Config@WEB MTU to RTU Protocols Manual

S2200-AAA-00002 V**10.1**

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For Reference Only

Manual No. S2200-AAA-00002

Rev	Date	Description	ECO #	Review Approval
0.0	12-6-02	Initial Release		
1.0	04-28-03	Changed name to Telvent and updated to match A6 firmware (added DNP-over-Ethernet, selection of non-contiguous points or range of points for mapping, CDC I protocol, and other improvements)	11248	
2.0	07-09-03	Added Modbus Master & Modbus Slave protocols for A7 release	11281	
3.0	10-08-03	Added SES 92 and L&N Conitel protocols	11327	
4.0	01-09-04	Added L&N C2100H protocol, updated Modbus R and other changes	11368	
5.0	08-17-04	Removed RTU to IED protocols from this manual and inserted into manual S2200-AAA-00004	11471	
6.0	12-01-04	Added IEC-104 protocol and updated CDT protocol	11503	
7.0	04-04-05	Added PMS-80 and FMS protocols	11526	
8.0	08-17-06	Added IDLC, added ACC DEFROST/FREEZE function to VanComm protocol, updated screen dumps, spun off DNP Device Profile to separate manual (C3413-AAA-DNP01), added SV-GP	11596	
9.0	03-12-07	Updated for C9 firmware	11635	
9.1	08-06-07	Updated for CA_P2 firmware	11672	
9.2	06-02-08	Updated for CD firmware	11712	
9.3	04-22-09	Updated for D2 firmware	11786	
9.4	10-04-12	Updated for Secure firmware		
10.0	10-17-2014	Update for Schneider Electric Template.		
				Dan Stark, Manager, RTU S/W Engineering

1 Introduction

The Schneider Electric RTUs that use the config@WEB interface have built-in point mapping. Point mapping is used on the output comm port, that is, the comm port reporting to a Master, whether that Master is another RTU or a central Master Station.

Your config@WEB configuration should follow this sequence:

1. Configure Hardware I/O
2. Configure IEDs
3. Configure Master Station interface ports

This manual concerns itself with the last item.

1.1 Communication Port Configuration

Communication is possible over both traditional serial ports (RS232 for all supported protocols) and Ethernet sockets for DNP and Modbus. Both Serial Comm operation and Ethernet Comm operation are explained in the following chapters.

1.2 Communications Timers

Schneider Electricmicroprocessor based RTUs use timers for communications. These timers are CTS Delay, RX Timeout, B4 Time, InterByte Time, and Modem TurnOff Time. Each of the timers and their normal uses are described below. Calculation of the communications timer values are dependent on the baud rate selected, the result of other communication timer values and the mode in which the serial device is used.

1.2.1 Timer Calculations

The timer values are calculated in the following order: InterByte Time, CTS Delay, Modem TurnOff Time, and B4 Time.

InterByte Time (10ms)

The InterByte time is the maximum time allowed between consecutive bytes of a message. This timer is started at the receipt of each byte of the transmission from the MTU to the RTU. The entire message will be discarded if the timer expires between two bytes of a message. The timer value is entered in 1ms increments and has a resolution of 5ms in the RTU.

If a value of 10 (the default) is entered, the timer value will be calculated based on the baud rate using the following formula:

InterByte Time Timer = the greater of 2 or ((14,400/baud rate+1) + 4)/5 + 1

This formula results in a quantity of 5ms ticks. For example, if the baud rate is 1200 baud, the timer would be calculated as ((14,400/1200) + 5)/5 + 1 resulting in a 4 tick timer. A four tick timer results in an actual time of from between 15 and 20 milliseconds since the tick timer begins asynchronously from the actual 5ms interrupt.

If a non zero value is entered, the 1ms value entered will be rounded up to the nearest number of 5ms ticks plus 1. The formula used is:

InterByte Time Timer = (value entered + 4)/5 + 1

If a value of 1 were entered, the timer would be calculated as (1 + 4)/5 + 1 resulting in a 2 tick timer. A two tick timer results in an actual time of from between 5 and 10 milliseconds since the tick timer begins asynchronously from the actual 5ms interrupt.

Each byte of the MTU to RTU message may be qualified with the hardware DCD option if the modem being used supports this signal. If the DCD input is unasserted when a byte is received, the byte will be discarded.

CTS Delay (1ms) (Clear To Send)

The CTS Delay timer is the delay from the end of the MTU message reception to the start of RTU message transmission. This timer is started when the RTU has received a message from the MTU that requires a response by the RTU and after the RTU has built the response message. When this timer is started, the RTS & DTR pins of the port will be asserted. The Clear To Send timer is used as displayed on the screen for the protocol. This timer is entered in 1ms increments and has a resolution of 1ms in the RTU.
If the Hardware CTS option is not enabled (the default), the RTU firmware will wait the CTS Delay period before transmitting its response to the MTU. If the Hardware CTS option is enabled, the RTU firmware will wait the CTS Delay period before checking the state of the CTS input. If the CTS pin is not asserted, the RTU firmware will check each millisecond until the signal is asserted, and at that time the RTU will transmit its response to the MTU.

Modem TurnOff Time (1ms)

The Modem TurnOff Time timer is the time the Modem is left on after completion of RTU message transmission. This timer is entered in 1ms increments and has a resolution of 1ms in the RTU. This timer is started when the RTU has transmitted the last byte of a message. When this timer expires, the RTS and DTR pins of the port will be de-asserted.

If a value of 0 (the default) is entered and the setting for the CTS Delay is non-zero, the timer value will be calculated based on the baud rate using the following formula:

Modem TurnOff Time Timer = the greater of 2 or (14,400/baud rate) + 1

This formula results in a quantity of 1ms ticks. For example, if the baud rate is 1200 baud, the timer would be calculated as ((14,400/1200) + 1 resulting in a 13 tick timer. A thirteen tick timer results in an actual time of from between 12 and 13 milliseconds since the tick timer begins asynchronously from the actual 1ms interrupt. If a value of 0 (the default) is entered and the setting for the CTS Delay is zero, the timer value will be set to zero.

If a non zero value is entered, the 1ms value entered will be the number of 1ms ticks used. If a value of 3 were entered, the timer would be a 3 tick timer. A three tick timer results in an actual time of from between 2 and 3 milliseconds since the tick timer begins asynchronously from the actual 1ms interrupt.

If a MTO value of 7 were entered and the baud rate were set to 2400, the timer would be a 15 tick timer. A fifteen tick timer results in an actual time of from between 14 and 15.

B4 Time (1ms)

The B4 Time timer is the amount of time the RTU listens for a dead receive line prior to enabling the receiver and accepting a new message. This timer is started at the end of each transmission from the RTU to the MTU. The timer must expire prior to a new message being accepted from the MTU. If any bytes of a message are received by the RTU prior to the time expiring, they will be discarded and the B4 timer restarted. This timer is entered in 1ms increments and has a resolution of 5ms in the RTU.

If a non zero value is entered, the 1ms value entered will be rounded up to the nearest number of 5ms ticks plus 1. The formula would then appear as:

B4 Time Timer = (value entered + 4)/5 + 1

If a value of 10 were entered, the timer would be calculated as (10 + 4)/5 + 1 resulting in a 3 tick timer. A three tick timer results in an actual time of from between 10 and 15 milliseconds since the tick timer begins asynchronously from the actual 5ms interrupt.

If a value of 0 is entered, the timer value will be calculated based on the modem turnoff time using the following formula:

*B4 Time Timer =((the greater of (MTO/2)*5 or 10) + 4)/5 +1*

This formula results in a quantity of 5ms ticks. For example, if the MTO delay is 2, the timer would be calculated as ((10) + 4)/5 + 1 resulting in a 3 tick timer. A three tick timer results in an actual time of from between 10 and 15 milliseconds since the tick timer begins asynchronously from the actual 5ms interrupt.

RX Timeout (16.67ms)

The RX Timeout timer is the amount of time the RTU receiver waits to hear valid communications from the MTU. This timer is started at the end of each transmission from the RTU to the MTU. If no bytes of a message are received by the RTU prior to the timer expiring, the USART of the port will be initialized. This timer is entered in 1ms ticks and has a resolution of 16.67ms in the RTU. An entry of 5000ms results in an actual time between 5.183 and 5.200 seconds because the tick timer begins asynchronously from the actual 16.67ms interrupt.

1.3 Timing Diagrams

Figure 1-1 represents request-response cycles between an MTU and an RTU. Figure 1-2 shows an expanded single request-response cycle including the additional RTU signal timing.

Figure 1-1 MTU-RTU Communications Timing Diagram

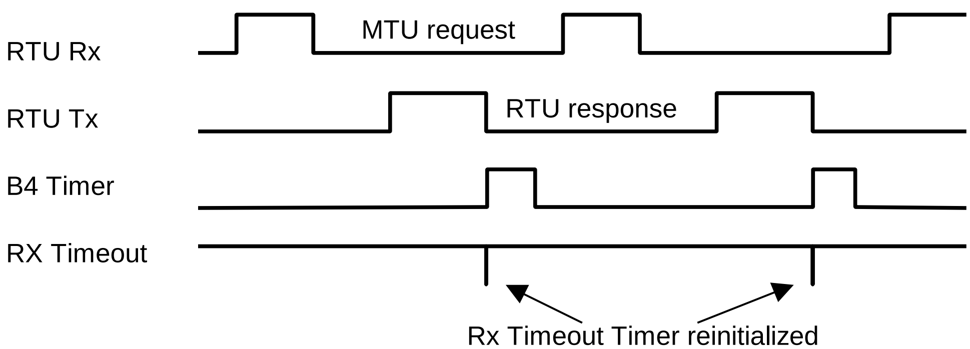
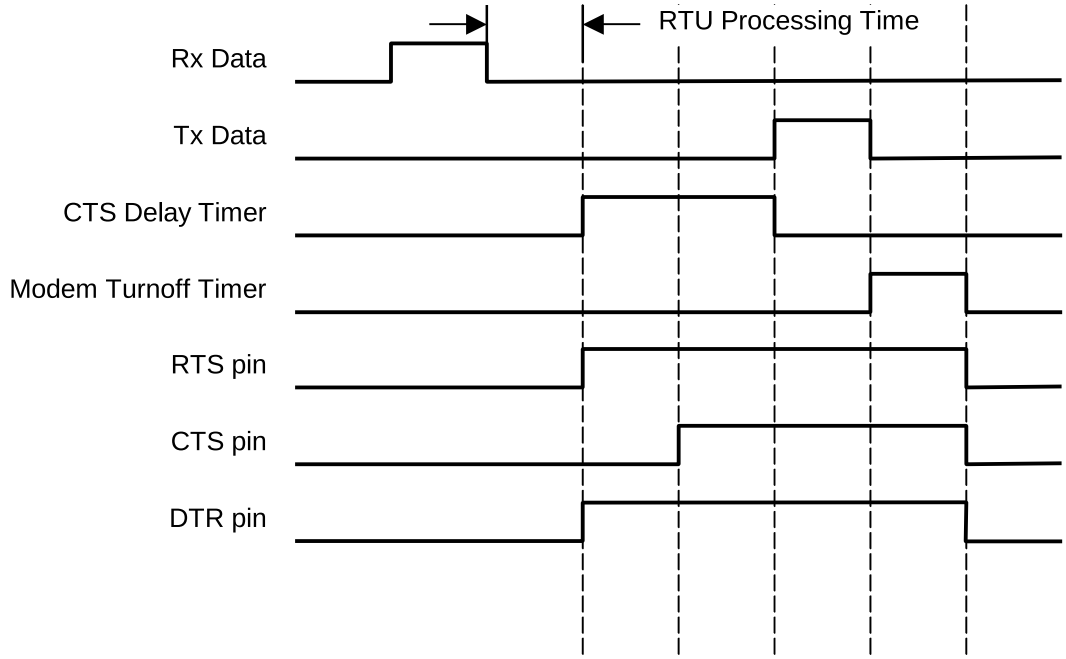


Figure 1-2 DNPR Expanded Communications Timing

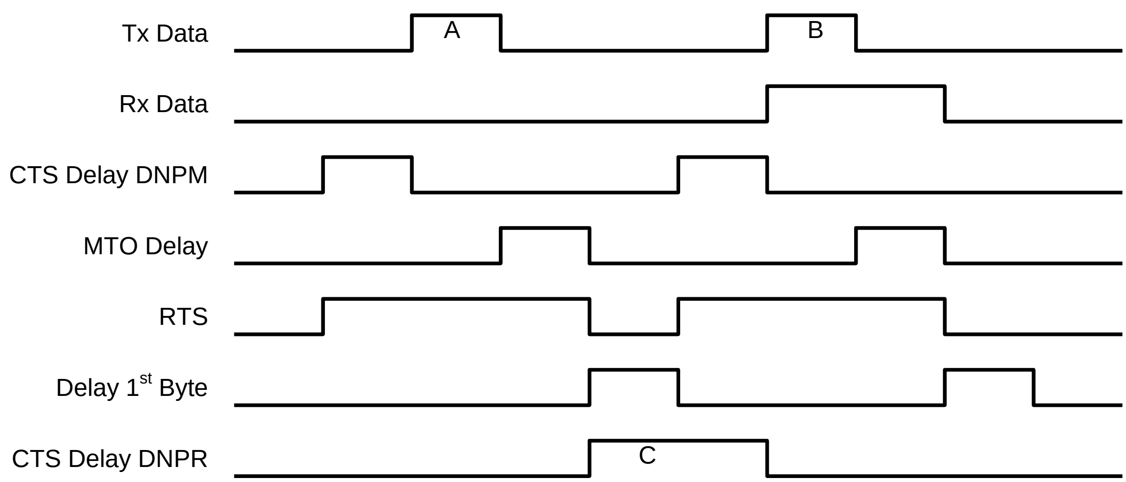


1.4 DNP Timing Problem Examples

1.4.1 CTS Delay Too Long

Common timing problems arise when there are mismatches between the selected timer values. Some of these are illustrated in the following diagrams:

Figure 1-3 Mismatch CTS and 1st Byte Times



Transmit Data A & B
The Tx Data represents polling messages from the DNPM RTU.

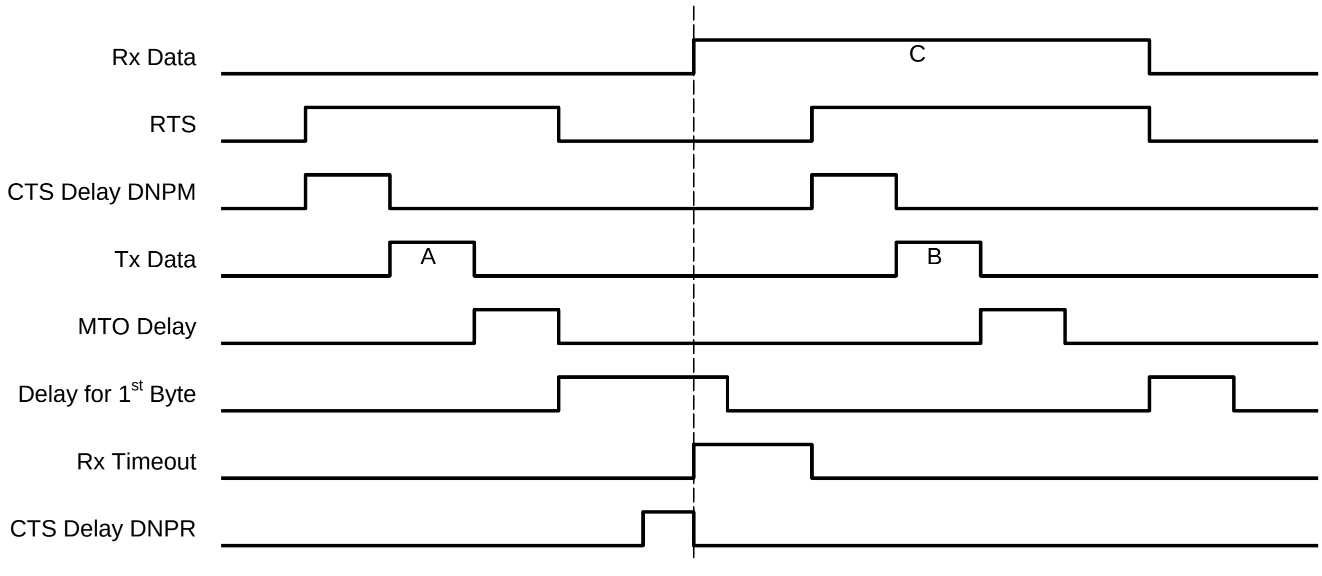
CTS Delay at DNPR (C)
The CTS delay time is set too long or the Delay 1st Byte is set too short.

The mismatch between the DNPR CTS and Delay for 1st Byte causes the DNPM to never hear the DNPR transmission. The defaults set in the PROM may not be appropriate for every communications media. This problem is indicated by rapid polling by the DNPM. It is the purpose for the Delay 1st Byte timer to allow rapid, efficient polling.

1.4.2 Rx Timer Too Short

The DNPR CTS Delay (See Figure 1-4) is properly set since the first byte is received before the Delay for 1st Byte timer expires.

Figure 1-4 DNPM Timing Problem - Rx Timeout Set Incorrectly



Transmit Data A & B
The Tx Data represents polling messages from the DNPM RTU.

Rx Data (C)
The DNPR data transmission (C) starts properly but the RX timeout timer at the DNPM cuts it short. This causes the DNPM to transmit a poll request (B) even while the DNPR is still responding to the first poll request (A).

1.5 Secure Authentication

DNPR now supports Secure Authentication. See the DNPR chapter.

1.6 Communication Port Configuration Screen

From the Configuration screen, click Serial Comm.

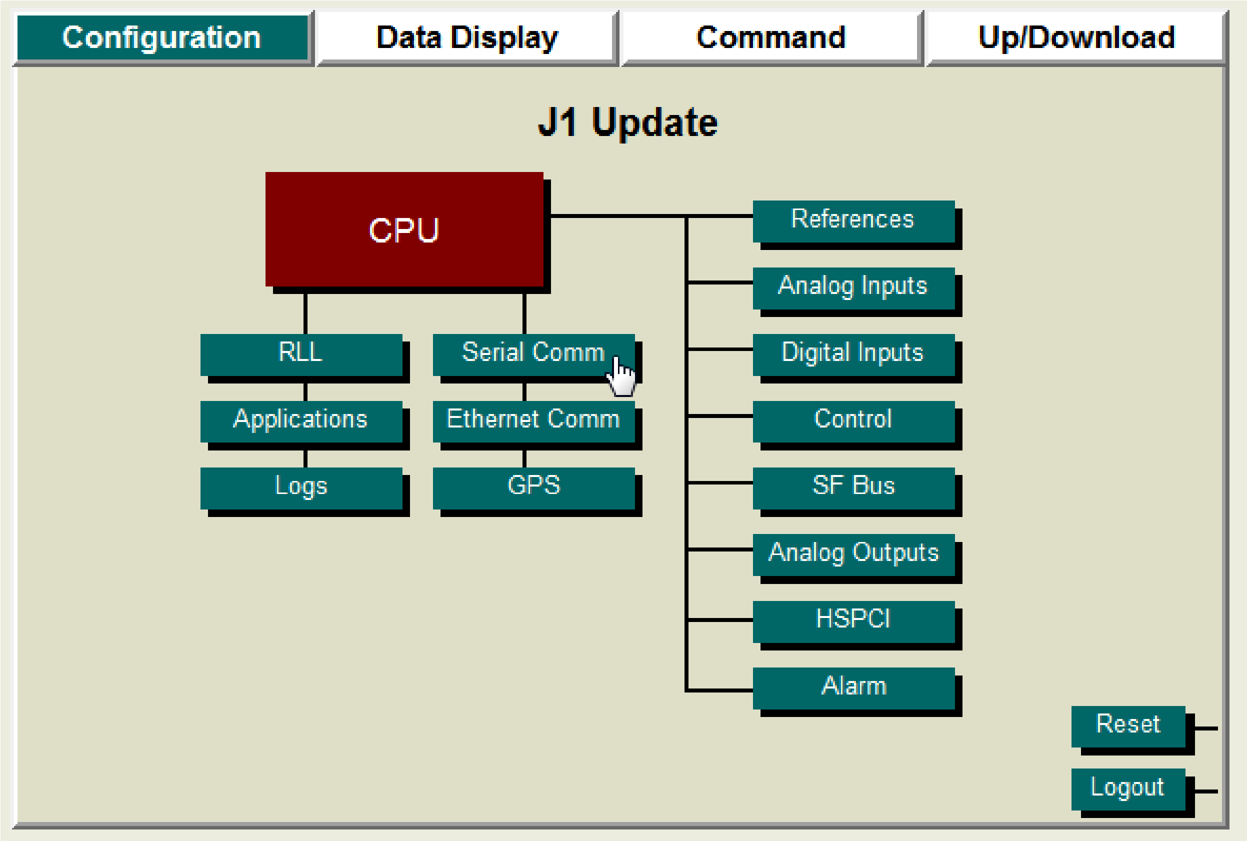
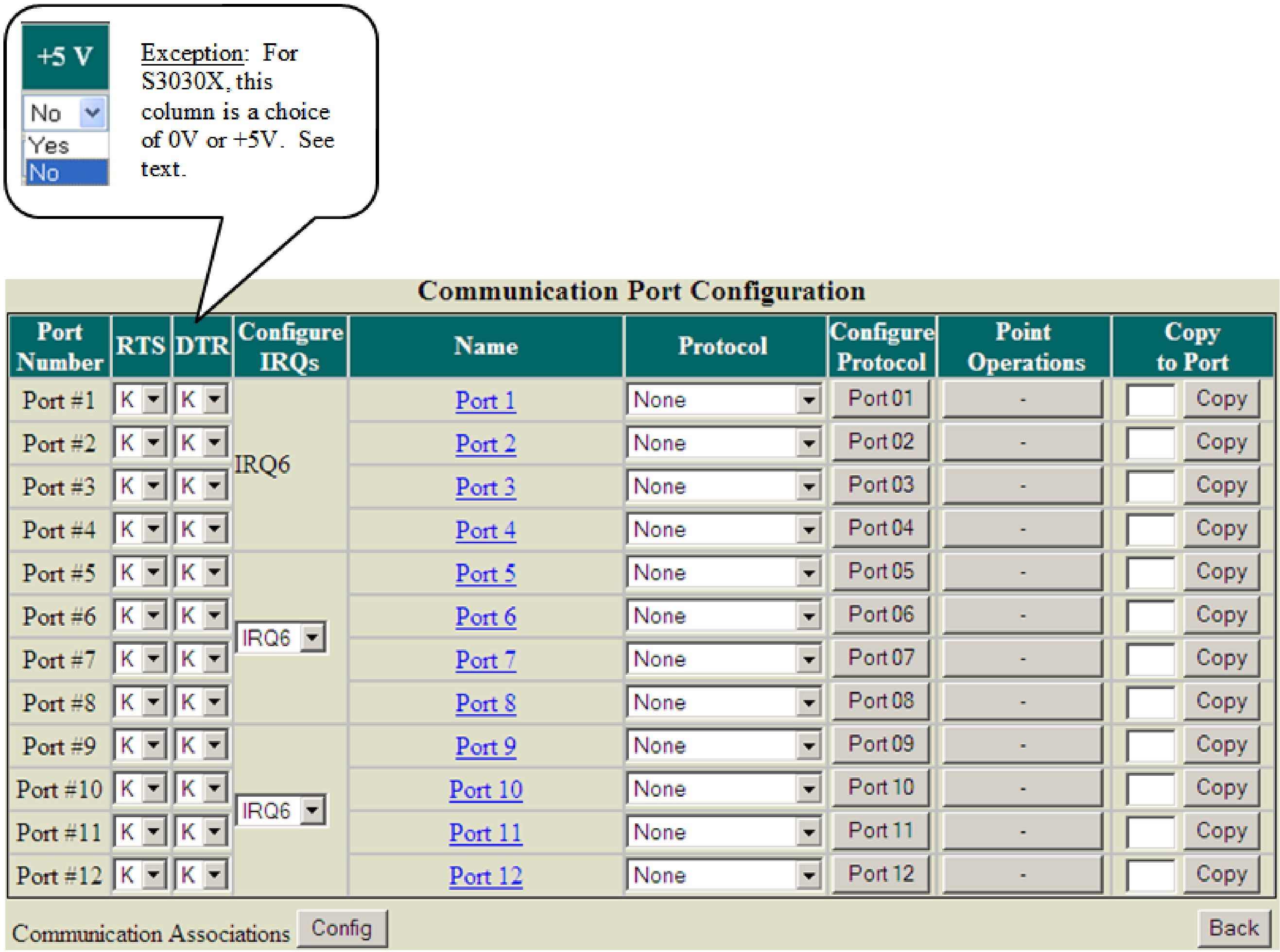


Figure 1-5 Config Page

You will get a screen similar to Figure 1-6 Communication Port Configuration



Port Number	RTS	DTR	Configure IRQs	Name	Protocol	Configure Protocol	Point Operations	Copy to Port
Port #1	K	K	IRQ6	Port 1	None	Port 01	-	Copy
Port #2	K	K		Port 2	None	Port 02	-	Copy
Port #3	K	K		Port 3	None	Port 03	-	Copy
Port #4	K	K		Port 4	None	Port 04	-	Copy
Port #5	K	K	IRQ6	Port 5	None	Port 05	-	Copy
Port #6	K	K		Port 6	None	Port 06	-	Copy
Port #7	K	K		Port 7	None	Port 07	-	Copy
Port #8	K	K		Port 8	None	Port 08	-	Copy
Port #9	K	K	IRQ6	Port 9	None	Port 09	-	Copy
Port #10	K	K		Port 10	None	Port 10	-	Copy
Port #11	K	K		Port 11	None	Port 11	-	Copy
Port #12	K	K		Port 12	None	Port 12	-	Copy

Figure 1-6 Communication Port Configuration

Port Number

Physical Port number of the RTU.

RTS and DTR

Request **T**o **S**end and **D**ata **T**erminal **R**eady. Using the drop-down list, set to K, H, or L.

Note: This example applies to the SAGE 2300. Refer to the hardware manual for your particular RTU for variations.

"K" represents Keyed (Radio/Modem).

The RTU firmware asserts/de-asserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.

When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.

The output will be driven to the negative RS232 voltage at power-up and always be the negative RS232 voltage.

+5V (S3030X only)

Yes

Provides +5V at approximately 100mA on pin 1 of the RS-232 connector to power auxiliary communications devices.

No

Turns pin 1 on the RS-232 connector to be a Data Carrier Detect (DCD) input.

Name

Click on the “blue” name (see below) and rename the port, or accept the default name.

Protocol

From the drop-down list, select the protocol for this port.

Configure Protocol

Click the button under Configure Protocol to set up communication parameters for this port.

Point Operations

Click this button to assign points.

Copy to Port

This function copies everything in the port configuration except the port name to the target port. Enter a port number to copy to, then click the Copy button.

Press Alt + Left Arrow to go back to the link from the protocol you were reading.

2 DNPR

DNP may be implemented through either a Serial Comm port, or through Ethernet. Each method is detailed in the following sections. DNPR is a protocol that communicates between a Master and the RTU.

2.1 Serial Comm Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

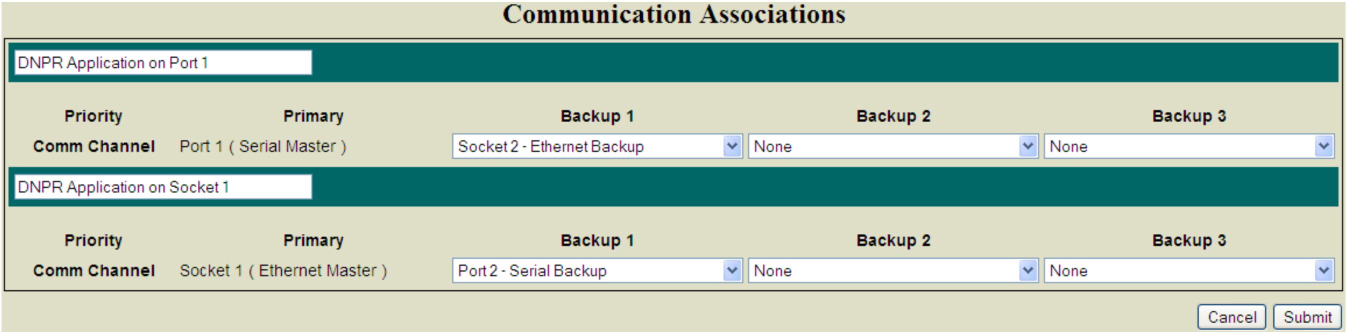
2.1.1 Communication Associations

Communication Associations allow you to set-up backup channels to the Master channel. As of this writing, this function has been implemented only for DNPR. To make the backup work, you must have a separate comm link to the Master. If the primary comm link fails, the Backup comm link will take over.

Click the Config button to get the screen shown in Figure 2-1.

In the example, DNPR Primary and Backup channels have been setup in both the Serial ports, and the Ethernet ports. The two port types can be intermixed in the setup. That is, you could have a Serial Master and an Ethernet Backup, and vice-versa, as shown.

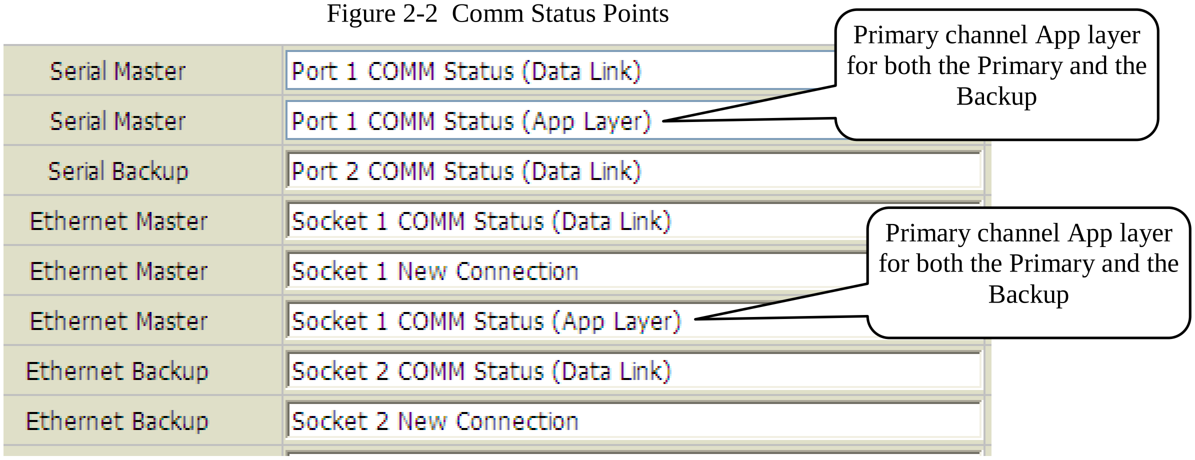
Figure 2-1 Communication Associations



As shown in Figure 2-1, each Primary channel may have up to three Backup channels.

In DNP communications, there is a Data Link Layer, which controls the physical connection, and there is an Application layer. The Communication Association function works by using the Application Layer of only the channel designated as the Primary. This principle may be seen when we examine the mapped internal Comm Status points, as shown in Figure 2-2.

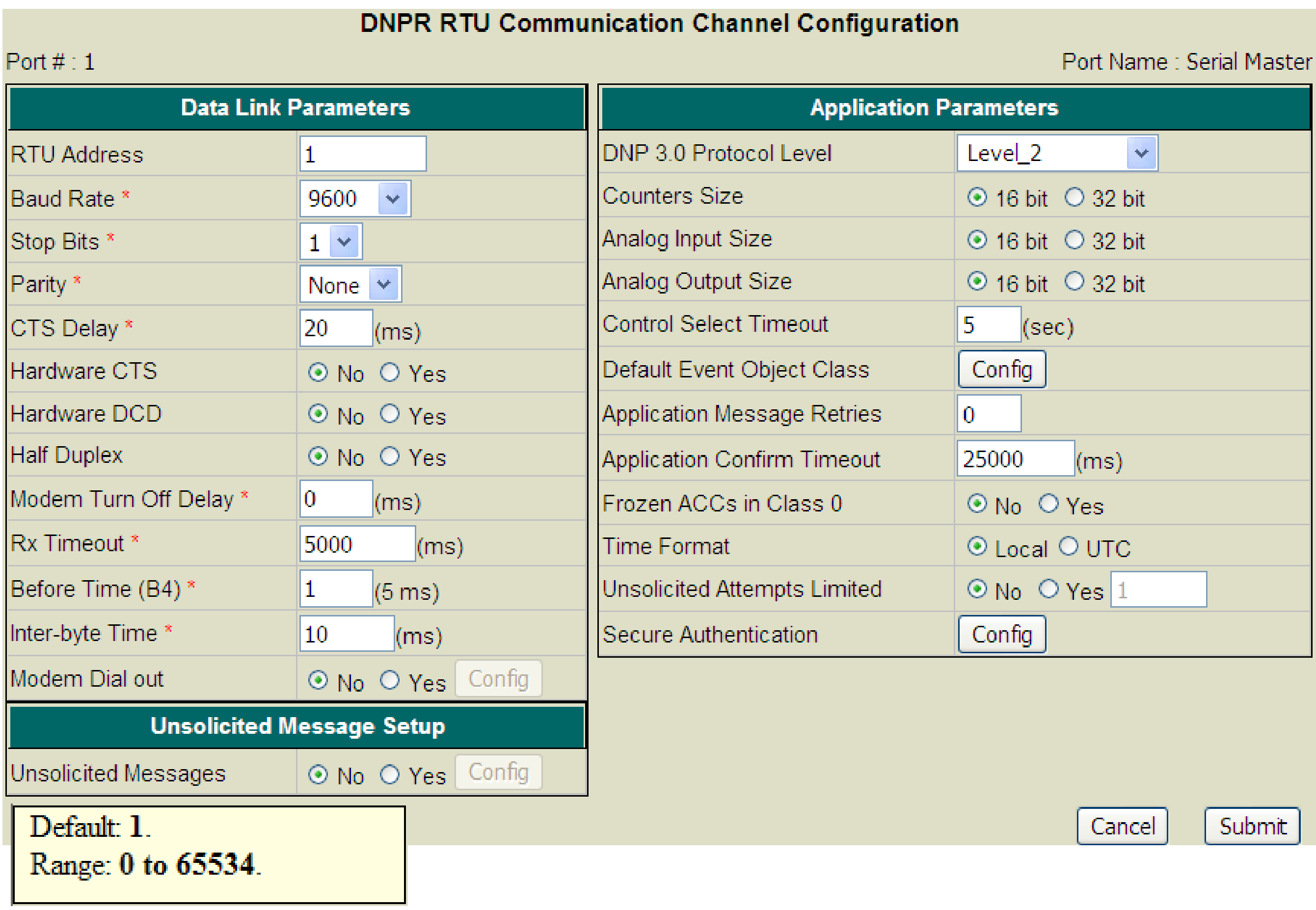
Figure 2-2 Comm Status Points



2.1.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the DNPR port. You may accept all defaults or fill in the form according to the information following Figure 2-3.

Figure 2-3 DNPR Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU Address.

2.1.2.1 Data Link Parameters

RTU Address (0 – 65534)
Enter the RTU address. This is the ID number to which the RTU will respond. The default is 1.

Baud Rate (300-38400)
From the drop-down menu, select the baud rate. The default setting is 9600.

Stop Bits (0 – 2)
From the drop-down menu, enter the stop bits. The default is 1.

Parity (None, Odd, Even)
Enter the parity for the associated channel. The default setting is None.

CTS Delay (0 to 1000ms)
Enter the clear-to-send delay in milliseconds for the associated channel. This is the delay of time the channel will wait to start transmitting following Request-To-Send being asserted. Valid entries are in the range of 0-1000 msec. The default setting is 20.

Hardware CTS (No, Yes)
Click the radio button for Yes if you want the Hardware Clear-To-Send option selected. If CTS is not detected, the RTU will not respond to the MTU and will go back into receive mode. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. The default setting is No.

Hardware DCD (No, Yes)
Click the radio button for Yes if you want the Hardware DCD selected. When this option is selected, the channel communications driver will accept requested message data bytes only if the carrier is detected by the modem. If the carrier is not detected, the data bytes are discarded. The default setting is No.

Half Duplex (No, Yes)
Enter Yes for half duplex or No for full duplex. This field enables the RTU to properly condition the RS-232 control lines. The CTS delay is used for carrier conditioning. In full duplex operation, the CTS signal is used for collision avoidance. In Half duplex operation, the DCD signal is used for collision avoidance and to enable the receiver. The default setting is No.

Modem Turn Off Delay (0 to 250ms)
Enter the Modem Turnoff Delay for the associated channel. The MTO Delay is used to designate the amount of time (in milliseconds) that will elapse after the last byte is transmitted before the modem is turned off. The default setting is 0 ms.

Rx Timeout (0 to 1,000,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. The default setting is 5000ms (5 sec).

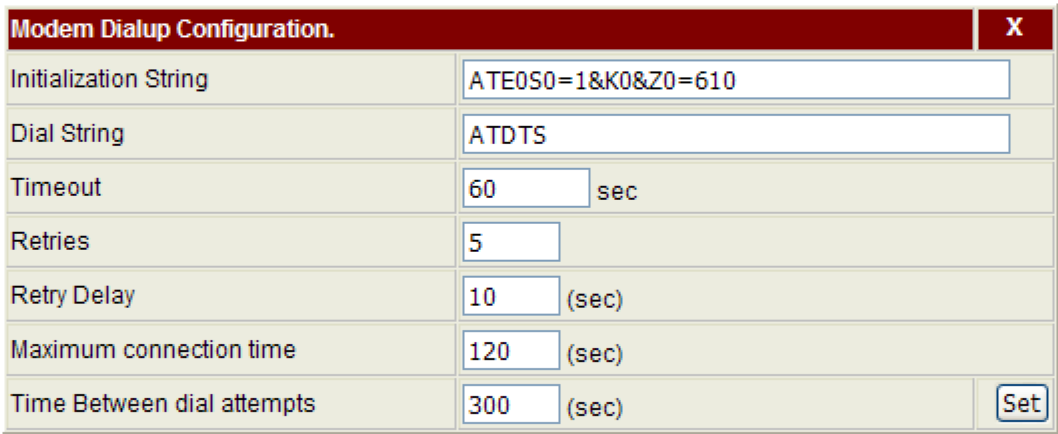
Before Time (B4) (0-250)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTU receive interrupts. A full duplex connection should use minimal values. Each integer in this field represents 5ms. The default setting is 1.

Inter-byte time (0 to 30,000ms)

Enter the inter-byte time for the associated channel. The inter-byte time is the time allowed for the next byte of a message to be received after a byte has been accepted before the RTU discards the partial message and begins looking for the first byte of a new message. It is recommended that you increase the delay when using frequency-hopping radios. The default setting is 10 msec.

Modem Dial Out (Yes, No)

This radio button sets up conditions for dial out modem. No is the default. If unsolicited dial out is desired, click the Yes radio button, then the Config button to get the Modem Dialup Configuration screen as shown below.



Initialization String

The default is ATE0S0=1&K0&Z0=610 where:

AT	attention command line prefix
E0	Echo off
S0=1	answer on one ring
&K0	hardware flow control is off
&Z0=610	Stores telephone number. n=string of digits compatible with Dial command

Dial String

The default is ATDTS where:

AT	attention command line prefix
DT	touch tone dialing
S	The number to be dialed

Delete the S and enter the number to be dialed immediately following the ATDT string.

Timeout (0 – 60,000 sec.)

Enter the connect timeout value that will allow sufficient time to connect to the dialed number without degrading system performance. The default is 60 sec.

Retries (0 – 60,000)

Enter the number of dialup retries to attempt upon failure to connect. The default is 5 retries.

Retry Delay (0 – 60,000 sec.)

Enter the delay time between retries after a failure to connect timeout. The default is 10 sec.

Maximum connection time (0 – 60,000 sec.)

Enter the maximum connect time before the modem will go back on-hook. Set the time long enough so that valid messages are not cut off. The default is 120 sec.

Time Between dial attempts (0 – 60,000 sec.)

Enter the delay time between dialup attempts. The default is 300 sec.

Navigation

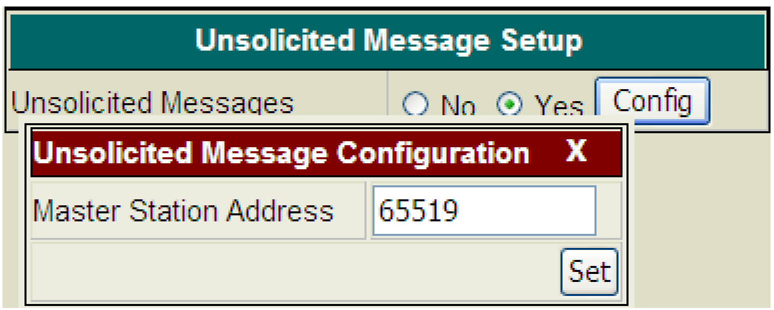
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

2.1.2.2 Unsolicited Message Setup

An Unsolicited Message transmission is one that is triggered by an event in the RTU without a poll request from a DNP master.

Unsolicited Messages (No, Yes – Config)

Click Yes if you wish to set up unsolicited messages, then click Config. Unsolicited Reporting allows the RTU to initiate a report transmission without being polled by a master. The MTU can enable or disable this feature remotely. The default is No.



Master Station Address (0 – 65534)

Enter the Master Station Address. This is the address of the DNPM or the OASyS to which the DNPR reports. Enter the MTU Address. If Unsolicited Reporting is enabled, this is the destination ID the RTU will place into unsolicited messages. If OASyS (Data Link Confirm) is selected, this is also the ID which the RTU will expect to find in Data Link Acknowledge messages. The default setting is 65519.

Click Set to accept changes. Click X to dismiss the pop-up.

2.1.2.3 Application Parameters

DNP 3.0 Protocol Level

This drop-down list allows you to choose the level of conformance with the DNP 3.0 protocol. The default is Level_2.

OASyS (Data Link Confirm)

Enter OASyS (Data Link Confirm) for connections to an OASyS master station with the RTU set to request data-link confirmation messages from the master on each frame of multi-frame messages.

Note: If DNP 3.0 Protocol Level is set to OASyS (Data Link Confirm), the Data Link Retries (under Unsolicited Message Setup) will become active.

OASyS

Enter OASyS for connection to an OASyS master station without data link confirm.

Level_2

Enter Level_2 when communicating with a DNP master station other than OASyS.

Central Hudson

Enter Central Hudson if your utility is Central Hudson.

PJM

The PJM option causes the RTU to reserve space in memory for up to 576 Frozen Accumulator with Time Tag events for each accumulator mapped to DNPR. With this option, a request for accumulator class data returns queued accumulator freeze events with time tags. Reported events are deleted from the queue when a subsequent application confirm is received. This option is designed to work with the global freeze by "Enable Freeze After the Hour" option (described in any of the config@WEB RTU hardware manuals) to freeze accumulators at specified times within the hour and queue the frozen accumulator values with time tags.

Counters Size (16 bit, 32 bit)

Select whether you want the RTU to send counters as 16 bit words or 32 bit words. The default is 16 bit.

Analog Input Size (16 bit, 32 bit)

Select whether you want the RTU to send analog inputs as 16 bit words or 32 bit words. The default is 16 bit.

Analog Output Size (16 bit, 32 bit)

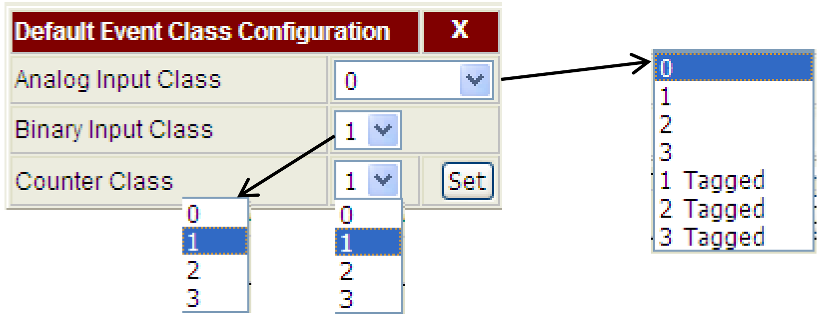
Select whether you want the RTU to send analog outputs as 16 bit words or 32 bit words. The default is 16 bit.

Control Select Timeout (0 – 60sec)

Enter the SBO select timeout value. The Control Select Timeout provides a time window for an SBO execute request to reach the RTU after the Select Request has been received. This value operates for all control points. Default is 5.

Default Event Object Class

Default Event Object Class may now be assigned separately according to type of point. Click the Config button to get the pop-up shown below.



You can select a different Event Object Class for each type of point shown above, as the example shows. After making your selections, click Set to retain your choices, or X to dismiss the pop-up.

The entries chosen will be used until the MTU assigns the event object to a different class. The Internal Indications bit corresponding to the assigned class will be set when the RTU has changes that need to be read by the MTU. The default for all types of points is 1.

Class	Analog Input, Binary Input, & Counters
0	No events generated unless reassigned by MTU.
1	Assigned to Class 1 unless reassigned by the MTU.
2	Assigned to Class 2 unless reassigned by the MTU.
3	Assigned to Class 3 unless reassigned by the MTU.
Analog Input only	
1 Tagged	Assigned to Class 1 & Time Tagged unless reassigned by the MTU
2 Tagged	Assigned to Class 2 & Time Tagged unless reassigned by the MTU
3 Tagged	Assigned to Class 3 & Time Tagged unless reassigned by the MTU

Application Message Retries (0 – 99)

Enter the number of times the RTU should retry application messages which require a response. The default setting is 0.

Application Confirm Timeout (0 – 1,000,000 ms)

Enter the number of milliseconds the RTU should wait for an Application Confirm message before timeout. The default setting is 25000.

Frozen ACCs in Class 0 (No, Yes)

Enter 'Yes' if there are frozen accumulators in Class 0. The default setting is 0.

Time Format (Local, UTC)

Note: The coordination between UTC and local time is a feature that may be ignored. If you want your RTU to act as it always has in regards to time syncs, set Time Format to Local Time. See the config@WEB Secure Software Users Guide for a discussion of time settings under the CPU block.

If you want time synchronization from the master, you must know whether the master is sending Local time or UTC time, then set this radio button to match the master's format. Default is Local.

Unsolicited Attempts Limited (No, Yes)

Click No to make unsolicited attempts unlimited. Click Yes to limit unsolicited attempts, then configure the number of attempts allowed. The maximum is 60,000. The default is 1.

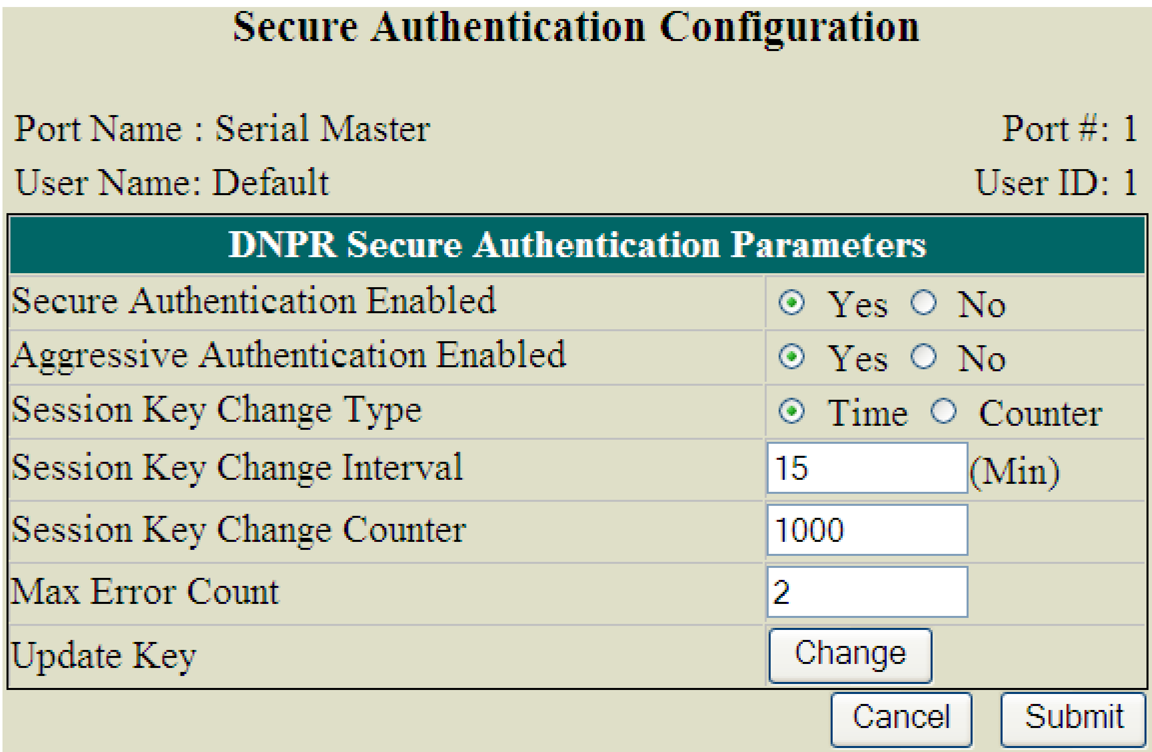
After reset of the RTU, the configured number of attempts is made to establish communications with the MTU. If these initial attempts fail, the RTU will attempt to establish communications for every Binary Input change, the first Analog Input deadband violation per point, or the first Counter deadband violation per point until successful communications is established. Each new event will set the attempts left to make to the configured number of attempts, even if attempts are currently being made.

2.1.2.4 Secure Authentication

To Configure DNP to use Secure Authentication (as defined in DNP3Spec-V2-Sup1-SecureAuthentication-20080731.pdf), click on Config next to Secure Authentication.

The ability to add users is not currently available. There is 1 user by default with user ID: 1 and User Name: Default.

Figure 2-4 Secure Authentication Configuration



Secure Authentication Enabled (Yes, No)
By default, Secure Authentication is disabled. To enable it, click Yes.

Aggressive Authentication Enabled (Yes, No)
Aggressive Authentication is enabled by default. Aggressive authentication is less secure, but saves bandwidth.

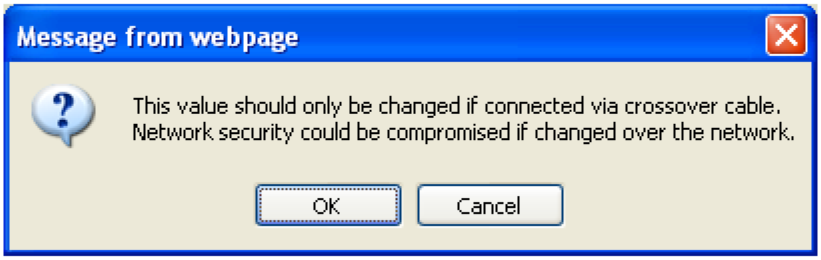
Session Key Change Type (Time, Counter)
This defines whether Session Keys expire after a certain length of time or a certain number of secure authentication messages. Time is the default.

Session Key Change Interval (1 – 120 minutes)
This number defines (in minutes) the length of time in which a new Session Key will become invalid. The default is 15 minutes.

Session Key Change Counter (1 – 10000)
This number defines the number of Secure Authentication messages which may be sent with a new Session Key before it becomes invalid. The default is 1000.

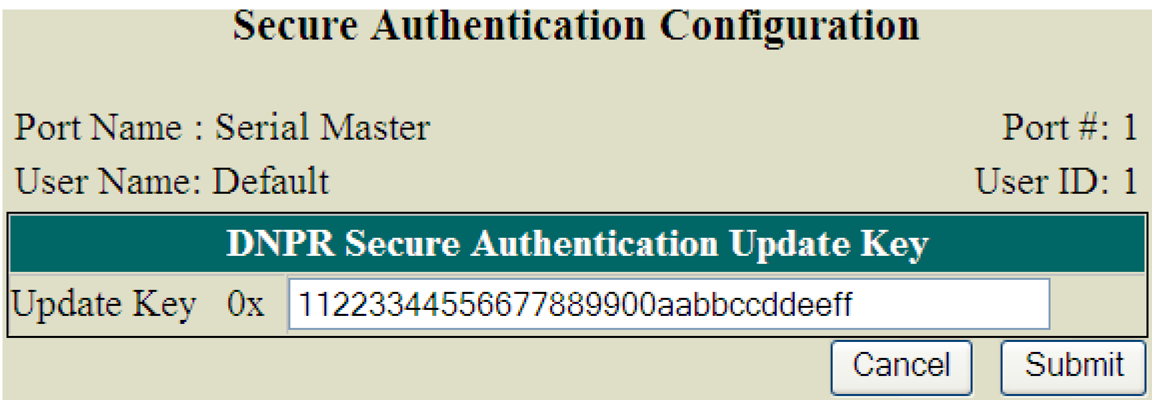
Max Error Count (0 - 10)
This number defines the maximum number of Secure Auth messages (Obj 120 v 7) that may be sent or received with the current session key before it is invalidated. The default is 2.

Update Key (Change button)
This is the 128 bit Key which is used to decode/encode Session Key Change Messages in order to renegotiate Session Keys. This number should only be changed on a Secure Network or when directly connected to the RTU via a crossover cable, otherwise the security of the DNP messages would be compromised. You will get the following warning before you can continue:



When you click OK, the Update Key box will appear.

Figure 2-5 Secure Authentication Configuration Update Key



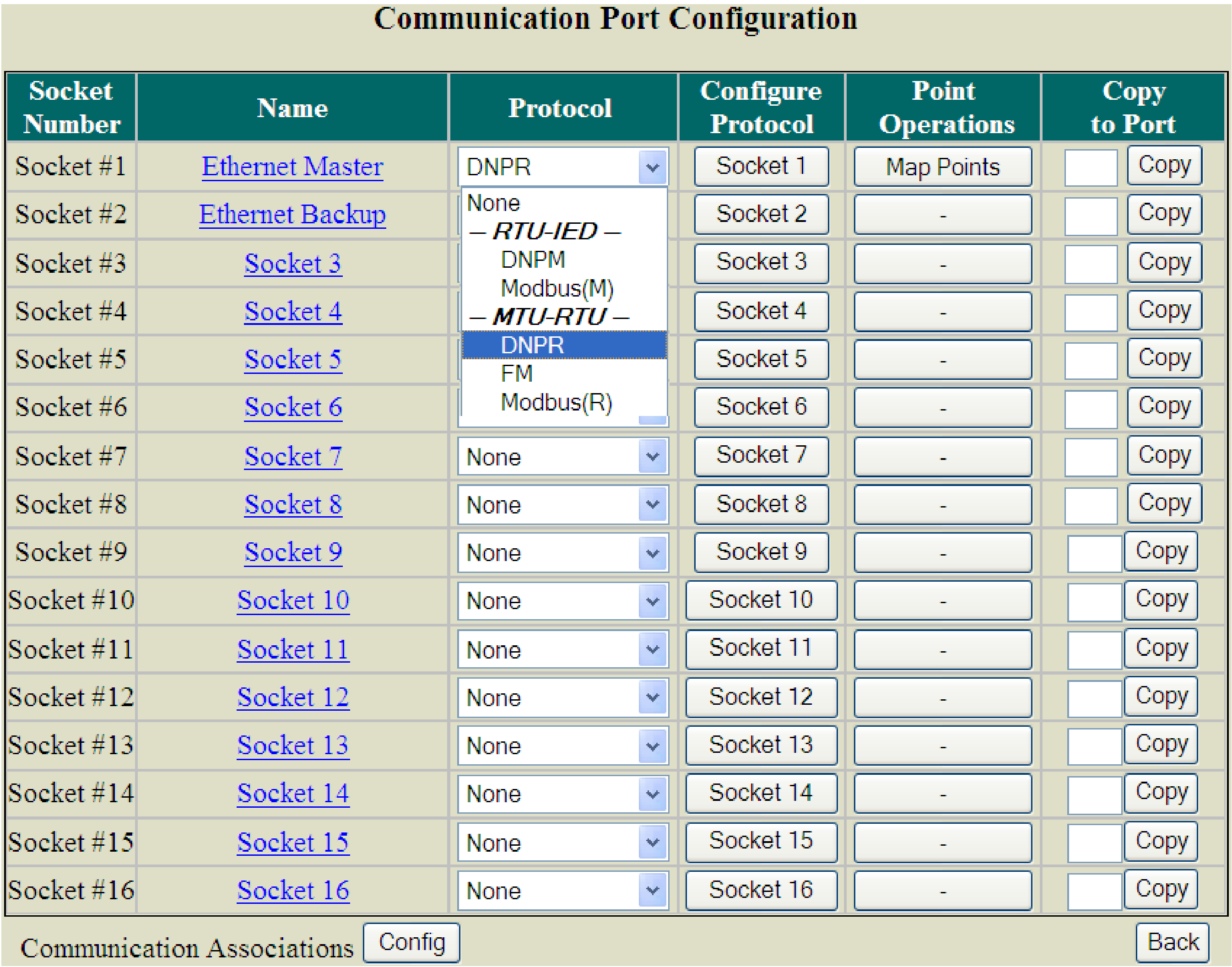
The Update Key is a 128 bit number which must be entered as 16 Bytes (32 characters). Only the numbers 0-9 and the letters a-f are valid characters. The ASCII values entered are converted to the binary hexadecimal equivalent in the RTU.

2.2 Ethernet Comm Port Configuration

DNPR is a protocol that communicates between the RTU and a Master.

From the Configuration screen, click Ethernet Comm. You will get a screen similar to below. See the config@WEB Secure Software Users Guide for a discussion of the Ethernet Comm Port Configuration screen. From this screen, click DNPR from the Protocol drop-down menu as shown.

Figure 2-6 DNPR Ethernet Comm Port Configuration



Communication Port Configuration

Socket Number	Name	Protocol	Configure Protocol	Point Operations	Copy to Port
Socket #1	Ethernet Master	DNPR	Socket 1	Map Points	Copy
Socket #2	Ethernet Backup	None	Socket 2	-	Copy
Socket #3	Socket 3	— RTU-IED —	Socket 3	-	Copy
Socket #4	Socket 4	DNPM	Socket 4	-	Copy
Socket #5	Socket 5	Modbus(M)	Socket 5	-	Copy
Socket #6	Socket 6	— MTU-RTU — DNPR FM Modbus(R)	Socket 6	-	Copy
Socket #7	Socket 7	None	Socket 7	-	Copy
Socket #8	Socket 8	None	Socket 8	-	Copy
Socket #9	Socket 9	None	Socket 9	-	Copy
Socket #10	Socket 10	None	Socket 10	-	Copy
Socket #11	Socket 11	None	Socket 11	-	Copy
Socket #12	Socket 12	None	Socket 12	-	Copy
Socket #13	Socket 13	None	Socket 13	-	Copy
Socket #14	Socket 14	None	Socket 14	-	Copy
Socket #15	Socket 15	None	Socket 15	-	Copy
Socket #16	Socket 16	None	Socket 16	-	Copy

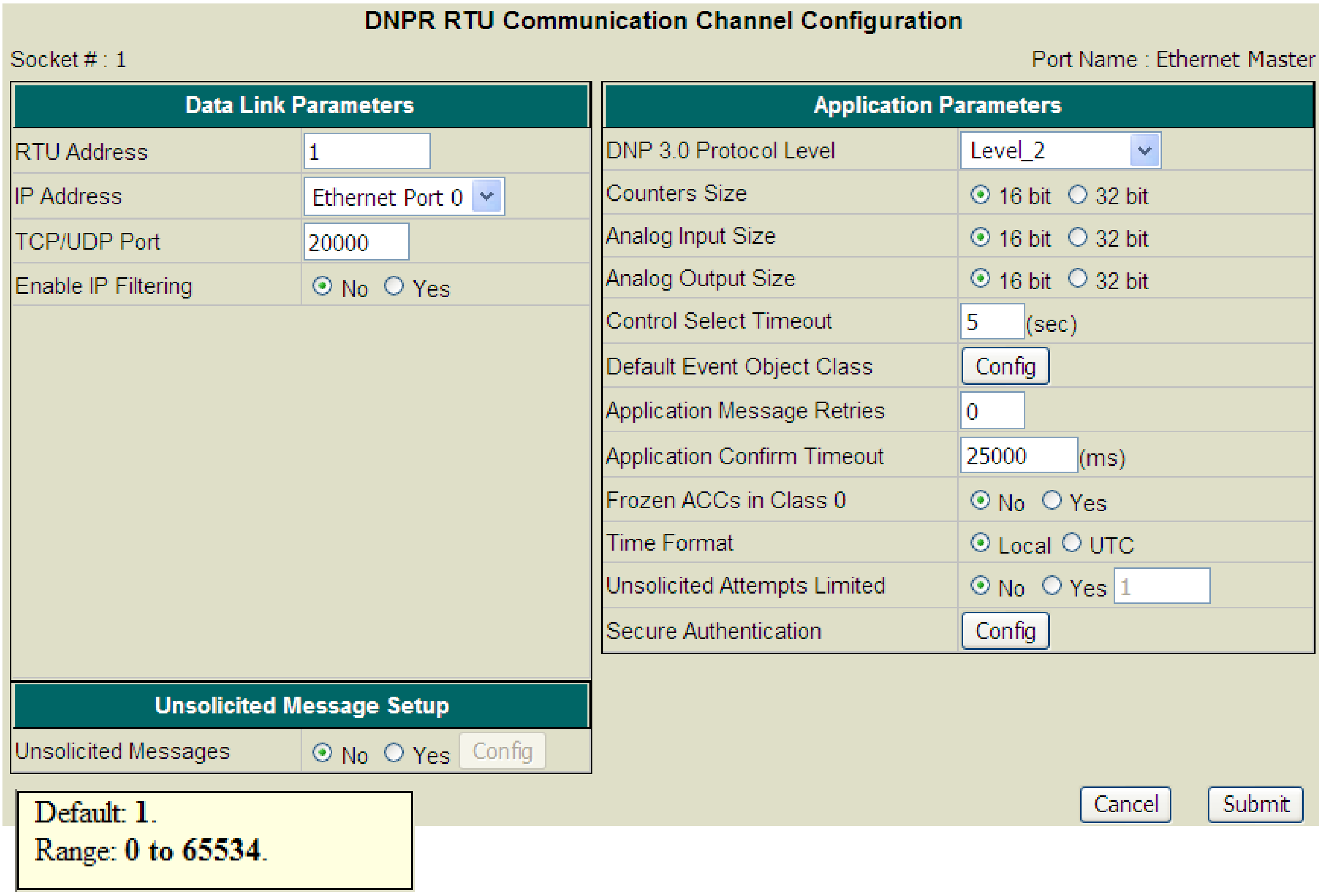
Communication Associations Config Back

Note: Functions on the above screen are similar to the functions on the Serial Comm Port Configuration screen, so details will not be repeated. The following sections details functions which are somewhat different from the Serial Comm Port Configuration.

2.2.1 Configure Protocol

Under the heading Configure Protocol, click Socket *n* to configure the DNPR port. You may accept all defaults or fill in the form according to the information following Figure 2-7.

Figure 2-7 DNPR Ethernet Comm Channel Configuration



Note: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU Address.

2.2.1.1 Data Link Parameters

RTU Address (Ethernet Port 0 or 1)
Enter the RTU address. This is the ID number to which the RTU will respond. The default is 1.

IP Address (0 – 65534)
Enter the Ethernet Port for which this IP configuration applies. The green CPU card had only Ethernet Port 0. The red CPU card has two Ethernet ports; 0 (J3) and 1 (J2).. The default is 0 (J3).

TCP/UDP Port
The DNP/IP connection used on this RTU is typically a TCP socket. A TCP socket connection requires two “addresses” to form the connection. One is the TCP/IP address (contained on the CPU setup screen of this RTU) and the other is the TCP Port number. To poll this RTU via DNP/IP, the master station would need to be configured to “point to” this RTU’s TCP/IP address and this particular DNPR socket’s port number. If multiple master stations would be polling this RTU via DNP/IP, each master station would be configured to poll the same RTU IP address, but each master would have a unique TCP Port number to match each RTU DNPR socket that is configured. The default setting is 20000. Each additional port must

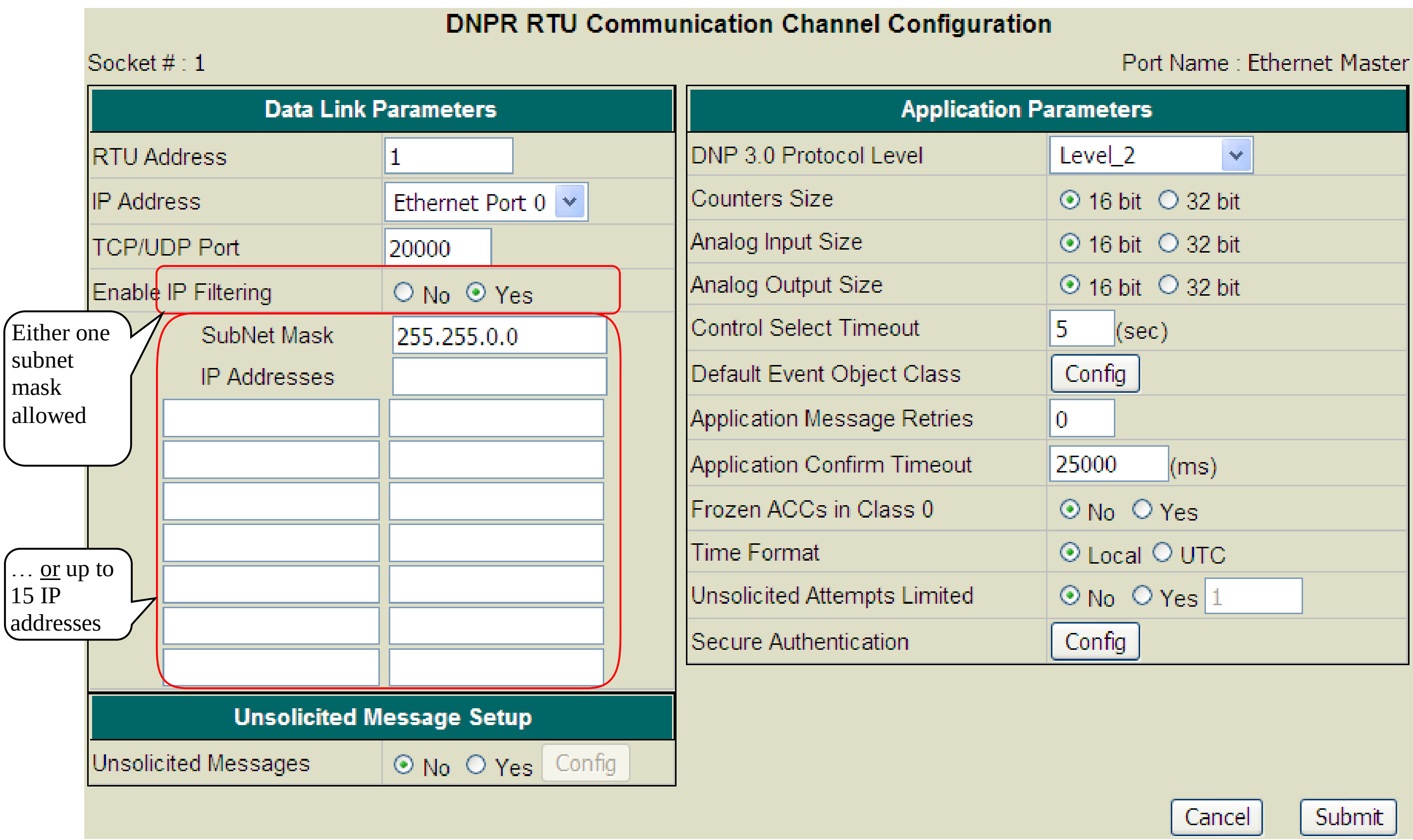
be uniquely numbered. For questions and recommendations about port number assignments, see www.iana.org.

Enable IP Filtering (Yes, No)

This function provides a means to filter the IP addresses and Subnet Mask addresses from Master Stations. The default is No.

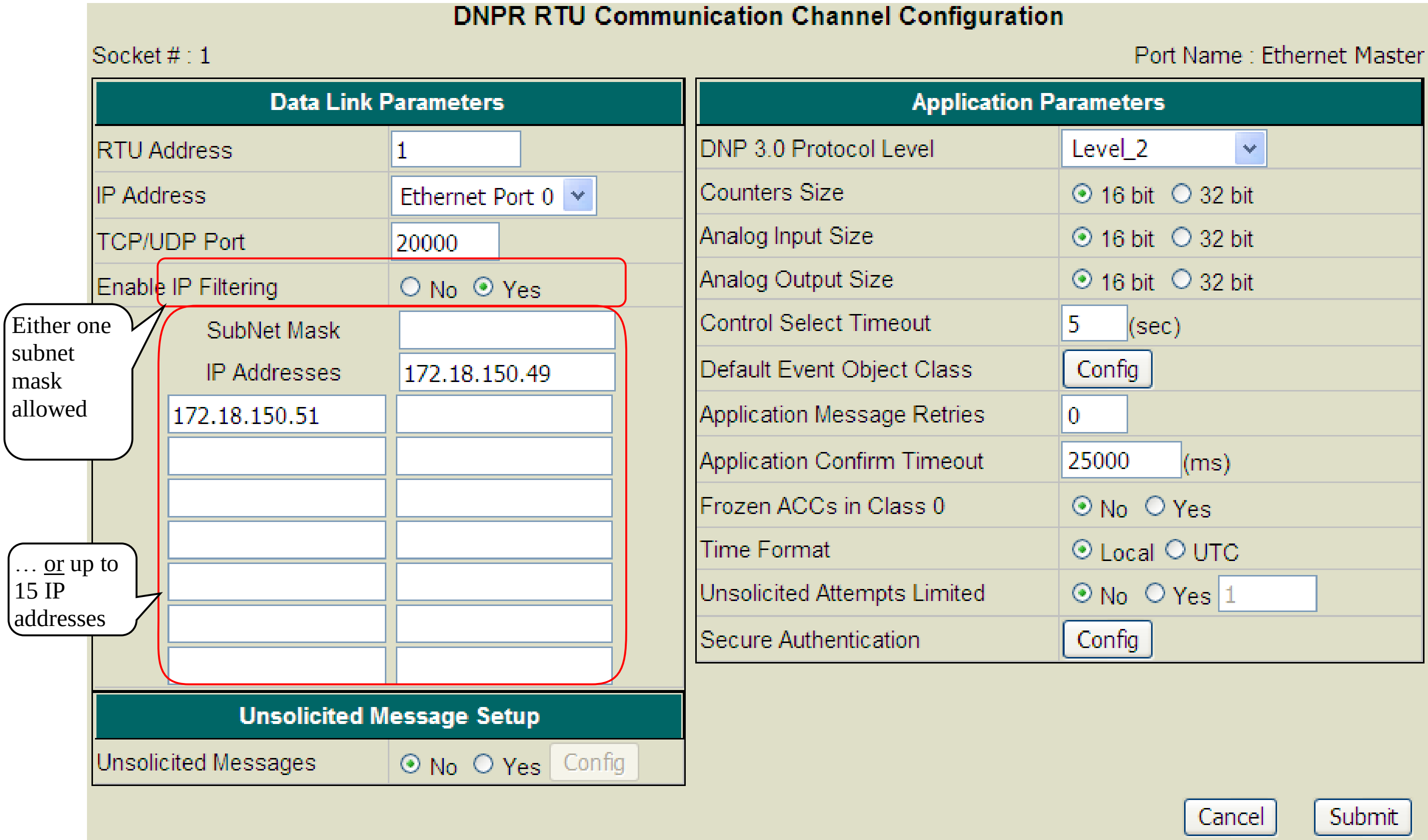
If Yes is selected, you will get the following screen. As noted below, you may enter either one subnet mask, or up to 15 IP addresses. A subnet mask is shown as an example. If a subnet mask is entered, any entered IP addresses will be ignore, meaning the subnet mask is the "Bottleneck" filter. Furthermore, comparing the entered subnet mask below to the subnet mask entered under CPU block, the most restrictive subnet mask between the two will be the effective subnet mask.

Figure 2-8 Restricting Master Station Subnet Mask Addresses



If you use IP address filtering from Master Stations, the figure below is an example for two IP addresses.

Figure 2-9 Restricting Master Station IP Addresses



2.2.1.2 Unsolicited Message Setup

This is the same as in the Serial Comm setup. Please see **Section 2.1.2.2**.

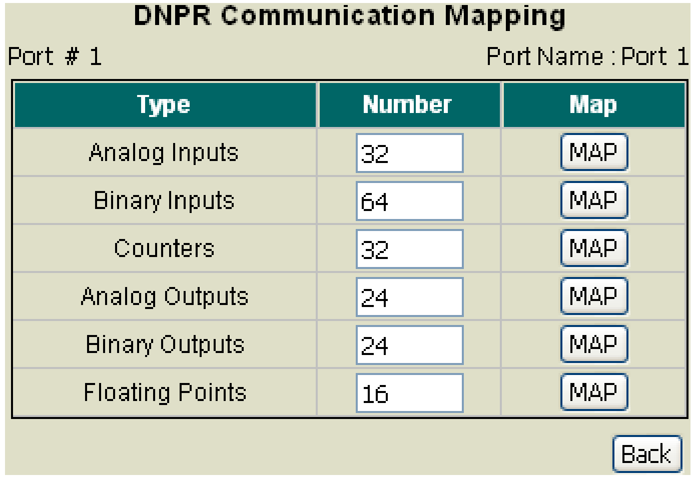
2.2.1.3 Application Parameters

This is the same as in the Serial Comm setup. Please see **Section 2.1.2.3**.

2.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 2-10 will appear. Enter the number of points for each type of point, then click MAP before moving on to the next point type.

Figure 2-10 DNPR Communication Mapping



Type

The different types of I/O points supported by this protocol.

Number

Enter the quantity of points for the given type.

Note: You must Map the points entered before moving to the next point type.

Map

Click the MAP button to map the points.

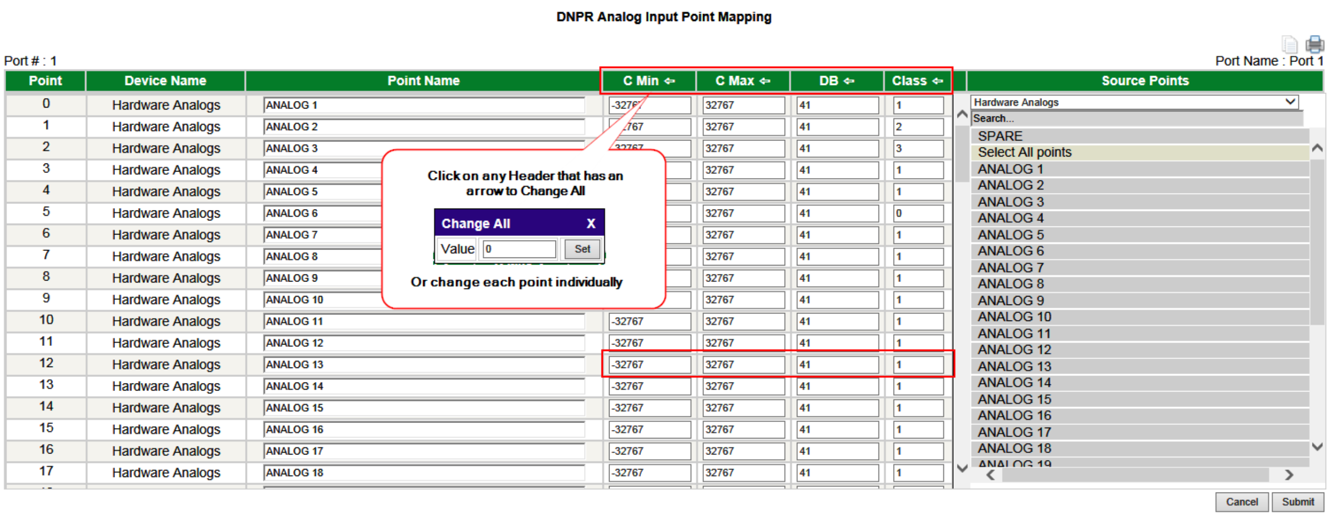
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the IED Configuration screen.

2.3.1 Map Analog Inputs

From the DNPR Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 2-11 will appear.

Figure 2-11 DNPR Analog Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -32767.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 32767.

DB
Deadband counts for each enabled Analog Input are used to limit exception reporting of analog inputs to significant changes. The deadband counts apply to the counts sent to the master. For instance, a deadband of 41 when sending -2048 to +2047 counts is 1%. If you send a count range of 65,534 (+/- 32,767) 1% equals 655 counts.

Setting the deadband to -1 will disable any reporting of the analog input as exception data in Class 1, 2, or 3 poll response messages. Setting the deadband to 0 will cause any change in the value to be reported. The point will not be reported in every Class 1, 2, or 3 poll response if the current value is the same as the last reported value, but is reported if the current value is different from the last reported value. Any other deadband value forms a bipolar limit around the last reported value.

If the deadband is not -1, the Class 1, 2, or 3 Data flag (depends on the class that the analog input has been assigned to) is set when the deadband on at least one point has been exceeded. The data is then transmitted in the next appropriate Class Data poll response message. The flag is reset when the RTU receives an

Applications Acknowledge message. A message will be transmitted immediately if unsolicited reporting has been enabled and the deadband of at least one analog input has been exceeded.

Class

Use this field to assign each point to a DNP Event Class. 0, 1, 2, and 3 are allowed. If a point is assigned to Class 0, it does not generate events. If 1, 2, or 3 is assigned, an event will be generated and an Internal Indication bit will be set for Class N Data Available in the protocol. The default value comes from the DNPR configuration page.

Source Points

Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

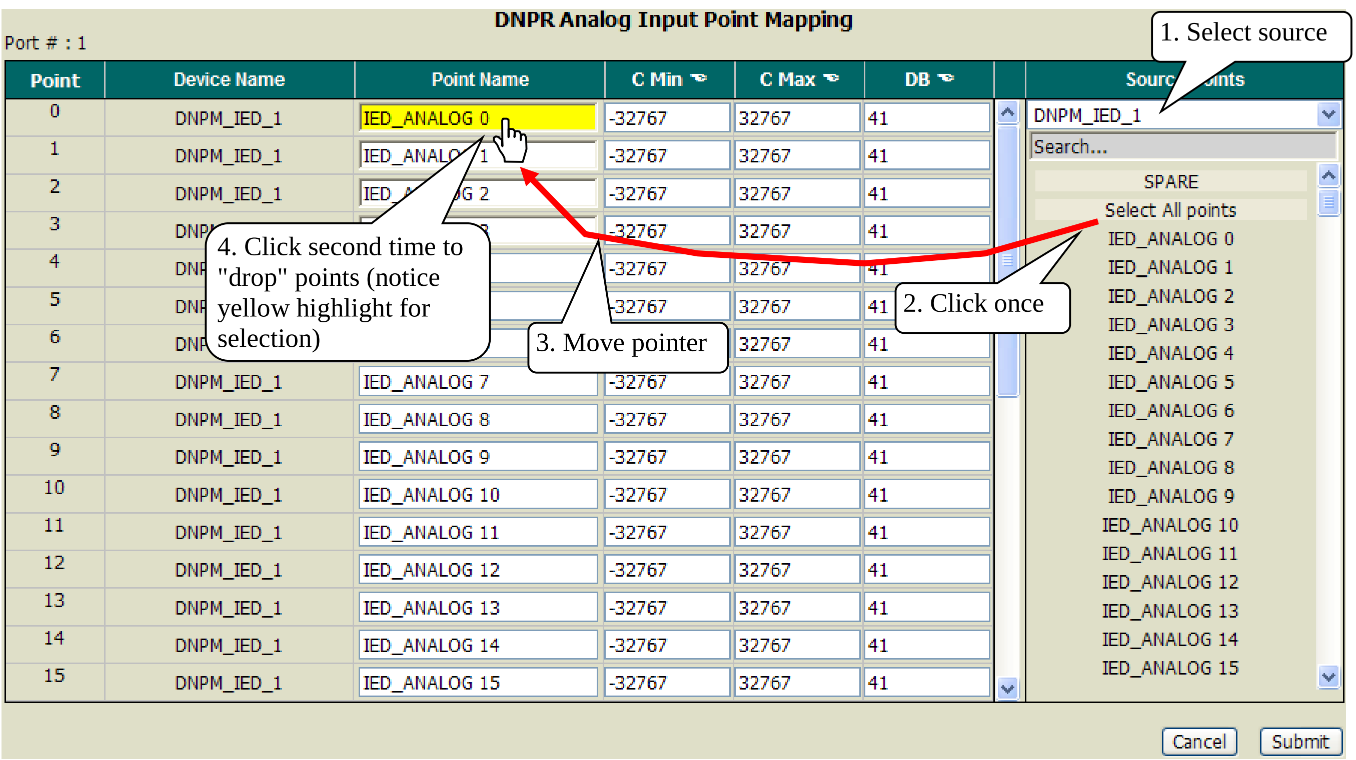
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

2.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

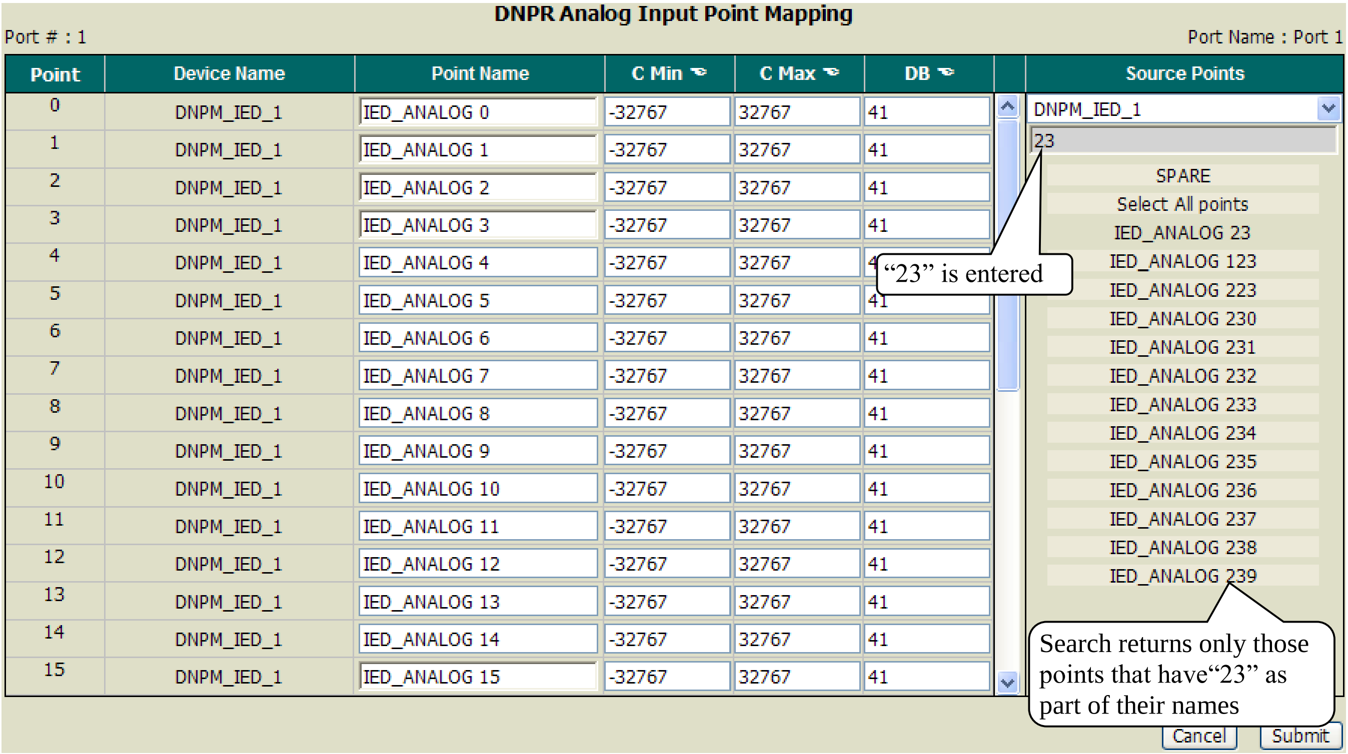
Figure 2-12 Point Mapping Highlight



2.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

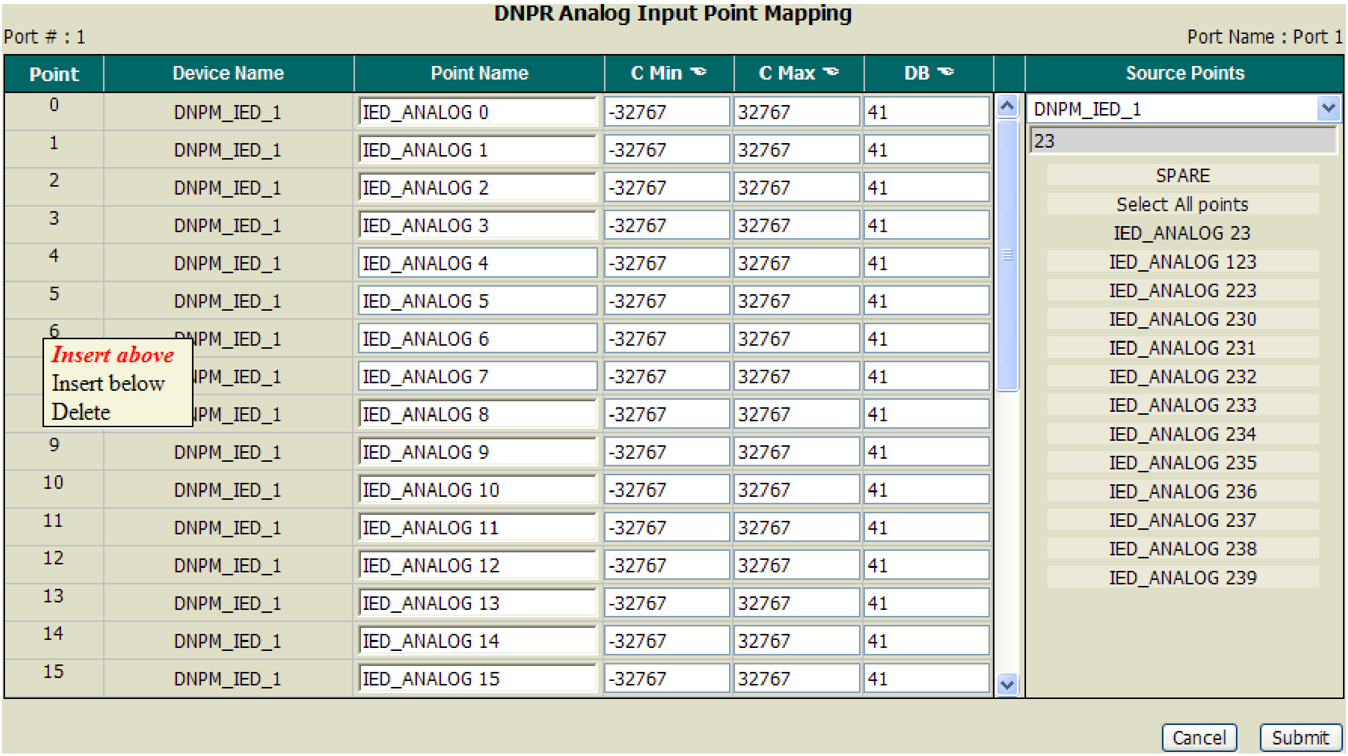
Figure 2-13 Point Database Search



2.3.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #6) and right click the mouse. The message box shown below appears. Select Insert above (or below) and left click.

Figure 2-14 Insert a Point



DNPR Analog Input Point Mapping

Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max	DB
0	DNPM_IED_1	IED_ANALOG 0	-32767	32767	41
1	DNPM_IED_1	IED_ANALOG 1	-32767	32767	41
2	DNPM_IED_1	IED_ANALOG 2	-32767	32767	41
3	DNPM_IED_1	IED_ANALOG 3	-32767	32767	41
4	DNPM_IED_1	IED_ANALOG 4	-32767	32767	41
5	DNPM_IED_1	IED_ANALOG 5	-32767	32767	41
6	DNPM_IED_1	IED_ANALOG 6	-32767	32767	41
	PM_IED_1	IED_ANALOG 7	-32767	32767	41
	PM_IED_1	IED_ANALOG 8	-32767	32767	41
9	DNPM_IED_1	IED_ANALOG 9	-32767	32767	41
10	DNPM_IED_1	IED_ANALOG 10	-32767	32767	41
11	DNPM_IED_1	IED_ANALOG 11	-32767	32767	41
12	DNPM_IED_1	IED_ANALOG 12	-32767	32767	41
13	DNPM_IED_1	IED_ANALOG 13	-32767	32767	41
14	DNPM_IED_1	IED_ANALOG 14	-32767	32767	41
15	DNPM_IED_1	IED_ANALOG 15	-32767	32767	41

The results of Insert is shown in the next Figure. Notice that the old Point #6, IED_ANALOG 6, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 2-15 Results of Insert Above

DNPR Analog Input Point Mapping

Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max	DB
0	DNPM_IED_1	IED_ANALOG 0	-32767	32767	41
1	DNPM_IED_1	IED_ANALOG 1	-32767	32767	41
2	DNPM_IED_1	IED_ANALOG 2	-32767	32767	41
3	DNPM_IED_1	IED_ANALOG 3	-32767	32767	41
4	DNPM_IED_1	IED_ANALOG 4	-32767	32767	41
5	DNPM_IED_1	IED_ANALOG 5	-32767	32767	41
6		SPARE	-32767	32767	41
7	DNPM_IED_1	IED_ANALOG 6	-32767	32767	41
8	DNPM_IED_1	IED_ANALOG 7	-32767	32767	41
9	DNPM_IED_1	IED_ANALOG 8	-32767	32767	41
10	DNPM_IED_1	IED_ANALOG 9	-32767	32767	41
11	DNPM_IED_1	IED_ANALOG 10	-32767	32767	41
12	DNPM_IED_1	IED_ANALOG 11	-32767	32767	41
13	DNPM_IED_1	IED_ANALOG 12	-32767	32767	41
14	DNPM_IED_1	IED_ANALOG 13	-32767	32767	41
15	DNPM_IED_1	IED_ANALOG 14	-32767	32767	41

Source Points
DNPM_IED_1
23
SPARE
Select All points
IED_ANALOG 23
IED_ANALOG 123
IED_ANALOG 223
IED_ANALOG 230
IED_ANALOG 231
IED_ANALOG 232
IED_ANALOG 233
IED_ANALOG 234
IED_ANALOG 235
IED_ANALOG 236
IED_ANALOG 237
IED_ANALOG 238
IED_ANALOG 239

Cancel Submit

The Spare point can also be deleted. The following example shows the results of deleting Point#6, IED_ANALOG 6.

Figure 2-16 Results of Deleting a Point

DNPR Analog Input Point Mapping

Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max	DB
0	DNPM_IED_1	IED_ANALOG 0	-32767	32767	41
1	DNPM_IED_1	IED_ANALOG 1	-32767	32767	41
2	DNPM_IED_1	IED_ANALOG 2	-32767	32767	41
3	DNPM_IED_1	IED_ANALOG 3	-32767	32767	41
4	DNPM_IED_1	IED_ANALOG 4	-32767	32767	41
5	DNPM_IED_1	IED_ANALOG 5	-32767	32767	41
6	DNPM_IED_1	IED_ANALOG 7	-32767	32767	41
7	DNPM_IED_1	IED_ANALOG 8	-32767	32767	41
8	DNPM_IED_1	IED_ANALOG 9	-32767	32767	41
9	DNPM_IED_1	IED_ANALOG 10	-32767	32767	41
10	DNPM_IED_1	IED_ANALOG 11	-32767	32767	41
11	DNPM_IED_1	IED_ANALOG 12	-32767	32767	41
12	DNPM_IED_1	IED_ANALOG 13	-32767	32767	41
13	DNPM_IED_1	IED_ANALOG 14	-32767	32767	41
14	DNPM_IED_1	IED_ANALOG 15	-32767	32767	41
15	DNPM_IED_1	IED_ANALOG 16	-32767	32767	41

Source Points
DNPM_IED_1
23
SPARE
Select All points
IED_ANALOG 23
IED_ANALOG 123
IED_ANALOG 223
IED_ANALOG 230
IED_ANALOG 231
IED_ANALOG 232
IED_ANALOG 233
IED_ANALOG 234
IED_ANALOG 235
IED_ANALOG 236
IED_ANALOG 237
IED_ANALOG 238
IED_ANALOG 239

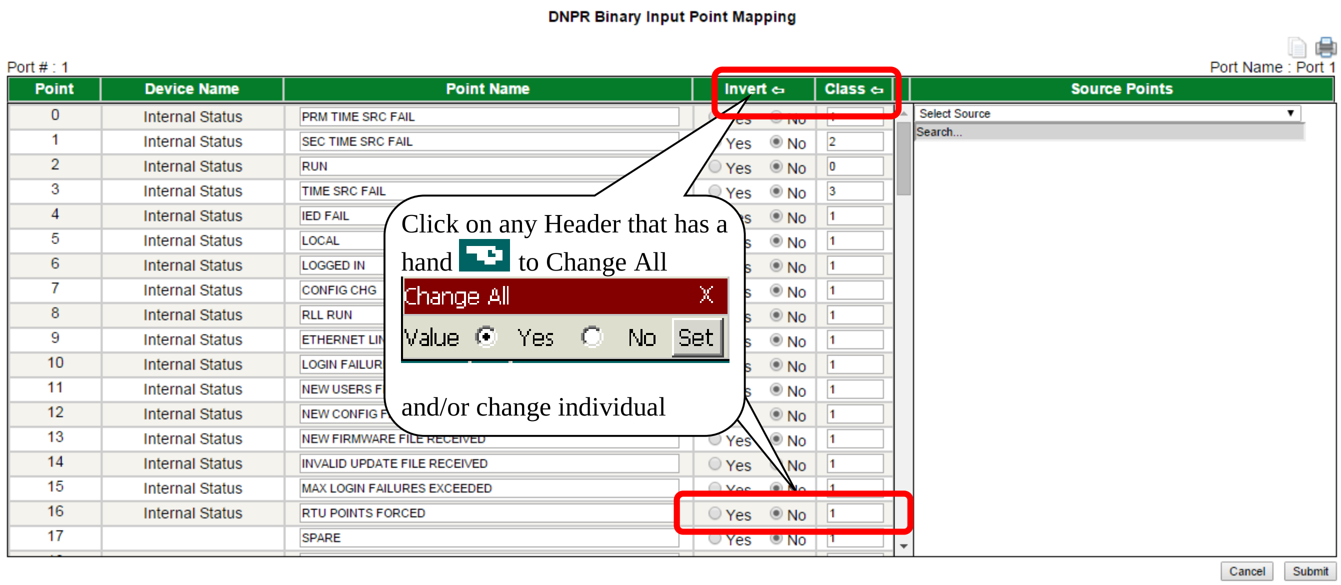
Cancel Submit

Notice that IED_ANALOG 6 is now missing, although Point numbers remain contiguous.

2.3.2 Map Binary Inputs

From the DNPR Communication Mapping screen, click the MAP button for Binary Inputs. A screen similar to Figure 2-17 will appear.

Figure 2-17 DNPR Binary Input Point Mapping



> **Note:** This protocol automatically creates a Comm Status point which may be mapped to any MTU to RTU protocol.

Point
The protocol logical point number. The RTU for DNPR will support up to 5120 binary input points.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

> **Please note:** No configuration changes take effect until the RTU is reset.

2.3.2.1 Point Mapping Highlight

See the Analog Input example.

2.3.2.2 Point Database Search

See the Analog Input example.

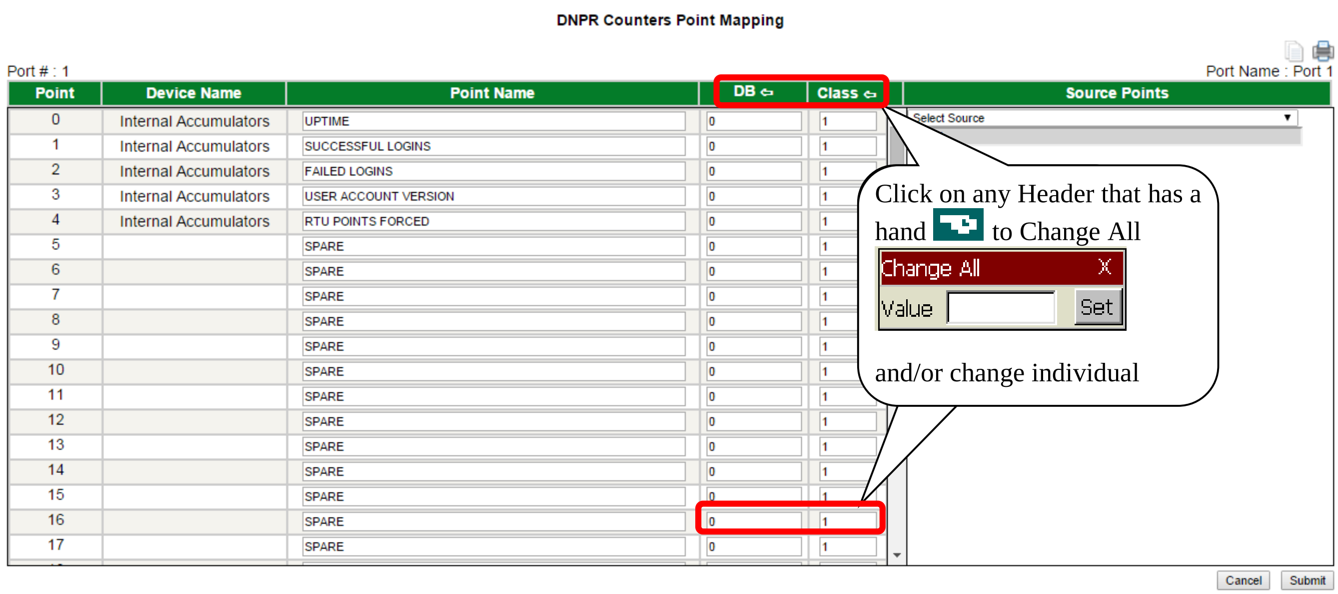
2.3.2.3 Insert & Delete Points

See the Analog Input example.

2.3.3 Map Counters

From the DNPR Communication Mapping screen, click the MAP button for Counters. A screen similar to Figure 2-18 will appear.

Figure 2-18 DNPR Binary Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

DB
Assigning the accumulator to Class 0 or setting the deadband to -1 disables the reporting of the accumulator as Class 1, 2, or 3 data for a deadband violation.

If the accumulator is to be assigned to Class 1, 2, or 3, enter the deadband count for the Accumulator. The deadband count forms an upper limit on the last reported value for each Accumulator.

If the accumulator point has been assigned to Class 1, 2, or 3, the appropriate Class Data flag is set when the deadband on at least one point has been exceeded. The data is then transmitted in the appropriate Class Data poll response message. The flag is reset when the RTU receives an Applications Acknowledge message.

A message will be transmitted immediately if unsolicited reporting has been enabled and the deadband of at least one point has been exceeded.

Source Points

Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

2.3.3.1 Point Mapping Highlight

See the Analog Input example.

2.3.3.2 Point Database Search

See the Analog Input example.

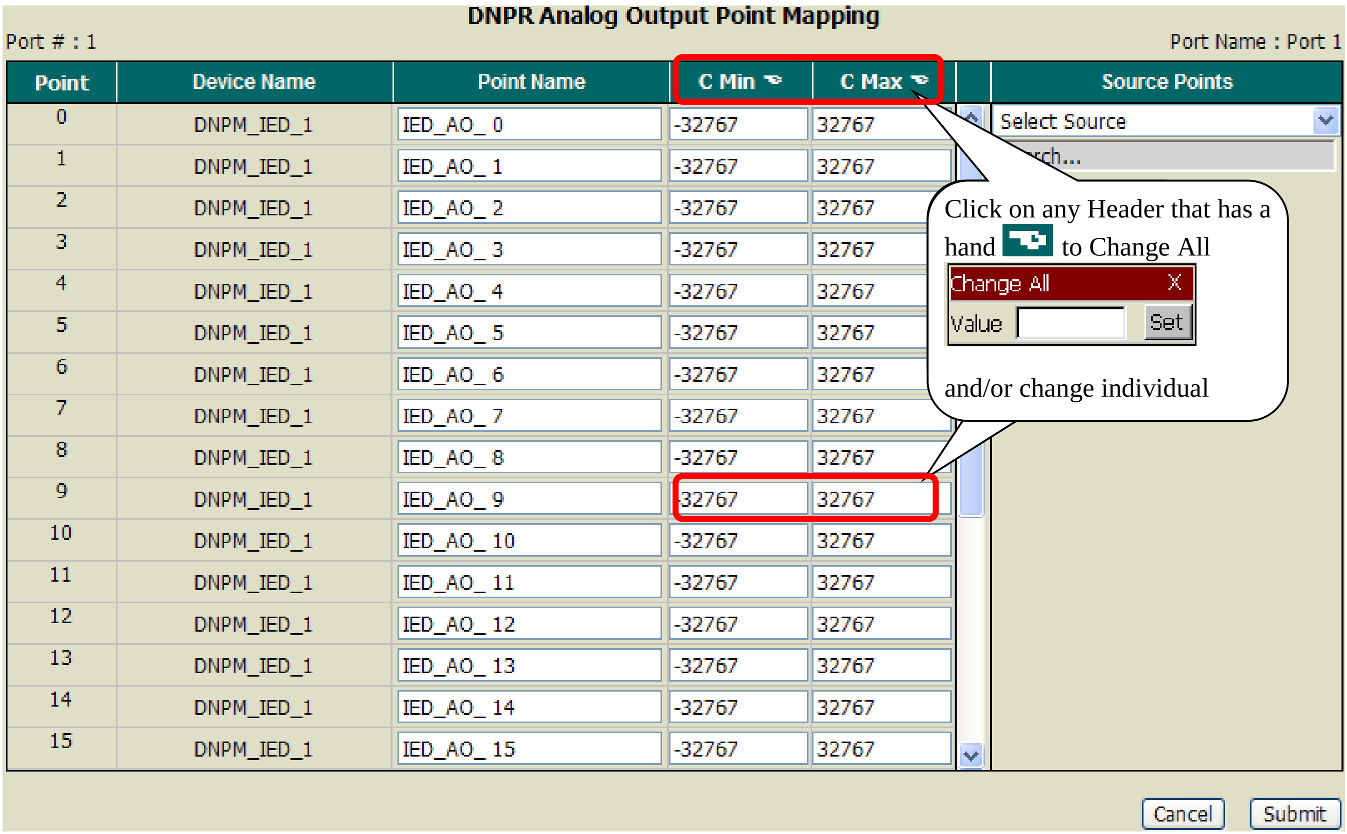
2.3.3.3 Insert & Delete Points

See the Analog Input example.

2.3.4 Map Analog Outputs

From the DNPR Communication Mapping screen, click the MAP button for Analog Outputs. A screen similar to Figure 2-19 will appear.

Figure 2-19 DNPR Analog Output Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min/C Max
Enter the counts expected by the master system, or accept the default counts.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

2.3.4.1 Point Mapping Highlight

See the Analog Input example.

2.3.4.2 Point Database Search

See the Analog Input example.

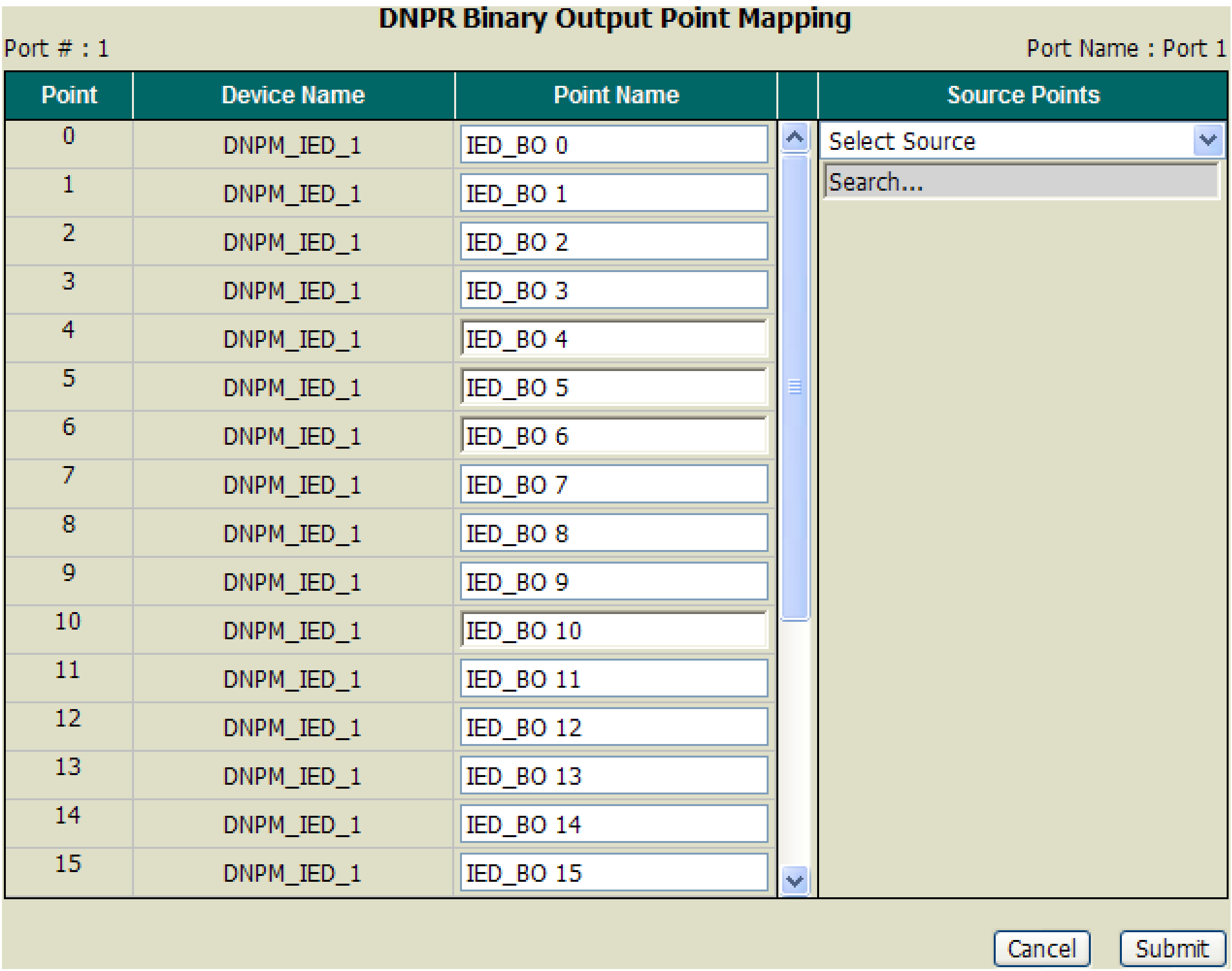
2.3.4.3 Insert & Delete Points

See the Analog Input example.

2.3.5 Map Binary Outputs

From the DNPR Communication Mapping screen, click the MAP button for Binary Outputs. A screen similar to Figure 2-20 will appear.

Figure 2-20 DNPR Binary Output Point Mapping



Point
The protocol logical point number. The RTU for DNPR will support up to 2048 binary output points.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

2.3.5.1 Point Mapping Highlight

See the Analog Input example.

2.3.5.2 Point Database Search

See the Analog Input example.

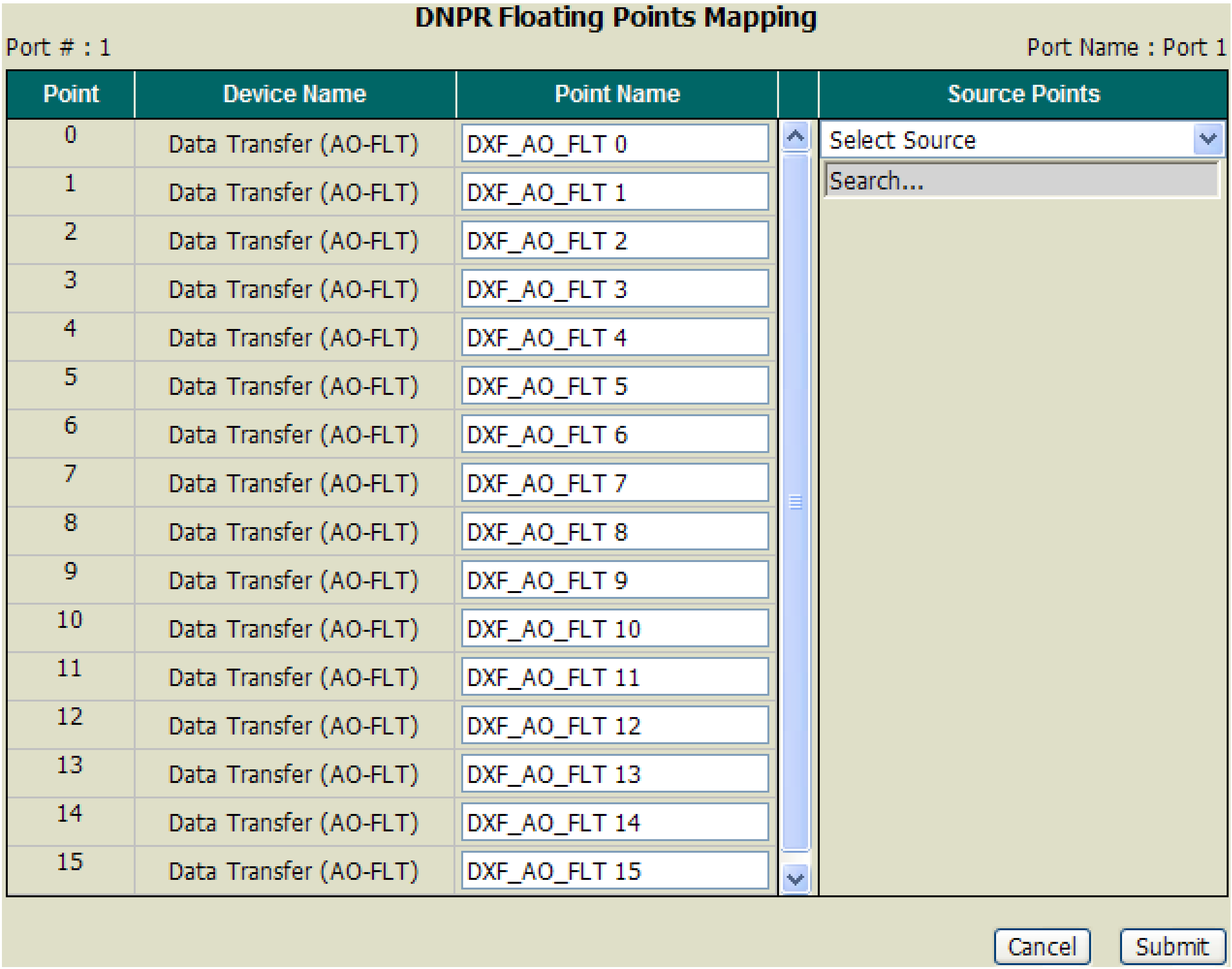
2.3.5.3 Insert & Delete Points

See the Analog Input example.

2.3.6 Map Floating Points

From the DNPR Communication Mapping screen, click the MAP button for Floating Points. A screen similar to Figure 2-21 will appear.

Figure 2-21 DNPR Floating Points Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

2.3.6.1 Point Mapping Highlight

See the Analog Input example.

2.3.6.2 Point Database Search

See the Analog Input example.

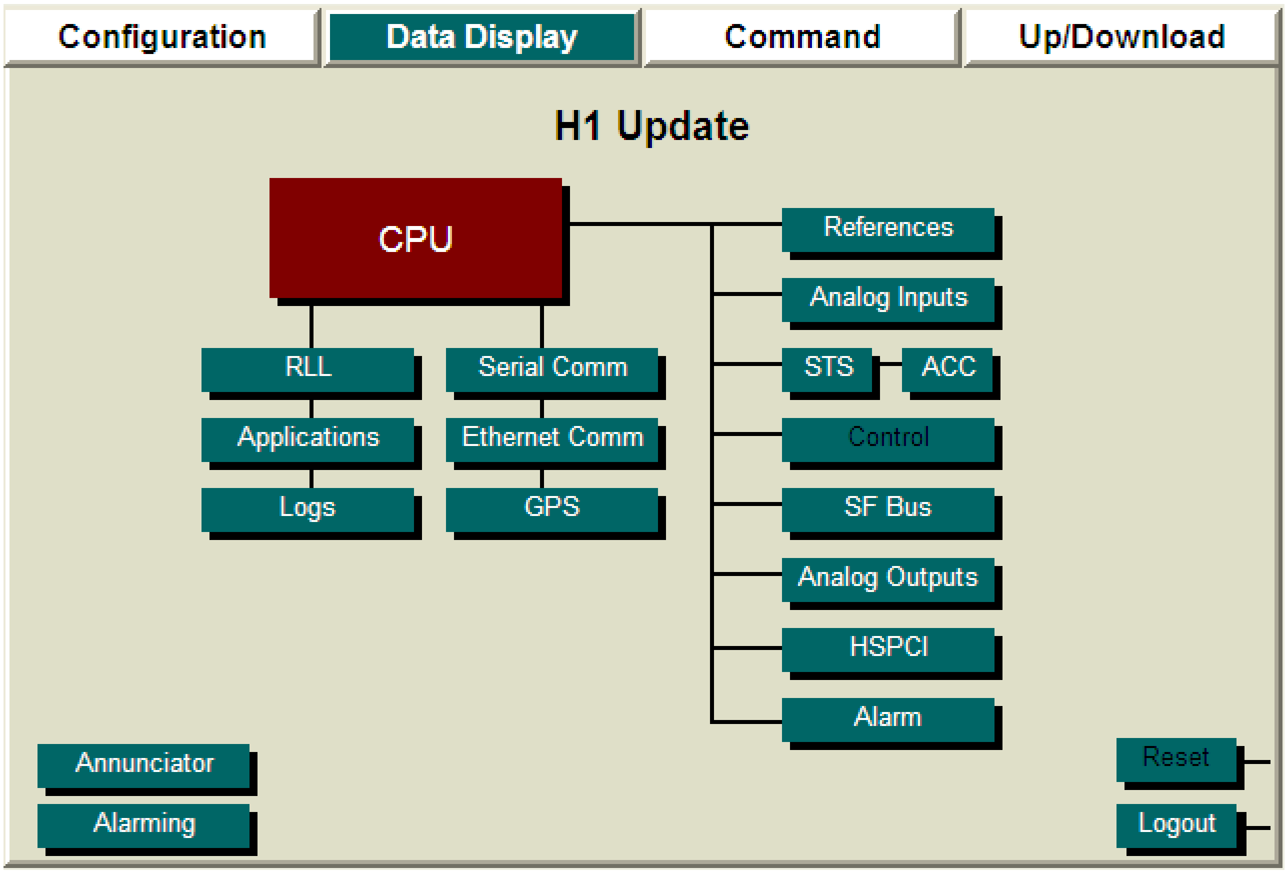
2.3.6.3 Insert & Delete Points

See the Analog Input example.

2.4 Data Display

Click the Data Display tab as shown in Figure 2-22.

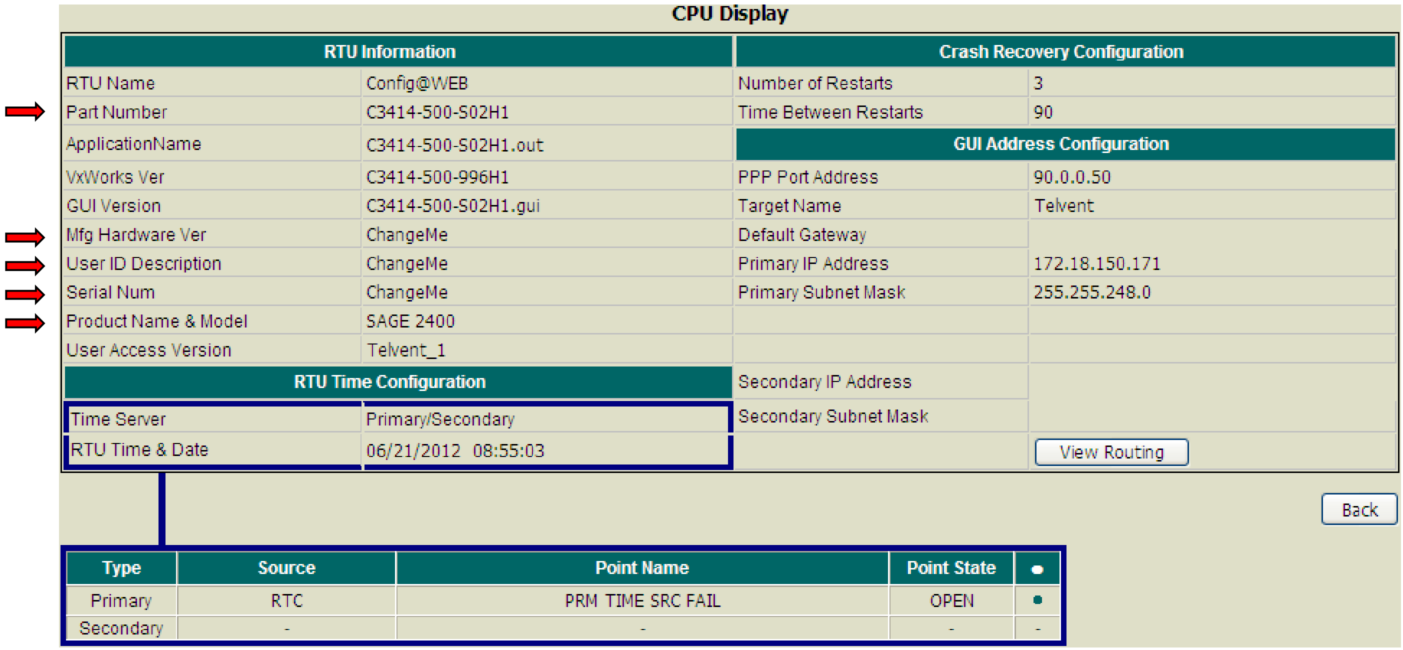
Figure 2-22 Data Display Screen



2.4.1 CPU Display / DNP Profile

From the Data Display screen, click CPU. The CPU Data Display screen reflects the CPU Configuration as shown in Figure 2-23. Only the items associated with DNP (arrows on left) are explained below. See the config@WEB Secure Software Users Guide for non-DNP information.

Figure 2-23 CPU Data Display



CPU Display

RTU Information		Crash Recovery Configuration	
RTU Name	Config@WEB	Number of Restarts	3
Part Number	C3414-500-S02H1	Time Between Restarts	90
ApplicationName	C3414-500-S02H1.out	**GUI Address Configuration**	
VxWorks Ver	C3414-500-996H1	PPP Port Address	90.0.0.50
GUI Version	C3414-500-S02H1.gui	Target Name	Telvent
Mfg Hardware Ver	ChangeMe	Default Gateway	
User ID Description	ChangeMe	Primary IP Address	172.18.150.171
Serial Num	ChangeMe	Primary Subnet Mask	255.255.248.0
Product Name & Model	SAGE 2400		
User Access Version	Telvent_1		
RTU Time Configuration		Secondary IP Address	
Time Server	Primary/Secondary	Secondary Subnet Mask	
RTU Time & Date	06/21/2012 08:55:03		View Routing

Back

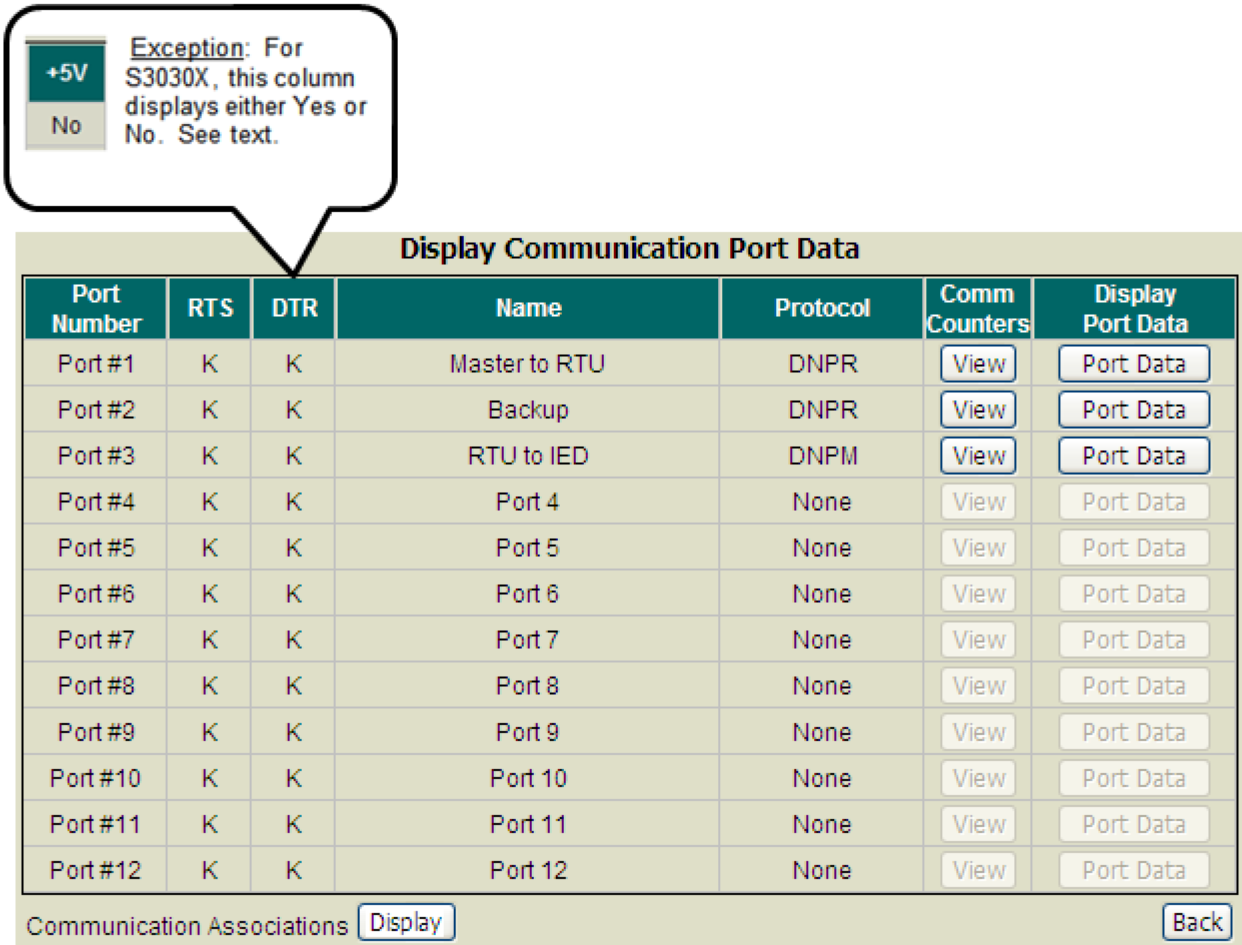
Type	Source	Point Name	Point State	●
Primary	RTC	PRM TIME SRC FAIL	OPEN	●
Secondary	-	-	-	-

RTU Information

Part Number	Firmware Part Number assigned by Schneider Electric (DNP Var 242 – Device Mfg software ver)
Mfg. Hardware Ver	User defined information (DNP Var 243 – Device Mfg hardware ver)
User ID Description	User defined information (DNP Var 246 - User assigned ID code / num)
Serial Num	User defined information (DNP Var 248 – Device serial number)
Product Name & Model	The RTU hardware (DNP Var 250 – Device mfg prod name & model)

2.4.2 Serial Comm Data Display

Click Serial Comm to get the screen shown in Figure 2-24



Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Master to RTU	DNPR	View	Port Data
Port #2	K	K	Backup	DNPR	View	Port Data
Port #3	K	K	RTU to IED	DNPM	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Figure 2-24 Display Communication Port Data

Port Number

Physical Port number of the RTU.

RTS and DTR

Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).

The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.

When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.

The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

+5V (S3030X only)

Yes

Provides +5V at approximately 100mA on pin 1 of the RS-232 connector to power auxiliary communications devices.

No

Turns pin 1 on the RS-232 connector to be a Data Carrier Detect (DCD) input.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data
Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

Navigation

Click the Back button to return to the previous screen.

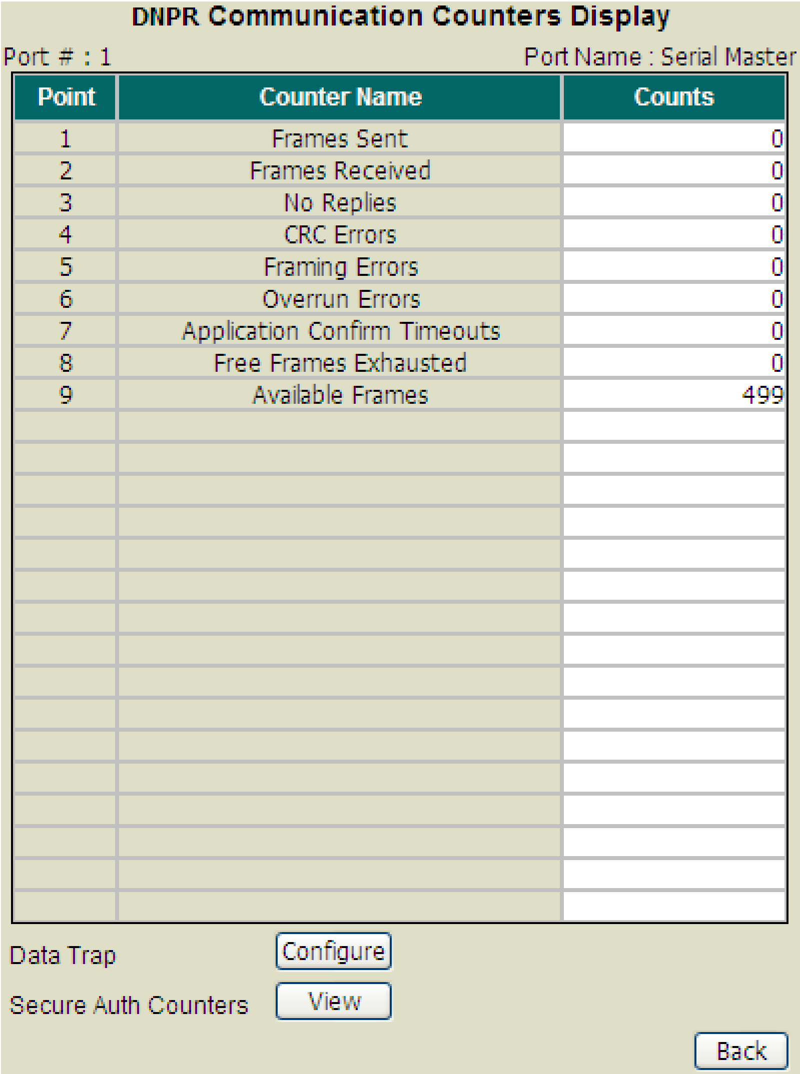
2.4.3 Communication Association

Please see Communication Associations

2.4.4 Serial Comm Counters

Under Comm Counters, click View to get the screen shown in Figure 2-25.

Figure 2-25 DNPR Communication Counters Display



DNPR Communication Counters Display

Port # : 1 Port Name : Serial Master

Point	Counter Name	Counts
1	Frames Sent	0
2	Frames Received	0
3	No Replies	0
4	CRC Errors	0
5	Framing Errors	0
6	Overrun Errors	0
7	Application Confirm Timeouts	0
8	Free Frames Exhausted	0
9	Available Frames	499

Data Trap Configure

Secure Auth Counters View

Back

Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Frames Sent

This indicates the cumulative number of transmitted frames since the last reset or power-up.

Frames Received

This indicates the cumulative number of received frames since the last reset or power-up.

No Replies

This indicates the cumulative number of transmitted frames that did not receive a response since the last reset or power-up. This count can be affected by the Rx timeout delay value.

CRC Errors

This indicates the cumulative number of received frames with CRC errors since the last reset or power-up. This can be affected by parity and MTO.

Framing Errors

This indicates the cumulative number of framing errors since the last reset or power-up. This can be affected by parity.

Overrun Errors

This indicates the cumulative number of over-run errors since the last reset or power-up.

Application Confirm Timeouts

This indicates the cumulative number of Application Confirm Timeouts since the last reset or power-up.

Free Frames Exhausted

This counter increments whenever a message is received and there are no more free frames in memory to store the incoming message. If the counter is incrementing, it indicates a critical memory shortage problem with the DNP Data Link task, and Schneider Electric tech support should be called.

Available Frames

Indicates the number of frames still available.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

Secure Auth Counters

Please see the config@WEB Secure Software Users Guide.

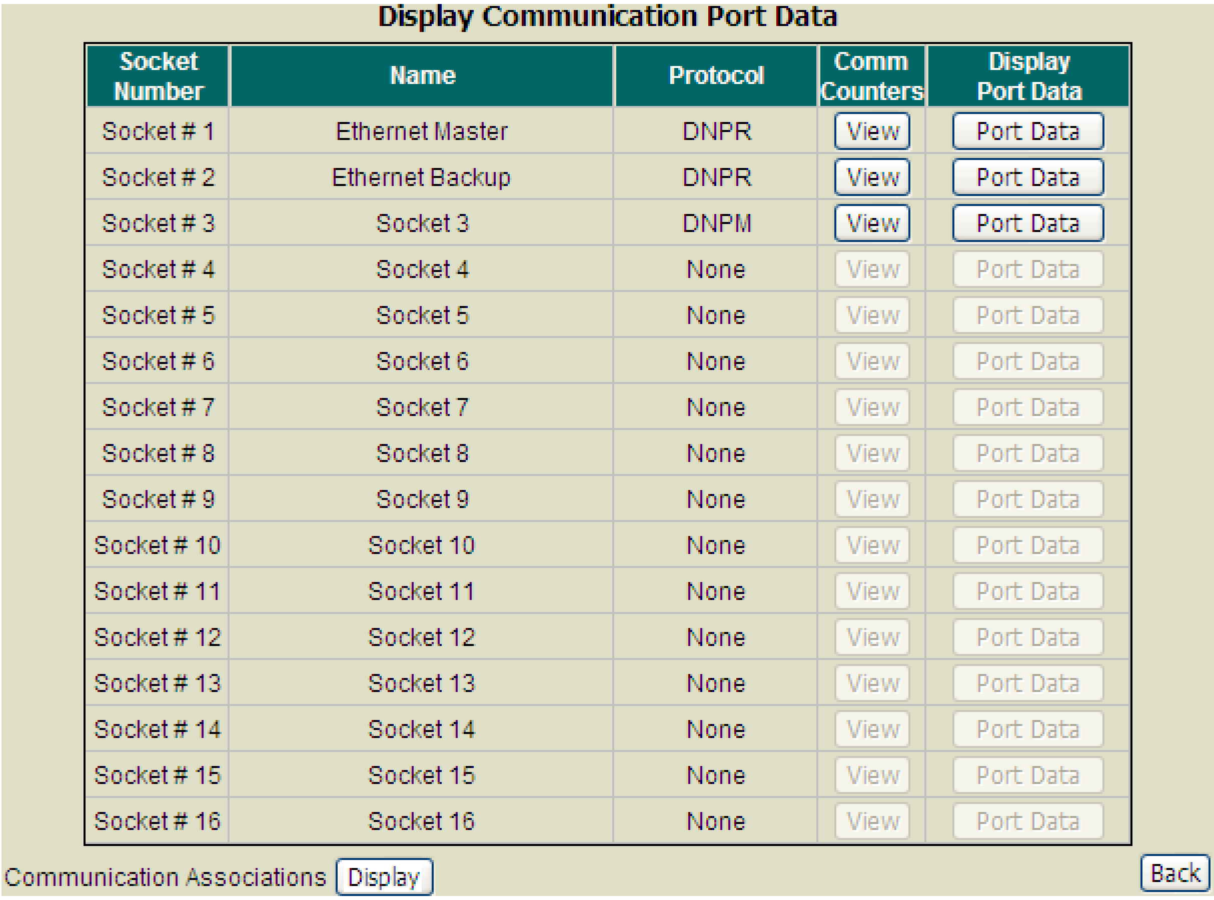
Navigation

Click Done, then Back to return to the Comm Counters display.

2.4.5 Ethernet Comm Displays

Under Data Display, click Ethernet Comm to get the screen shown below, then click on View Comm Counters.

Figure 2-26 DNPR: Display Ethernet Communication Port Data



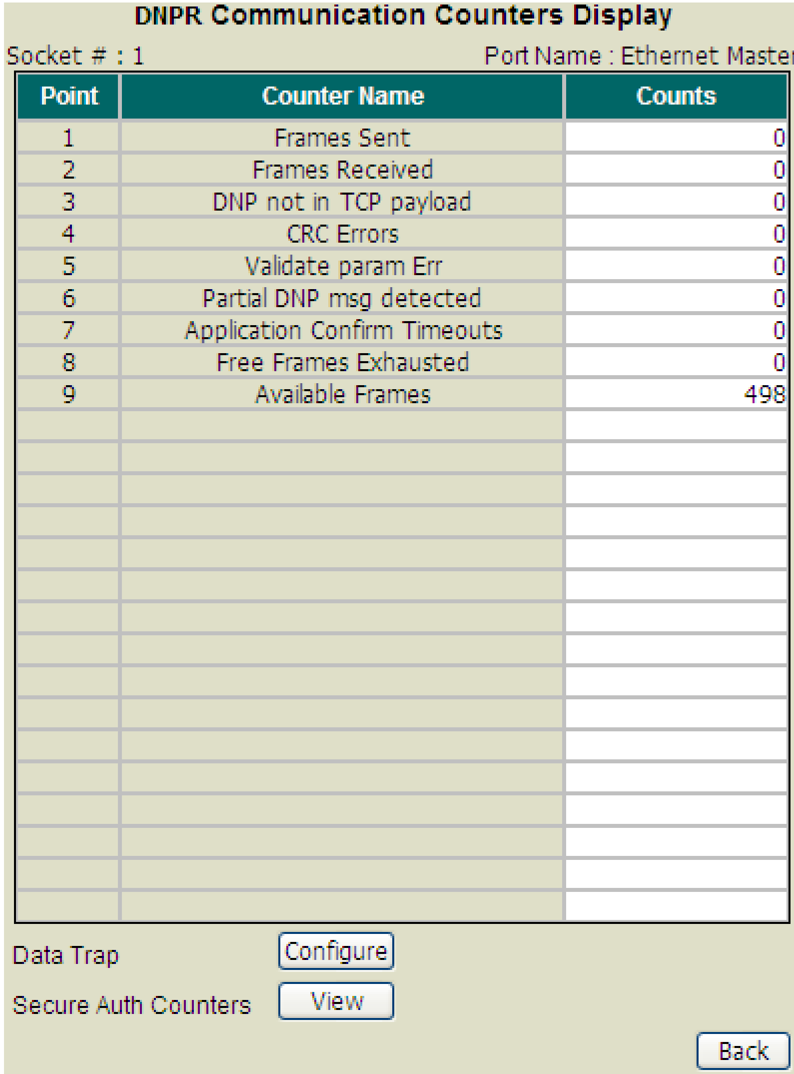
Display Communication Port Data

Socket Number	Name	Protocol	Comm Counters	Display Port Data
Socket # 1	Ethernet Master	DNPR	View	Port Data
Socket # 2	Ethernet Backup	DNPR	View	Port Data
Socket # 3	Socket 3	DNPM	View	Port Data
Socket # 4	Socket 4	None	View	Port Data
Socket # 5	Socket 5	None	View	Port Data
Socket # 6	Socket 6	None	View	Port Data
Socket # 7	Socket 7	None	View	Port Data
Socket # 8	Socket 8	None	View	Port Data
Socket # 9	Socket 9	None	View	Port Data
Socket # 10	Socket 10	None	View	Port Data
Socket # 11	Socket 11	None	View	Port Data
Socket # 12	Socket 12	None	View	Port Data
Socket # 13	Socket 13	None	View	Port Data
Socket # 14	Socket 14	None	View	Port Data
Socket # 15	Socket 15	None	View	Port Data
Socket # 16	Socket 16	None	View	Port Data

Communication Associations Display

Back

Figure 2-27 DNPR Comm Counters Display



Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Frames Sent

This indicates the cumulative number of transmitted frames since the last reset or power-up.

Frames Received

This indicates the cumulative number of received frames since the last reset or power-up.

DNP not in TCP payload

This counter indicates that when the TCP/IP buffer was read and examined, no valid DNP message was found in the buffer. This may provide useful troubleshooting information.

CRC Errors

This indicates the cumulative number of received frames with CRC errors since the last reset or power-up. This can be affected by parity and MTO.

Validate param Err

This counter indicates that a key parameter needed by the "Validation" parser was out of specification, and prevented the parser from examining the message buffer. This is a rare occurrence, but may provide useful troubleshooting information if it is happening.

Partial DNP msg detected

This counter indicates that it took more than one read of the TCP/IP message buffer to obtain a complete DNP request message. A DNP request message is usually relatively small (~15 – 30 bytes), so it should be unusual for the request to be broken out over multiple TCP/IP buffers. This may provide useful troubleshooting information.

Application Confirm Timeouts

This indicates the cumulative number of Application Confirm Timeouts since the last reset or power-up.

Free Frames Exhausted

This counter increments whenever a message is received and there are no more free frames in memory to store the incoming message. If the counter is incrementing, it indicates a critical memory shortage problem with the DNP Data Link task, and Schneider Electric tech support should be called.

Available Frames

Indicates the number of frames still available.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

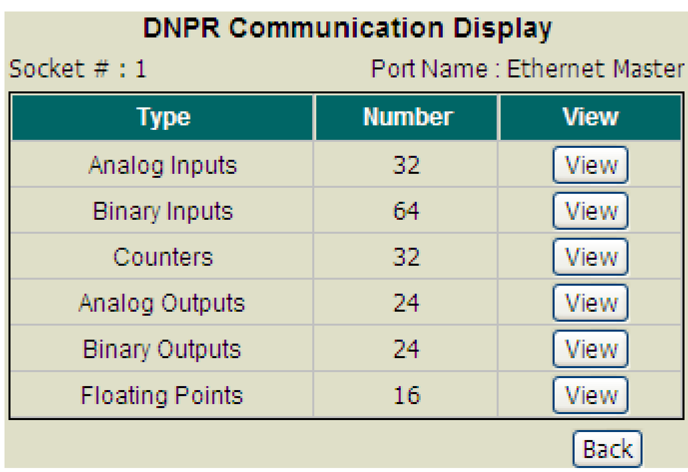
Secure Auth Counters

Please see the config@WEB Secure Software Users Guide.

2.4.6 Communication Displays

From the Display Communication Port Data Screen, click Port Data to get the screen shown below.

Figure 2-28 DNPR Communication Display


DNPR Communication Display

Socket # : 1 Port Name : Ethernet Master

Type	Number	View
Analog Inputs	32	View
Binary Inputs	64	View
Counters	32	View
Analog Outputs	24	View
Binary Outputs	24	View
Floating Points	16	View

Back

Type

The type of point.

Number
The number of points of each type.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

2.4.6.1 Analog Inputs

From the DNPR Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 2-29.

Figure 2-29 DNPR Analog Inputs Display

DNPR Analog Inputs Display

Port # : 5 Port Name : Port 5

Page1 of 1 Go To Go

Point	Device Name	Point Name	Assigned Class	Point Status	Point Value	Point Counts
0	Hardware Analogs	ANALOG 1	1		2.931	19205
1	Hardware Analogs	ANALOG 2	1		0.000	0
2	Hardware Analogs	ANALOG 3	1		0.000	0
3	Hardware Analogs	ANALOG 4	1		0.000	0
4	Hardware Analogs	ANALOG 5	1		0.000	0
5	Hardware Analogs	ANALOG 6	1		0.000	0
6	Hardware Analogs	ANALOG 7	1		0.000	0
7	Hardware Analogs	ANALOG 8	1		0.000	0
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Assigned Class

This value reflects the object class, which may be the Default Event Object Class selected in Configuration, until a class is assigned by the MTU. The Internal Indications bit corresponding to the assigned class will be set when the RTU has changes that need to be read by the MTU. The default is 1.

Class	Result
0	No events generated unless reassigned by MTU.
1	Assigned to Class 1 unless reassigned by the MTU.
2	Assigned to Class 2 unless reassigned by the MTU.
3	Assigned to Class 3 unless reassigned by the MTU.
1 Tagged	Assigned to Class 1 & Time Tagged unless reassigned by the MTU
2 Tagged	Assigned to Class 2 & Time Tagged unless reassigned by the MTU
3 Tagged	Assigned to Class 3 & Time Tagged unless reassigned by the MTU

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

2.4.6.2 Binary Inputs

From the DNPR Communication Display screen, click View for Binary Inputs to get the screen shown below.

Figure 2-30 DNPR Binary Inputs Display

DNPR Binary Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 4 Go To Go Next>>

Point	Device Name	Point Name	Assigned Class	Point Status	Point State
0	DNPM_IED_1	COMM_STS	1		CLOSE
1	DNPM_IED_1	IED_STS 0	1	F	OPEN
2	DNPM_IED_1	IED_STS 1	1	F	OPEN
3	DNPM_IED_1	IED_STS 2	1	F	OPEN
4	DNPM_IED_1	IED_STS 3	1	F	OPEN
5	DNPM_IED_1	IED_STS 4	1	F	OPEN
6	DNPM_IED_1	IED_STS 5	1	F	OPEN
7	DNPM_IED_1	IED_STS 6	1	F	OPEN
8	DNPM_IED_1	IED_STS 7	1	F	OPEN
9	DNPM_IED_1	IED_STS 8	1	F	OPEN
10	DNPM_IED_1	IED_STS 9	1	F	OPEN
11	DNPM_IED_1	IED_STS 10	1	F	OPEN
12	DNPM_IED_1	IED_STS 11	1	F	OPEN
13	DNPM_IED_1	IED_STS 12	1	F	OPEN
14	DNPM_IED_1	IED_STS 13	1	F	OPEN
15	DNPM_IED_1	IED_STS 14	1	F	OPEN

Back

Note: This protocol automatically assigns a Comm Status bit.

Close = Comm channel failed
Open = Comm channel okay

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Assigned Class

This value reflects the object class, which may be the Default Event Object Class selected in Configuration, until a class is assigned by the MTU. The Internal Indications bit corresponding to the assigned class will be set when the RTU has changes that need to be read by the MTU. The default is 1.

Class	Result
0	No events generated unless reassigned by MTU.
1	Assigned to Class 1 unless reassigned by the MTU.
2	Assigned to Class 2 unless reassigned by the MTU.
3	Assigned to Class 3 unless reassigned by the MTU.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

2.4.6.3 Counters Inputs

From the DNPR Communication Display screen, click View for Counters to get the screen shown in Figure 2-31.

Figure 2-31 DNPR Counters Display

DNPR Counters Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To [ ] Go Next>>

Point	Device Name	Point Name	Assigned Class	Point Status	Count
0	DNPM_IED_1	IED_ACC_ 0	1	F	0
1	DNPM_IED_1	IED_ACC_ 1	1	F	0
2	DNPM_IED_1	IED_ACC_ 2	1	F	0
3	DNPM_IED_1	IED_ACC_ 3	1	F	0
4	DNPM_IED_1	IED_ACC_ 4	1	F	0
5	DNPM_IED_1	IED_ACC_ 5	1	F	0
6	DNPM_IED_1	IED_ACC_ 6	1	F	0
7	DNPM_IED_1	IED_ACC_ 7	1	F	0
8	DNPM_IED_1	IED_ACC_ 8	1	F	0
9	DNPM_IED_1	IED_ACC_ 9	1	F	0
10	DNPM_IED_1	IED_ACC_ 10	1	F	0
11	DNPM_IED_1	IED_ACC_ 11	1	F	0
12	DNPM_IED_1	IED_ACC_ 12	1	F	0
13	DNPM_IED_1	IED_ACC_ 13	1	F	0
14	DNPM_IED_1	IED_ACC_ 14	1	F	0
15	DNPM_IED_1	IED_ACC_ 15	1	F	0

Back

Point

Protocol logical point number.

Device Name

The origin of the point.

Point Name

The name of the point assigned during configuration.

Assigned Class

This value reflects the object class, which may be the Default Event Object Class selected in Configuration, until a class is assigned by the MTU. The Internal Indications bit corresponding to the assigned class will be set when the RTU has changes that need to be read by the MTU. The default is 1.

Class	Result
0	No events generated unless reassigned by MTU.
1	Assigned to Class 1 unless reassigned by the MTU.
2	Assigned to Class 2 unless reassigned by the MTU.
3	Assigned to Class 3 unless reassigned by the MTU.

Point Status

Please see the config@WEB Secure Software Users Guide.

Count

The accumulated count.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

2.4.6.4 Analog Outputs

From the DNPR Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 2-32.

Figure 2-32 DNPR Analog Outputs Display

DNPR Analog Outputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	Hardware AO	ANA_OUT 1	F	-5.000	-32767
1	Hardware AO	ANA_OUT 2	F	-5.000	-32767
2	Hardware AO	ANA_OUT 3	F	-5.000	-32767
3	Hardware AO	ANA_OUT 4	F	-5.000	-32767
4	Hardware AO	ANA_OUT 5	F	-5.000	-32767
5	Hardware AO	ANA_OUT 6	F	-5.000	-32767
6	Hardware AO	ANA_OUT 7	F	-5.000	-32767
7	Hardware AO	ANA_OUT 8	F	-5.000	-32767
8	Hardware AO	ANA_OUT 9	F	-5.000	-32767
9	Hardware AO	ANA_OUT 10	F	-5.000	-32767
10	Hardware AO	ANA_OUT 11	F	-5.000	-32767
11	Hardware AO	ANA_OUT 12	F	-5.000	-32767
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

2.4.6.5 Binary Outputs

From the DNPR Communication Display screen, click View for Binary Outputs to get the screen shown below.

Figure 2-33 DNPR Binary Outputs Display

DNPR Binary Outputs Display

Port # : 1 Port Name : Port 1

Page1 of 3 Go To [ ] Go Next>>

Point	Device Name	Point Name	Point Status	Point State	•
0	Hardware Controls	SBO 1	U	OPEN	•
1	Hardware Controls	SBO 2	U	OPEN	•
2	Hardware Controls	SBO 3	U	OPEN	•
3	Hardware Controls	SBO 4	U	OPEN	•
4	DNPM_IED_1	IED_BO 0	F	OPEN	•
5	DNPM_IED_1	IED_BO 1	F	OPEN	•
6	DNPM_IED_1	IED_BO 2	F	OPEN	•
7	DNPM_IED_1	IED_BO 3	F	OPEN	•
8	DNPM_IED_1	IED_BO 4	F	OPEN	•
9	DNPM_IED_1	IED_BO 5	F	OPEN	•
10	DNPM_IED_1	IED_BO 6	F	OPEN	•
11	DNPM_IED_1	IED_BO 7	F	OPEN	•
12	DNPM_IED_1	IED_BO 8	F	OPEN	•
13	DNPM_IED_1	IED_BO 9	F	OPEN	•
14	DNPM_IED_1	IED_BO 10	F	OPEN	•
15	DNPM_IED_1	IED_BO 11	F	OPEN	•

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

2.4.6.6 Floating Points

From the DNPR Communication Display screen, click View for Floating Points to get the screen shown in Figure 2-34.

Figure 2-34 DNPR Floating Points Display

DNPR Floating Points Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	Data Transfer	DXF_AO_FLT 0		0.000	0
1	Data Transfer	DXF_AO_FLT 1		0.000	0
2	Data Transfer	DXF_AO_FLT 2		0.000	0
3	Data Transfer	DXF_AO_FLT 3		0.000	0
4	Data Transfer	DXF_AO_FLT 4		0.000	0
5	Data Transfer	DXF_AO_FLT 5		0.000	0
6	Data Transfer	DXF_AO_FLT 6		0.000	0
7	Data Transfer	DXF_AO_FLT 7		0.000	0
8	Data Transfer	DXF_AO_FLT 8		0.000	0
9	Data Transfer	DXF_AO_FLT 9		0.000	0
10	Data Transfer	DXF_AO_FLT 10		0.000	0
11	Data Transfer	DXF_AO_FLT 11		0.000	0
12	Data Transfer	DXF_AO_FLT 12		0.000	0
13	Data Transfer	DXF_AO_FLT 13		0.000	0
14	Data Transfer	DXF_AO_FLT 14		0.000	0
15	Data Transfer	DXF_AO_FLT 15		0.000	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status

Please see the config@WEB Secure Software Users Guide.

Point Value

The engineering unit (EGU) value.

Point Counts

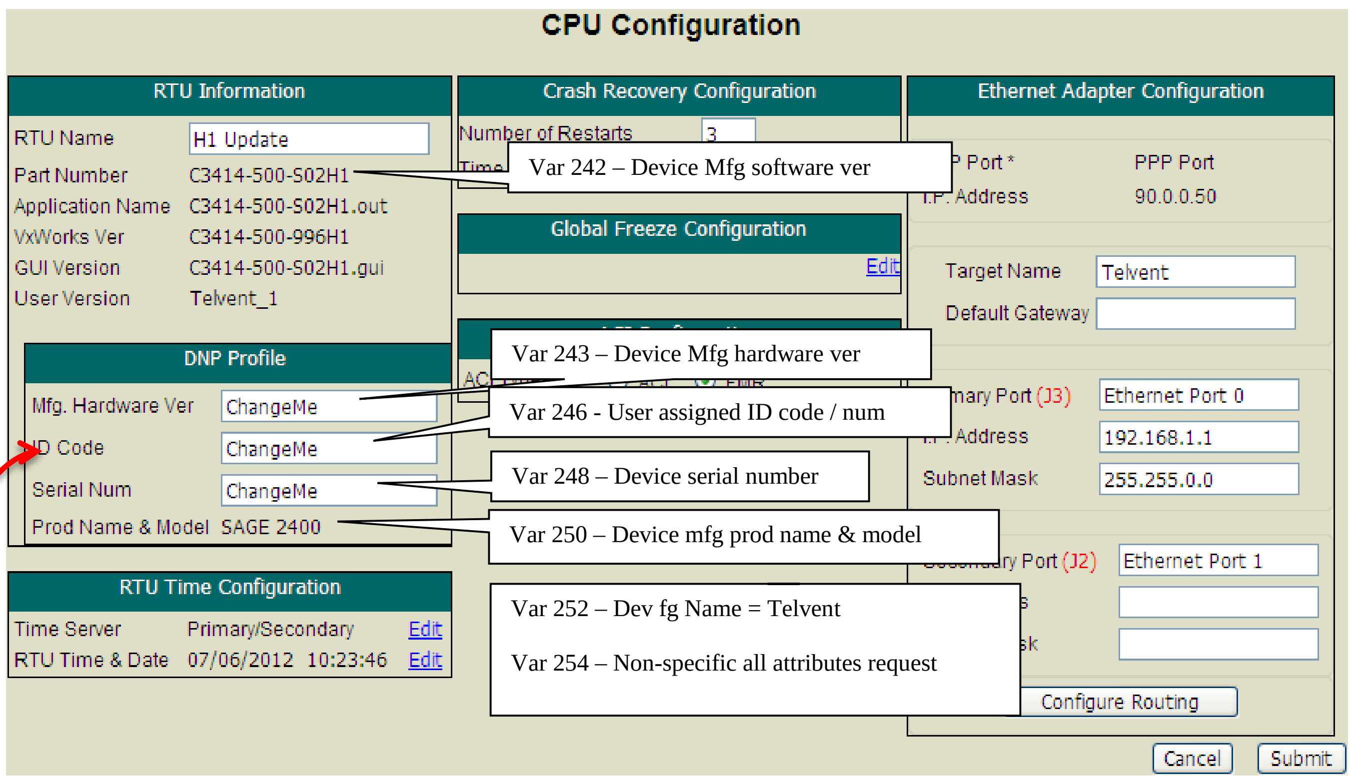
The counts being sent from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

2.5 CPU Configuration / DNP Profile

Support for DNP Object 0 was added for Level 1 and Level 2 compliance, as shown below.



Mfg. Hardware Ver	User defined information	These fields may be used to bring back any information the user needs, like coordinates for GIS, etc. See below.
ID Code	User defined information	
Serial Num	User defined information	
Product Name & Model	Product defined information	

The following information can now be returned to the DNPR Master by the Object 0 var X request.

Variation 254 comes in the following form:

Var242.value,1;Var243.value,2;Var246.value,3;Var248.value,4;Var250.value,5;Var252.value,6;

Variation 255 comes in the form: (Each block is a new byte in the DNP response msg)

0xF2	0x00	0xF3	0x00	0xF6	0x00	0xF8	0x00	0xFA	0x00	0xFC	0x00

2.6 DNPR Device Profile Document

Please see the config@WEB DNP Device Profile.

2.7 Secure Authentication Theory

Under section "**2.1.2.4 Secure Authentication**" is a feature called Secure Authentication Configuration. This feature allows secure communication with a Master that supports Authentication. The following quote is the description from the DNP Secure Authentication documentation.

> "The Session Keys that each device uses to hash the challenge data are the most frequently used keys. A different Session Key is used in each direction, so that if the key for one direction is compromised, it does not compromise communications in the other direction. There is a different set of Session Keys and a different Update Key for each user at the master end, identified by a User Number.
>
> The master initializes the Session Keys immediately after communications is established and regularly changes the Session Keys thereafter. This practice of periodically changing the Session Keys protects them from being compromised through analysis of the communications link.
>
> The master uses a second key, called the Update Key, to encrypt the new Session Keys, together with the challenge data, inside a Key Change message. The use of a second key permits the master to change the Session Key even if the original Session Key was compromised. Both the Session Keys and the Update Key are symmetric keys.
>
> Outstations shall consider all output operations (controls, setpoint adjustments, parameter settings, etc.) to be critical. Other mandatory critical operations are described in 7.5.2.3.2. Each implementation may define additional mandatory critical operations.
>
> To protect against replay attacks, the challenge message contains data that changes randomly each time a challenge is issued.
>
> ***Aggressive Mode***
>
> To reduce bandwidth usage, a responder attempting a critical operation may optionally “anticipate” the challenge and send the MAC Value in the same ASDU being protected. This practice is known as “aggressive mode”. It eliminates the challenge and reply messages."

3 Series III and V

3.1 Communication Port Configuration

Series III & V are protocols that communicate between the RTU and a Master.

From the Configuration screen, click on Serial Comm.

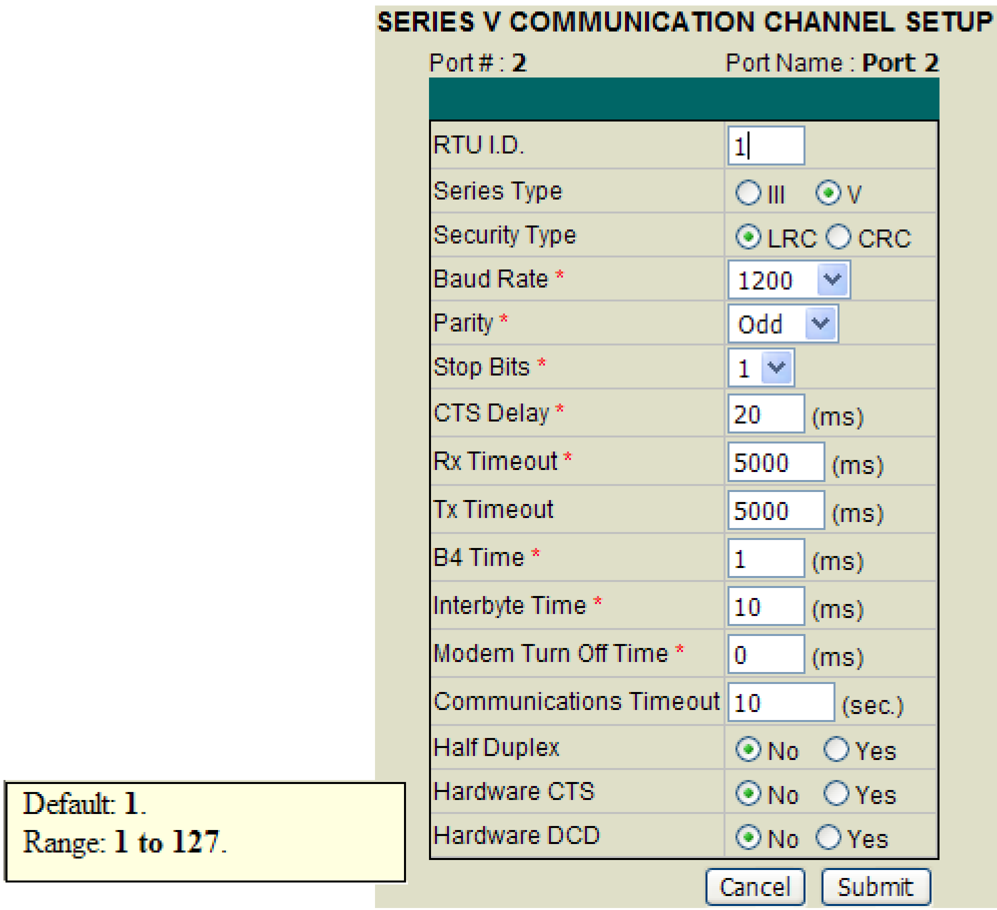
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

3.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the Series V port. You may accept all defaults or fill in the form according to the information following Figure 3-1.

Figure 3-1 Series V Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D. (1 – 127)

Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 1.

Series Type

Identifies the communications protocol used between the MTU and RTU. The default is Series V.

Security Type

The Series V Communication Protocol uses two types of error detection techniques: Longitudinal Redundancy Check (LRC) or Cyclic Redundancy Check (CRC). Both security codes are described in the Series V Protocol Manual, B8300-AAA-00005. Default setting is LRC.

Baud Rate (300 – 19200)

Select the communications speed for the associated channel. Default setting is 1200.

Parity (None, Odd, Even)
Select the parity for the associated channel. The default setting is Odd.

Stop Bits (0,1,2)
Select the stop bits from the pull-down menu. The default is 1.

CTS Delay (0 – 1000ms)
Enter the Clear-To-Send delay in milliseconds for the associated channel. This is the time delay the channel will wait to start transmitting following Request-To-Send signal being asserted. Default setting is 20.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 5000 (5 seconds).

Tx Timeout (0 – 30,000ms)
Enter the transmit timeout for the associated channel. This value limits the maximum transmission time from the RTU to the master. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 1.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 10.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Communications Timeout (1 to 86,400 sec.)
Enter the communications timeout for the associated channel. The communications timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. The default setting is 10 sec.

Half Duplex (No, Yes)
Enter Yes for half duplex or No for full duplex. This field enables the RTU to properly condition the RS-232 control lines. The CTS delay is used for carrier conditioning. In full duplex operation, the CTS signal is used for collision avoidance. In Half duplex operation, the DCD signal is used for collision avoidance and to enable the receiver. The default setting is No.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

Navigation

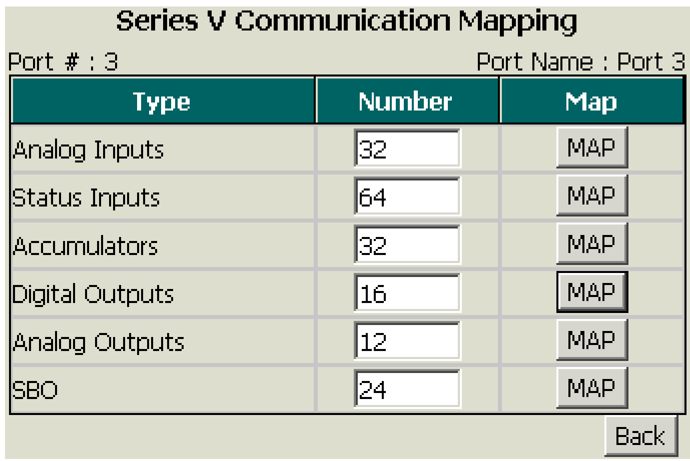
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

3.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 3-2 will appear. Enter the number of points for each type of point, then click MAP before moving on to the next point type.

Figure 3-2 Series V Communication Mapping



Type
The different types of I/O points supported by this protocol.

Number
Enter the quantity of points for the given type.

Note: You must Map the points entered before moving to the next point type.

Map
Click the MAP button to map the points.

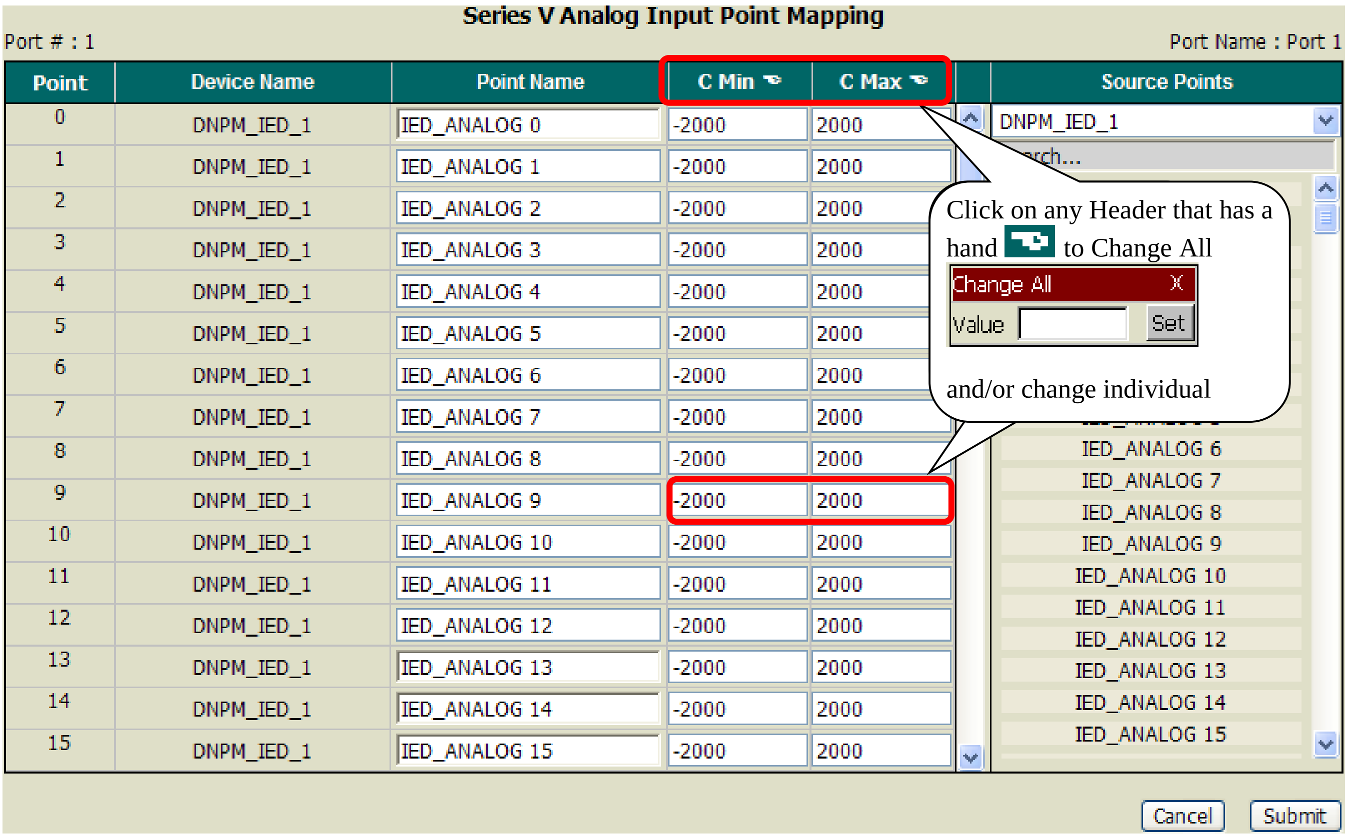
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the IED Configuration screen.

3.3.1 Map Analog Inputs

From the Series V Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 3-3 will appear.

Figure 3-3 Series V Analog Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

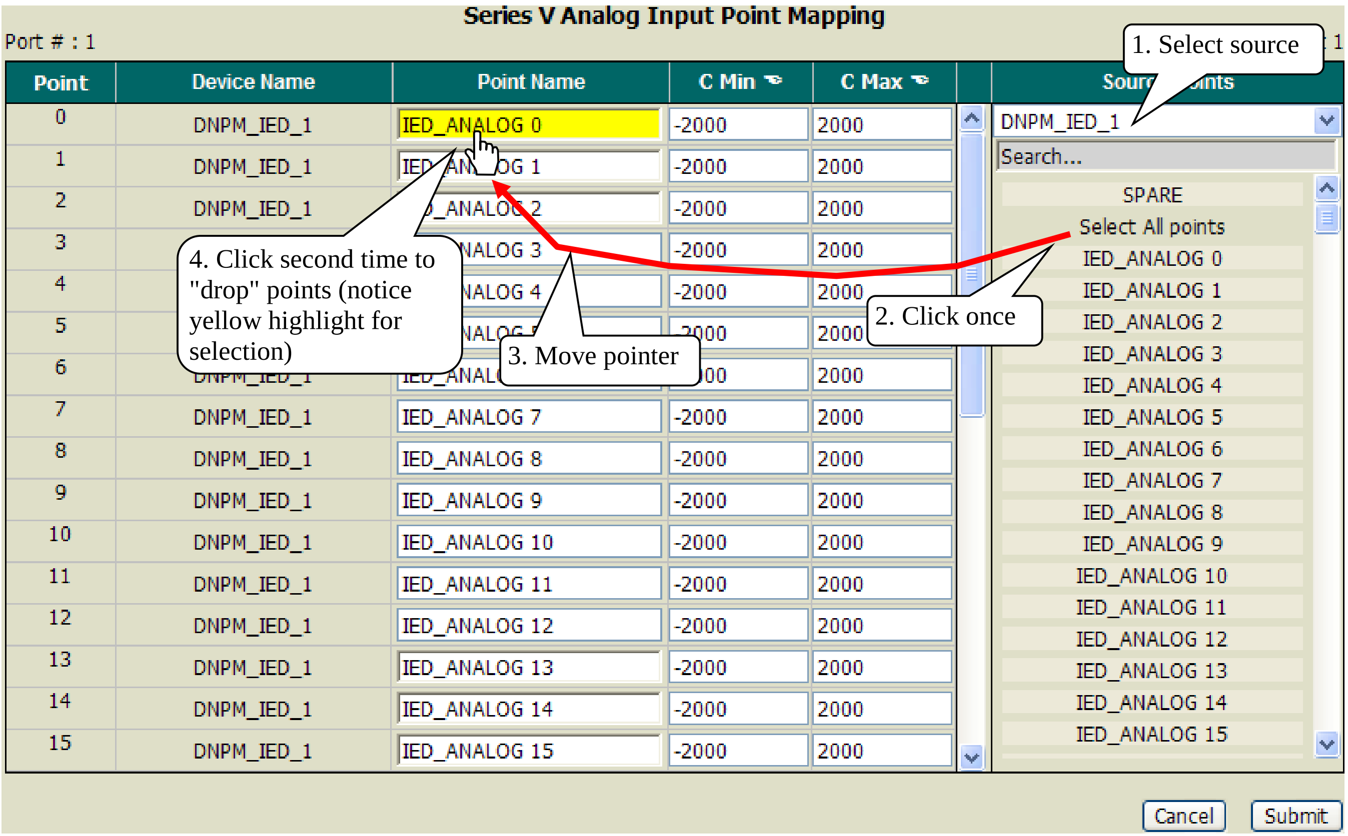
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

3.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

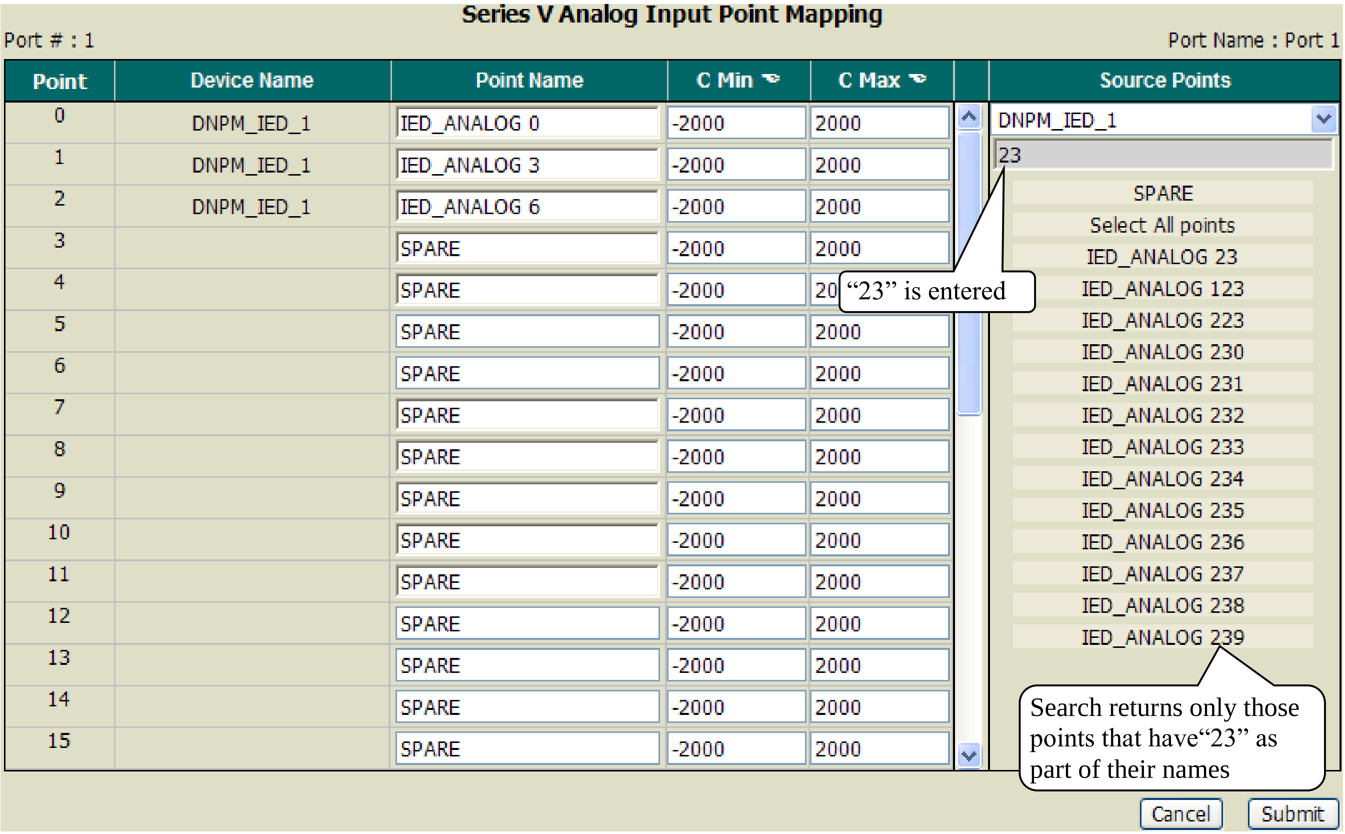
Figure 3-4 Point Mapping Highlight



3.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

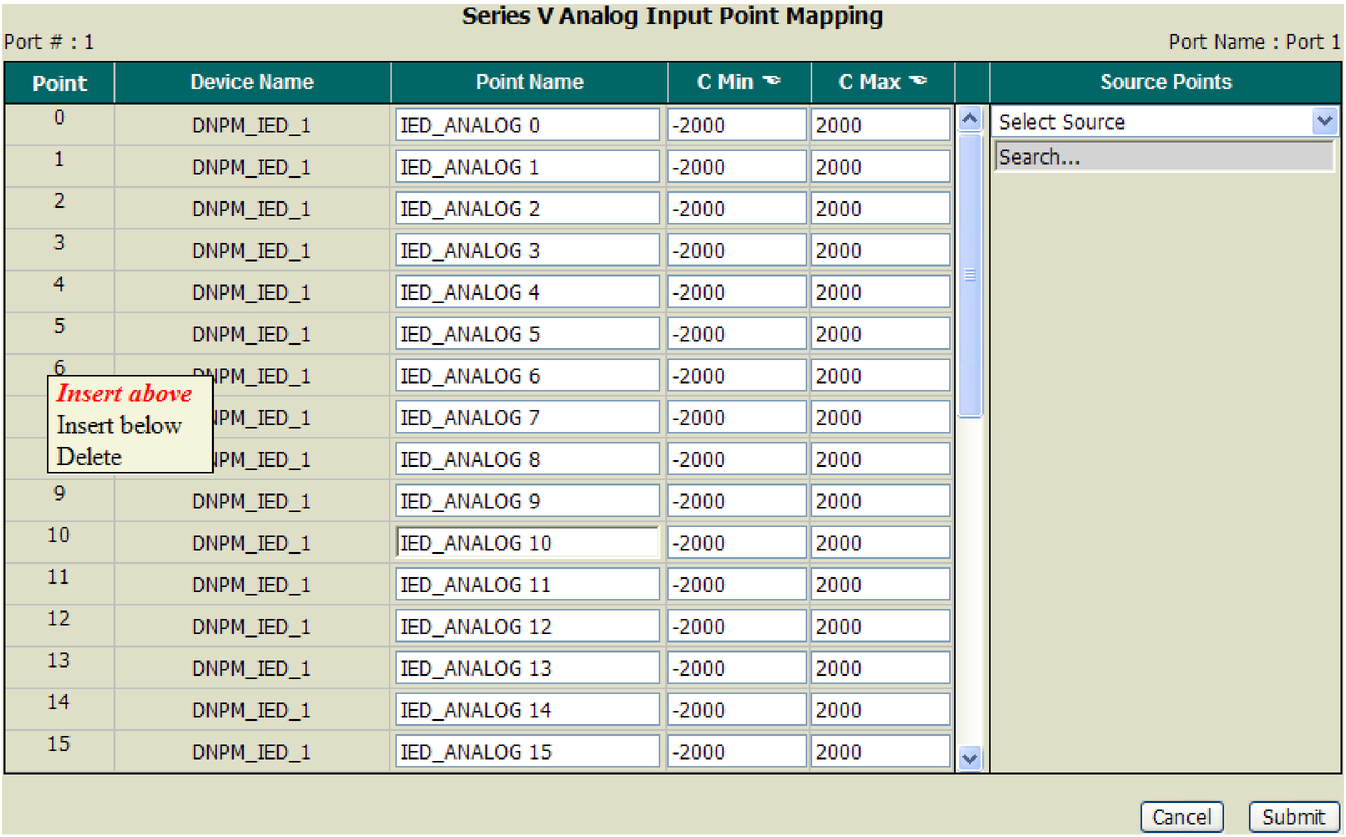
Figure 3-5 Point Database Search



3.3.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #6) and <u>right</u> click the mouse. The message box shown below appears. Select Insert above (or below) and <u>left</u> click.

Figure 3-6 Insert a Point

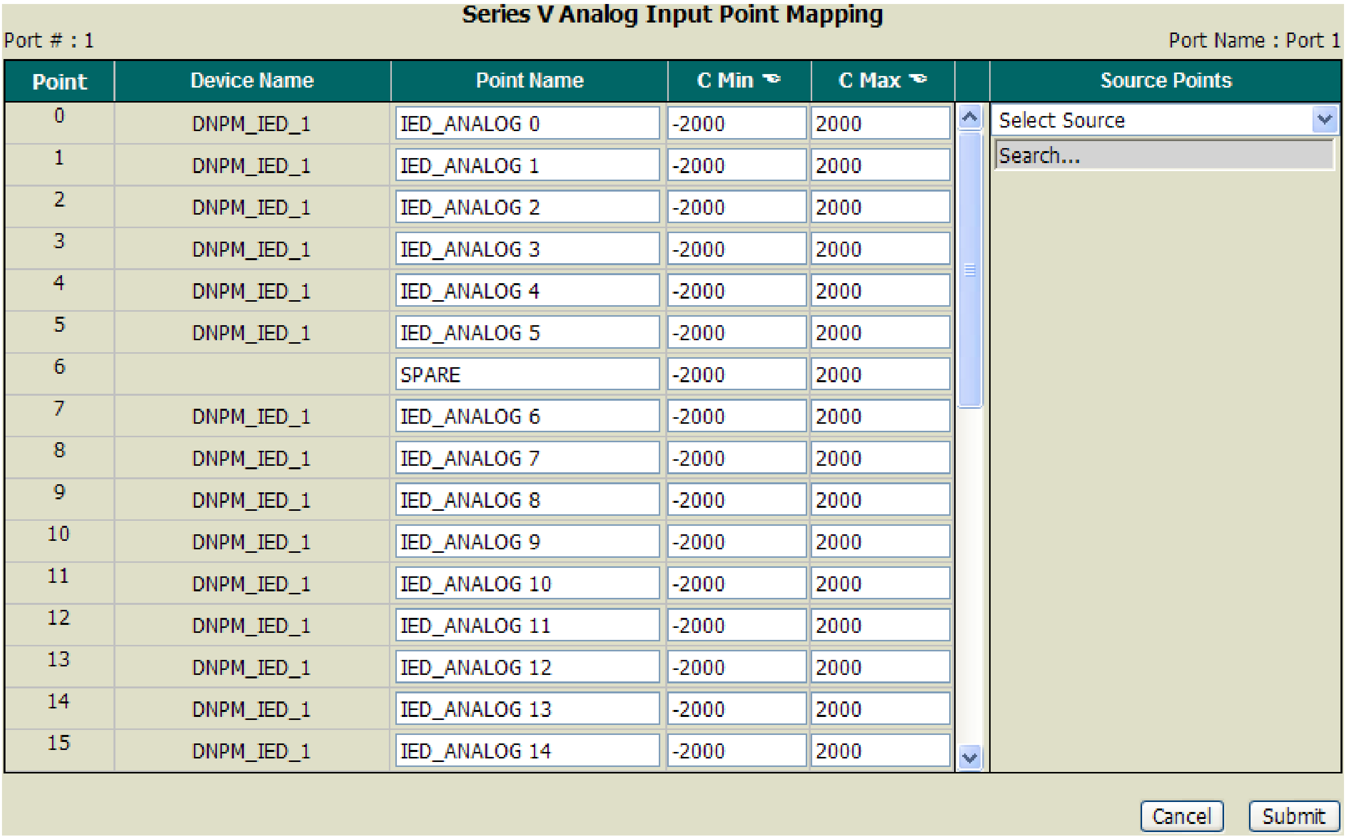


The result of Insert is shown in the next Figure. Notice that the old Point #6, IED_ANALOG 6, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 3-7 Results of Insert Above



Series V Analog Input Point Mapping

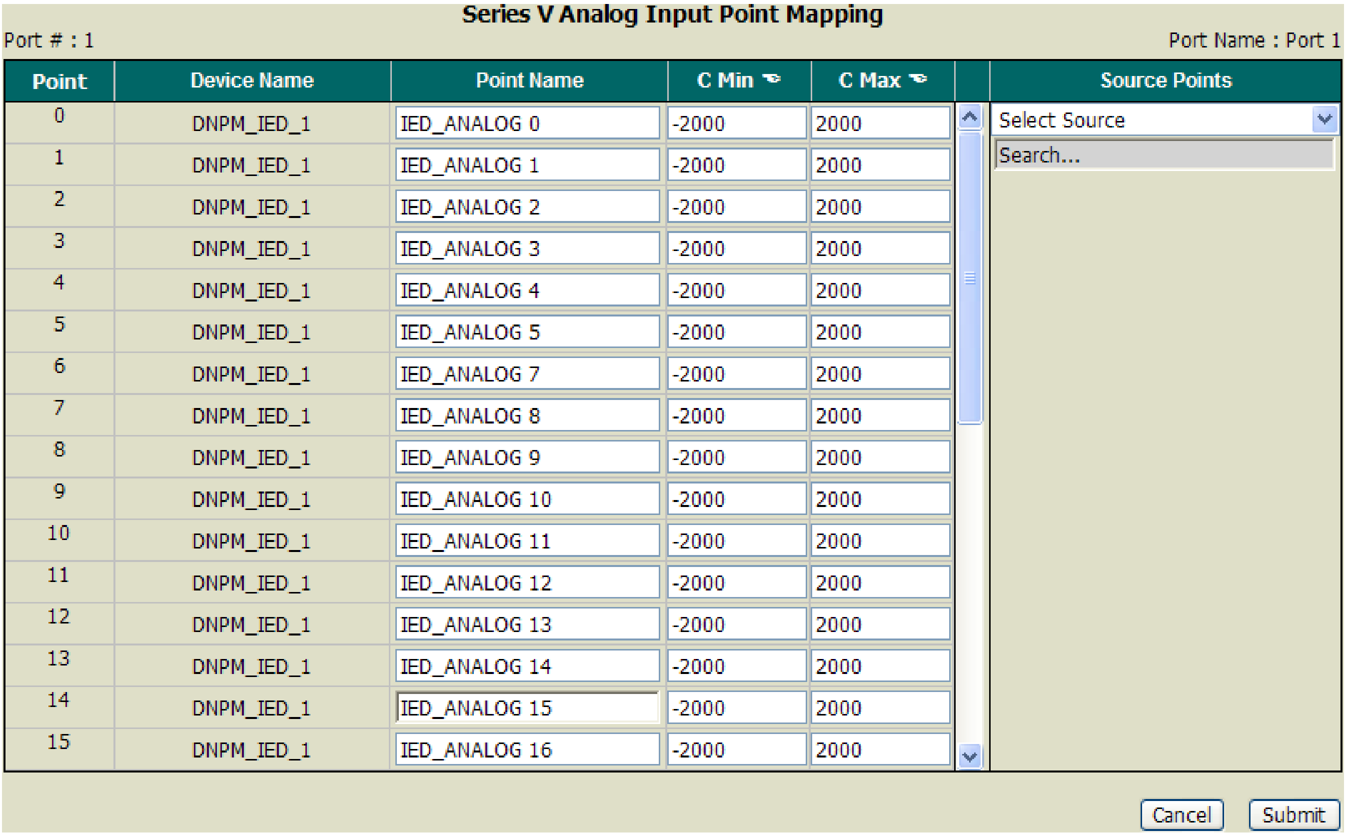
Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max	Source Points
0	DNPM_IED_1	IED_ANALOG 0	-2000	2000	Select Source
1	DNPM_IED_1	IED_ANALOG 1	-2000	2000	Search...
2	DNPM_IED_1	IED_ANALOG 2	-2000	2000	
3	DNPM_IED_1	IED_ANALOG 3	-2000	2000	
4	DNPM_IED_1	IED_ANALOG 4	-2000	2000	
5	DNPM_IED_1	IED_ANALOG 5	-2000	2000	
6		SPARE	-2000	2000	
7	DNPM_IED_1	IED_ANALOG 6	-2000	2000	
8	DNPM_IED_1	IED_ANALOG 7	-2000	2000	
9	DNPM_IED_1	IED_ANALOG 8	-2000	2000	
10	DNPM_IED_1	IED_ANALOG 9	-2000	2000	
11	DNPM_IED_1	IED_ANALOG 10	-2000	2000	
12	DNPM_IED_1	IED_ANALOG 11	-2000	2000	
13	DNPM_IED_1	IED_ANALOG 12	-2000	2000	
14	DNPM_IED_1	IED_ANALOG 13	-2000	2000	
15	DNPM_IED_1	IED_ANALOG 14	-2000	2000	

Cancel Submit

The Spare point can also be deleted. The following example shows the results of deleting Point#6, IED_ANALOG 6.

Figure 3-8 Results of Deleting a Point



Series V Analog Input Point Mapping

Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max	Source Points
0	DNPM_IED_1	IED_ANALOG 0	-2000	2000	Select Source
1	DNPM_IED_1	IED_ANALOG 1	-2000	2000	Search...
2	DNPM_IED_1	IED_ANALOG 2	-2000	2000	
3	DNPM_IED_1	IED_ANALOG 3	-2000	2000	
4	DNPM_IED_1	IED_ANALOG 4	-2000	2000	
5	DNPM_IED_1	IED_ANALOG 5	-2000	2000	
6	DNPM_IED_1	IED_ANALOG 7	-2000	2000	
7	DNPM_IED_1	IED_ANALOG 8	-2000	2000	
8	DNPM_IED_1	IED_ANALOG 9	-2000	2000	
9	DNPM_IED_1	IED_ANALOG 10	-2000	2000	
10	DNPM_IED_1	IED_ANALOG 11	-2000	2000	
11	DNPM_IED_1	IED_ANALOG 12	-2000	2000	
12	DNPM_IED_1	IED_ANALOG 13	-2000	2000	
13	DNPM_IED_1	IED_ANALOG 14	-2000	2000	
14	DNPM_IED_1	IED_ANALOG 15	-2000	2000	
15	DNPM_IED_1	IED_ANALOG 16	-2000	2000	

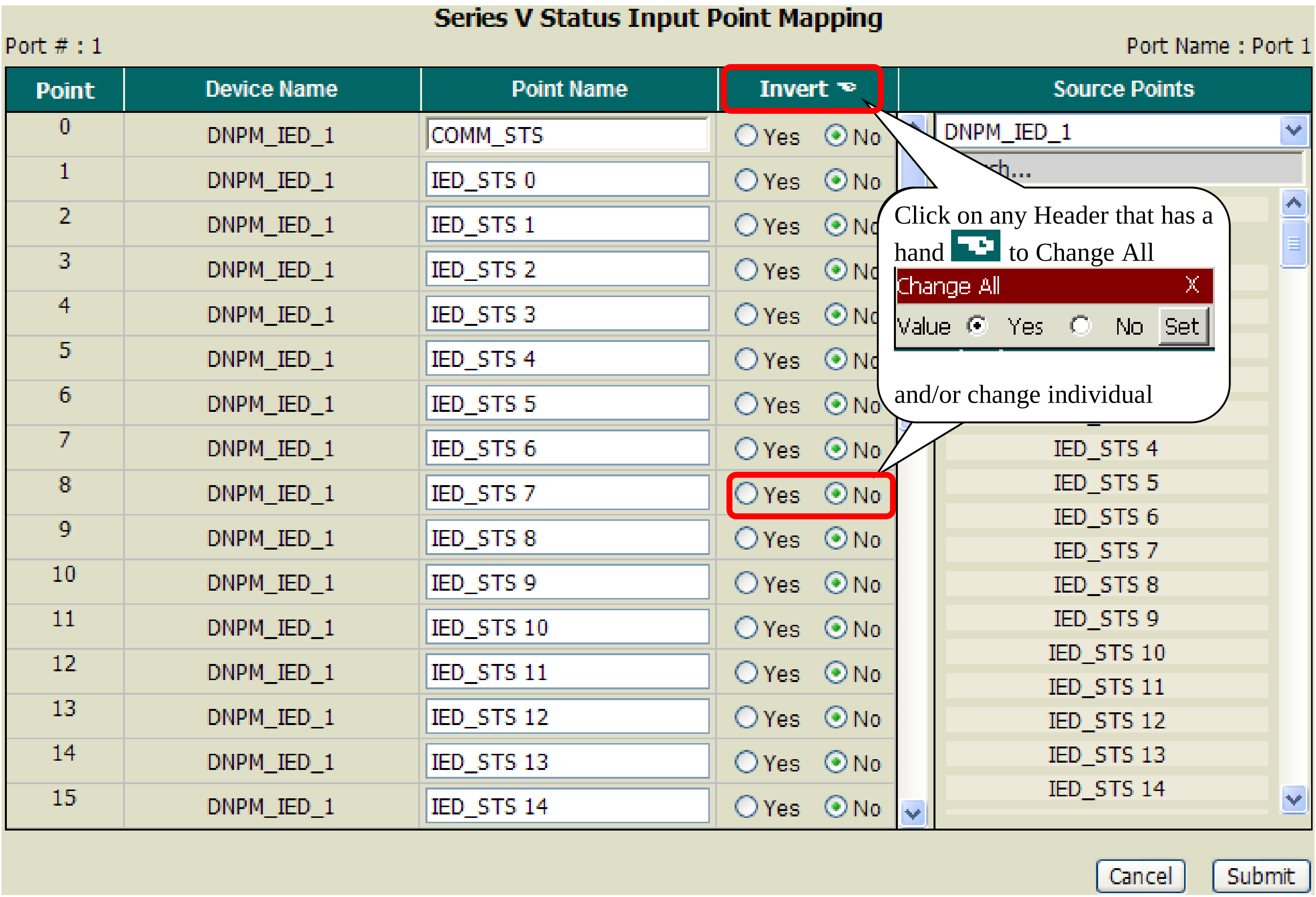
Cancel Submit

Notice that IED_ANALOG 6 is now missing, although Point numbers remain contiguous.

3.3.2 Map Status Inputs

From the Series V Communication Mapping screen, click the MAP button for Status Inputs. A screen similar to Figure 3-9 will appear.

Figure 3-9 Series V Status Input Point Mapping



Note: This protocol automatically creates a Comm Status point which may be mapped to any MTU to RTU protocol.

Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

3.3.2.1 Point Mapping Highlight

See the Analog example.

3.3.2.2 Point Database Search

See the Analog example.

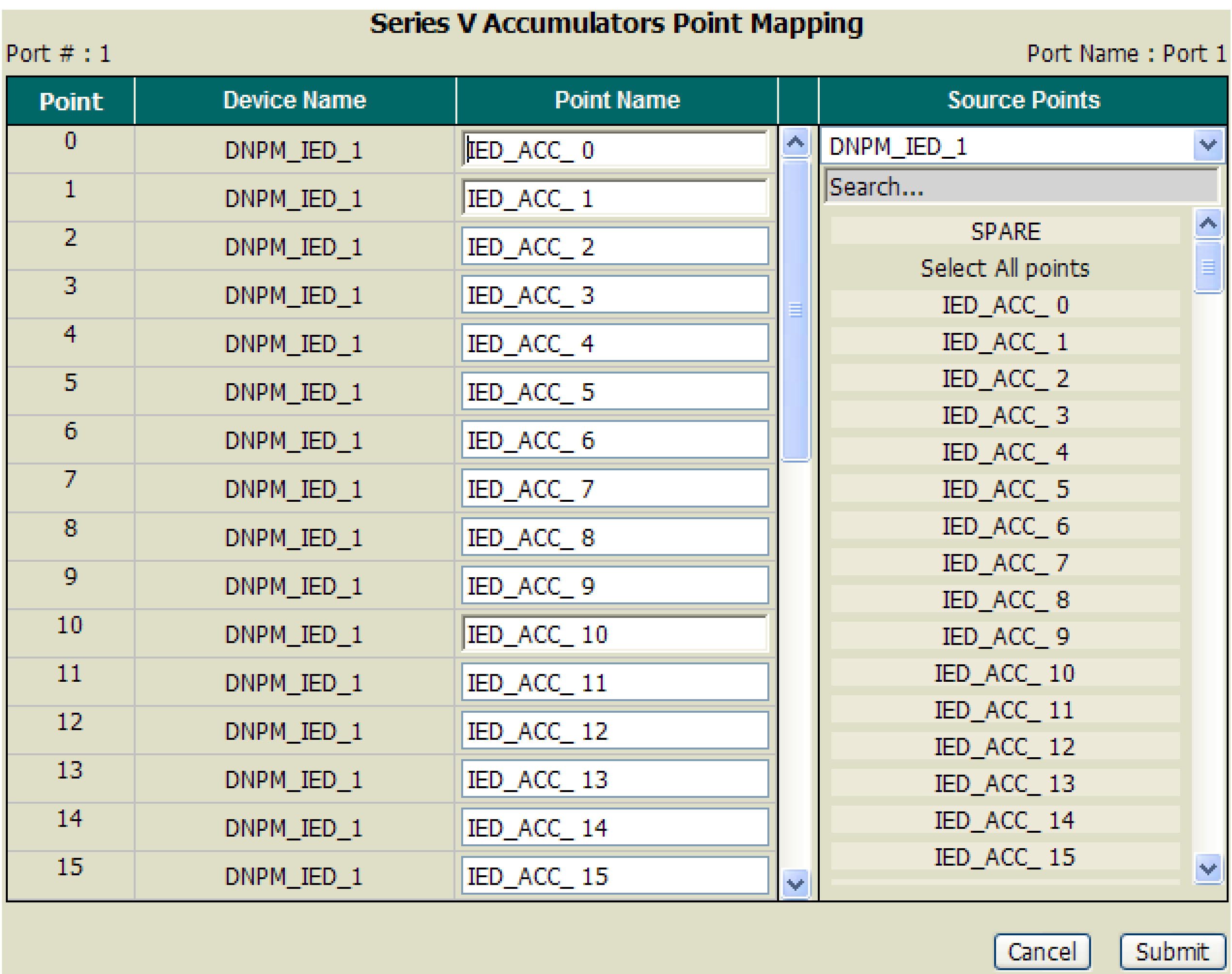
3.3.2.3 Insert & Delete Points

See the Analog example.

3.3.3 Map Accumulators

From the Series V Communication Mapping screen, click the MAP button for Accumulators. A screen similar to Figure 3-10 will appear.

Figure 3-10 Series V Accumulator Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

3.3.3.1 Point Mapping Highlight

See the Analog example.

3.3.3.2 Point Database Search

See the Analog example.

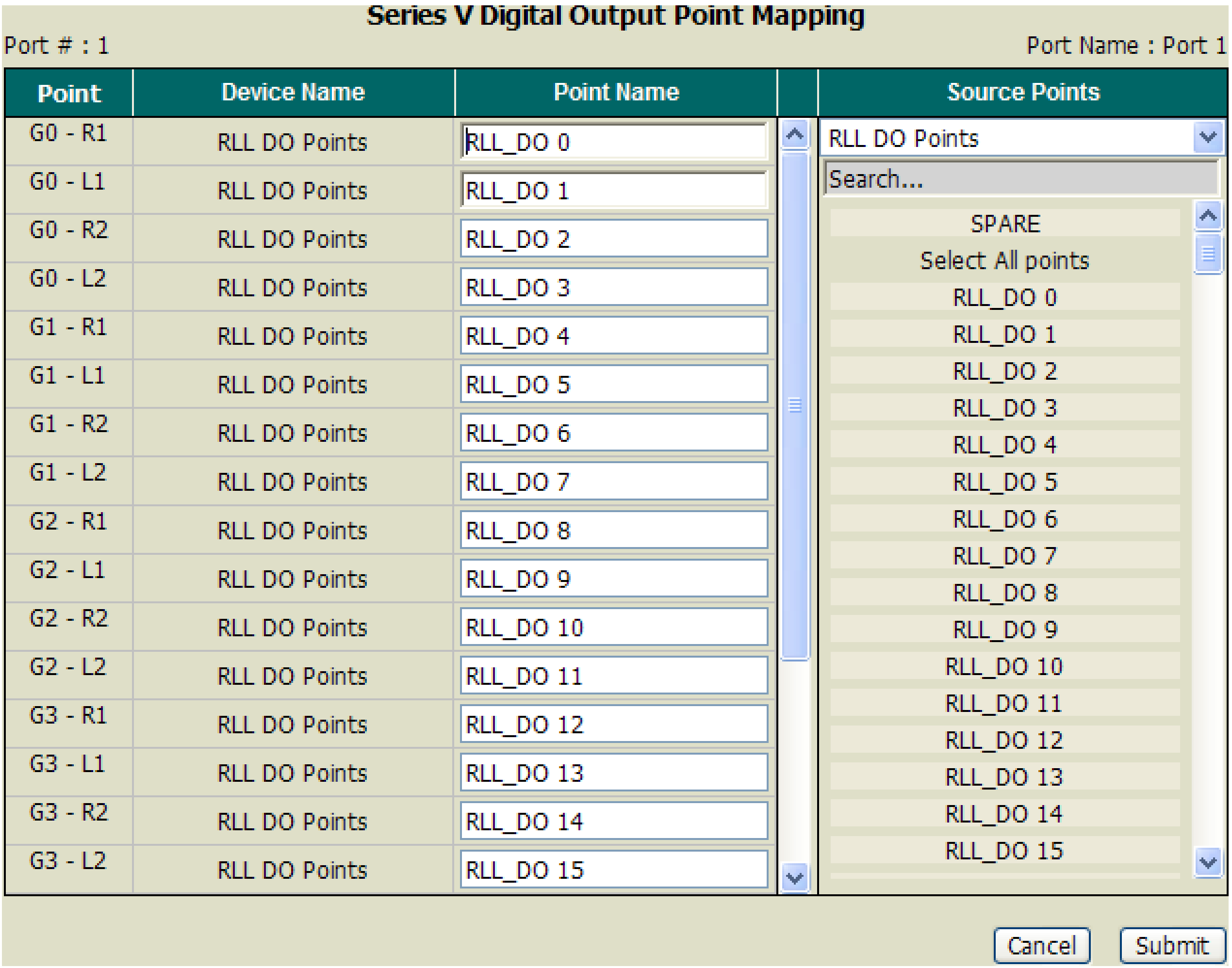
3.3.3.3 Insert & Delete Points

See the Analog example.

3.3.4 Map Digital Outputs

From the Series V Communication Mapping screen, click the MAP button for Digital Outputs. A screen similar to Figure 3-11 will appear.

Figure 3-11 Series V Digital Outputs Point Mapping



Point
The protocol organizes the point numbers into four groups (G0-G3) of two raise/lower points each, R1-R2, and L1-L2.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

3.3.4.1 Point Mapping Highlight

See the Analog example.

3.3.4.2 Point Database Search

See the Analog example.

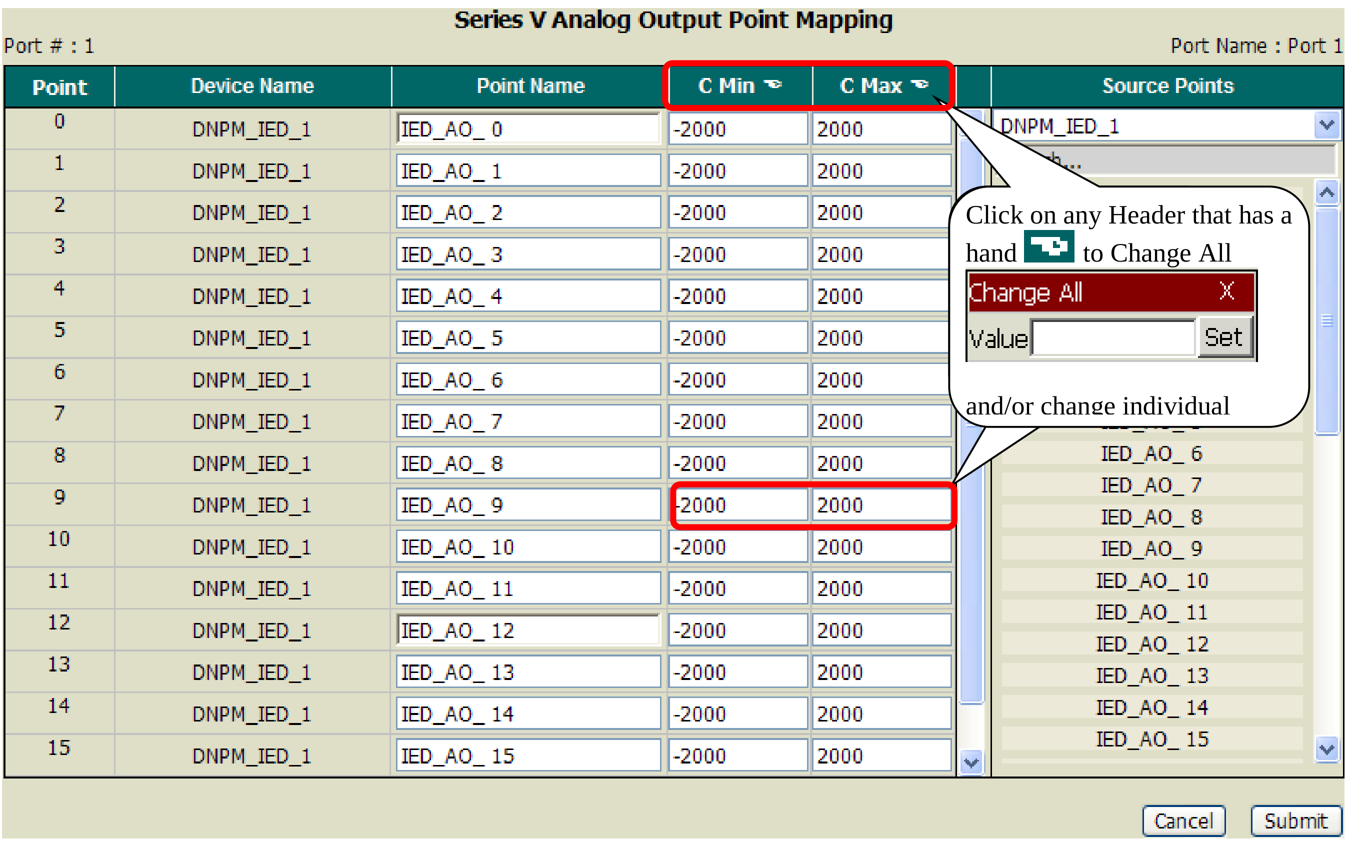
3.3.4.3 Insert & Delete Points

See the Analog example.

3.3.5 Map Analog Outputs

From the Series V Communication Mapping screen, click the MAP button for Analog Outputs. A screen similar to Figure 3-12 will appear.

Figure 3-12 Series V Analog Output Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts to be sent by the master station for a minimum EU value. Default setting is -2000.

C Max
Enter the maximum counts to be sent by the master station for a maximum EU value. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

3.3.5.1 Point Mapping Highlight

See the Analog example.

3.3.5.2 Point Database Search

See the Analog example.

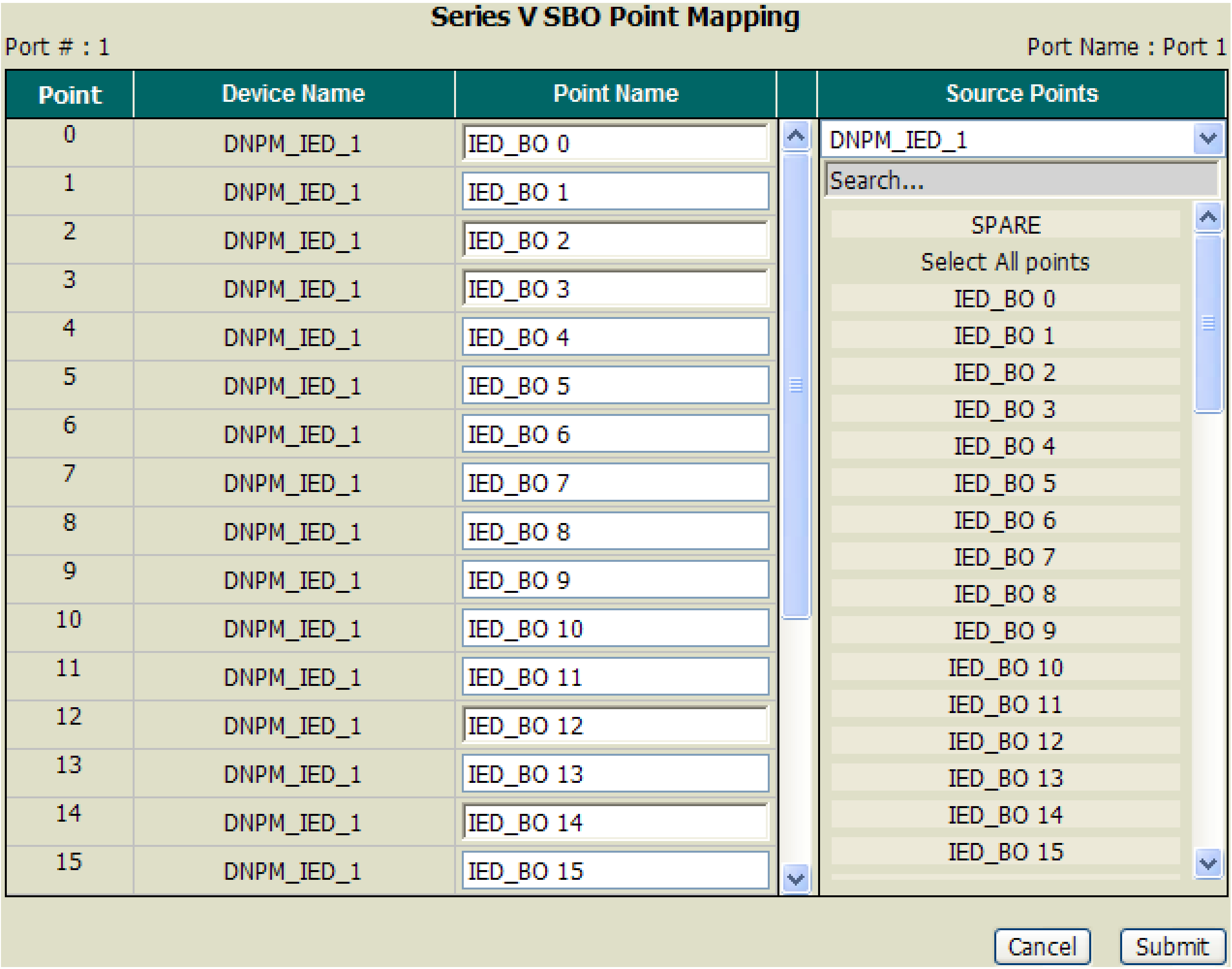
3.3.5.3 Insert & Delete Points

See the Analog example.

3.3.6 Map SBOs

From the Series V Communication Mapping screen, click the MAP button for SBOs. A screen similar to Figure 3-13 will appear.

Figure 3-13 Series V SBO Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

3.3.6.1 Point Mapping Highlight

See the Analog example.

3.3.6.2 Point Database Search

See the Analog example.

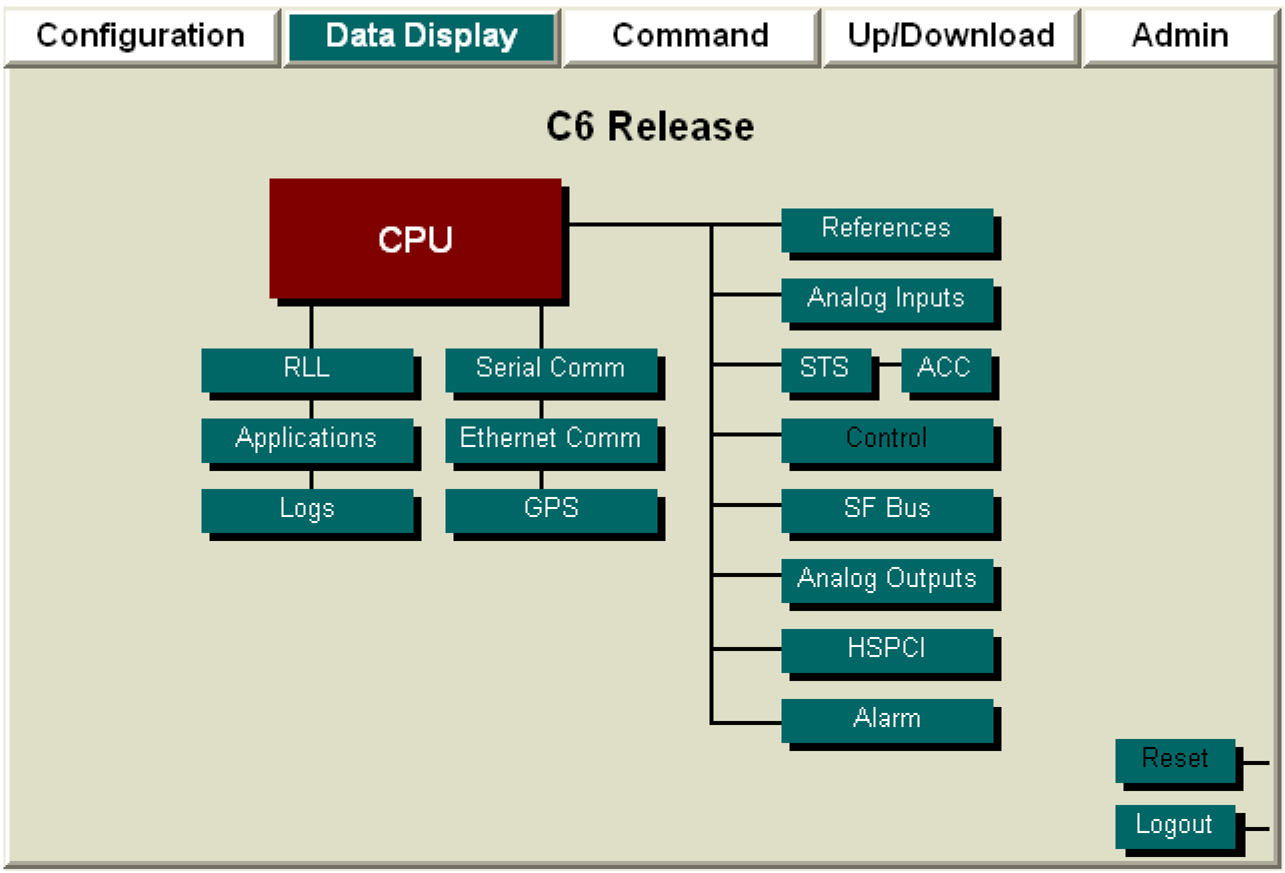
3.3.6.3 Insert & Delete Points

See the Analog example.

3.4 Data Display

Click the Data Display tab as shown in Figure 3-14.

Figure 3-14 Data Display Screen



Click Serial Comm to get the screen shown in Figure 3-15.

Figure 3-15 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	Series V	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).

The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.

When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.

The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data

Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

Navigation

Click the Back button to return to the previous screen.

3.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 3-16.

Figure 3-16 Series V Communication Counters Display

Series V Communication Counters Display

Port # : 1 Port Name : Port 1

Point	Counter Name	Counts
1	Messages Received	0
2	Messages Sent	0
3	RX Timeouts	0
4	B4 Timer Violations	0
5	IB Timer Violations	0
6	Questionable Requests	0
7	Security Errors	0
8	Parity Errors	0
9	Overrun Errors	0
10	Framing Errors	0
11	Hardware DCD Errors	0
12	Hardware CTS Errors	0

Data Trap Configure

Back

Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Messages Received

This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

B4 Timer Violations

This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

IB Timer Violations

This indicates the cumulative number of Interbyte timer violations since the last reset or power-up. This count can be affected by the setting of the Interbyte Time in configuration.

Questionable Requests

This indicates the cumulative number of messages where the RTU is receiving a global message but the function is not a freeze, freeze reset or set clock.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Parity Errors

This indicates the cumulative number of parity errors since the last reset or power-up.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Framing Errors

This indicates the cumulative number of received bytes with framing errors since the last reset or power-up. This can be affected by parity and MTO.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

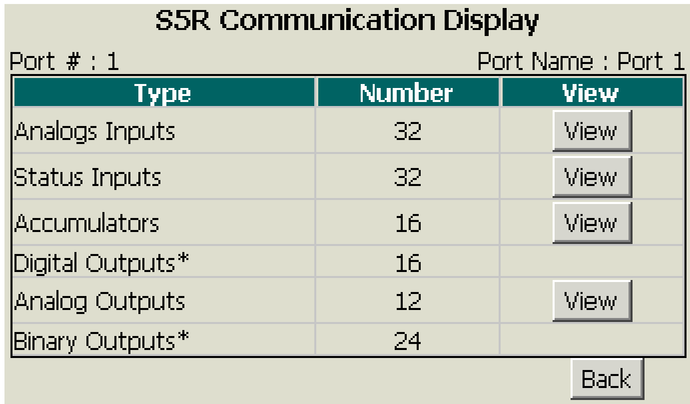
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

3.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 3-17.

Figure 3-17 Series V Communication Display



Type
The type of point.

Number
The number of points of each type.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

3.4.2.1 Analog Inputs

From the S5R Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 3-18.

Figure 3-18 Series V Analog Inputs Display

S5R Analog Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To [ ] Go

Point	Device Name	Point Name	Deadband	Point Status	Point Value	Point Counts
0	Hardware Analogs	ANALOG 1	7		3.281	625
1	Hardware Analogs	ANALOG 2	7		3.281	625
2	Hardware Analogs	ANALOG 3	7		1.552	-759
3	Hardware Analogs	ANALOG 4	7		1.552	-759
4	Hardware Analogs	ANALOG 5	7		0.000	-2000
5	Hardware Analogs	ANALOG 6	7		0.000	-2000
6	Hardware Analogs	ANALOG 7	7		0.000	-2000
7	Hardware Analogs	ANALOG 8	7		0.000	-2000
8	DNPM_IED_1	IED_ANALOG 0	7	F	0.000	0
9	DNPM_IED_1	IED_ANALOG 1	7	F	0.000	0
10	DNPM_IED_1	IED_ANALOG 2	7	F	0.000	0
11	DNPM_IED_1	IED_ANALOG 3	7	F	0.000	0
12	DNPM_IED_1	IED_ANALOG 4	7	F	0.000	0
13	DNPM_IED_1	IED_ANALOG 5	7	F	0.000	0
14	DNPM_IED_1	IED_ANALOG 6	7	F	0.000	0
15	DNPM_IED_1	IED_ANALOG 7	7	F	0.000	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Deadband
The deadband, which is downloaded from the Master Station, displays the analog deadband used to determine the value the cumulative analog value must exceed before the point is marked in exception to be reported to the Master Station on the next valid scan for this point. In the example above, deadbands of 7 were downloaded.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

3.4.2.2 Status Inputs

From the S5R Communication Display screen, click View for Status Inputs to get the screen shown in Figure 3-19.

Figure 3-19 Series V Status Inputs Display

S5R Status Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 3 Go To Go Next>>

Point	Device Name	Point Name	Point Status	Point State	●
0	DNPM_IED_1	COMM_STS		CLOSE	●
1	DNPM_IED_1	IED_STS 0	F	OPEN	●
2	DNPM_IED_1	IED_STS 1	F	OPEN	●
3	DNPM_IED_1	IED_STS 2	F	OPEN	●
4	DNPM_IED_1	IED_STS 3	F	OPEN	●
5	DNPM_IED_1	IED_STS 4	F	OPEN	●
6	DNPM_IED_1	IED_STS 5	F	OPEN	●
7	DNPM_IED_1	IED_STS 6	F	OPEN	●
8	DNPM_IED_1	IED_STS 7	F	OPEN	●
9	DNPM_IED_1	IED_STS 8	F	OPEN	●
10	DNPM_IED_1	IED_STS 9	F	OPEN	●
11	DNPM_IED_1	IED_STS 10	F	OPEN	●
12	DNPM_IED_1	IED_STS 11	F	OPEN	●
13	DNPM_IED_1	IED_STS 12	F	OPEN	●
14	DNPM_IED_1	IED_STS 13	F	OPEN	●
15	DNPM_IED_1	IED_STS 14	F	OPEN	●

Back

Note: This protocol automatically assigns a Comm Status bit.

Close = Comm channel failed
Open = Comm channel okay

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

3.4.2.3 Accumulator Inputs

From the S5R Communication Display screen, click View for Accumulators to get the screen shown in Figure 3-20.

Figure 3-20 Series V Accumulators Display

S5R Accumulators Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To Go

Point	Device Name	Point Name	Count
0	Hardware DI	DI_PNT_17	0
1	Hardware DI	DI_PNT_18	0
2	Hardware DI	DI_PNT_19	0
3	Hardware DI	DI_PNT_20	0
4	Hardware DI	DI_PNT_21	0
5	Hardware DI	DI_PNT_22	0
6	Hardware DI	DI_PNT_23	0
7	Hardware DI	DI_PNT_24	0
8	Hardware DI	DI_PNT_25	0
9	Hardware DI	DI_PNT_26	0
10	Hardware DI	DI_PNT_27	0
11	Hardware DI	DI_PNT_28	0
12	Hardware DI	DI_PNT_29	0
13	Hardware DI	DI_PNT_30	0
14	Hardware DI	DI_PNT_31	0
15	Hardware DI	DI_PNT_32	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Please note: These values will only update when the accumulators are frozen.

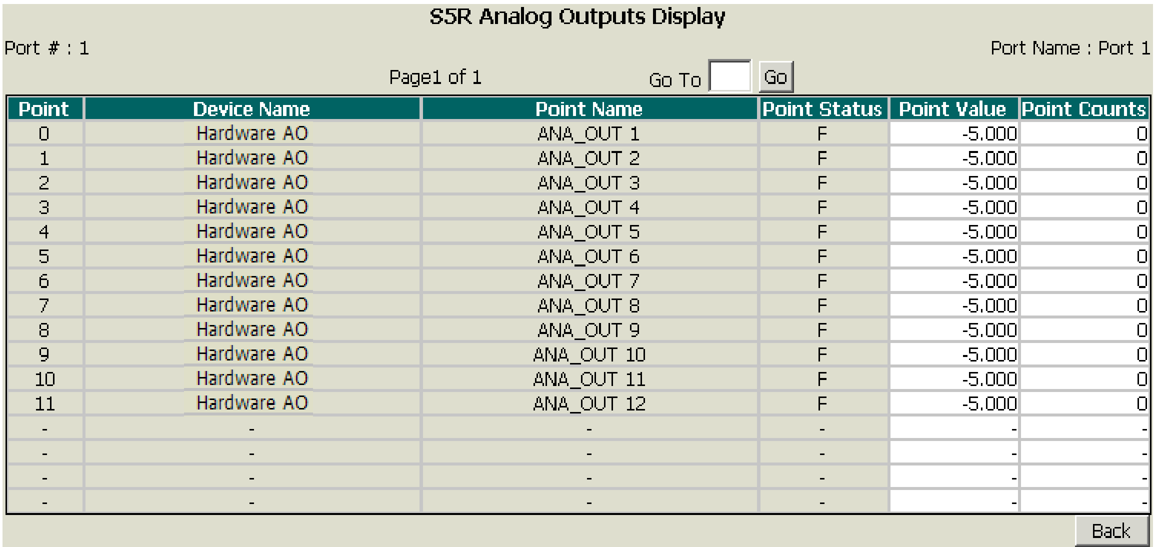
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

3.4.2.4 Analog Outputs

From the S5R Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 3-21.

Figure 3-21 Series V Analog Outputs Display


S5R Analog Outputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	Hardware AO	ANA_OUT 1	F	-5.000	0
1	Hardware AO	ANA_OUT 2	F	-5.000	0
2	Hardware AO	ANA_OUT 3	F	-5.000	0
3	Hardware AO	ANA_OUT 4	F	-5.000	0
4	Hardware AO	ANA_OUT 5	F	-5.000	0
5	Hardware AO	ANA_OUT 6	F	-5.000	0
6	Hardware AO	ANA_OUT 7	F	-5.000	0
7	Hardware AO	ANA_OUT 8	F	-5.000	0
8	Hardware AO	ANA_OUT 9	F	-5.000	0
9	Hardware AO	ANA_OUT 10	F	-5.000	0
10	Hardware AO	ANA_OUT 11	F	-5.000	0
11	Hardware AO	ANA_OUT 12	F	-5.000	0
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value. This value is calculated based on the EGU min and EGU max settings for the target analog output point along with the current binary count sent from the master station.

Point Counts
The binary counts being sent from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

3.4.2.5 Binary Outputs

There is no display for Binary Outputs.

4 Series V North Carolina

4.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

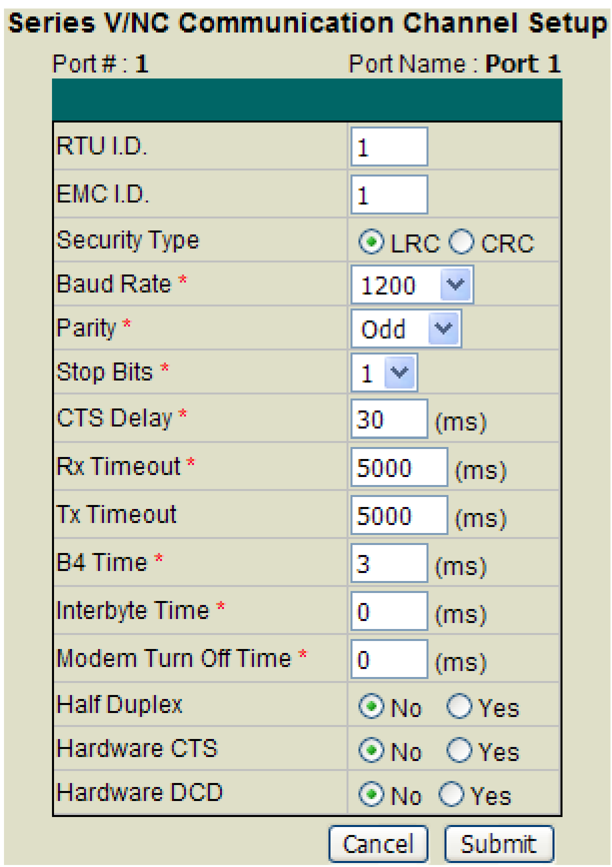
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

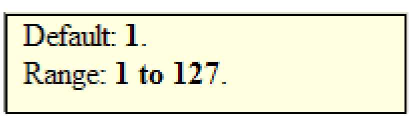
From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

4.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 4-1.

Figure 4-1 SVNC Communication Channel Configuration





Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D. (1 – 127)
Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 1.

EMC I.D. (1 – 127)
Enter the EMC ID number. The default is 1.

Security Type
The SVNC Communication Protocol uses two types of error detection techniques: Longitudinal Redundancy Check (LRC) or Cyclic Redundancy Check (CRC). Both security codes are described in the Series V Protocol Manual, B8300-AAA-00005. Default setting is LRC.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 1200.

Parity (None, Odd, Even)
Select the parity for the associated channel. The default setting is Odd.

Stop Bits (0, 1, 2)
Select the stop bits from the pull-down menu. The default is 1.

CTS Delay (0 – 1000ms)
Enter the Clear-To-Send delay in milliseconds for the associated channel. This is the time delay the channel will wait to start transmitting following Request-To-Send signal being asserted. Default setting is 30.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 5000 (5 seconds).

Tx Timeout (0 – 30,000ms)
Enter the transmit timeout for the associated channel. This value limits the maximum transmission time from the RTU to the master. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 3.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 0.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Half Duplex (No, Yes)
Enter Yes for half duplex or No for full duplex. This field enables the RTU to properly condition the RS-232 control lines. The CTS delay is used for carrier conditioning. In full duplex operation, the CTS signal is used for collision avoidance. In Half duplex operation, the DCD signal is used for collision avoidance and to enable the receiver. The default setting is No.

Hardware CTS (No, Yes)

If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)

If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

Navigation

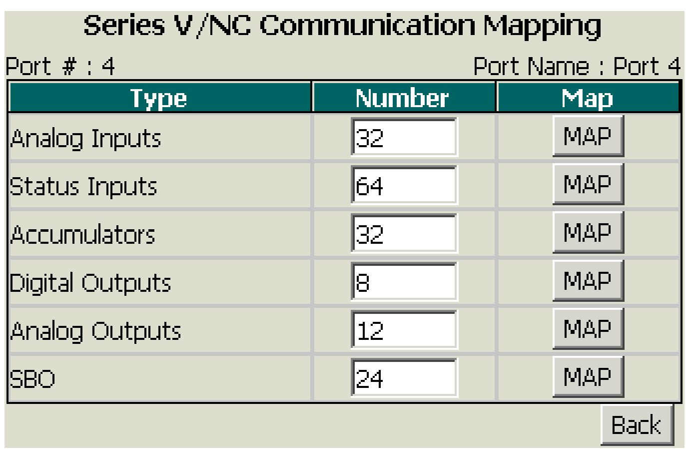
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

4.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 4-2 will appear. Enter the number of points for each type of point, then click MAP before moving on to the next point type.

Figure 4-2 SVNC Communication Mapping



Type

The different types of I/O points supported by this protocol.

Number

Enter the quantity of points for the given type.

Note: You must Map the points entered before moving to the next point type.

Map

Click the MAP button to map the points.

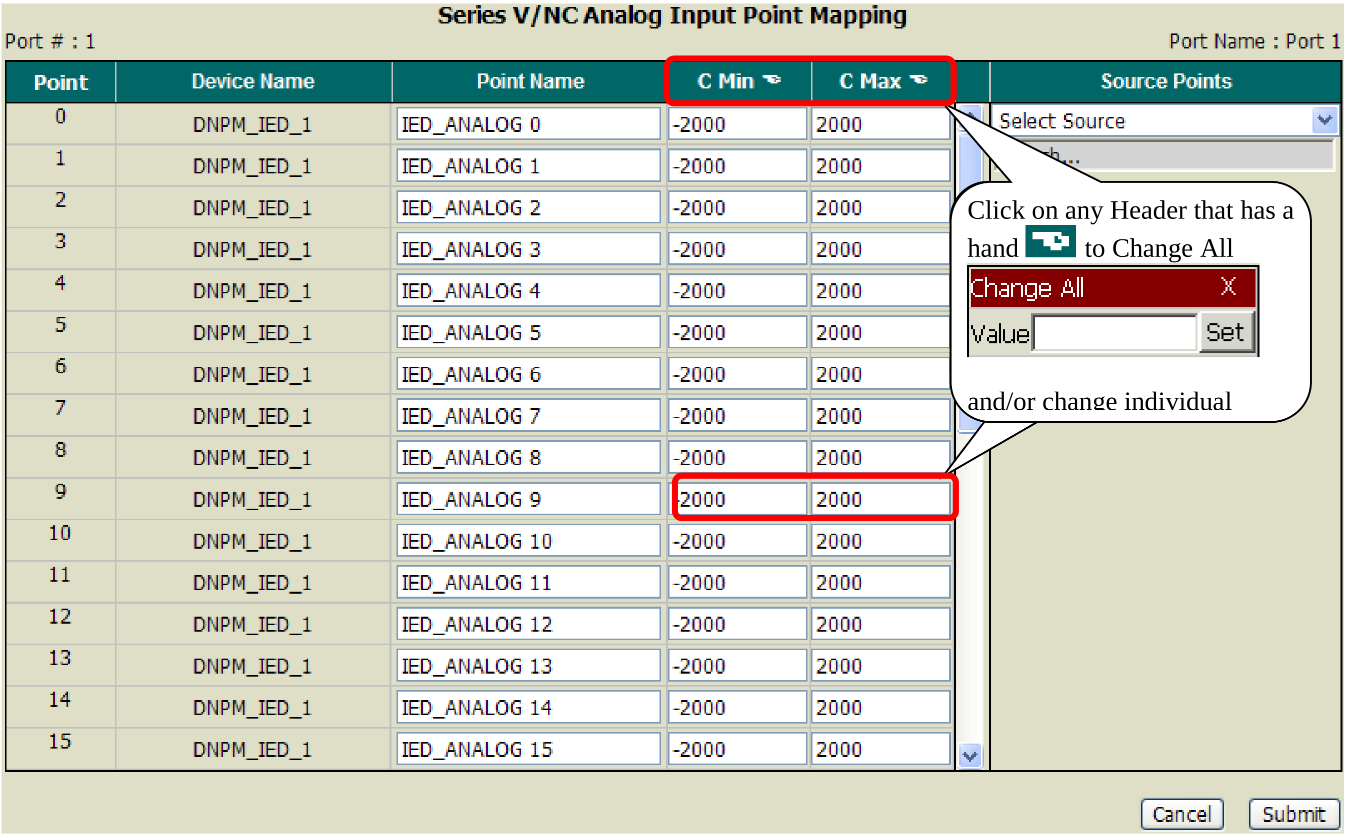
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the IED Configuration screen.

4.3.1 Map Analog Inputs

From the SVNC Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 4-3 will appear.

Figure 4-3 SVNC Analog Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

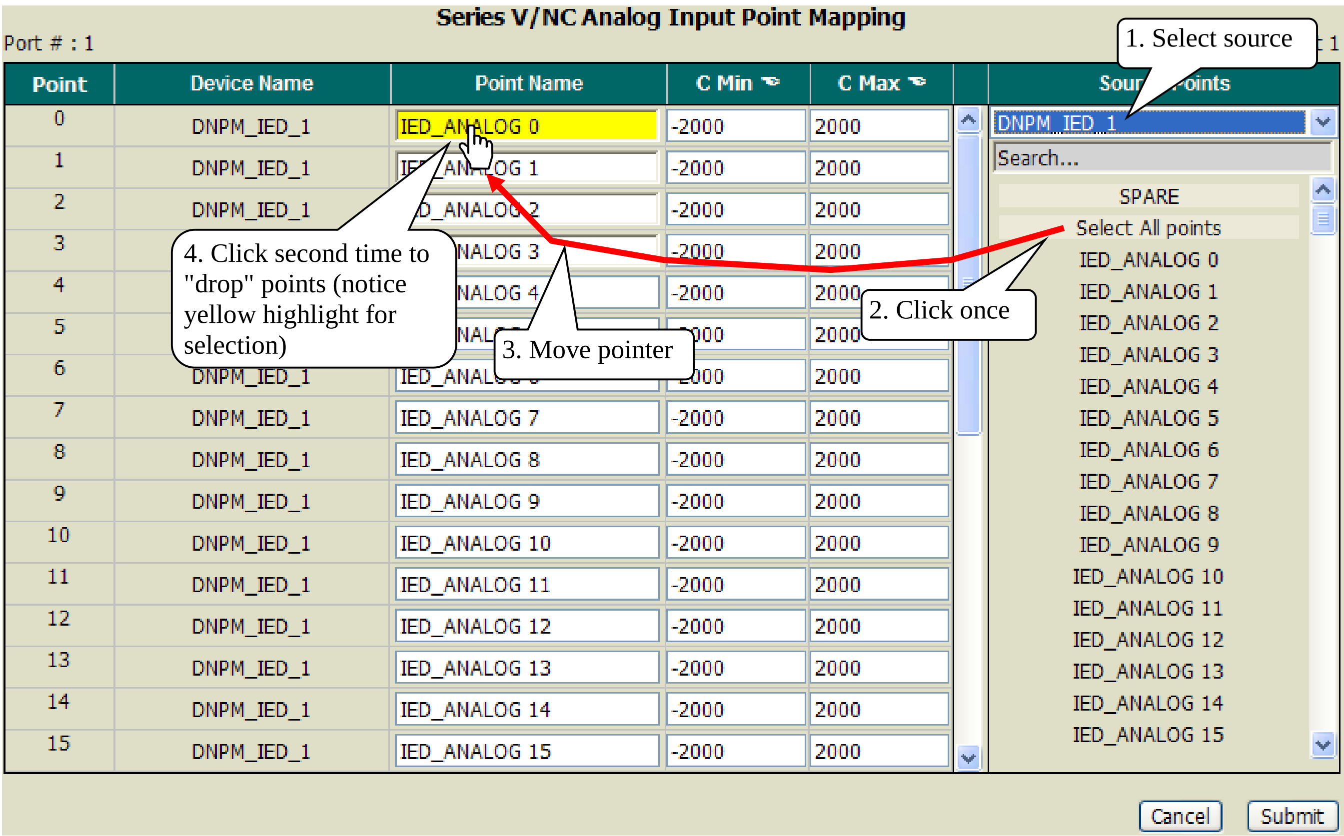
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

4.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

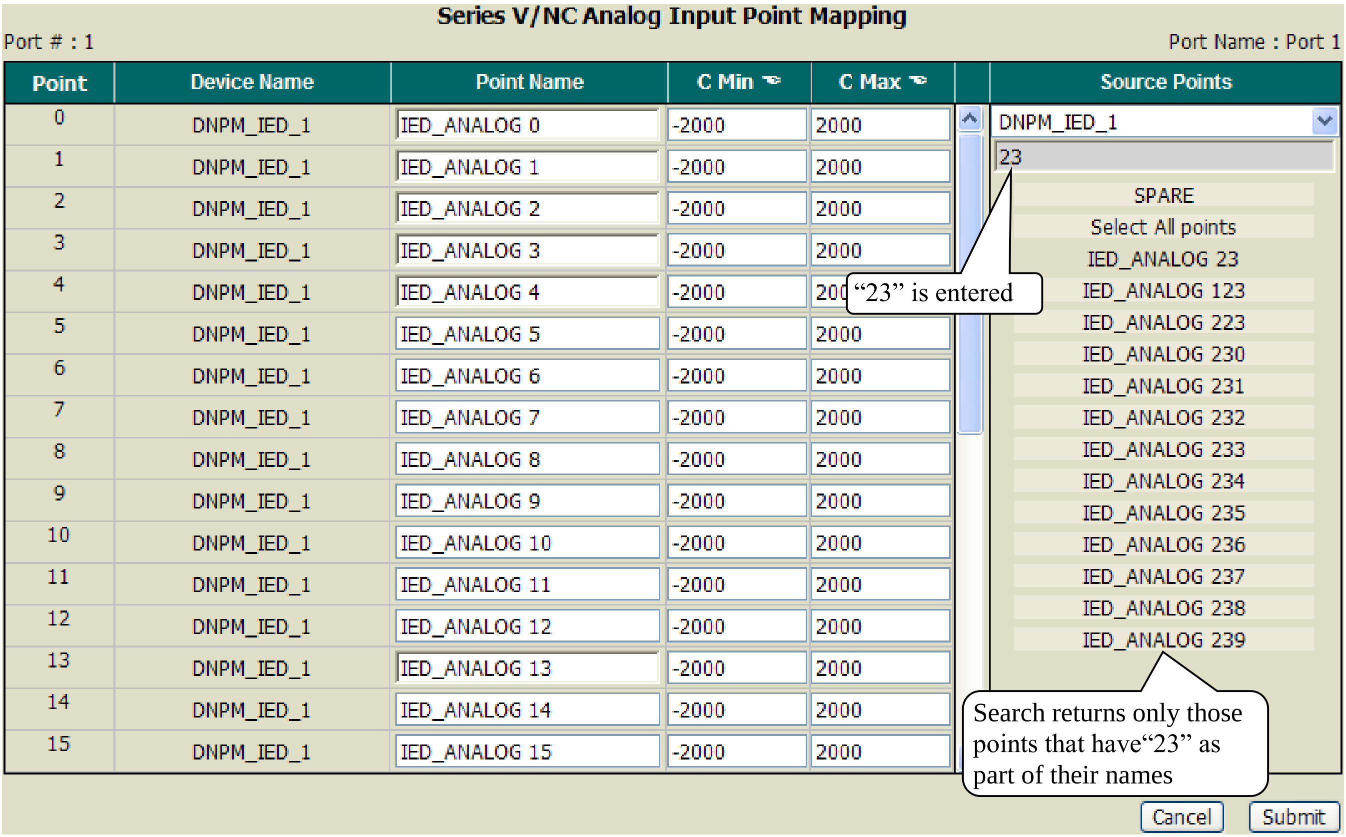
Figure 4-4 Point Mapping Highlight



4.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

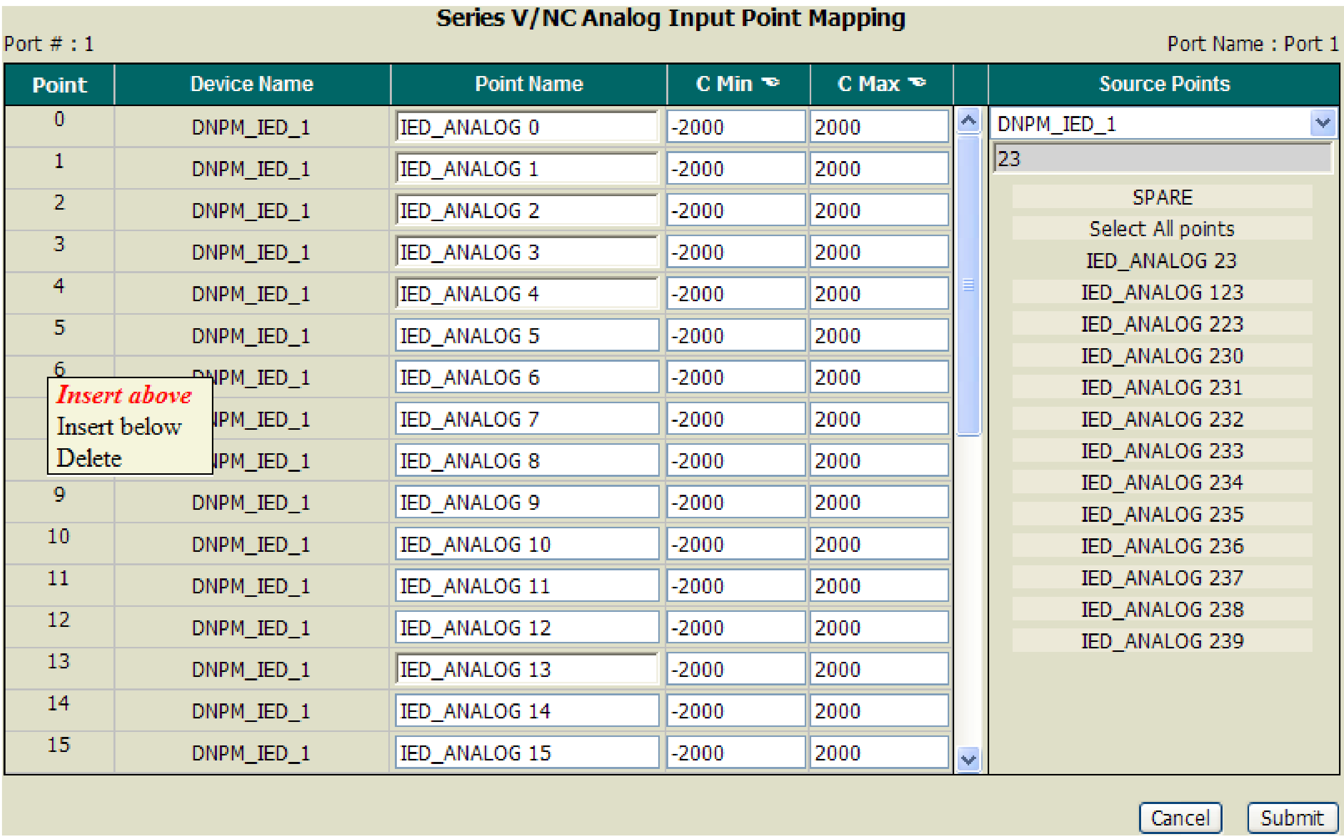
Figure 4-5 Point Database Search



4.3.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #6) and right click the mouse. The message box shown below appears. Select Insert above (or below) and left click.

Figure 4-6 Insert a Point



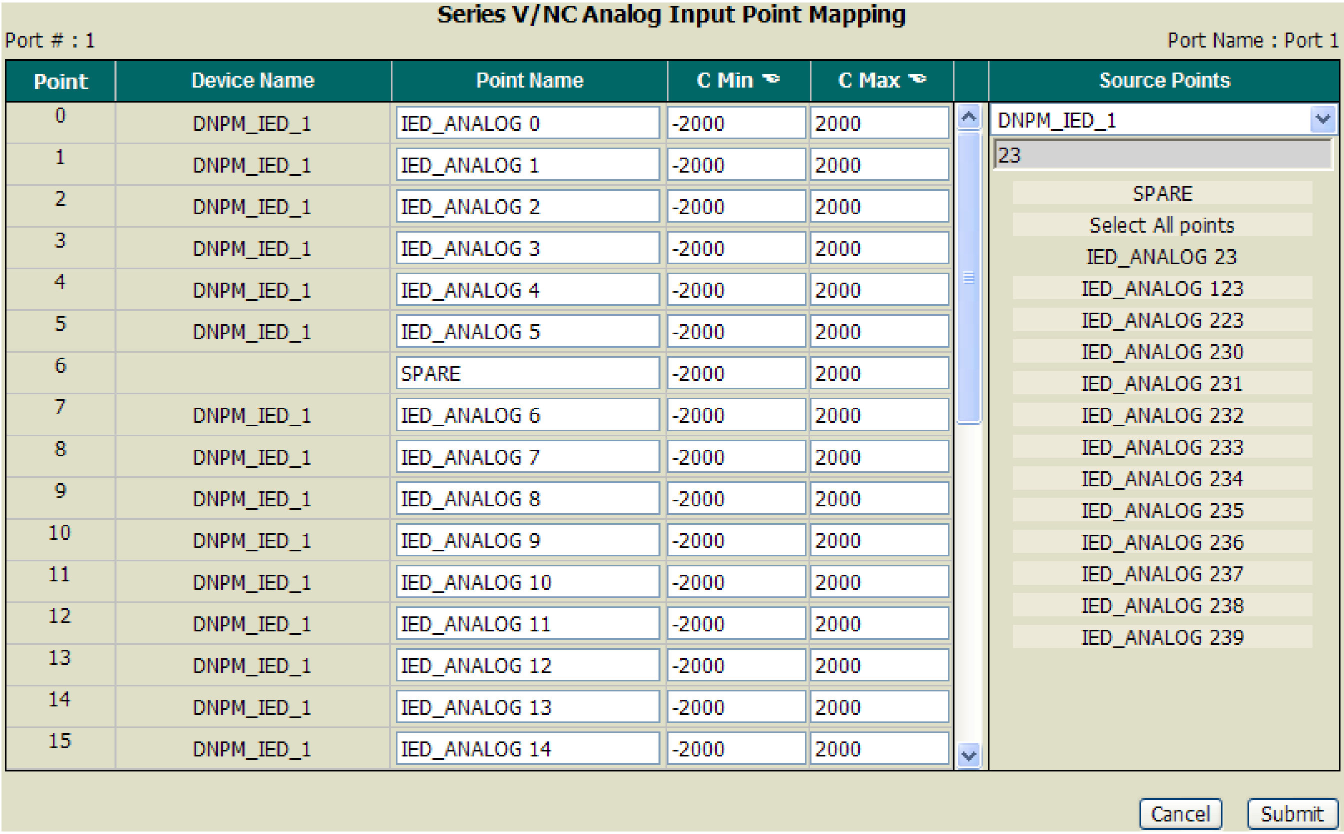
Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2000	2000
1	DNPM_IED_1	IED_ANALOG 1	-2000	2000
2	DNPM_IED_1	IED_ANALOG 2	-2000	2000
3	DNPM_IED_1	IED_ANALOG 3	-2000	2000
4	DNPM_IED_1	IED_ANALOG 4	-2000	2000
5	DNPM_IED_1	IED_ANALOG 5	-2000	2000
6	DNPM_IED_1	IED_ANALOG 6	-2000	2000
	IPM_IED_1	IED_ANALOG 7	-2000	2000
	IPM_IED_1	IED_ANALOG 8	-2000	2000
9	DNPM_IED_1	IED_ANALOG 9	-2000	2000
10	DNPM_IED_1	IED_ANALOG 10	-2000	2000
11	DNPM_IED_1	IED_ANALOG 11	-2000	2000
12	DNPM_IED_1	IED_ANALOG 12	-2000	2000
13	DNPM_IED_1	IED_ANALOG 13	-2000	2000
14	DNPM_IED_1	IED_ANALOG 14	-2000	2000
15	DNPM_IED_1	IED_ANALOG 15	-2000	2000

The result of Insert is shown in Figure 4-7. Notice that the old Point #6, IED_ANALOG 6, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 4-7 Results of Insert Above



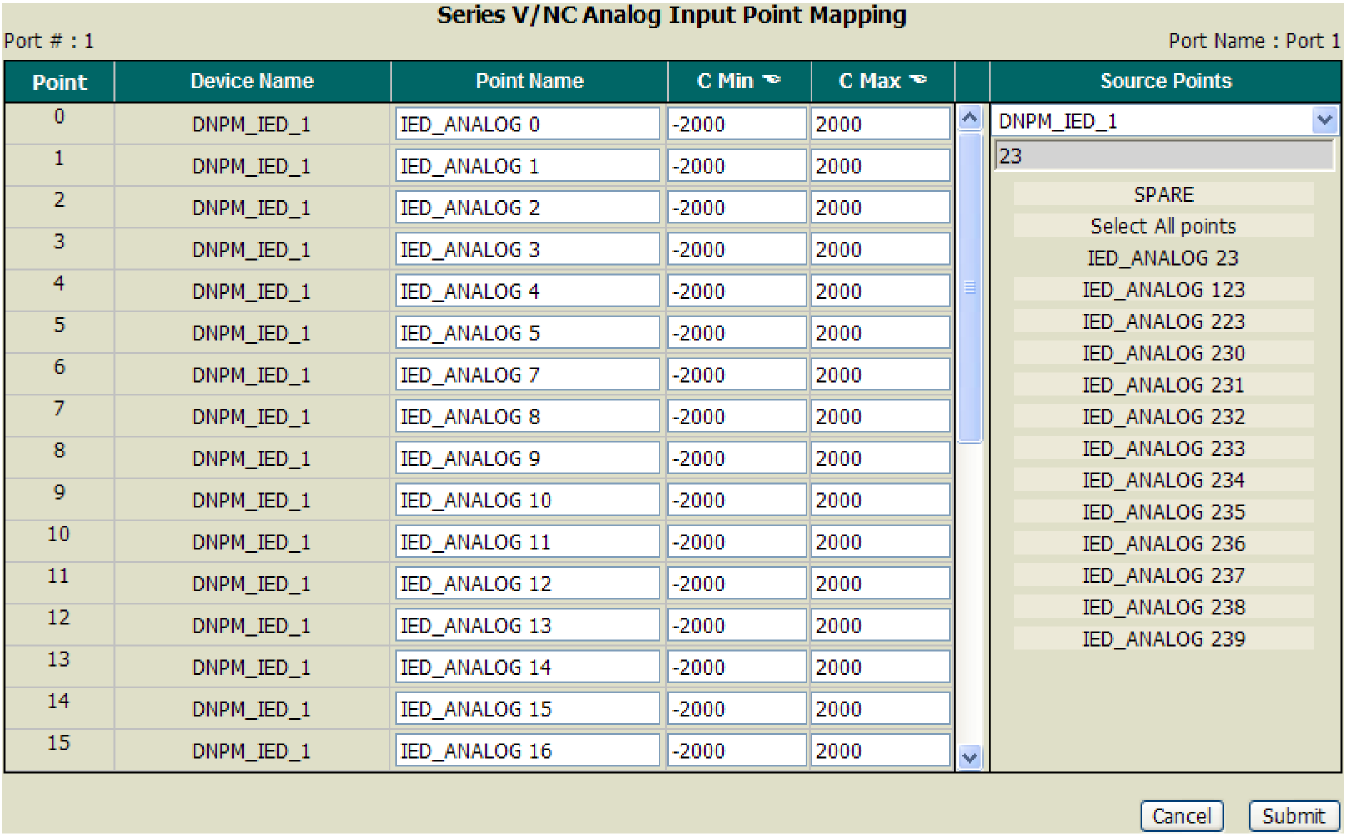
Series V/NC Analog Input Point Mapping

Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2000	2000
1	DNPM_IED_1	IED_ANALOG 1	-2000	2000
2	DNPM_IED_1	IED_ANALOG 2	-2000	2000
3	DNPM_IED_1	IED_ANALOG 3	-2000	2000
4	DNPM_IED_1	IED_ANALOG 4	-2000	2000
5	DNPM_IED_1	IED_ANALOG 5	-2000	2000
6		SPARE	-2000	2000
7	DNPM_IED_1	IED_ANALOG 6	-2000	2000
8	DNPM_IED_1	IED_ANALOG 7	-2000	2000
9	DNPM_IED_1	IED_ANALOG 8	-2000	2000
10	DNPM_IED_1	IED_ANALOG 9	-2000	2000
11	DNPM_IED_1	IED_ANALOG 10	-2000	2000
12	DNPM_IED_1	IED_ANALOG 11	-2000	2000
13	DNPM_IED_1	IED_ANALOG 12	-2000	2000
14	DNPM_IED_1	IED_ANALOG 13	-2000	2000
15	DNPM_IED_1	IED_ANALOG 14	-2000	2000

The Spare point can also be deleted. The following example shows the results of deleting Point#6, IED_ANALOG 6.

Figure 4-8 Results of Deleting a Point



Series V/NC Analog Input Point Mapping

Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2000	2000
1	DNPM_IED_1	IED_ANALOG 1	-2000	2000
2	DNPM_IED_1	IED_ANALOG 2	-2000	2000
3	DNPM_IED_1	IED_ANALOG 3	-2000	2000
4	DNPM_IED_1	IED_ANALOG 4	-2000	2000
5	DNPM_IED_1	IED_ANALOG 5	-2000	2000
6	DNPM_IED_1	IED_ANALOG 7	-2000	2000
7	DNPM_IED_1	IED_ANALOG 8	-2000	2000
8	DNPM_IED_1	IED_ANALOG 9	-2000	2000
9	DNPM_IED_1	IED_ANALOG 10	-2000	2000
10	DNPM_IED_1	IED_ANALOG 11	-2000	2000
11	DNPM_IED_1	IED_ANALOG 12	-2000	2000
12	DNPM_IED_1	IED_ANALOG 13	-2000	2000
13	DNPM_IED_1	IED_ANALOG 14	-2000	2000
14	DNPM_IED_1	IED_ANALOG 15	-2000	2000
15	DNPM_IED_1	IED_ANALOG 16	-2000	2000

Source Points
DNPM_IED_1
23
SPARE
Select All points
IED_ANALOG 23
IED_ANALOG 123
IED_ANALOG 223
IED_ANALOG 230
IED_ANALOG 231
IED_ANALOG 232
IED_ANALOG 233
IED_ANALOG 234
IED_ANALOG 235
IED_ANALOG 236
IED_ANALOG 237
IED_ANALOG 238
IED_ANALOG 239

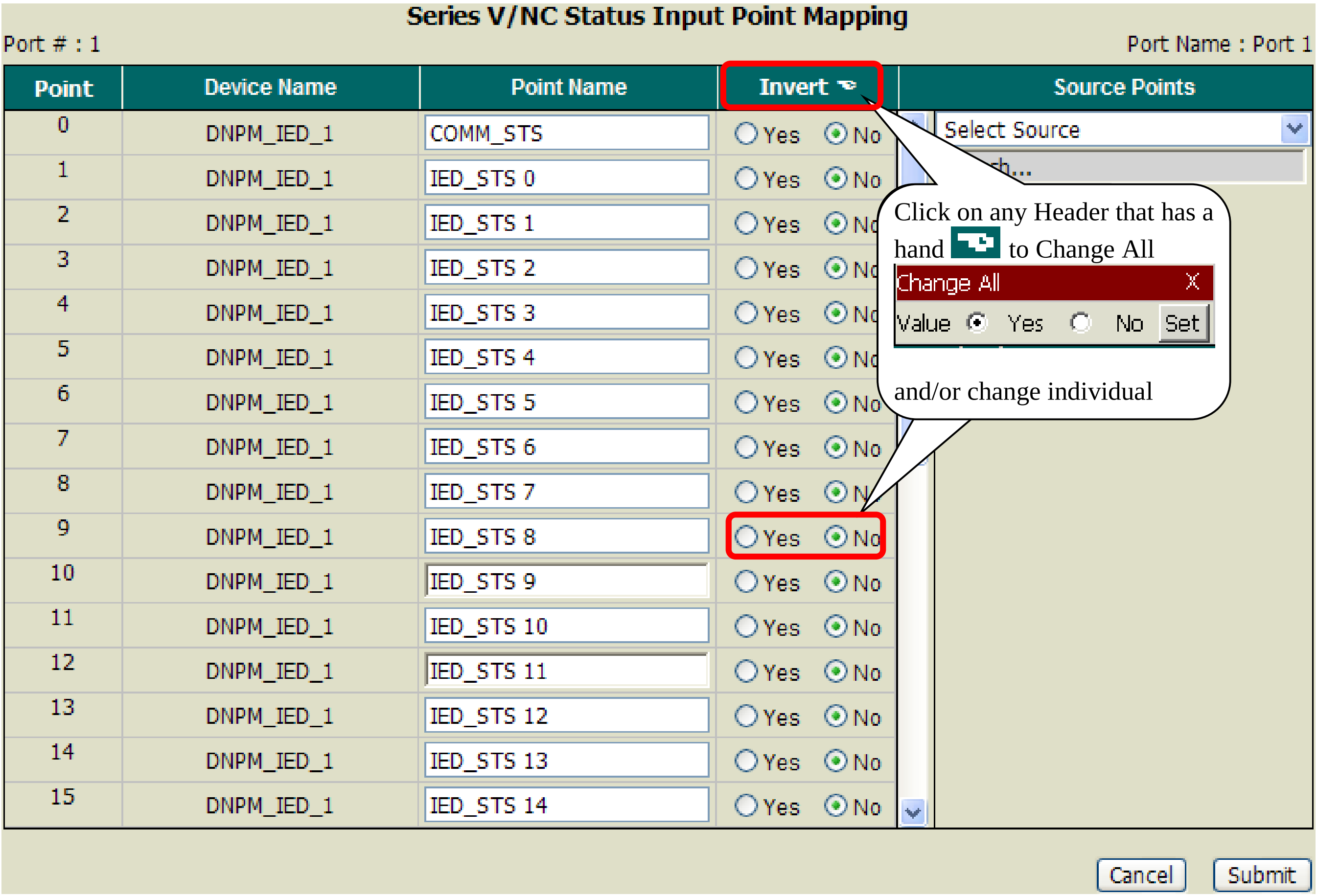
Cancel Submit

Notice that IED_ANALOG 6 is now missing, although Point numbers remain contiguous.

4.3.2 Map Status Inputs

From the SVNC Communication Mapping screen, click the MAP button for Status Inputs. A screen similar to Figure 4-9 will appear.

Figure 4-9 SVNC Status Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

4.3.2.1 Point Mapping Highlight

See the Analog example.

4.3.2.2 Point Database Search

See the Analog example.

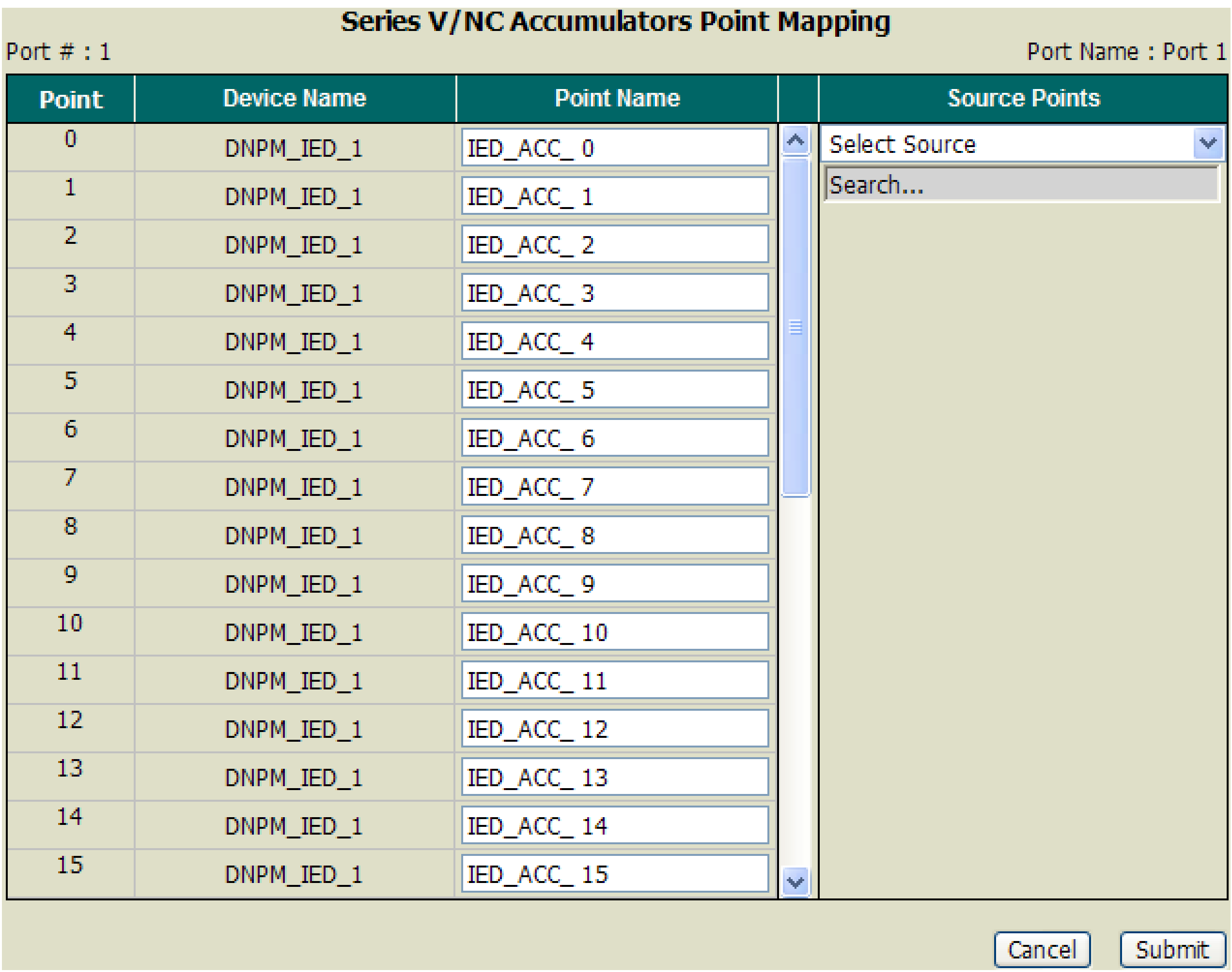
4.3.2.3 Insert & Delete Points

See the Analog example.

4.3.3 Map Accumulators

From the SVNC Communication Mapping screen, click the MAP button for Accumulators. A screen similar to Figure 4-10 will appear.

Figure 4-10 SVNC Accumulator Point Mapping



Point
The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

4.3.3.1 Point Mapping Highlight

See the Analog example.

4.3.3.2 Point Database Search

See the Analog example.

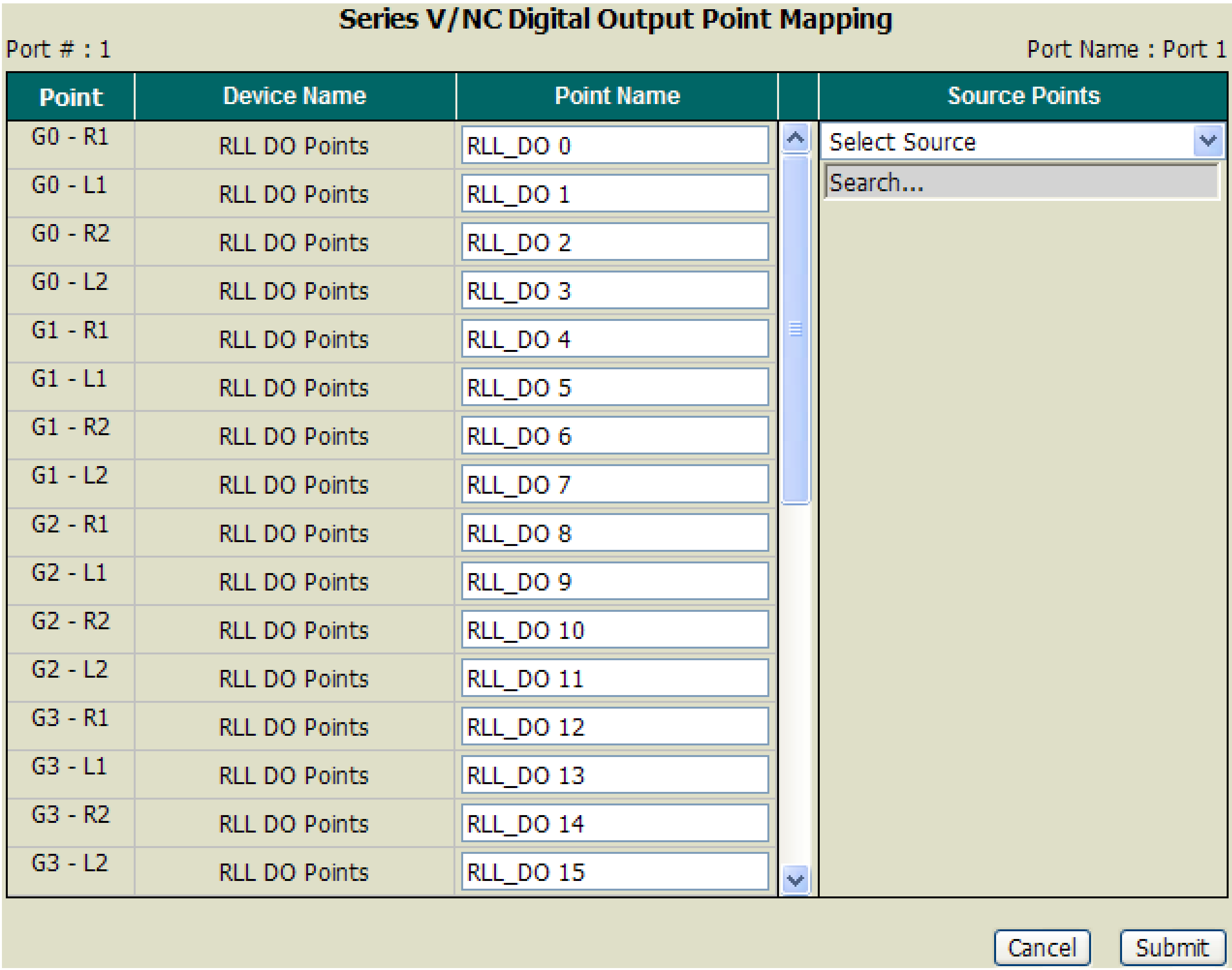
4.3.3.3 Insert & Delete Points

See the Analog example.

4.3.4 Map Digital Outputs

From the SVNC Communication Mapping screen, click the MAP button for Digital Outputs. A screen similar to Figure 4-11 will appear.

Figure 4-11 SVNC Digital Outputs Point Mapping



Point
The protocol organizes the point numbers into four groups (G0-G3) of two raise/lower points each, R1-R2, and L1-L2.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

4.3.4.1 Point Mapping Highlight

See the Analog example.

4.3.4.2 Point Database Search

See the Analog example.

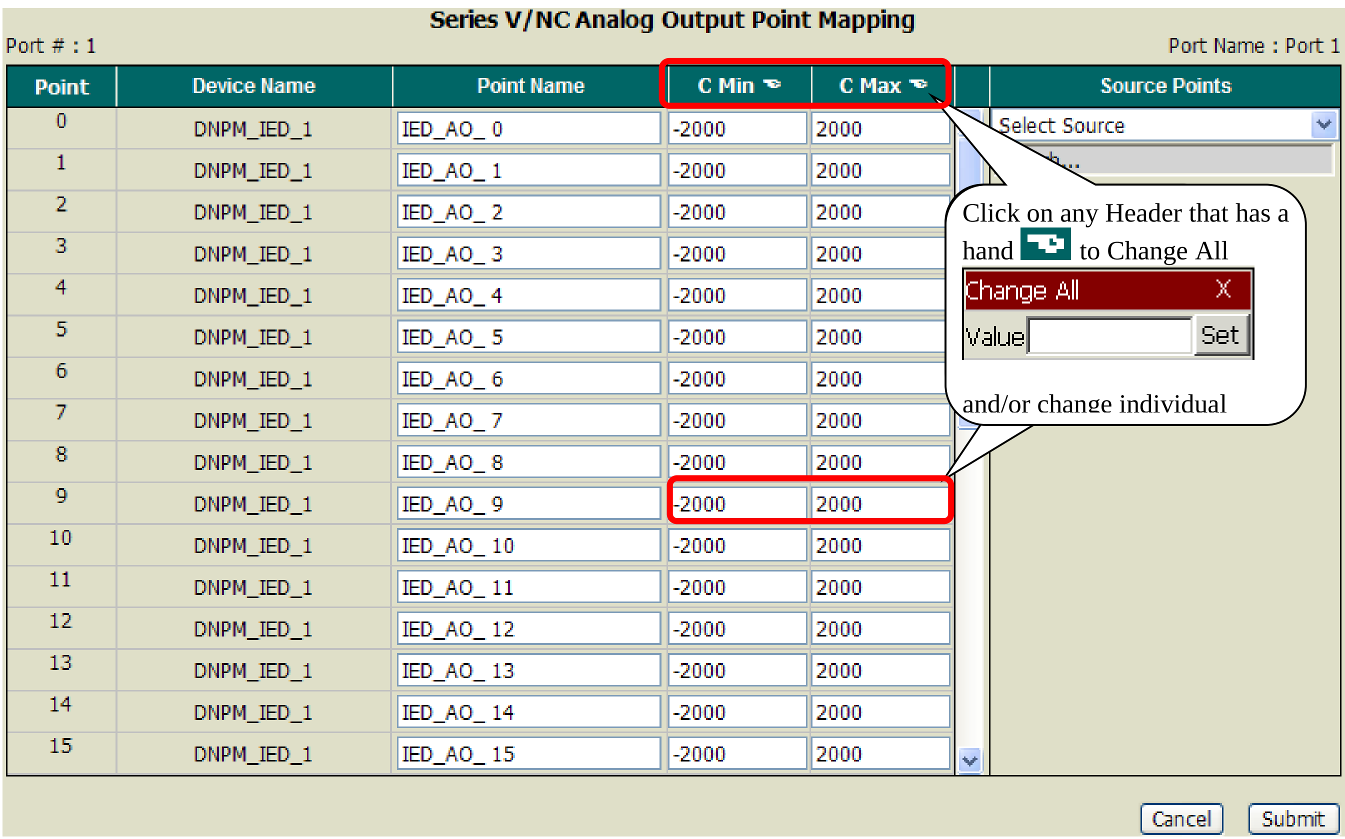
4.3.4.3 Insert & Delete Points

See the Analog example.

4.3.5 Map Analog Outputs

From the SVNC Communication Mapping screen, click the MAP button for Analog Outputs. A screen similar to Figure 4-12 will appear.

Figure 4-12 SVNC Analog Output Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

4.3.5.1 Point Mapping Highlight

See the Analog example.

4.3.5.2 Point Database Search

See the Analog example.

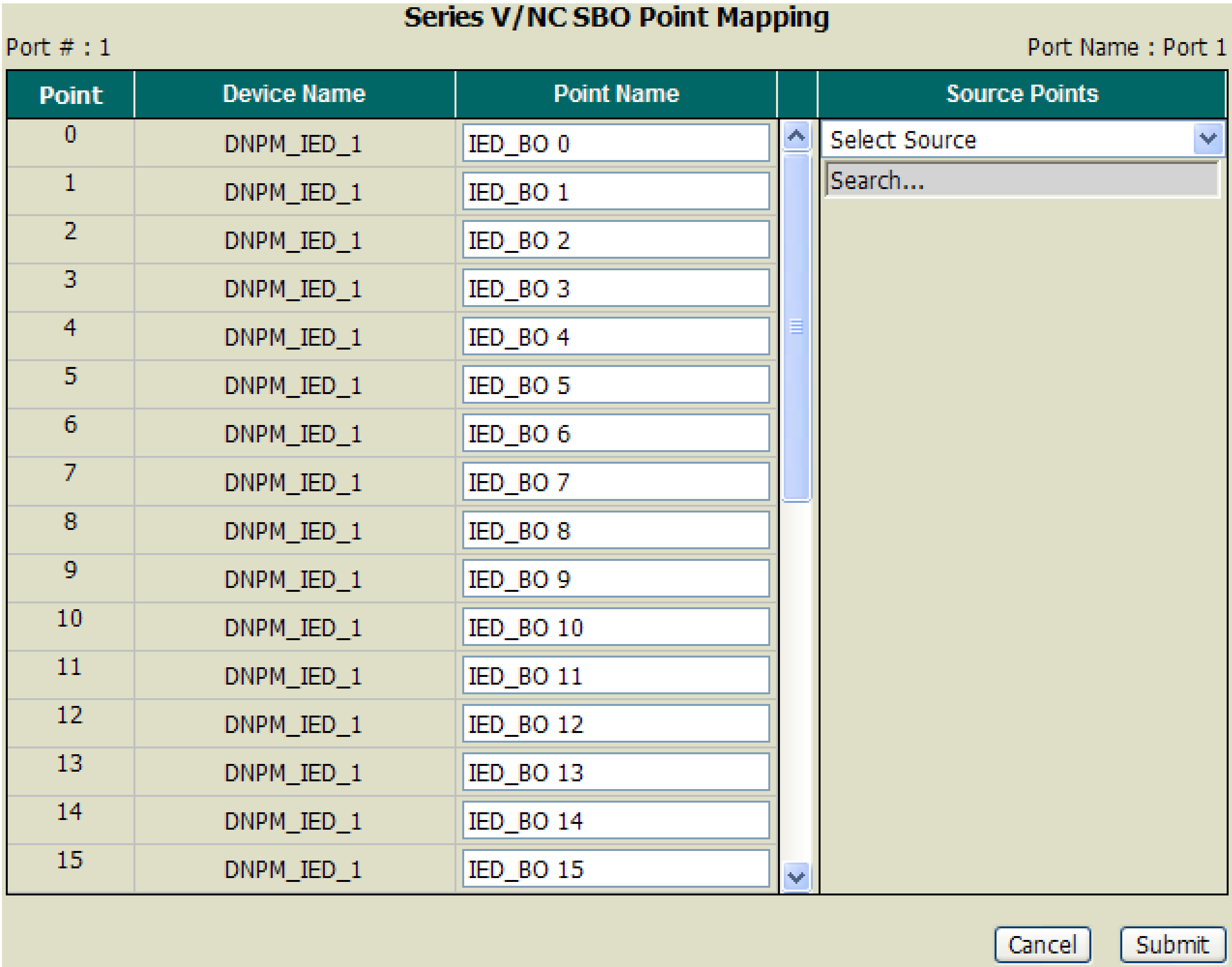
4.3.5.3 Insert & Delete Points

See the Analog example.

4.3.6 Map SBOs

From the SVNC Communication Mapping screen, click the MAP button for SBOs. A screen similar to Figure 4-13 will appear.

Figure 4-13 SVNC SBO Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

4.3.6.1 Point Mapping Highlight

See the Analog example.

4.3.6.2 Point Database Search

See the Analog example.

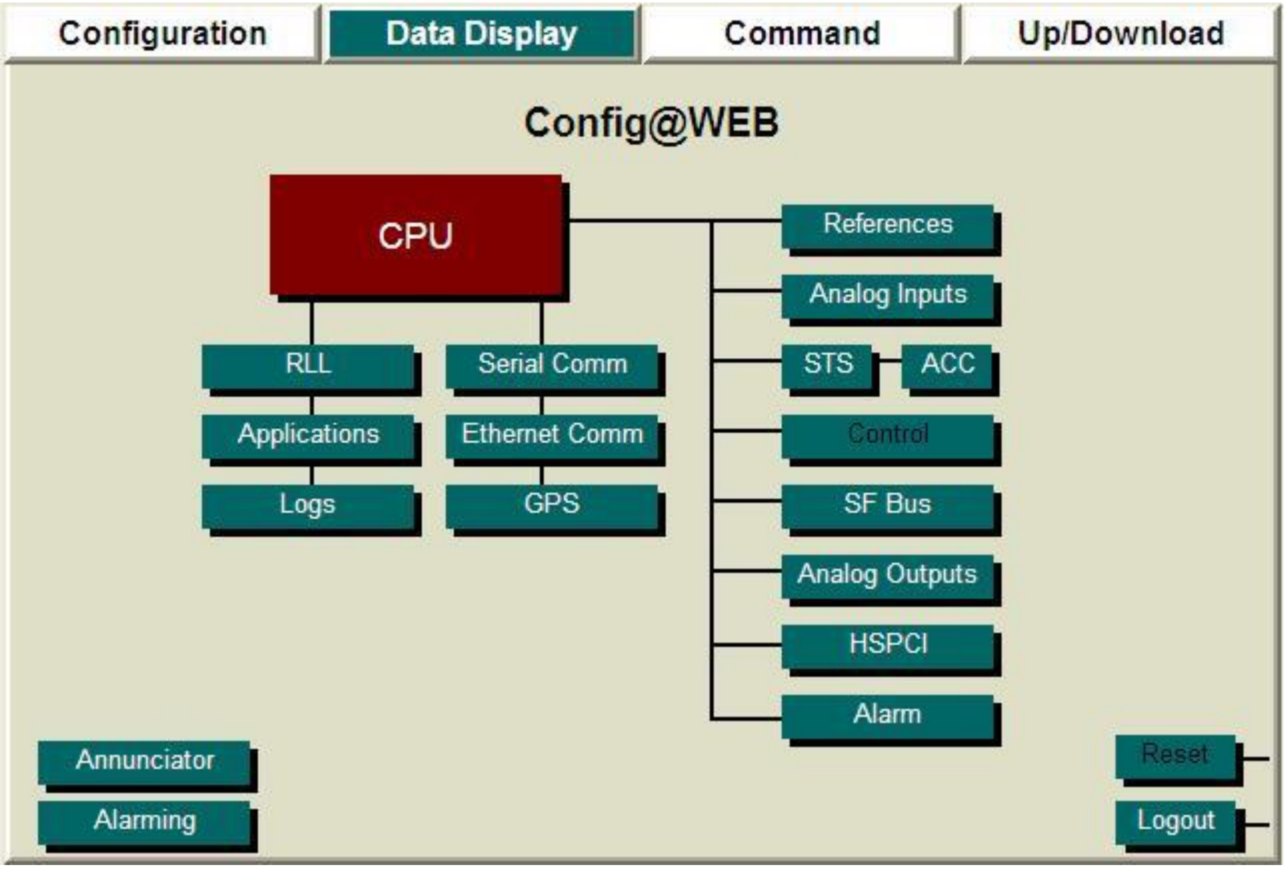
4.3.6.3 Insert & Delete Points

See the Analog example.

4.4 Data Display

Click the Data Display tab as shown in Figure 4-14.

Figure 4-14 Data Display Screen



Click Serial Comm to get the screen shown in Figure 4-15.

Figure 4-15 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	SVNC	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/de-asserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

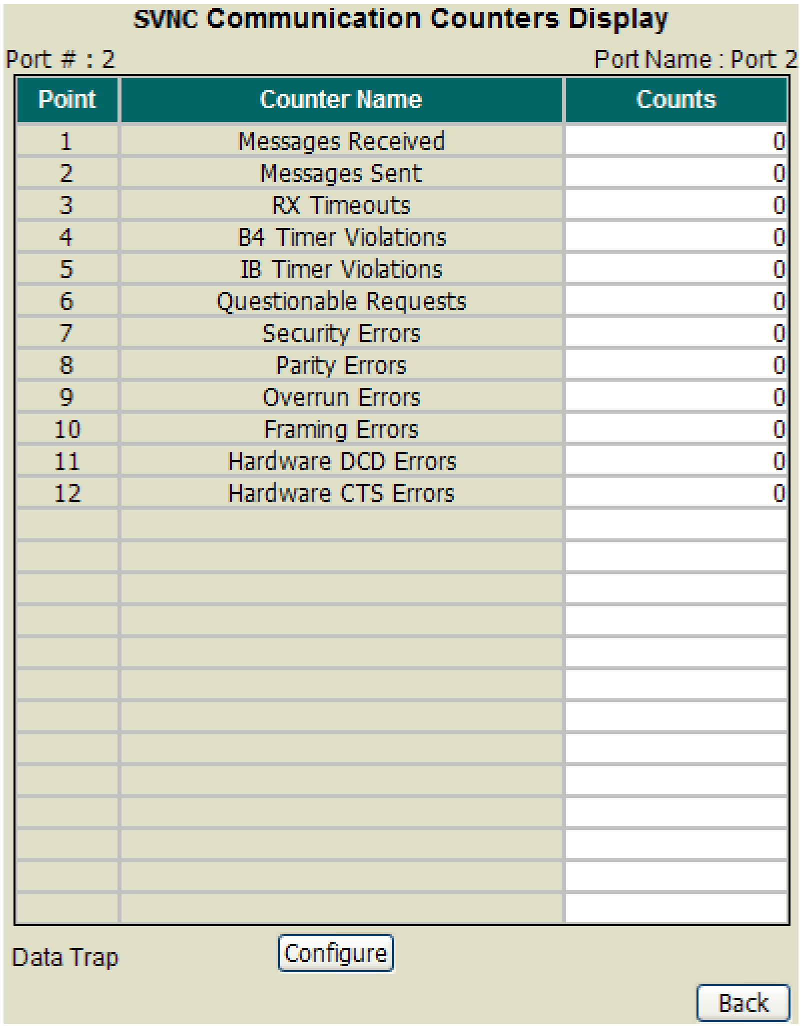
Display Port Data
Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

Navigation
Click the Back button to return to the previous screen.

4.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 4-16.

Figure 4-16 SVNC Communication Counters Display



Point Number
A logical point number for reference only.

Counter Name
The following counters are monitored:

Messages Received
This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts
This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

B4 Timer Violations
This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

IB Timer Violations
This indicates the cumulative number of Interbyte timer violations since the last reset or power-up. This count can be affected by the setting of the Interbyte Time in configuration.

Questionable Requests
This indicates the cumulative number of messages where the RTU is receiving a global message but the function is not a freeze, freeze reset or set clock.

Security Errors
This indicates the cumulative number of security errors since the last reset or power-up.

Parity Errors
This indicates the cumulative number of parity errors since the last reset or power-up.

Overrun Errors
This indicates the cumulative number of overrun errors since the last reset or power-up.

Framing Errors
This indicates the cumulative number of received bytes with framing errors since the last reset or power-up. This can be affected by parity and MTO.

Hardware DCD Errors
This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors
This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts
The counts for each type of Counter.

Data Trap
Please see the config@WEB Secure Software Users Guide.

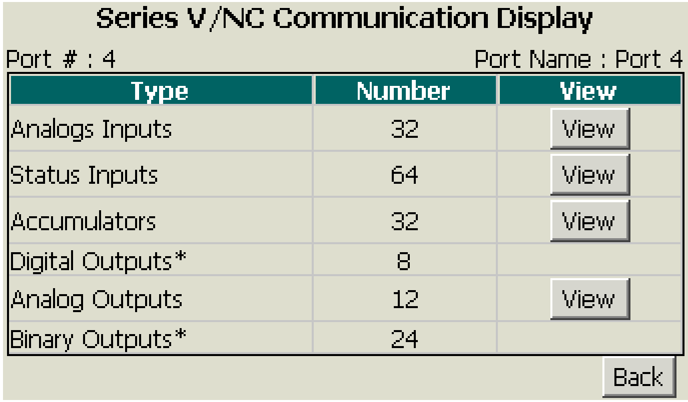
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

4.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 4-17.

Figure 4-17 SVNC Communication Display


Series V/NC Communication Display

Port # : 4 Port Name : Port 4

Type	Number	View
Analogs Inputs	32	View
Status Inputs	64	View
Accumulators	32	View
Digital Outputs*	8	
Analog Outputs	12	View
Binary Outputs*	24	

Back

Type
The type of point.

Number
The number of points of each type.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

4.4.2.1 Analog Inputs

From the SVNC Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 4-18

Figure 4-18 SVNC Analog Inputs Display

Series V/NC Analog Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To [ ] Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	Hardware Analogs	ANALOG 1		3.153	522
1	Hardware Analogs	ANALOG 2		3.156	525
2	Hardware Analogs	ANALOG 3		1.495	-804
3	Hardware Analogs	ANALOG 4		1.495	-804
4	Hardware Analogs	ANALOG 5		0.000	-2000
5	Hardware Analogs	ANALOG 6		0.000	-2000
6	Hardware Analogs	ANALOG 7		0.000	-2000
7	Hardware Analogs	ANALOG 8		0.000	-2000
8	DNPM_IED_1	IED_ANALOG 0	F	0.000	0
9	DNPM_IED_1	IED_ANALOG 1	F	0.000	0
10	DNPM_IED_1	IED_ANALOG 2	F	0.000	0
11	DNPM_IED_1	IED_ANALOG 3	F	0.000	0
12	DNPM_IED_1	IED_ANALOG 4	F	0.000	0
13	DNPM_IED_1	IED_ANALOG 5	F	0.000	0
14	DNPM_IED_1	IED_ANALOG 6	F	0.000	0
15	DNPM_IED_1	IED_ANALOG 7	F	0.000	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

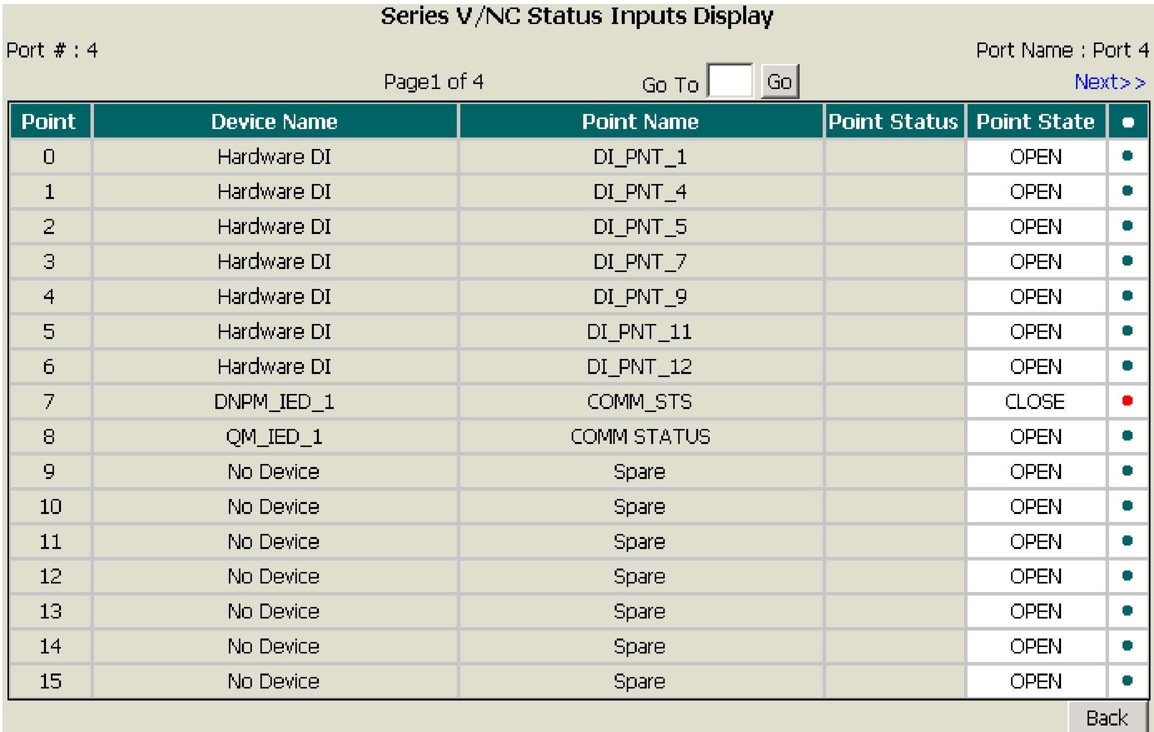
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

4.4.2.2 Status Inputs

From the SVNC Communication Display screen, click View for Status Inputs to get the screen shown in Figure 4-19.

Figure 4-19 SVNC Status Inputs Display



Series V/NC Status Inputs Display

Port # : 4 Port Name : Port 4

Page1 of 4 Go To Go Next>>

Point	Device Name	Point Name	Point Status	Point State	●
0	Hardware DI	DI_PNT_1		OPEN	●
1	Hardware DI	DI_PNT_4		OPEN	●
2	Hardware DI	DI_PNT_5		OPEN	●
3	Hardware DI	DI_PNT_7		OPEN	●
4	Hardware DI	DI_PNT_9		OPEN	●
5	Hardware DI	DI_PNT_11		OPEN	●
6	Hardware DI	DI_PNT_12		OPEN	●
7	DNPM_IED_1	COMM_STS		CLOSE	●
8	QM_IED_1	COMM STATUS		OPEN	●
9	No Device	Spare		OPEN	●
10	No Device	Spare		OPEN	●
11	No Device	Spare		OPEN	●
12	No Device	Spare		OPEN	●
13	No Device	Spare		OPEN	●
14	No Device	Spare		OPEN	●
15	No Device	Spare		OPEN	●

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

4.4.2.3 Accumulator Inputs

From the SVNC Communication Display screen, click View for Accumulators to get the screen shown in Figure 4-20.

Figure 4-20 SVNC Accumulators Display

Series V/NC Accumulators Display

Port # : 4 Port Name : Port 4

Page1 of 2 Go To [ ] Go Next>>

Point	Device Name	Point Name	Count
0	Hardware DI	DI_PNT_2	0
1	Hardware DI	DI_PNT_3	0
2	Hardware DI	DI_PNT_6	0
3	Hardware DI	DI_PNT_8	0
4	Hardware DI	DI_PNT_10	0
5	Hardware DI	DI_PNT_13	0
6	Hardware DI	DI_PNT_14	0
7	Hardware DI	DI_PNT_15	0
8	QM_IED_1	REGISTER_2	0
9	QM_IED_1	REGISTER_5	0
10	No Device	Spare	0
11	No Device	Spare	0
12	No Device	Spare	0
13	No Device	Spare	0
14	No Device	Spare	0
15	No Device	Spare	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Please note: These values will only update when the accumulators are frozen.

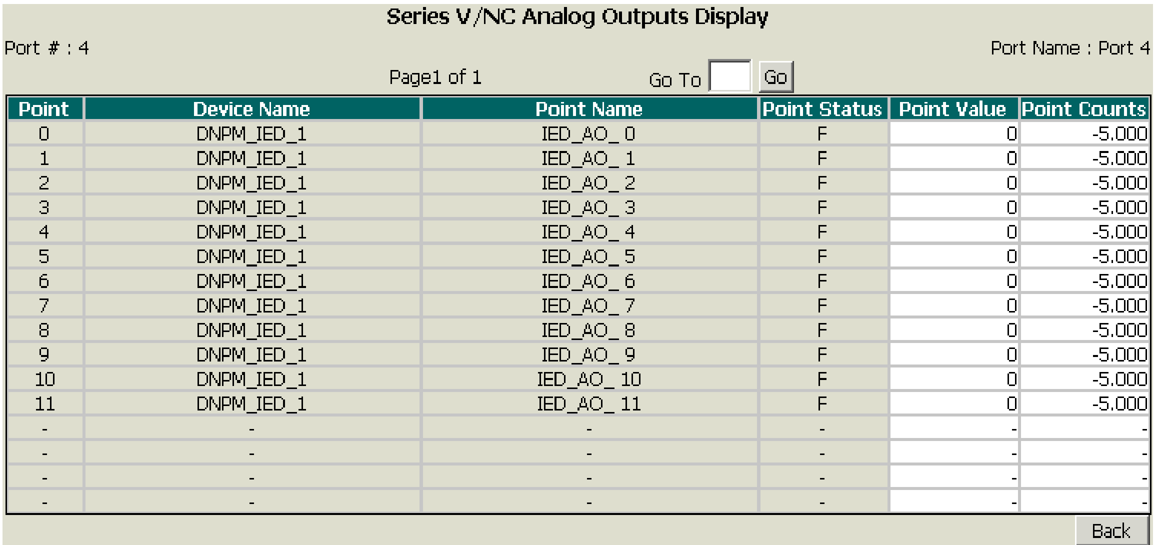
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

4.4.2.4 Analog Outputs

From the SVNC Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 4-21.

Figure 4-21 SVNC Analog Outputs Display



Series V/NC Analog Outputs Display

Port # : 4 Port Name : Port 4

Page1 of 1 Go To Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	DNPM_IED_1	IED_AO_ 0	F	0	-5.000
1	DNPM_IED_1	IED_AO_ 1	F	0	-5.000
2	DNPM_IED_1	IED_AO_ 2	F	0	-5.000
3	DNPM_IED_1	IED_AO_ 3	F	0	-5.000
4	DNPM_IED_1	IED_AO_ 4	F	0	-5.000
5	DNPM_IED_1	IED_AO_ 5	F	0	-5.000
6	DNPM_IED_1	IED_AO_ 6	F	0	-5.000
7	DNPM_IED_1	IED_AO_ 7	F	0	-5.000
8	DNPM_IED_1	IED_AO_ 8	F	0	-5.000
9	DNPM_IED_1	IED_AO_ 9	F	0	-5.000
10	DNPM_IED_1	IED_AO_ 10	F	0	-5.000
11	DNPM_IED_1	IED_AO_ 11	F	0	-5.000
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value. This value is calculated based on the EGU min and EGU max settings for the target analog output point along with the current binary count sent from the master station.

Point Counts
The binary counts being sent from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

4.4.2.5 Binary Outputs

There is no display for Binary Outputs.

5 Telegyr 8979

5.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

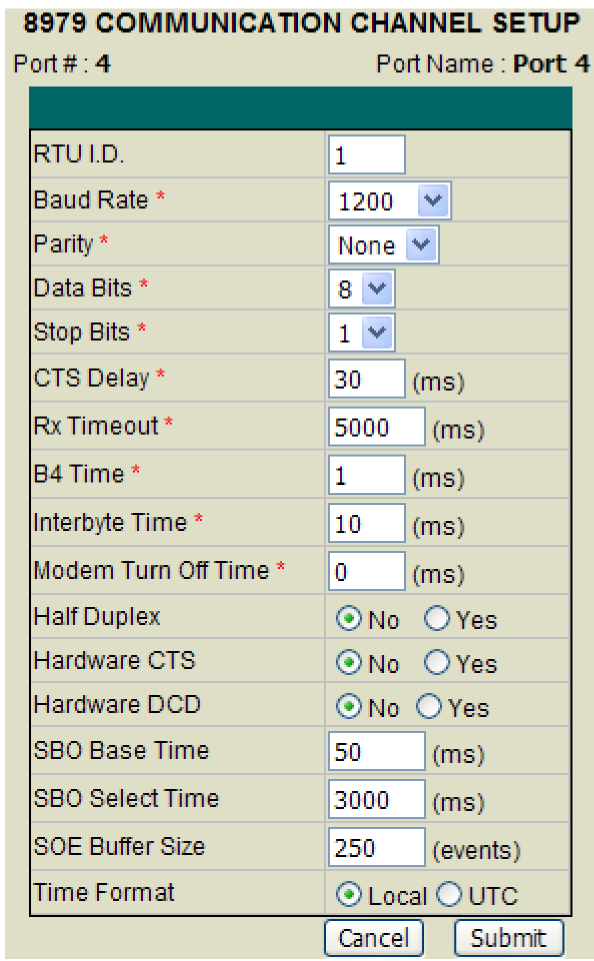
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

5.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 5-1.

Figure 5-1 8979 Communication Channel Configuration



Default: **1**.
Range: **1 to 255**.

Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D. (1 – 255)
Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 1.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 1200.

Parity (None, Odd, Even)
Select the byte parity for the associated channel. The default setting is None.

Data Bits (5,6,7,8)
Select the number of data bits per byte for the associated channel. The default is 8.

Stop Bits (0,1,2)
Select the number of stop bits per byte for the associated channel. The default is 1.

CTS Delay (0 – 250ms)
Enter the Clear-To-Send delay in milliseconds for the associated channel. This is the time delay the channel will wait to start transmitting following Request-To-Send signal being asserted. Default setting is 30.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 1.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 10.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Half Duplex (No, Yes)
Enter Yes for half duplex or No for full duplex. This field enables the RTU to properly condition the RS-232 control lines. The CTS delay is used for carrier conditioning. In full duplex operation, the CTS signal is used for collision avoidance. In Half duplex operation, the DCD signal is used for collision avoidance and to enable the receiver. The default setting is No.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

SBO Base Time (5 – 100ms)
Enter the length of time in milliseconds that will be multiplied by the protocol value to generate the control execute length. Default setting is 50.

SBO Select Time (5 – 30,000ms)
Enter the Select before Operate control select time in milliseconds. If a valid execute command is not received by the RTU before the SBO Select Time expires, the select will be reset. Default setting is 3000.

SOE Buffer Size (0 – 1000)
Enter the SOE event buffer size. Default setting is 250.

Time Format (Local, UTC)

> **Note:** The coordination between UTC and local time is a feature that may be ignored. If you want your RTU to act as it always has in regards to time syncs, set Time Format to Local Time. See Time Configuration Settings in the Configuration chapter of the hardware manual for time settings under the CPU block.

If you want time synchronization from the master, you must know whether the master is sending Local time or UTC time, then set this radio button to match the master's format.

Navigation

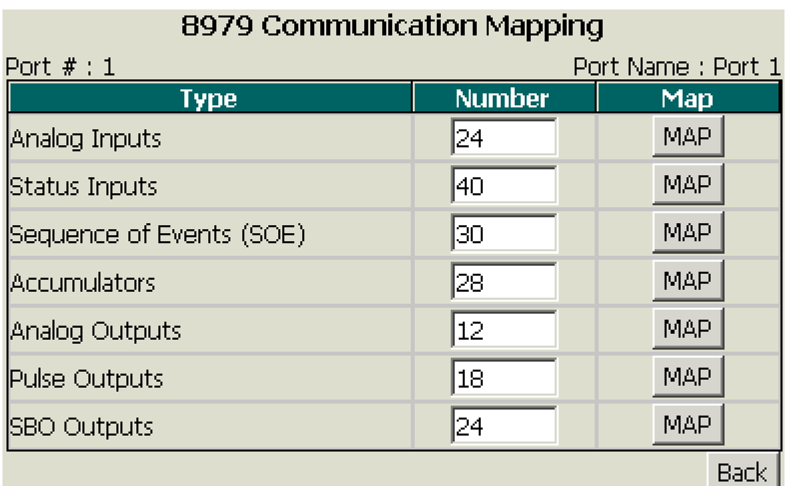
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

> **Please note:** No configuration changes take effect until the RTU is reset.

5.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 5-2 will appear. Enter the number of points for each type of point, then click MAP before moving on to the next point type.

Figure 5-2 8979 Communication Mapping



8979 Communication Mapping

Port # : 1 Port Name : Port 1

Type	Number	Map
Analog Inputs	24	MAP
Status Inputs	40	MAP
Sequence of Events (SOE)	30	MAP
Accumulators	28	MAP
Analog Outputs	12	MAP
Pulse Outputs	18	MAP
SBO Outputs	24	MAP

Back

Type
The different types of I/O points supported by this protocol.

Number
Enter the quantity of points for the given type.

Note: You must Map the points entered before moving to the next point type.

Map

Click the MAP button to map the points.

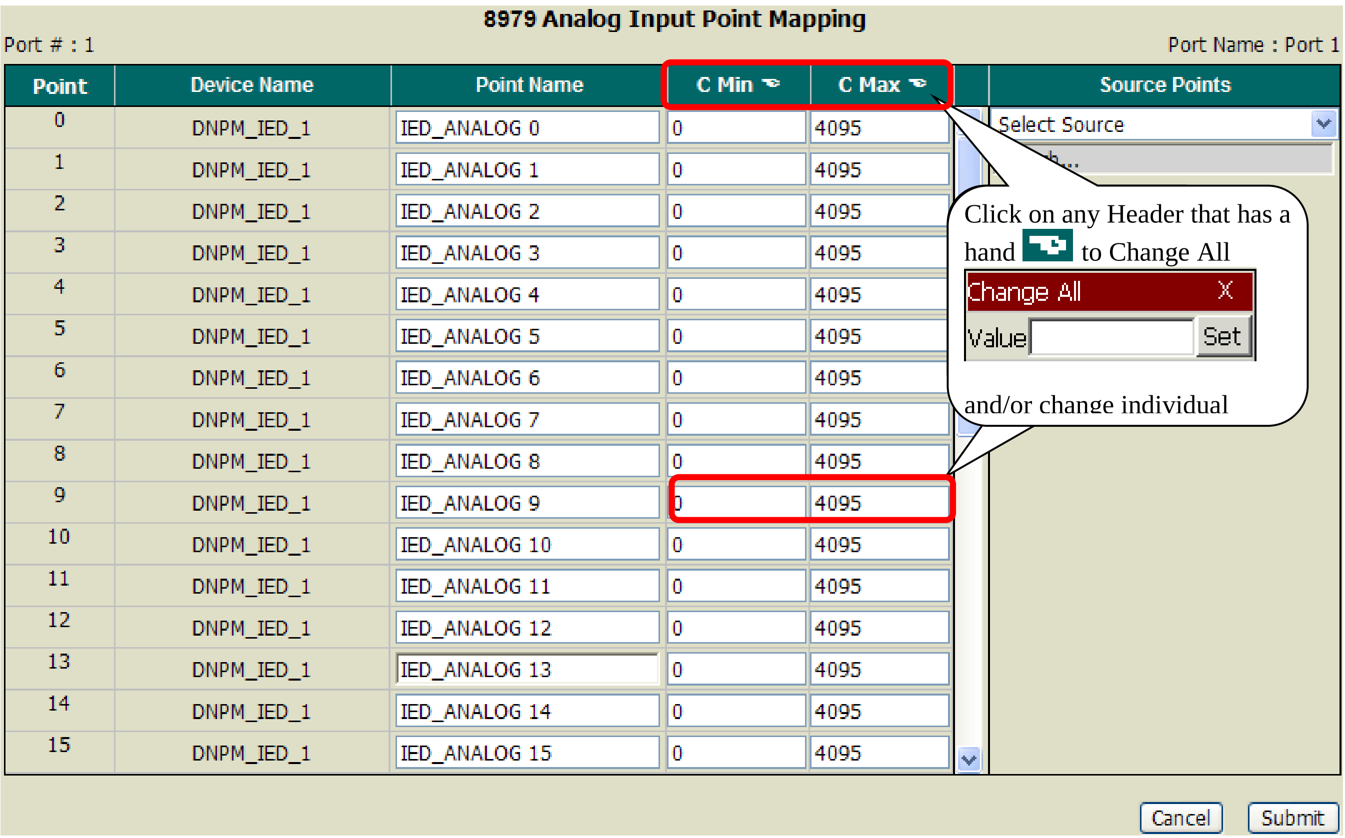
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the Port Configuration screen.

5.3.1 Map Analog Inputs

From the 8979 Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 5-3 will appear.

Figure 5-3 8979 Analog Input Point Mapping



Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	0	4095
1	DNPM_IED_1	IED_ANALOG 1	0	4095
2	DNPM_IED_1	IED_ANALOG 2	0	4095
3	DNPM_IED_1	IED_ANALOG 3	0	4095
4	DNPM_IED_1	IED_ANALOG 4	0	4095
5	DNPM_IED_1	IED_ANALOG 5	0	4095
6	DNPM_IED_1	IED_ANALOG 6	0	4095
7	DNPM_IED_1	IED_ANALOG 7	0	4095
8	DNPM_IED_1	IED_ANALOG 8	0	4095
9	DNPM_IED_1	IED_ANALOG 9	0	4095
10	DNPM_IED_1	IED_ANALOG 10	0	4095
11	DNPM_IED_1	IED_ANALOG 11	0	4095
12	DNPM_IED_1	IED_ANALOG 12	0	4095
13	DNPM_IED_1	IED_ANALOG 13	0	4095
14	DNPM_IED_1	IED_ANALOG 14	0	4095
15	DNPM_IED_1	IED_ANALOG 15	0	4095

Point

The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name

The name of the mapped point.

C Min

Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is 0.

C Max

Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 4095.

Source Points

Select the device name from which to map points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

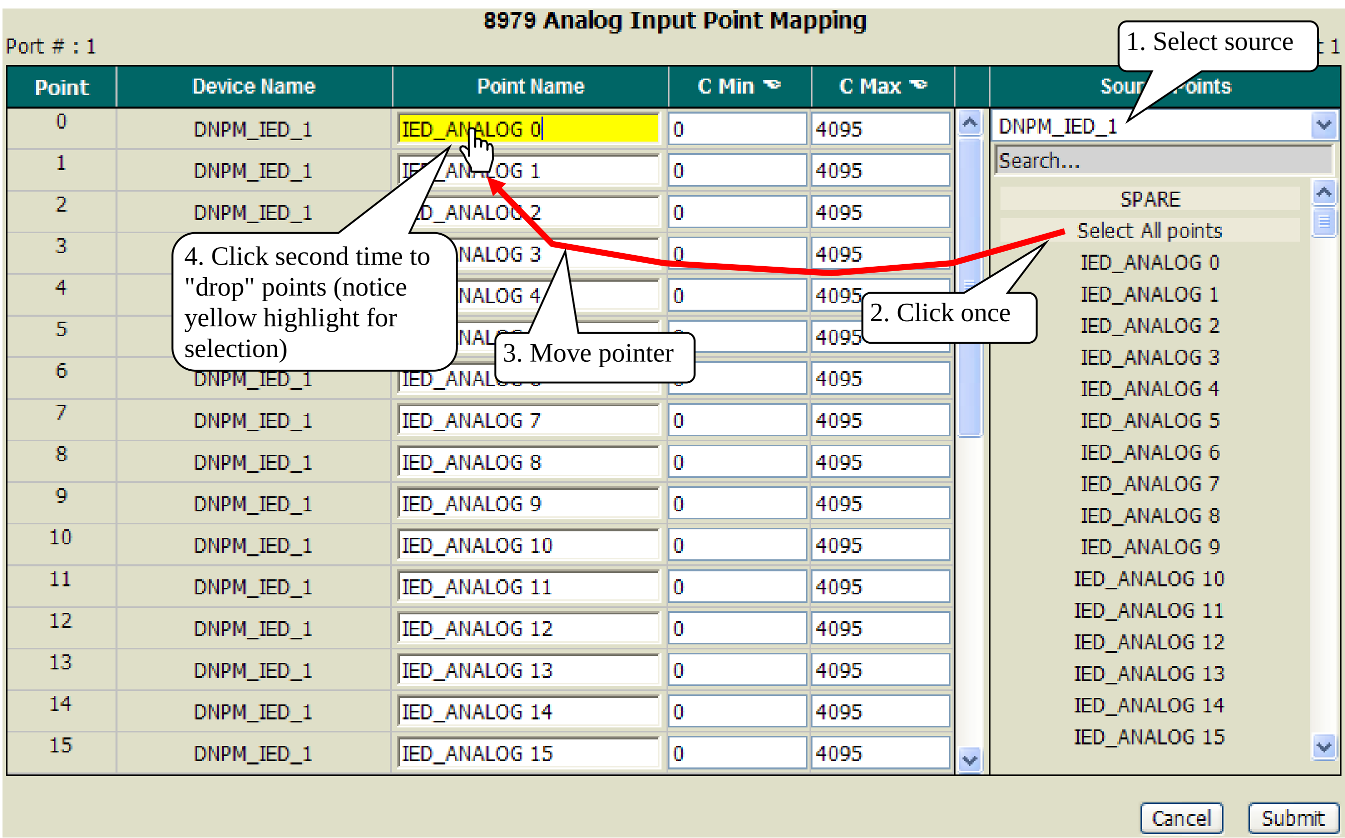
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

5.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

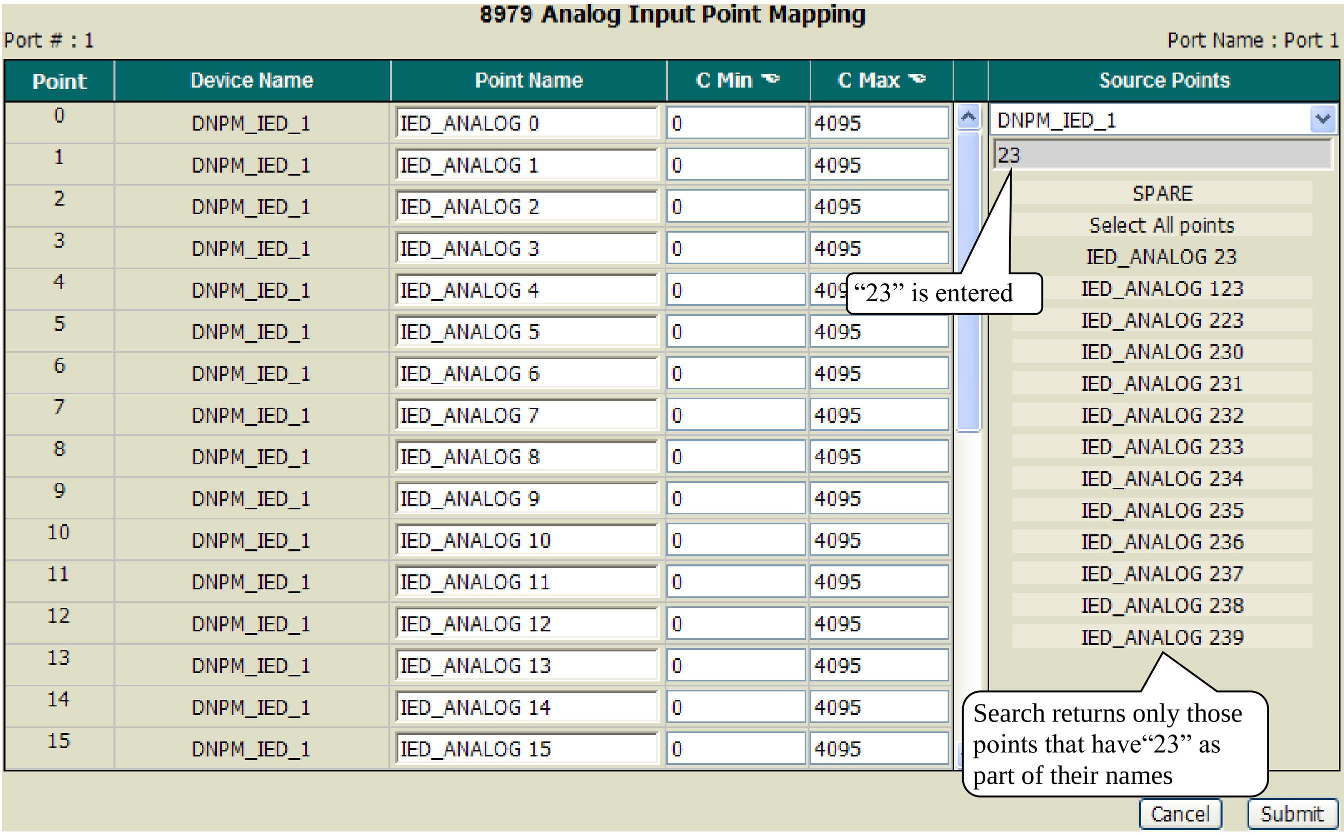
Figure 5-4 Point Mapping Highlight



5.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

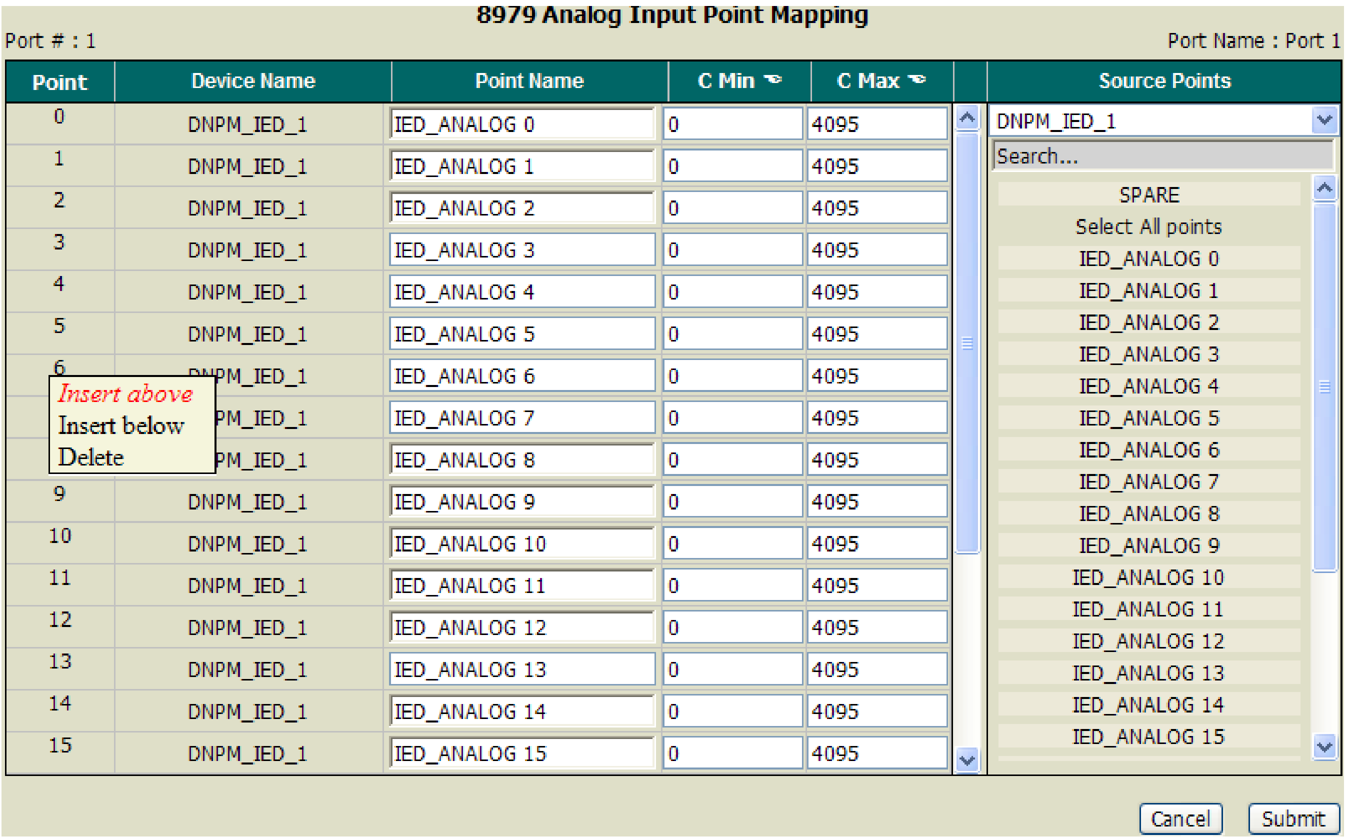
Figure 5-5 Point Database Search



5.3.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #6) and right click the mouse. The message box shown below appears. Select Insert above (or below) and left click.

Figure 5-6 Insert a Point



The results of Insert is shown in the next Figure. Notice that the old Point #6, IED_ANALOG 6, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 5-7 Results of Insert Above

8979 Analog Input Point Mapping

Port # : 1

Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	0	4095
1	DNPM_IED_1	IED_ANALOG 1	0	4095
2	DNPM_IED_1	IED_ANALOG 2	0	4095
3	DNPM_IED_1	IED_ANALOG 3	0	4095
4	DNPM_IED_1	IED_ANALOG 4	0	4095
5	DNPM_IED_1	IED_ANALOG 5	0	4095
6		SPARE	0	4095
7	DNPM_IED_1	IED_ANALOG 6	0	4095
8	DNPM_IED_1	IED_ANALOG 7	0	4095
9	DNPM_IED_1	IED_ANALOG 8	0	4095
10	DNPM_IED_1	IED_ANALOG 9	0	4095
11	DNPM_IED_1	IED_ANALOG 10	0	4095
12	DNPM_IED_1	IED_ANALOG 11	0	4095
13	DNPM_IED_1	IED_ANALOG 12	0	4095
14	DNPM_IED_1	IED_ANALOG 13	0	4095
15	DNPM_IED_1	IED_ANALOG 14	0	4095

Source Points

DNPM_IED_1

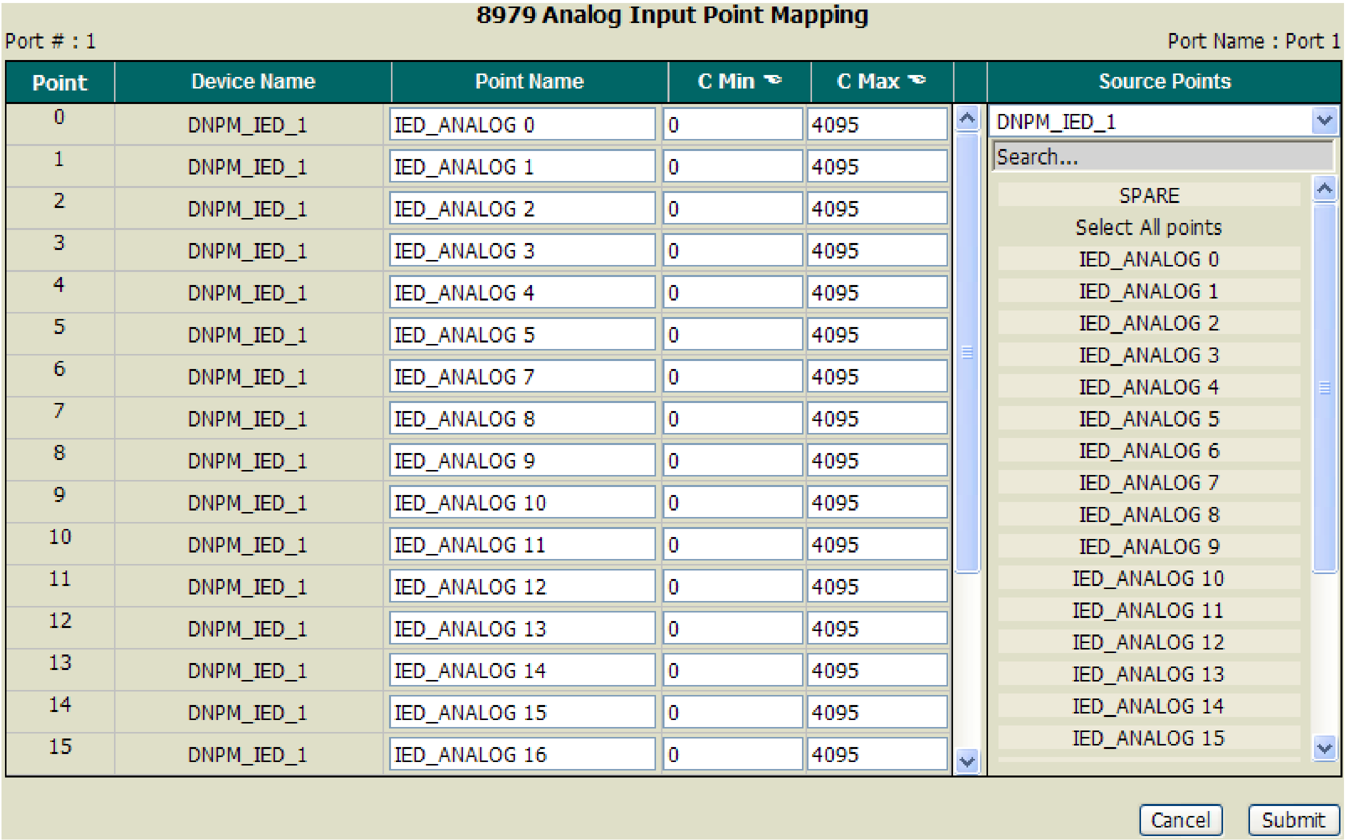
Search...

SPARE
Select All points
IED_ANALOG 0
IED_ANALOG 1
IED_ANALOG 2
IED_ANALOG 3
IED_ANALOG 4
IED_ANALOG 5
IED_ANALOG 6
IED_ANALOG 7
IED_ANALOG 8
IED_ANALOG 9
IED_ANALOG 10
IED_ANALOG 11
IED_ANALOG 12
IED_ANALOG 13
IED_ANALOG 14
IED_ANALOG 15

Cancel Submit

The Spare point can also be deleted. The following example shows the results of deleting Point#6, IED_ANALOG 6.

Figure 5-8 Results of Deleting a Point

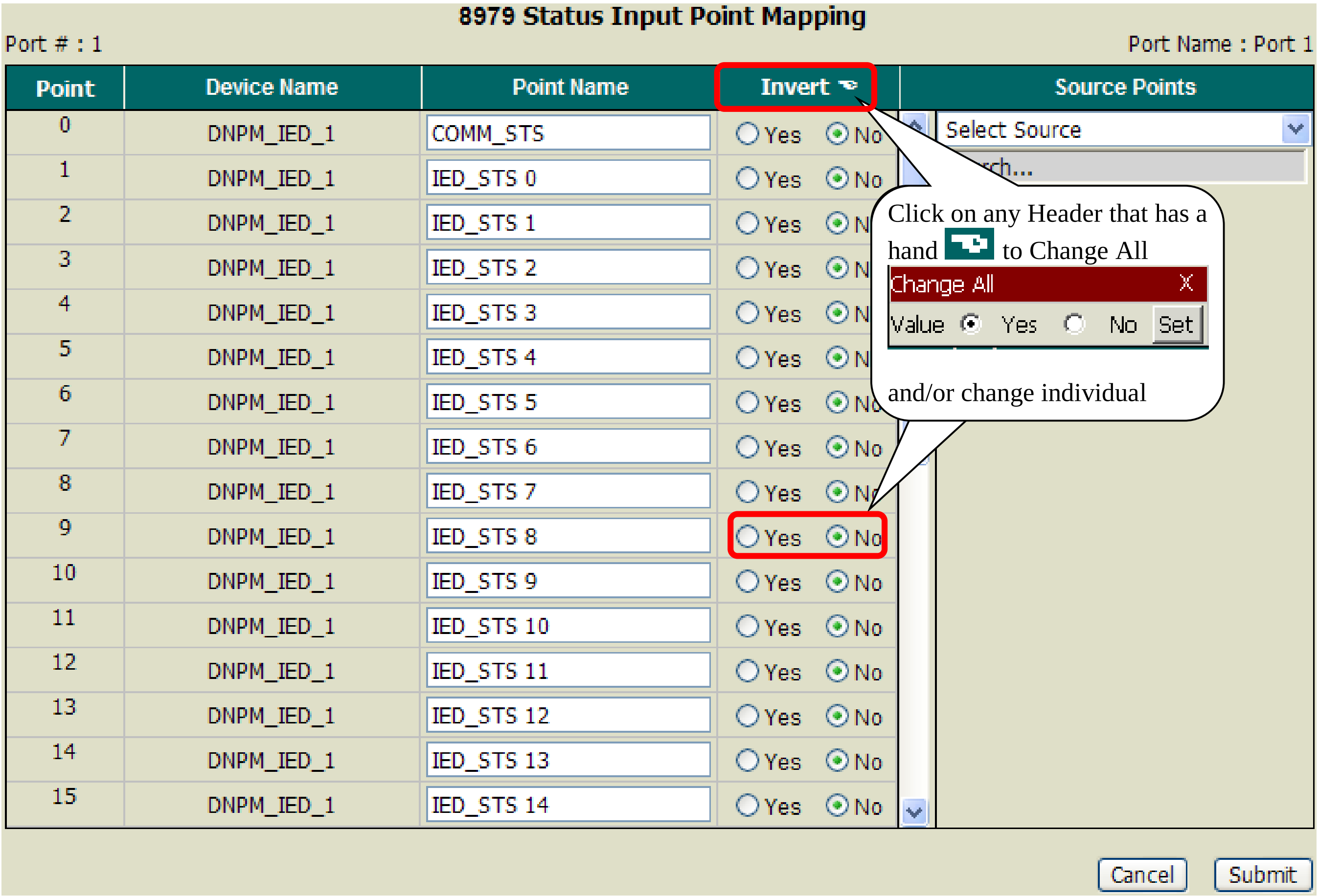


Notice that IED_ANALOG 6 is now missing, although Point numbers remain contiguous.

5.3.2 Map Status Inputs

From the 8979 Communication Mapping screen, click the MAP button for Status Inputs. A screen similar to the one below will appear.

Figure 5-9 8979 Status Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click the Yes radio button to invert the point. The default is No.

Source Points
Select the device name from which to map points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

5.3.2.1 Point Mapping Highlight

See the Analog example.

5.3.2.2 Point Database Search

See the Analog example.

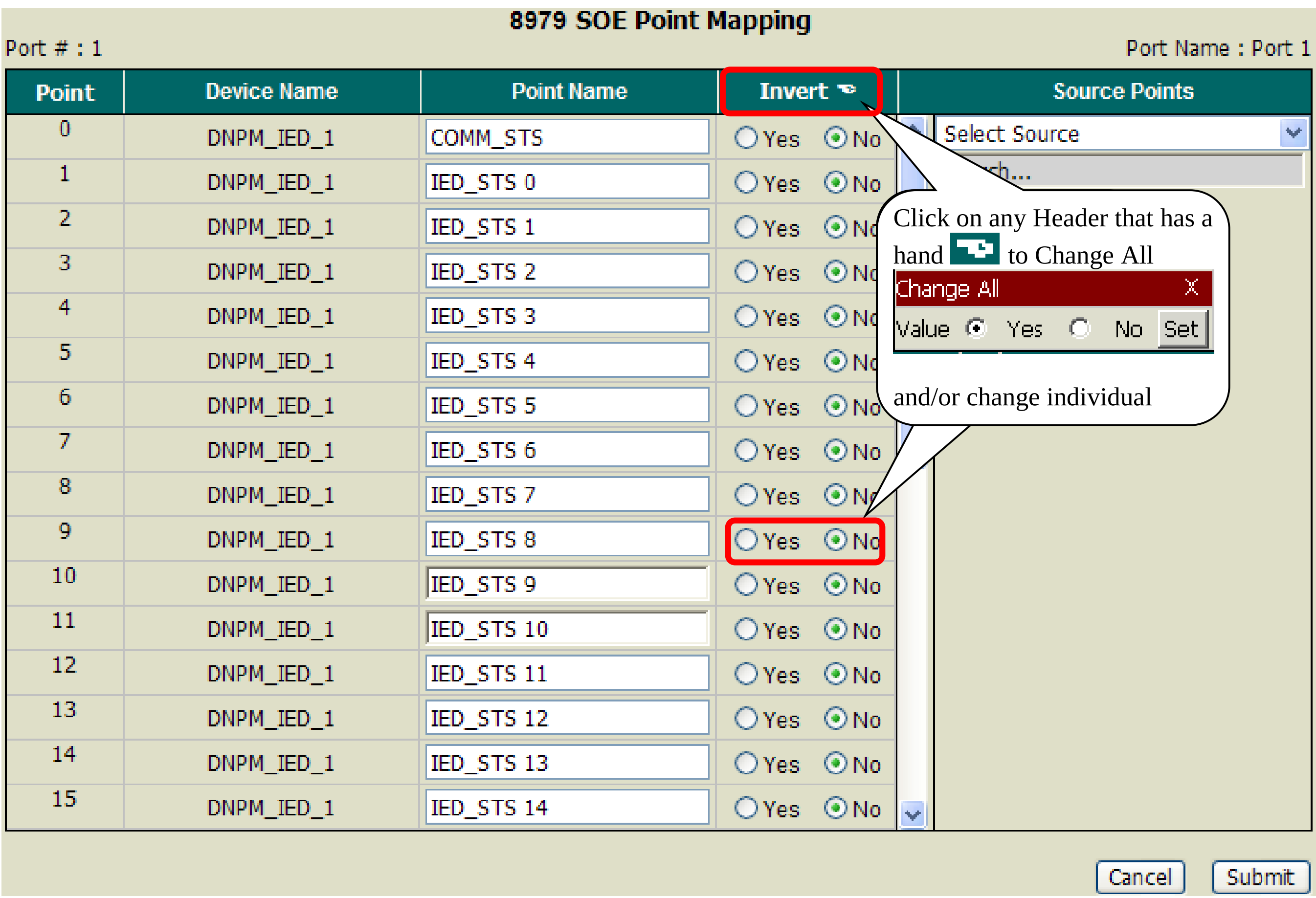
5.3.2.3 Insert & Delete Points

See the Analog example.

5.3.3 Map SOE Inputs

From the 8979 Communication Mapping screen, click the MAP button for SOE Inputs. A screen similar to the one below will appear.

Figure 5-10 8979 SOE Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name

The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

5.3.3.1 Point Mapping Highlight

See the Analog example.

5.3.3.2 Point Database Search

See the Analog example.

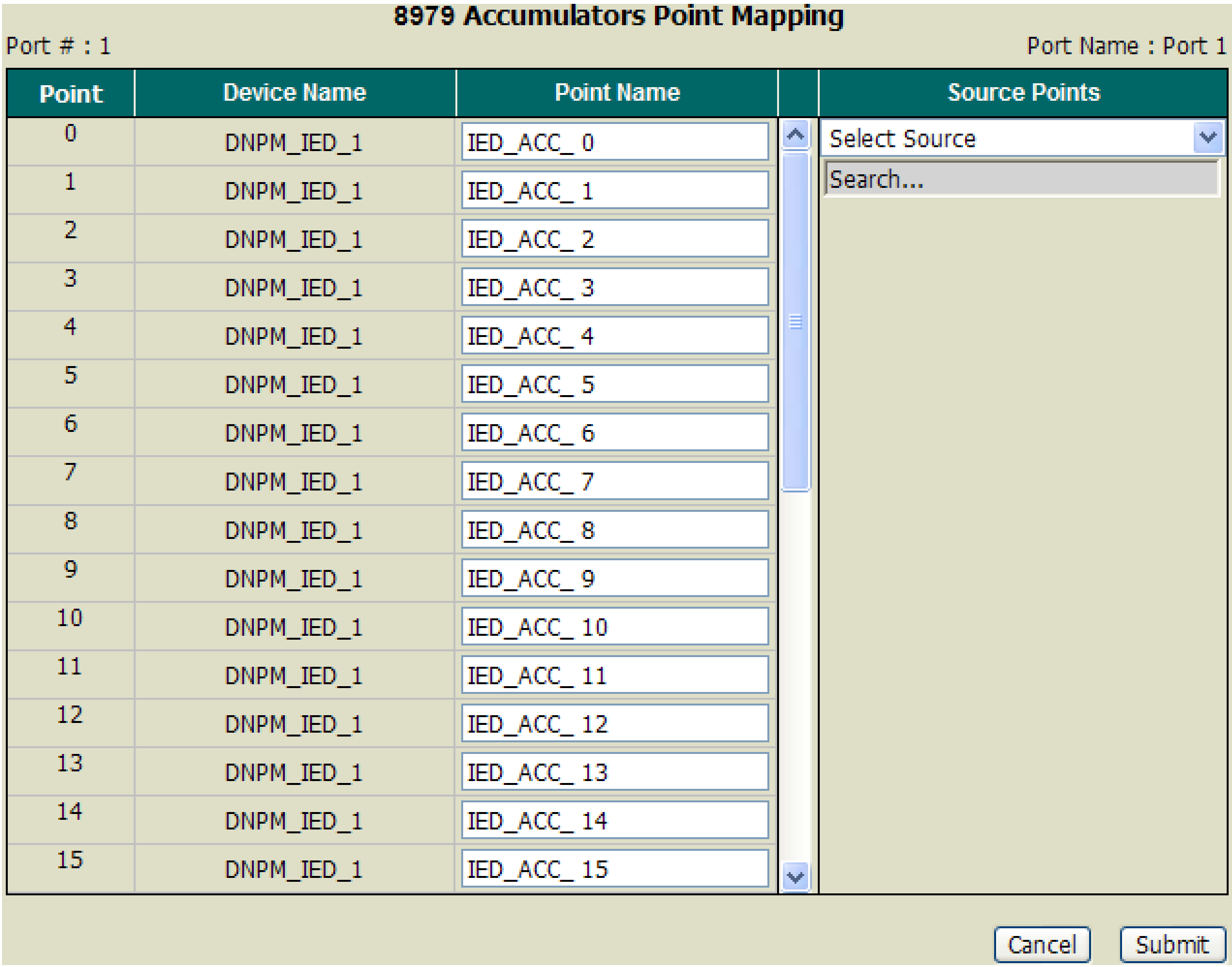
5.3.3.3 Insert & Delete Points

See the Analog example.

5.3.4 Map Accumulators

From the 8979 Communication Mapping screen, click the MAP button for Accumulators. A screen similar to the one below will appear.

Figure 5-11 8979 Accumulator Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

5.3.4.1 Point Mapping Highlight

See the Analog example.

5.3.4.2 Point Database Search

See the Analog example.

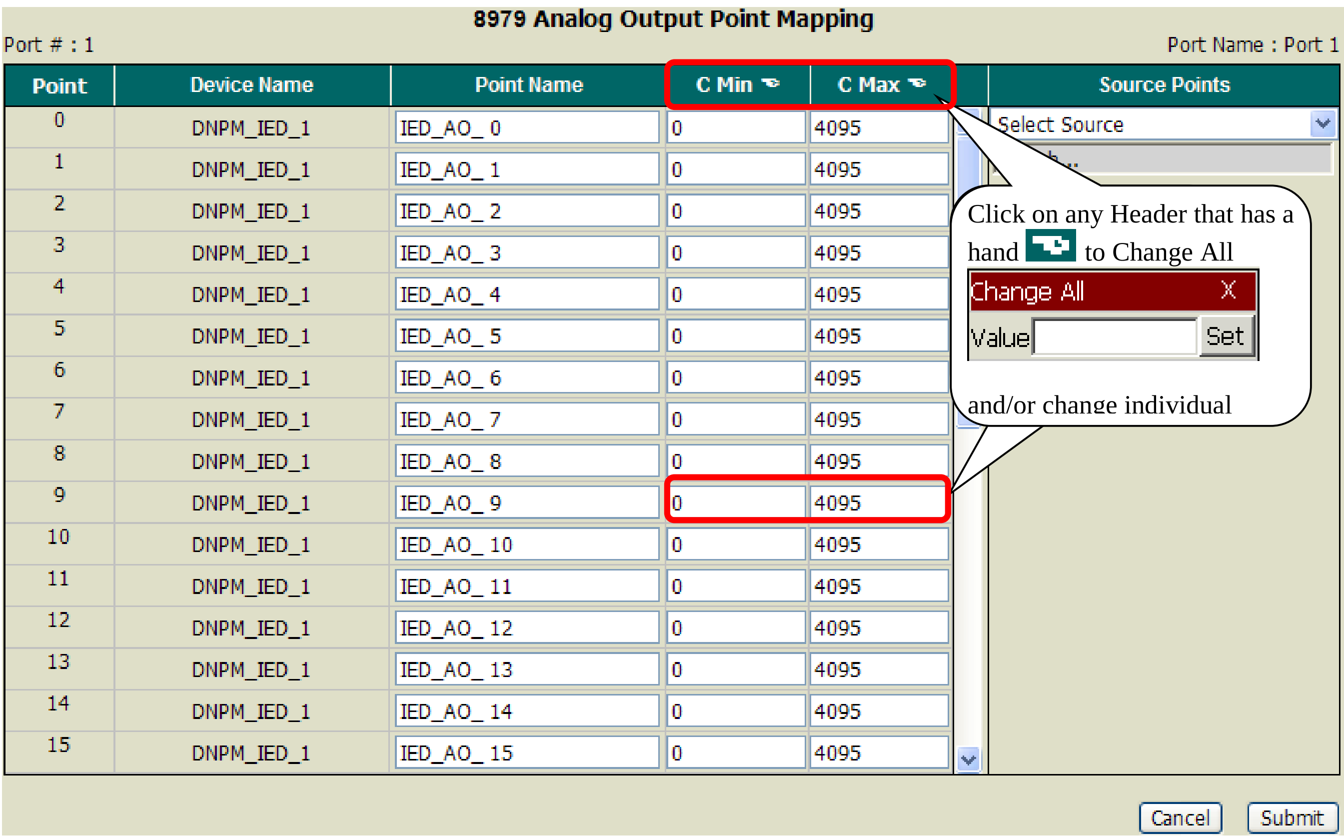
5.3.4.3 Insert & Delete Points

See the Analog example.

5.3.5 Map Analog Outputs

From the 8979 Communication Mapping screen, click the MAP button for Analog Outputs. A screen similar to the one below will appear.

Figure 5-12 8979 Analog Output Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is 0.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 4095.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

5.3.5.1 Point Mapping Highlight

See the Analog example.

5.3.5.2 Point Database Search

See the Analog example.

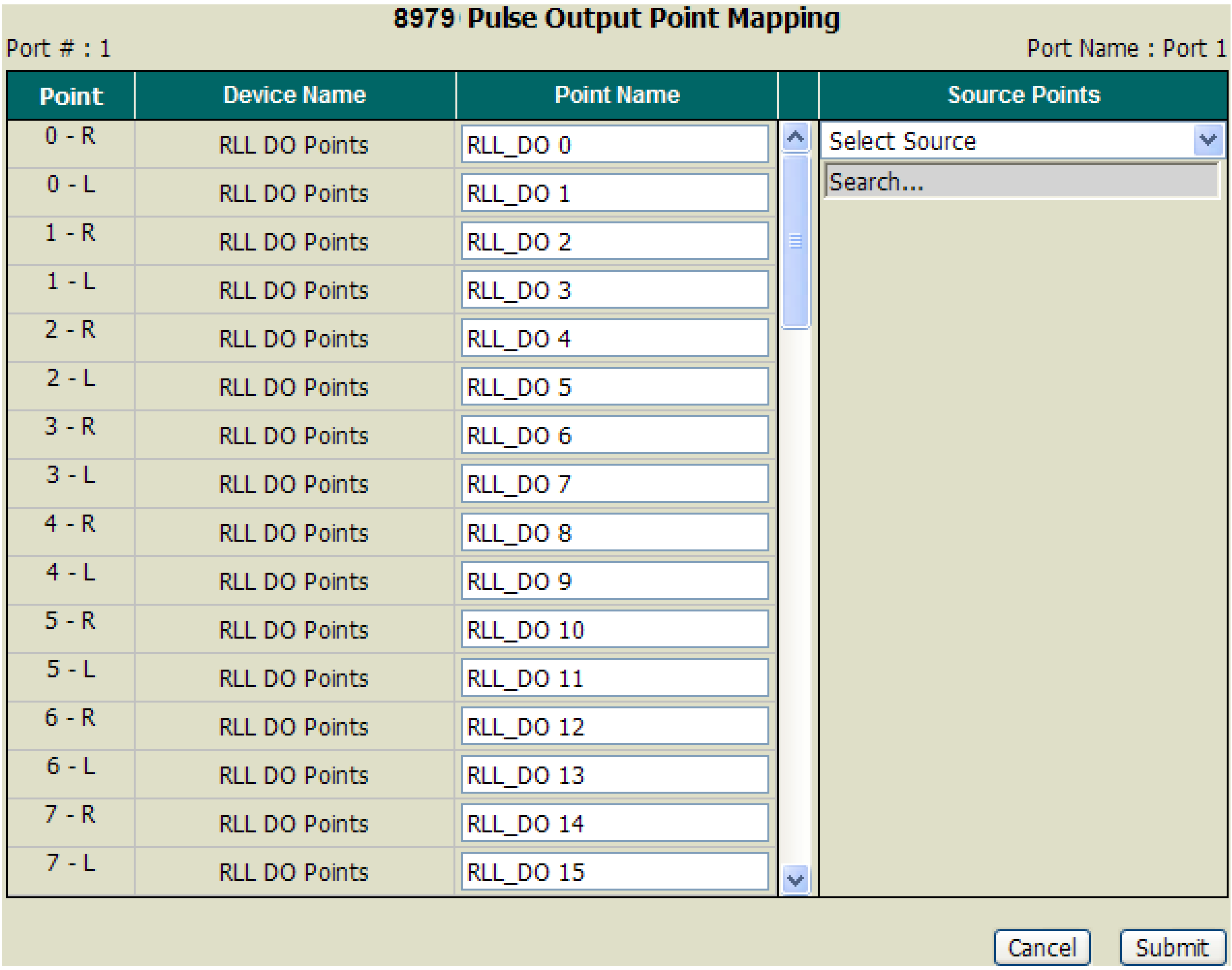
5.3.5.3 Insert & Delete Points

See the Analog example.

5.3.6 Map Pulse Outputs

From the 8979 Communication Mapping screen, click the MAP button for Pulse Outputs. A screen similar to the one below will appear.

Figure 5-13 8979 Pulse Outputs Point Mapping



8979 Pulse Output Point Mapping

Port # : 1

Port Name : Port 1

Point	Device Name	Point Name	Source Points
0 - R	RLL DO Points	RLL_DO 0	Select Source
0 - L	RLL DO Points	RLL_DO 1	Search...
1 - R	RLL DO Points	RLL_DO 2	
1 - L	RLL DO Points	RLL_DO 3	
2 - R	RLL DO Points	RLL_DO 4	
2 - L	RLL DO Points	RLL_DO 5	
3 - R	RLL DO Points	RLL_DO 6	
3 - L	RLL DO Points	RLL_DO 7	
4 - R	RLL DO Points	RLL_DO 8	
4 - L	RLL DO Points	RLL_DO 9	
5 - R	RLL DO Points	RLL_DO 10	
5 - L	RLL DO Points	RLL_DO 11	
6 - R	RLL DO Points	RLL_DO 12	
6 - L	RLL DO Points	RLL_DO 13	
7 - R	RLL DO Points	RLL_DO 14	
7 - L	RLL DO Points	RLL_DO 15	

Cancel Submit

Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

5.3.6.1 Point Mapping Highlight

See the Analog example.

5.3.6.2 Point Database Search

See the Analog example.

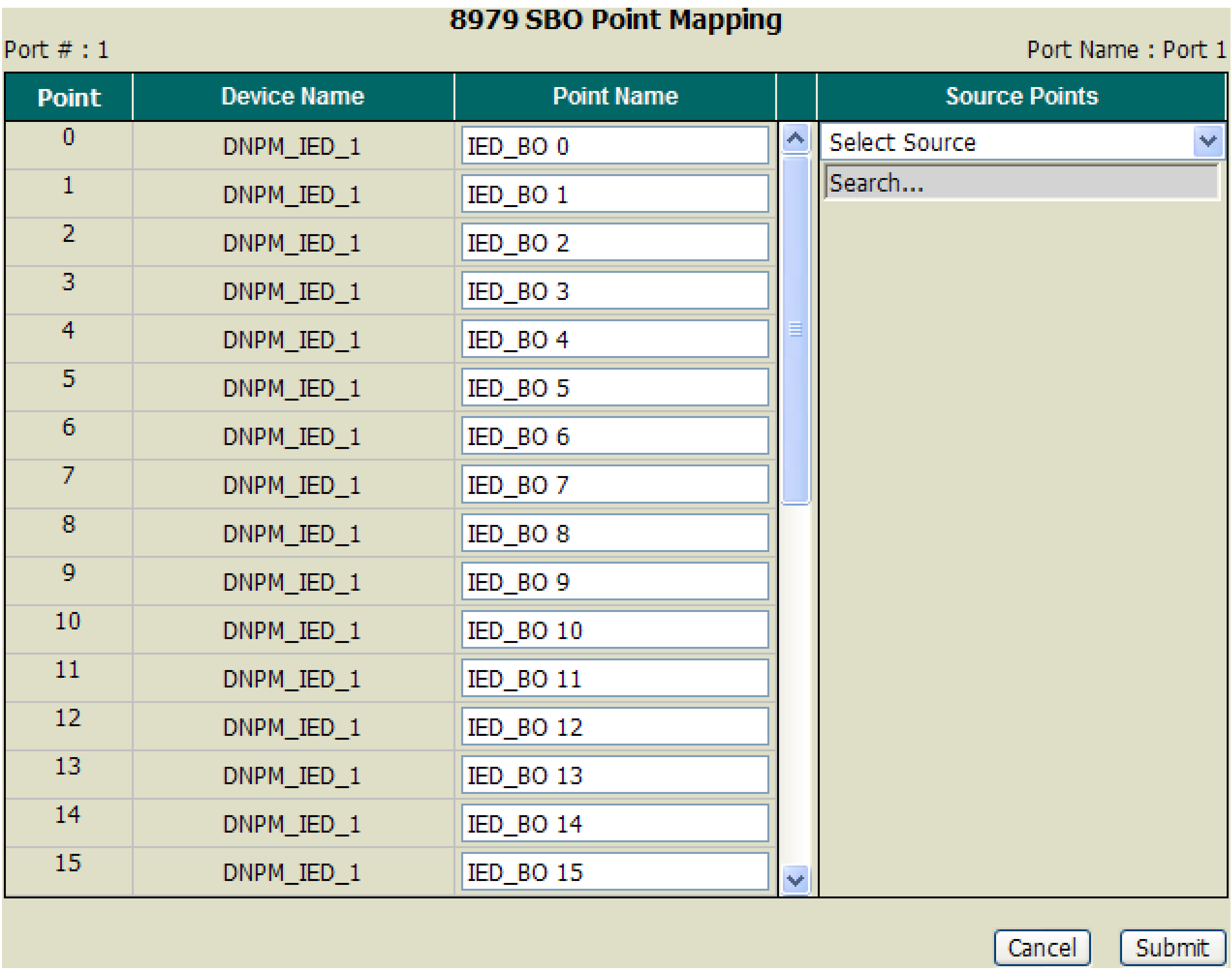
5.3.6.3 Insert & Delete Points

Insert & Delete not applicable to this page.

5.3.7 Map SBOs

From the 8979 Communication Mapping screen, click the MAP button for SBOs. A screen similar to the one below will appear.

Figure 5-14 8979 SBO Point Mapping



Point
The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

5.3.7.1 Point Mapping Highlight

See the Analog example.

5.3.7.2 Point Database Search

See the Analog example.

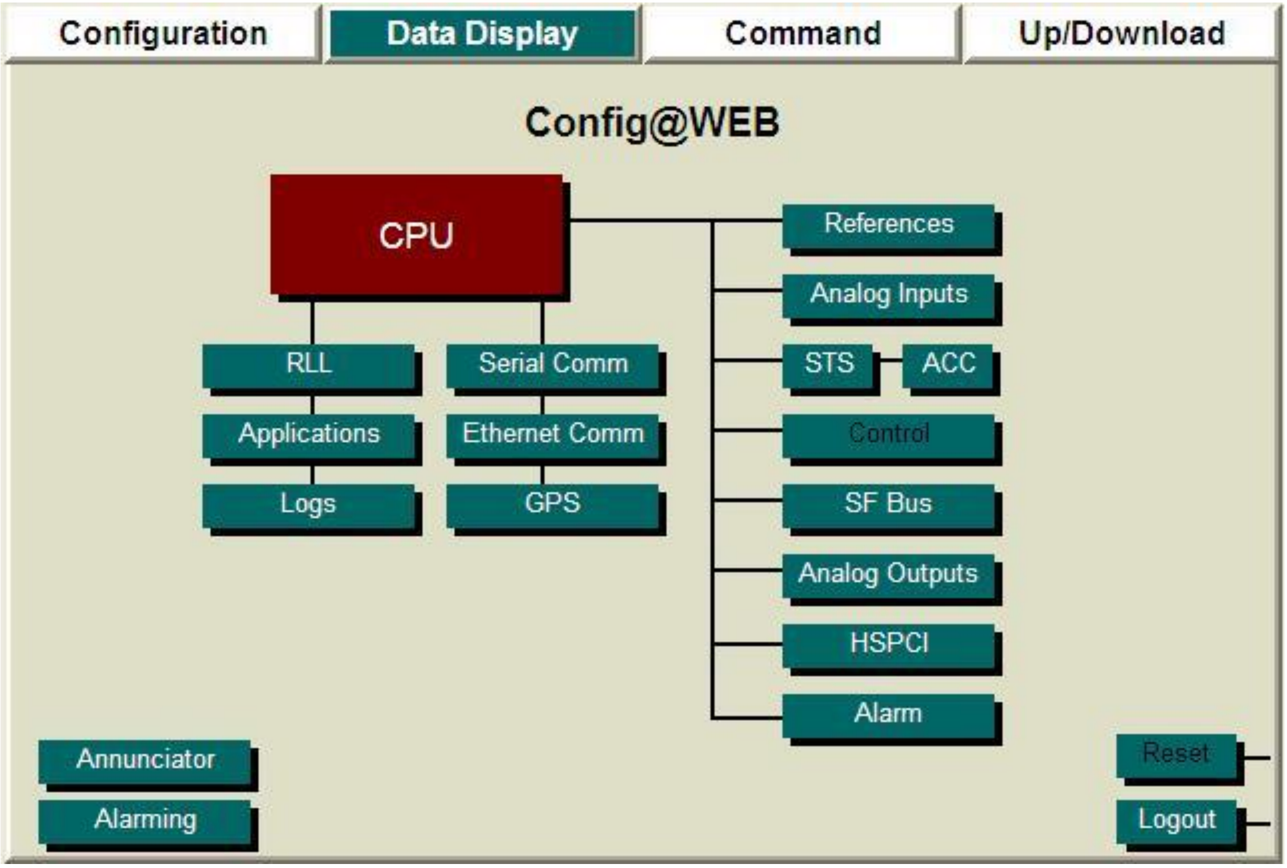
5.3.7.3 Insert & Delete Points

See the Analog example.

5.4 Data Display

Click the Data Display tab as shown in Figure 5-15.

Figure 5-15 Data Display Screen



Click Serial Comm to get the screen shown in Figure 5-16.

Figure 5-16 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	8979	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data
Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

Navigation

Click the Back button to return to the previous screen.

5.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 5-17.

Figure 5-17 Communication Counters Display

Point Number
A logical point number for reference only.

Counter Name
The following counters are monitored:

Messages Received
This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

B4 Timer Violations

This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

IB Timer Violations

This indicates the cumulative number of Interbyte timer violations since the last reset or power-up. This count can be affected by the setting of the Interbyte Time in configuration.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Parity Errors

This indicates the cumulative number of parity errors since the last reset or power-up.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Framing Errors

This indicates the cumulative number of received frames with CRC errors since the last reset or power-up. This can be affected by parity and MTO.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

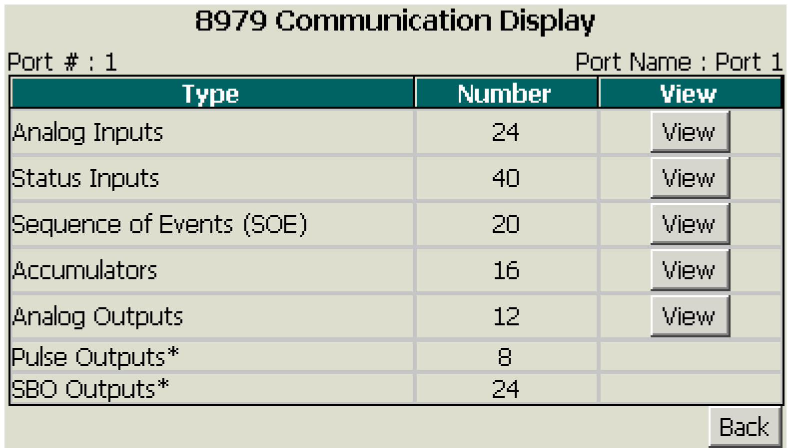
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

5.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 5-18

Figure 5-18 8979 Communication Display



Type
The type of point.

Number
The number of points of each type.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

5.4.2.1 Analog Inputs

From the 8979 Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 2-29.

Figure 5-19 8979 Analog Inputs Display

8979 Analog Inputs Display

Port # : 2 Port Name : Port 2

Page1 of 1 Go To [ ] Go

Point	Device Name	Point Name	Group	Deadband	Point Status	Point Value	Point Counts
0	Hardware Analogs	ANALOG 1	0	10		0.000	2048
1	Hardware Analogs	ANALOG 2	0	10		0.000	2048
2	Hardware Analogs	ANALOG 3	0	10		0.000	2048
3	Hardware Analogs	ANALOG 4	0F	3		0.000	2048
4	Hardware Analogs	ANALOG 5	1	10		0.000	2048
5	Hardware Analogs	ANALOG 6	1	10		0.000	2048
6	Hardware Analogs	ANALOG 7	1	10		0.000	2048
7	Hardware Analogs	ANALOG 8	1F	3		0.000	2048
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Group
The group, which is downloaded from the Master Station, displays the analog group that the point has been assigned. At reset, all points are assigned to group 0. The Master Station may then assign the points to any group in the range of 0 to 14. In addition, if the Master Station assigns the point to group 15 (the fast analog group), it becomes a member of all groups (in addition to the group it is assigned). The assignment to group 15 is maintained until the next reset and is shown by the suffix "F" being displayed after the group number shown on the display.

In the example above, the Master Station has assigned protocol points 4 through 7 to group 1. In addition, points 3 and 7 were assigned to group 15.

Deadband
The deadband, which is downloaded from the Master Station, displays the analog deadband used to determine the value the cumulative analog value must exceed before the point is marked in exception to be reported to the Master Station on the next valid scan for this point. At reset, all deadbands are assigned a value of 255 (never report an exception).

In the example above, deadbands of 10 were downloaded to all points with the exception of 3 and 7, where the Master Station downloaded a deadband of 3.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

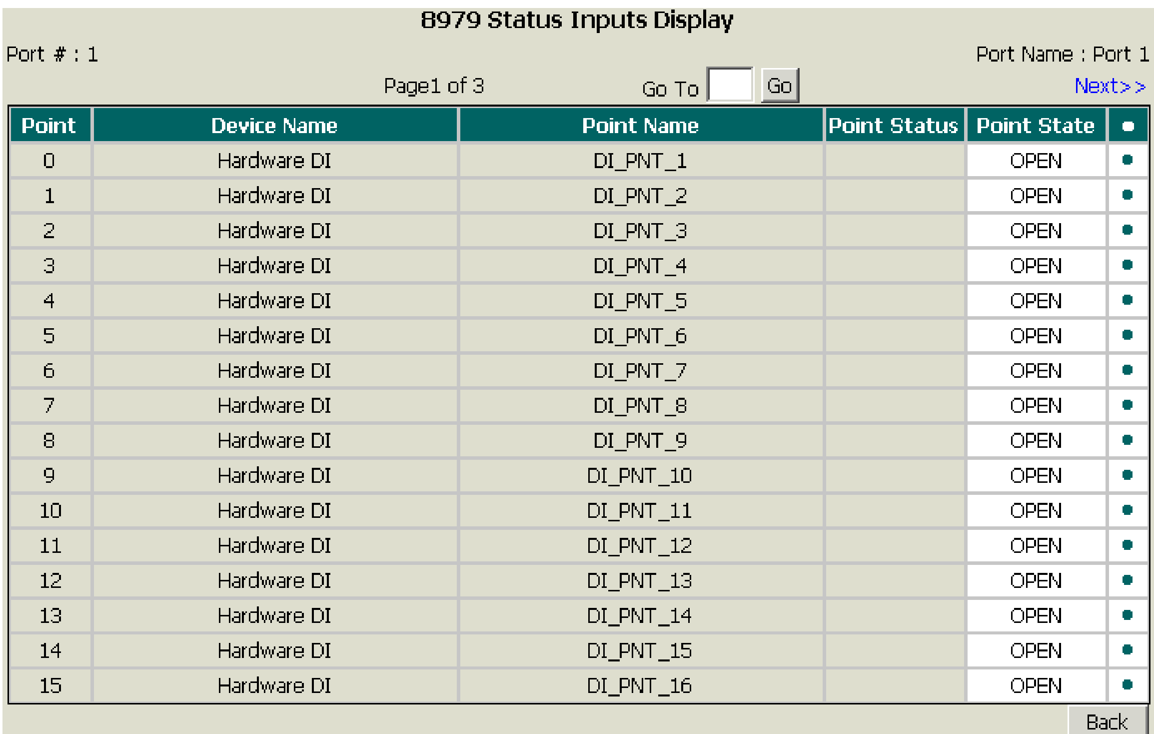
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

5.4.2.2 Status Inputs

From the 8979 Communication Display screen, click View for Status Inputs to get the screen shown in Figure 2-30.

Figure 5-20 8979 Status Inputs Display



8979 Status Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 3 Go To Go Next>>

Point	Device Name	Point Name	Point Status	Point State	
0	Hardware DI	DI_PNT_1		OPEN	
1	Hardware DI	DI_PNT_2		OPEN	
2	Hardware DI	DI_PNT_3		OPEN	
3	Hardware DI	DI_PNT_4		OPEN	
4	Hardware DI	DI_PNT_5		OPEN	
5	Hardware DI	DI_PNT_6		OPEN	
6	Hardware DI	DI_PNT_7		OPEN	
7	Hardware DI	DI_PNT_8		OPEN	
8	Hardware DI	DI_PNT_9		OPEN	
9	Hardware DI	DI_PNT_10		OPEN	
10	Hardware DI	DI_PNT_11		OPEN	
11	Hardware DI	DI_PNT_12		OPEN	
12	Hardware DI	DI_PNT_13		OPEN	
13	Hardware DI	DI_PNT_14		OPEN	
14	Hardware DI	DI_PNT_15		OPEN	
15	Hardware DI	DI_PNT_16		OPEN	

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

5.4.2.3 Sequence of Events (SOE)

From the 8979 Communication Display screen, click View for Sequence of Events (SOE) to get the screen shown below.

Figure 5-21 8979 Sequence of Events (SOE) Display

8979 Sequence of Events(SOE) Display

Port # : 4 Port Name : Port 4

Page1 of 2 Go To Go Next>>

Point	Device Name	Point Name	Point Status	Point State	●
0	No Device	MSSOE_PNT1		OPEN	●
1	No Device	MSSOE_PNT2		OPEN	●
2	No Device	MSSOE_PNT3		OPEN	●
3	No Device	MSSOE_PNT4		OPEN	●
4	No Device	MSSOE_PNT5		OPEN	●
5	No Device	MSSOE_PNT6		OPEN	●
6	No Device	MSSOE_PNT7		OPEN	●
7	No Device	MSSOE_PNT8		OPEN	●
8	No Device	MSSOE_PNT9		CLOSE	●
9	No Device	MSSOE_PNT10		CLOSE	●
10	No Device	MSSOE_PNT11		CLOSE	●
11	No Device	MSSOE_PNT12		CLOSE	●
12	No Device	MSSOE_PNT13		CLOSE	●
13	No Device	MSSOE_PNT14		CLOSE	●
14	No Device	MSSOE_PNT15		CLOSE	●
15	No Device	MSSOE_PNT16		CLOSE	●

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State

Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

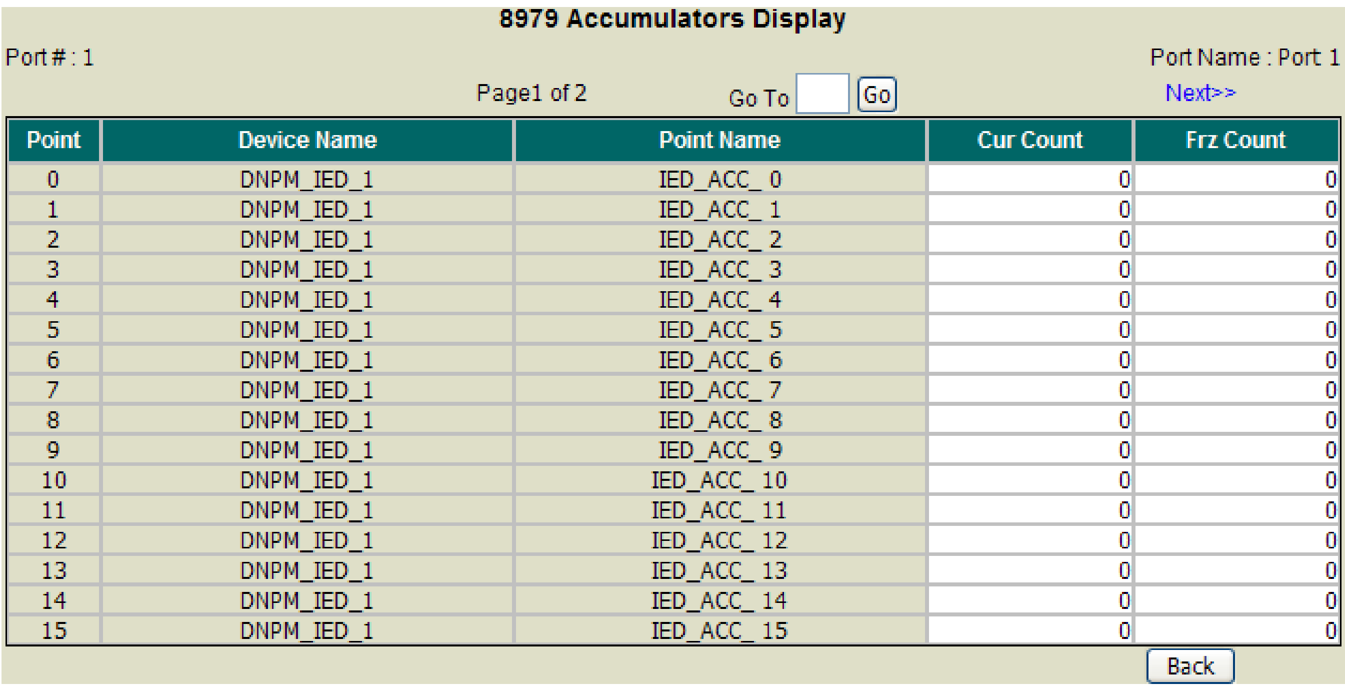
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

5.4.2.4 Accumulator Inputs

From the 8979 Communication Display screen, click View for Accumulators to get the screen shown in Figure 5-22.

Figure 5-22 8979 Accumulators Display



8979 Accumulators Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To Go Next>>

Point	Device Name	Point Name	Cur Count	Frz Count
0	DNPM_IED_1	IED_ACC_ 0	0	0
1	DNPM_IED_1	IED_ACC_ 1	0	0
2	DNPM_IED_1	IED_ACC_ 2	0	0
3	DNPM_IED_1	IED_ACC_ 3	0	0
4	DNPM_IED_1	IED_ACC_ 4	0	0
5	DNPM_IED_1	IED_ACC_ 5	0	0
6	DNPM_IED_1	IED_ACC_ 6	0	0
7	DNPM_IED_1	IED_ACC_ 7	0	0
8	DNPM_IED_1	IED_ACC_ 8	0	0
9	DNPM_IED_1	IED_ACC_ 9	0	0
10	DNPM_IED_1	IED_ACC_ 10	0	0
11	DNPM_IED_1	IED_ACC_ 11	0	0
12	DNPM_IED_1	IED_ACC_ 12	0	0
13	DNPM_IED_1	IED_ACC_ 13	0	0
14	DNPM_IED_1	IED_ACC_ 14	0	0
15	DNPM_IED_1	IED_ACC_ 15	0	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Cur Count
The count from the running counter.

Frz Count
The freeze count.

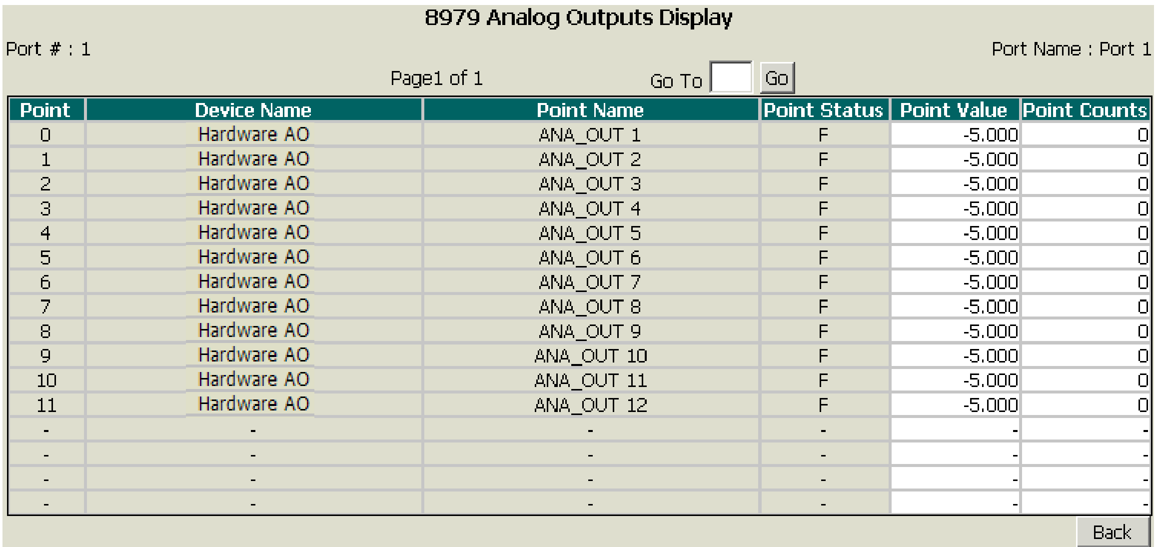
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

5.4.2.5 Analog Outputs

From the 8979 Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 5-23

Figure 5-23 8979 Analog Outputs Display


8979 Analog Outputs Display

Port # : 1

Port Name : Port 1

Page1 of 1 Go To Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	Hardware AO	ANA_OUT 1	F	-5.000	0
1	Hardware AO	ANA_OUT 2	F	-5.000	0
2	Hardware AO	ANA_OUT 3	F	-5.000	0
3	Hardware AO	ANA_OUT 4	F	-5.000	0
4	Hardware AO	ANA_OUT 5	F	-5.000	0
5	Hardware AO	ANA_OUT 6	F	-5.000	0
6	Hardware AO	ANA_OUT 7	F	-5.000	0
7	Hardware AO	ANA_OUT 8	F	-5.000	0
8	Hardware AO	ANA_OUT 9	F	-5.000	0
9	Hardware AO	ANA_OUT 10	F	-5.000	0
10	Hardware AO	ANA_OUT 11	F	-5.000	0
11	Hardware AO	ANA_OUT 12	F	-5.000	0
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

5.4.2.6 Pulse Outputs

From the 8979 Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 5-24.

8979 Pulse Outputs Display

Port # : 4 Port Name : Port 4

Page1 of 1 Go To Go

Pnt	Point	Device Name	Point Name	Point Status	Point State	●
0	0 R	ISaGRAF_IF	RLL_DO 0		CLOSE	●
1	0 L	ISaGRAF_IF	RLL_DO 1		CLOSE	●
2	1 R	ISaGRAF_IF	RLL_DO 2		CLOSE	●
3	1 L	ISaGRAF_IF	RLL_DO 3		CLOSE	●
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

Back

Figure 5-24 8979 Pulse Outputs Display

Pnt
Protocol logical point number.

Point
Logical Point Raise & Lower Points.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

5.4.2.7 SBO Outputs

There is no display available.

6 Harris(R) 5000/5500/6000

6.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

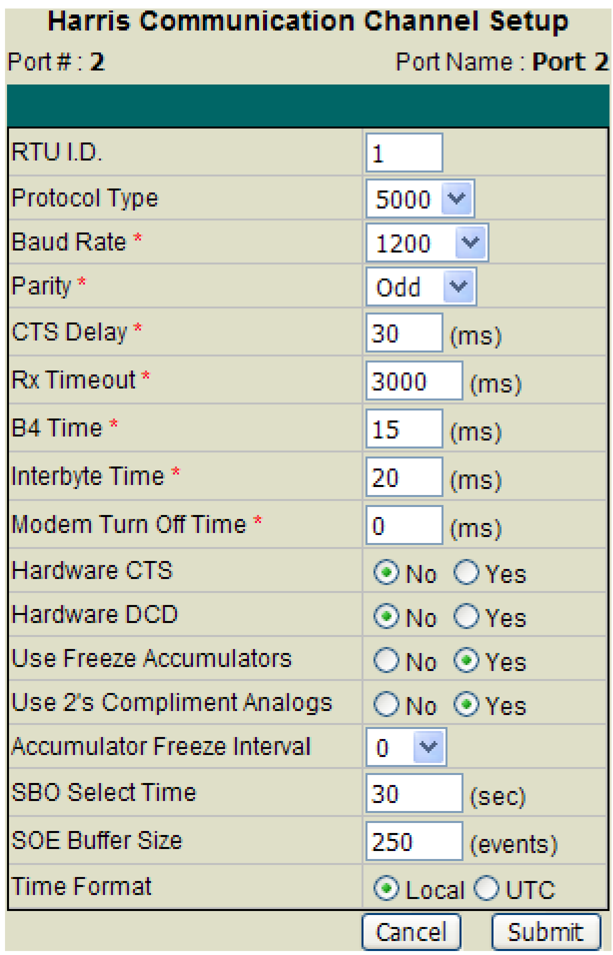
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

6.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 6-1.

Figure 6-1 Harris(R) Communication Channel Configuration



Default: **1**.
Range: **1 to 63**.

Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D. (1 – 63)

Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Address zero is reserved for broadcast messages to all RTUs on a common communications channel. Default setting is 1.

Protocol Type (5000, 5500, 6000)

Enter the type of RTU emulation to be performed 5000, 5500 or 6000. This field is used to determine which protocol Op Codes will be valid along with defining specific header information used in RTU to MTU responses. This field is also used by the Automatic Configuration function to determine valid port types. Default setting is 5000.

Baud Rate (300 – 19200)

Select the communications speed for the associated channel. Default setting is 1200.

Parity (None, Odd, Even)

Select the parity for the associated channel. The default setting is Odd.

CTS Delay (0 – 250ms)

Enter the Clear-To-Send delay in milliseconds for the associated channel. This is the time delay the channel will wait to start transmitting following Request-To-Send signal being asserted. Default setting is 30.

Rx Timeout (0 – 30,000ms)

Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 3000 (3 seconds).

B4 Time (0 – 250ms)

Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 15.

Interbyte Time (0 – 250ms)

Enter the interbyte time allowed before the received message is terminated. Default setting is 20.

Modem Turn Off Time (0 – 250ms)

Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Hardware CTS (No, Yes)

If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)

If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

Use Freeze Accumulators (No, Yes)

Enter No to have the RTU respond to a DATA DUMP (Op Code 0) MTU request with rolling accumulator PORT values. An entry of No will force the RTU to respond to an MTU SET FREEZE INTERVAL command (Op Code 30) with an error 61 indication. It will also cause the RTU to ignore the Accumulator

Freeze Interval field. Enter Yes to have the RTU respond to a DATA DUMP (Op Code 0) MTU request with frozen accumulator PORT values. An entry of Yes will allow the RTU to respond to an MTU SET FREEZE INTERVAL command (Op Code 30) by setting the freeze interval, disabling the freeze interval or freezing accumulators. In addition, the RTU will use the value in the Accumulator Freeze Interval field to set the initial freeze interval. Default setting is Yes.

Use 2's Compliment Analogs (No, Yes)

This setting should be left at the default of "Yes" for almost all Harris(R) protocol implementations. Selecting "No" will result in all analogs returned as magnitude plus sign.

Accumulator Freeze Interval (0,1,2,3,4,5,6,10,12,15,20,30,60)

Enter the units of minutes Freeze Interval used by the RTU for automatically freezing accumulators. This value will be superseded by any MTU command. All accumulator freeze timing is synced to the top of the hour. A freeze interval of zero disables the automatic freezing of accumulators. Default value is 0.

SBO Select Time (0-30sec)

Select the timeout period between SBO Select and SBO Operate. Any pending Select will be cancelled if an Execute is not received before the Select Timeout expires. An entry of zero disables SBO controls for this communications channel. Default setting is 30 sec.

SOE Buffer Size (0-1000 events)

Select the number of events the Sequence of Events buffer is required to hold. This field is only used when the 6000 protocol is selected. Default setting is 250 events.

Time Format (Local, UTC)

Note: The coordination between UTC and local time is a feature that may be ignored. If you want your RTU to act as it always has in regards to time syncs, set Time Format to Local Time. See Time Configuration Settings in the Configuration chapter of the hardware manual for time settings under the CPU block.

If you want time synchronization from the master, you must know whether the master is sending Local time or UTC time, then set this radio button to match the master's format.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3 Point Operations, Harris(R) 5000, 5500, 6000

From the Communication Port Configuration screen, click the Map Points button under Point Operations. Figure 2-10 depicts the Harris(R) 5000, Figure 6-3 depicts the Harris(R) 5500, and Figure 6-4 & Figure 6-5 depict the Harris(R) 6000. Enter the Harris(R) point group for each Harris(R) card port. Some groups can be mapped on inputs and outputs, some on one or the other.

Figure 6-2 Harris(R) 5000 Communication Mapping

8 types from drop-down menu

32 Pt Control & Ind
32 Pt Analog In
8 Pt 12 bit ACC In
4 Pt 24 bit ACC In
4 Pt 32 bit ACC In
6 Pt Raise/Lower Out
4 Pt Analog Out
16 Pt Digital Out

Harris Communication Mapping

Port # : 1 Port Name : Port 1

Port	Type	Map Inputs	Map Outputs
1	32 Pt Control & Ind	MAP	MAP
	32 Pt Analog In	MAP	MAP
	8 Pt 12 bit ACC In	MAP	MAP
	4 Pt 24 bit ACC In	MAP	MAP
	6 Pt Raise/Lower Out	MAP	MAP
	4 Pt Analog Out	MAP	MAP
7	16 Pt Digital Out	MAP	MAP

Back

Figure 6-3 Harris(R) 5500 Communication Mapping

Harris Communication Mapping

Port # : 2 Port Name : Port 2

Port	Type	Map Inputs	Map Outputs
1	16 Pt Control & Ind	MAP	MAP
2	16 Pt Analog In	MAP	MAP
3	8 Pt 12 bit ACC In	MAP	MAP
4	8 Pt 24 bit ACC In	MAP	MAP
5	6 Pt Raise/Lower Out	MAP	MAP
6	4 Pt Analog Out	MAP	MAP
7	16 Pt Digital Out	MAP	MAP

Back

Figure 6-4 Harris(R) 6000 Communication Mapping. First Seven Types

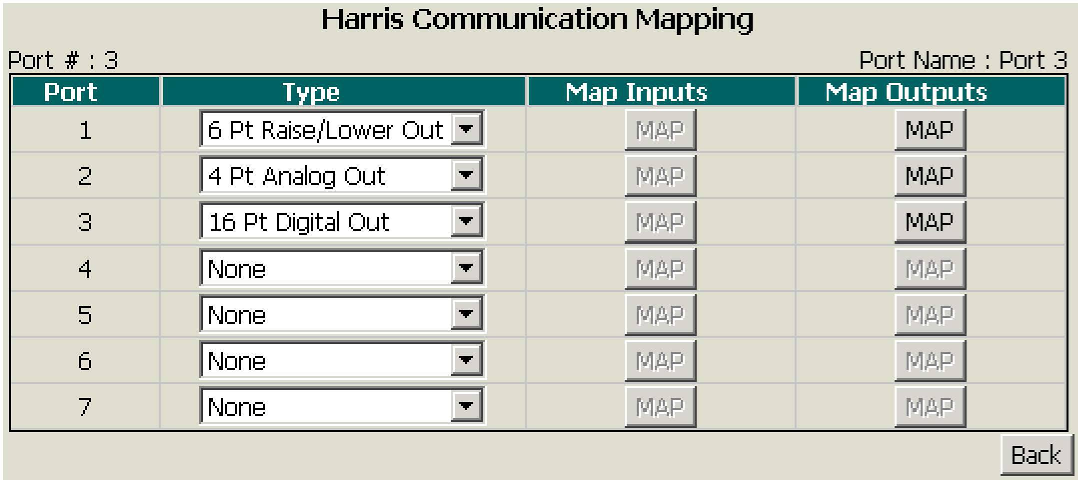
Harris Communication Mapping

Port # : 3 Port Name : Port 3

Port	Type	Map Inputs	Map Outputs
1	32 Pt Control & Ind	MAP	MAP
2	63 Pt Control & Ind	MAP	MAP
3	63 Pt Control & SOE	MAP	MAP
4	32 Pt Analog In	MAP	MAP
5	63 Pt Analog In	MAP	MAP
6	8 Pt 12 bit ACC In	MAP	MAP
7	8 Pt 24 bit ACC In	MAP	MAP

Back

Figure 6-5 Harris(R) 6000 Communication Mapping, Last Three Types



Port
The Harris(R) card port.

Type
Each Harris(R) port handles a different point type and quantity. The example in Table 6-1 shows all Harris(R) point groups.

Map Inputs
If the Harris(R) port has an input map, this button will be active.

Map Outputs
If the Harris(R) port has an Output map, this button will be active.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the IED Configuration screen.

6.3.1 Valid Port Configurations

Each of the seven ports can be defined as:

4. Configured and Equipped
5. Configured and Unequipped
6. Unconfigured

Configured and Equipped (CE)
Types defined other than NONE with at least one point mapped are used to scan data and send outputs to RTU I/O. They respond to PORT STATUS commands as on-line.

Configured and Unequipped (CU)
Types defined other than NONE with no points mapped are used to reserve ports in analog and status dump commands. They respond to PORT STATUS commands as off-line.

Unconfigured
Types defined as NONE are used to reserve ports for unspecified future expansion. They respond to PORT STATUS commands as off-line.

The valid port configurations are shown in Table 6-1.

Table 6-1 Harris Data Port Configurations

Type	Size Output	Valid Protocols
16 PT Control & Ind	*8	5500
32 PT Control & Ind	*16	5000/6000
63 PT Control & Ind	*30	6000
63 PT Control & SOE	*30	6000
16 PT Analog In		5500
32 PT Analog In		5000/6000
63 PT Analog In		6000
8 PT 12 bit ACC In		5000/5500/6000
4 PT 24 bit ACC In		5000
4 PT 32 bit ACC in		5000
8 PT 24 bit ACC In		5500/6000
6 PT Raise/Lower Out	6	5000/5500/6000
4 PT Analog Out	4	5000/5500/6000
16 PT Digital Out	16	5000/5500/6000
NONE		

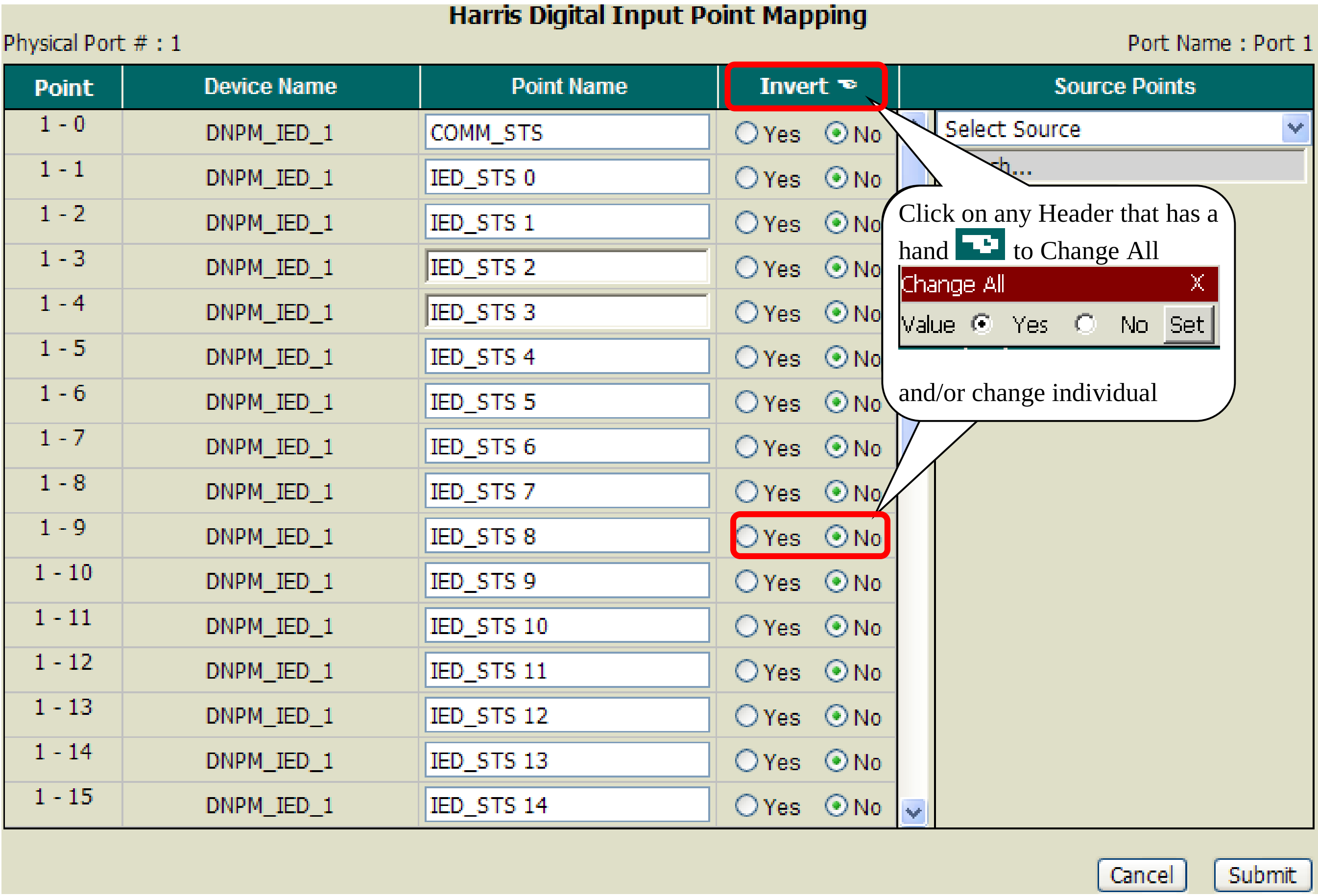
* C&I and C&S ports have an assumed output port size as shown for the associated input port sizes.

The number of ports included in the Analog or Status Dump requests must match the number of Analog or Status type ports configured (CE and CU) in the RTU, even though no data will be requested from the CU ports. If a Status or Analog Dump request is sent by the Master for more or less than the configured (CE and CU) number of ports the RTU will ignore the request and not reply. The Port Status Byte for a configured unequipped or unconfigured port will contain only the "off-line" bit set.

6.3.2 Map Inputs 32 Pt Control & Ind, Harris(R) 5000, 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 32 Pt Control & Ind. A screen similar to Figure 6-6 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-6 Harris(R) 5000 Digital Input Point Mapping



Point

The first number is the Harris(R) port. The second number is protocol logical point number within that port.

Device Name

The name of the source device for the mapped point.

Point Name

The name of the mapped point.

Invert (Yes, No)

Select whether on not you want the point inverted. Default in No.

Source Points

Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

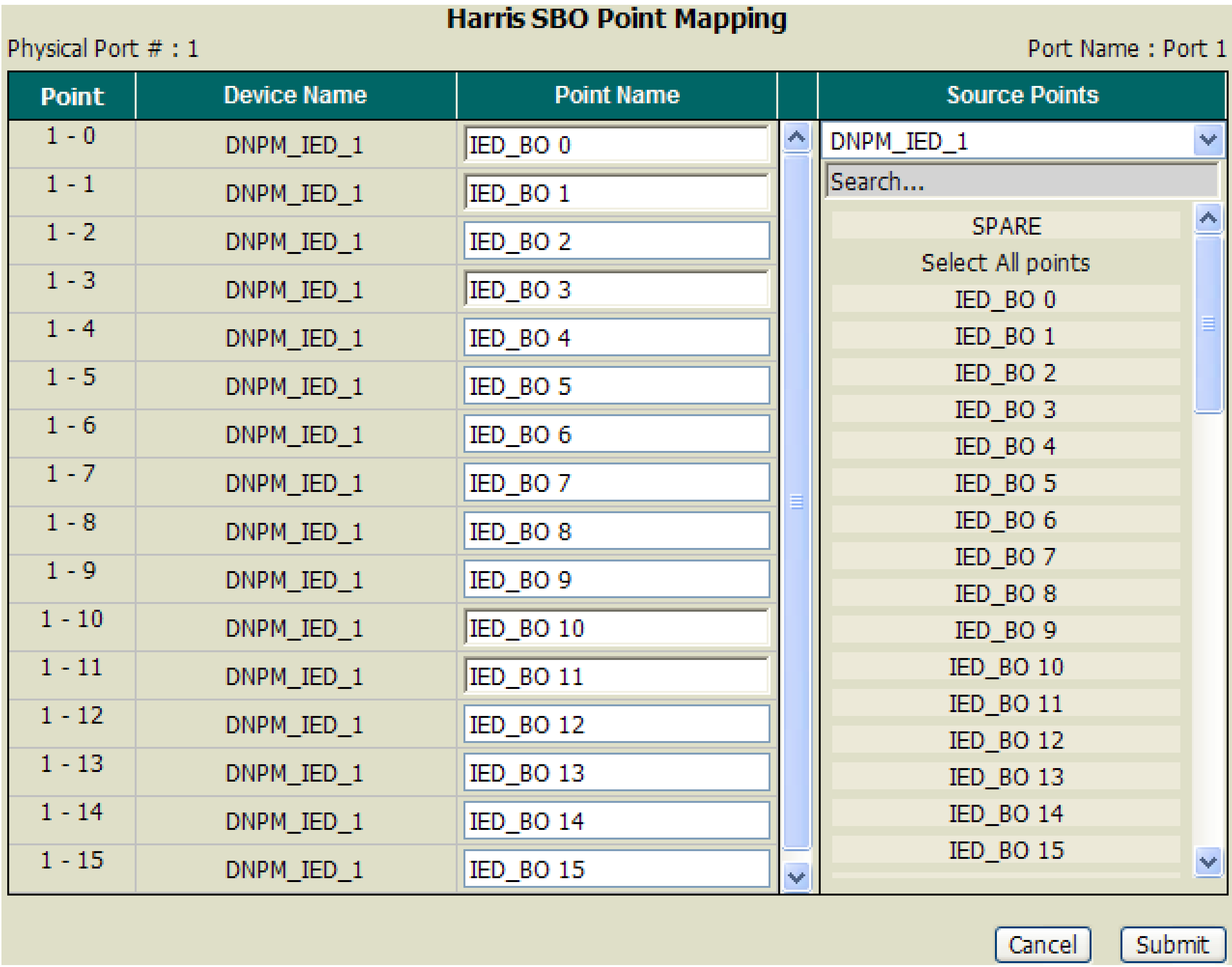
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.3 Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Outputs 32 Pt Control & Ind. A screen similar to Figure 6-7 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-7 Harris(R) 5000 SBO Point Mapping



Point

The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name

The name of the source device for the mapped point.

Point Name

The name of the mapped point.

Source Points

Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

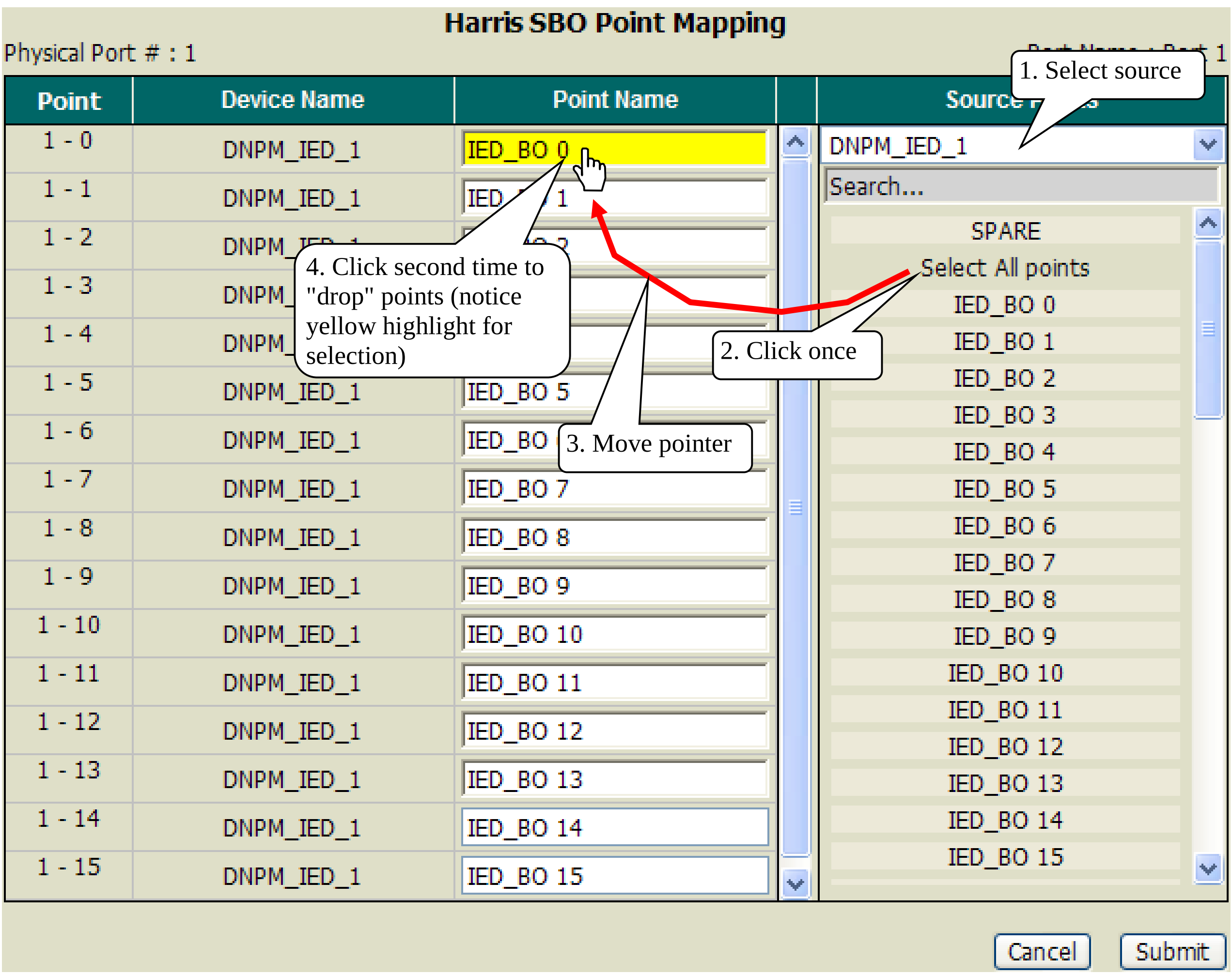
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.3.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

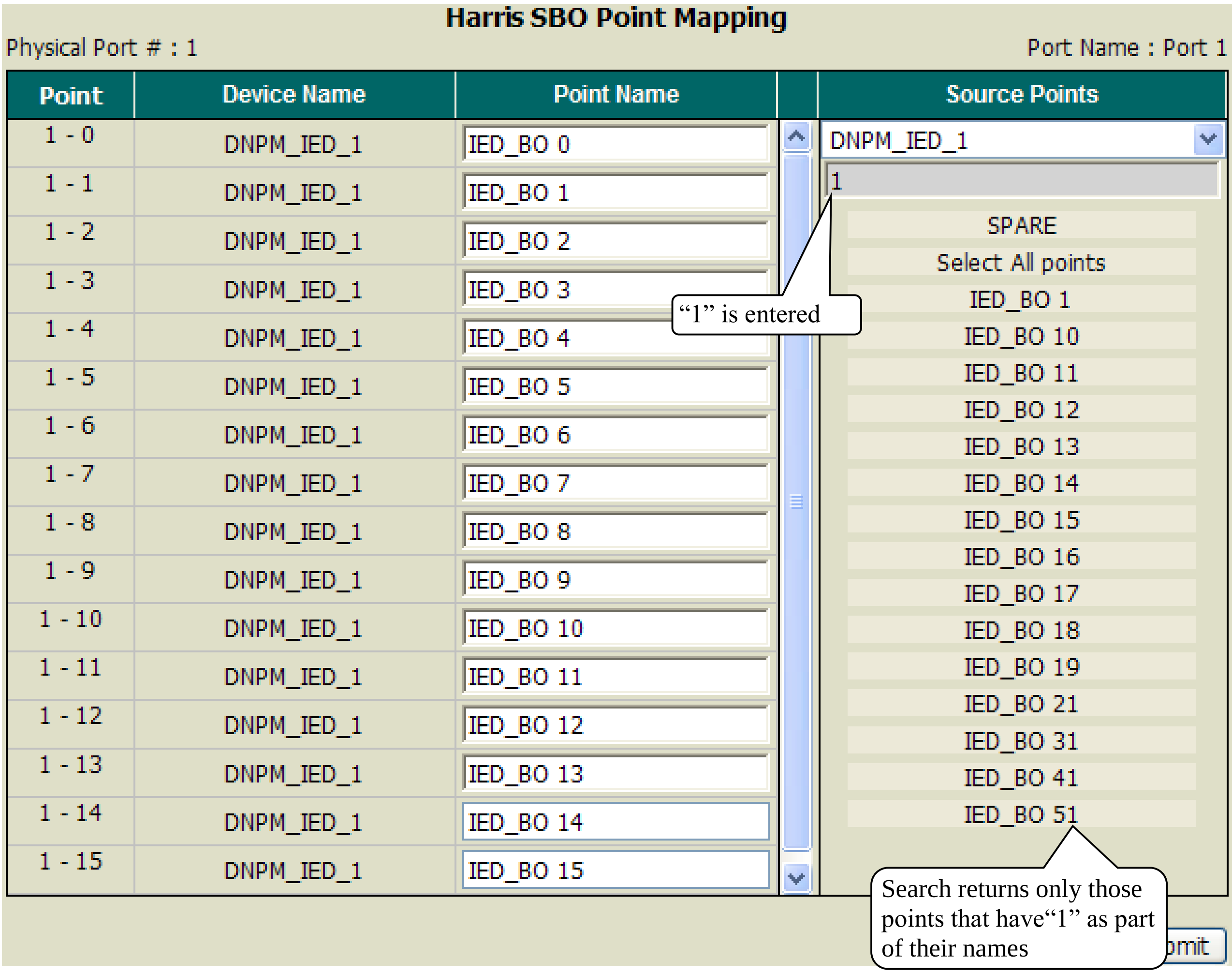
Figure 6-8 Point Mapping Highlight



6.3.3.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

Figure 6-9 Point Database Search



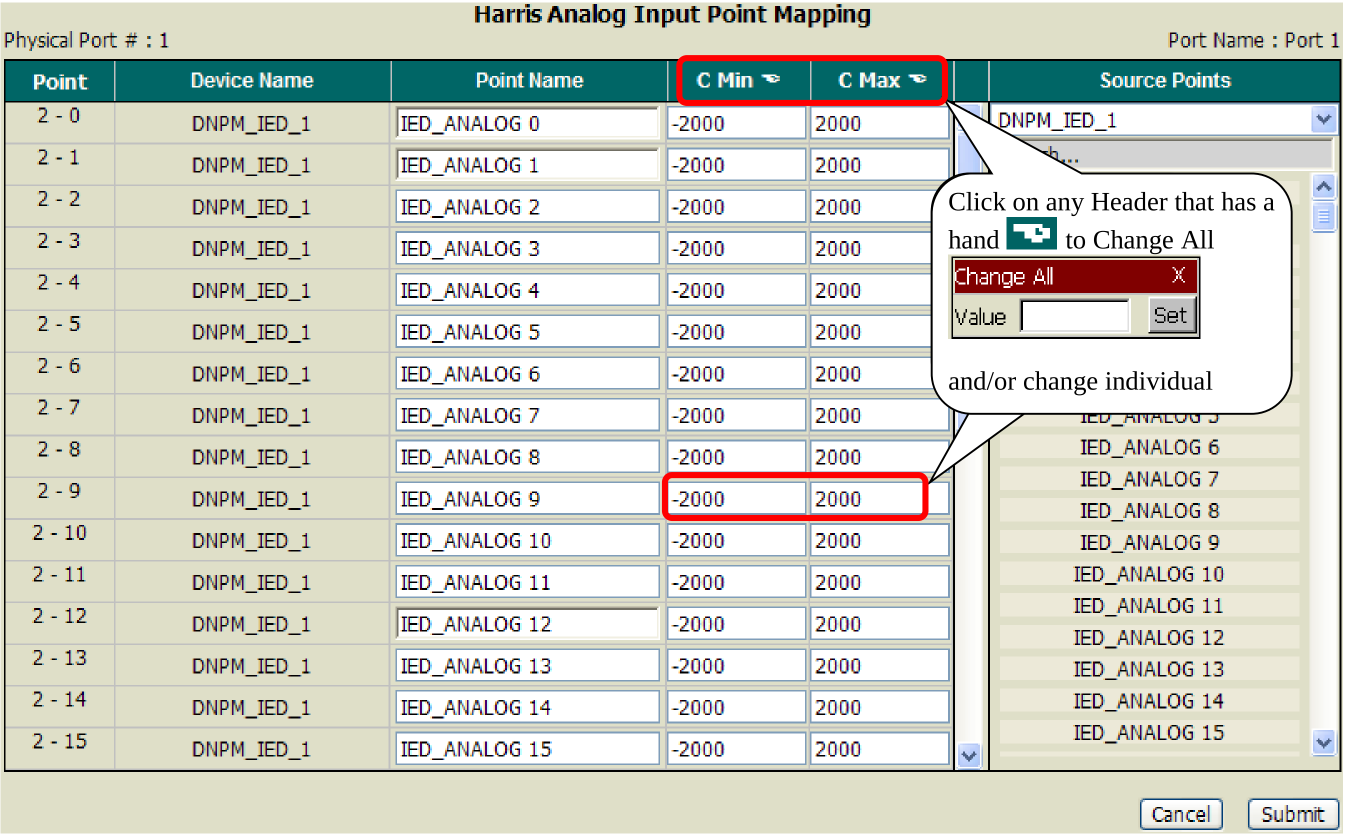
6.3.3.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.4 Map Inputs 32 Pt Analog In, Harris(R) 5000, 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 32 Pt Analog In. A screen similar to Figure 6-10 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-10 Harris(R) 5000 Analog Input Point Mapping



Point
The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.4.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.4.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

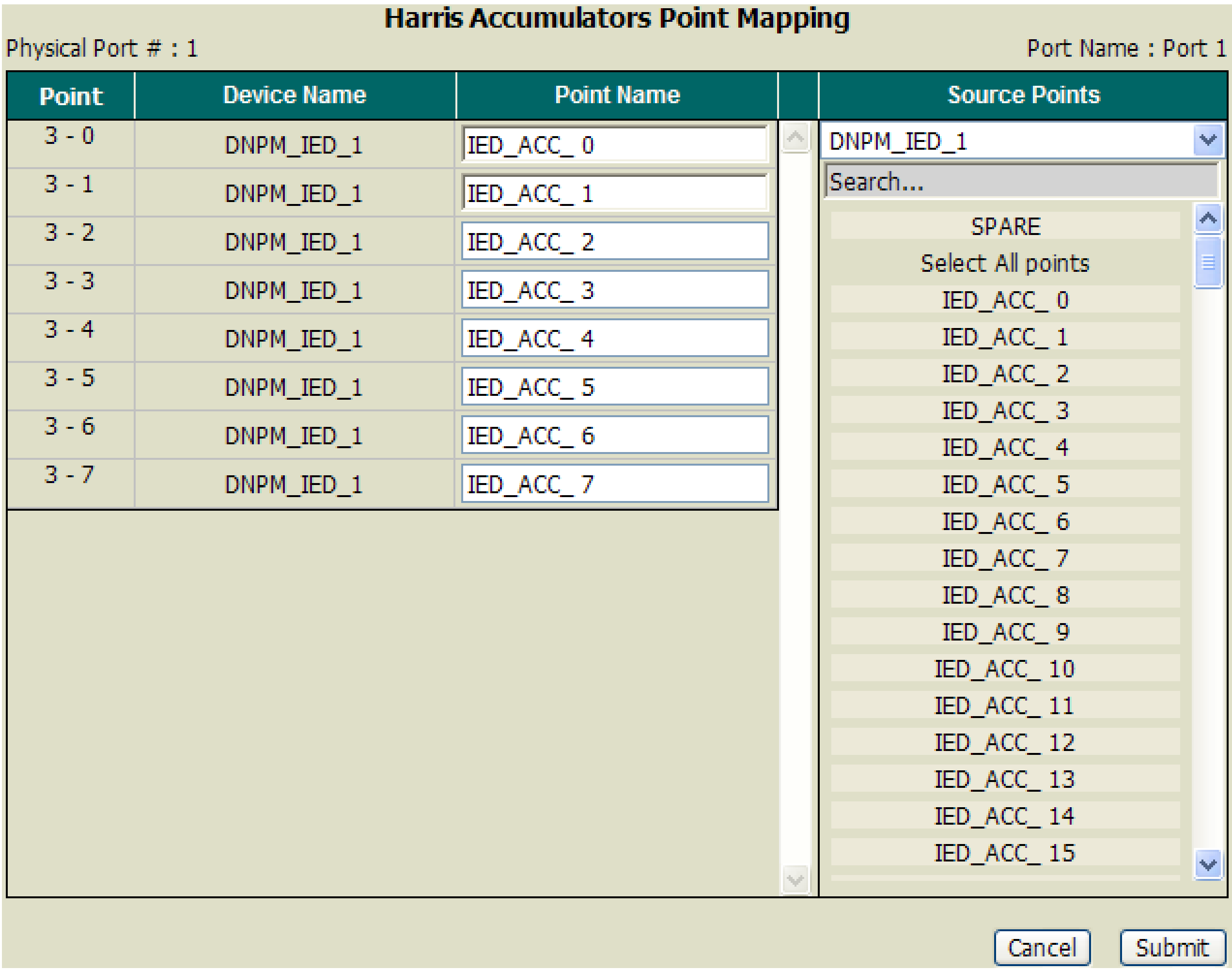
6.3.4.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.5 Map Inputs 8 Pt 12 bit ACC In, Harris(R) 5000, 5500, 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 8 Pt 12 bit ACC In. A screen similar to Figure 6-11 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-11 Harris(R) 5000 Accumulator Point Mapping



Point
The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.5.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.5.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

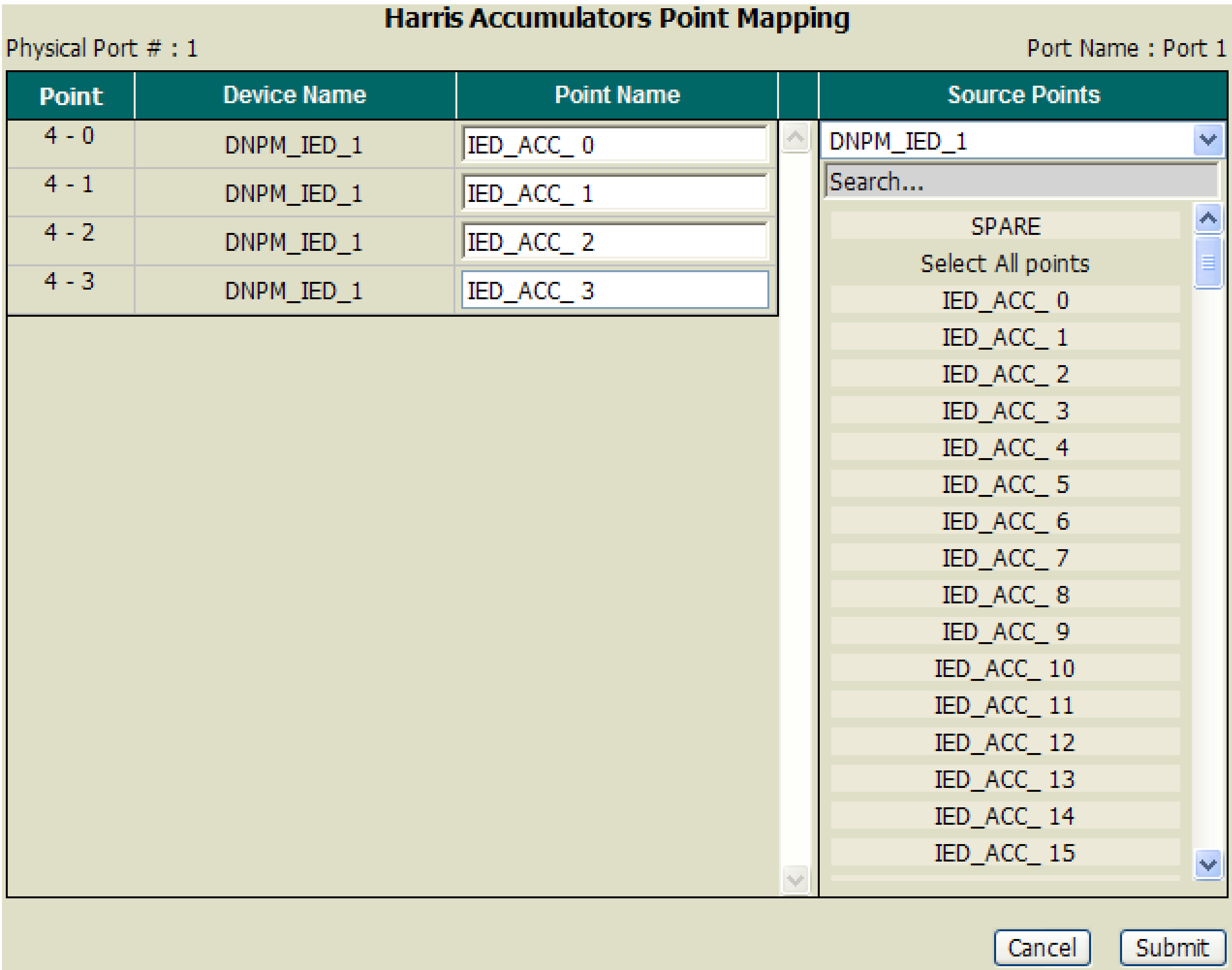
6.3.5.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.6 Map Inputs 4 Pt 24 bit ACC In, Harris(R) 5000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 4 Pt 24 bit ACC In. A screen similar to Figure 6-12 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-12 Harris(R) 5000 Accumulator Point Mapping



Point
The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.6.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.6.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

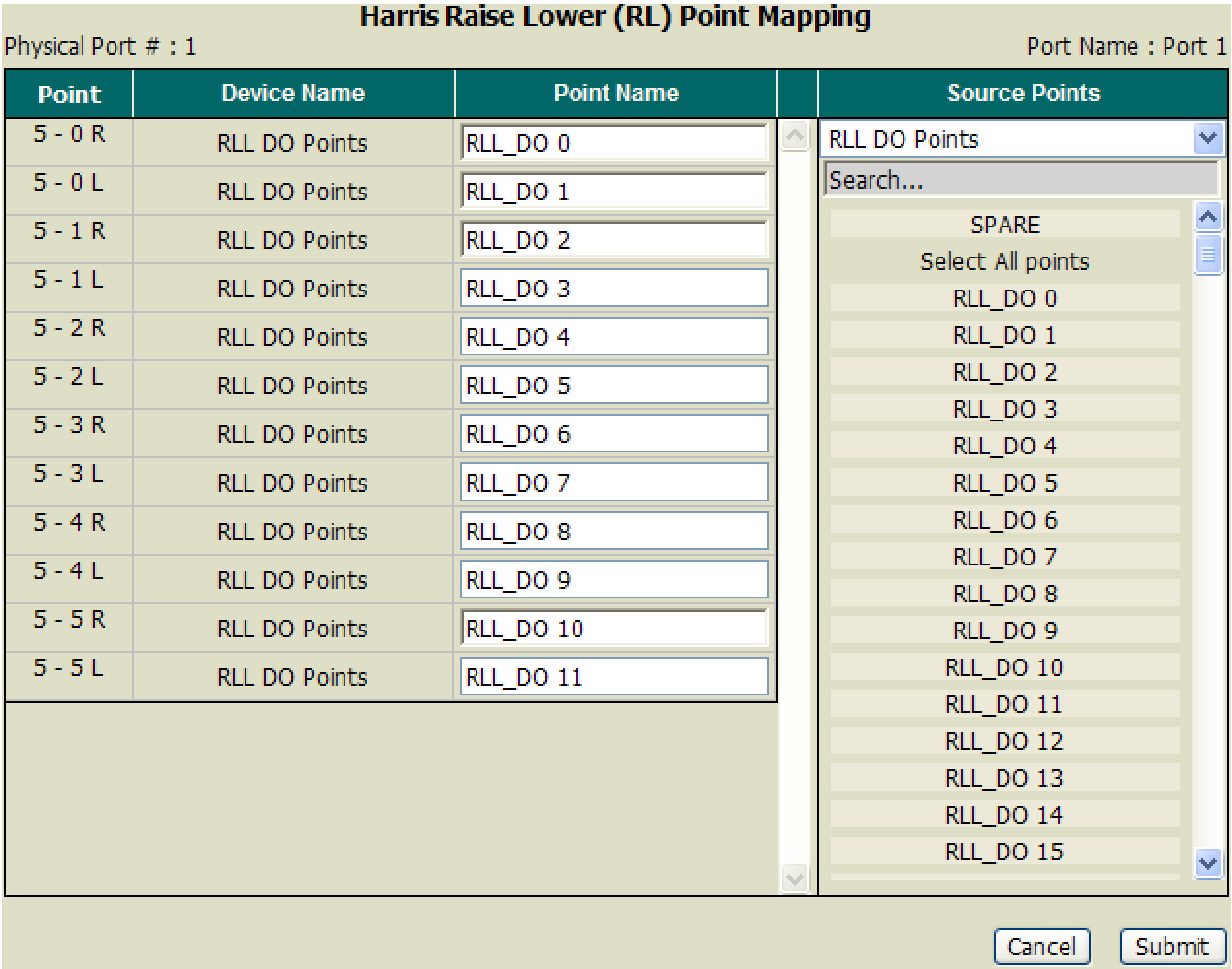
6.3.6.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.7 Map Outputs 6 Pt Raise/Lower Out, Harris(R) 5000, 5500, 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Outputs 6 Pt Raise/Lower Out. A screen similar to Figure 6-13 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-13 Harris(R) 5000 Raise Lower (RL) Point Mapping



Point
The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.7.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.7.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

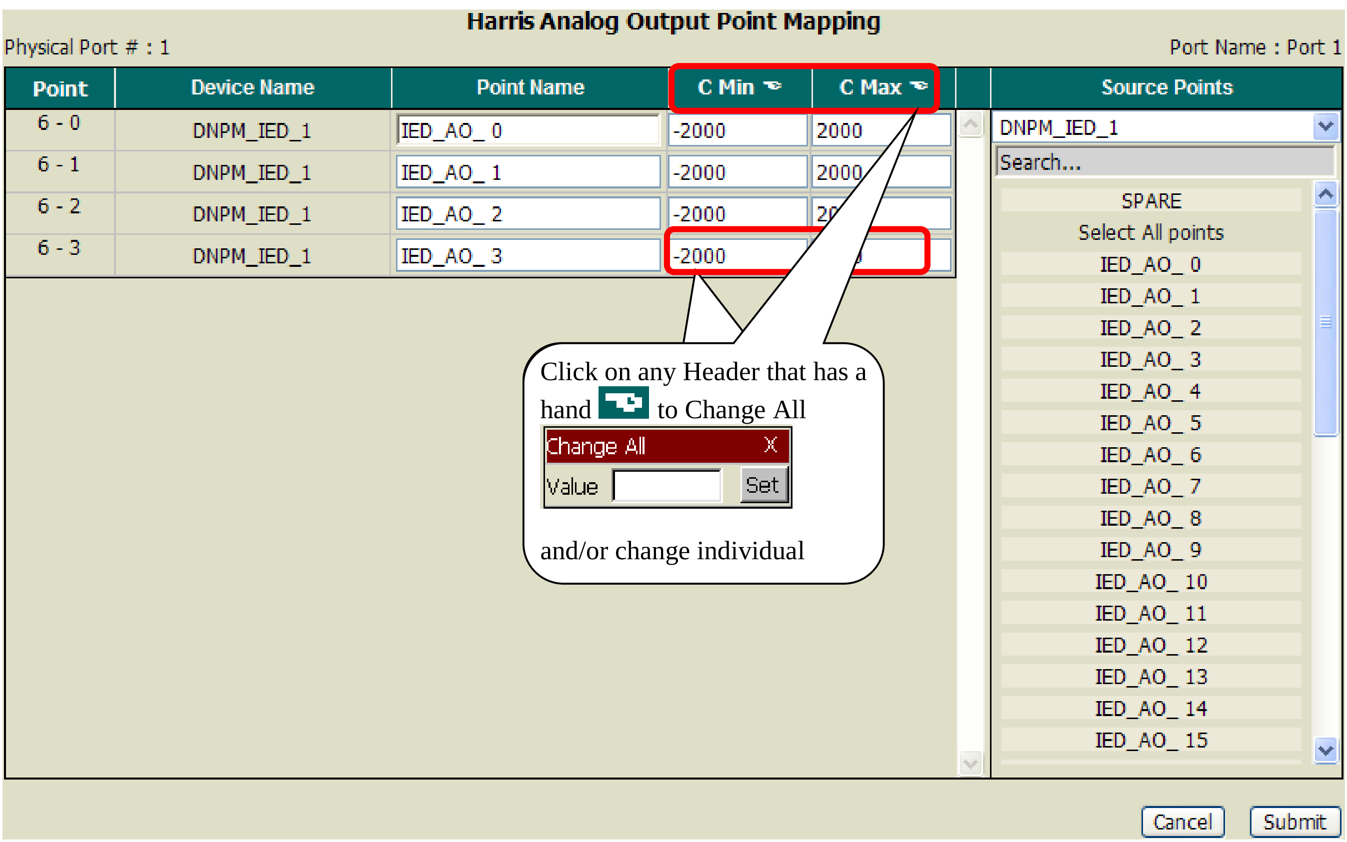
6.3.7.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.8 Map Outputs 4 Pt Analog Out, Harris(R) 5000, 5500, 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Outputs 4 Pt Analog Out. A screen similar to Figure 6-14 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-14 Harris(R) 5000 Analog Output Point Mapping



Point

The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.8.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.8.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

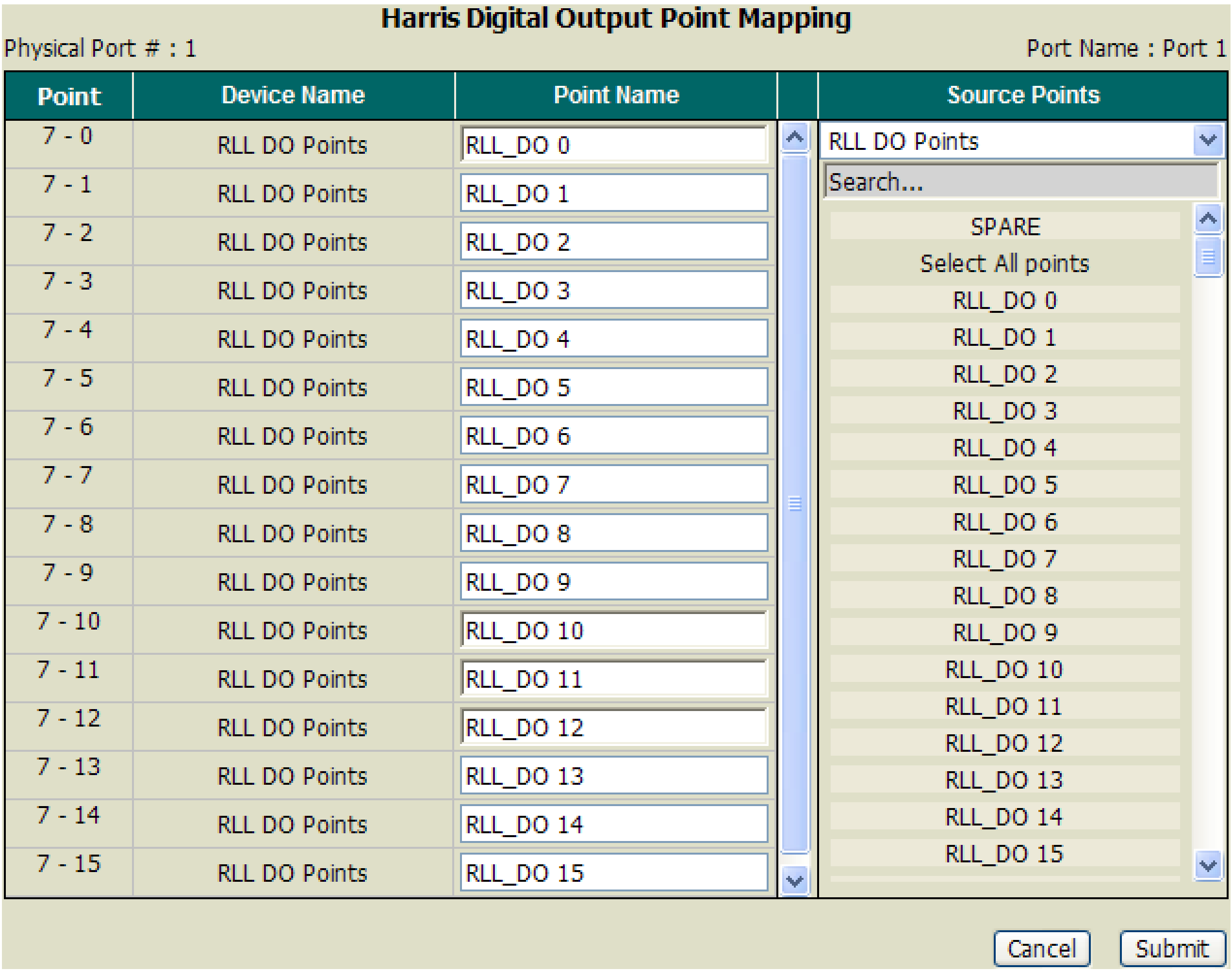
6.3.8.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.9 Map Outputs 16 Pt Digital Out, Harris(R) 5000, 5500, 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Outputs 16 Pt Digital Out. A screen similar to Figure 6-15 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-15 Harris(R) 5000 Digital Output Point Mapping



Point
The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.9.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.9.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

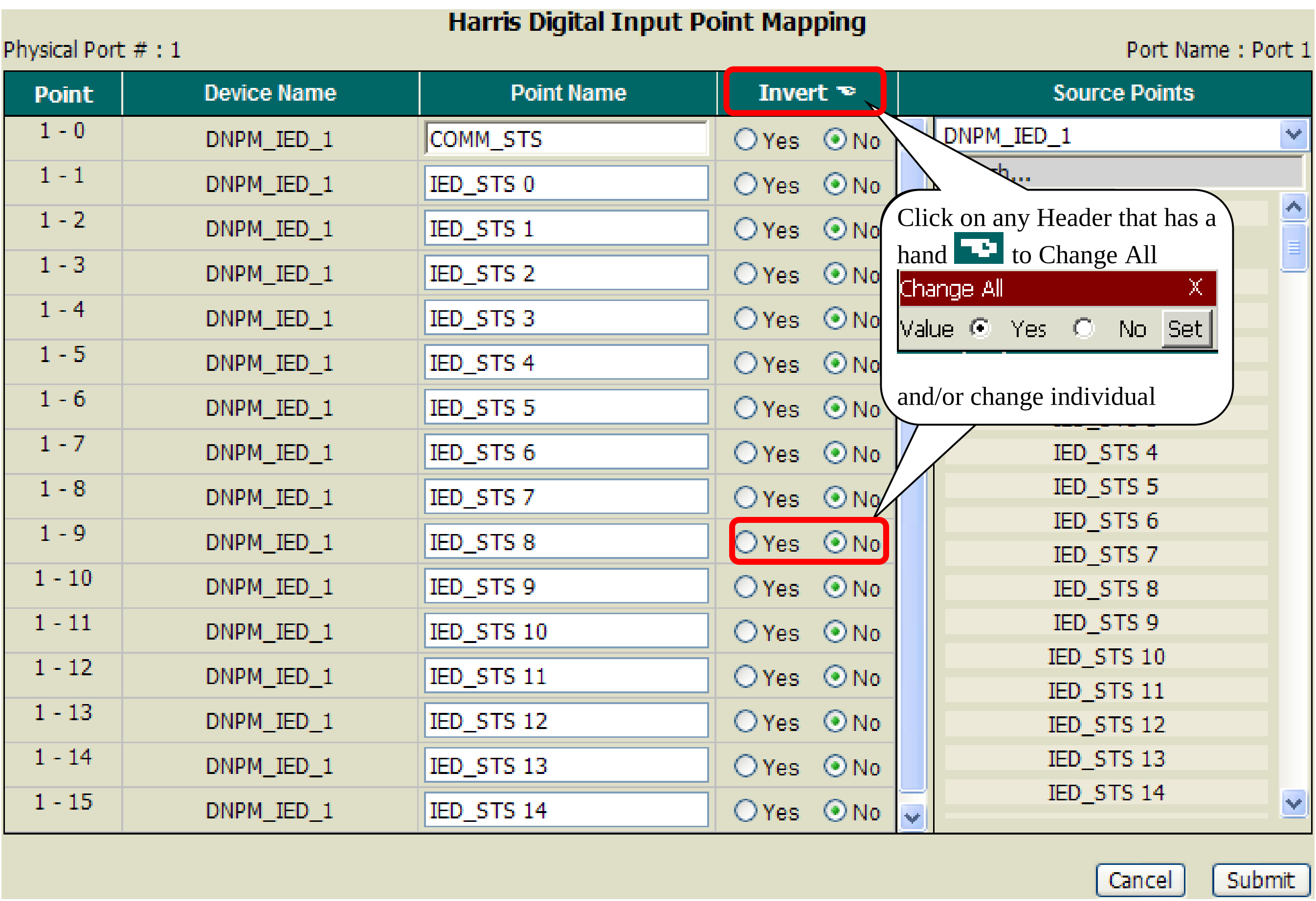
6.3.9.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.10 Map Inputs 16 Pt Control & Ind, Harris(R) 5500

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 16 Pt Control & Ind. A screen similar to Figure 6-16 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-16 Harris(R) 5500 Digital Input Point Mapping



Point

The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert (Yes, No)
Select whether on not you want the point inverted. Default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.10.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.10.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

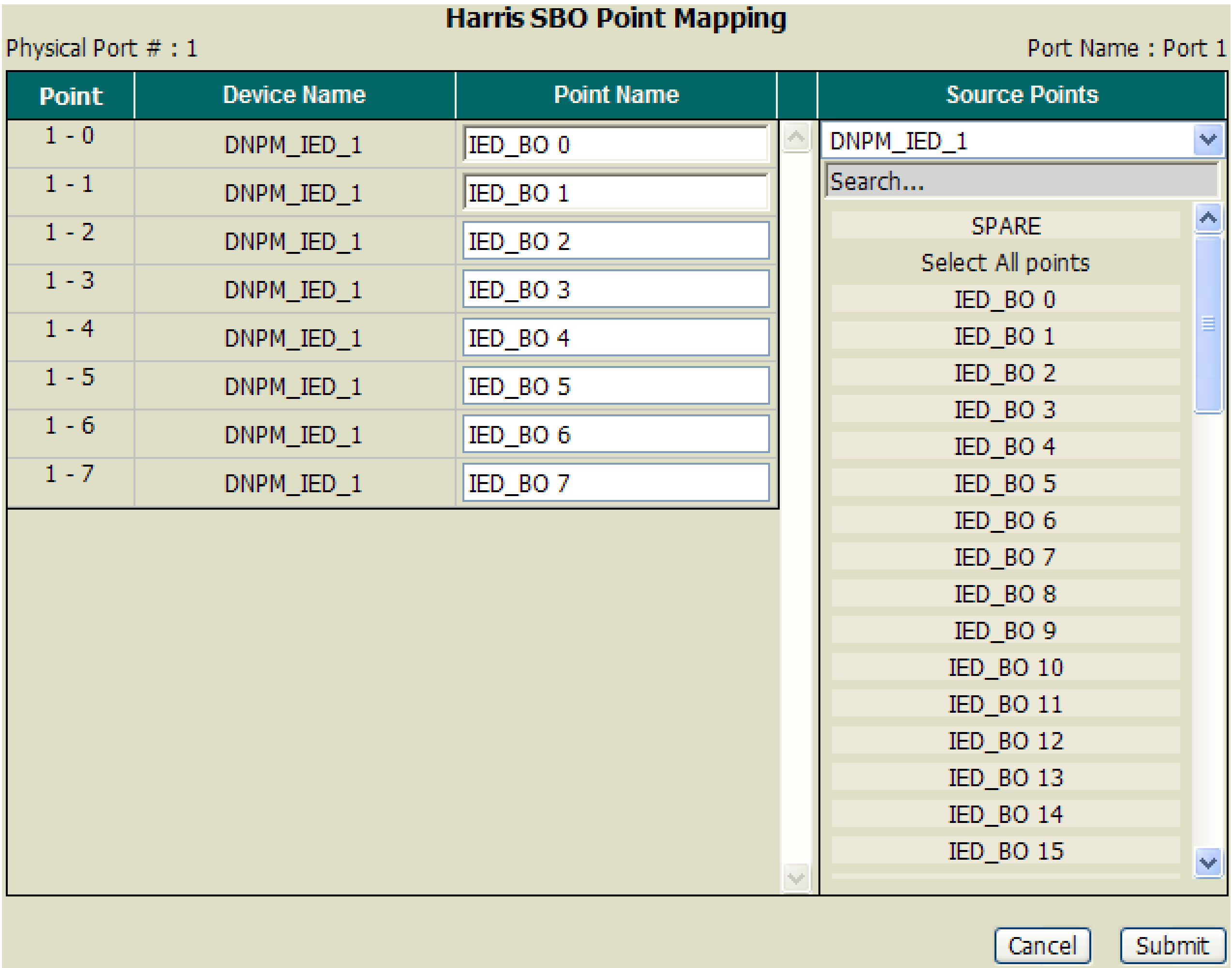
6.3.10.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.11 Map Outputs 16 Pt Control & Ind, Harris(R) 5500

From the Harris(R) Communication Mapping screen, click the MAP button for Map Outputs 16 Pt Control & Ind. A screen similar to Figure 6-17 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-17 Harris(R) 5500 SBO Point Mapping



Point
The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.11.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.11.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

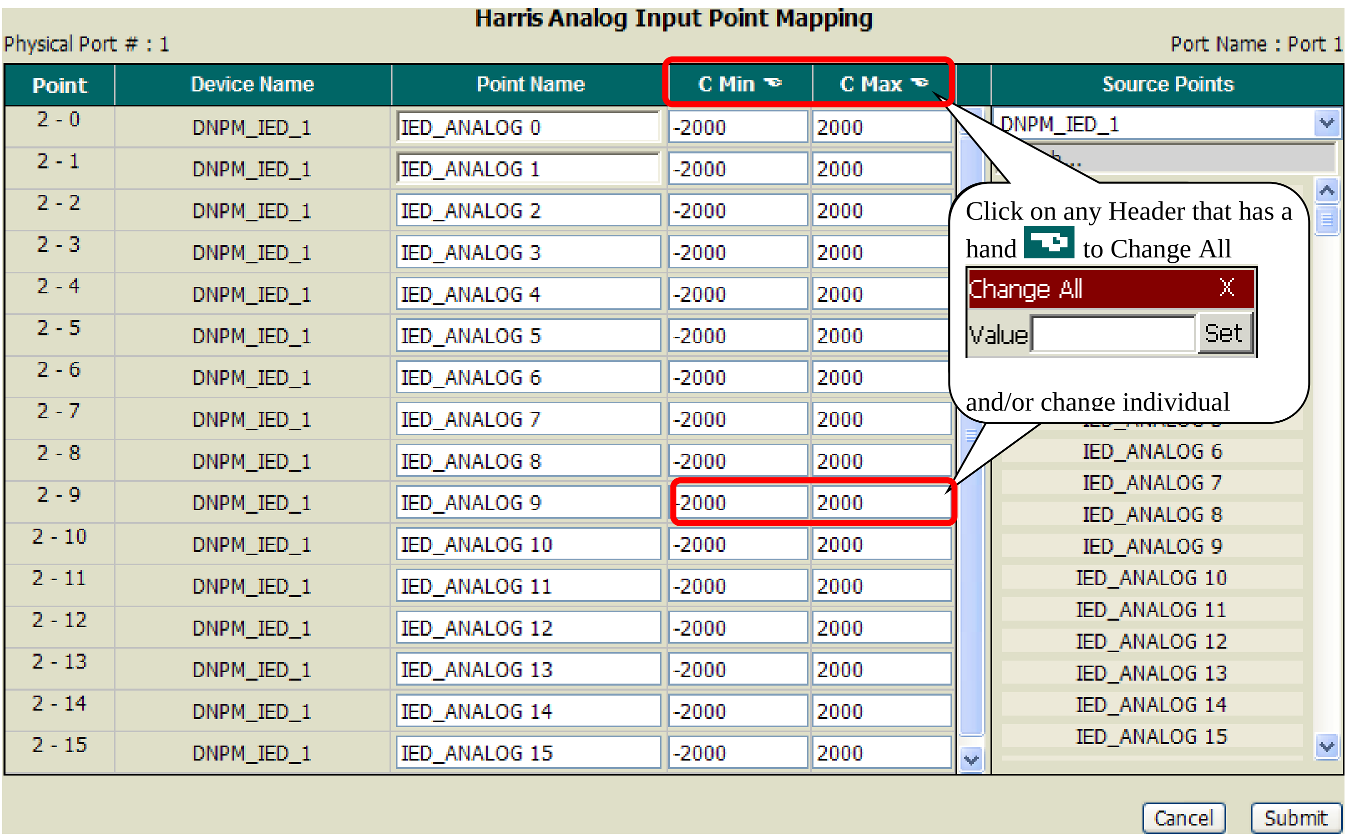
6.3.11.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.12 Map Inputs 16 Pt Analog In, Harris(R) 5500

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 16 Pt Analog In. A screen similar to Figure 6-18 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-18 Harris(R) 5500 Analog Input Point Mapping



Point

The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.12.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.12.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

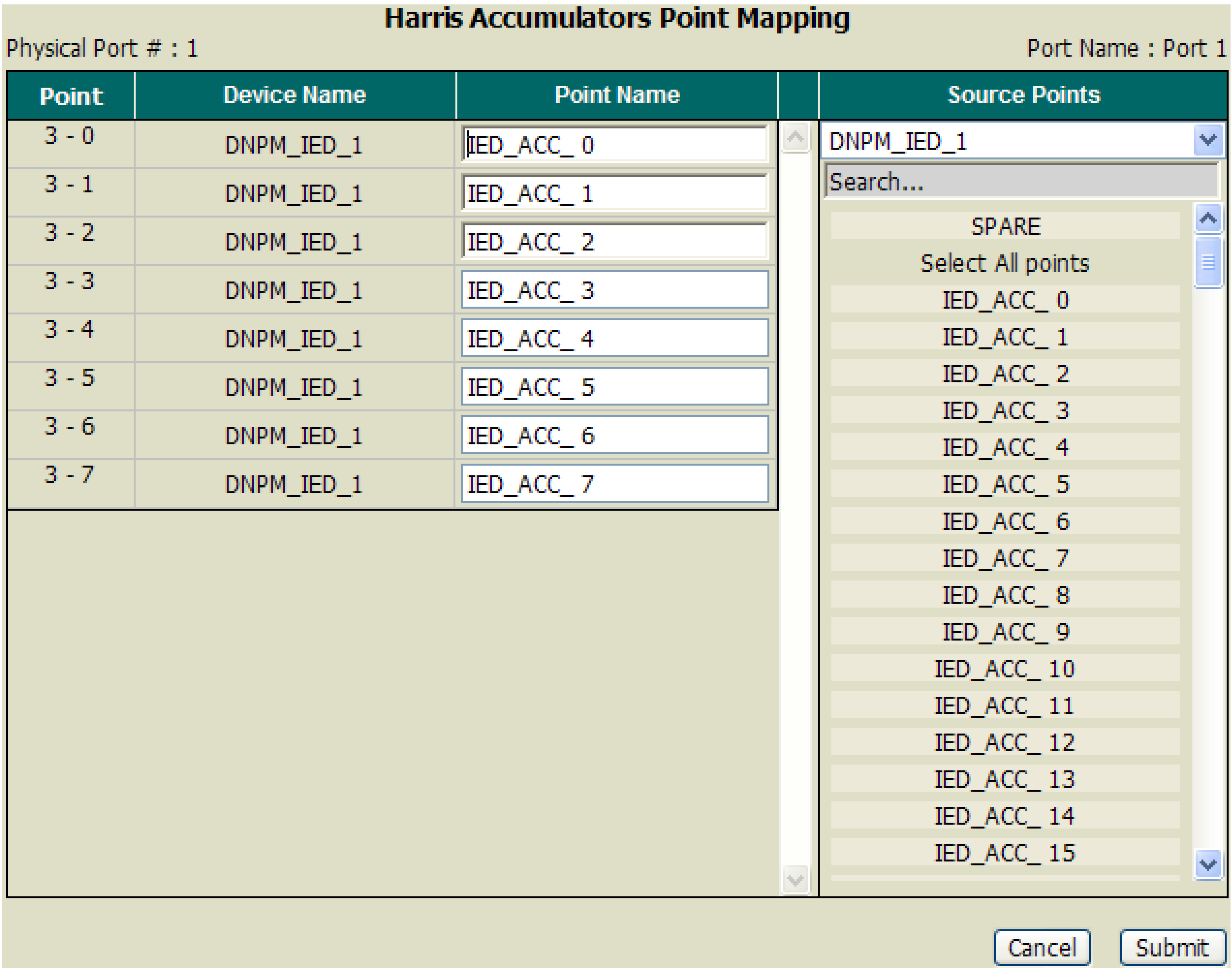
6.3.12.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.13 Map Inputs 8 Pt 12 bit ACC In, Harris(R) 5500

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 8 Pt 12 bit ACC In. A screen similar to the one below will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-19 Harris(R) 5500 Accumulator Point Mapping



Point
The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.13.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.13.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

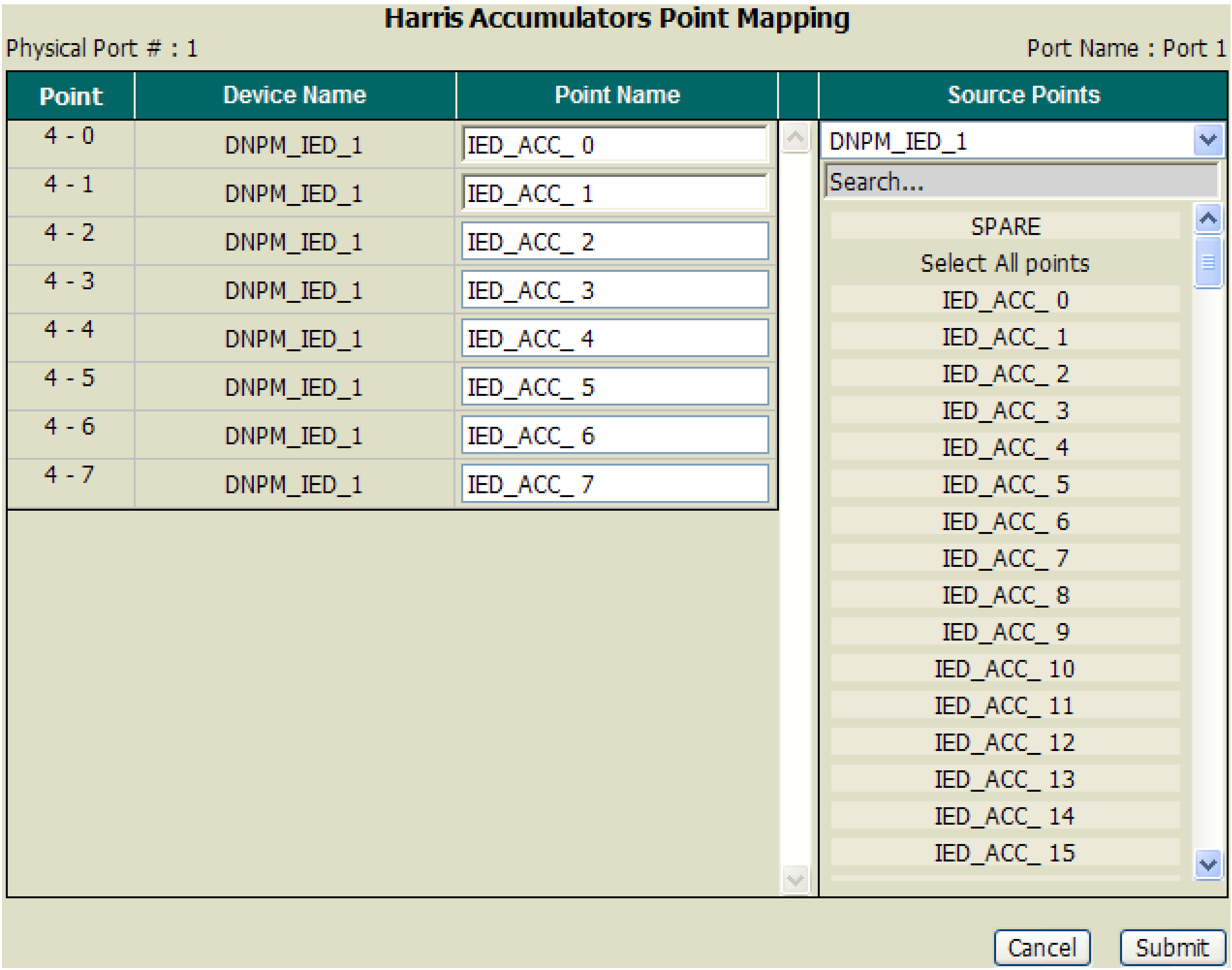
6.3.13.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.14 Map Inputs 8 Pt 24 bit ACC In, Harris(R) 5500, 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 8 Pt 24 bit ACC In. A screen similar to Figure 6-20 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-20 Harris(R) 5500 Accumulator Point Mapping



Point
The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.14.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.14.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

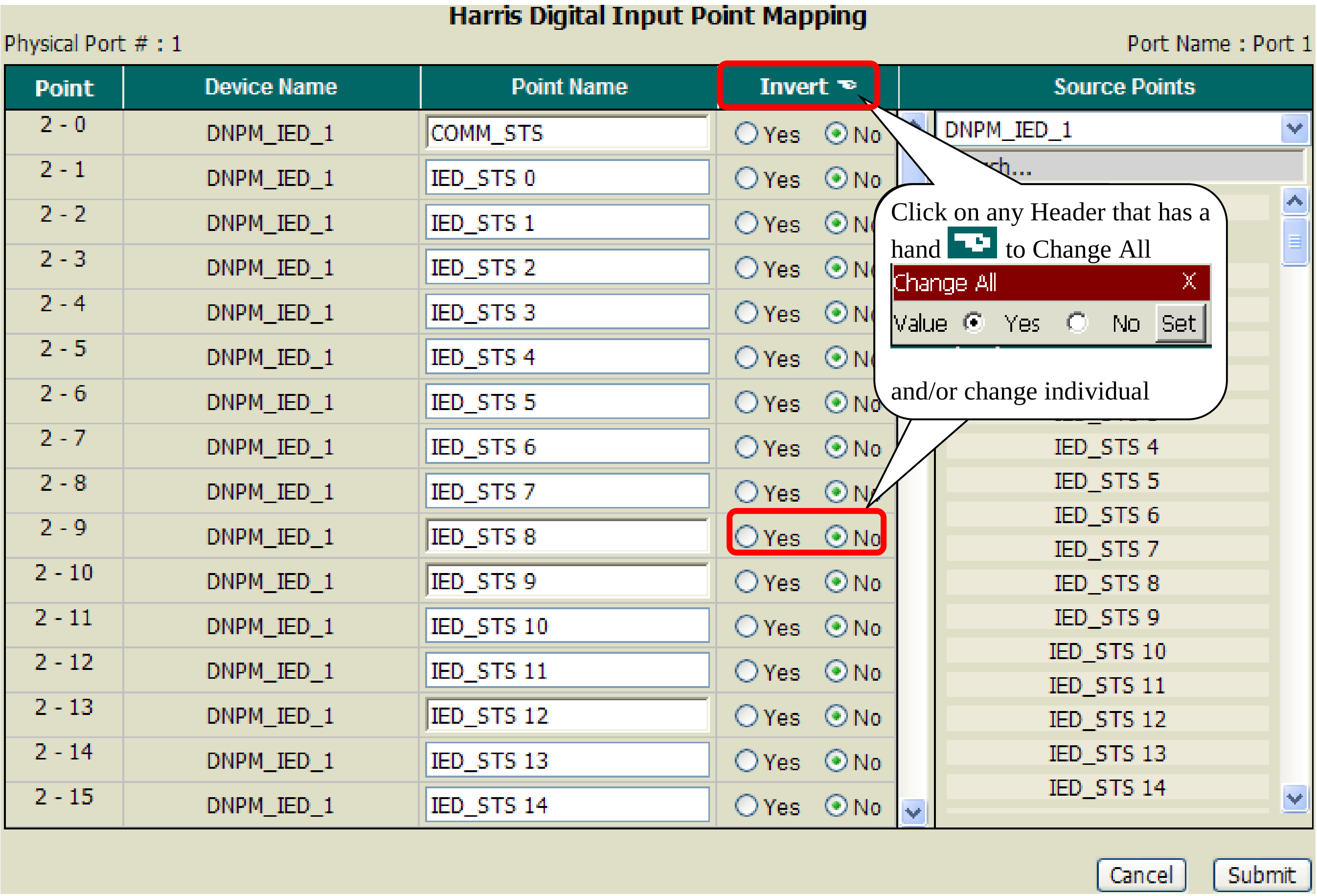
6.3.14.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.15 Map Inputs 63 Pt Control & Ind, Harris(R) 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 63 Pt Control & Ind. A screen similar to Figure 6-21 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-21 Harris(R) 6000 Digital Input Point Mapping



Point

The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert (Yes, No)
Select whether on not you want the point inverted. Default in No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.15.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.15.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

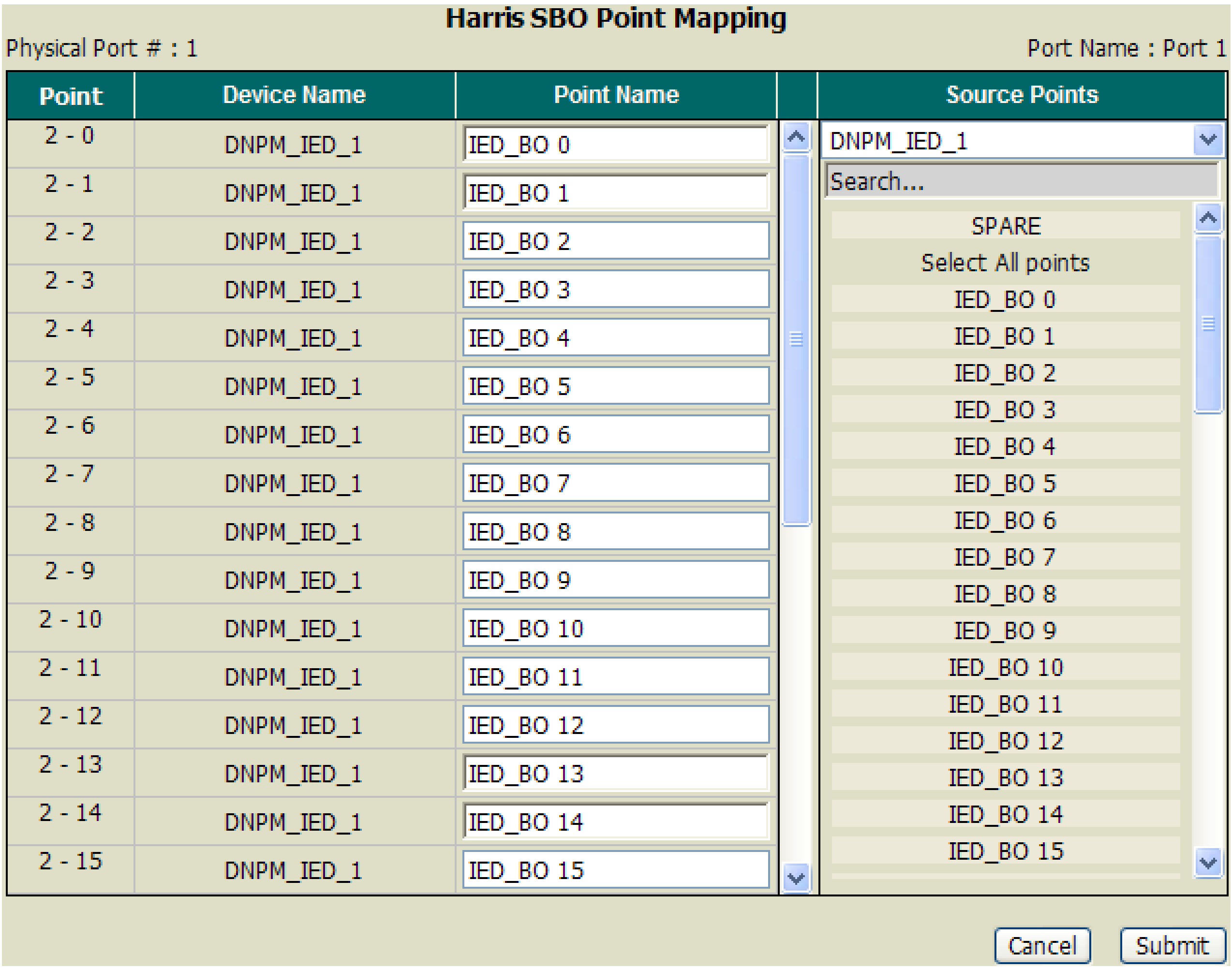
6.3.15.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.16 Map Outputs 63 Pt Control & Ind, Harris(R) 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Outputs 63 Pt Control & Ind. A screen similar to Figure 6-22 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-22 Harris(R) 6000 SBO Point Mapping



Point
The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.16.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.16.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

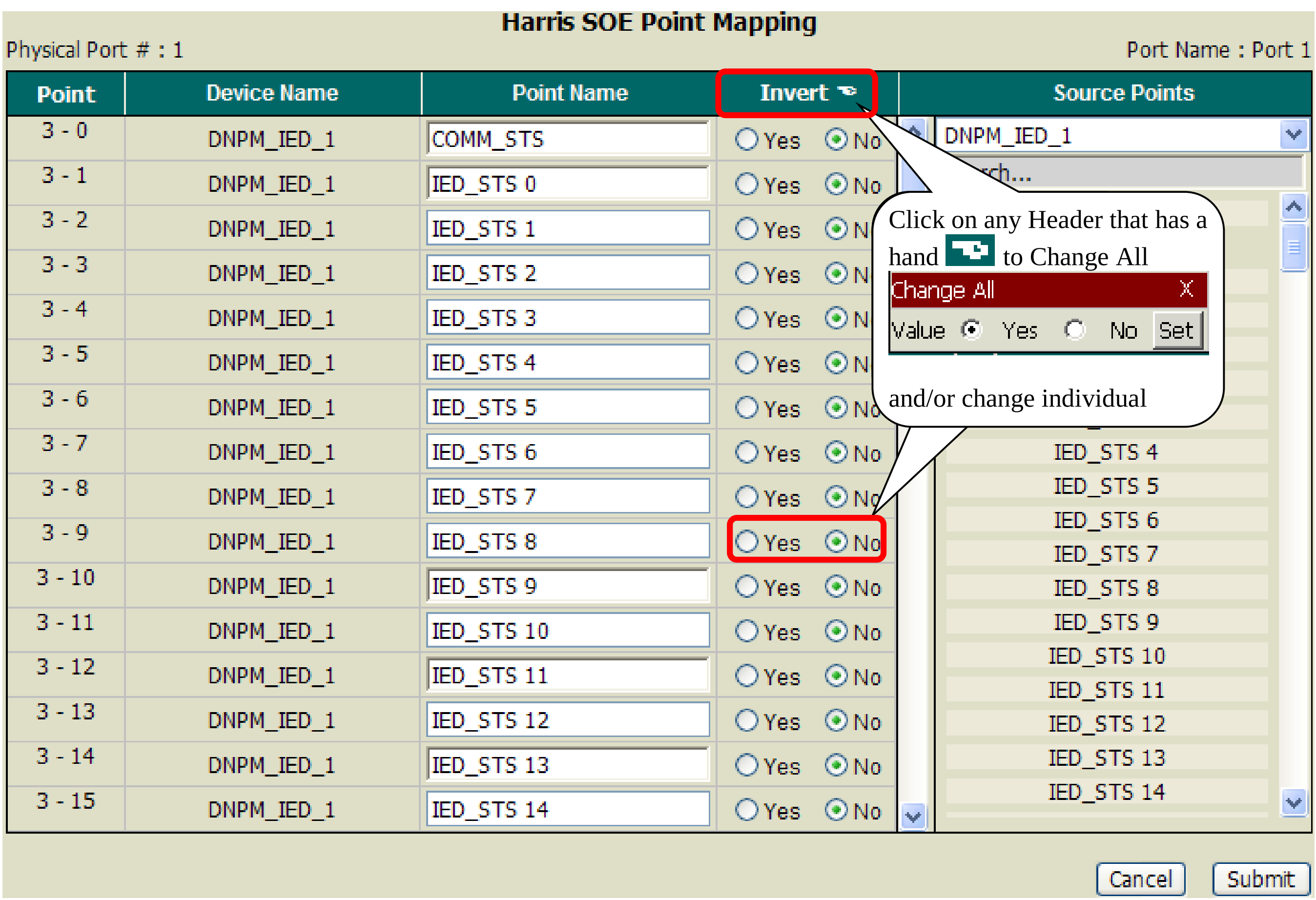
6.3.16.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.17 Map Inputs 63 Pt Control & SOE, Harris(R) 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 63 Pt Control & SOE. A screen similar to Figure 6-23 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-23 Harris(R) 6000 Digital Input Point Mapping



Point

The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert (Yes, No)
Select whether on not you want the point inverted. Default in No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.17.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.17.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

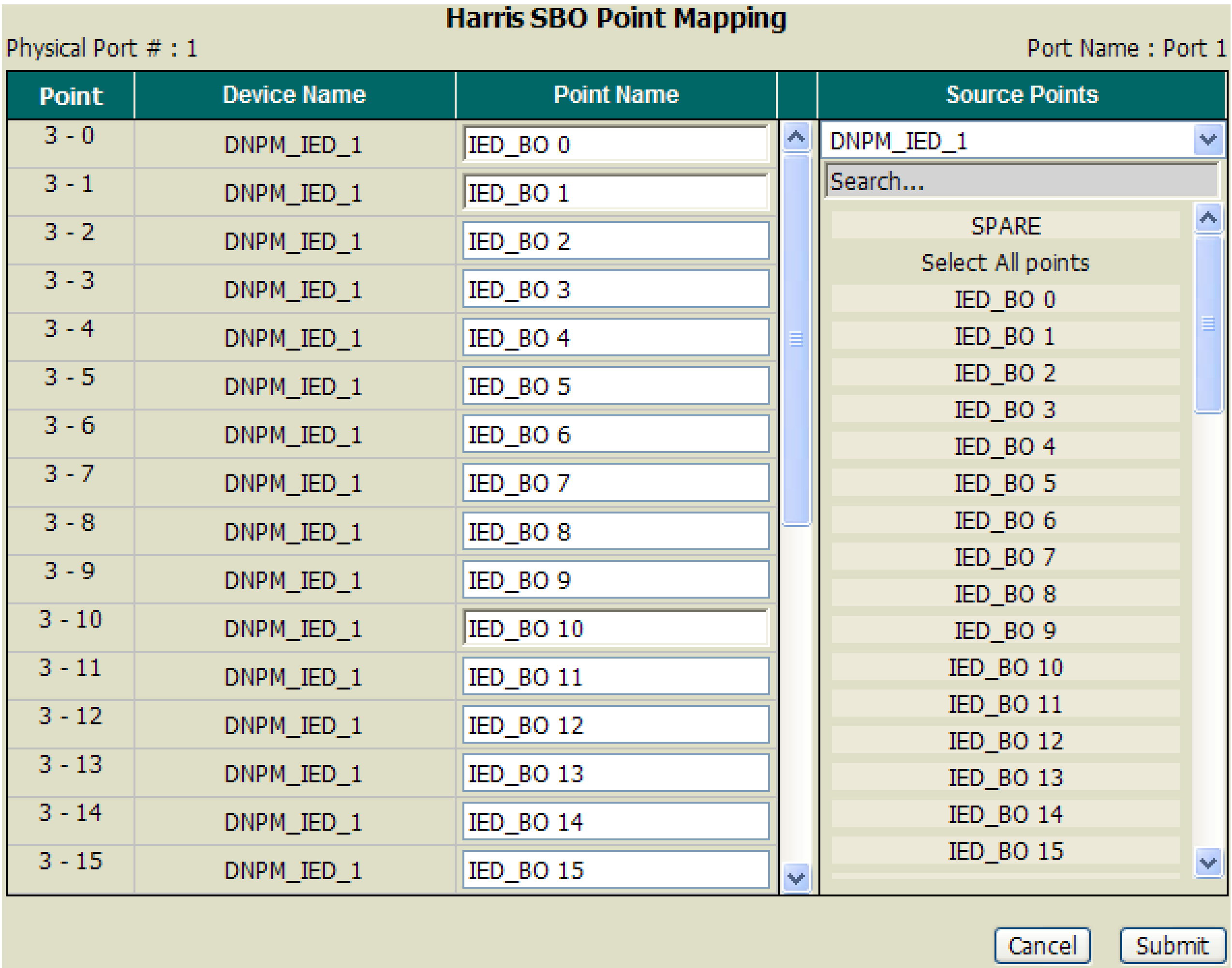
6.3.17.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.18 Map Outputs 63 Pt Control & SOE, Harris(R) 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Outputs 63 Pt Control & SOE. A screen similar to Figure 6-24 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-24 Harris(R) 6000 SBO Point Mapping



Point
The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.18.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.18.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

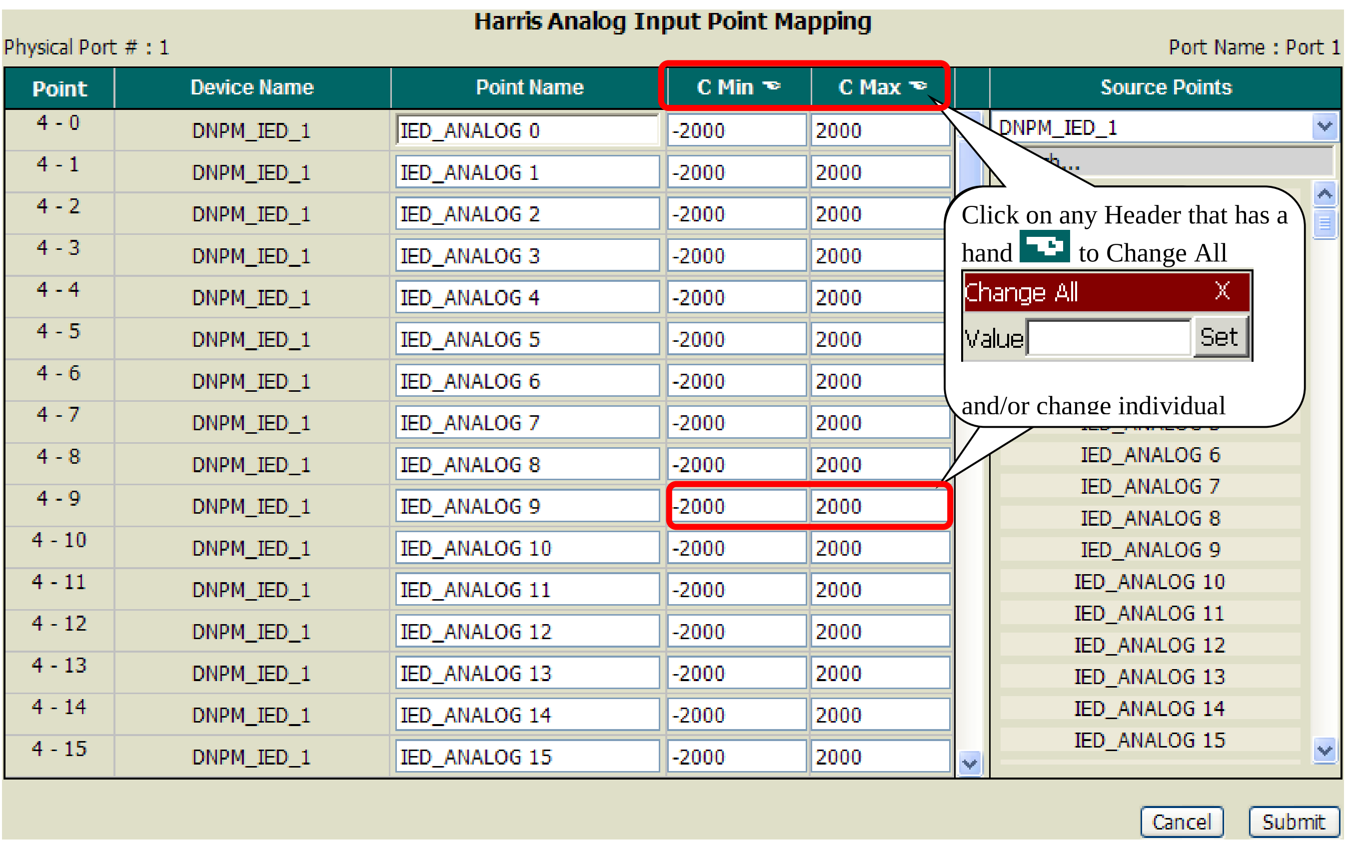
6.3.18.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.19 Map Inputs 63 Pt Analog In, Harris(R) 6000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 63 Pt Analog In. A screen similar to Figure 6-25 will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-25 Harris(R) 6000 Analog Input Point Mapping



Point

The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name

The name of the source device for the mapped point.

Point Name

The name of the mapped point.

C Min

Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max

Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points

Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.3.19.1 Point Mapping Highlight

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

6.3.19.2 Point Database Search

See the Map Outputs 32 Pt Control & Ind, Harris(R) 5000, 6000 example.

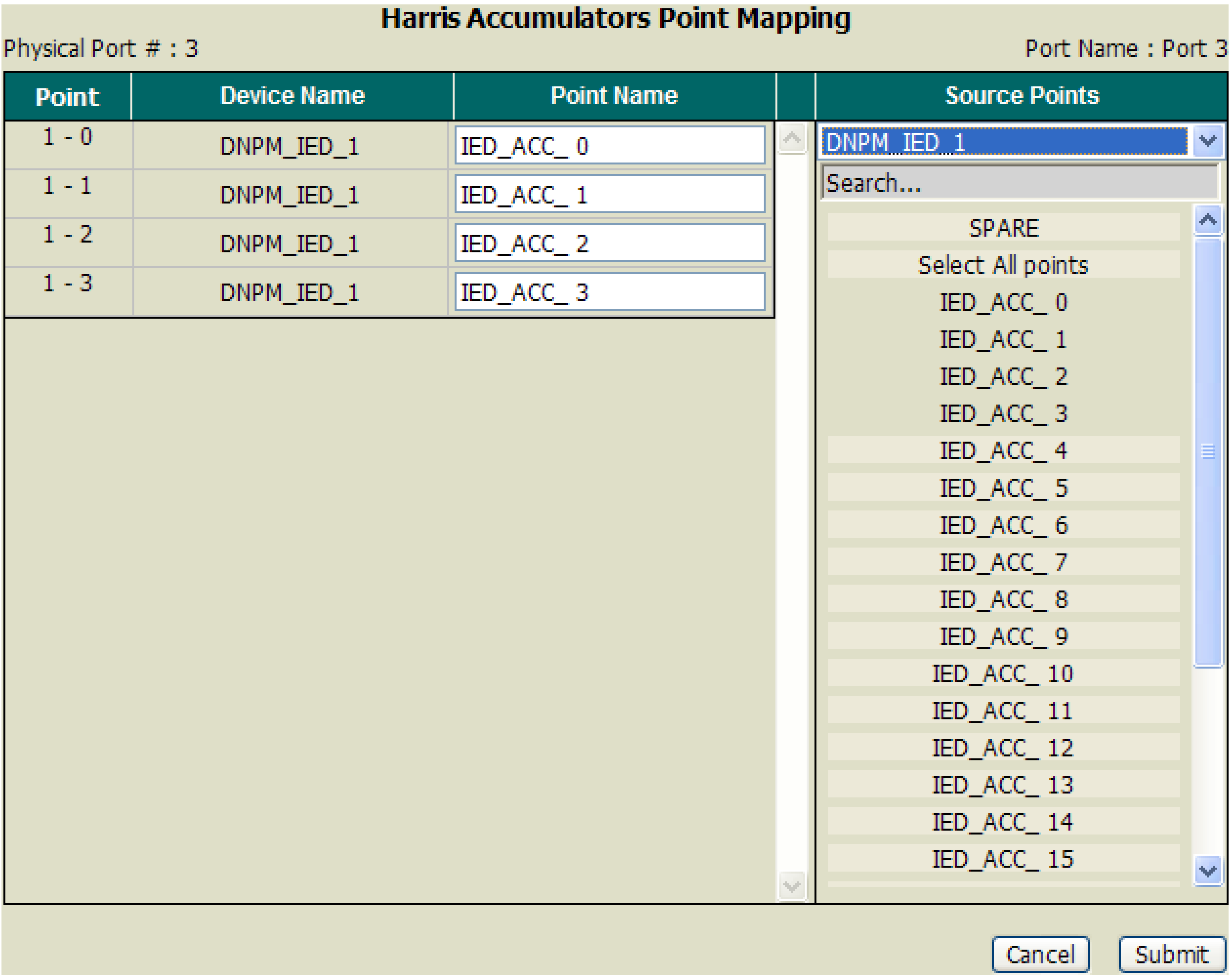
6.3.19.3 Insert & Delete Points

Insert & Delete not applicable to Harris(R) 5000/5500/6000 protocol.

6.3.20 Map Inputs 4 Pt 32 bit ACC In, Harris(R) 5000

From the Harris(R) Communication Mapping screen, click the MAP button for Map Inputs 4 Pt 32 bit ACC In. A screen similar to the one below will appear. Select from the Source Points drop-down list the points you want to map; drag-and-drop those points to the appropriate slot under Point Name.

Figure 6-26 Harris(R) 5000 Accumulator Point Mapping



Point
The first number is the Harris(R) port. The second number is the protocol logical point number within that port.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

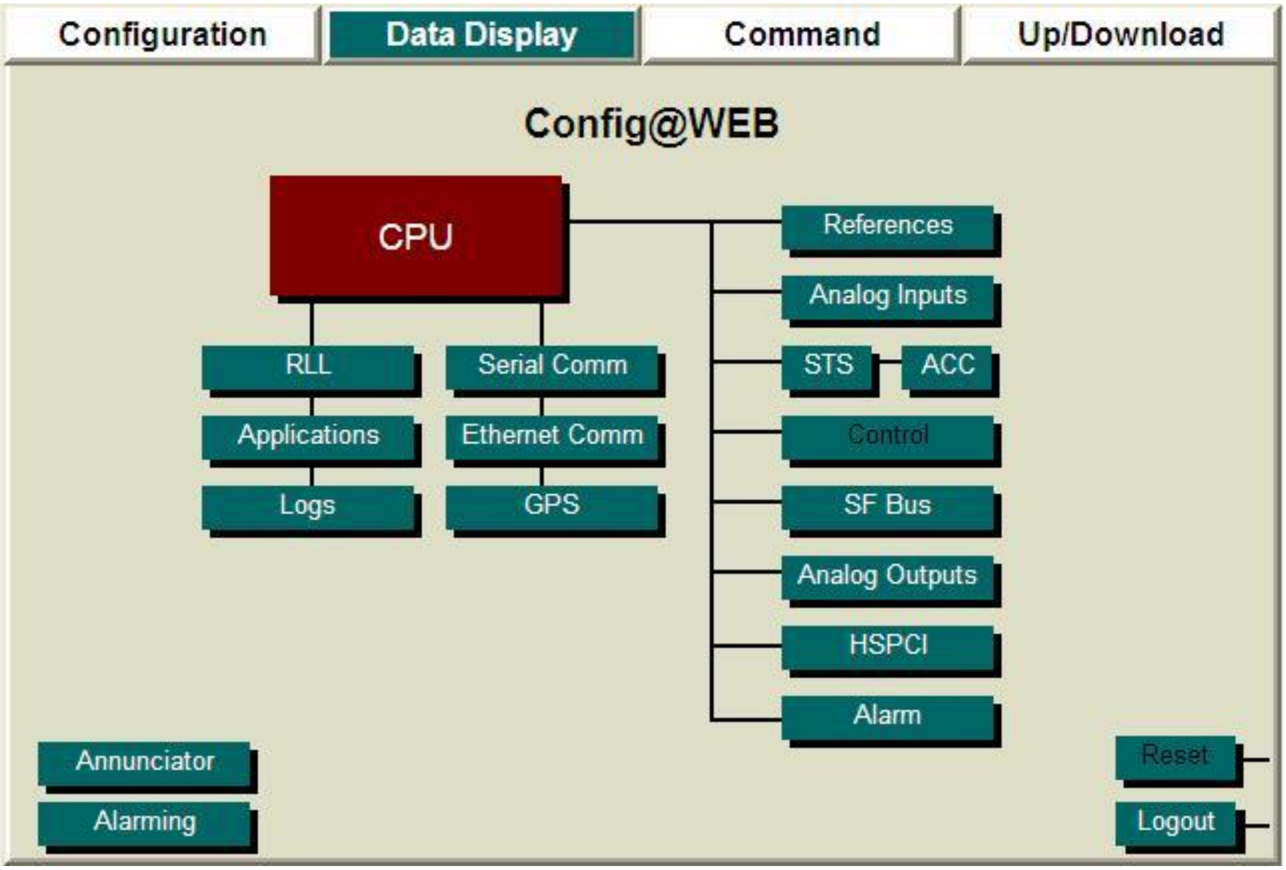
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

6.4 Data Display

Click the Data Display tab as shown in Figure 6-27.

Figure 6-27 Data Display Screen



Click Serial Comm to get the screen shown in Figure 6-28.

Figure 6-28 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	Harris (R)	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/de-asserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data
Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

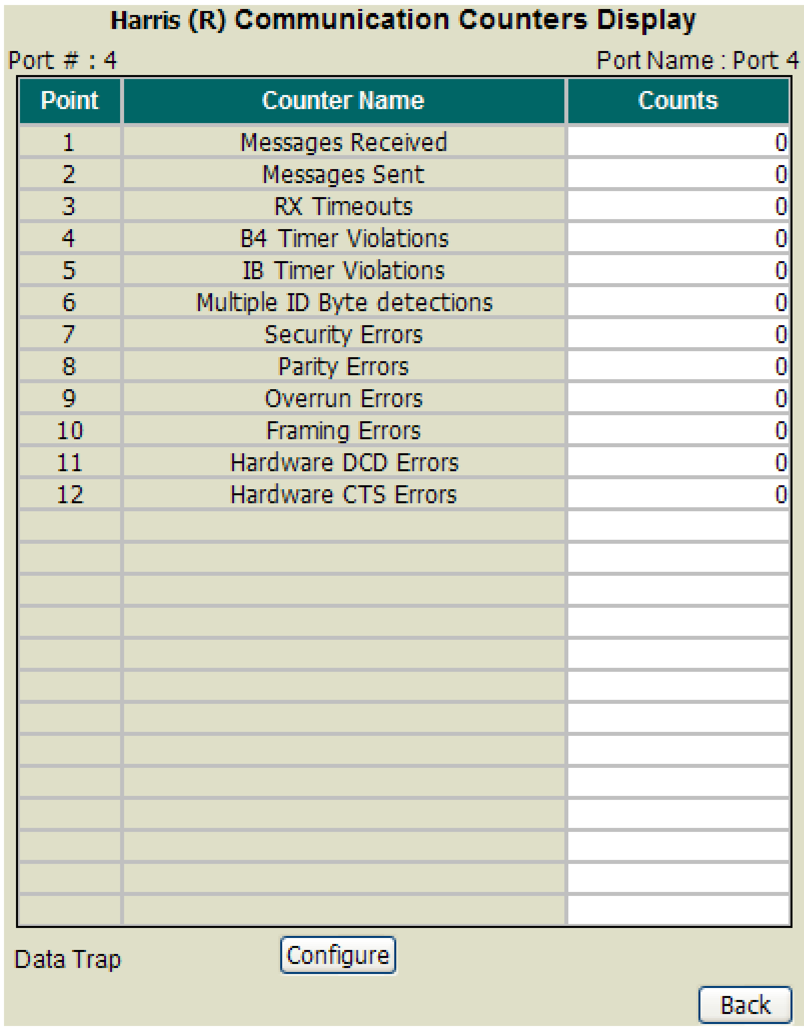
Navigation

Click the Back button to return to the previous screen.

6.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 6-29.

Figure 6-29 Harris(R) Communication Counters Display


Harris (R) Communication Counters Display

Port # : 4 Port Name : Port 4

Point	Counter Name	Counts
1	Messages Received	0
2	Messages Sent	0
3	RX Timeouts	0
4	B4 Timer Violations	0
5	IB Timer Violations	0
6	Multiple ID Byte detections	0
7	Security Errors	0
8	Parity Errors	0
9	Overrun Errors	0
10	Framing Errors	0
11	Hardware DCD Errors	0
12	Hardware CTS Errors	0

Data Trap Configure

Back

Point Number
A logical point number for reference only.

Counter Name
The following counters are monitored:

Messages Received

This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

B4 Timer Violations

This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

IB Timer Violations

This indicates the cumulative number of Interbyte timer violations since the last reset or power-up. This count can be affected by the setting of the Interbyte Time in configuration.

Multiple ID Byte detectors

This indicates the cumulative number of Multiple ID Byte detections since the last reset or power-up.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Parity Errors

This indicates the cumulative number of parity errors since the last reset or power-up.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Framing Errors

This indicates the cumulative number of received bytes with framing errors since the last reset or power-up. This can be affected by parity and MTO.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

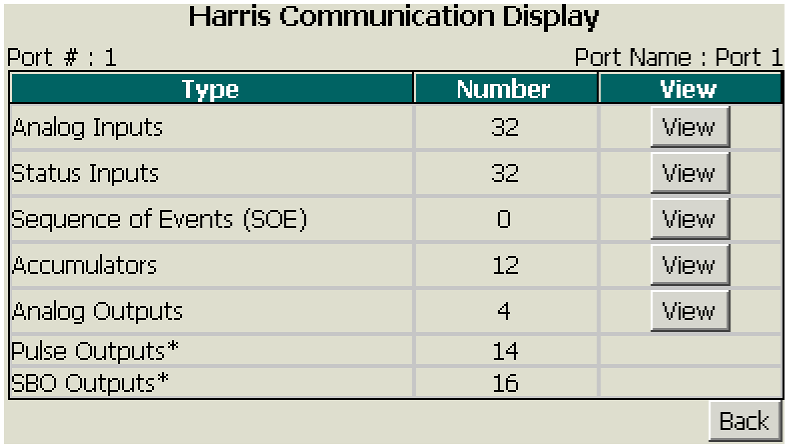
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

6.4.2 Communication Displays, Harris(R) 5000, 5500, 6000

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 6-30.

Figure 6-30 Harris(R) Communication Display



Type
The type of point.

Number
The number of points of each type.

View
Click the View button to view points.

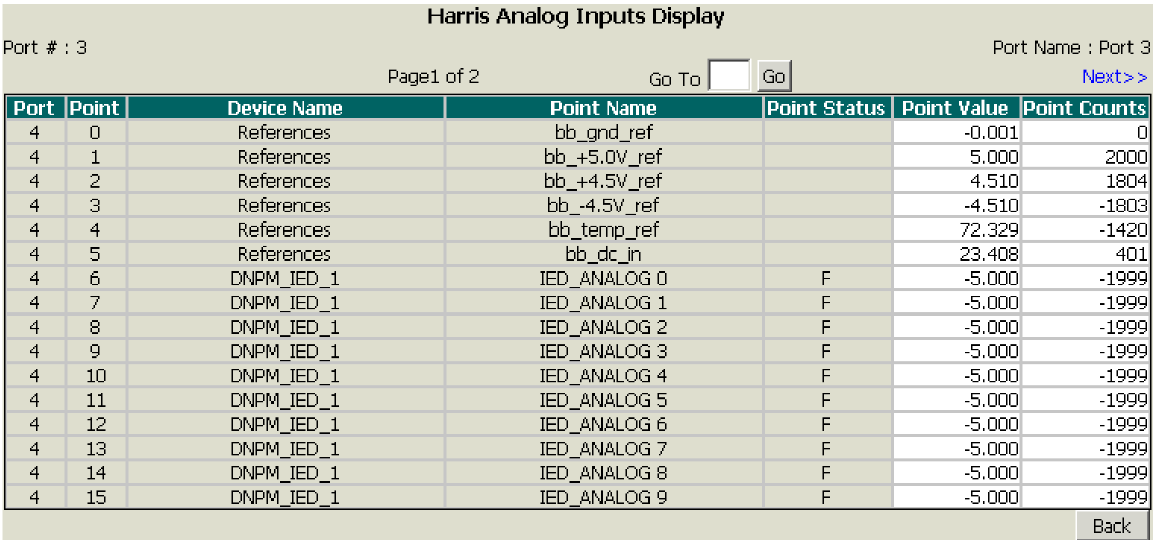
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

6.4.2.1 Analog Inputs

From the Harris(R) Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 6-31.

Figure 6-31 Harris(R) Analog Inputs Display


Harris Analog Inputs Display

Port # : 3 Port Name : Port 3

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Port	Point	Device Name	Point Name	Point Status	Point Value	Point Counts
4	0	References	bb_gnd_ref		-0.001	0
4	1	References	bb_+5.0V_ref		5.000	2000
4	2	References	bb_+4.5V_ref		4.510	1804
4	3	References	bb_-4.5V_ref		-4.510	-1803
4	4	References	bb_temp_ref		72.329	-1420
4	5	References	bb_dc_in		23.408	401
4	6	DNPM_IED_1	IED_ANALOG 0	F	-5.000	-1999
4	7	DNPM_IED_1	IED_ANALOG 1	F	-5.000	-1999
4	8	DNPM_IED_1	IED_ANALOG 2	F	-5.000	-1999
4	9	DNPM_IED_1	IED_ANALOG 3	F	-5.000	-1999
4	10	DNPM_IED_1	IED_ANALOG 4	F	-5.000	-1999
4	11	DNPM_IED_1	IED_ANALOG 5	F	-5.000	-1999
4	12	DNPM_IED_1	IED_ANALOG 6	F	-5.000	-1999
4	13	DNPM_IED_1	IED_ANALOG 7	F	-5.000	-1999
4	14	DNPM_IED_1	IED_ANALOG 8	F	-5.000	-1999
4	15	DNPM_IED_1	IED_ANALOG 9	F	-5.000	-1999

Back

Port
This is the Harris(R) port number.

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

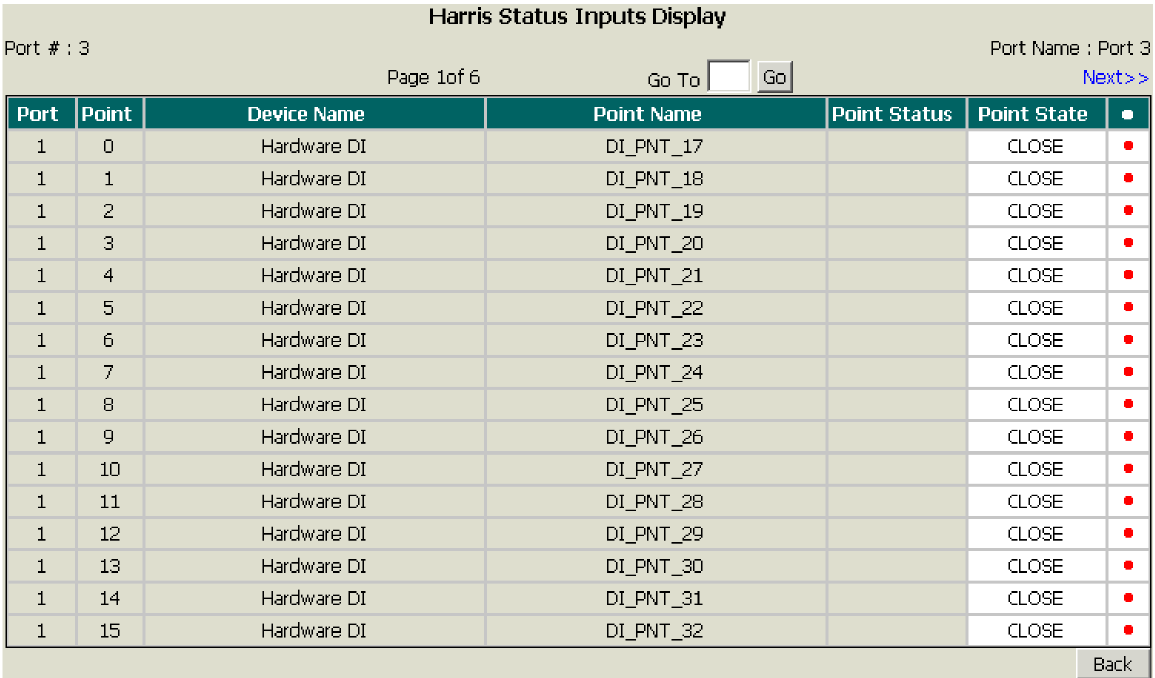
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

6.4.2.2 Status Inputs

From the Harris(R) Communication Display screen, click View for Status Inputs to get the screen shown in Figure 6-32.

Figure 6-32 Harris(R) Status Inputs Display



Harris Status Inputs Display

Port # : 3 Port Name : Port 3

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Port	Point	Device Name	Point Name	Point Status	Point State	●
1	0	Hardware DI	DI_PNT_17		CLOSE	●
1	1	Hardware DI	DI_PNT_18		CLOSE	●
1	2	Hardware DI	DI_PNT_19		CLOSE	●
1	3	Hardware DI	DI_PNT_20		CLOSE	●
1	4	Hardware DI	DI_PNT_21		CLOSE	●
1	5	Hardware DI	DI_PNT_22		CLOSE	●
1	6	Hardware DI	DI_PNT_23		CLOSE	●
1	7	Hardware DI	DI_PNT_24		CLOSE	●
1	8	Hardware DI	DI_PNT_25		CLOSE	●
1	9	Hardware DI	DI_PNT_26		CLOSE	●
1	10	Hardware DI	DI_PNT_27		CLOSE	●
1	11	Hardware DI	DI_PNT_28		CLOSE	●
1	12	Hardware DI	DI_PNT_29		CLOSE	●
1	13	Hardware DI	DI_PNT_30		CLOSE	●
1	14	Hardware DI	DI_PNT_31		CLOSE	●
1	15	Hardware DI	DI_PNT_32		CLOSE	●

Back

Port
This is the Harris(R) port number.

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

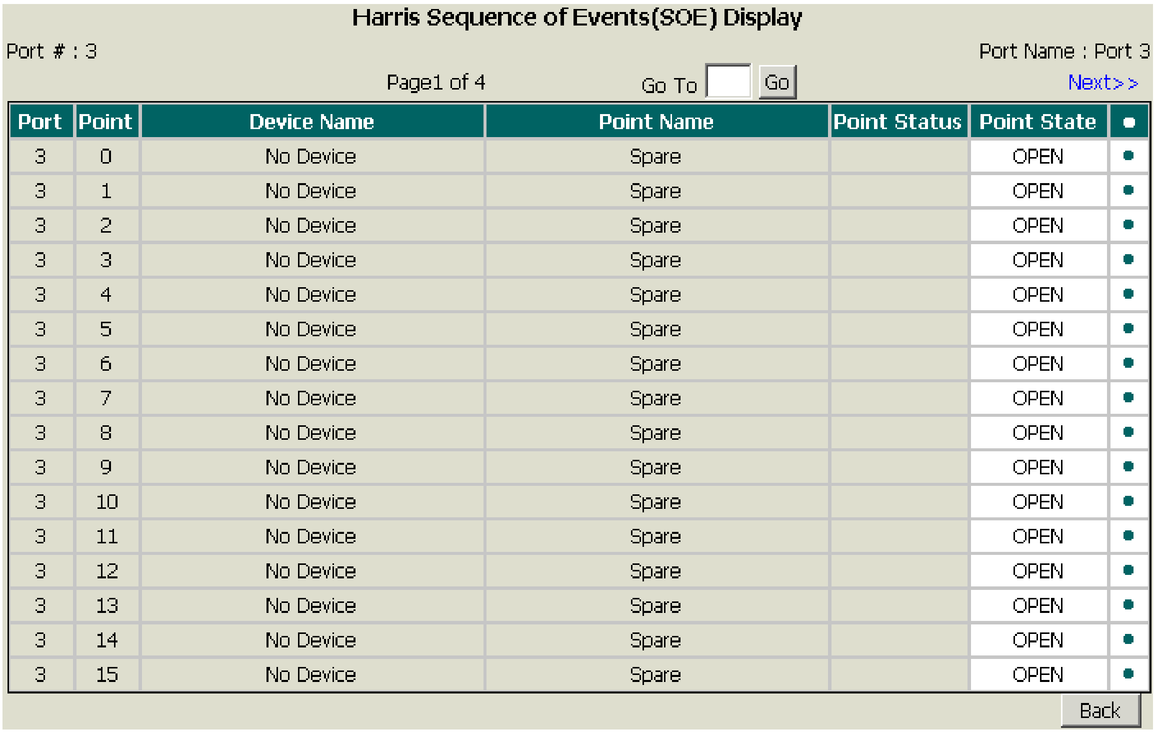
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

6.4.2.3 Sequence of Events (SOE)

From the Harris(R) Communication Display screen, click View for Sequence of Events (SOE) Inputs to get the screen shown in Figure 6-33.

Figure 6-33 Harris(R) Sequence of Events (SOE) Display


Harris Sequence of Events(SOE) Display

Port # : 3 Port Name : Port 3

Page1 of 4 Go To Go Next>>

Port	Point	Device Name	Point Name	Point Status	Point State	●
3	0	No Device	Spare		OPEN	●
3	1	No Device	Spare		OPEN	●
3	2	No Device	Spare		OPEN	●
3	3	No Device	Spare		OPEN	●
3	4	No Device	Spare		OPEN	●
3	5	No Device	Spare		OPEN	●
3	6	No Device	Spare		OPEN	●
3	7	No Device	Spare		OPEN	●
3	8	No Device	Spare		OPEN	●
3	9	No Device	Spare		OPEN	●
3	10	No Device	Spare		OPEN	●
3	11	No Device	Spare		OPEN	●
3	12	No Device	Spare		OPEN	●
3	13	No Device	Spare		OPEN	●
3	14	No Device	Spare		OPEN	●
3	15	No Device	Spare		OPEN	●

Back

Port
This is the Harris(R) port number.

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

6.4.2.4 Accumulator Inputs

From the Harris(R) Communication Display screen, click View for Accumulators to get the screen shown in Figure 6-34.

Figure 6-34 Harris(R) Accumulators Display

Harris Accumulators Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To Go

Port	Point	Device Name	Point Name	Count
3	0	2179_IED_1	IED_ACC_40	0
3	1	2179_IED_1	IED_ACC_41	0
3	2	2179_IED_1	IED_ACC_42	0
3	3	2179_IED_1	IED_ACC_43	0
3	4	2179_IED_1	IED_ACC_44	0
3	5	2179_IED_1	IED_ACC_45	0
3	6	2179_IED_1	IED_ACC_46	0
3	7	2179_IED_1	IED_ACC_47	0
4	0	TD_IED_1	Chan 1 Total Usage	0
4	1	TD_IED_1	Chan 1 Demand	0
4	2	2179_IED_1	IED_ACC_40	0
4	3	2179_IED_1	IED_ACC_41	0
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-
-	-	-	-	-

Back

Port
This is the Harris(R) port number.

Point
Reference point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Navigation

Port # : n tells you which port you are on. Port Name: name tells you the name of the port. Click << Prev to navigate to the previous 16 points, if applicable. Page n of n tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

6.4.2.5 Analog Outputs

From the Harris(R) Communication Display screen, click View for Analog Outputs to get the screen shown below.

Figure 6-35 Harris(R) Analog Outputs Display

Harris Analog Outputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To Go

Port	Point	Device Name	Point Name	Point Status	Point Value	Point Counts
6	0	Hardware AO	ANA_OUT 1	F	0	-5.000
6	1	Hardware AO	ANA_OUT 2	F	0	-5.000
6	2	DNPM_IED_1	IED_AO_ 0	F	0	-5.000
6	3	DNPM_IED_1	IED_AO_ 1	F	0	-5.000
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

Back

Port
This is the Harris(R) port number.

Point
Reference point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

Navigation

Port # : n tells you which port you are on. Port Name : name tells you the name of the port. Click << Prev to navigate to the previous 16 points, if applicable. Page n of n tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

6.4.2.6 Pulse Outputs

No display available.

6.4.2.7 SBO Outputs

No display available.

7 CDC I

7.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

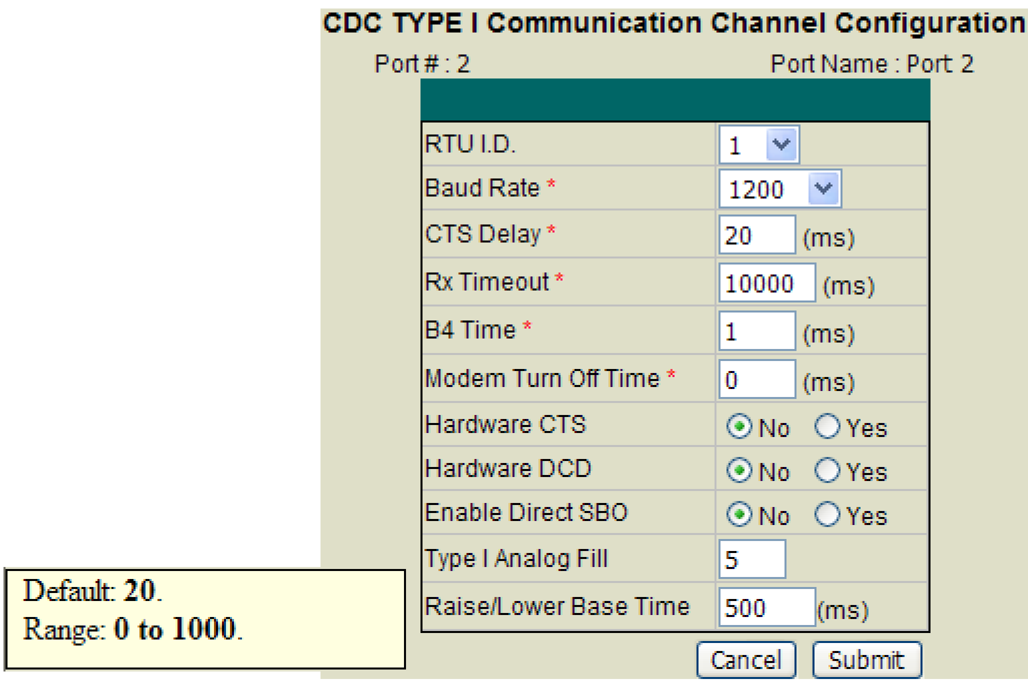
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

7.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 7-1.

Figure 7-1 CDC I Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for CTS Delay.

RTU I.D. (0 – 13, 15)
Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Address 14 is reserved for broadcast messages to all RTUs on a common communications channel. Default setting is 1.

Baud Rate (300 – 19200)

From the drop-down menu, select the baud rate. The default setting is 1200.

CTS Delay (0 – 1000ms)
Enter the clear-to-send delay in milliseconds for the associated channel. This is the delay of time the channel will wait to start transmitting following Request-To-Send being asserted. The default setting is 20.

Rx Timeout (0 – 30000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. The default setting is 10000ms.

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTU's receive interrupts. Default setting 1.

Modem Turn Off Time (0 – 250ms)
Enter the delay time that the modem will maintain the carrier after the last data byte has been transmitted. Default setting is 0.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

Enable Direct SBO (No, Yes)
This function allows the user to enable/disable the Direct Trip and Direct Close Function Codes. The default setting is No.

Type I Analog Fill (0 – 15)
Enter the value that will be inserted into the four (4) unused bits (upper nibble) of the sixteen (16) bit field for Type I twelve (12) bit analog values. The default setting is 5.

Raise/Lower Base Time (0 – 30,000ms)
Enter the raise/lower control base time in msec. The dwell time for the relay will be, in msec,

(R/L Base Time) *x* ***(Time Interval Increment)***

where the time interval increment is a value from 1 to 15 supplied in the Raise/Lower command. This time will have a granularity in the RTU of 5 msecs. Default setting is 500.

Navigation

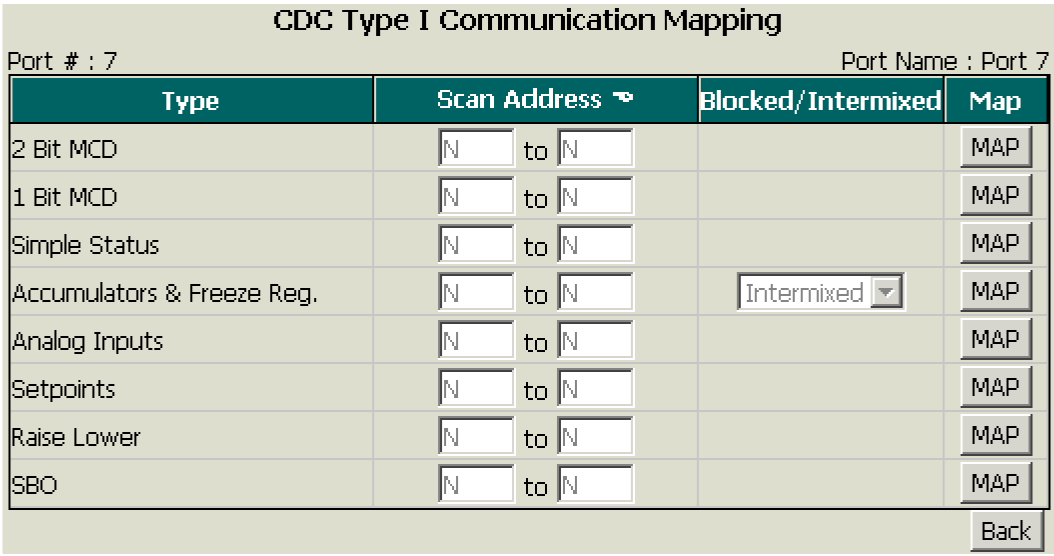
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

7.3 Point Operations

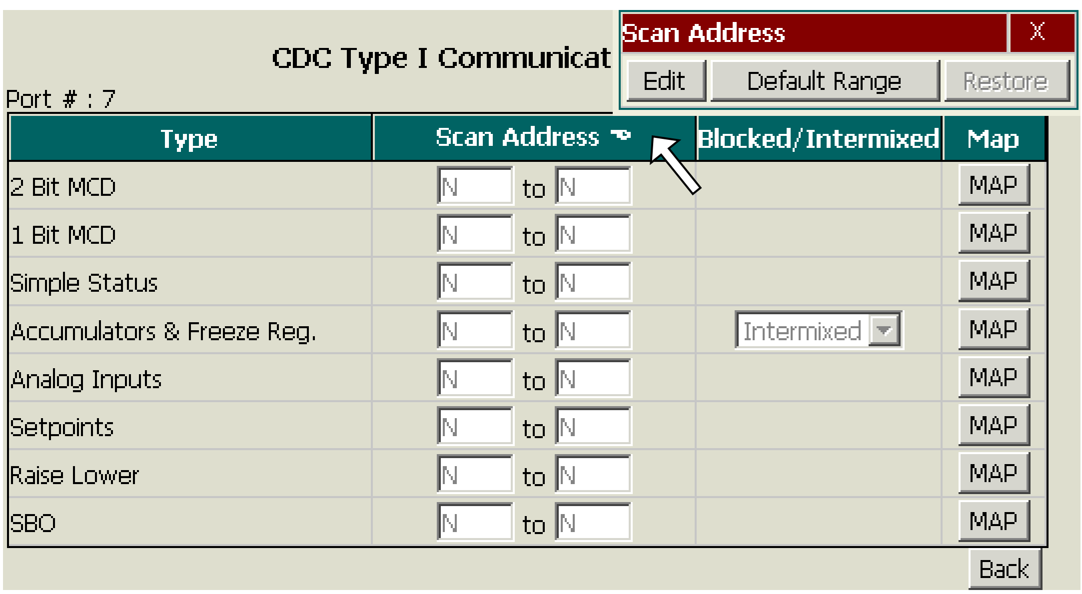
From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 7-2 will appear.

Figure 7-2 CDC Type I Communication Mapping



The initial Scan Address is populated with the letter N. Click on the header "Scan Address". You will get a screen similar to Figure 7-3. You may choose either Edit or Default Range.

Figure 7-3 IED Configuration Scan Address



If you choose Edit, you will be able to enter your own scan address range. If you choose Default Range, a range of default values will populate the Scan Address. No matter which one you choose, the Scan Address box will transform into Set and Restore. The first figure below shows an example of choosing Default Range with Accumulators Blocked. Figure 7-5 Shows an example of choosing Default Range with

Accumulators Intermixed. To keep your changes, click Set. To return to the previous range, click Restore. To accept the Default Range, click Set.

For simplicity, you can select Default Range, then edit individual address numbers according to the number of points you need.

Figure 7-4 Default Scan Address with Accumulators Blocked

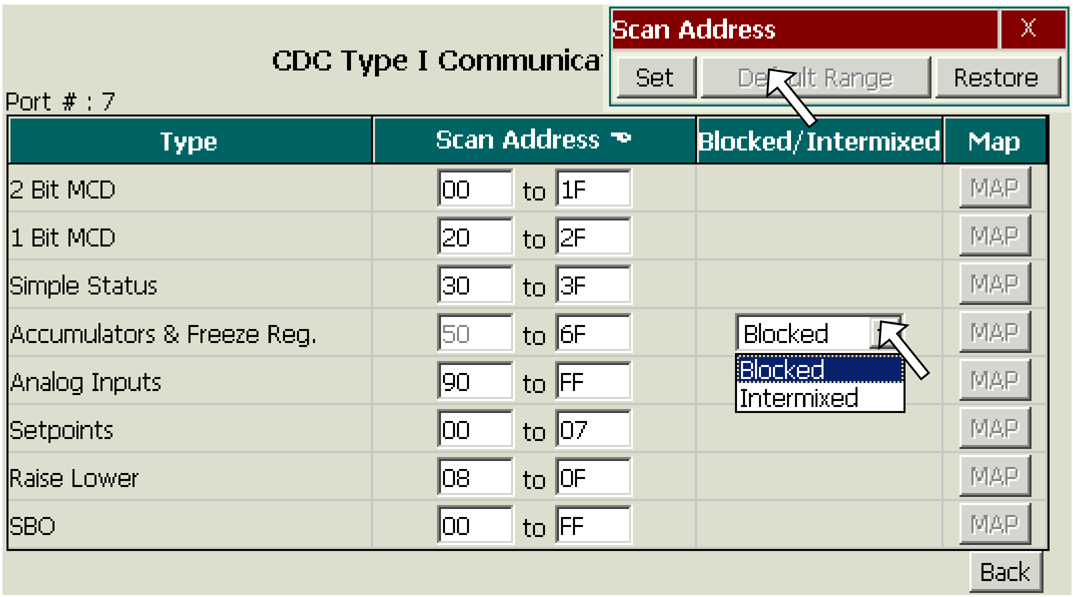
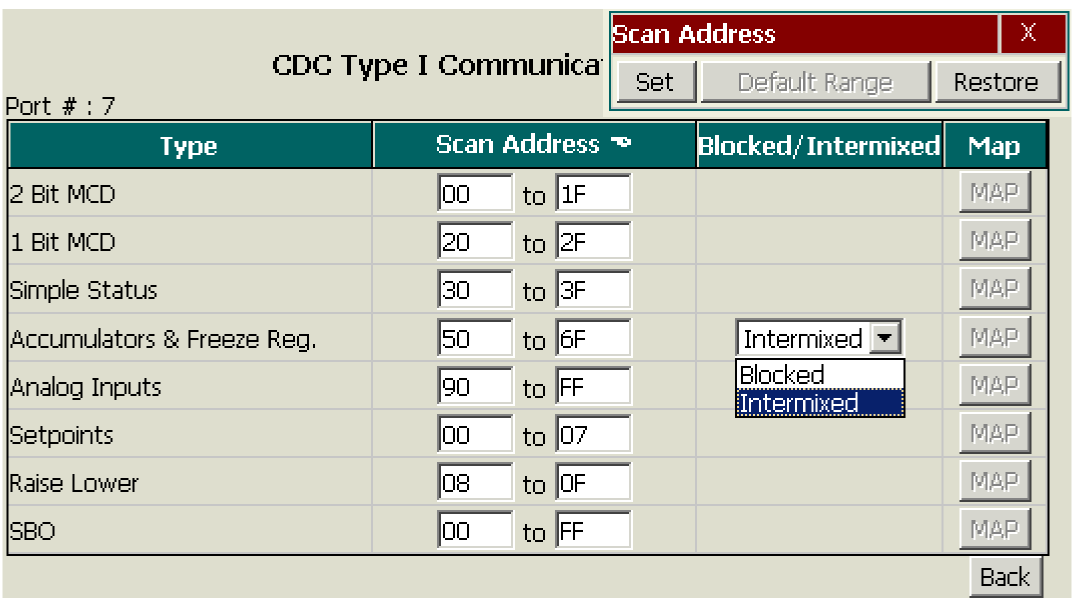
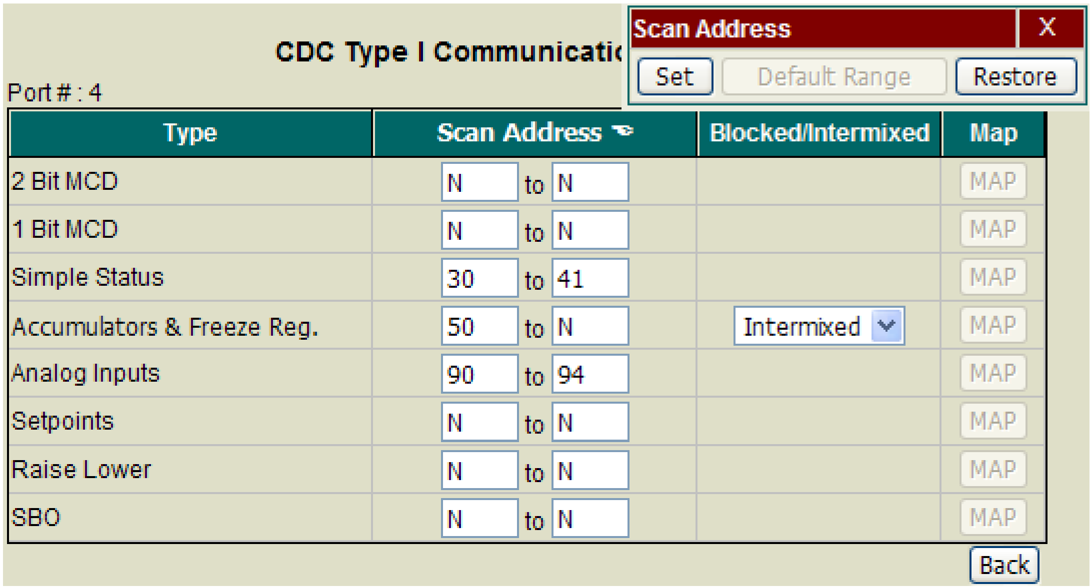


Figure 7-5 Default Scan Address with Accumulators Intermixed with Freeze Register



Note: Do not configure the Scan Addresses for more points than are being used. Always set beginning and end addresses at the lowest number as shown in the following example that has 12 simple statuses and 5 analogs.

Figure 7-6 Configuring for Minimum Points

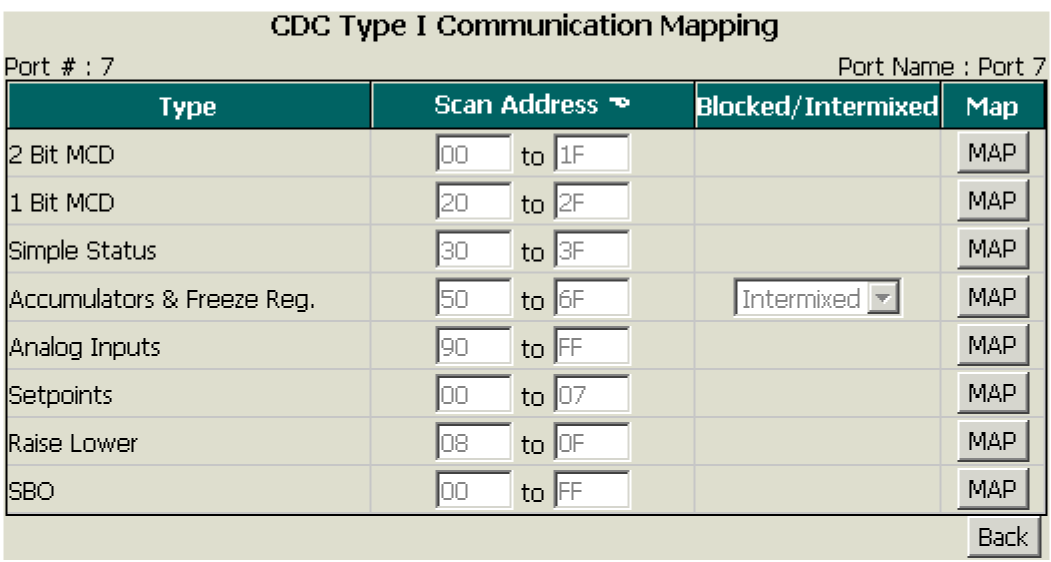


Type	Scan Address	Blocked/Intermixed	Map
2 Bit MCD	N to N		MAP
1 Bit MCD	N to N		MAP
Simple Status	30 to 41		MAP
Accumulators & Freeze Reg.	50 to N	Intermixed	MAP
Analog Inputs	90 to 94		MAP
Setpoints	N to N		MAP
Raise Lower	N to N		MAP
SBO	N to N		MAP

After the Scan Addresses are configured for the points you need, click the Set button to finalize the Scan Address Number configuration.

After dismissing the Scan Address box, you may proceed to the MAP button for each point type.

Figure 7-7 Mapping the Point Types



Type	Scan Address	Blocked/Intermixed	Map
2 Bit MCD	00 to 1F		MAP
1 Bit MCD	20 to 2F		MAP
Simple Status	30 to 3F		MAP
Accumulators & Freeze Reg.	50 to 6F	Intermixed	MAP
Analog Inputs	90 to FF		MAP
Setpoints	00 to 07		MAP
Raise Lower	08 to 0F		MAP
SBO	00 to FF		MAP

Type
The type of point.

Scan Address
The hex code scan address range expected by the master for each type of point.

Blocked/Intermixed

Please see section 7.3.4 on page 196 for an explanation and examples.

Map

Click the MAP button to map the points.

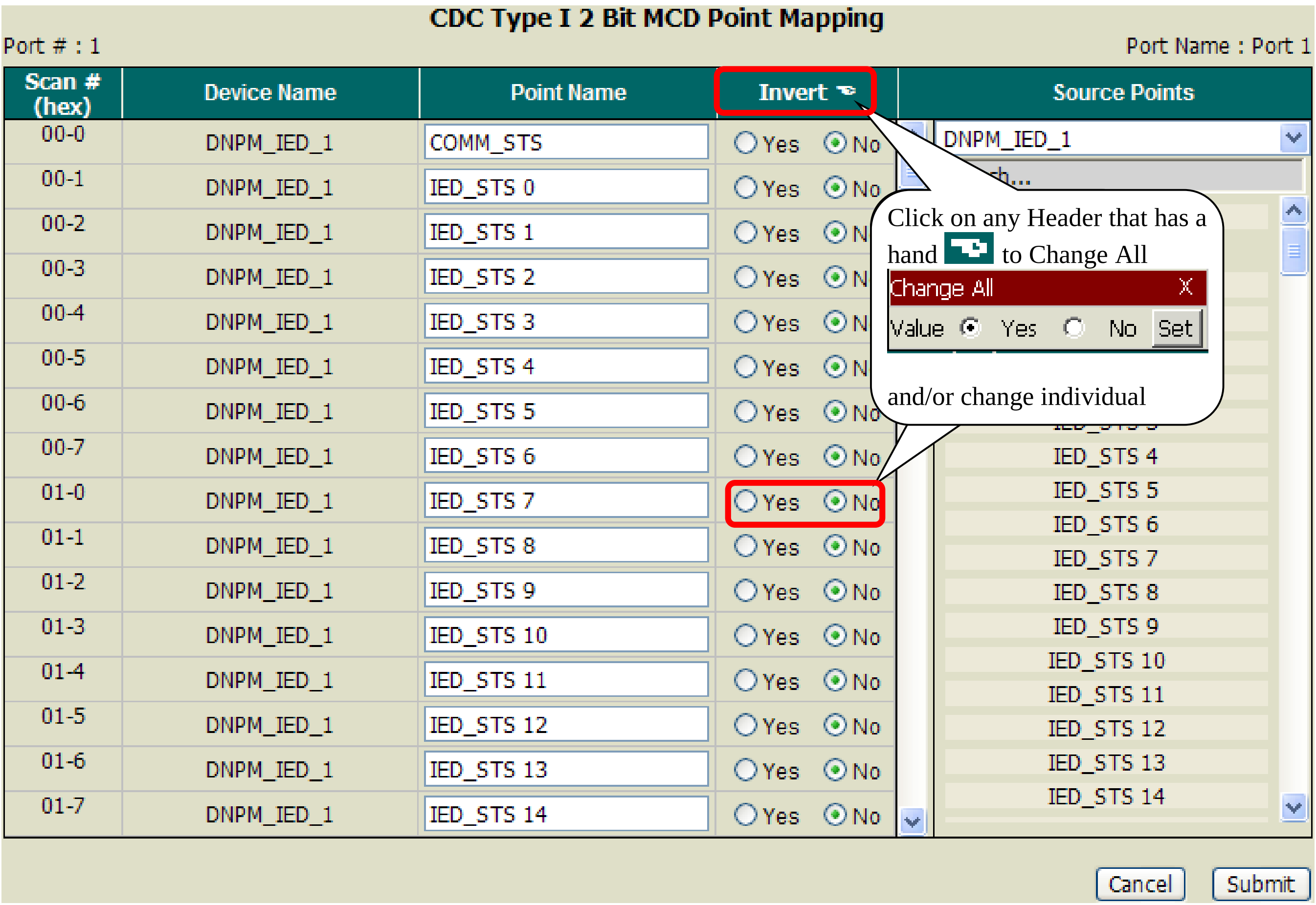
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the Port Configuration screen.

7.3.1 Map 2 Bit MCD (Multiple Change Detect)

From the CDC Type I Communication Mapping screen, click MAP for 2 Bit MCD. You will get a screen similar to Figure 7-8.

Figure 7-8 CDC Type I 2 Bit MCD Point Mapping



Scan# Hex

The CDC Type I scan address number in hex followed by the bit number in the word.

Device Name

The name of the source device for the mapped point.

Point Name

The name of the mapped point.

Invert

Click Yes to invert the point. The default is No.

Source Points

Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

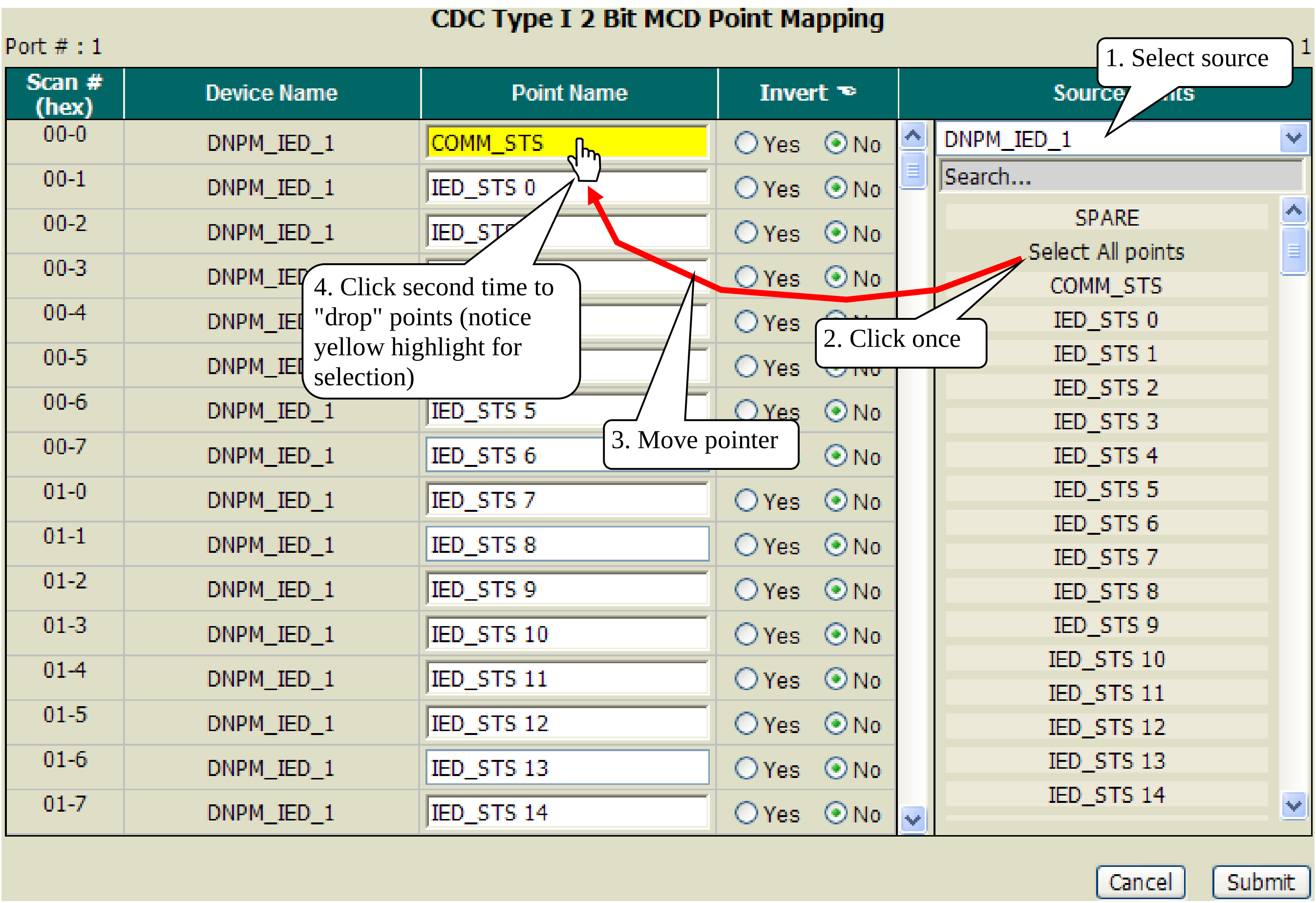
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

7.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

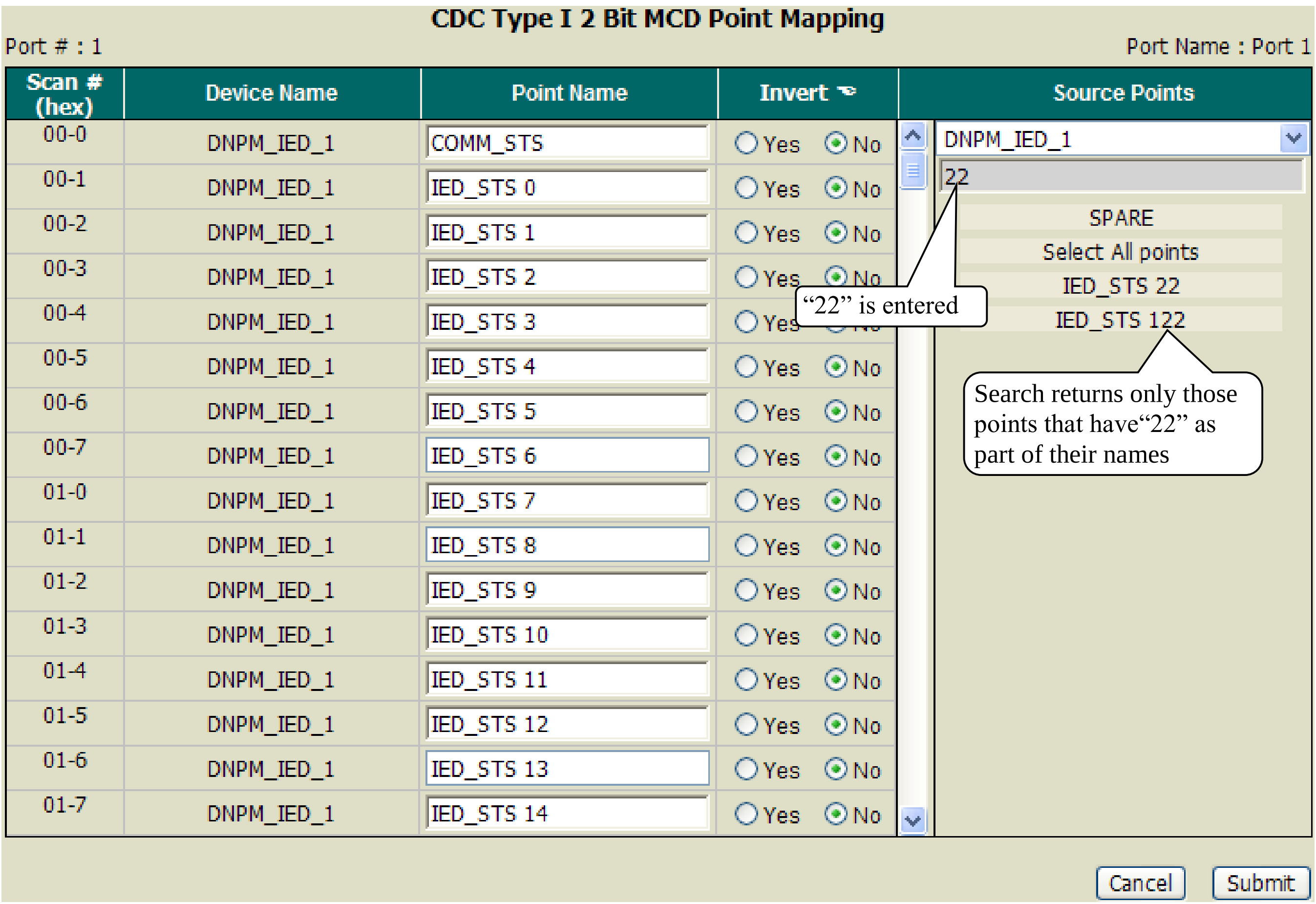
Figure 7-9 Point Mapping Highlight



7.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

Figure 7-10 Point Database Search



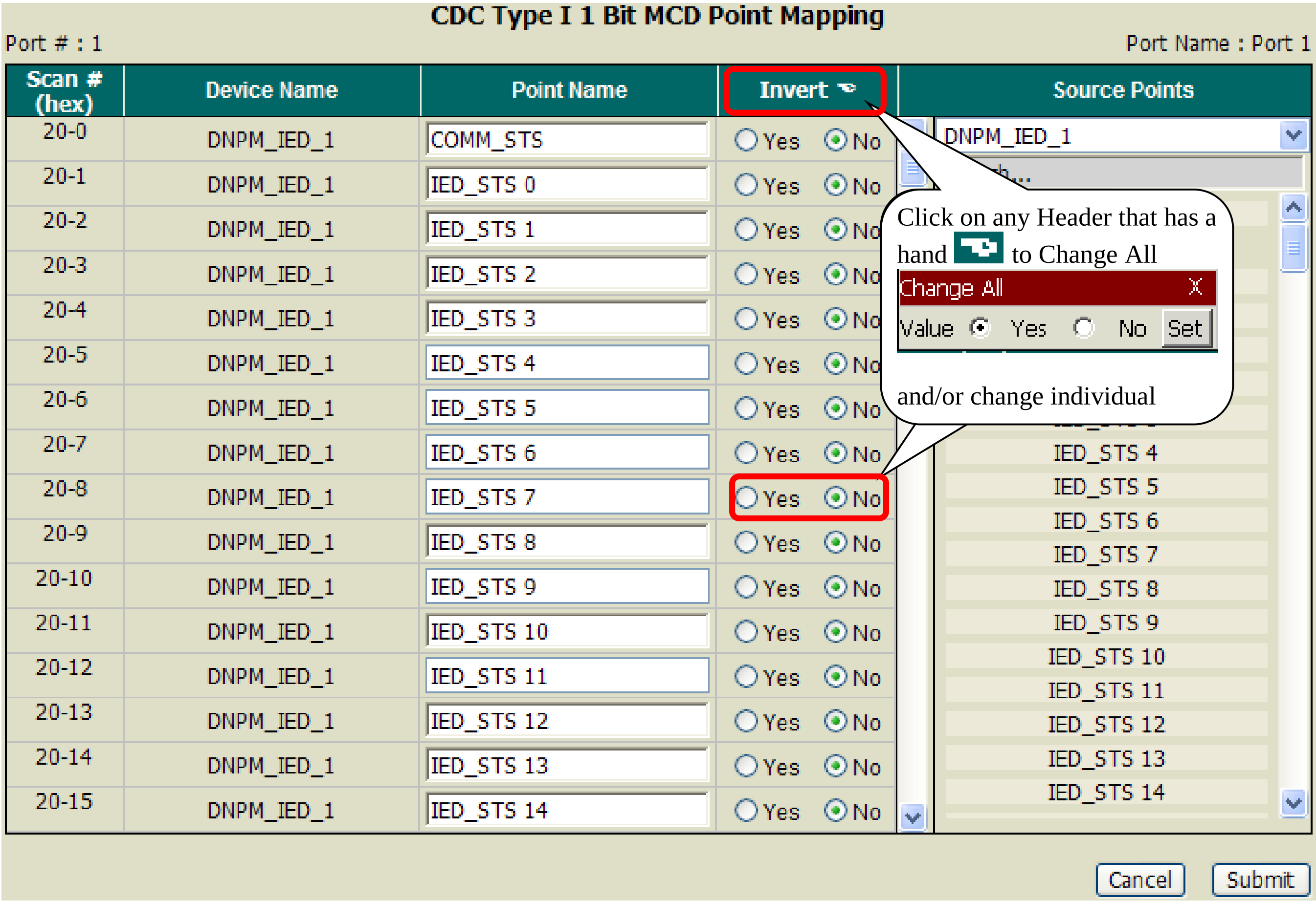
7.3.1.3 Insert & Delete Points

Insert & Delete not applicable to CDC I protocol.

7.3.2 Map 1 Bit MCD (Multiple Change Detect)

From the CDC Type I Communication Mapping screen, click MAP for 1 Bit MCD. You will get a screen similar to Figure 7-11.

Figure 7-11 CDC Type I 1 Bit MCD Point Mapping



Scan# Hex
The CDC Type I scan address number in hex followed by the bit number in the word.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

7.3.2.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

7.3.2.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

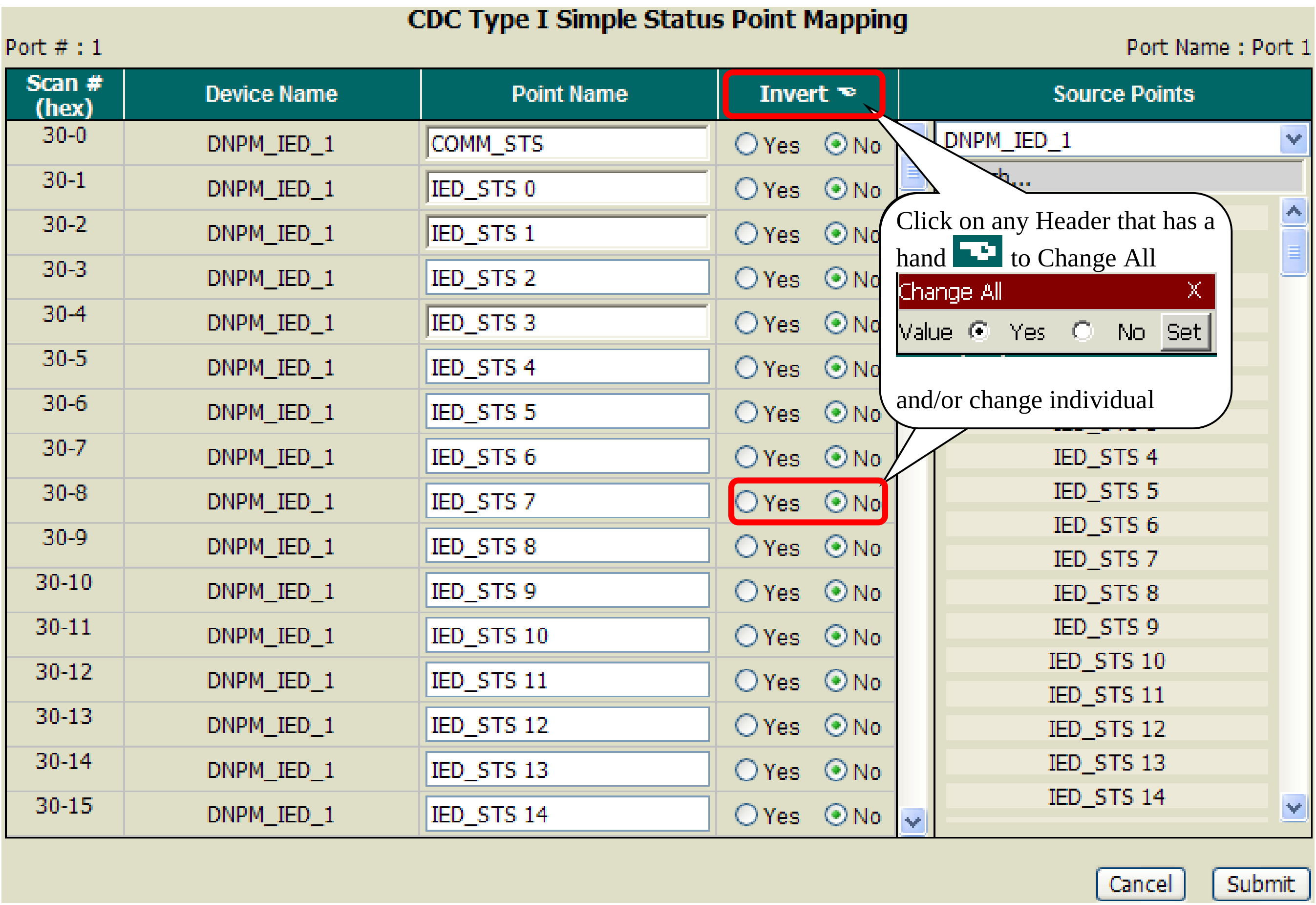
7.3.2.3 Insert & Delete Points

Insert & Delete not applicable to CDC I protocol.

7.3.3 Map Simple Status

From the CDC Type I Communication Mapping screen, click MAP for Simple Status. You will get a screen similar to Figure 7-12.

Figure 7-12 CDC Type I Simple Status Point Mapping



Scan# Hex
The CDC Type I scan address number in hex followed by the bit number in the word.

Device Name
The name of the source device for the mapped point.

Point Name

The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

7.3.3.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

7.3.3.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

7.3.3.3 Insert & Delete Points

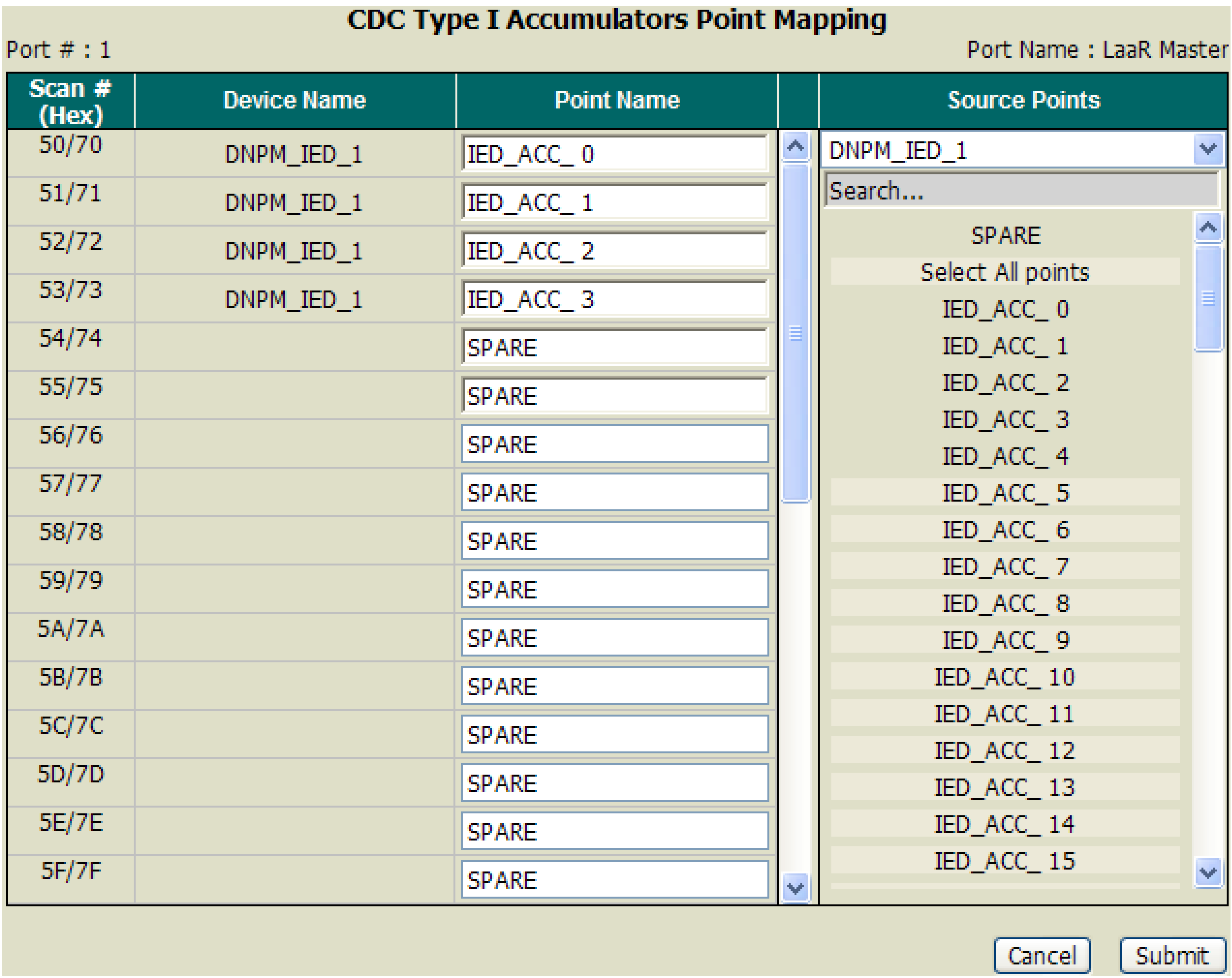
Insert & Delete not applicable to CDC I protocol.

7.3.4 Map Accumulators & Freeze Registers

7.3.4.1 Blocked Accumulators

From the CDC Type I Communication Mapping screen, click MAP for Blocked Accumulators. You will get a screen similar to Figure 7-13.

Figure 7-13 CDC Type I Blocked Accumulators Point Mapping



Scan# Hex

The CDC Type I scan address number in hex. The first number is the scan address number for the pulse accumulator and the second number is the scan address number for the freeze buffer. For blocked accumulators, the accumulators and freeze registers are "blocked" together as follows (the following table and Figure 7-13 have 4 accumulators):

Scan Address #	Point Name	Input Type
50	IED_ACC_0	Pulse Accumulator
51	IED_ACC_1	Pulse Accumulator
52	IED_ACC_2	Pulse Accumulator
53	IED_ACC_3	Pulse Accumulator
70	IED_ACC_0	Freeze Register
71	IED_ACC_1	Freeze Register
72	IED_ACC_2	Freeze Register
73	IED_ACC_3	Freeze Register

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

7.3.4.2 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

7.3.4.3 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

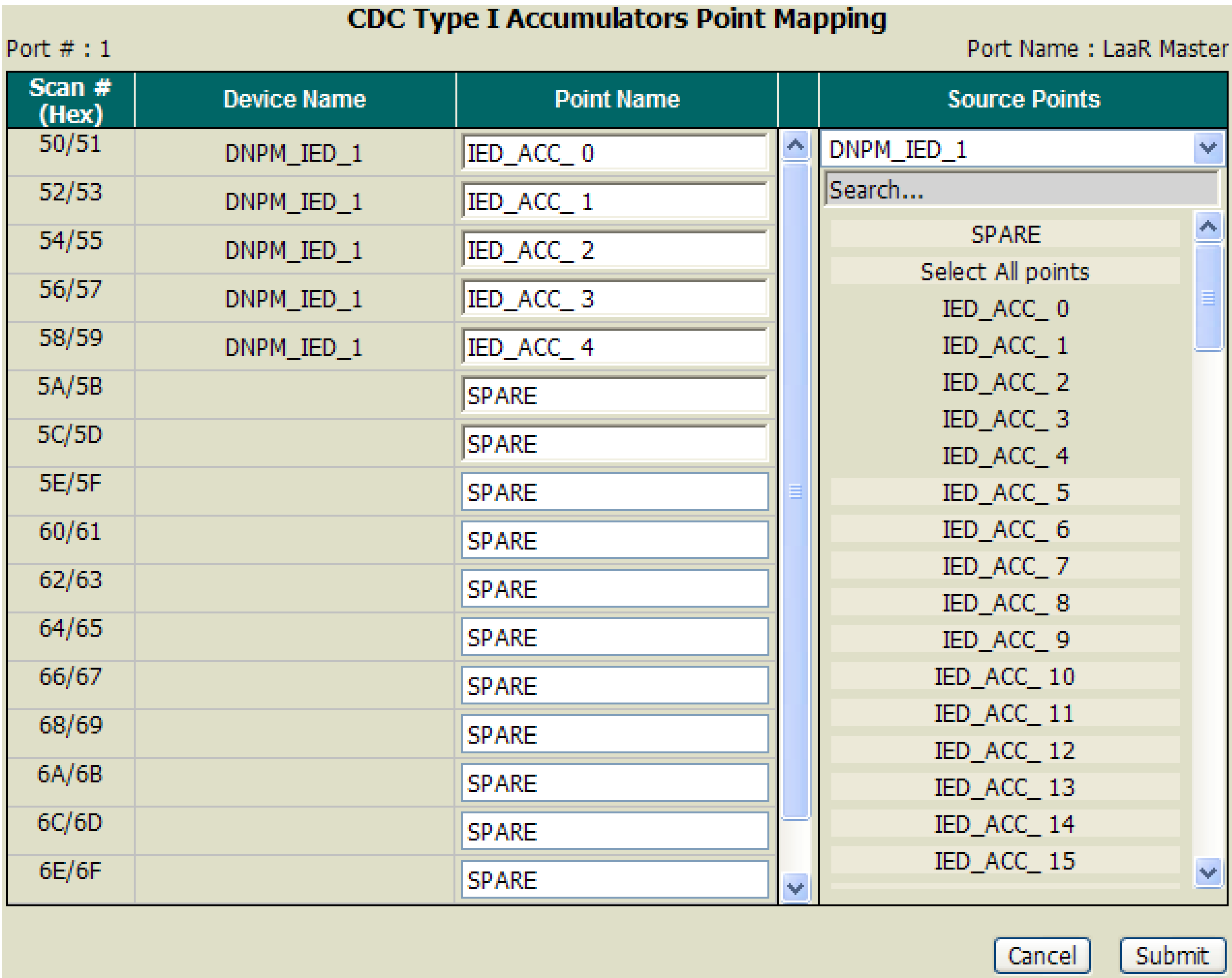
7.3.4.4 Insert & Delete Points

Insert & Delete not applicable to CDC I protocol.

7.3.4.5 Intermixed Accumulators & Registers

From the CDC Type I Communication Mapping screen, click MAP for Intermixed Accumulators. You will get a screen similar to Figure 7-14.

Figure 7-14 CDC Type I Intermixed Accumulators & Registers Point Mapping



Scan# Hex

The CDC Type I scan address number in hex. The first number is the scan address number for the pulse accumulator and the second number is the scan address number for the freeze buffer. For intermixed accumulators & registers, the accumulators and freeze registers are "intermixed" as follows (the following table and Figure 7-14 have 4 accumulators):

Scan Address #	Point Name	Input Type
50	IED_ACC_0	Pulse Accumulator
51	IED_ACC_0	Freeze Register
52	IED_ACC_1	Pulse Accumulator
53	IED_ACC_1	Freeze Register
54	IED_ACC_2	Pulse Accumulator
55	IED_ACC_2	Freeze Register
56	IED_ACC_3	Pulse Accumulator
57	IED_ACC_3	Freeze Register

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

7.3.4.6 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

7.3.4.7 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

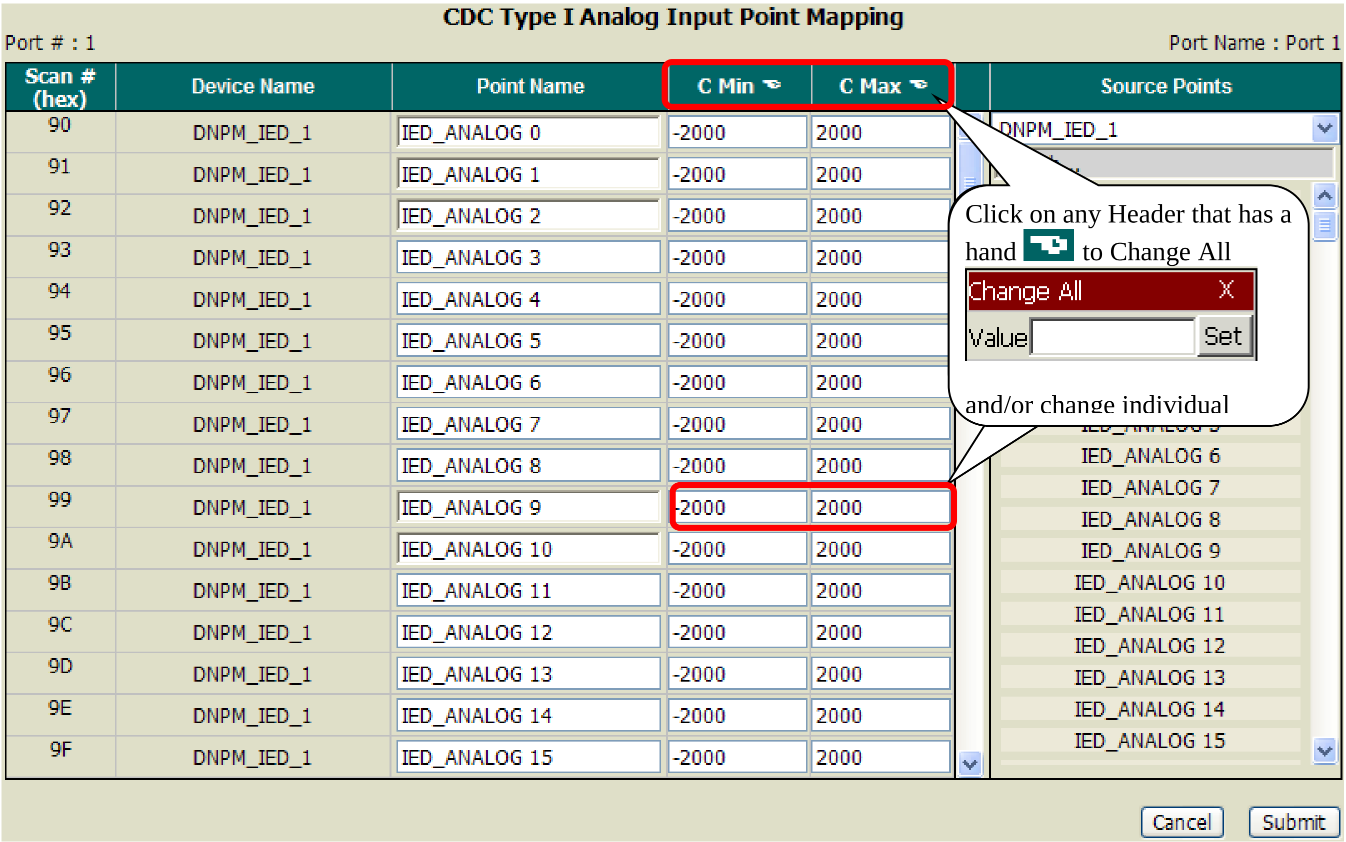
7.3.4.8 Insert & Delete Points

Insert & Delete not applicable to CDC I protocol.

7.3.5 Map Analog Inputs

From the CDC Type I Communication Mapping screen, click MAP for Analog Inputs. You will get a screen similar to Figure 7-15.

Figure 7-15 CDC Type I Analog Inputs Point Mapping



Scan# Hex
The CDC Type I scan address number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

7.3.5.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

7.3.5.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

7.3.5.3 Insert & Delete Points

Insert & Delete not applicable to CDC I protocol.

7.3.6 Map Setpoints

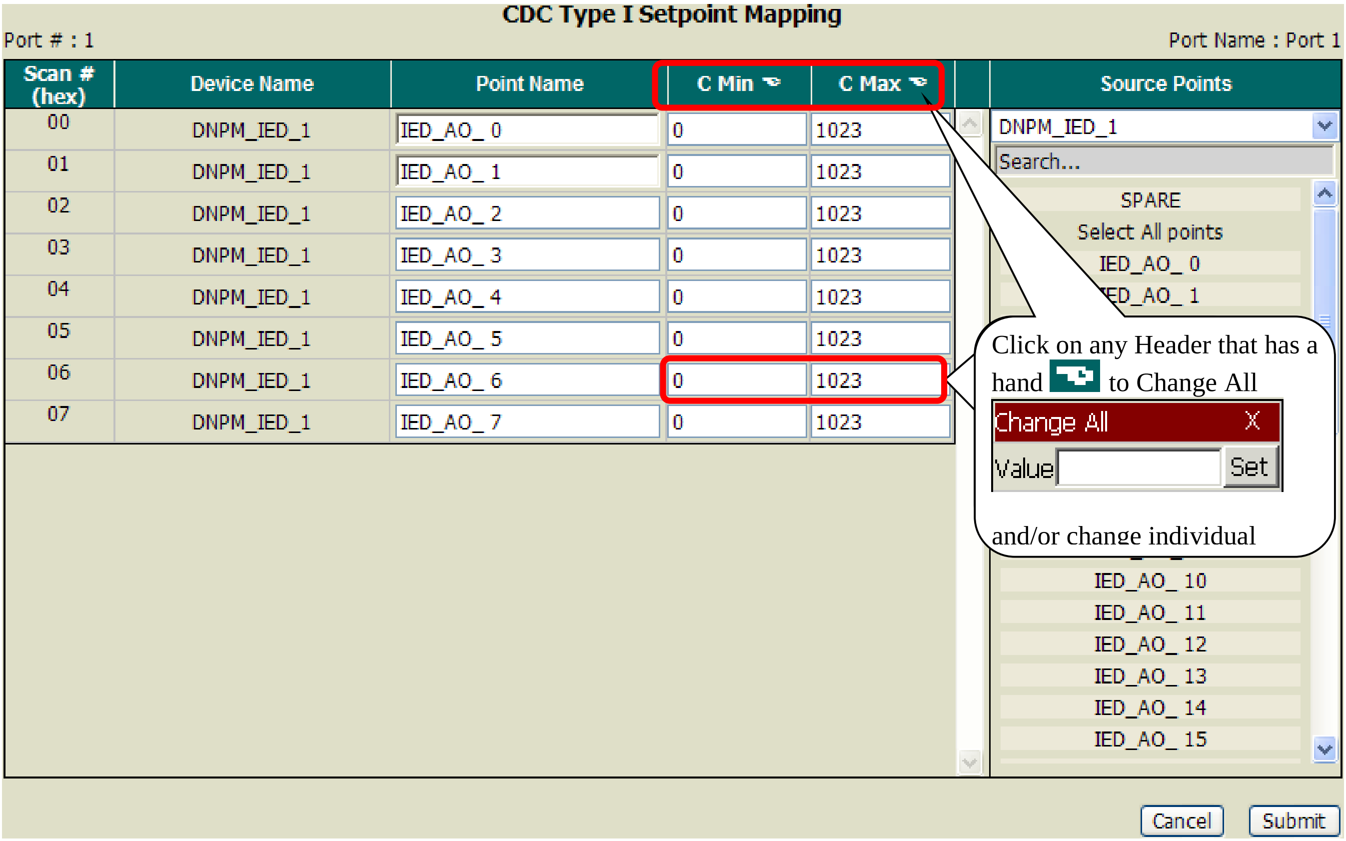
From the CDC Type I Communication Mapping screen, click MAP for Setpoints. You will get a screen similar to the one below.

Both 10 bit (count range of 0 to 1023 unipolar or count range of -512 to 511 bipolar) and 12 bit (count range of 0 to 4095 unipolar or count range of -2048 to 2047 bipolar) setpoints are supported.

Table 7-1 CDC I Supported Formats

Setpoint Bits	Output Type	C Min	C Max
10	Unipolar	0	1023
10	Bipolar	-512	511
12	Unipolar	0	4095
12	Bipolar	-2048	2047

Figure 7-16 CDC Type I Setpoints Point Mapping



Scan# Hex
The CDC Type I scan address number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts sent by the master station for a minimum output value or accept the default count. Default setting is 0. If bipolar outputs are used, -512 must be used for the minimum for 10 bit setpoints and -2048 must be used for the minimum for 12 bit setpoints.

C Max
Enter the maximum counts sent by the master station for a maximum output value or accept the default count. Default setting is 1023. If unipolar 12 bit analog output are used, 4095 must be set as the maximum. If bipolar outputs are used, 1023 must be used for the maximum for 10 bit setpoints and 2047 must be used for the maximum for 12 bit setpoints.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

7.3.6.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

7.3.6.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

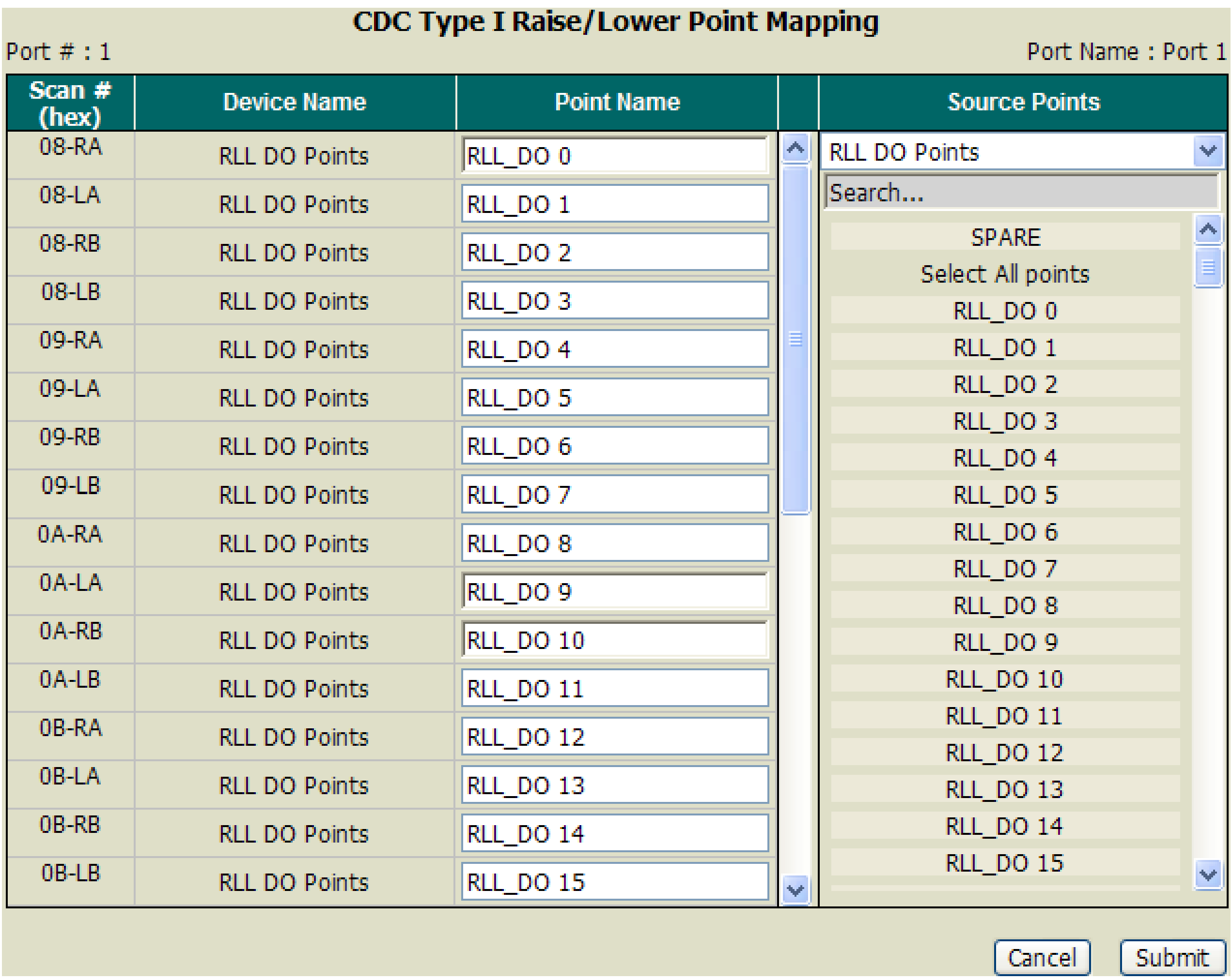
7.3.6.3 Insert & Delete Points

Insert & Delete not applicable to CDC I protocol.

7.3.7 Map Raise Lower

From the CDC Type I Communication Mapping screen, click MAP for Raise Lower. You will get a screen similar to Figure 7-17.

Figure 7-17 CDC Type I Raise Lower Point Mapping



Scan# Hex
The CDC Type I scan address number in hex followed by RA (Raise A), LA (Lower A), RB (Raise B), or LB (Lower B).

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

7.3.7.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

7.3.7.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

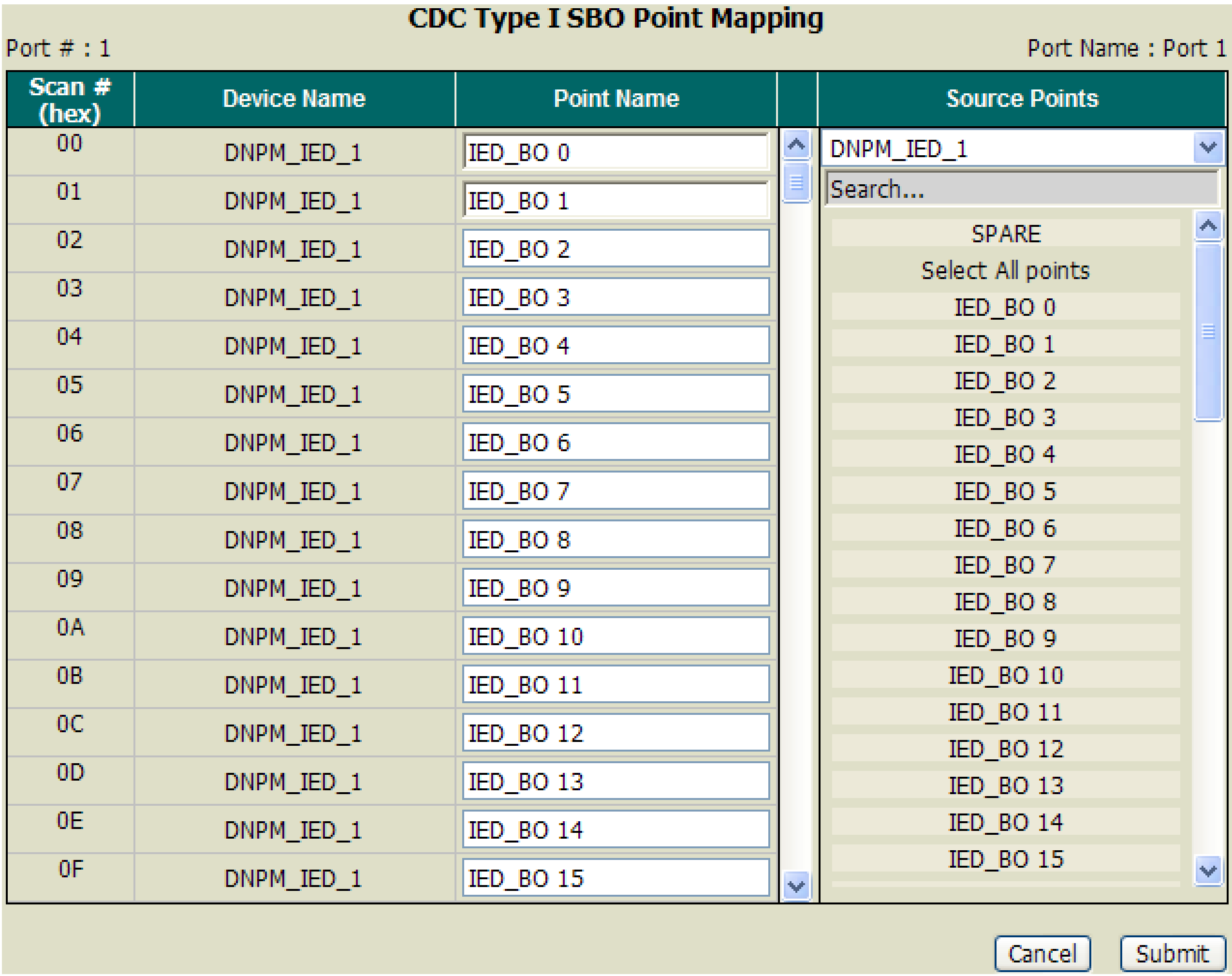
7.3.7.3 Insert & Delete Points

Insert & Delete not applicable to CDC I protocol.

7.3.8 Map SBO

From the CDC Type I Communication Mapping screen, click MAP for SBO. You will get a screen similar to Figure 7-18.

Figure 7-18 CDC Type I SBO Point Mapping



Scan# Hex
The CDC Type I scan address number in hex.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

7.3.8.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

7.3.8.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

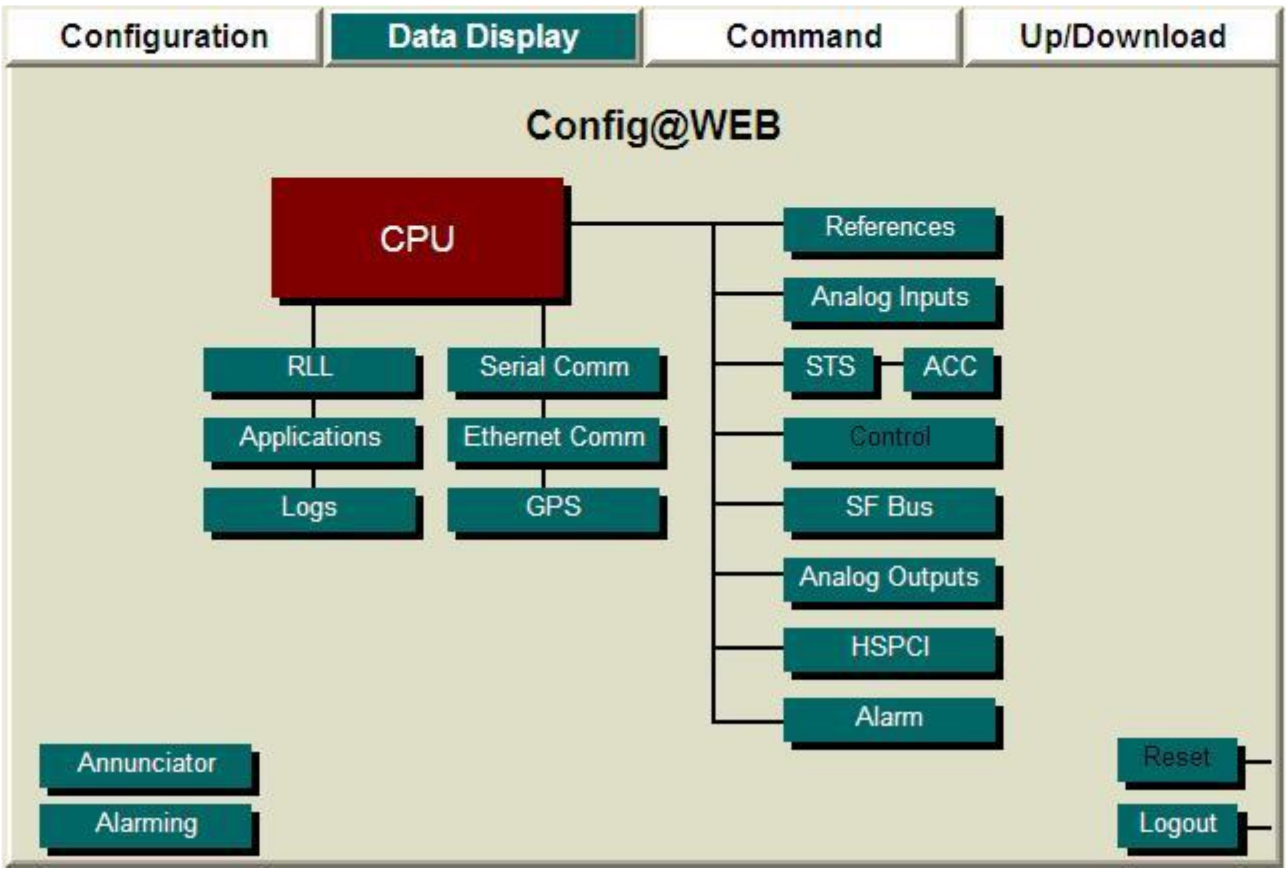
7.3.8.3 Insert & Delete Points

Insert & Delete not applicable to CDC I protocol.

7.4 Data Display

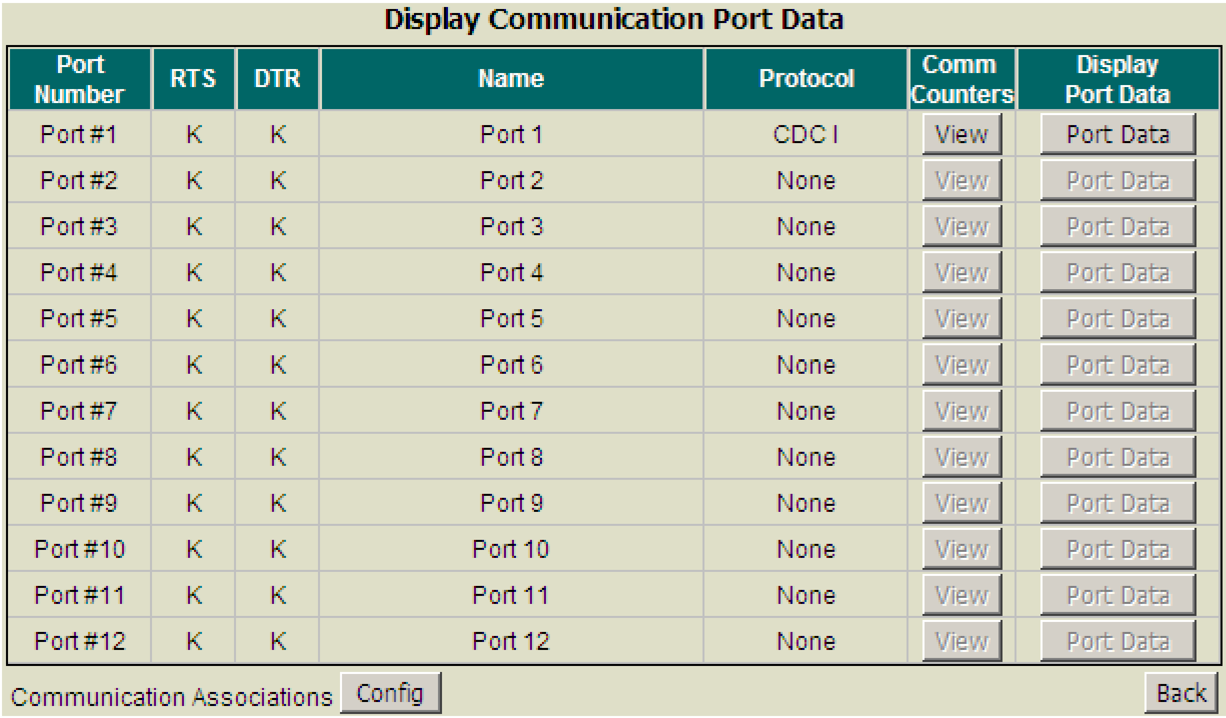
Click the Data Display tab as shown in Figure 7-19.

Figure 7-19 Data Display Screen



Click Serial Comm to get the screen shown in Figure 7-20.

Figure 7-20 Display Communication Port Data



Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	CDC I	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/de-asserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data

Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

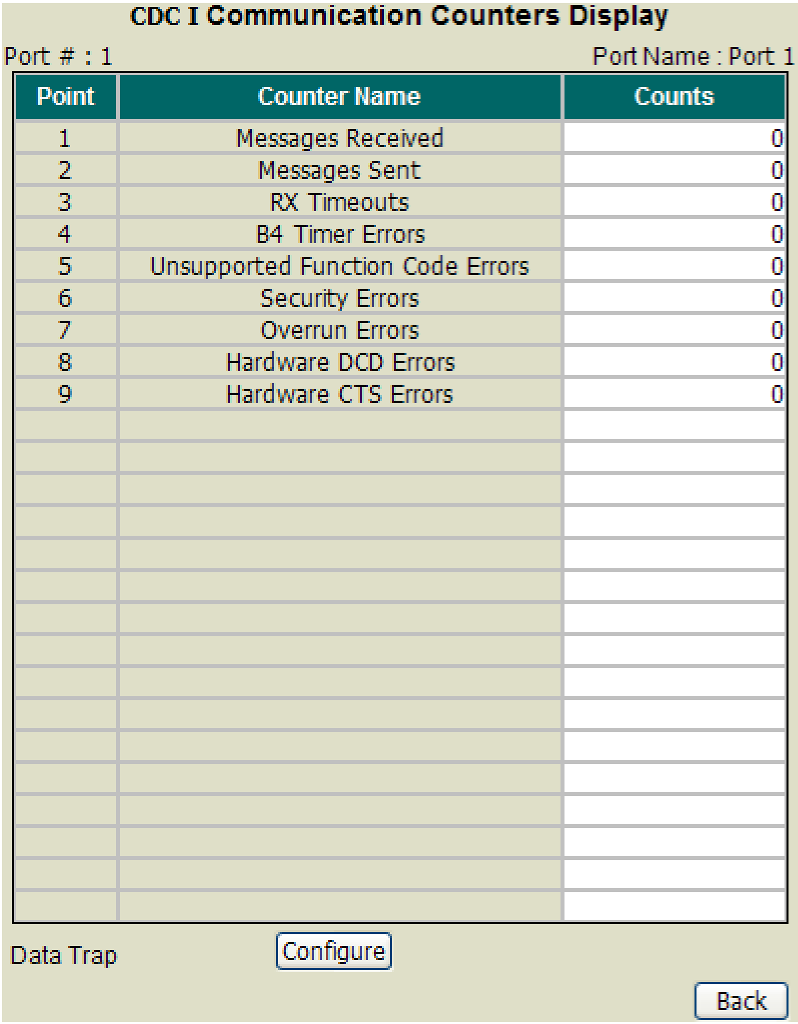
Navigation

Click the Back button to return to the previous screen.

7.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 7-21.

Figure 7-21 CDC I Communication Counters Display


CDC I Communication Counters Display

Port # : 1 Port Name : Port 1

Point	Counter Name	Counts
1	Messages Received	0
2	Messages Sent	0
3	RX Timeouts	0
4	B4 Timer Errors	0
5	Unsupported Function Code Errors	0
6	Security Errors	0
7	Overrun Errors	0
8	Hardware DCD Errors	0
9	Hardware CTS Errors	0

Data Trap Configure

Back

Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Messages Received

This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

B4 Timer Errors

This indicates the cumulative number of B4 Timer errors. This count can be affected by the setting of the B4 Time in configuration.

IB Timer Violations

This indicates the cumulative number of Interbyte timer violations since the last reset or power-up. This count can be affected by the setting of the Interbyte Time in configuration.

Unsupported Function Code Errors

This indicates the cumulative number of valid messages received with an unsupported function code since the last reset or power-up.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

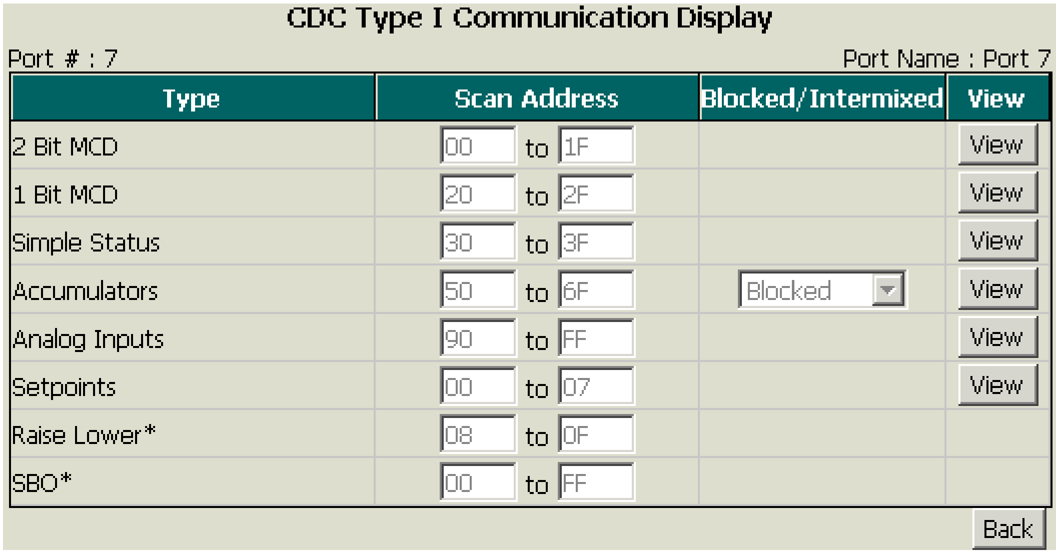
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

7.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 7-22.

Figure 7-22 CDC I Communication Display



Type
The type of point.

Scan Address
The scan address number in hex for point types.

Blocked/Intermixed
Accumulators may display as either blocked or mixed.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

7.4.2.1 2 Bit MCD

From the CDC I Communication Display screen, click View for 2 Bit MCD to get the screen shown in Figure 7-23.

Figure 7-23 CDC I 2 Bit MCD Display

CDC Type I 2 Bit MCD Display

Port # : 7 Port Name : Port 7

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Point	Device Name	Point Name	Point Status	Point State	●
0-0	Hardware DI	AC Power Failure		OPEN	●
0-1	Hardware DI	DC Power Failure		OPEN	●
0-2	Hardware DI	DI_PNT_3		OPEN	●
0-3	Hardware DI	DI_PNT_4		OPEN	●
0-4	Hardware DI	DI_PNT_5		OPEN	●
0-5	Hardware DI	DI_PNT_6		OPEN	●
0-6	Hardware DI	DI_PNT_7		OPEN	●
0-7	Hardware DI	DI_PNT_8		OPEN	●
1-0	Hardware DI	DI_PNT_9		OPEN	●
1-1	Hardware DI	DI_PNT_10		OPEN	●
1-2	Hardware DI	DI_PNT_11		OPEN	●
1-3	Hardware DI	DI_PNT_12		OPEN	●
1-4	Hardware DI	DI_PNT_13		OPEN	●
1-5	Hardware DI	DI_PNT_14		OPEN	●
1-6	Hardware DI	DI_PNT_17		CLOSE	●
1-7	Hardware DI	DI_PNT_18		CLOSE	●

Back

Point
The CDC Type I scan address number in hex followed by the bit number in the word.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that the current state of the point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

7.4.2.2 I Bit MCD

CDC I Communication Display screen, click View for 1 Bit MCD to get the screen shown in Figure 7-24.

Figure 7-24 CDC I 1 Bit MCD Display

CDC Type I 1 Bit MCD Display

Port # : 7 Port Name : Port 7

Page1 of 16 Go To [ ] Go Next>>

Point	Device Name	Point Name	Point Status	Point State	●
20-0	Hardware DI	AC Power Failure		OPEN	●
20-1	Hardware DI	DC Power Failure		OPEN	●
20-2	Hardware DI	DI_PNT_3		OPEN	●
20-3	Hardware DI	DI_PNT_4		OPEN	●
20-4	Hardware DI	DI_PNT_5		OPEN	●
20-5	Hardware DI	DI_PNT_6		OPEN	●
20-6	Hardware DI	DI_PNT_7		OPEN	●
20-7	Hardware DI	DI_PNT_8		OPEN	●
20-8	Hardware DI	DI_PNT_9		OPEN	●
20-9	Hardware DI	DI_PNT_10		OPEN	●
20-10	Hardware DI	DI_PNT_11		OPEN	●
20-11	Hardware DI	DI_PNT_12		OPEN	●
20-12	Hardware DI	DI_PNT_13		OPEN	●
20-13	Hardware DI	DI_PNT_14		OPEN	●
20-14	Hardware DI	DI_PNT_17		CLOSE	●
20-15	Hardware DI	DI_PNT_18		CLOSE	●

Back

Point
The CDC Type I scan address number in hex followed by the bit number in the word.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that the current state of the point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

7.4.2.3 Simple Status

From the CDC I Communication Display screen, click View Simple Status to get the screen shown in Figure 7-25.

Figure 7-25 CDC I Simple Status Display

CDC Type I Simple Status Display

Port # : 7 Port Name : Port 7

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Point	Device Name	Point Name	Point Status	Point State	●
30-0	Hardware DI	AC Power Failure		OPEN	●
30-1	Hardware DI	DC Power Failure		OPEN	●
30-2	Hardware DI	DI_PNT_3		OPEN	●
30-3	Hardware DI	DI_PNT_4		OPEN	●
30-4	Hardware DI	DI_PNT_5		OPEN	●
30-5	Hardware DI	DI_PNT_6		OPEN	●
30-6	Hardware DI	DI_PNT_7		OPEN	●
30-7	Hardware DI	DI_PNT_8		OPEN	●
30-8	Hardware DI	DI_PNT_9		OPEN	●
30-9	Hardware DI	DI_PNT_10		OPEN	●
30-10	Hardware DI	DI_PNT_11		OPEN	●
30-11	Hardware DI	DI_PNT_12		OPEN	●
30-12	Hardware DI	DI_PNT_13		OPEN	●
30-13	Hardware DI	DI_PNT_14		OPEN	●
30-14	Hardware DI	DI_PNT_17		CLOSE	●
30-15	Hardware DI	DI_PNT_18		CLOSE	●

Back

Point
The CDC Type I scan address number in hex followed by the bit number in the word.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that the current state of the point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

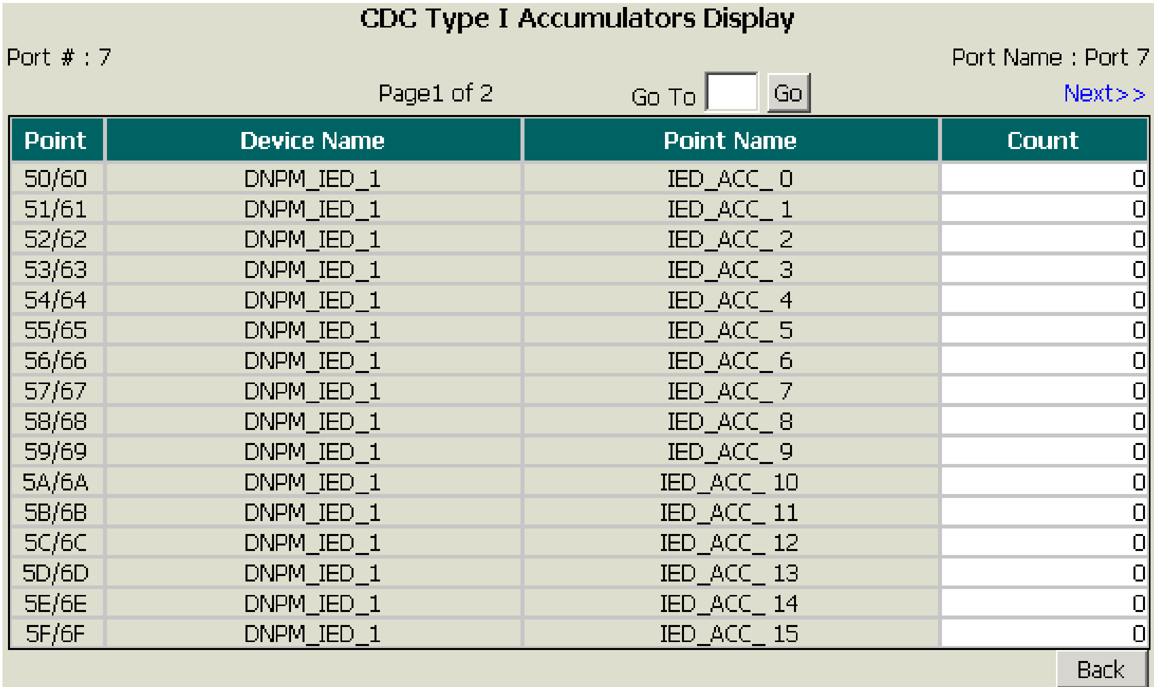
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

7.4.2.4 Accumulators

From the CDC I Communication Display screen, click View for Accumulators to get the screen shown in Figure 7-26.

Figure 7-26 CDC I Accumulators Display


CDC Type I Accumulators Display

Port # : 7   Port Name : Port 7

Page1 of 2   Go To [ ] Go   Next>>

Point	Device Name	Point Name	Count
50/60	DNPM_IED_1	IED_ACC_ 0	0
51/61	DNPM_IED_1	IED_ACC_ 1	0
52/62	DNPM_IED_1	IED_ACC_ 2	0
53/63	DNPM_IED_1	IED_ACC_ 3	0
54/64	DNPM_IED_1	IED_ACC_ 4	0
55/65	DNPM_IED_1	IED_ACC_ 5	0
56/66	DNPM_IED_1	IED_ACC_ 6	0
57/67	DNPM_IED_1	IED_ACC_ 7	0
58/68	DNPM_IED_1	IED_ACC_ 8	0
59/69	DNPM_IED_1	IED_ACC_ 9	0
5A/6A	DNPM_IED_1	IED_ACC_ 10	0
5B/6B	DNPM_IED_1	IED_ACC_ 11	0
5C/6C	DNPM_IED_1	IED_ACC_ 12	0
5D/6D	DNPM_IED_1	IED_ACC_ 13	0
5E/6E	DNPM_IED_1	IED_ACC_ 14	0
5F/6F	DNPM_IED_1	IED_ACC_ 15	0

Back

Point
The CDC Type I scan address number in hex. The first number is the scan address number for the pulse accumulator and the second number is the scan address number for the freeze buffer.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The pulse accumulator count.

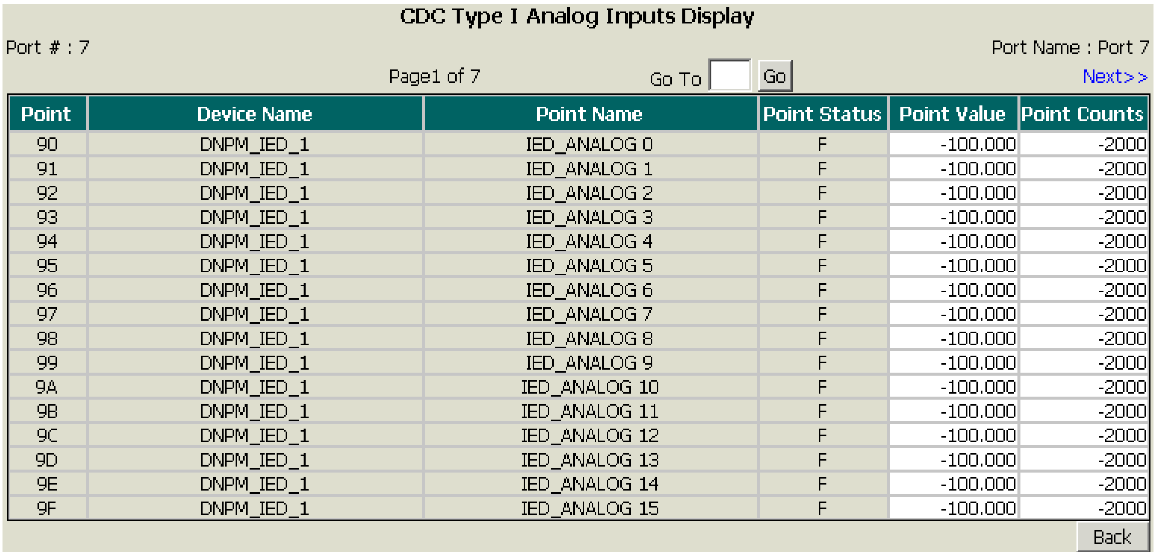
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

7.4.2.5 Analog Inputs

From the CDC I Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 7-27.

Figure 7-27 CDC I Analog Inputs Display



CDC Type I Analog Inputs Display

Port # : 7 Port Name : Port 7

Page1 of 7 Go To Go Next>>

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
90	DNPM_IED_1	IED_ANALOG 0	F	-100.000	-2000
91	DNPM_IED_1	IED_ANALOG 1	F	-100.000	-2000
92	DNPM_IED_1	IED_ANALOG 2	F	-100.000	-2000
93	DNPM_IED_1	IED_ANALOG 3	F	-100.000	-2000
94	DNPM_IED_1	IED_ANALOG 4	F	-100.000	-2000
95	DNPM_IED_1	IED_ANALOG 5	F	-100.000	-2000
96	DNPM_IED_1	IED_ANALOG 6	F	-100.000	-2000
97	DNPM_IED_1	IED_ANALOG 7	F	-100.000	-2000
98	DNPM_IED_1	IED_ANALOG 8	F	-100.000	-2000
99	DNPM_IED_1	IED_ANALOG 9	F	-100.000	-2000
9A	DNPM_IED_1	IED_ANALOG 10	F	-100.000	-2000
9B	DNPM_IED_1	IED_ANALOG 11	F	-100.000	-2000
9C	DNPM_IED_1	IED_ANALOG 12	F	-100.000	-2000
9D	DNPM_IED_1	IED_ANALOG 13	F	-100.000	-2000
9E	DNPM_IED_1	IED_ANALOG 14	F	-100.000	-2000
9F	DNPM_IED_1	IED_ANALOG 15	F	-100.000	-2000

Back

Point
The CDC Type I scan address number in hex.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts that will be sent to the master on the next poll of the data.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

7.4.2.6 Setpoints

From the CDC I Communication Display screen, click View for Setpoints to get the screen shown in Figure 7-28.

Figure 7-28 CDC I Setpoints Display

CDC Type I Setpoints Display

Port # : 7 Port Name : Port 7

Page1 of 1 Go To Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	DNPM_IED_1	IED_AO_ 0	F	0.000	0
1	DNPM_IED_1	IED_AO_ 1	F	0.000	0
2	DNPM_IED_1	IED_AO_ 2	F	0.000	0
3	DNPM_IED_1	IED_AO_ 3	F	0.000	0
4	DNPM_IED_1	IED_AO_ 4	F	0.000	0
5	DNPM_IED_1	IED_AO_ 5	F	0.000	0
6	DNPM_IED_1	IED_AO_ 6	F	0.000	0
7	DNPM_IED_1	IED_AO_ 7	F	0.000	0
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Point
The CDC Type I scan address number in hex.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts last received for the analog output.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

7.4.2.7 Raise Lower

There is no display available.

7.4.2.8 SBO

There is no display available.

8 CDC II

8.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

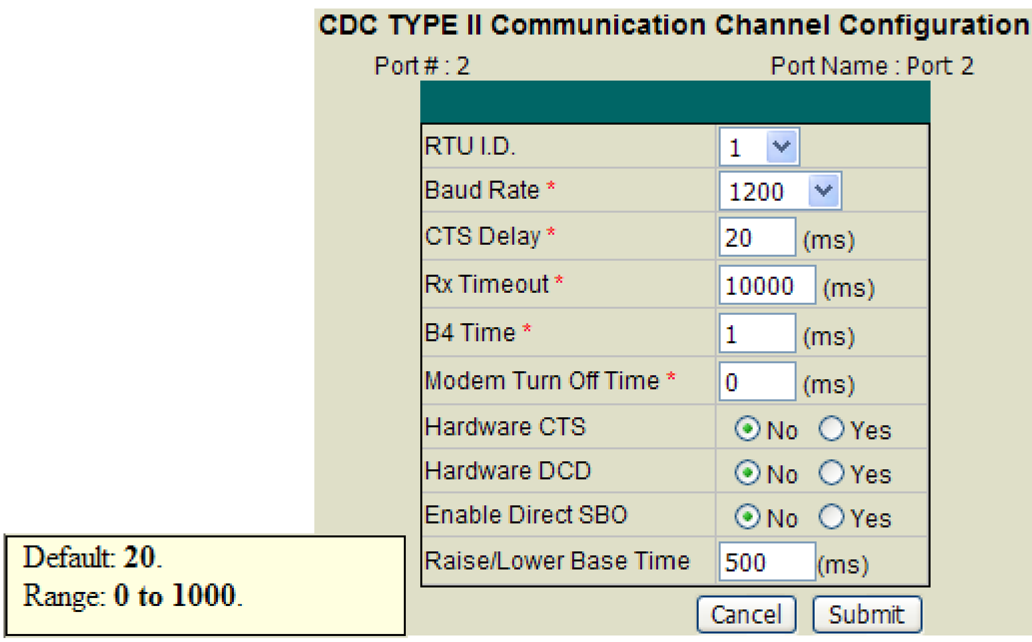
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

8.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 8-1.

Figure 8-1 C Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for CTS Delay.

RTU I.D. (0 – 13, 15)

Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Address 14 is reserved for broadcast messages to all RTUs on a common communications channel. Default setting is 1.

Baud Rate (300 – 19200)

From the drop-down menu, select the baud rate. The default setting is 1200.

CTS Delay (0 – 1000ms)
Enter the clear-to-send delay in milliseconds for the associated channel. This is the delay of time the channel will wait to start transmitting following Request-To-Send being asserted. The default setting is 20.

Rx Timeout (0 – 30000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. The default setting is 10000ms.

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTU's receive interrupts. Default setting 1.

Modem Turn Off Time (0 – 250ms)
Enter the delay time that the modem will maintain the carrier after the last data byte has been transmitted. Default setting is 0.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

Enable Direct SBO (No, Yes)
This function allows the user to enable/disable the Direct Trip and Direct Close Function Codes. The default setting is No.

Raise/Lower Base Time (0 – 30,000ms)
Enter the raise/lower control base time in msec. The dwell time for the relay will be, in msec,

(R/L Base Time) *x* ***(Time Interval Increment)***

where the time interval increment is a value from 1 to 15 supplied in the Raise/Lower command. This time will have a granularity in the RTU of 5 msecs. Default setting is 500.

Navigation

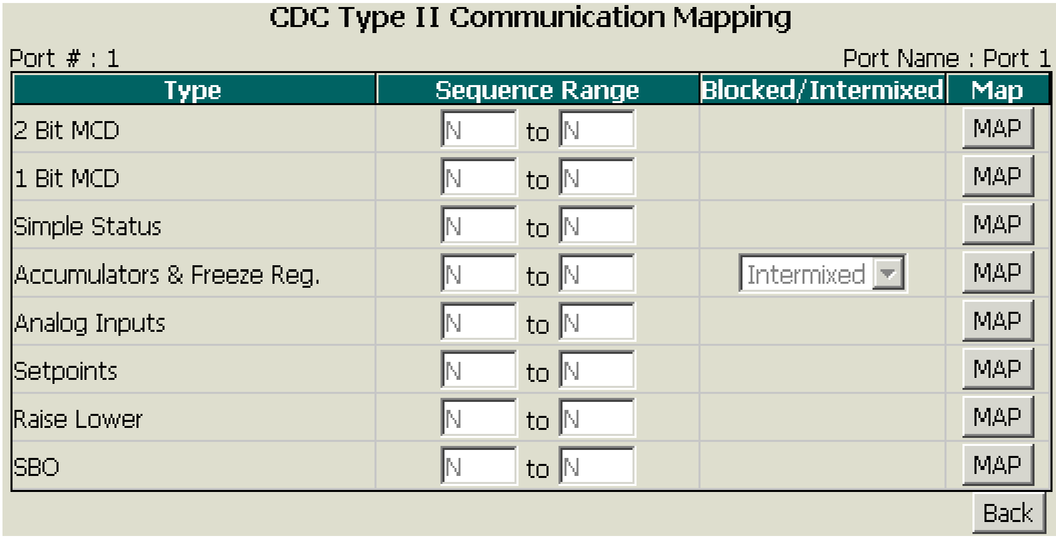
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

8.3 Point Operations

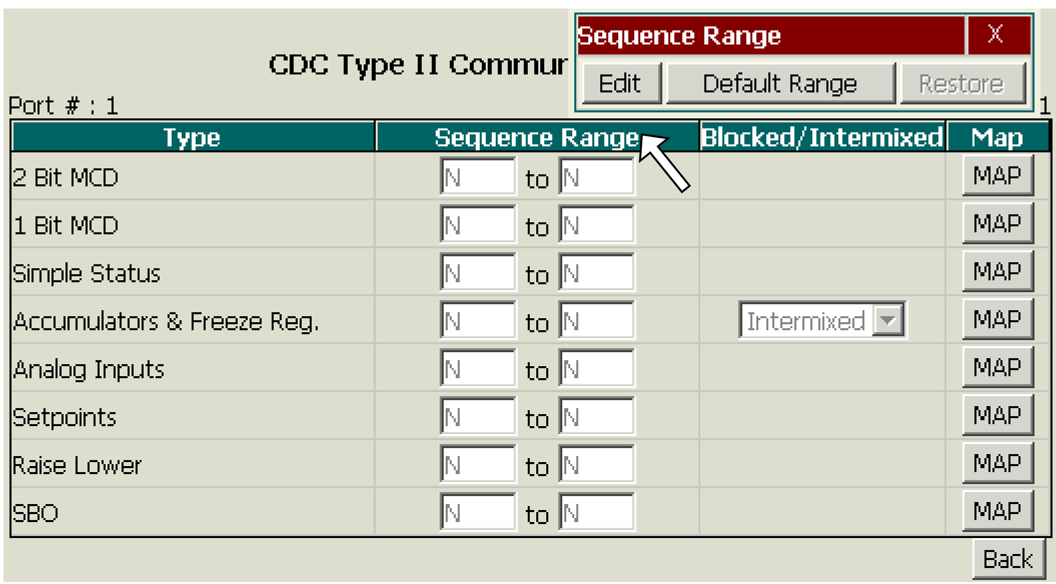
From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 8-2 will appear.

Figure 8-2 CDC Type II Communication Mapping



The initial Sequence Range is populated with the letter N. Click on the header "Sequence Range". You will get a screen similar to Figure 8-3. You may choose either Edit or Default Range.

Figure 8-3 IED Configuration Sequence Range



If you choose Edit, you will be able to enter your own sequence range. If you choose Default Range, a range of default values will populate the Sequence Range. No matter which one you choose, the Sequence Range box will transform into Set and Restore. Figure 8-4 shows an example of choosing Default Range with Accumulators Blocked. Figure 8-5 shows an example of choosing Default Range with Accumulators

Intermixed. To keep your changes, click Set. To return to the previous range, click Restore. To accept the Default Range, click Set.

For simplicity, you can select Default Range, then edit individual sequence numbers according to the number of points you need.

Figure 8-4 Default Sequence Range with Accumulators Blocked

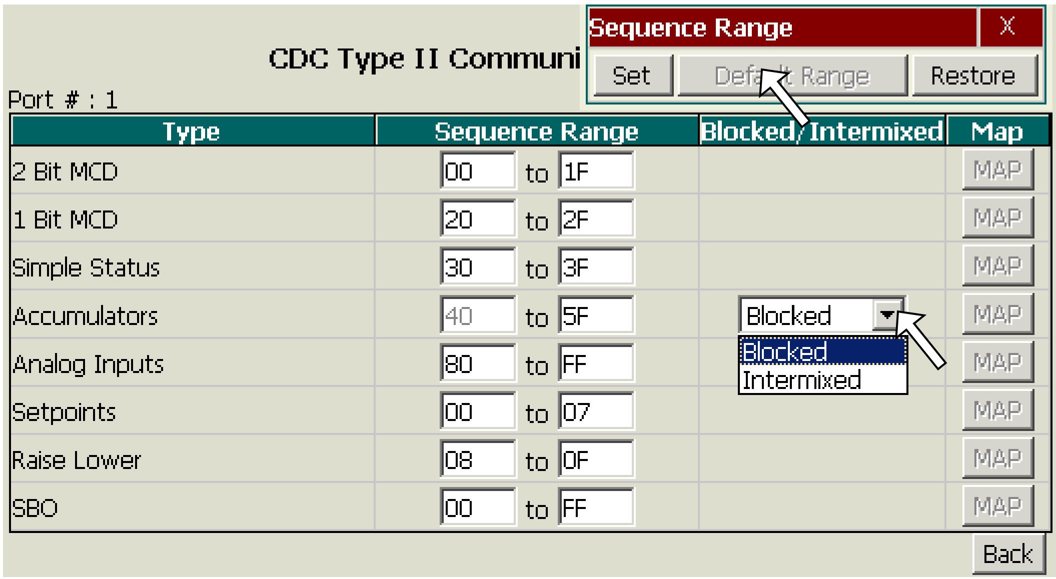
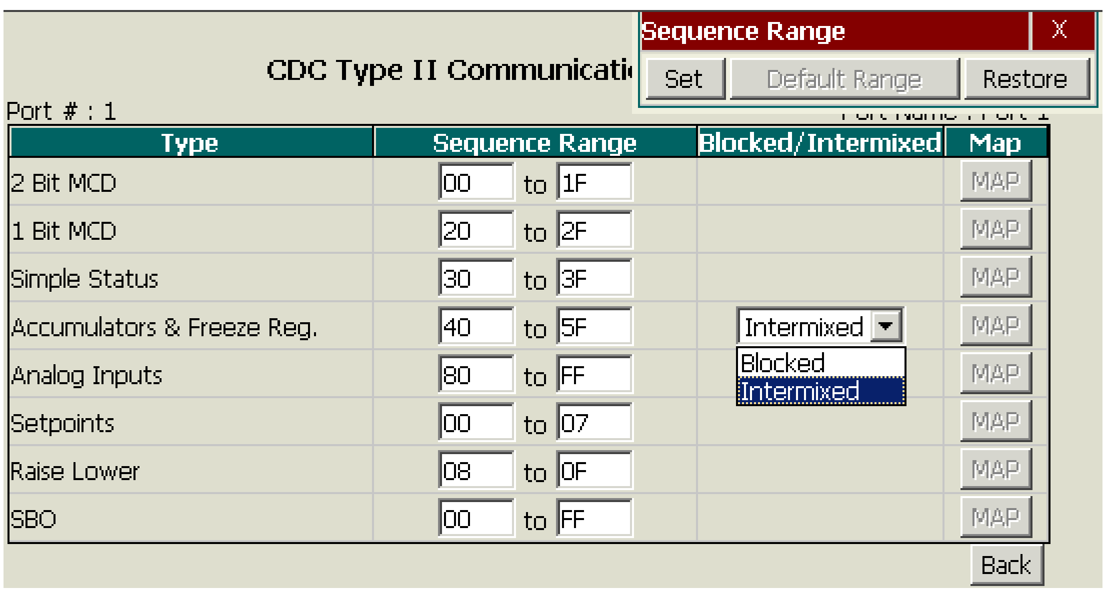


Figure 8-5 Default Sequence Range with Accumulators Intermixed with Freeze Register



Note: Do not configure the Sequence Ranges for more points than are needed. Always set beginning and end Sequence Range to reflect only the points used. Observe the following example with 12 simple statuses and 5 analogs.

Figure 8-6 Configuring for Minimum Points

CDC Type II Communicat

Sequence Range X

Set | Default Range | Restore

Port # : 4

Type	Sequence Range			Blocked/Intermixed	Map
2 Bit MCD	N	to	N		MAP
1 Bit MCD	N	to	N		MAP
Simple Status	30	to	41		MAP
Accumulators & Freeze Reg.	50	to	N	Intermixed	MAP
Analog Inputs	90	to	94		MAP
Setpoints	N	to	N		MAP
Raise Lower	N	to	N		MAP
SBO	N	to	N		MAP

Back

After the Sequence Ranges are configured for the points you need, click the Set button to finalize the Sequence Number configuration.

After dismissing the Sequence Range box, you may proceed to the MAP button for each point type.

Figure 8-7 Mapping the Point Types

CDC Type II Communication Mapping

Port # : 1 Port Name : Port 1

Type	Sequence Range			Blocked/Intermixed	Map
2 Bit MCD	00	to	1F		MAP
1 Bit MCD	20	to	2F		MAP
Simple Status	30	to	3F		MAP
Accumulators	40	to	5F	Blocked	MAP
Analog Inputs	80	to	FF		MAP
Setpoints	00	to	07		MAP
Raise Lower	08	to	0F		MAP
SBO	00	to	FF		MAP

Back

Type
The type of point.

Sequence Range
The hex code sequence range expected by the master for each type of point.

Blocked/Intermixed
Please see section 8.3.4 on page 228 for an explanation and examples.

Map
Click the MAP button to map the points.

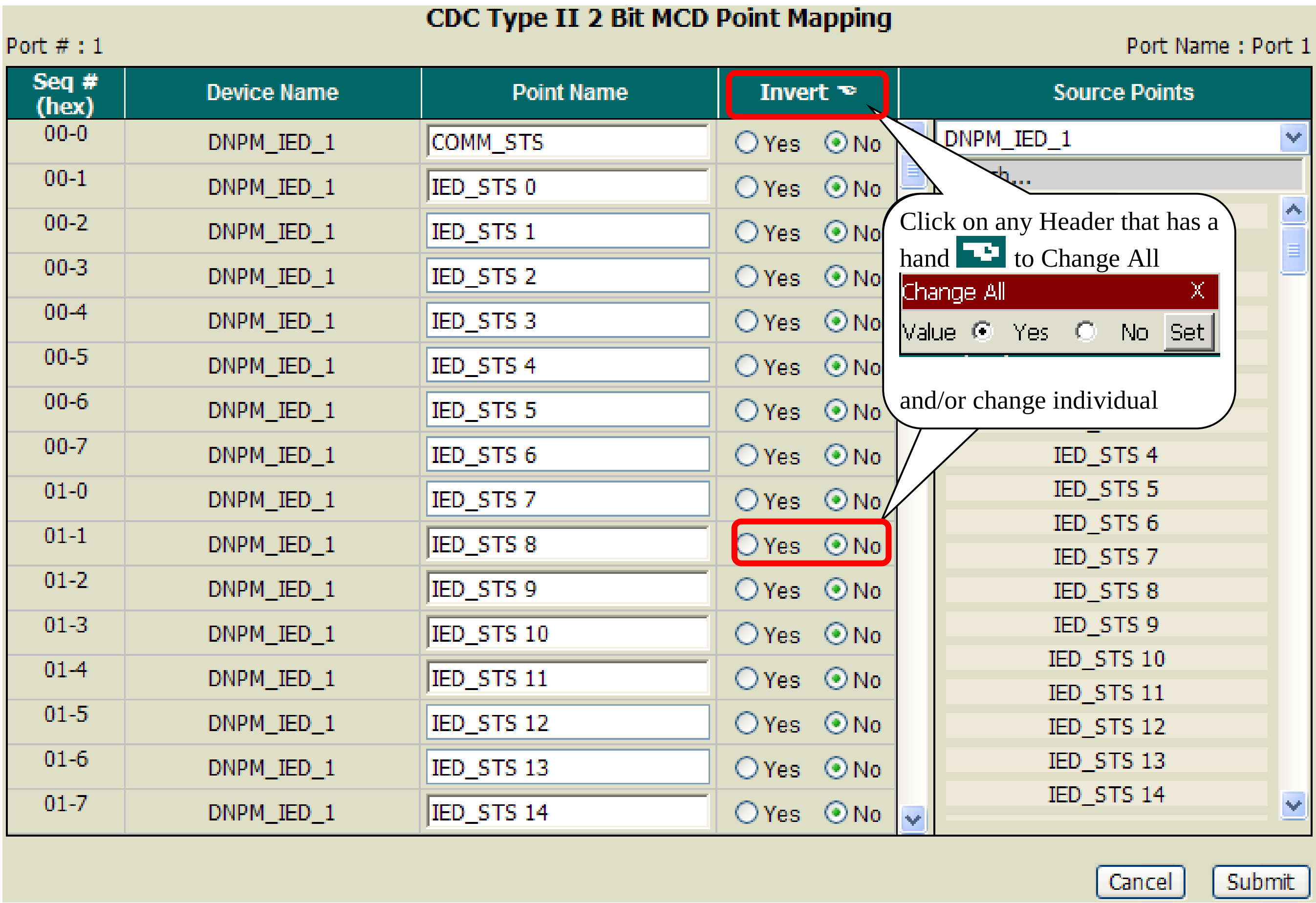
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the Port Configuration screen.

8.3.1 Map 2 Bit MCD (Multiple Change Detect)

From the CDC Type II Communication Mapping screen, click MAP for 2 Bit MCD. You will get a screen similar to Figure 8-8.

Figure 8-8 CDC Type II 2 Bit MCD Point Mapping



SEQ# Hex
The CDC Type II sequence number in hex followed by the bit number in the word.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points

Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

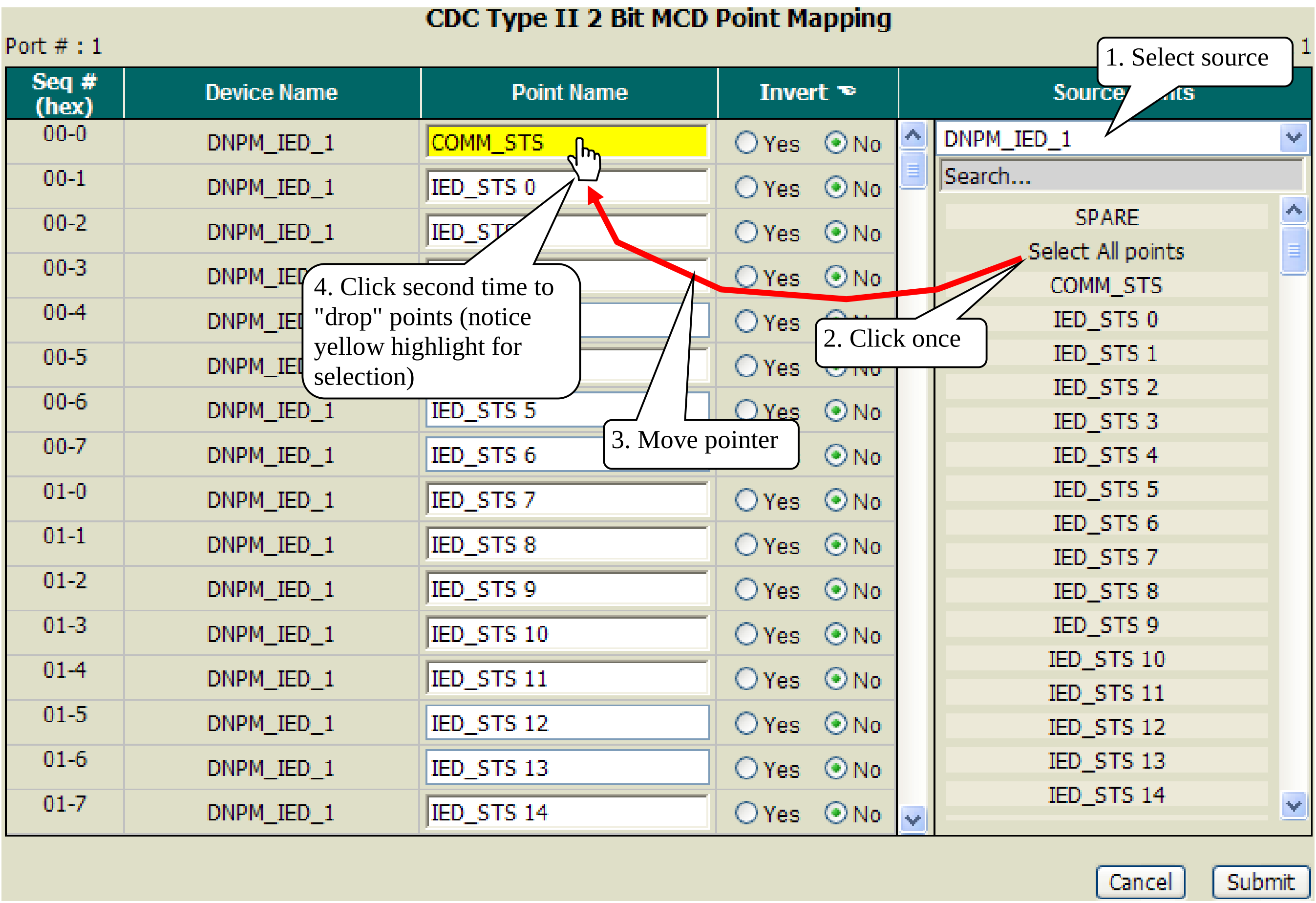
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

8.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

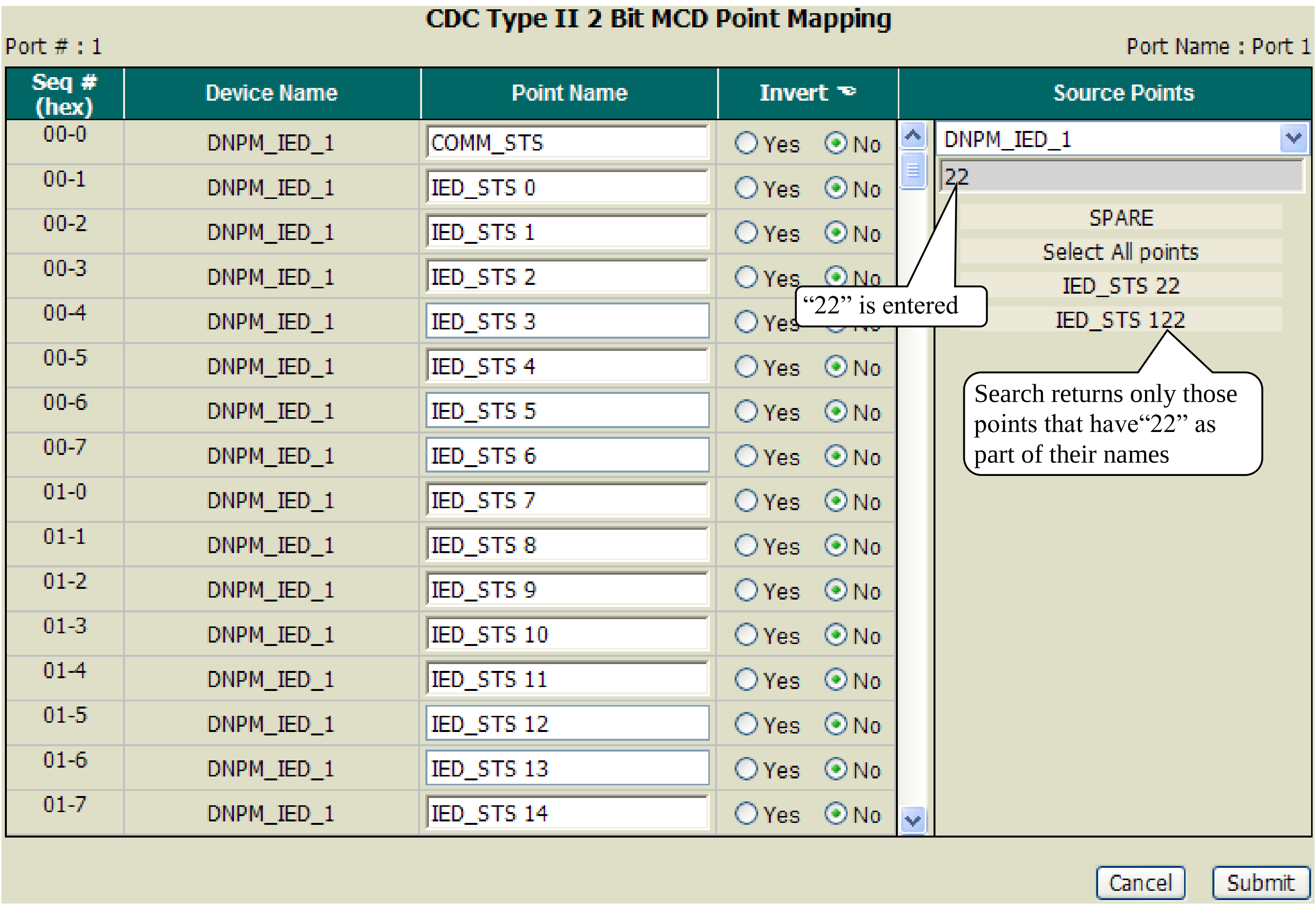
Figure 8-9 Point Mapping Highlight



8.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

Figure 8-10 Point Database Search



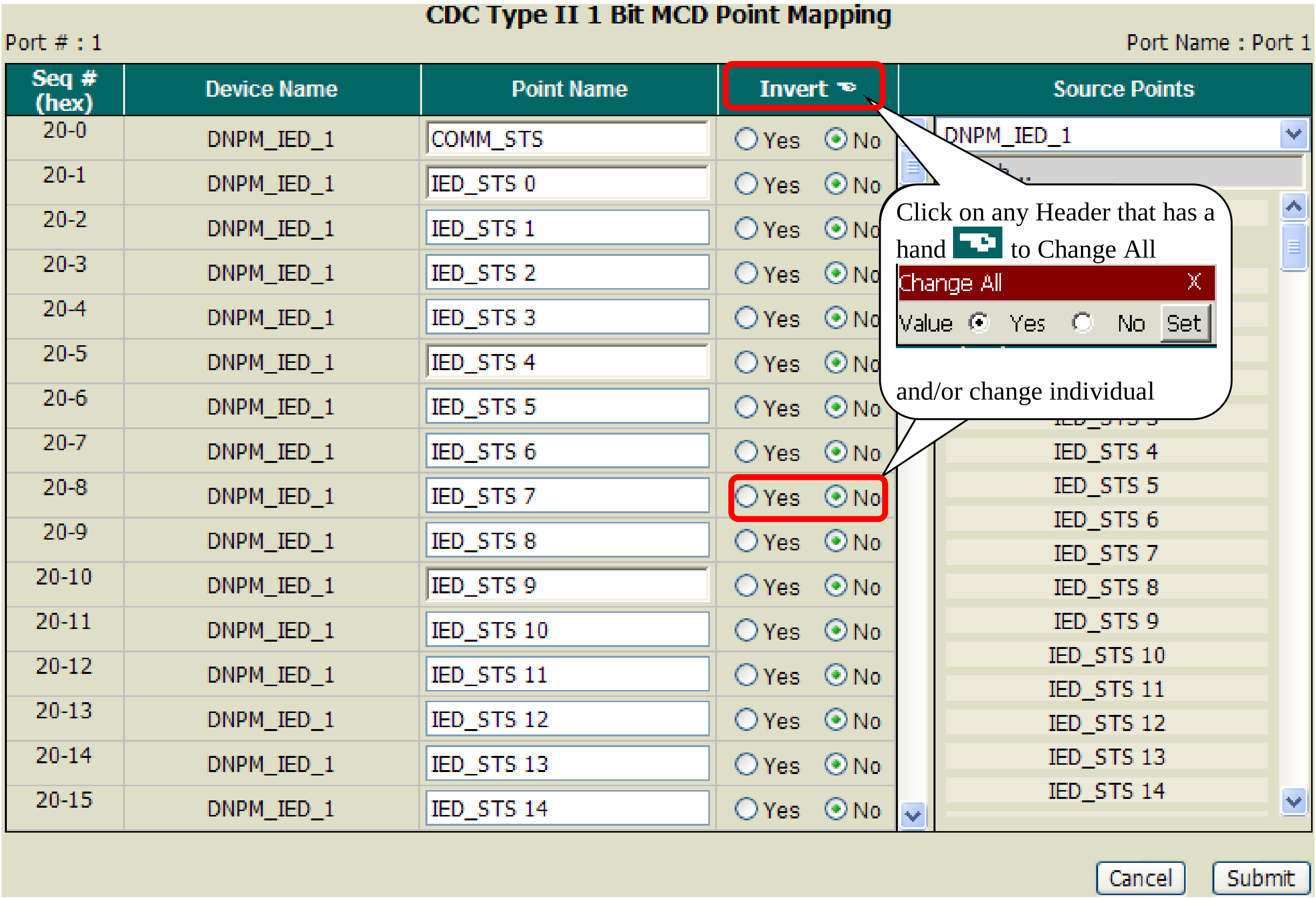
8.3.1.3 Insert & Delete Points

Insert & Delete not applicable to CDC II protocol.

8.3.2 Map 1 Bit MCD (Multiple Change Detect)

From the CDC Type II Communication Mapping screen, click MAP for 1 Bit MCD. You will get a screen similar to Figure 8-11.

Figure 8-11 CDC Type II 1 Bit MCD Point Mapping



SEQ# Hex
The CDC Type II sequence number in hex followed by the bit number in the word.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

8.3.2.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

8.3.2.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

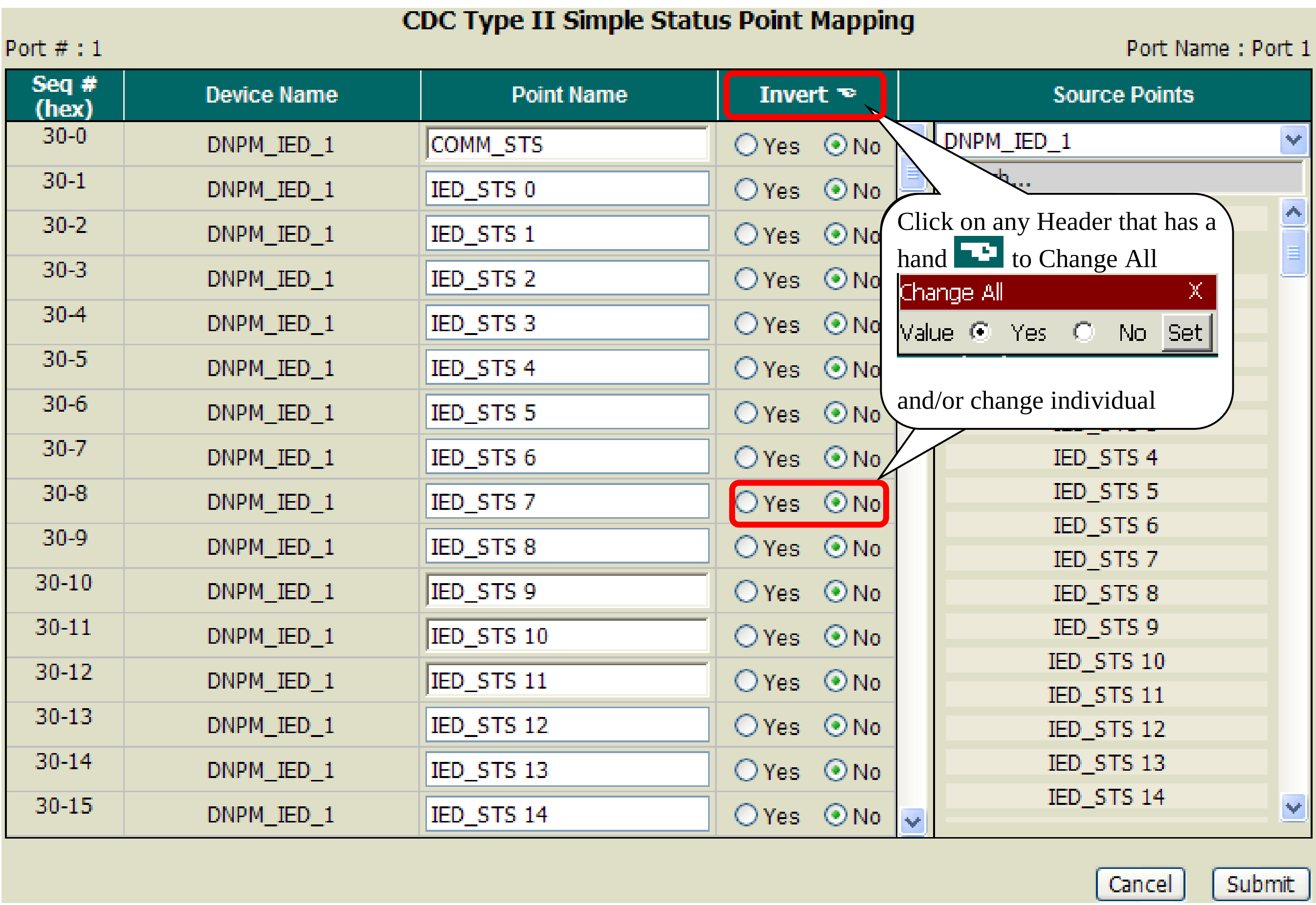
8.3.2.3 Insert & Delete Points

Insert & Delete not applicable to CDC II protocol.

8.3.3 Map Simple Status

From the CDC Type II Communication Mapping screen, click MAP for Simple Status. You will get a screen similar to Figure 8-12.

Figure 8-12 CDC Type II Simple Status Point Mapping



SEQ# Hex

The CDC Type II sequence number in hex followed by the bit number in the word.

Device Name

The name of the source device for the mapped point.

Point Name

The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

8.3.3.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

8.3.3.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

8.3.3.3 Insert & Delete Points

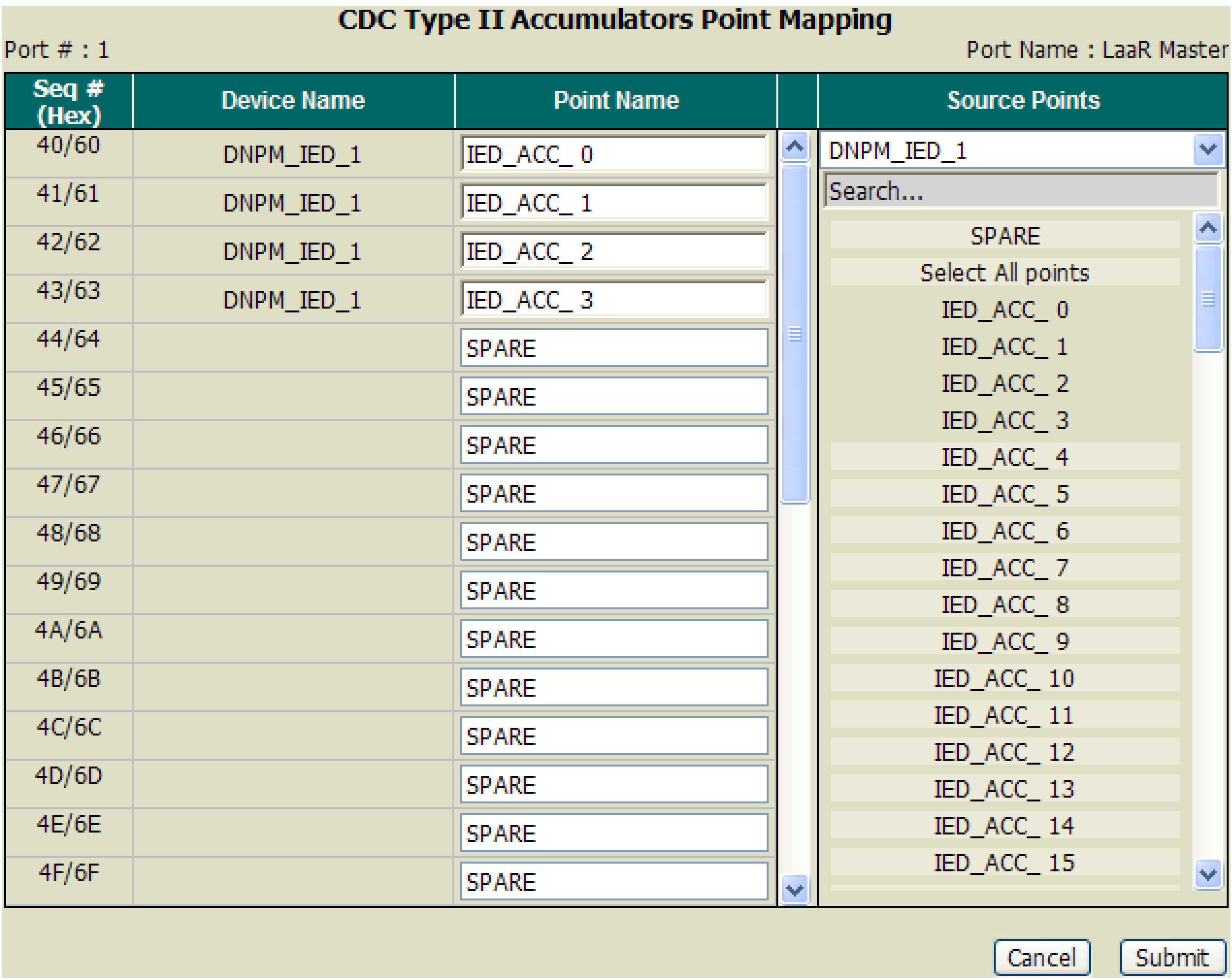
Insert & Delete not applicable to CDC II protocol.

8.3.4 Map Accumulators & Freeze Registers

8.3.4.1 Blocked Accumulators

From the CDC Type II Communication Mapping screen, click MAP for Blocked Accumulators. You will get a screen similar to Figure 8-13.

Figure 8-13 CDC Type II Blocked Accumulators Point Mapping



SEQ# Hex

The CDC Type II sequence number in hex. The first number is the sequence number for the pulse accumulator and the second number is the sequence number for the freeze buffer. For blocked accumulators, the accumulators and freeze registers are "blocked" together as follows (the following table and Figure 8-13 have 4 accumulators):

Sequence #	Point Name	Input Type
40	IED_ACC_0	Pulse Accumulator
41	IED_ACC_1	Pulse Accumulator
42	IED_ACC_2	Pulse Accumulator
43	IED_ACC_3	Pulse Accumulator
60	IED_ACC_0	Freeze Register
61	IED_ACC_1	Freeze Register
62	IED_ACC_2	Freeze Register
63	IED_ACC_3	Freeze Register

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

8.3.4.2 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

8.3.4.3 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

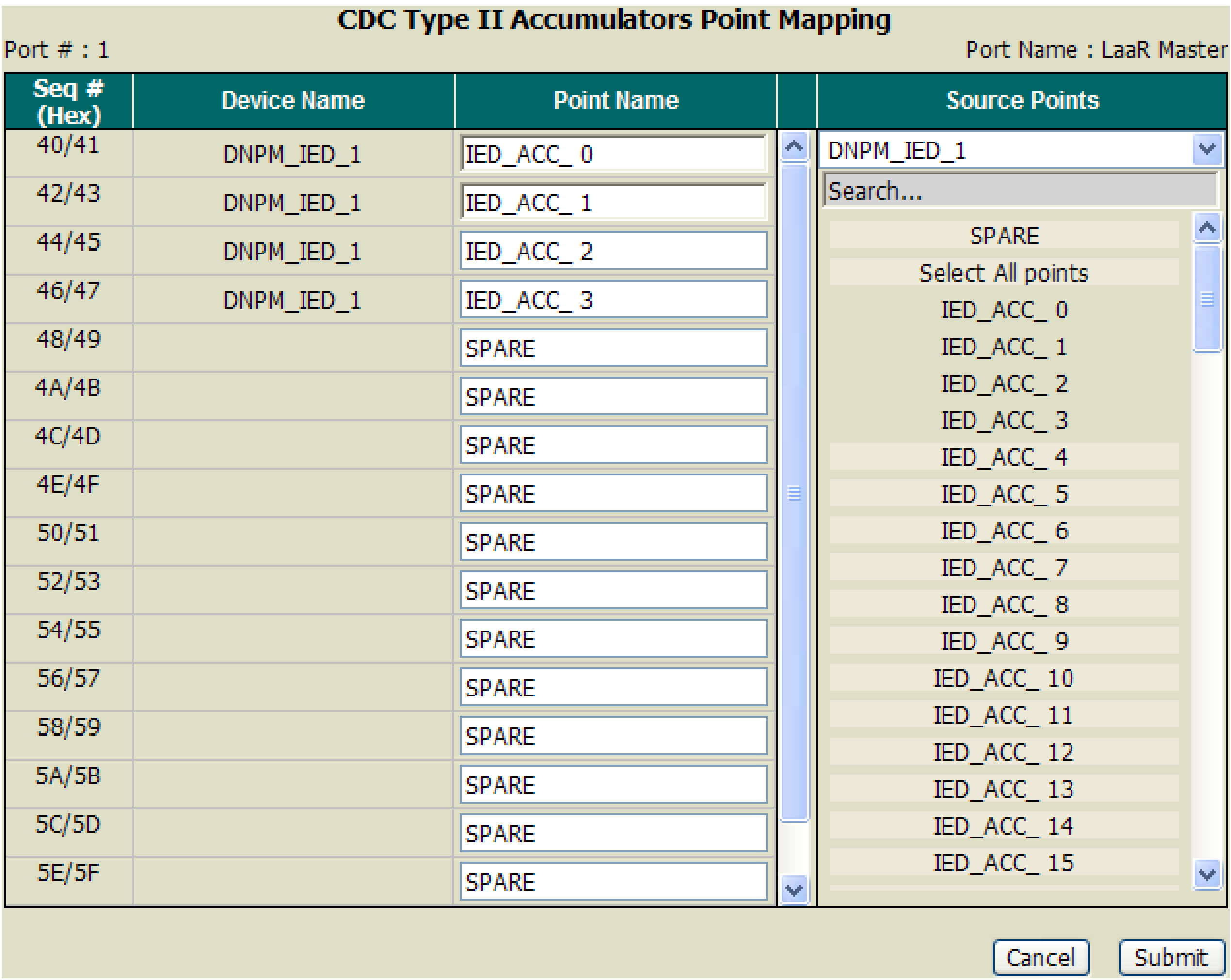
8.3.4.4 Insert & Delete Points

Insert & Delete not applicable to CDC II protocol.

8.3.4.5 Intermixed Accumulators & Registers

From the CDC Type II Communication Mapping screen, click MAP for Intermixed Accumulators. You will get a screen similar to Figure 8-14.

Figure 8-14 CDC Type II Intermixed Accumulators & Registers Point Mapping



SEQ# Hex

The CDC Type II sequence number in hex. The first number is the sequence number for the pulse accumulator and the second number is the sequence number for the freeze buffer. For intermixed accumulators & registers, the accumulators and freeze registers are "intermixed" as follows (the following table and Figure 8-14 have 4 accumulators):

Sequence #	Point Name	Input Type
40	IED_ACC_0	Pulse Accumulator
41	IED_ACC_0	Freeze Register
42	IED_ACC_1	Pulse Accumulator
43	IED_ACC_1	Freeze Register
44	IED_ACC_2	Pulse Accumulator
45	IED_ACC_2	Freeze Register
46	IED_ACC_3	Pulse Accumulator
47	IED_ACC_3	Freeze Register

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

8.3.4.6 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

8.3.4.7 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

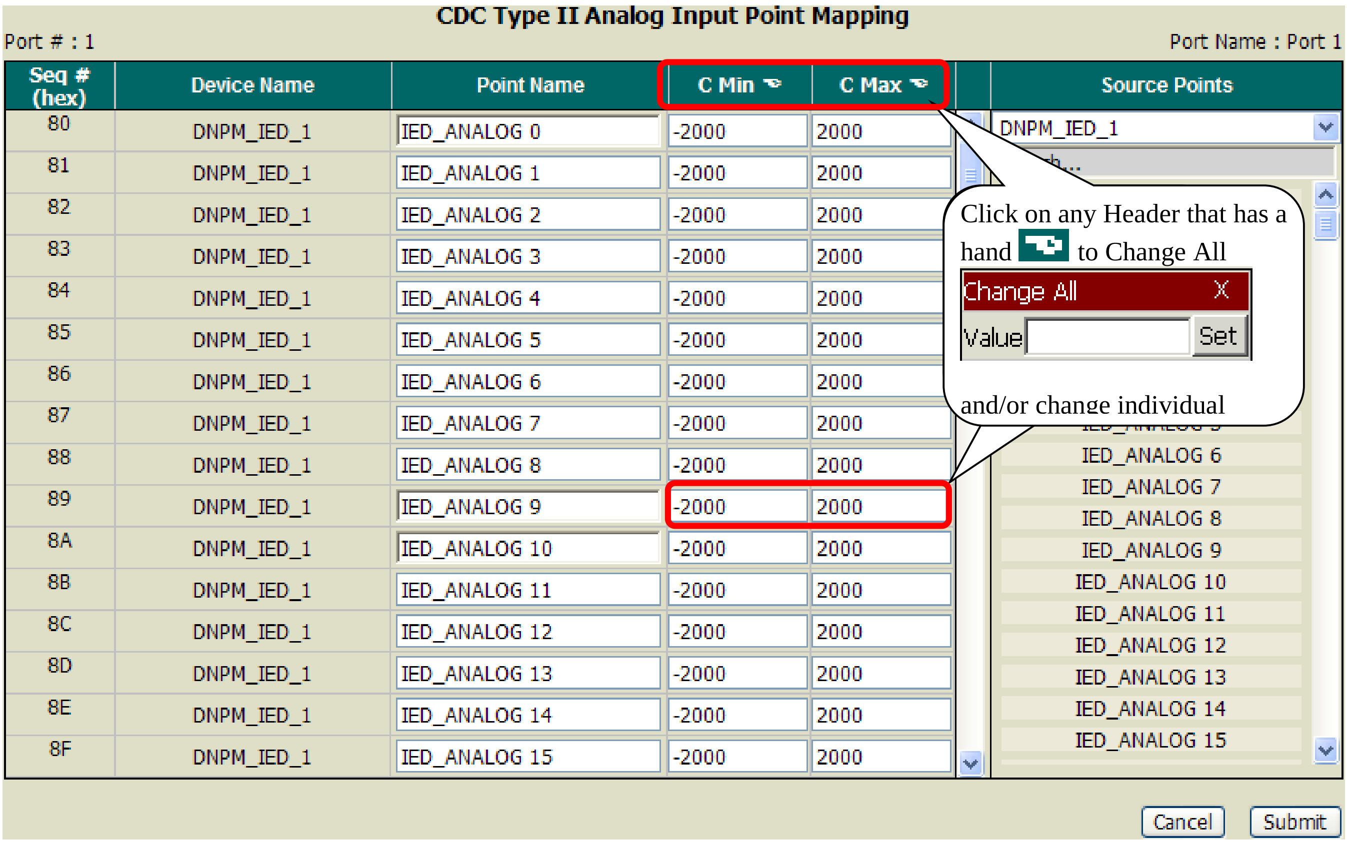
8.3.4.8 Insert & Delete Points

Insert & Delete not applicable to CDC II protocol.

8.3.5 Map Analog Inputs

From the CDC Type II Communication Mapping screen, click MAP for Analog Inputs. You will get a screen similar to Figure 8-15.

Figure 8-15 CDC Type II Analog Inputs Point Mapping



SEQ# Hex
The CDC Type II sequence number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

8.3.5.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

8.3.5.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

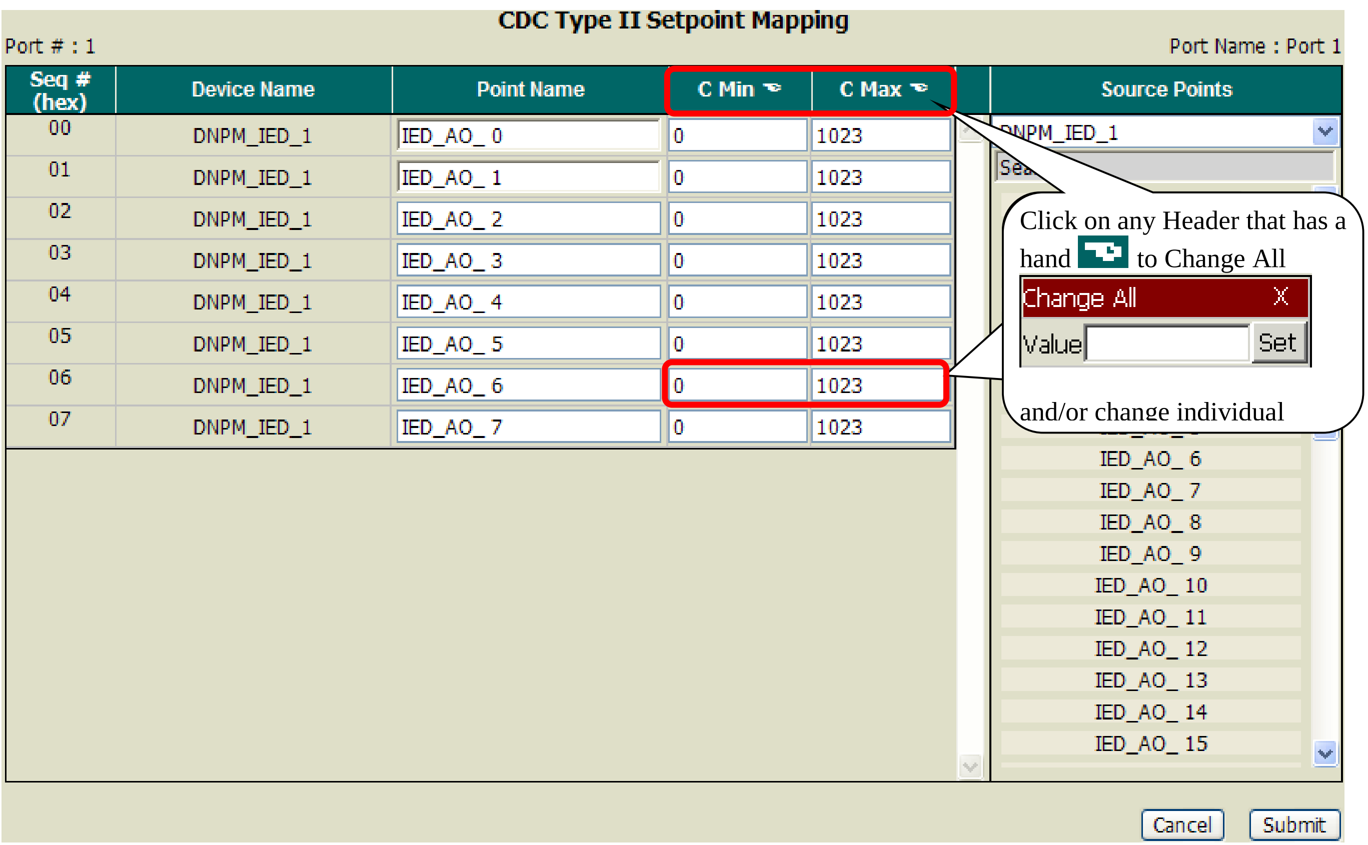
8.3.5.3 Insert & Delete Points

Insert & Delete not applicable to CDC II protocol.

8.3.6 Map Setpoints

From the CDC Type II Communication Mapping screen, click MAP for Setpoints. You will get a screen similar to Figure 8-16.

Figure 8-16 CDC Type II Setpoints Point Mapping



SEQ# Hex
The CDC Type II sequence number.

Device Name
The name of the source device for the mapped point.

Point Name

The name of the mapped point.

C Min

Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is 0.

C Max

Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 1023.

Source Points

Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

8.3.6.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

8.3.6.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

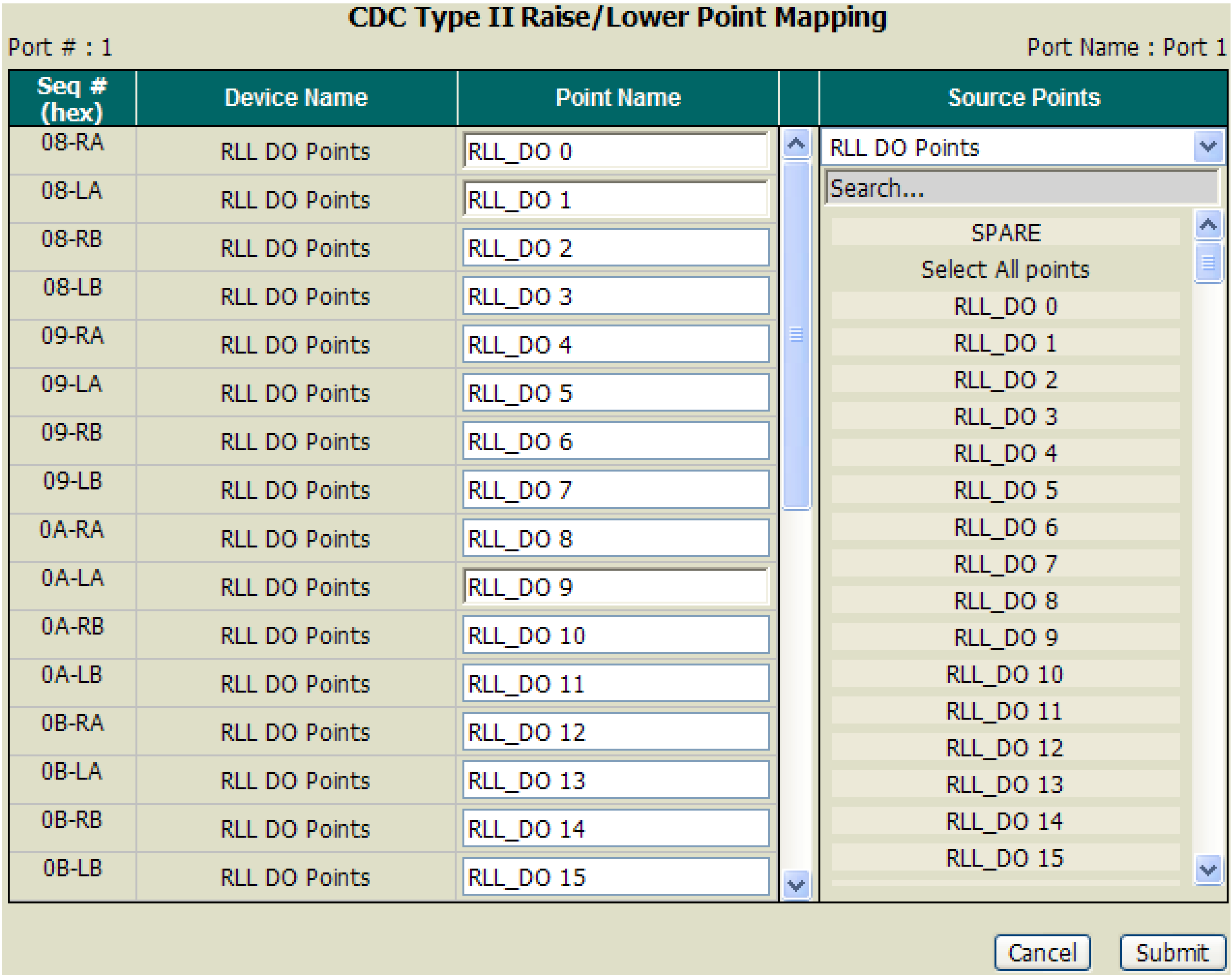
8.3.6.3 Insert & Delete Points

Insert & Delete not applicable to CDC II protocol.

8.3.7 Map Raise Lower

From the CDC Type II Communication Mapping screen, click MAP for Raise Lower. You will get a screen similar to Figure 8-17.

Figure 8-17 CDC Type II Raise Lower Point Mapping



SEQ# Hex
The CDC Type II sequence number in hex followed by RA (Raise A), LA (Lower A), RB (Raise B), or LB (Lower B).

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

8.3.7.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

8.3.7.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

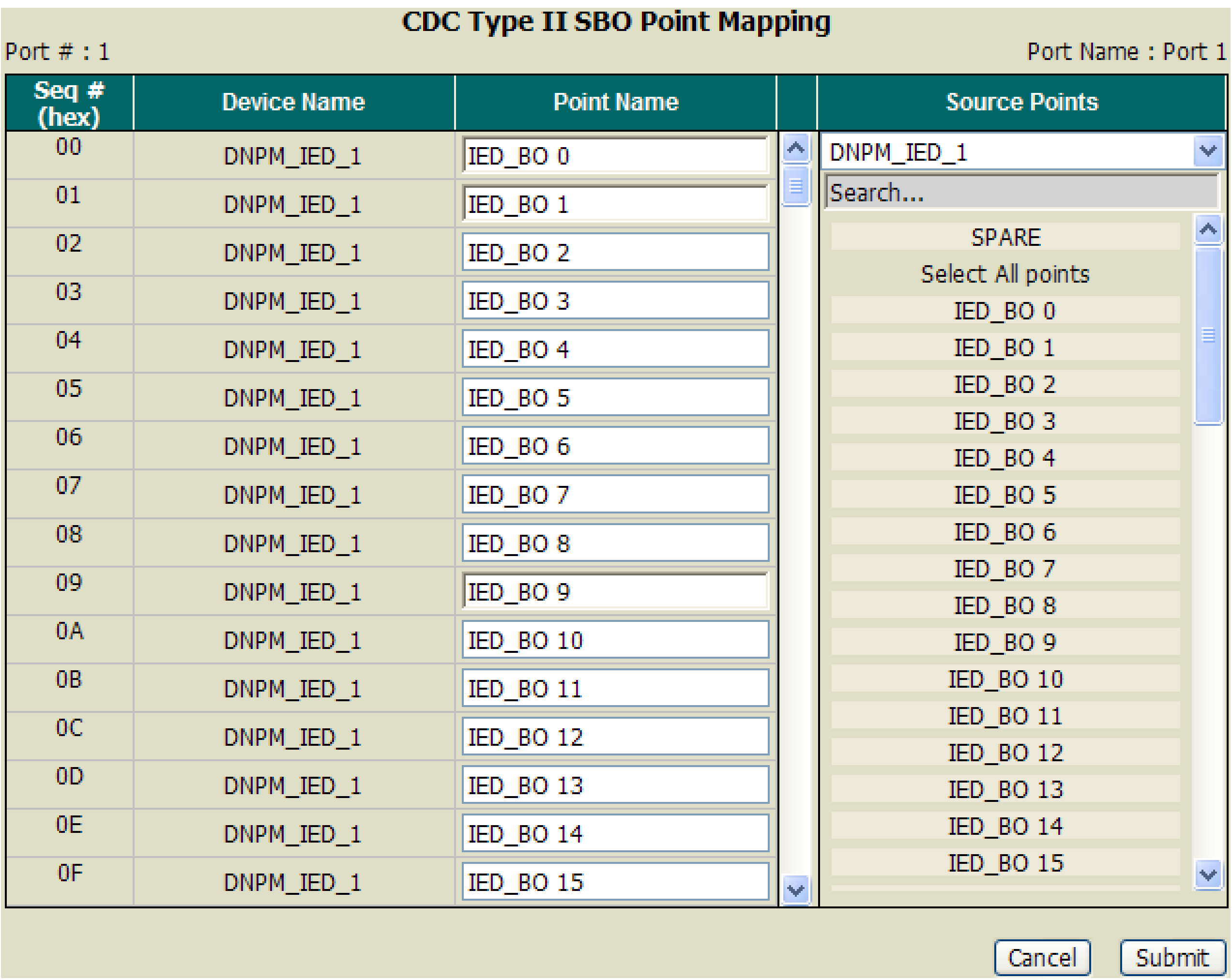
8.3.7.3 Insert & Delete Points

Insert & Delete not applicable to CDC II protocol.

8.3.8 Map SBO

From the CDC Type II Communication Mapping screen, click MAP for SBO. You will get a screen similar to Figure 8-18.

Figure 8-18 CDC Type II SBO Point Mapping



SEQ# Hex
The CDC Type II sequence number in hex.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

8.3.8.1 Point Mapping Highlight

See the Map 2 Bit MCD (Multiple Change Detect) example.

8.3.8.2 Point Database Search

See the Map 2 Bit MCD (Multiple Change Detect) example.

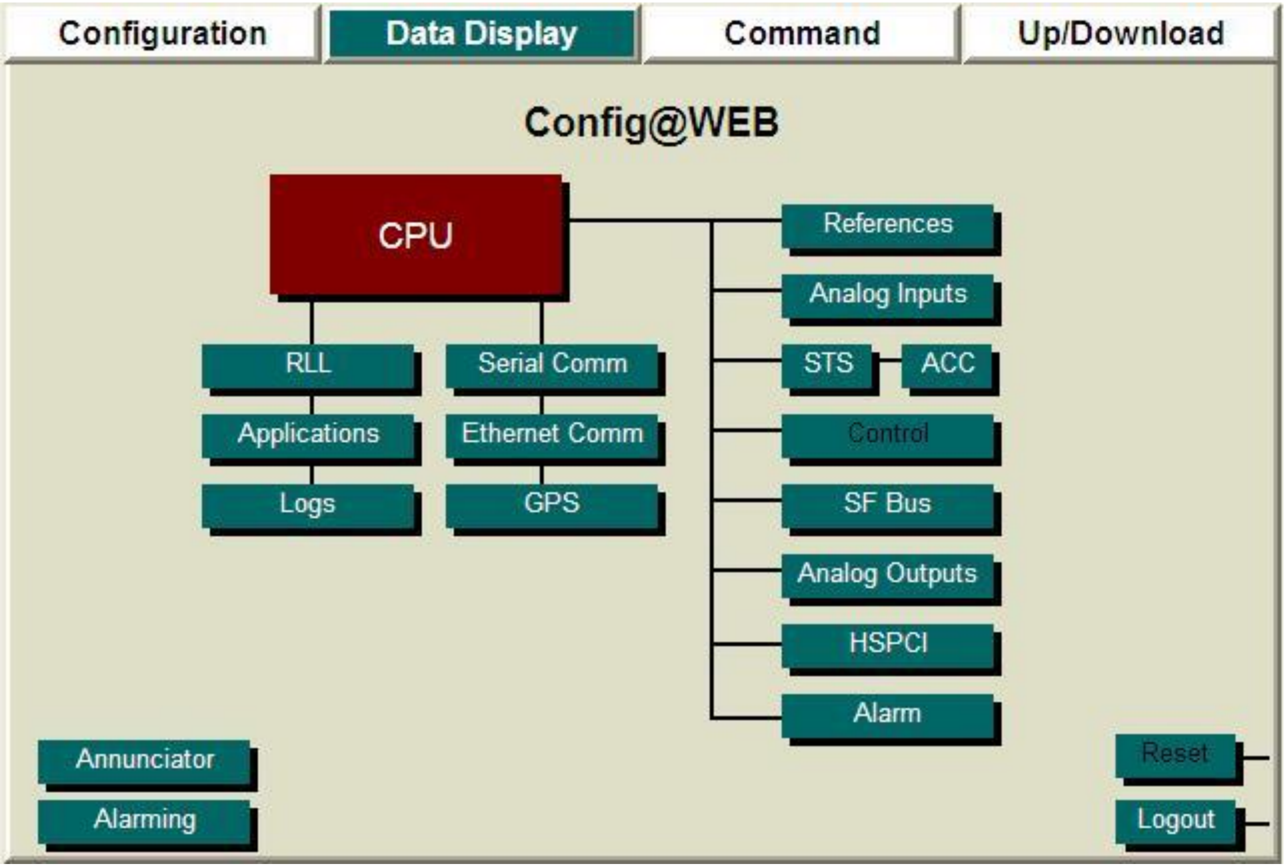
8.3.8.3 Insert & Delete Points

Insert & Delete not applicable to CDC II protocol.

8.4 Data Display

Click the Data Display tab as shown in Figure 8-19.

Figure 8-19 Data Display Screen



Click Serial Comm to get the screen shown in Figure 8-20.

Figure 8-20 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	CDC II	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number

Physical Port number of the RTU.

RTS and DTR

Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).

The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.

When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.

The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name

The port name given during configuration or default name accepted.

Protocol

The configured protocol for this port.

Comm Counters

Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data

Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

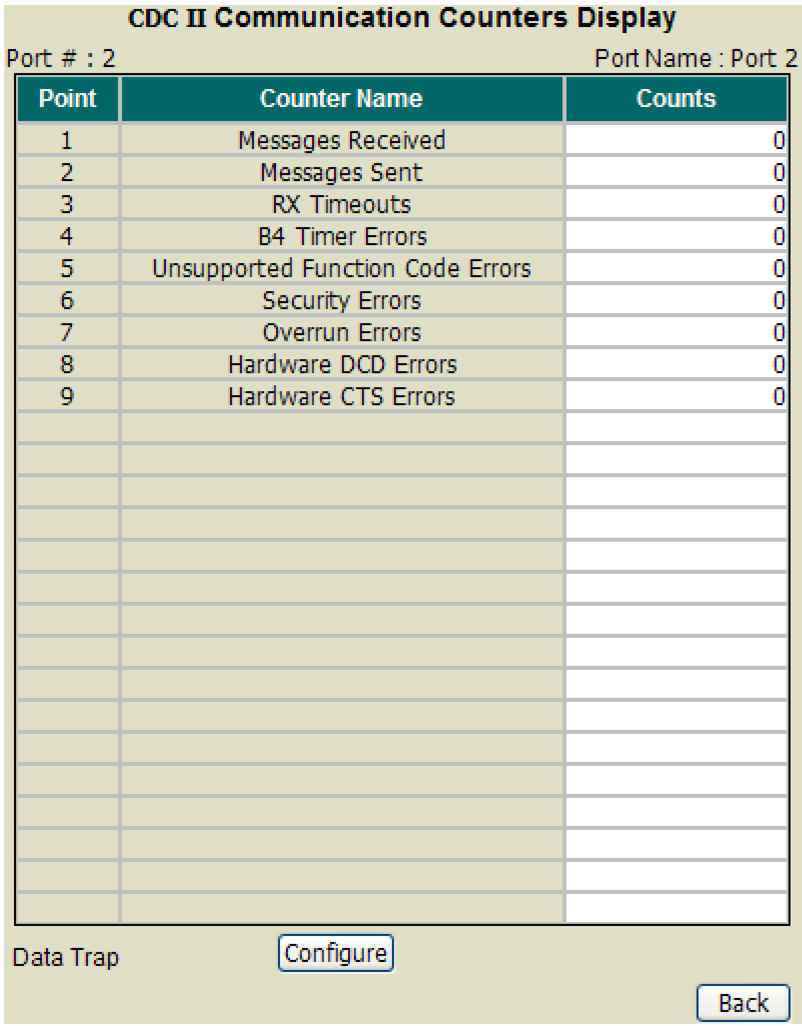
Navigation

Click the Back button to return to the previous screen.

8.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 8-21.

Figure 8-21 CDC II Communication Counters Display


CDC II Communication Counters Display

Port # : 2 Port Name : Port 2

Point	Counter Name	Counts
1	Messages Received	0
2	Messages Sent	0
3	RX Timeouts	0
4	B4 Timer Errors	0
5	Unsupported Function Code Errors	0
6	Security Errors	0
7	Overrun Errors	0
8	Hardware DCD Errors	0
9	Hardware CTS Errors	0

Data Trap Configure

Back

Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Messages Received

This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

B4 Timer Errors

This indicates the cumulative number of B4 Timer errors. This count can be affected by the setting of the B4 Time in configuration.

Unsupported Function Code Errors

This indicates the cumulative number of valid messages received with an unsupported function code since the last reset or power-up.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

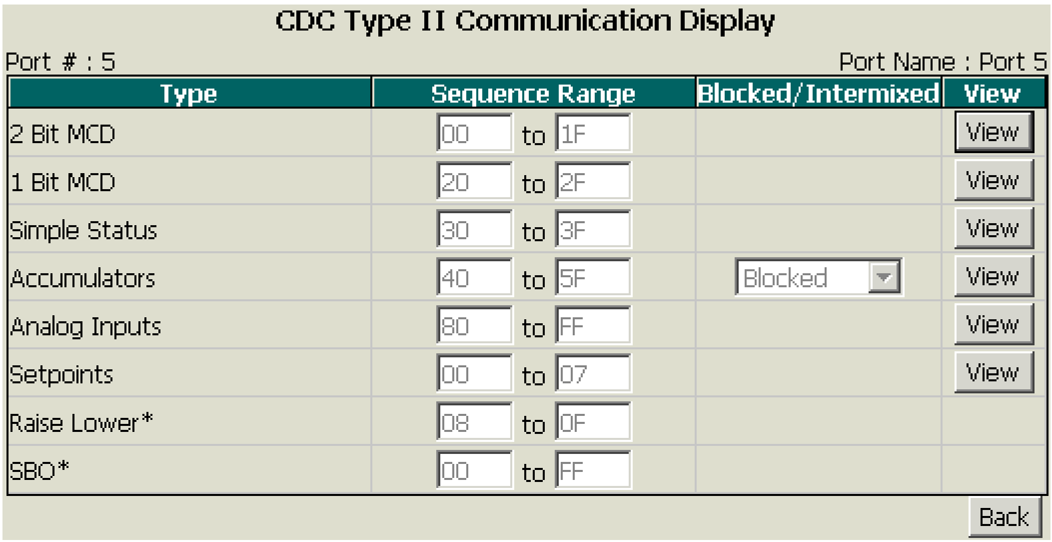
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

8.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 8-22.

Figure 8-22 CDC II Communication Display



Type
The type of point.

Sequence Range
The sequence in hex for point types.

Blocked/Intermixed
Accumulators may display as either blocked or mixed.

View
Click the View button to view points.

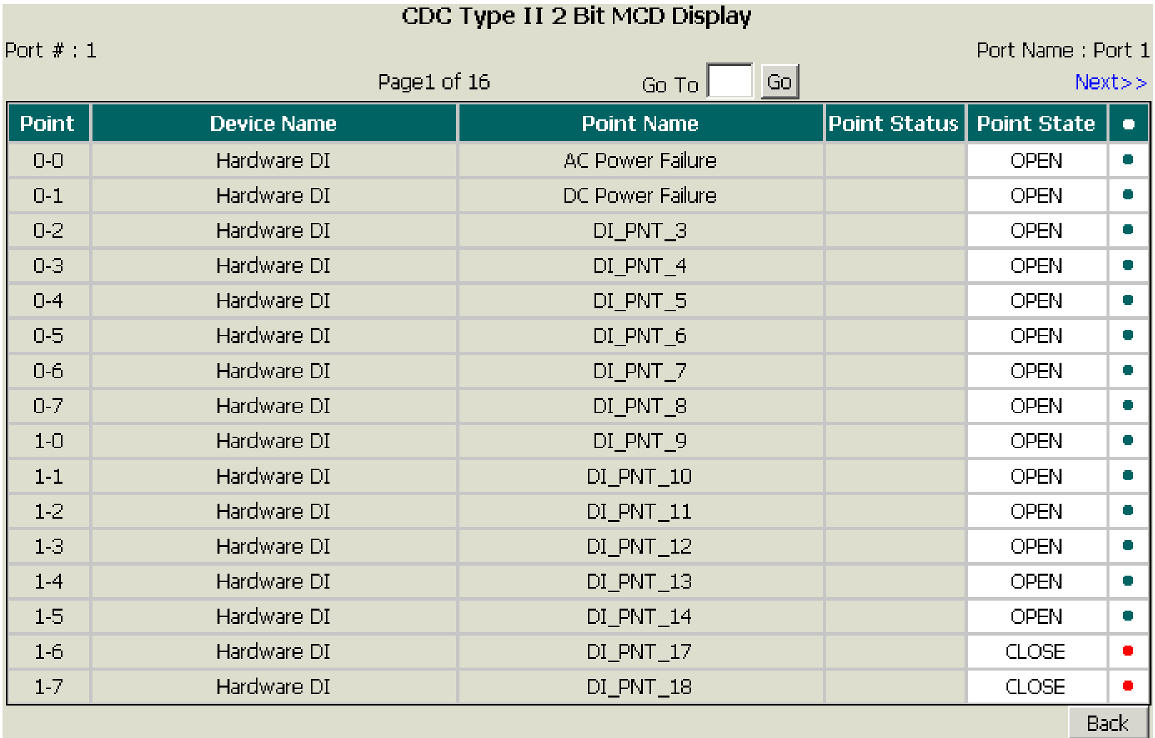
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

8.4.2.1 2 Bit MCD

From the CDC II Communication Display screen, click View for 2 Bit MCD to get the screen shown in Figure 8-23.

Figure 8-23 CDC II 2 Bit MCD Display



CDC Type II 2 Bit MCD Display

Port # : 1 Port Name : Port 1

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Point	Device Name	Point Name	Point Status	Point State	●
0-0	Hardware DI	AC Power Failure		OPEN	●
0-1	Hardware DI	DC Power Failure		OPEN	●
0-2	Hardware DI	DI_PNT_3		OPEN	●
0-3	Hardware DI	DI_PNT_4		OPEN	●
0-4	Hardware DI	DI_PNT_5		OPEN	●
0-5	Hardware DI	DI_PNT_6		OPEN	●
0-6	Hardware DI	DI_PNT_7		OPEN	●
0-7	Hardware DI	DI_PNT_8		OPEN	●
1-0	Hardware DI	DI_PNT_9		OPEN	●
1-1	Hardware DI	DI_PNT_10		OPEN	●
1-2	Hardware DI	DI_PNT_11		OPEN	●
1-3	Hardware DI	DI_PNT_12		OPEN	●
1-4	Hardware DI	DI_PNT_13		OPEN	●
1-5	Hardware DI	DI_PNT_14		OPEN	●
1-6	Hardware DI	DI_PNT_17		CLOSE	●
1-7	Hardware DI	DI_PNT_18		CLOSE	●

Back

Point
The CDC Type II Point number in hex followed by the bit number in the word.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that the current state of the point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

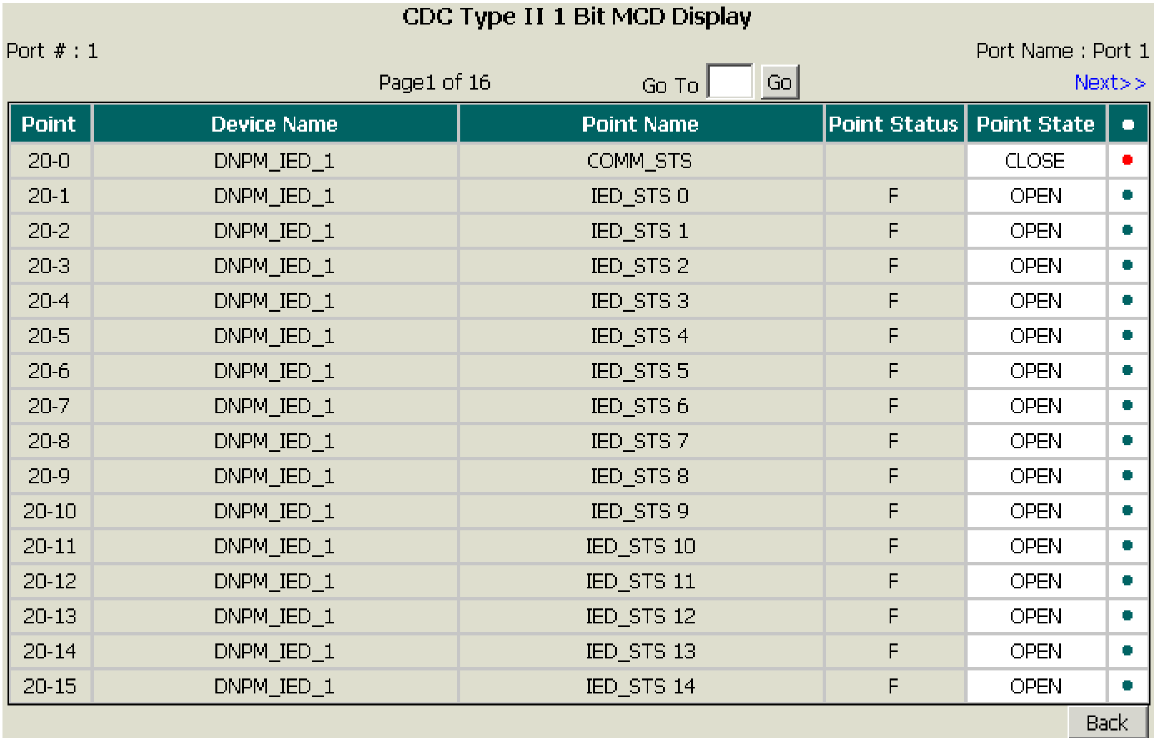
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

8.4.2.2 I Bit MCD

CDC II Communication Display screen, click View for 1 Bit MCD to get the screen shown in Figure 8-24.

Figure 8-24 CDC II 1 Bit MCD Display



CDC Type II 1 Bit MCD Display

Port # : 1 Port Name : Port 1

Page1 of 16 Go To Go Next>>

Point	Device Name	Point Name	Point Status	Point State	●
20-0	DNPM_IED_1	COMM_STS		CLOSE	●
20-1	DNPM_IED_1	IED_STS 0	F	OPEN	●
20-2	DNPM_IED_1	IED_STS 1	F	OPEN	●
20-3	DNPM_IED_1	IED_STS 2	F	OPEN	●
20-4	DNPM_IED_1	IED_STS 3	F	OPEN	●
20-5	DNPM_IED_1	IED_STS 4	F	OPEN	●
20-6	DNPM_IED_1	IED_STS 5	F	OPEN	●
20-7	DNPM_IED_1	IED_STS 6	F	OPEN	●
20-8	DNPM_IED_1	IED_STS 7	F	OPEN	●
20-9	DNPM_IED_1	IED_STS 8	F	OPEN	●
20-10	DNPM_IED_1	IED_STS 9	F	OPEN	●
20-11	DNPM_IED_1	IED_STS 10	F	OPEN	●
20-12	DNPM_IED_1	IED_STS 11	F	OPEN	●
20-13	DNPM_IED_1	IED_STS 12	F	OPEN	●
20-14	DNPM_IED_1	IED_STS 13	F	OPEN	●
20-15	DNPM_IED_1	IED_STS 14	F	OPEN	●

Back

Point
The CDC Type II Point number in hex followed by the bit number in the word.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that the current state of the point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

8.4.2.3 Simple Status

From the CDC II Communication Display screen, click View Simple Status to get the screen shown in Figure 8-25.

Figure 8-25 CDC II Simple Status Display

CDC Type II Simple Status Display

Port # : 1 Port Name : Port 1

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Point	Device Name	Point Name	Point Status	Point State	●
30-0	Hardware DI	AC Power Failure		OPEN	●
30-1	Hardware DI	DC Power Failure		OPEN	●
30-2	Hardware DI	DI_PNT_3		OPEN	●
30-3	Hardware DI	DI_PNT_4		OPEN	●
30-4	Hardware DI	DI_PNT_5		OPEN	●
30-5	Hardware DI	DI_PNT_6		OPEN	●
30-6	Hardware DI	DI_PNT_7		OPEN	●
30-7	Hardware DI	DI_PNT_8		OPEN	●
30-8	Hardware DI	DI_PNT_9		OPEN	●
30-9	Hardware DI	DI_PNT_10		OPEN	●
30-10	Hardware DI	DI_PNT_11		OPEN	●
30-11	Hardware DI	DI_PNT_12		OPEN	●
30-12	Hardware DI	DI_PNT_13		OPEN	●
30-13	Hardware DI	DI_PNT_14		OPEN	●
30-14	Hardware DI	DI_PNT_17		CLOSE	●
30-15	Hardware DI	DI_PNT_18		CLOSE	●

Back

Point
The CDC Type II Point number in hex followed by the bit number in the word.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that the current state of the point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

8.4.2.4 Accumulators

From the CDC II Communication Display screen, click View for Accumulators to get the screen shown in Figure 8-26.

Figure 8-26 CDC II Accumulators Display

CDC Type II Accumulators Display

Port # : 5 Port Name : Port 5

Page1 of 2 Go To Go Next>>

Point	Device Name	Point Name	Count
40/60	PC 1	IED_ACC_ 0	0
41/61	PC 1	IED_ACC_ 1	0
42/62	PC 1	IED_ACC_ 2	0
43/63	PC 1	IED_ACC_ 3	0
44/64	PC 2	IED_ACC_ 0	0
45/65	PC 2	IED_ACC_ 1	0
46/66	PC 2	IED_ACC_ 2	0
47/67	PC 2	IED_ACC_ 3	0
48/68	DNPM_IED_7	IED_ACC_ 0	0
49/69	DNPM_IED_7	IED_ACC_ 1	0
4A/6A	DNPM_IED_7	IED_ACC_ 2	0
4B/6B	DNPM_IED_7	IED_ACC_ 3	0
4C/6C	DNPM_IED_8	IED_ACC_ 0	0
4D/6D	DNPM_IED_8	IED_ACC_ 1	0
4E/6E	DNPM_IED_8	IED_ACC_ 2	0
4F/6F	DNPM_IED_8	IED_ACC_ 3	0

Back

Point
The CDC Type II sequence number in hex. The first number is the sequence number for the pulse accumulator and the second number is the sequence number for the freeze buffer.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The pulse accumulator count.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

8.4.2.5 Analog Inputs

From the CDC II Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 8-27.

Figure 8-27 CDC II Analog Inputs Display

CDC Type II Analog Inputs Display

Port # : 5 Port Name : Port 5

Page1 of 8 Go To [ ] Go Next>>

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
80	References	bb_gnd_ref		-0.001	0
81	References	bb_+5.0V_ref		5.000	2000
82	References	bb_+4.5V_ref		4.500	1800
83	References	bb_-4.5V_ref		-4.498	-1798
84	References	bb_temp_ref		70.248	-1429
85	References	bb_dc_in		25.041	568
86	Hardware Analogs	ANALOG 1		0.000	0
87	Hardware Analogs	ANALOG 2		0.000	0
88	Hardware Analogs	ANALOG 3		0.000	0
89	Hardware Analogs	ANALOG 4		0.000	0
8A	Hardware Analogs	ANALOG 5		0.000	0
8B	Hardware Analogs	ANALOG 6		0.000	0
8C	Hardware Analogs	ANALOG 7		0.000	0
8D	Hardware Analogs	ANALOG 8		0.000	0
8E	No Device	Spare			
8F	No Device	Spare			

Back

Point
The CDC Type II sequence number in hex.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts that will be sent to the master on the next poll of the data.

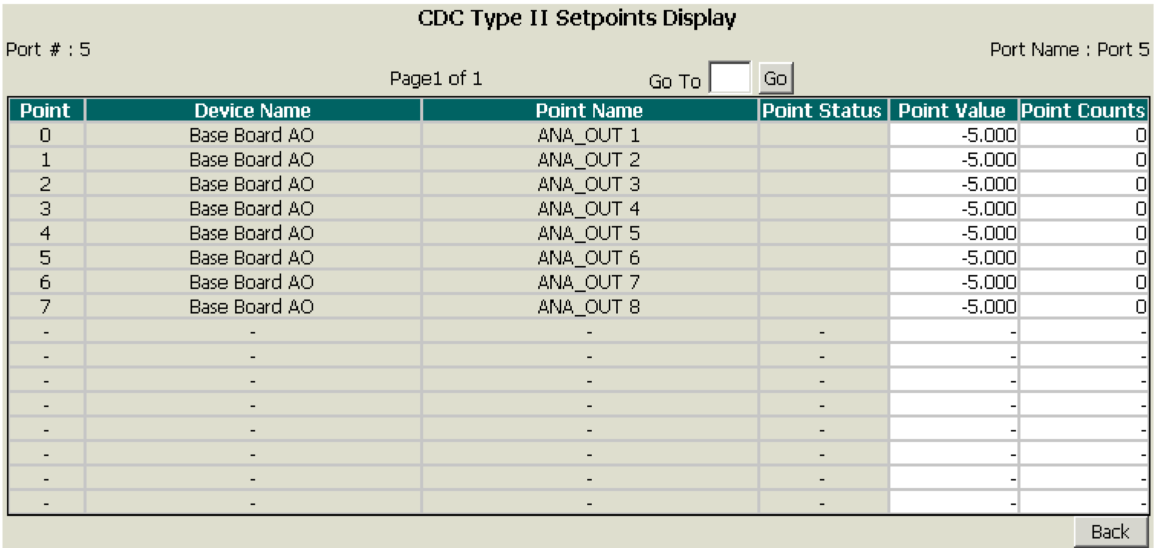
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

8.4.2.6 Setpoints

From the CDC II Communication Display screen, click View for Setpoints to get the screen shown in Figure 8-28.

Figure 8-28 CDC II Setpoints Display



CDC Type II Setpoints Display

Port # : 5

Port Name : Port 5

Page1 of 1

Go To Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	Base Board AO	ANA_OUT 1		-5.000	0
1	Base Board AO	ANA_OUT 2		-5.000	0
2	Base Board AO	ANA_OUT 3		-5.000	0
3	Base Board AO	ANA_OUT 4		-5.000	0
4	Base Board AO	ANA_OUT 5		-5.000	0
5	Base Board AO	ANA_OUT 6		-5.000	0
6	Base Board AO	ANA_OUT 7		-5.000	0
7	Base Board AO	ANA_OUT 8		-5.000	0
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Point
The CDC Type II sequence number in hex.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts last received for the analog output.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

8.4.2.7 Raise Lower

There is no display available.

8.4.2.8 SBO

There is no display available.

9 VanComm

9.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

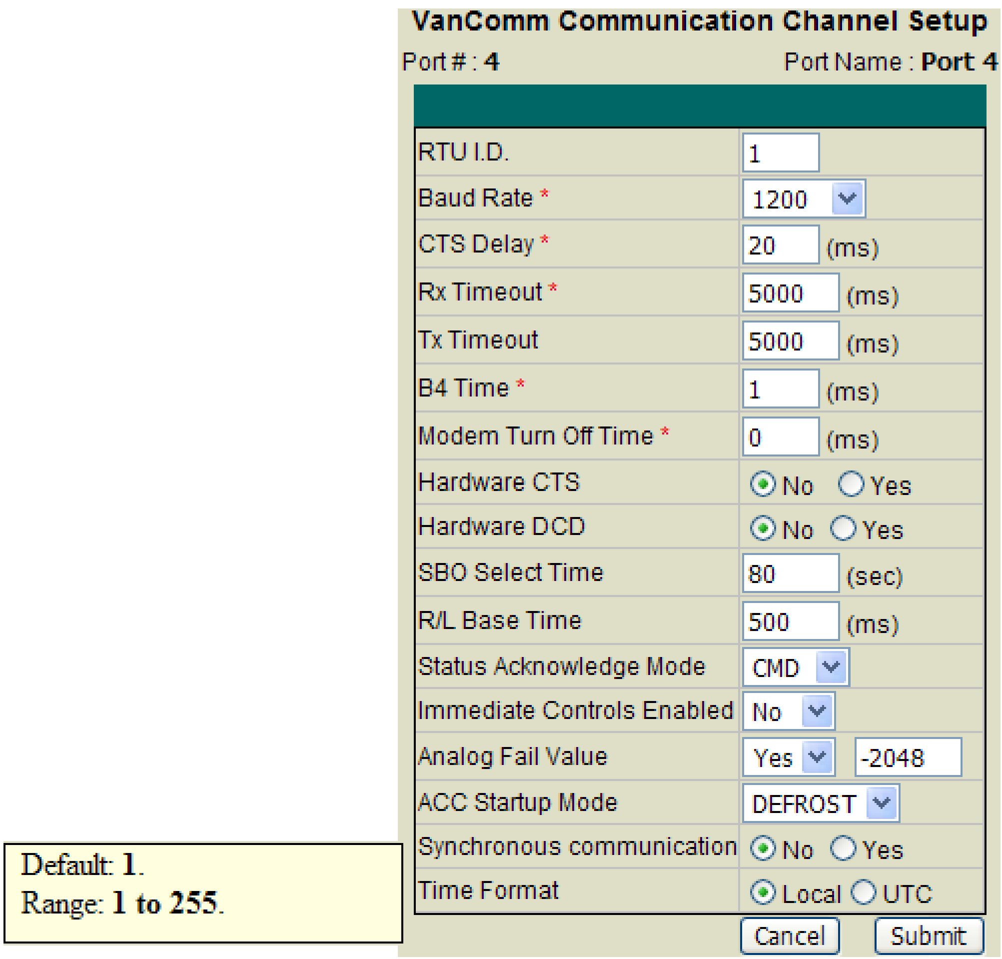
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

9.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 9-1.

Figure 9-1 VanComm Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D. (1 – 255)
Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 1.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 1200.

CTS Delay (0 – 250ms)
Enter the Clear-To-Send delay in milliseconds for the associated channel. This is the time delay the channel will wait to start transmitting following Request-To-Send signal being asserted. Default setting is 20.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 5000 (5 seconds).

Tx Timeout (0 – 30,000ms)
Enter the transmit timeout for the associated channel. This value limits the maximum transmission time from the RTU to the master. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 1.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

SBO Select Time (0 – 100sec)
This is the timeout between Select and Operate before an SBO control is cancelled. Default is 80.

R/L Base Time (0-30000ms)
Enter the raise/lower control base time in msec. The hold time for the relay will be, in msec,

Base Time + (Time Interval Increment X 50)

where the time interval increment is a value from 1 to 7 supplied in the Raise/Lower command. This time will have a granularity in the RTU of 5 msecs. Default setting is 500.

Status Acknowledge Mode (CMD, Auto)

Select CMD if status scans are to be acknowledged by the status acknowledge command or Auto if the acknowledgment is by the Acknowledge Last Status (ALS) bit contained in the header field of each master to RTU message. Default setting is CMD.

Immediate Controls Enabled (No, Yes)

Select if immediate controls will be accepted by the RTU or not. If set to No, immediate controls sent by the master will be ignored. Default setting is No.

Analog Fail Value (Yes, No) (-2048 to 2047)

If set to "Yes", the configured value will replace all analog values in the VanComm protocol if the RTU determines they are failed. Analog values that do not have the fail flag set will return as normal. Selecting "No" will result in the return of the current value of the failed analogs. Default is "Yes" and "-2048".

ACC Startup Mode (DEFROST, FREEZE)

When this value is set to DEFROST, the RTU will report the defrosted (running) accumulator value. When set to FREEZE, the RTU will report the protocol frozen value or the global frozen value if the protocol is configured as part of the global freeze application of the RTU. The default is DEFROST.

Synchronous communication (No, Yes)

If set to Yes, the communications device must provide a clock on pin 1 to be used in the transmission of the RTU response. The default is No.

Note: The Synchronous communication function does not apply to the SAGE 3030.

Time Format (Local, UTC)

Note: The coordination between UTC and local time is a feature that may be ignored. If you want your RTU to act as it always has in regards to time syncs, set Time Format to Local Time. See Time Configuration Settings in the Configuration chapter of the hardware manual for time settings under the CPU block.

If you want time synchronization from the master, you must know whether the master is sending Local time or UTC time, then set this radio button to match the master's format.

Navigation

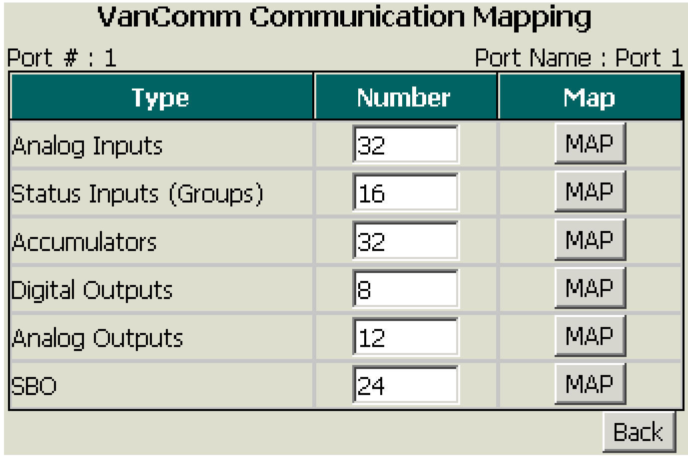
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

9.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 9-2 will appear. Enter the number of points for each type of point, then click MAP before moving on to the next point type.

Figure 9-2 VanComm Communication Mapping



Type

The different types of I/O points supported by this protocol.

Number

Enter the quantity of points for the given type.

Note: You must Map the points entered before moving to the next point type.

Map

Click the MAP button to map the points.

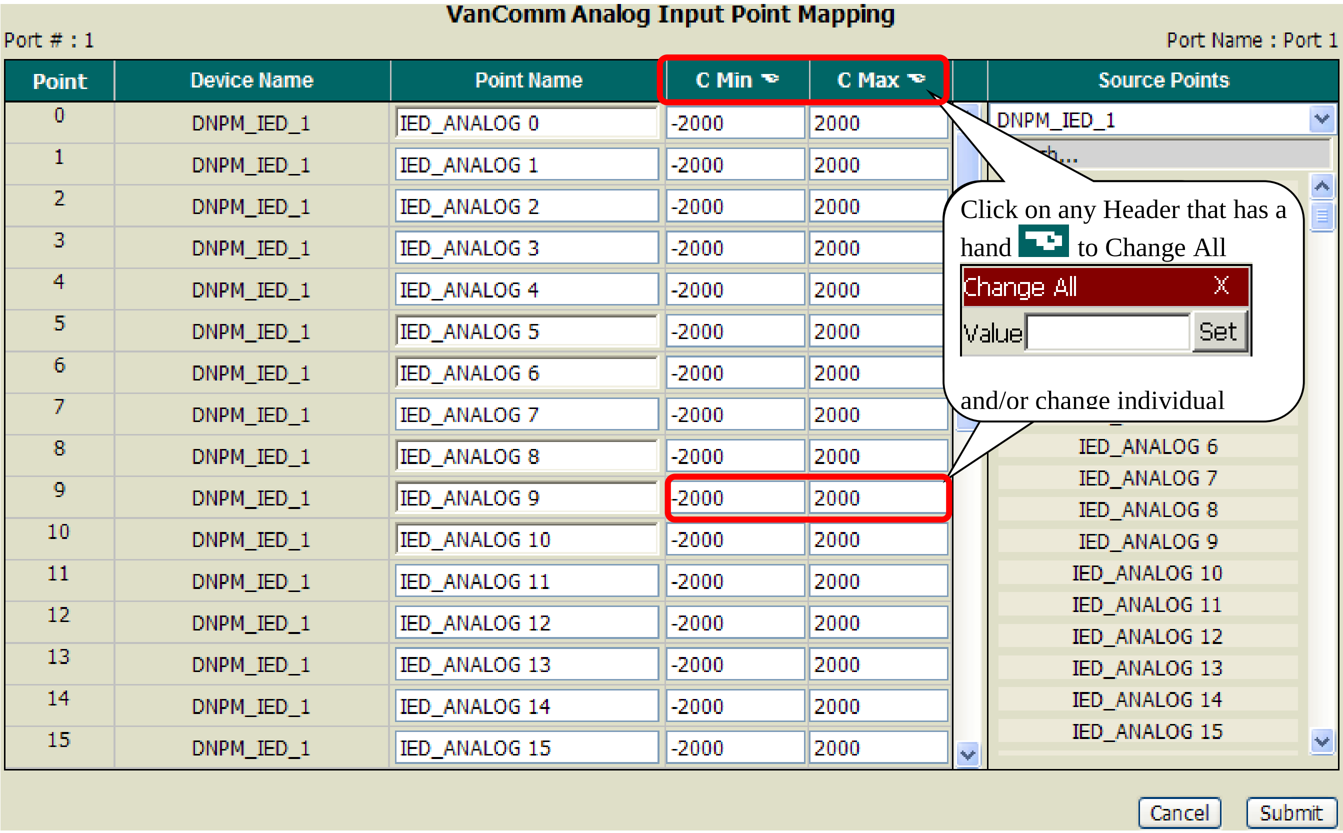
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the IED Configuration screen.

9.3.1 Map Analog Inputs

From the VanComm Communication Mapping screen, enter the number of points you want to map and click the MAP button for Analog Inputs. A screen similar to Figure 9-3 will appear.

Figure 9-3 VanComm Analog Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

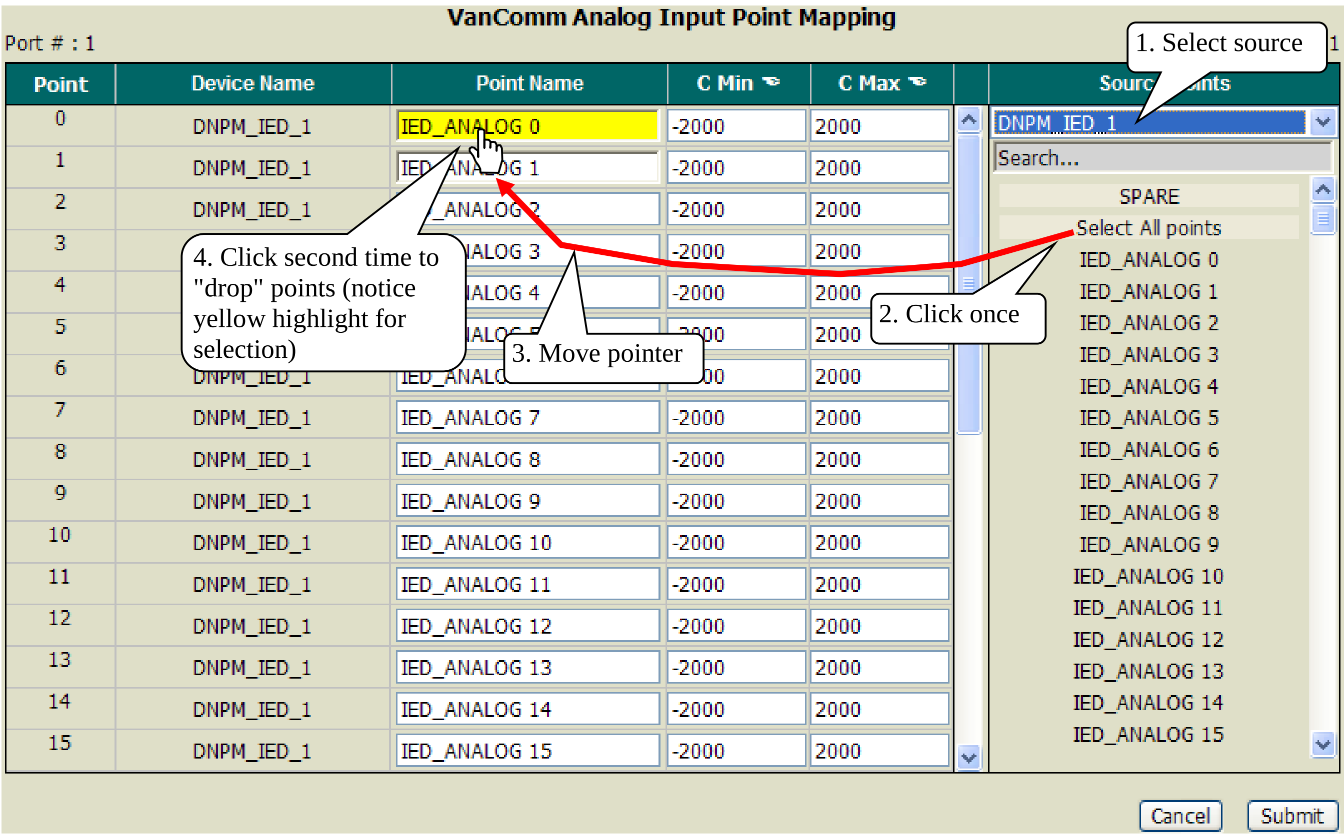
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

9.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

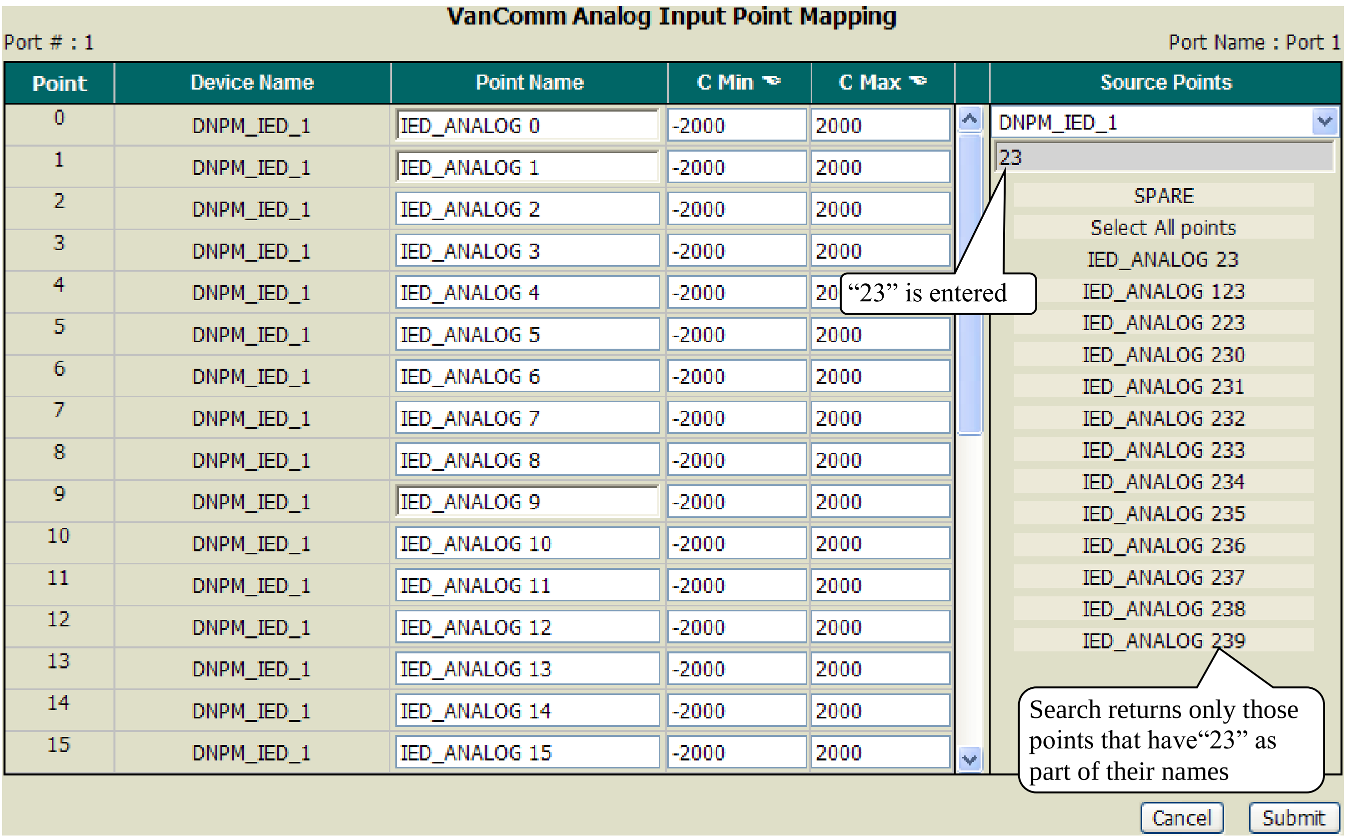
Figure 9-4 Point Mapping Highlight



9.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

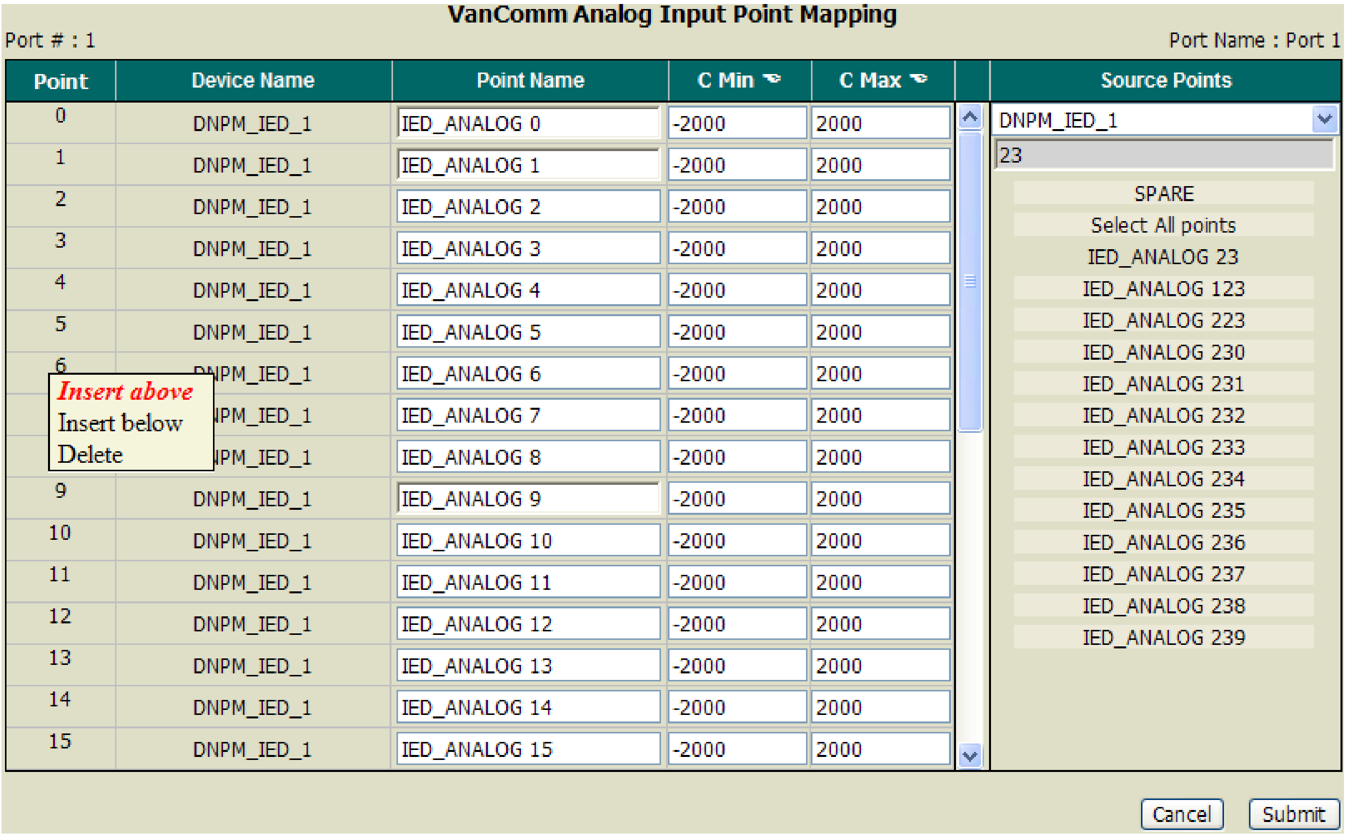
Figure 9-5 Point Database Search



9.3.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #6) and right click the mouse. The message box shown below appears. Select Insert above (or below) and left click.

Figure 9-6 Insert a Point

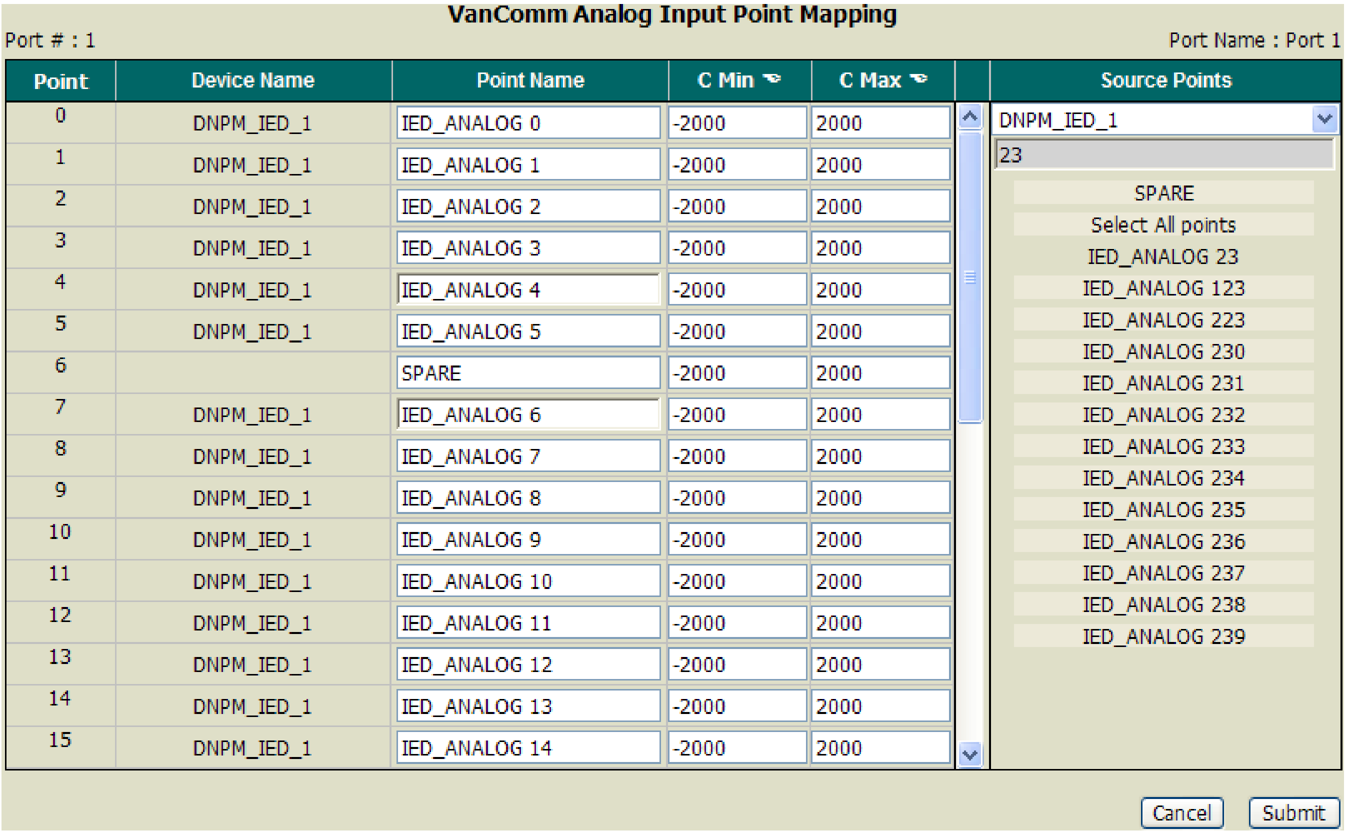


The results of Insert is shown in the next Figure. Notice that the old Point #6, IED_ANALOG 6, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 9-7 Results of Insert Above



VanComm Analog Input Point Mapping

Port # : 1

Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2000	2000
1	DNPM_IED_1	IED_ANALOG 1	-2000	2000
2	DNPM_IED_1	IED_ANALOG 2	-2000	2000
3	DNPM_IED_1	IED_ANALOG 3	-2000	2000
4	DNPM_IED_1	IED_ANALOG 4	-2000	2000
5	DNPM_IED_1	IED_ANALOG 5	-2000	2000
6		SPARE	-2000	2000
7	DNPM_IED_1	IED_ANALOG 6	-2000	2000
8	DNPM_IED_1	IED_ANALOG 7	-2000	2000
9	DNPM_IED_1	IED_ANALOG 8	-2000	2000
10	DNPM_IED_1	IED_ANALOG 9	-2000	2000
11	DNPM_IED_1	IED_ANALOG 10	-2000	2000
12	DNPM_IED_1	IED_ANALOG 11	-2000	2000
13	DNPM_IED_1	IED_ANALOG 12	-2000	2000
14	DNPM_IED_1	IED_ANALOG 13	-2000	2000
15	DNPM_IED_1	IED_ANALOG 14	-2000	2000

Source Points

DNPM_IED_1

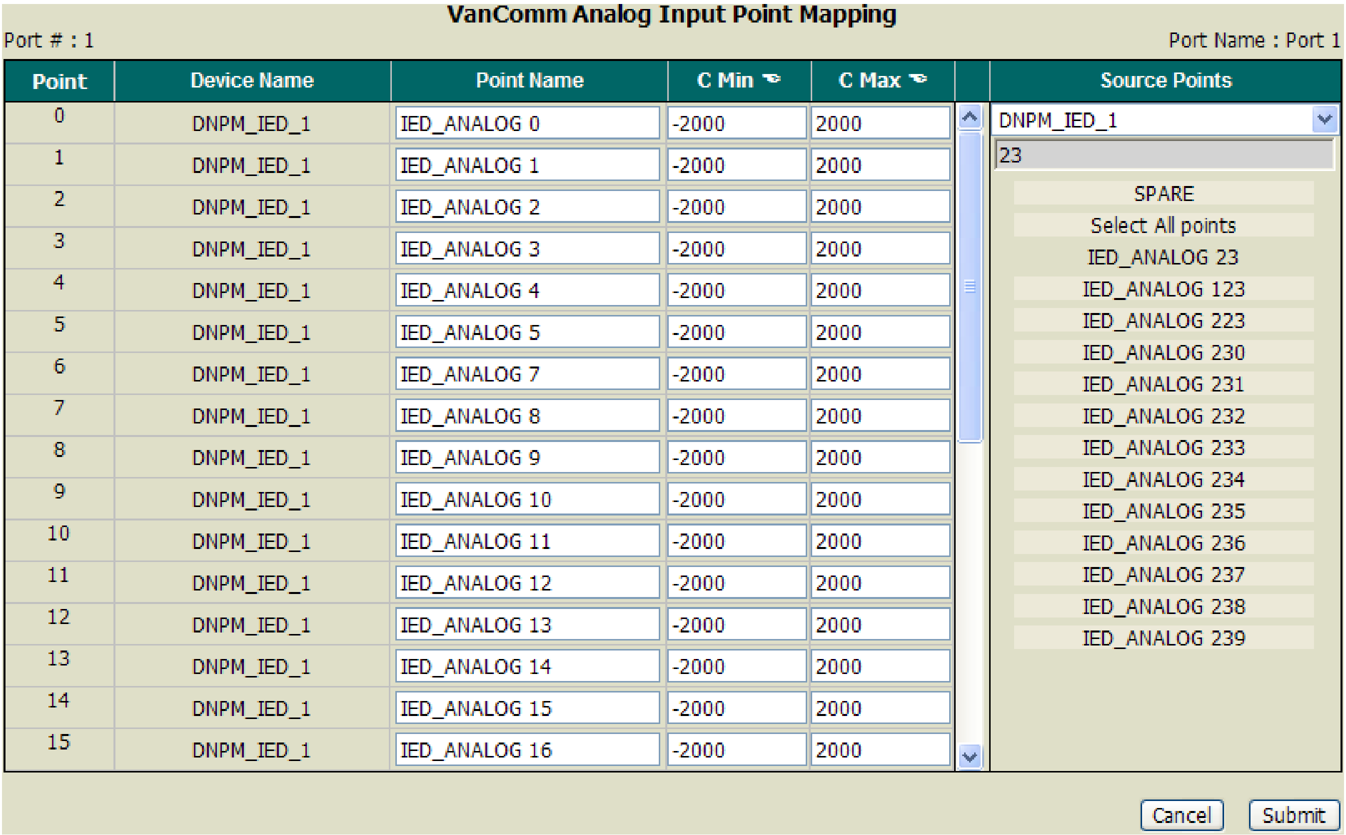
23

SPARE
Select All points
IED_ANALOG 23
IED_ANALOG 123
IED_ANALOG 223
IED_ANALOG 230
IED_ANALOG 231
IED_ANALOG 232
IED_ANALOG 233
IED_ANALOG 234
IED_ANALOG 235
IED_ANALOG 236
IED_ANALOG 237
IED_ANALOG 238
IED_ANALOG 239

Cancel Submit

The Spare point can also be deleted. The following example shows the results of deleting Point#6, IED_ANALOG 6.

Figure 9-8 Results of Deleting a Point

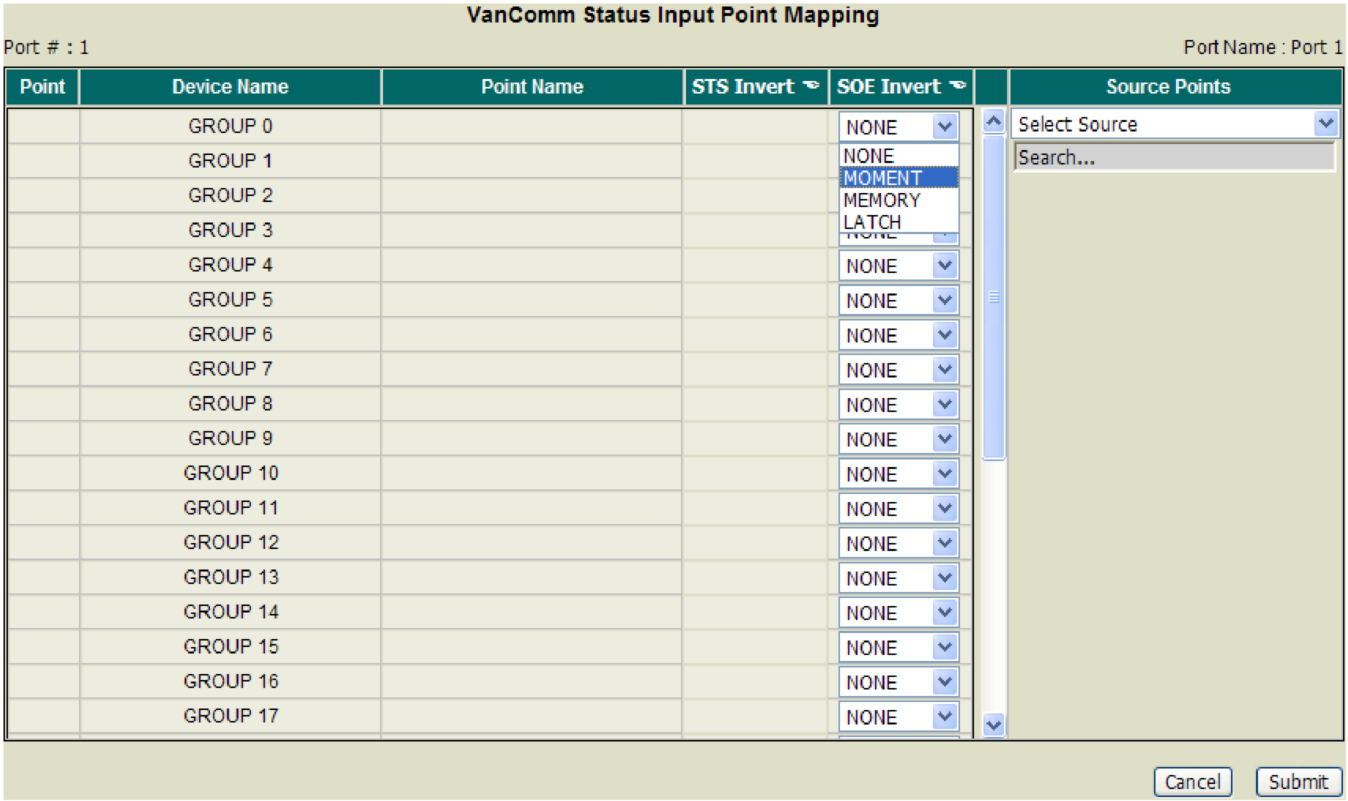


Notice that IED_ANALOG 6 is now missing, although Point numbers remain contiguous.

9.3.2 Map Status Inputs

From the VanComm Communication Mapping screen, enter the number of groups of points you want to map and click the MAP button for Status Inputs. A screen similar to Figure 9-9 will appear.

Figure 9-9 VanComm Status Input Point Mapping – Initial Screen

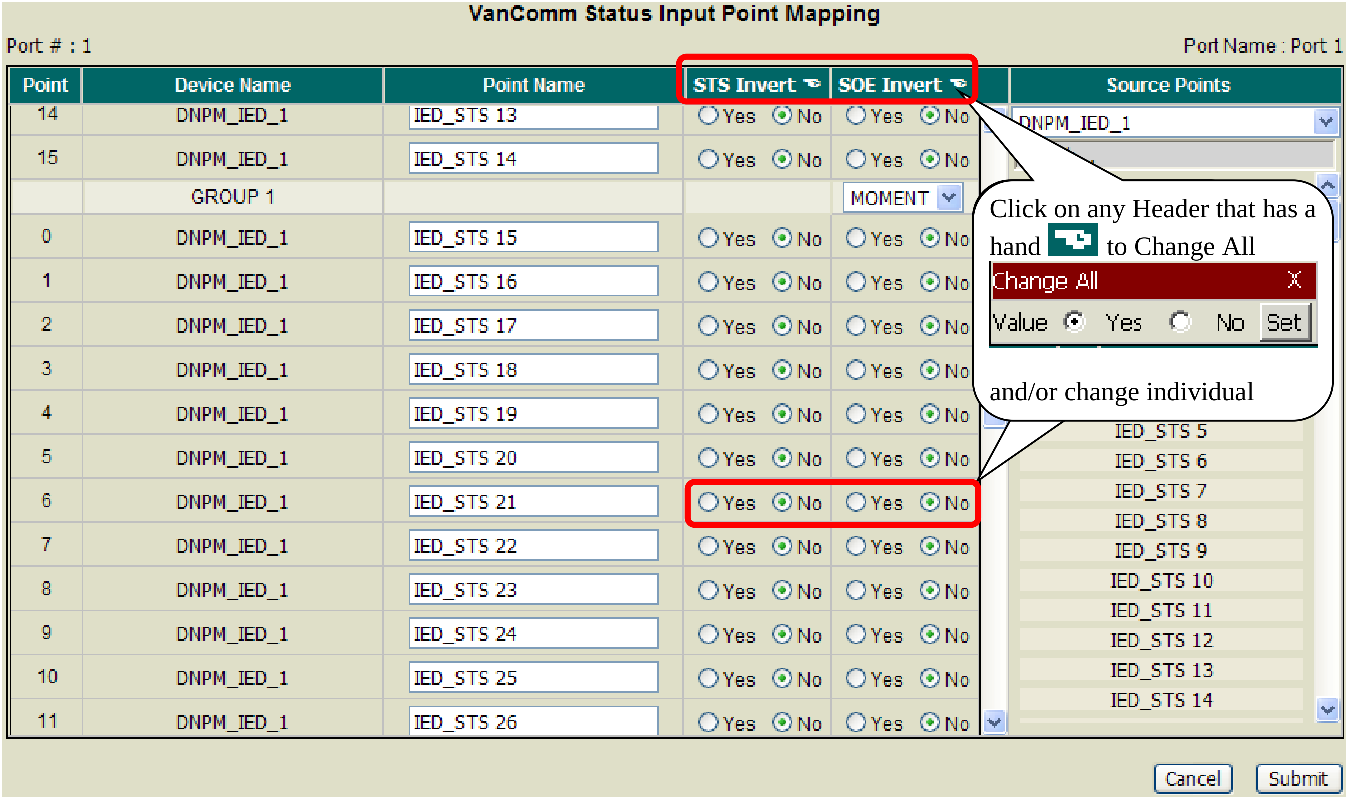


Status points in the VanComm protocol are configured by group. There can be a maximum of 240 groups defined, with each group containing a maximum of 16 status points. The configuration of each group applies to all the status points within that group. A group can be configured as follows:

- None (no status points defined in the group)
- Momentary (1-bit regular status – group will consist of 16 status points)
- Memory (2-bit status – group will consist of 8 status points, each with 1 memory bit)
- Latch (1-bit latching status – group will consist of 16 status points)

Figure 9-10 shows the groups being filled in from the source points.

Figure 9-10 VanComm Status Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

STS Invert
Click Yes to invert the status point. The default is No.

SOE Invert
Click Yes to invert the SOE point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

9.3.2.1 Point Mapping Highlight

See the Analog example.

9.3.2.2 Point Database Search

See the Analog example.

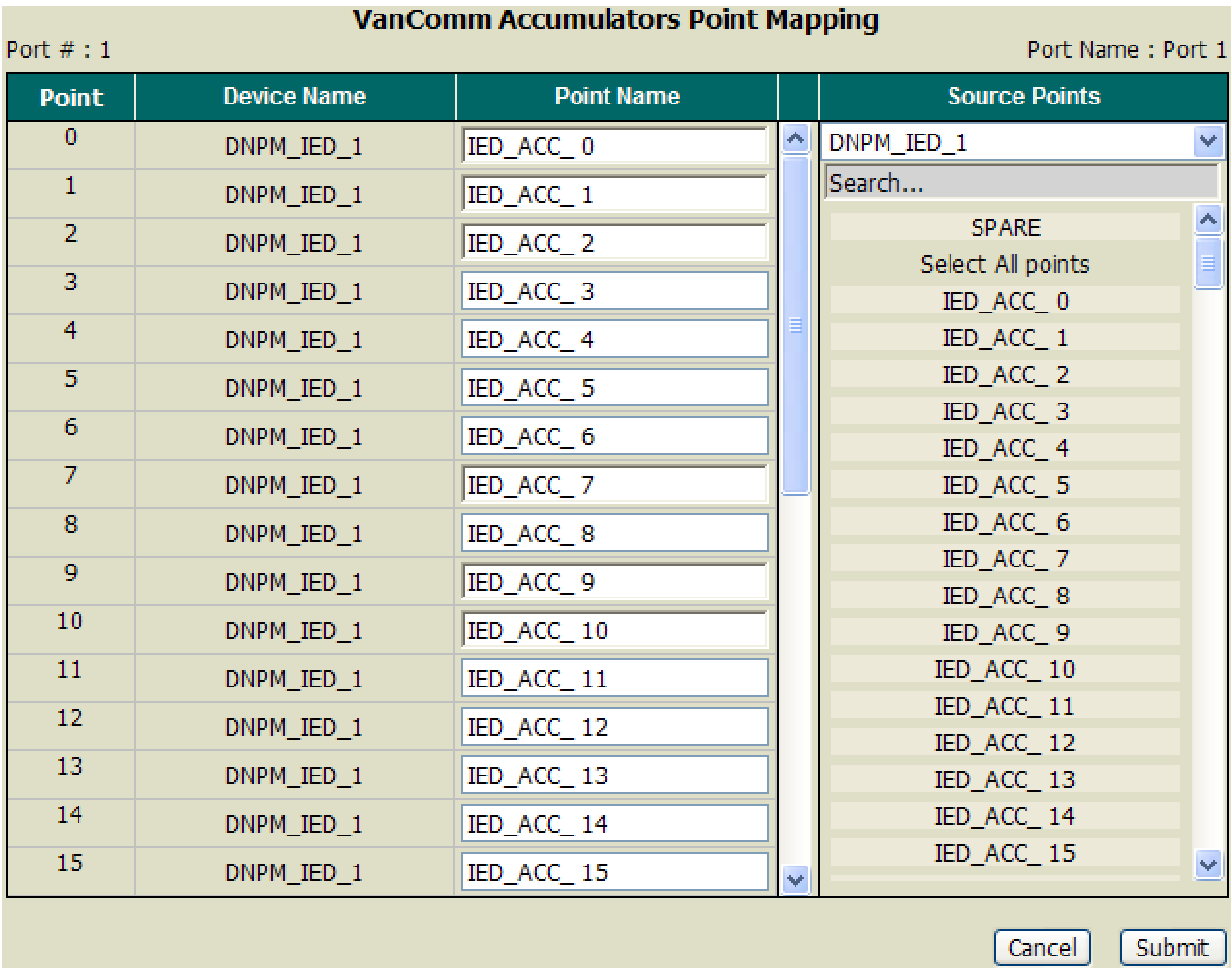
9.3.2.3 Insert & Delete Points

N/A.

9.3.3 Map Accumulators

From the VanComm Communication Mapping screen, enter the number of points you want to map and click the MAP button for Accumulators. A screen similar to Figure 9-11 will appear.

Figure 9-11 VanComm Accumulator Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points

Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

9.3.3.1 Point Mapping Highlight

See the Analog example.

9.3.3.2 Point Database Search

See the Analog example.

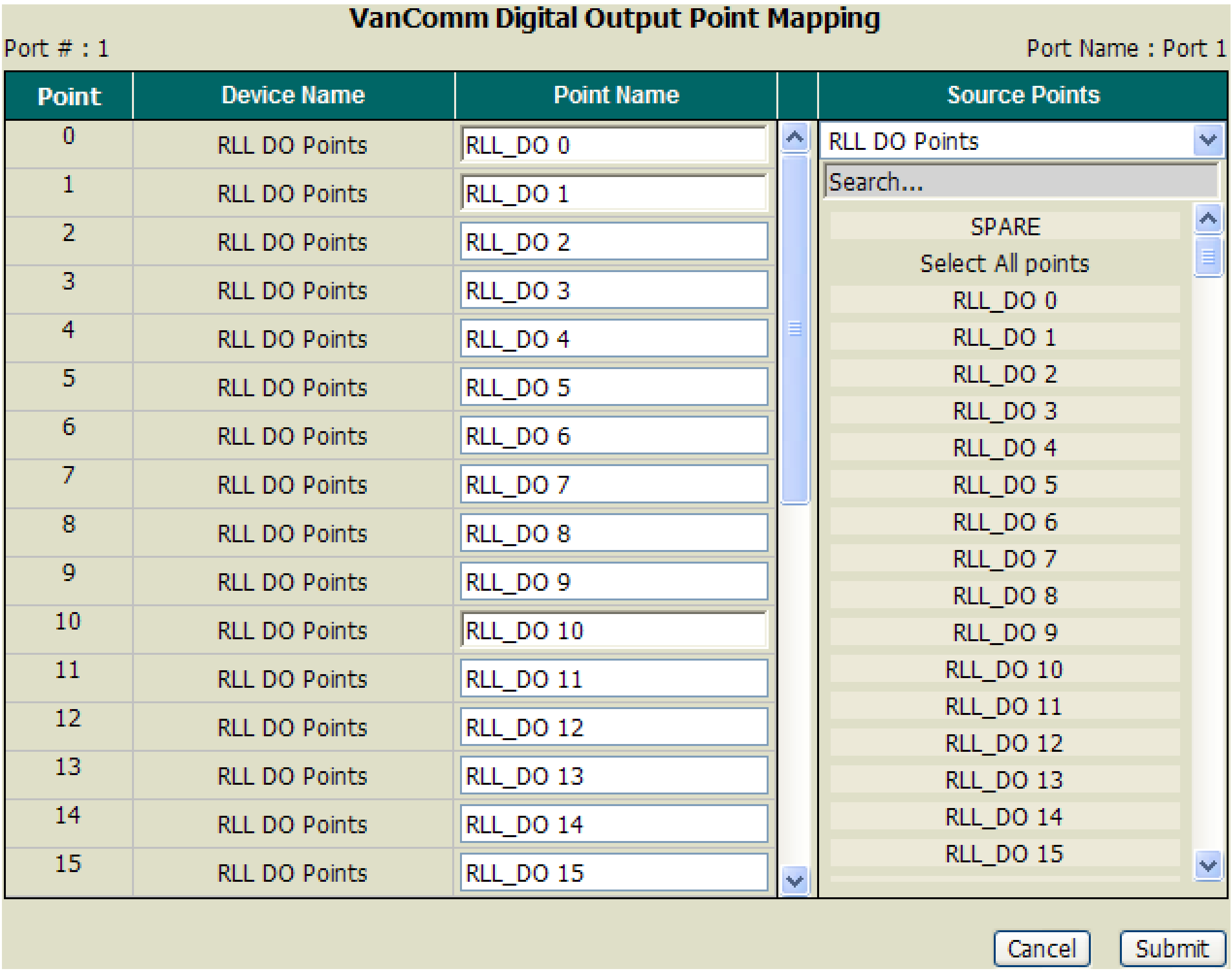
9.3.3.3 Insert & Delete Points

See the Analog example.

9.3.4 Map Digital Outputs

From the VanComm Communication Mapping screen, enter the number of points you want to map and click the MAP button for Digital Outputs. A screen similar to Figure 9-12 will appear.

Figure 9-12 VanComm Digital Outputs Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

9.3.4.1 Point Mapping Highlight

See the Analog example.

9.3.4.2 Point Database Search

See the Analog example.

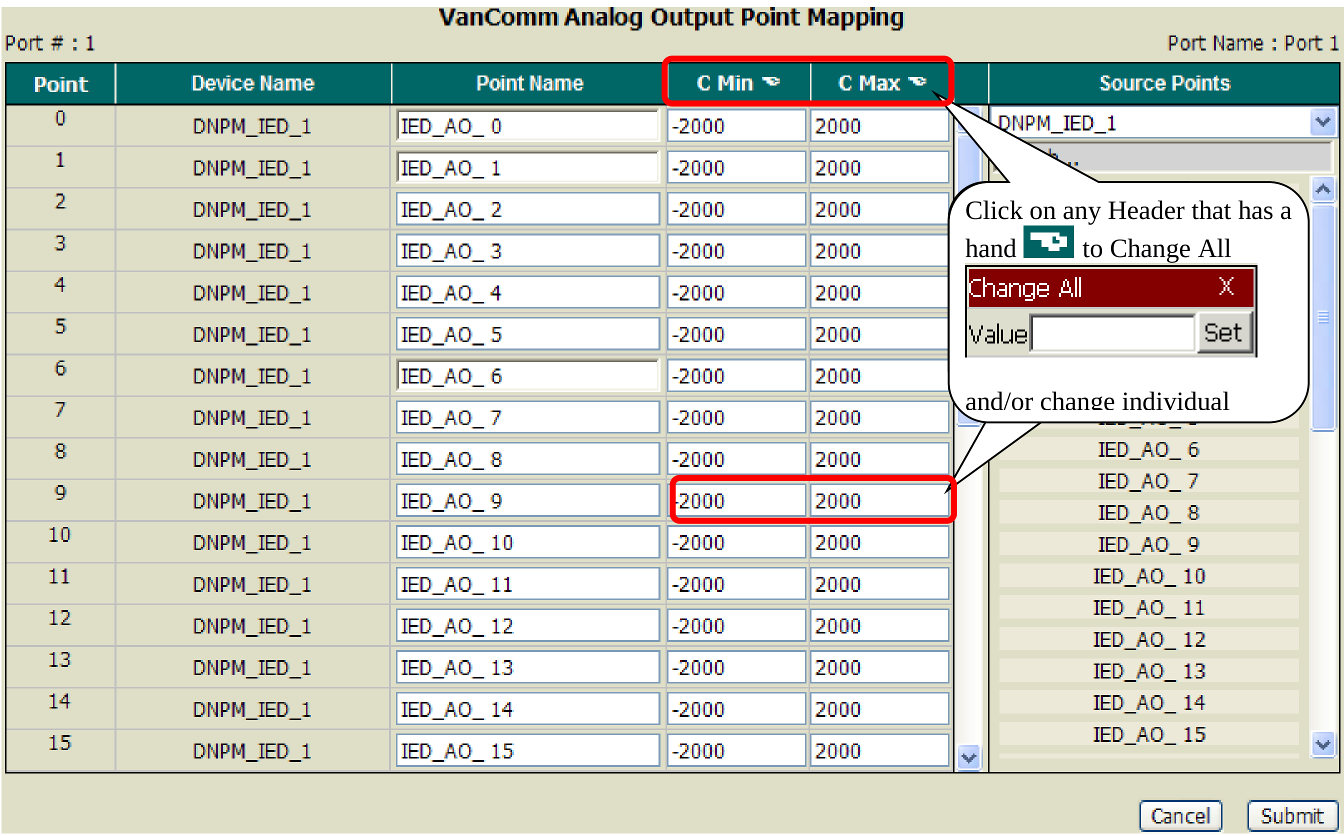
9.3.4.3 Insert & Delete Points

See the Analog example.

9.3.5 Map Analog Outputs

From the VanComm Communication Mapping screen, enter the number of points you want to map and click the MAP button for Analog Outputs. A screen similar to Figure 9-13 will appear.

Figure 9-13 VanComm Analog Output Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

9.3.5.1 Point Mapping Highlight

See the Analog example.

9.3.5.2 Point Database Search

See the Analog example.

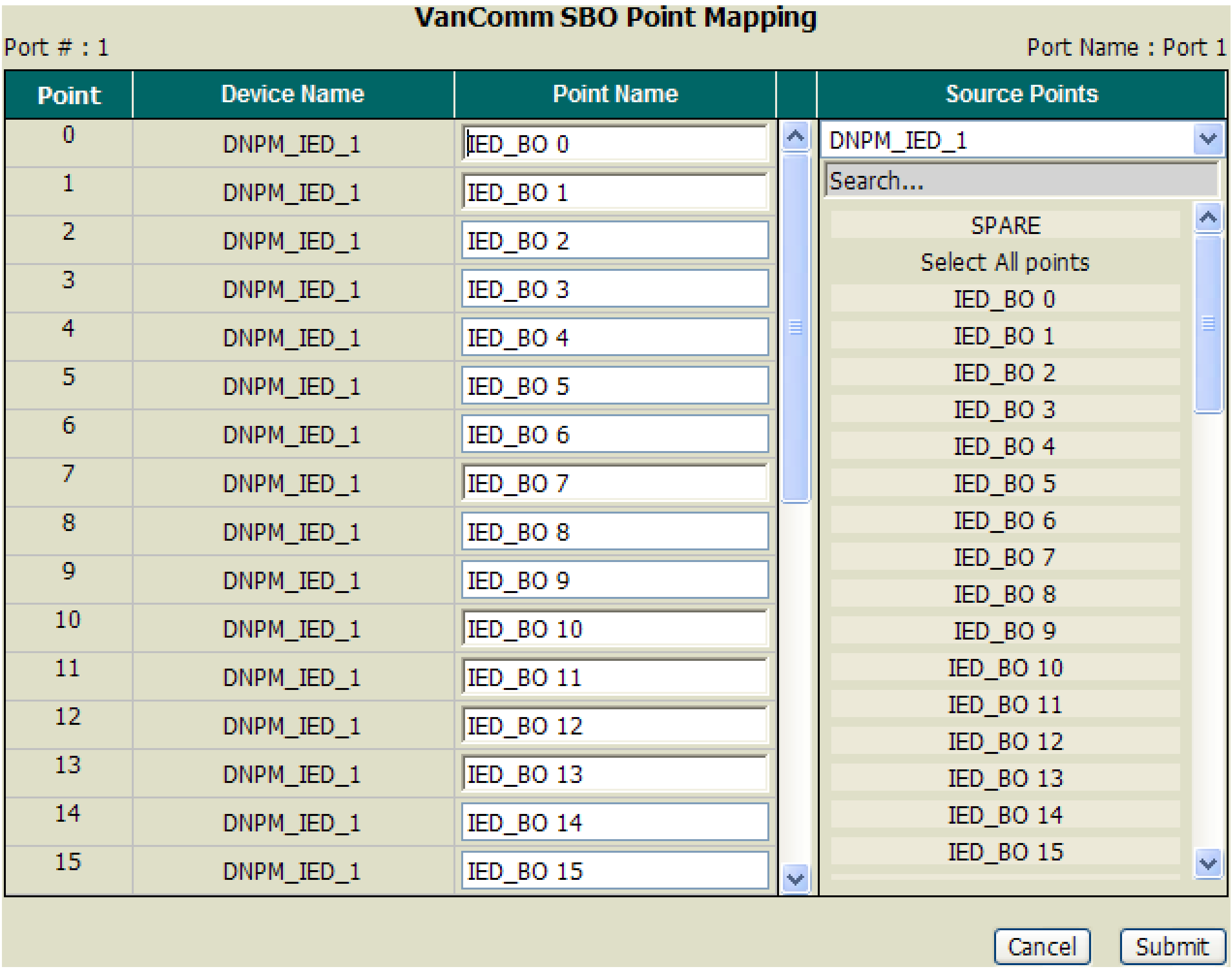
9.3.5.3 Insert & Delete Points

See the Analog example.

9.3.6 Map SBOs

From the VanComm Communication Mapping screen, enter the number of points you want to map and click the MAP button for SBOs. A screen similar to Figure 9-14 will appear.

Figure 9-14 VanComm SBO Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

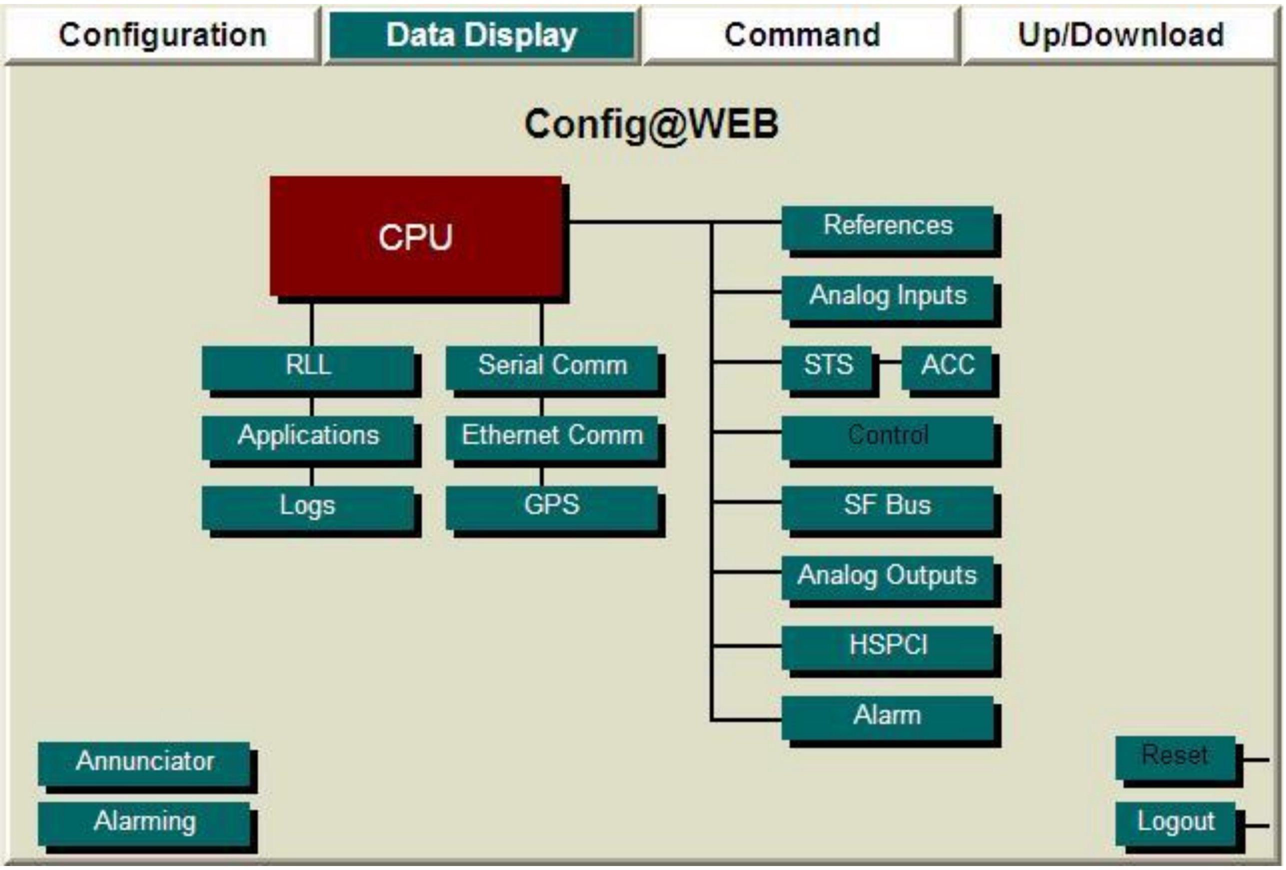
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

9.4 Data Display

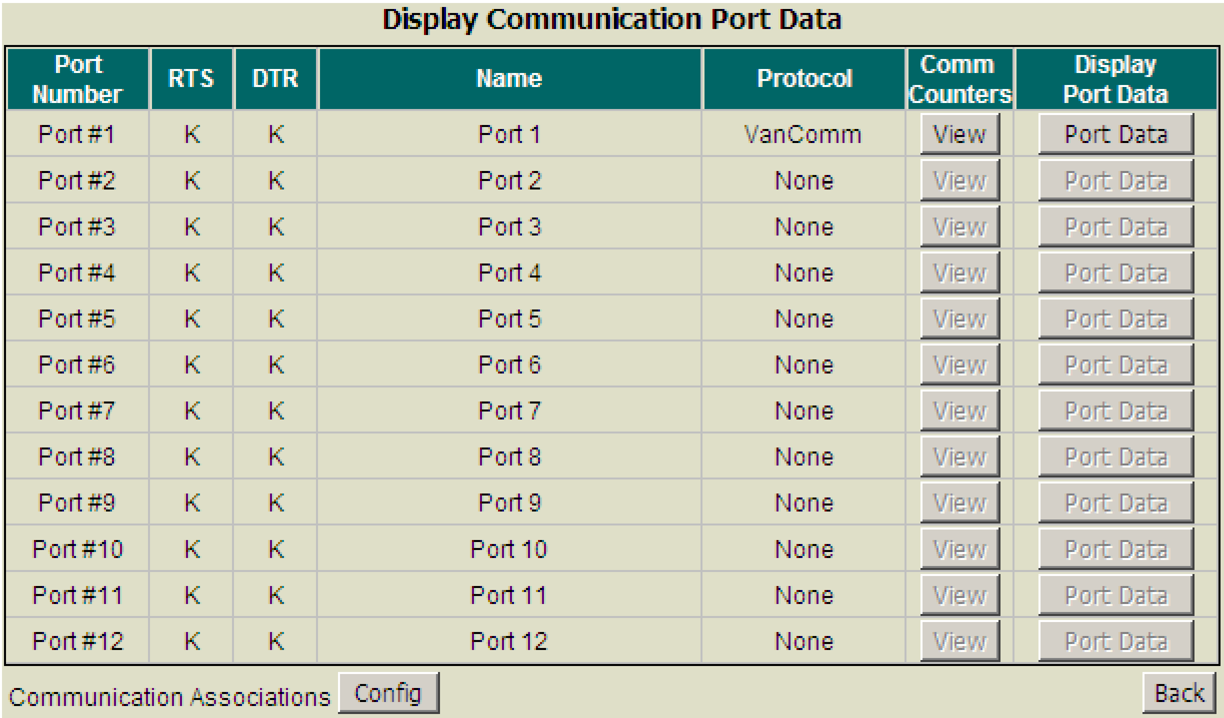
Click the Data Display tab as shown in Figure 9-15.

Figure 9-15 Data Display Screen



Click Serial Comm to get the screen shown in Figure 9-16.

Figure 9-16 Display Communication Port Data



Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	VanComm	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/de-asserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data

Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

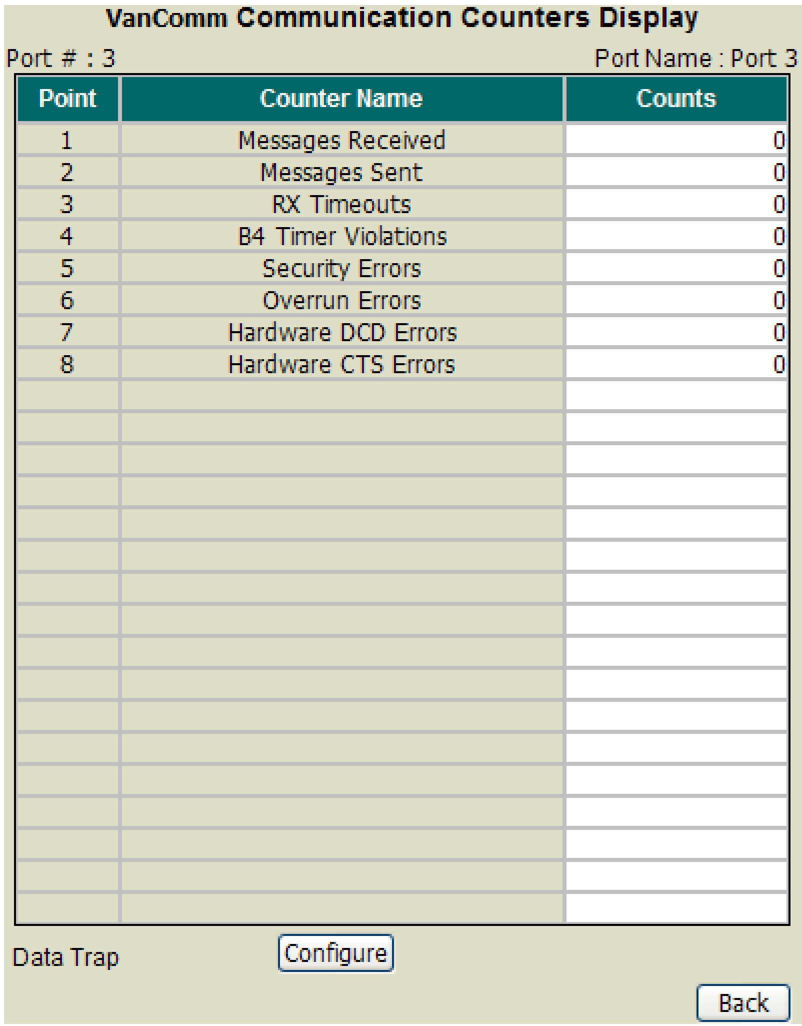
Navigation

Click the Back button to return to the previous screen.

9.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 9-17.

Figure 9-17 VanComm Communication Counters Display



Point	Counter Name	Counts
1	Messages Received	0
2	Messages Sent	0
3	RX Timeouts	0
4	B4 Timer Violations	0
5	Security Errors	0
6	Overrun Errors	0
7	Hardware DCD Errors	0
8	Hardware CTS Errors	0

Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Messages Received

This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

B4 Timer Violations

This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts
The counts for each type of Counter.

Data Trap
Please see the config@WEB Secure Software Users Guide.

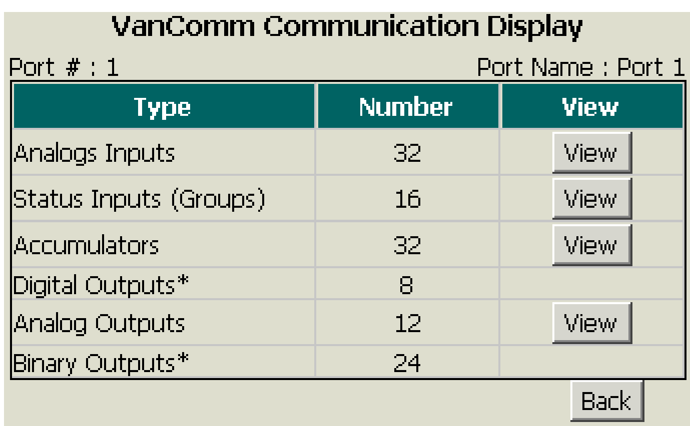
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

9.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 9-18.

Figure 9-18 VanComm Communication Display



Type
The type of point.

Number

The number of points of each type.

View
Click the View button to view points.

Note: There are no displays for Digital Outputs and Binary Outputs.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

9.4.2.1 Analog Inputs

From the VanComm Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 9-19.

Figure 9-19 VanComm Analog Inputs Display

VanComm Analog Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To Go Next>>

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	References	bb_gnd_ref		0.001	0
1	References	bb_+5.0V_ref		5.000	2000
2	References	bb_+4.5V_ref		4.501	1801
3	References	bb_-4.5V_ref		-4.499	-1799
4	References	bb_temp_ref		77.519	-1397
5	References	bb_dc_in		23.305	390
6	Hardware Analogs	ANALOG 1		0.000	0
7	Hardware Analogs	ANALOG 2		0.000	0
8	Hardware Analogs	ANALOG 3		0.000	0
9	Hardware Analogs	ANALOG 4		0.000	0
10	Hardware Analogs	ANALOG 5		0.000	0
11	Hardware Analogs	ANALOG 6		0.000	0
12	Hardware Analogs	ANALOG 7		0.000	0
13	Hardware Analogs	ANALOG 8		0.000	0
14	DNPM_IED_1	IED_ANALOG 0	F	-5.000	-1999
15	DNPM_IED_1	IED_ANALOG 1	F	-5.000	-1999

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

Navigation

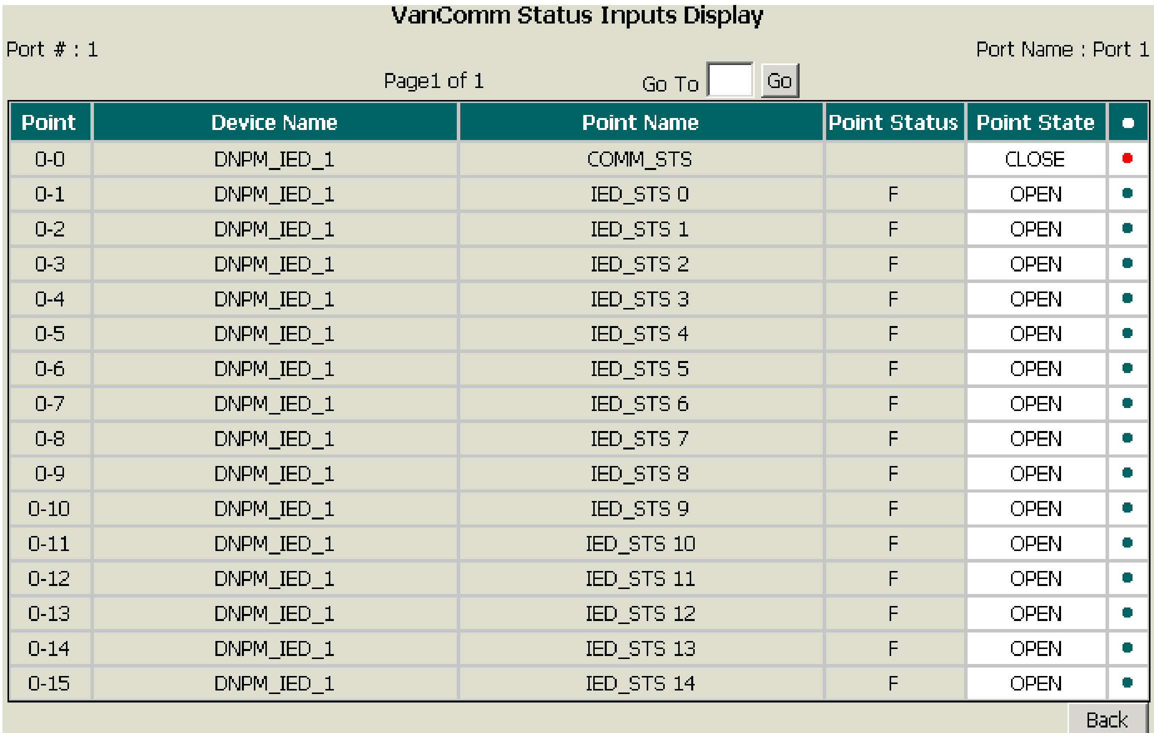
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of

pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

9.4.2.2 Status Inputs

From the VanComm Communication Display screen, click View for Status Inputs to get the screen shown in Figure 9-20.

Figure 9-20 VanComm Status Inputs Display


VanComm Status Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To Go

Point	Device Name	Point Name	Point Status	Point State	●
0-0	DNPM_IED_1	COMM_STS		CLOSE	●
0-1	DNPM_IED_1	IED_STS 0	F	OPEN	●
0-2	DNPM_IED_1	IED_STS 1	F	OPEN	●
0-3	DNPM_IED_1	IED_STS 2	F	OPEN	●
0-4	DNPM_IED_1	IED_STS 3	F	OPEN	●
0-5	DNPM_IED_1	IED_STS 4	F	OPEN	●
0-6	DNPM_IED_1	IED_STS 5	F	OPEN	●
0-7	DNPM_IED_1	IED_STS 6	F	OPEN	●
0-8	DNPM_IED_1	IED_STS 7	F	OPEN	●
0-9	DNPM_IED_1	IED_STS 8	F	OPEN	●
0-10	DNPM_IED_1	IED_STS 9	F	OPEN	●
0-11	DNPM_IED_1	IED_STS 10	F	OPEN	●
0-12	DNPM_IED_1	IED_STS 11	F	OPEN	●
0-13	DNPM_IED_1	IED_STS 12	F	OPEN	●
0-14	DNPM_IED_1	IED_STS 13	F	OPEN	●
0-15	DNPM_IED_1	IED_STS 14	F	OPEN	●

Back

Point
The first number is the group number. The second number is the point number within the group.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of

pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

9.4.2.3 Accumulator Inputs

From the VanComm Communication Display screen, click View for Accumulators to get the screen shown in Figure 9-21.

Figure 9-21 VanComm Accumulators Display

VanComm Accumulators Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To [ ] Go Next>>

Point	Device Name	Point Name	Count
0	Hardware DI	DI_PNT_9	0
1	Hardware DI	DI_PNT_13	0
2	Hardware DI	DI_PNT_14	0
3	DNPM_IED_1	IED_ACC_ 0	0
4	DNPM_IED_1	IED_ACC_ 1	0
5	DNPM_IED_1	IED_ACC_ 2	0
6	DNPM_IED_1	IED_ACC_ 3	0
7	DNPM_IED_1	IED_ACC_ 4	0
8	DNPM_IED_1	IED_ACC_ 5	0
9	DNPM_IED_1	IED_ACC_ 6	0
10	DNPM_IED_1	IED_ACC_ 7	0
11	DNPM_IED_1	IED_ACC_ 8	0
12	DNPM_IED_1	IED_ACC_ 9	0
13	DNPM_IED_1	IED_ACC_ 10	0
14	DNPM_IED_1	IED_ACC_ 11	0
15	DNPM_IED_1	IED_ACC_ 12	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

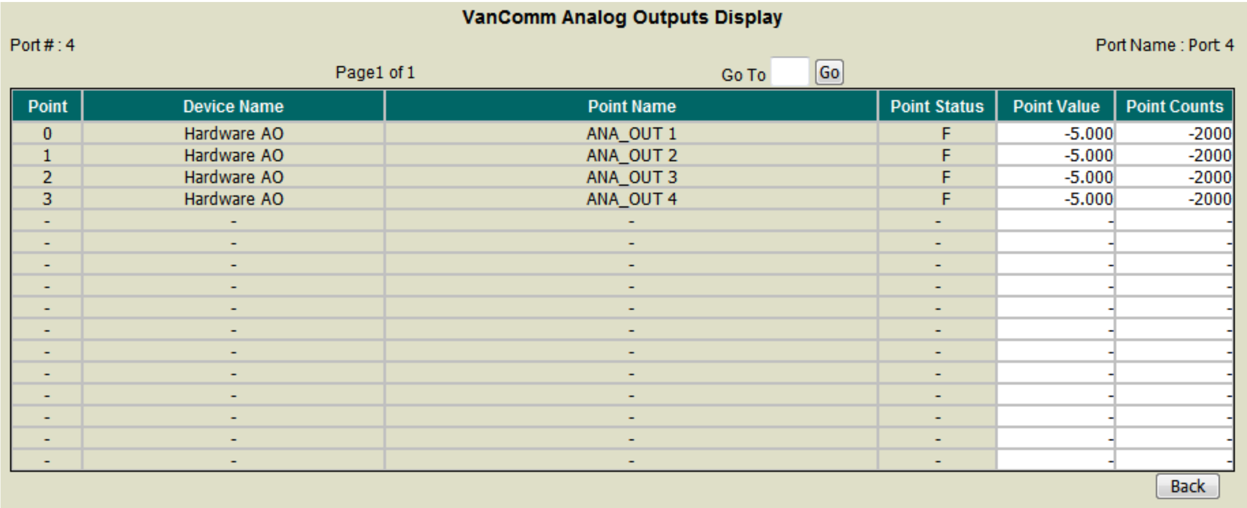
9.4.2.4 Digital Outputs

There is no display for Digital Outputs.

9.4.2.5 Analog Outputs

From the VanComm Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 9-22.

Figure 9-22 VanComm Analog Outputs Display



VanComm Analog Outputs Display

Port # : 4 Port Name : Port 4

Page1 of 1 Go To [ ] Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	Hardware AO	ANA_OUT 1	F	-5.000	-2000
1	Hardware AO	ANA_OUT 2	F	-5.000	-2000
2	Hardware AO	ANA_OUT 3	F	-5.000	-2000
3	Hardware AO	ANA_OUT 4	F	-5.000	-2000
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts received from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

9.4.2.6 Binary Outputs

There is no display for Binary Outputs.

9.5 Internal Status Word

This implementation of the VanComm protocol does not use all of the Internal Status Word bits. The bit masks that are used are noted in Table 9-1.

Table 9-1 VanComm Internal Status Words

Flag	Bit #	Description
CLE	0X0800	Control Error on relay
ACF	0X0400	ACcumulator Freeze mode
DAE	0X0100	D/A Control Error
PF	0X0080	Power Failure
CMD	0X0008	master station CoMmanDed restart

10 Modbus Remote

10.1 Communication Port Configuration

Modbus Remote is a subset implementation based upon the Gould Modicon Modbus specification and is used to communicate between the RTU and a polling Master. This implementation supports 2048 maximum configurable points for all types.

From the Config Home Page, click Serial Comm to setup a communication port.

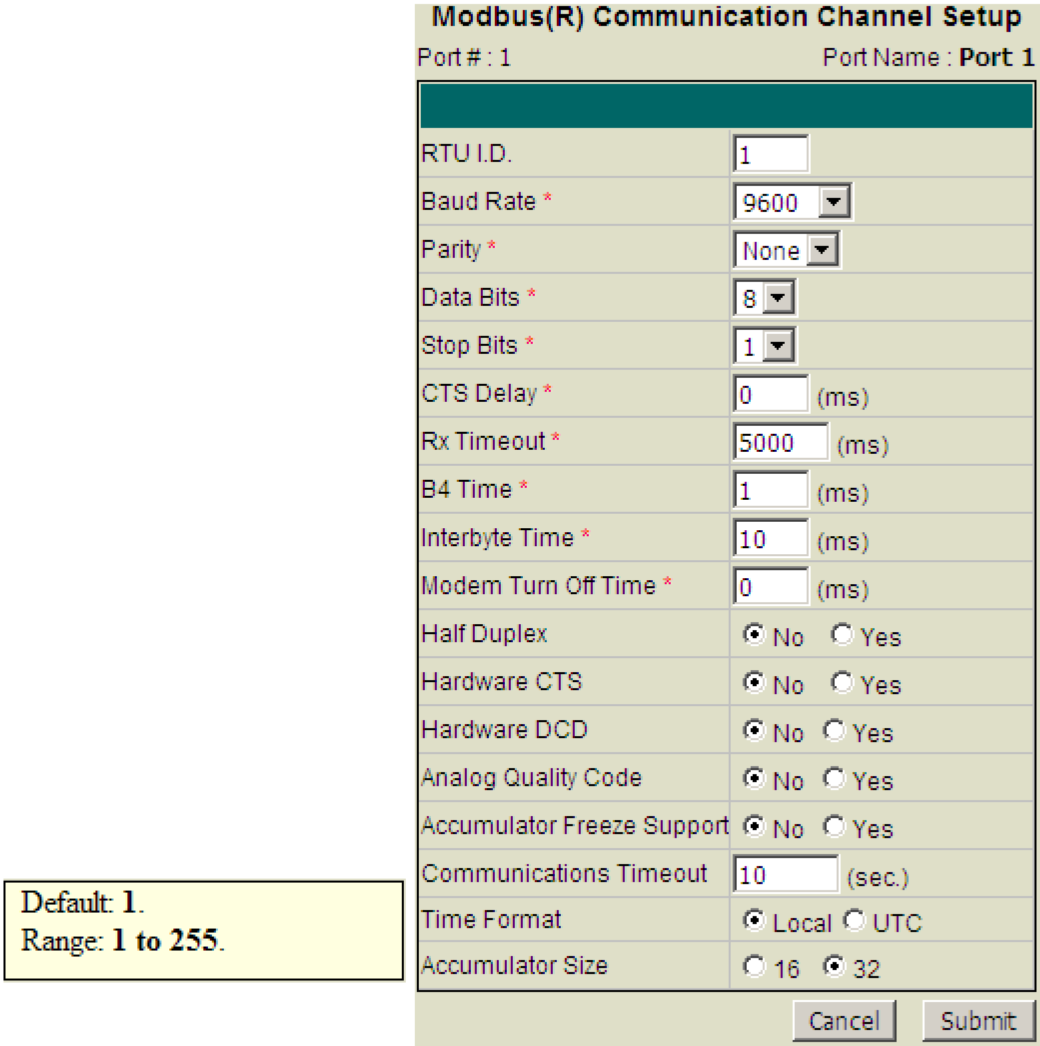
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

10.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 5-1.

Figure 10-1 Modbus (R) Communication Channel Configuration



Modbus(R) Communication Channel Setup

Port # : 1 Port Name : **Port 1**

RTU I.D.	1
Baud Rate *	9600
Parity *	None
Data Bits *	8
Stop Bits *	1
CTS Delay *	0 (ms)
Rx Timeout *	5000 (ms)
B4 Time *	1 (ms)
Interbyte Time *	10 (ms)
Modem Turn Off Time *	0 (ms)
Half Duplex	◉ No ○ Yes
Hardware CTS	◉ No ○ Yes
Hardware DCD	◉ No ○ Yes
Analog Quality Code	◉ No ○ Yes
Accumulator Freeze Support	◉ No ○ Yes
Communications Timeout	10 (sec.)
Time Format	◉ Local ○ UTC
Accumulator Size	○ 16 ◉ 32

Cancel Submit

Default: **1**.
Range: **1 to 255**.

Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D. (1 – 255)

Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 1.

Baud Rate (300 – 38400)

Select the communications speed for the associated channel. Default setting is 9600.

Parity (None, Odd, Even)

From the drop-down menu, select the parity for the associated channel. The default setting is None.

Data Bits (5,6,7,8)
From the drop-down menu, select the data bits for the associated channel. The default setting is 8.

Stop Bits (0,1,2)
From the drop-down menu, select the stop bits for the associated channel. The default setting is 1.

CTS Delay (0 – 250ms)
Enter the Clear-To-Send (CTS) Delay in milliseconds for the associated channel. This is the delay of time the channel will wait to start transmitting following Request-To-Send being asserted. The default setting is 0.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 1.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 10.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Half Duplex (No, Yes)
Enter Yes for half duplex or No for full duplex. This field enables the RTU to properly condition the RS-232 control lines. The CTS delay is used for carrier conditioning. In full duplex operation, the CTS signal is used for collision avoidance. In Half duplex operation, the DCD signal is used for collision avoidance and to enable the receiver. The default setting is No.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

Analog Quality Code (No, Yes)
Set Yes to enable attaching a data quality flag to the analog values. When this feature is enabled, analog values are returned as follows:

Normal range analog value:	returned as normal value
Under range analog value:	returned as normal value "OR'd" with 0x4000
Over range analog value:	returned as normal value "OR'd" with 0x8000.

Default setting is No.

Accumulators Freeze Support (No, Yes)

Set Yes to enable freezing of accumulator values from master station. If this features is enabled certain registers must be written to and read from to freeze and read accumulator data. Please see “Accumulators” under "10.7 Explanation of Modbus Implementation" section for details on usage of this feature. Default setting is No.

Communications Timeout (1 to 86,400 sec.)

Enter the communications timeout for the associated channel. The communications timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. The default setting is 10 sec.

Time Format (Local, UTC)

Note: The coordination between UTC and local time is a feature that may be ignored. If you want your RTU to act as it always has in regards to time syncs, set Time Format to Local Time. See Time Configuration Settings in the Configuration chapter of the hardware manual for time settings under the CPU block.

If you want time synchronization from the master, you must know whether the master is sending Local time or UTC time, then set this radio button to match the master’s format.

Accumulator Size

Select either 16 or 32 bit accumulator. The default is 32.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

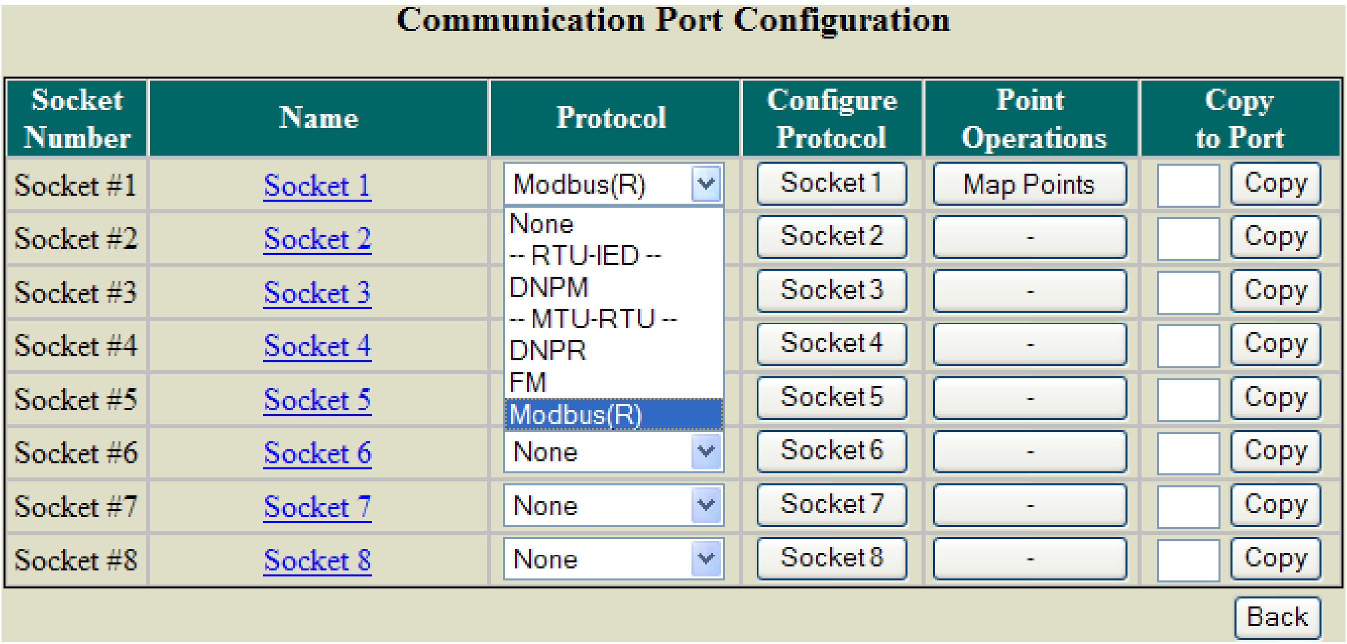
Please note: No configuration changes take effect until the RTU is reset.

10.3 Ethernet Comm Port Configuration

Modbus Remote is a protocol that communicates between the RTU and a Master.

From the Configuration screen, click Ethernet Comm. You will get a screen similar to below. See the hardware manual for a complete explanation of the Ethernet Comm Port Configuration screen. From this screen, click Modbus(R) from the Protocol drop-down menu as shown.

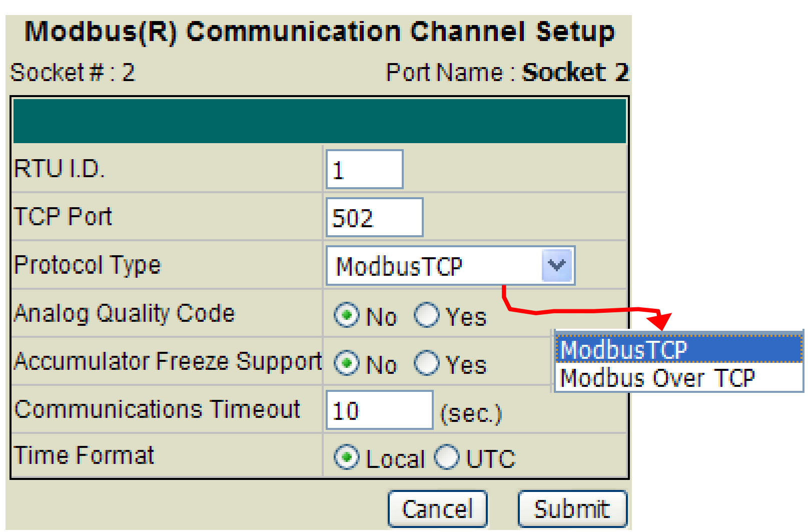
Figure 10-2 Modbus (R) Ethernet Comm Port Configuration



10.3.1 Configure Protocol

Under the heading Configure Protocol, click Socket *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 2-7.

Figure 10-3 Ethernet Comm Channel Configuration



RTU I.D. (0 – 255)

Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 1.

TCP Port

The Modbus Remote/IP connection used on this RTU is a TCP socket. A TCP socket connection requires two “addresses” to form the connection. One is the TCP/IP address (contained on the CPU setup screen of this RTU) and the other is the TCP Port number. To poll this RTU via Modbus Remote/IP, the master station would need to be configured to “point to” this RTU’s TCP/IP address and this particular Modbus Remote socket’s port number. If multiple master stations would be polling this RTU via Modbus Remote/IP, each master station would be configured to poll the same RTU IP address, but each master would have a unique TCP Port number to match each RTU Modbus Remote socket that is configured. The default setting is 502. Set each additional port with a unique port number in the range of 49152 to 65535. For questions about port number assignments, see www.iana.org.

Protocol Type

Select either ModbusTCP or Modbus Over TCP. The ModbusTCP selects protocol operation defined in the specification document from www.modbus.org. The Modbus Over TCP is Serial MODBUS RTU encapsulated in a TCP/IP wrapper. A brief summary of the differences follows.

ModbusTCP	**Modbus Over TCP**
Modbus TCP Header	
Address, Function, & Data	Address, Function, & Data
	CRC-16

Analog Quality Code (No, Yes)

Set Yes to enable attaching a data quality flag to the analog values. When this feature is enabled, analog values are returned as follows:

Normal range analog value:	returned as normal value
Under range analog value:	returned as normal value "OR’d" with 0x4000
Over range analog value:	returned as normal value "OR’d" with 0x8000.

Default setting is No.

Accumulators Freeze Support (No, Yes)

Set Yes to enable freezing of accumulator values from master station. If this features is enabled certain registers must be written to and read from to freeze and read accumulator data. Please see “Accumulators” under "10.7 Explanation of Modbus Implementation" section for details on usage of this feature. Default setting is No.

Communications Timeout (1 to 86,400 sec.)

Enter the communications timeout for the associated channel. The communications timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. The default setting is 10 sec.

Time Format (Local, UTC)

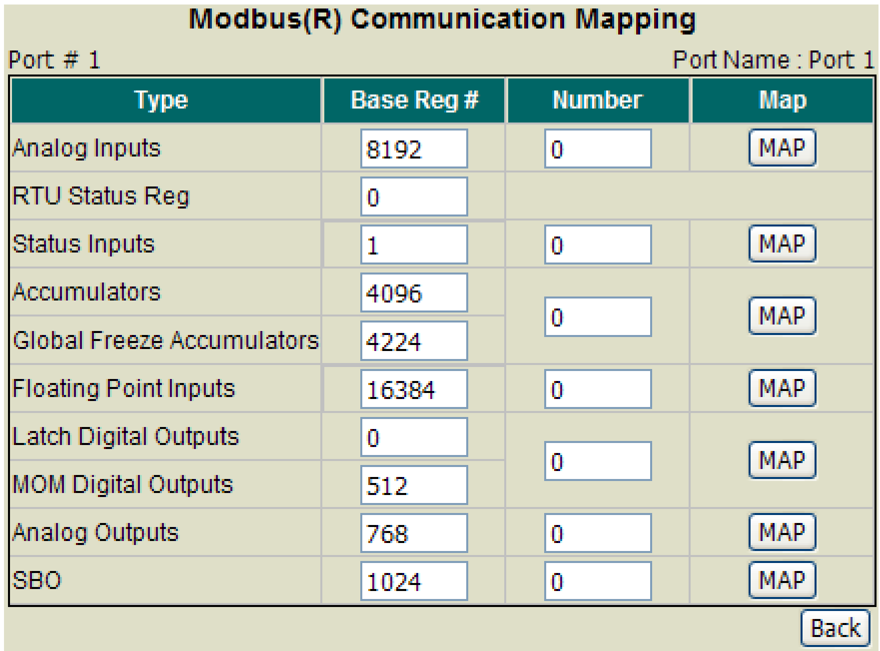
Note: The coordination between UTC and local time is a feature that may be ignored. If you want your RTU to act as it always has in regards to time syncs, set Time Format to Local Time. See Time Configuration Settings in the Configuration chapter of the hardware manual for time settings under the CPU block.

If you want time synchronization from the master, you must know whether the master is sending Local time or UTC time, then set this radio button to match the master’s format.

10.4 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 2-10 will appear. Enter the Base Reg # and the Number for each type of point, then click MAP before moving on to the next point type.

Figure 10-4 Communication Mapping



Type
The different types of I/O points supported by this protocol.

Base Reg #
Enter the Base Reg # for the given type. See section "10.7 Explanation of Modbus Implementation" for individual data type usage and polling information.

Number
Enter the quantity of points for the given type.

Map
Click the MAP button to map the points.

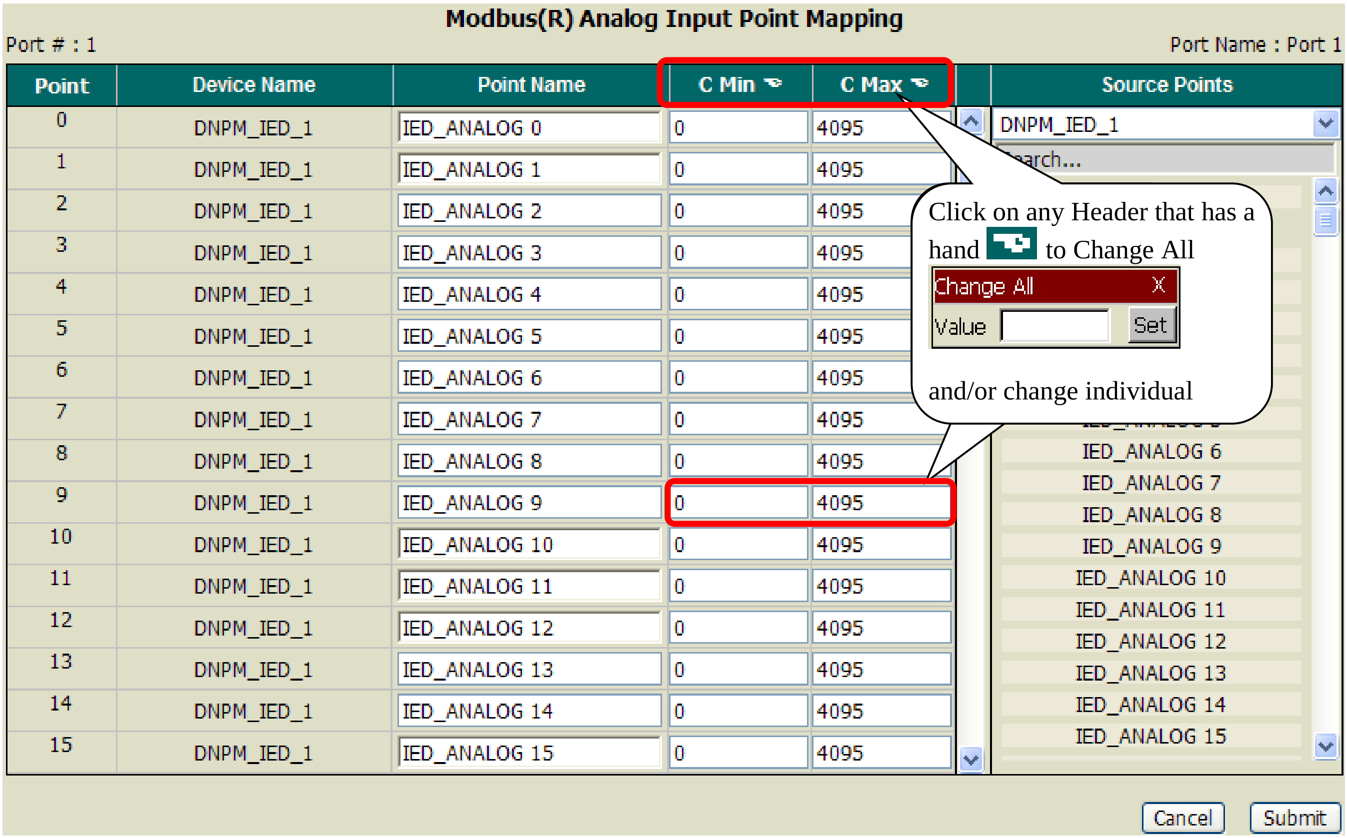
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the IED Configuration screen.

10.4.1 Map Analog Inputs

From the Modbus (R) Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 2-11 will appear.

Figure 10-5 Modbus (R) Analog Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is 0.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 4095.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

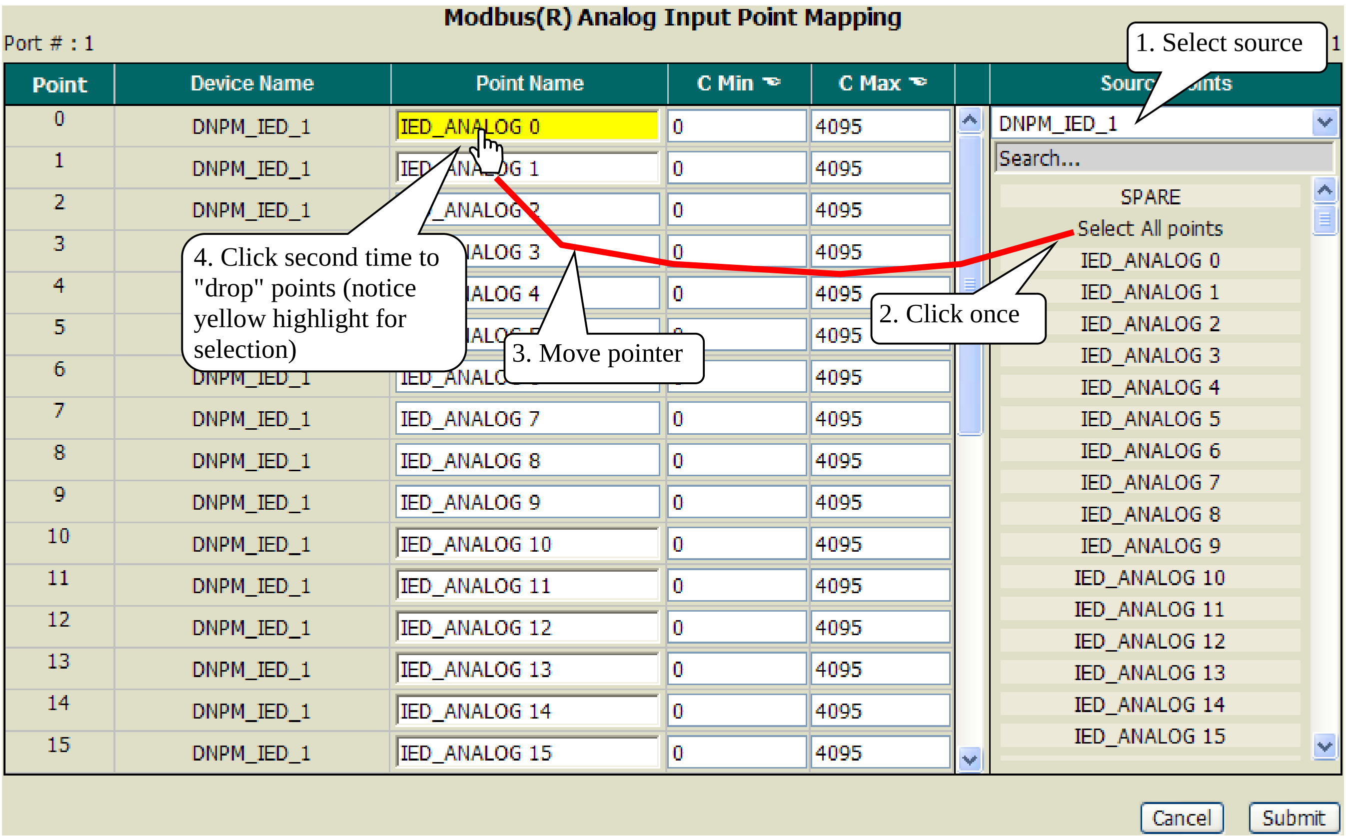
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

10.4.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

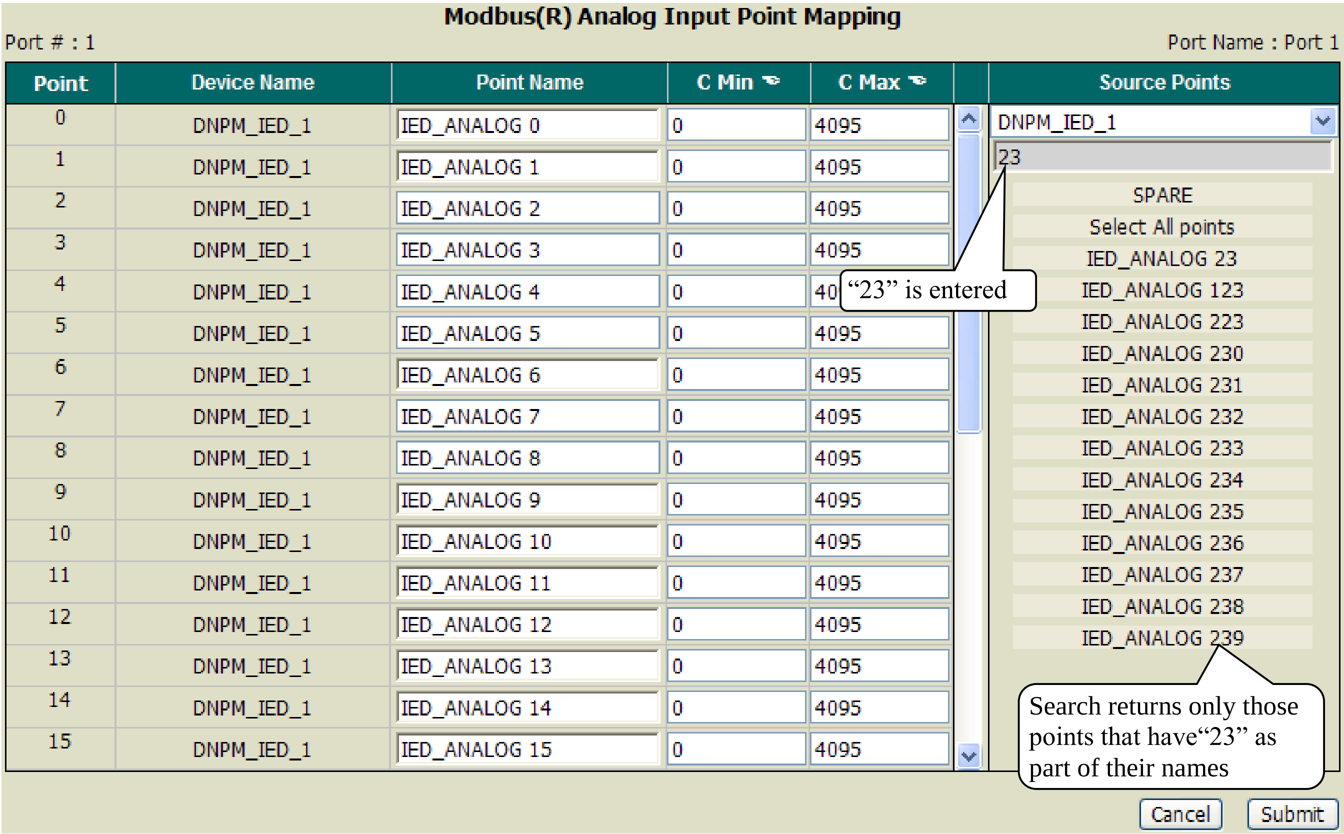
Figure 10-6 Point Mapping Highlight



10.4.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

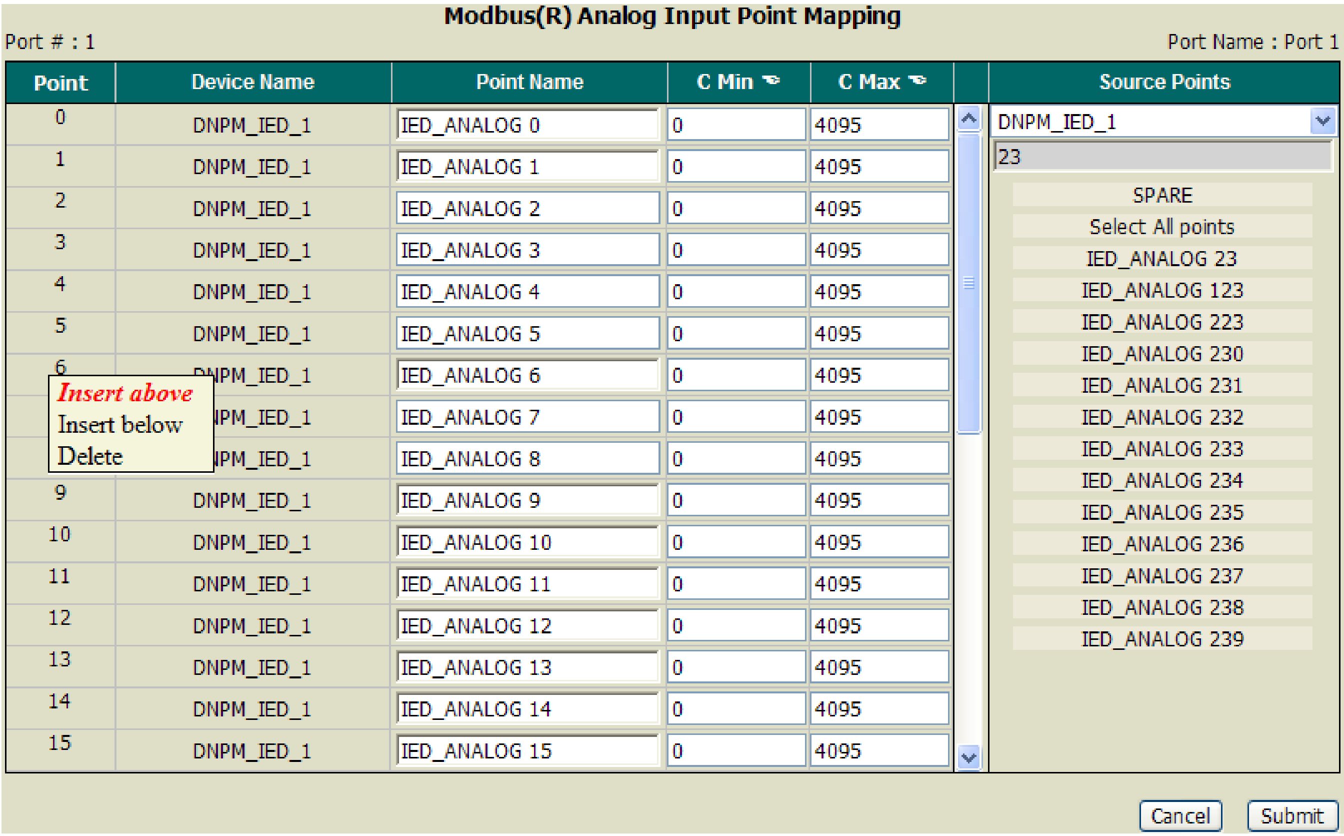
Figure 10-7 Point Database Search



10.4.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #6) and right click the mouse. The message box shown below appears. Select Insert above (or below) and left click.

Figure 10-8 Insert a Point

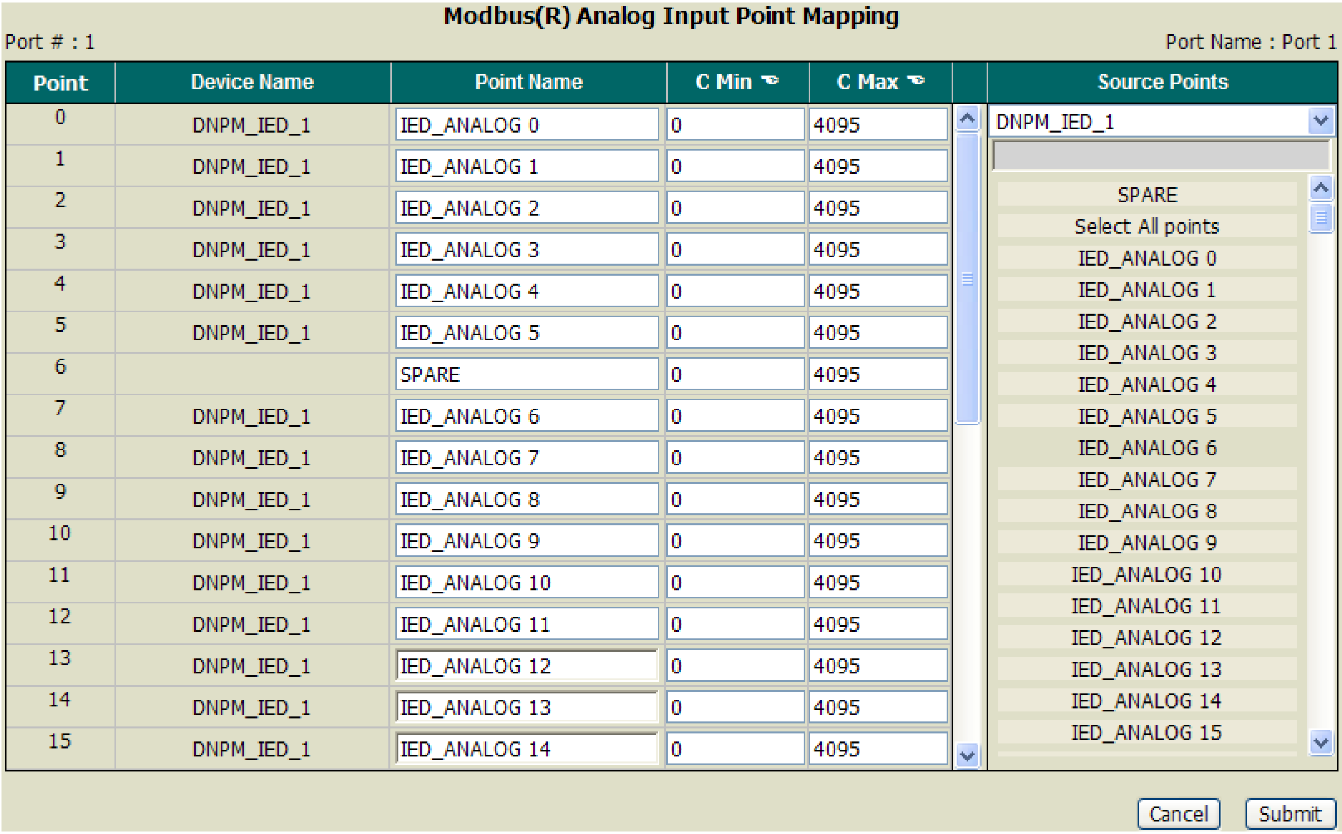


The results of Insert is shown in the next Figure. Notice that the old Point #6, IED_ANALOG 6, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 10-9 Results of Insert Above



Modbus(R) Analog Input Point Mapping

Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	0	4095
1	DNPM_IED_1	IED_ANALOG 1	0	4095
2	DNPM_IED_1	IED_ANALOG 2	0	4095
3	DNPM_IED_1	IED_ANALOG 3	0	4095
4	DNPM_IED_1	IED_ANALOG 4	0	4095
5	DNPM_IED_1	IED_ANALOG 5	0	4095
6		SPARE	0	4095
7	DNPM_IED_1	IED_ANALOG 6	0	4095
8	DNPM_IED_1	IED_ANALOG 7	0	4095
9	DNPM_IED_1	IED_ANALOG 8	0	4095
10	DNPM_IED_1	IED_ANALOG 9	0	4095
11	DNPM_IED_1	IED_ANALOG 10	0	4095
12	DNPM_IED_1	IED_ANALOG 11	0	4095
13	DNPM_IED_1	IED_ANALOG 12	0	4095
14	DNPM_IED_1	IED_ANALOG 13	0	4095
15	DNPM_IED_1	IED_ANALOG 14	0	4095

Source Points

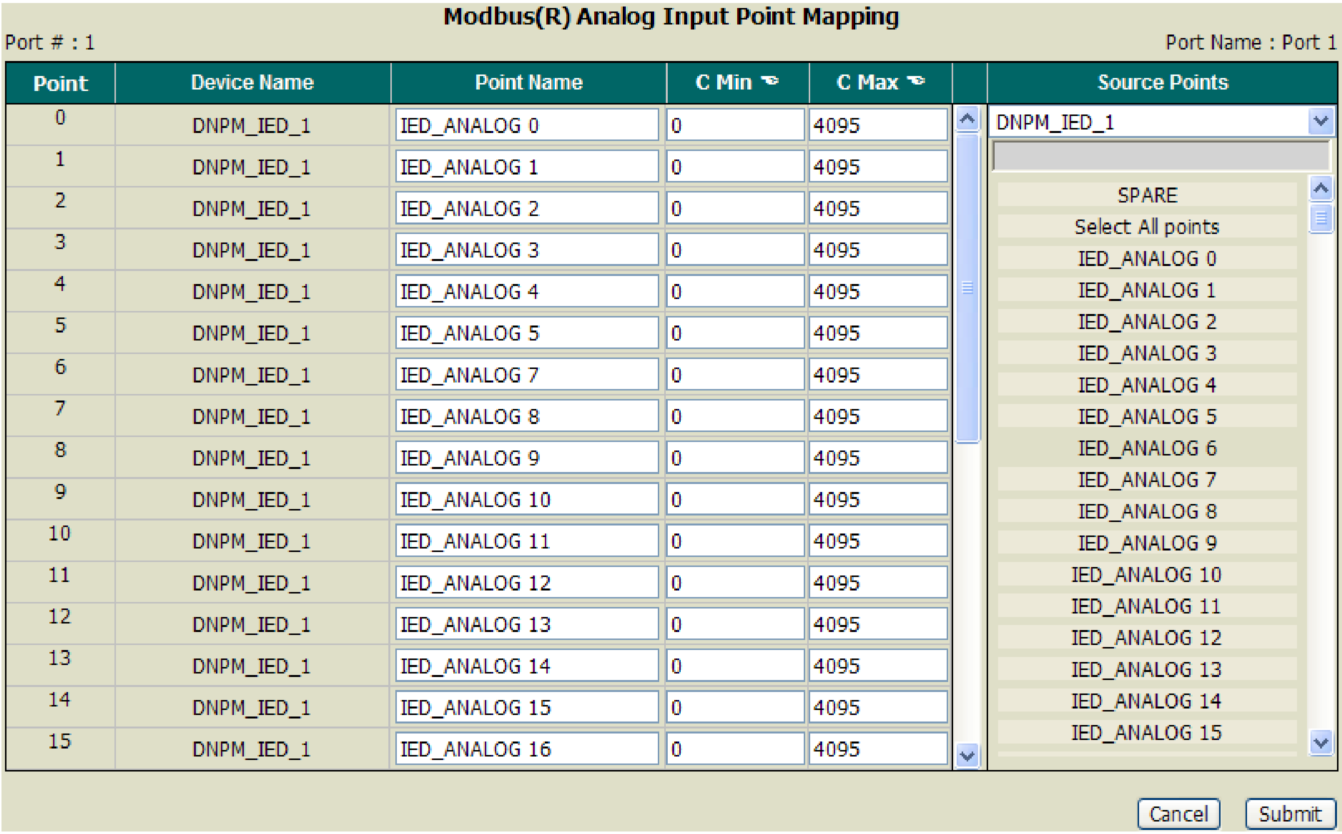
DNPM_IED_1

SPARE
Select All points
IED_ANALOG 0
IED_ANALOG 1
IED_ANALOG 2
IED_ANALOG 3
IED_ANALOG 4
IED_ANALOG 5
IED_ANALOG 6
IED_ANALOG 7
IED_ANALOG 8
IED_ANALOG 9
IED_ANALOG 10
IED_ANALOG 11
IED_ANALOG 12
IED_ANALOG 13
IED_ANALOG 14
IED_ANALOG 15

Cancel Submit

The Spare point can also be deleted. The following example shows the results of deleting Point#6, IED_ANALOG 6.

Figure 10-10 Results of Deleting a Point



Modbus(R) Analog Input Point Mapping

Port # : 1   Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	0	4095
1	DNPM_IED_1	IED_ANALOG 1	0	4095
2	DNPM_IED_1	IED_ANALOG 2	0	4095
3	DNPM_IED_1	IED_ANALOG 3	0	4095
4	DNPM_IED_1	IED_ANALOG 4	0	4095
5	DNPM_IED_1	IED_ANALOG 5	0	4095
6	DNPM_IED_1	IED_ANALOG 7	0	4095
7	DNPM_IED_1	IED_ANALOG 8	0	4095
8	DNPM_IED_1	IED_ANALOG 9	0	4095
9	DNPM_IED_1	IED_ANALOG 10	0	4095
10	DNPM_IED_1	IED_ANALOG 11	0	4095
11	DNPM_IED_1	IED_ANALOG 12	0	4095
12	DNPM_IED_1	IED_ANALOG 13	0	4095
13	DNPM_IED_1	IED_ANALOG 14	0	4095
14	DNPM_IED_1	IED_ANALOG 15	0	4095
15	DNPM_IED_1	IED_ANALOG 16	0	4095

Source Points

DNPM_IED_1

SPARE
Select All points
IED_ANALOG 0
IED_ANALOG 1
IED_ANALOG 2
IED_ANALOG 3
IED_ANALOG 4
IED_ANALOG 5
IED_ANALOG 6
IED_ANALOG 7
IED_ANALOG 8
IED_ANALOG 9
IED_ANALOG 10
IED_ANALOG 11
IED_ANALOG 12
IED_ANALOG 13
IED_ANALOG 14
IED_ANALOG 15

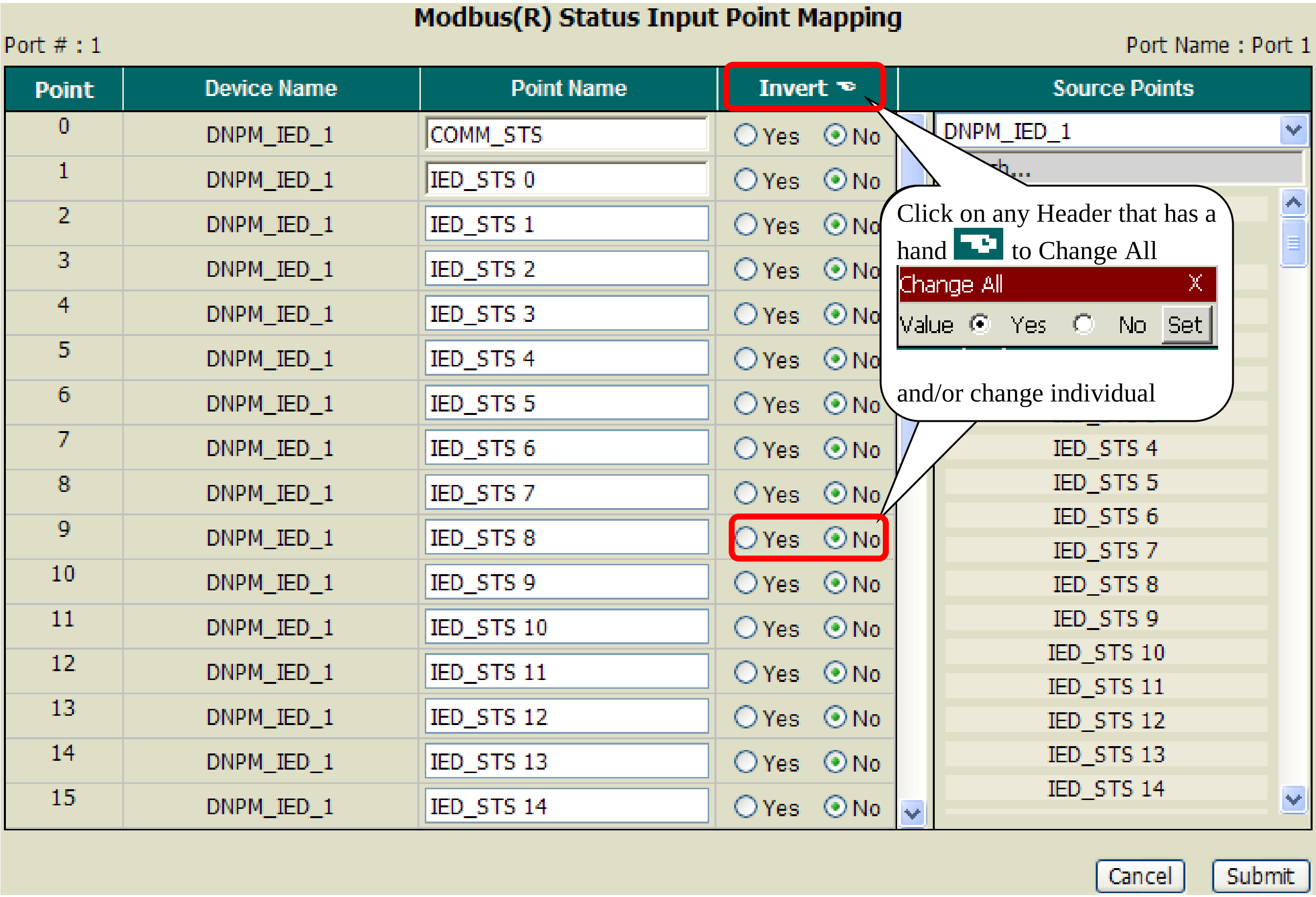
Cancel Submit

Notice that IED_ANALOG 6 is now missing, although Point numbers remain contiguous.

10.4.2 Map Status Inputs

From the Modbus (R) Communication Mapping screen, click the MAP button for Status Inputs. A screen similar to Figure 12-7 will appear.

Figure 10-11 Modbus (R) Status Input Point Mapping



> **Note:** This protocol automatically creates a Comm Status point which may be mapped to any MTU to RTU protocol.

Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

10.4.2.1 Point Mapping Highlight

See the Analog example.

10.4.2.2 Point Database Search

See the Analog example.

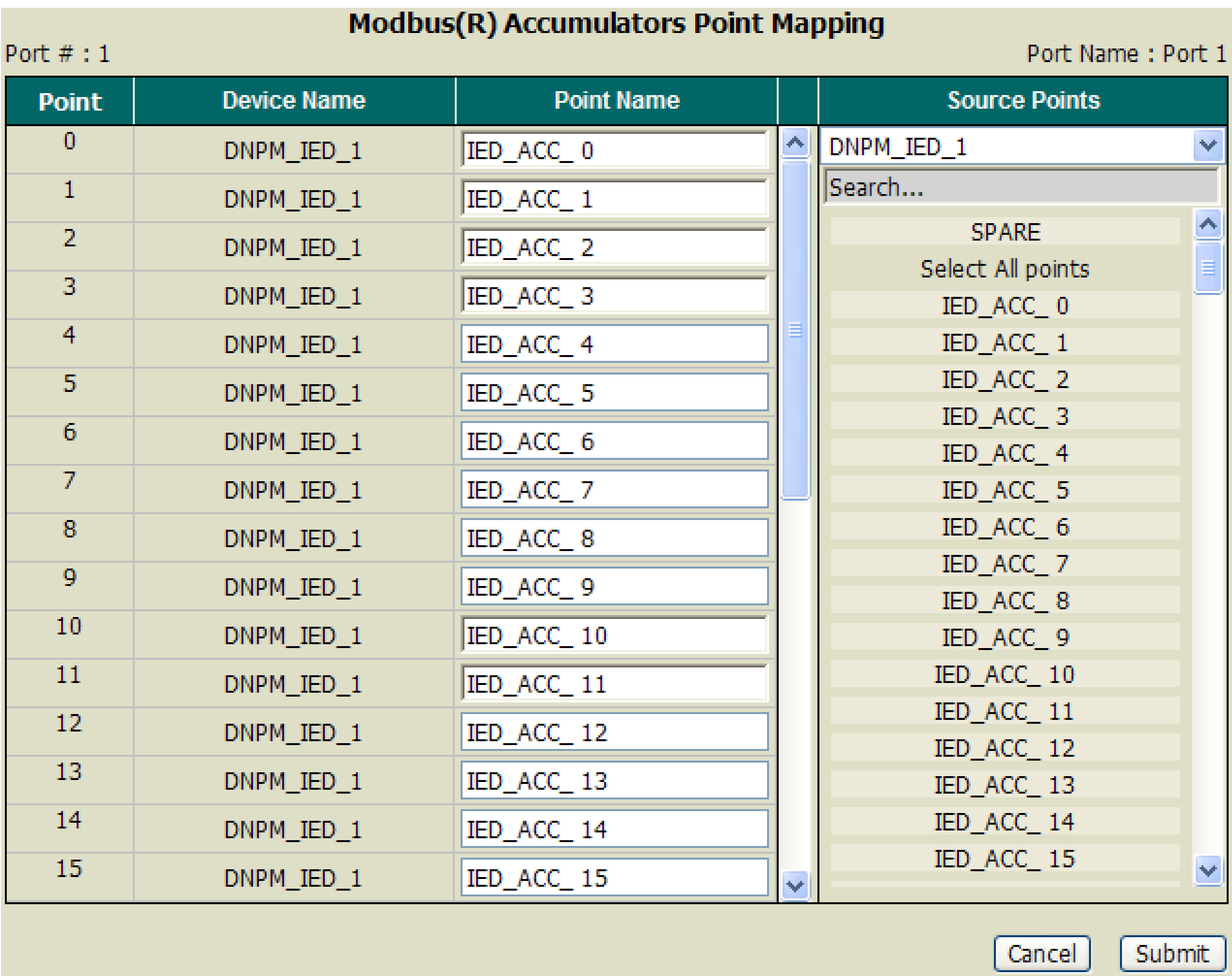
10.4.2.3 Insert & Delete Points

See the Analog example.

10.4.3 Map Accumulators

From the Modbus (R) Communication Mapping screen, click the MAP button for Accumulators. A screen similar to Figure 2-18 will appear.

Figure 10-12 Modbus (R) Accumulator Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

10.4.3.1 Point Mapping Highlight

See the Analog example.

10.4.3.2 Point Database Search

See the Analog example.

10.4.3.3 Insert & Delete Points

See the Analog example.

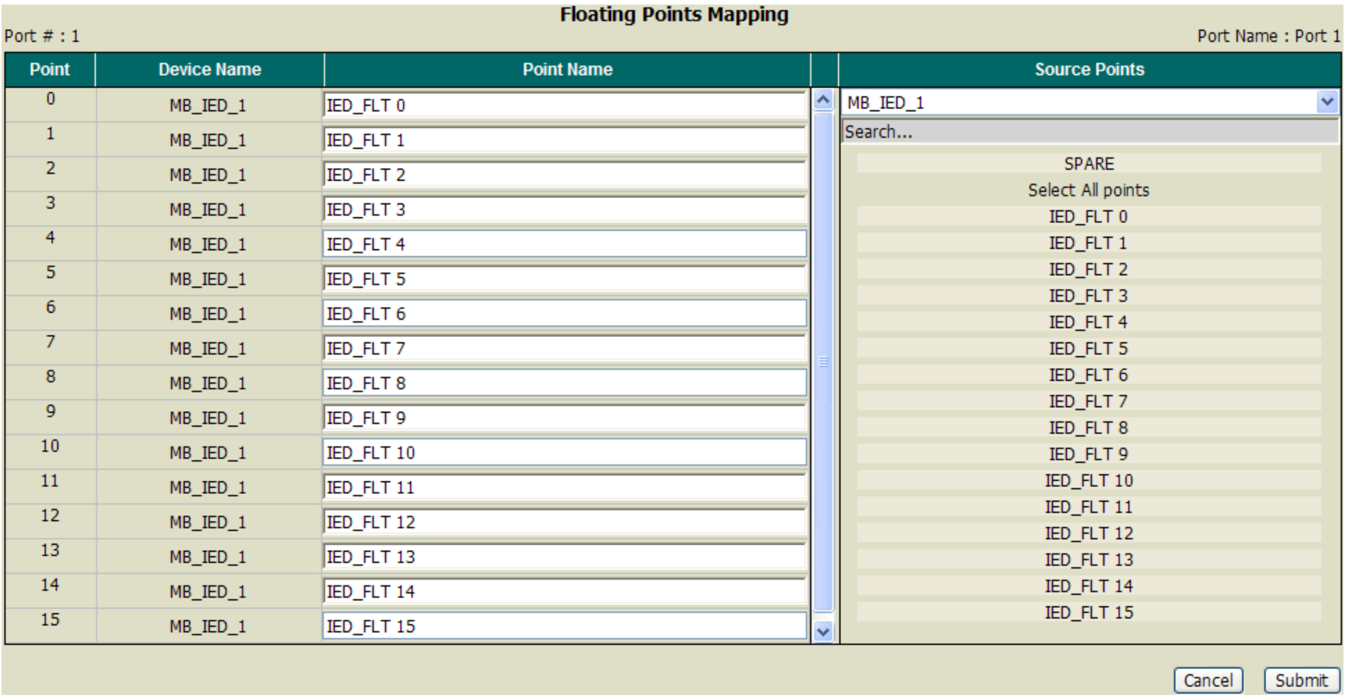
10.4.4 Map Global Freeze Accumulators

This is the same mapping as running accumulators. You must specify the starting holding register address you wants to read for the frozen accumulator values, which must be frozen by using the "Global Freeze Configuration" option on the CPU panel. You must make sure that there is not an overlap in holding register values with any of the other data types.

10.4.5 Map Floating Points Inputs

From the Modbus (R) Communication Mapping screen, click the MAP button for Floating Points Input. A screen similar to the one below will appear. Each Floating Point value requires two consecutive registers. Values are IEEE 754 binary32 format, low-order byte first.

Figure 10-13 Modbus (R) Floating Points Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

10.4.5.1 Point Mapping Highlight

See the Analog example.

10.4.5.2 Point Database Search

See the Analog example.

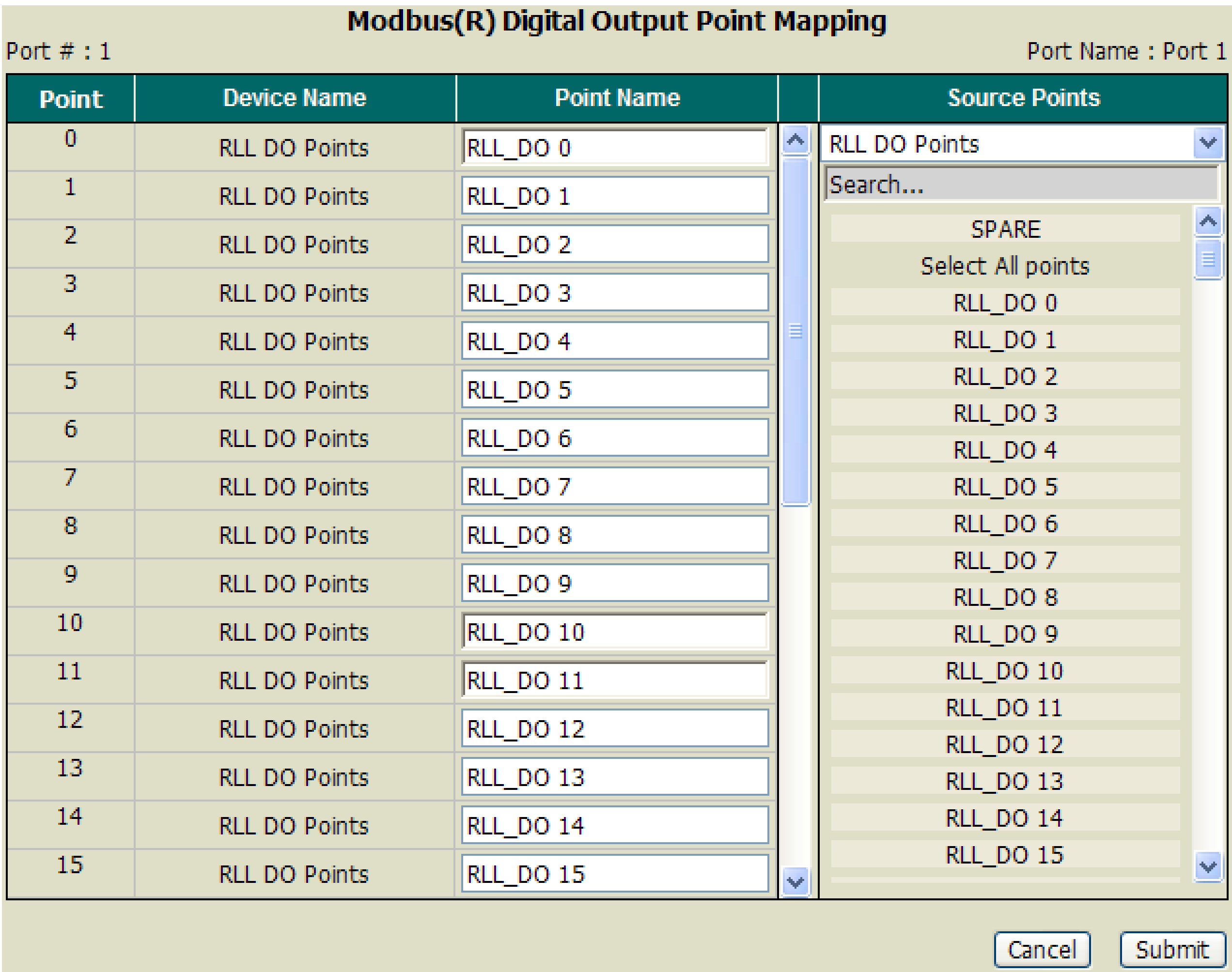
10.4.5.3 Insert & Delete Points

See the Analog example.

10.4.6 Map Digital Outputs

From the Modbus (R) Communication Mapping screen, click the MAP button for Digital Outputs. A screen similar to Figure 3-11 will appear.

Figure 10-14 Modbus (R) Digital Outputs Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

10.4.6.1 Point Mapping Highlight

See the Analog example.

10.4.6.2 Point Database Search

See the Analog example.

10.4.6.3 Insert & Delete Points

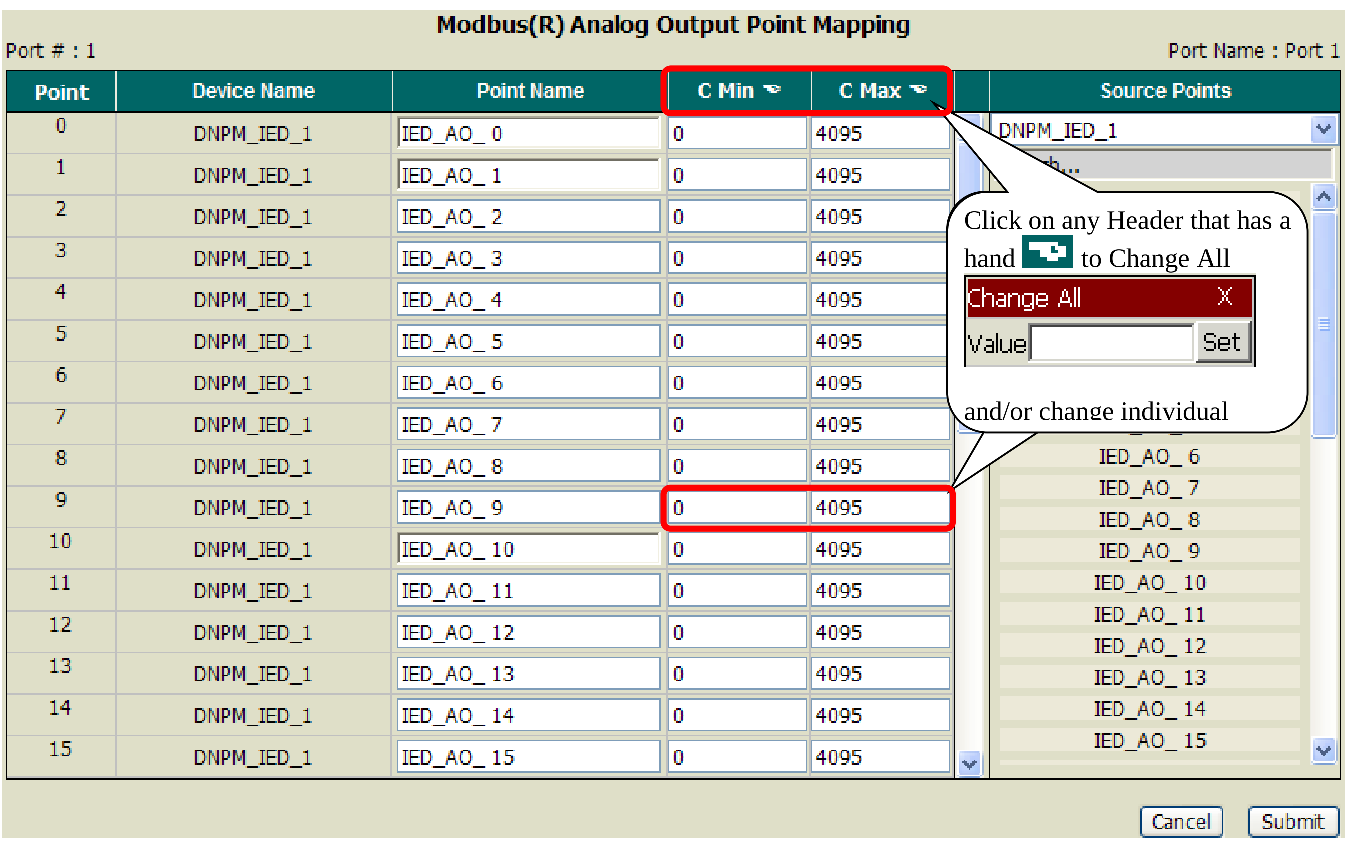
See the Analog example.

10.4.7 Map Analog Outputs

From the Modbus (R) Communication Mapping screen, click the MAP button for Analog Outputs. A screen similar to Figure 2-19 will appear.

Analog Outputs that have been mapped may be read using function codes 3 or 4 or written using function codes 6 or 16. If the holding registers assigned to the points overlap with another data type, the data for the other type will be returned instead of the Analog Output values.

Figure 10-15 Modbus (R) Analog Output Point Mapping



Point

The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts to be sent by the master station for a minimum EU value. Default setting is 0.

C Max
Enter the maximum counts to be sent by the master station for a maximum EU value. Default setting is 4095.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

10.4.7.1 Point Mapping Highlight

See the Analog example.

10.4.7.2 Point Database Search

See the Analog example.

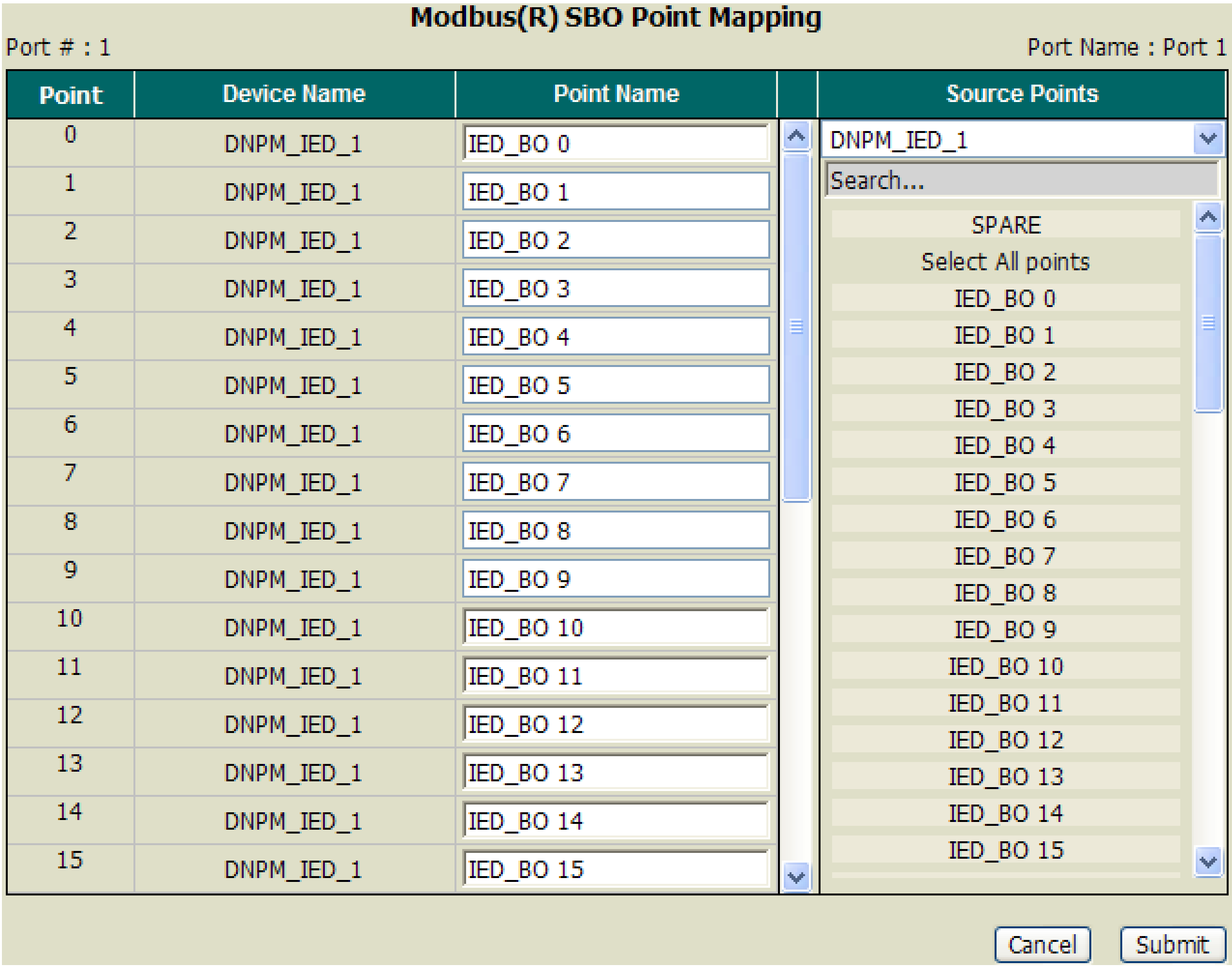
10.4.7.3 Insert & Delete Points

See the Analog example.

10.4.8 Map SBOs

From the Modbus (R) Communication Mapping screen, click the MAP button for SBOs. A screen similar to Figure 3-13 will appear.

Figure 10-16 Modbus (R) SBO Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

10.4.8.1 Point Mapping Highlight

See the Analog example.

10.4.8.2 Point Database Search

See the Analog example.

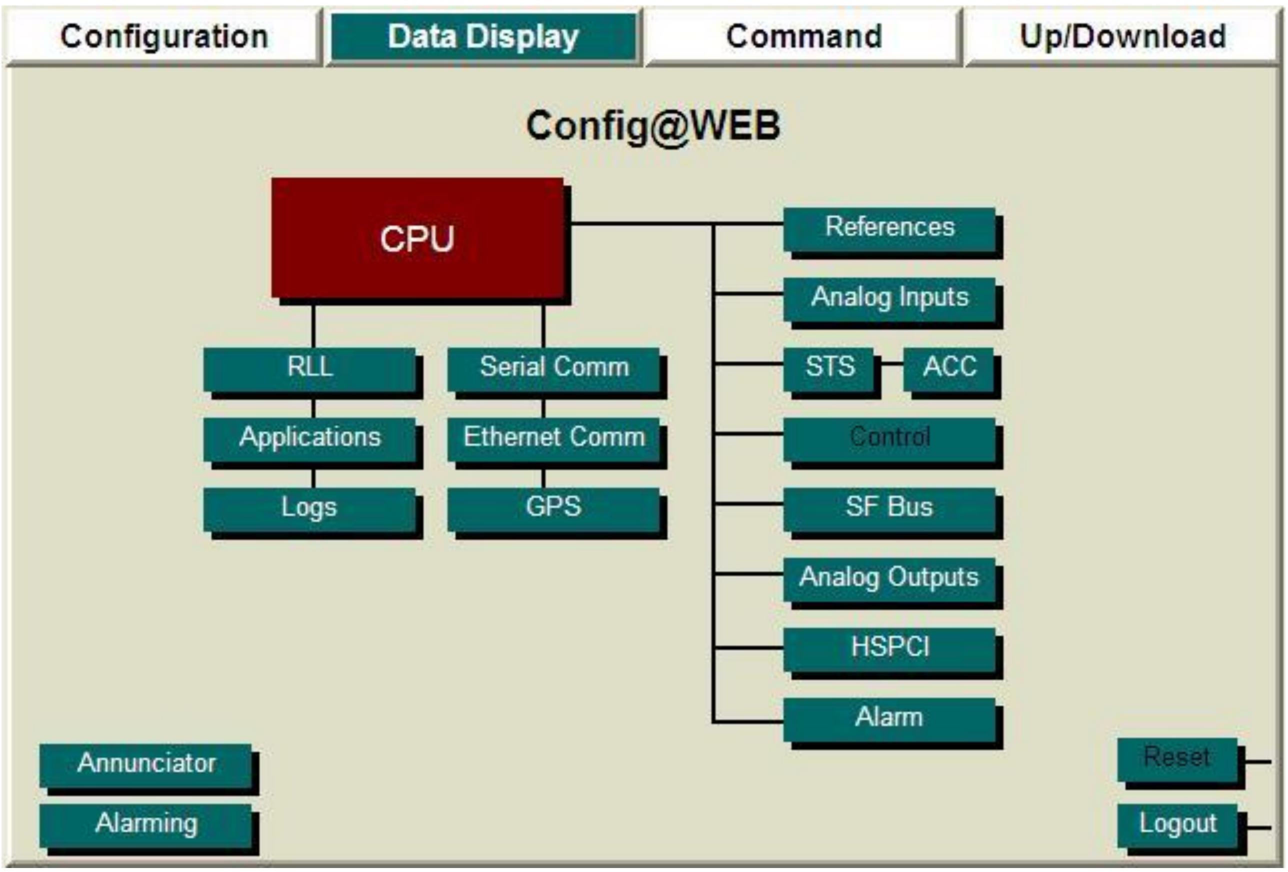
10.4.8.3 Insert & Delete Points

See the Analog example.

10.5 Data Display

Click the Data Display tab as shown in Figure 2-22.

Figure 10-17 Data Display Screen



Click either Serial Comm or Ethernet Comm to get the screen shown in Figure 4-15. The screens shown are for Serial Comm, but Ethernet Comm screens are identical, except the word Socket is used instead of Port..

Figure 10-18 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	Modbus(R)	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/de-asserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data
Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

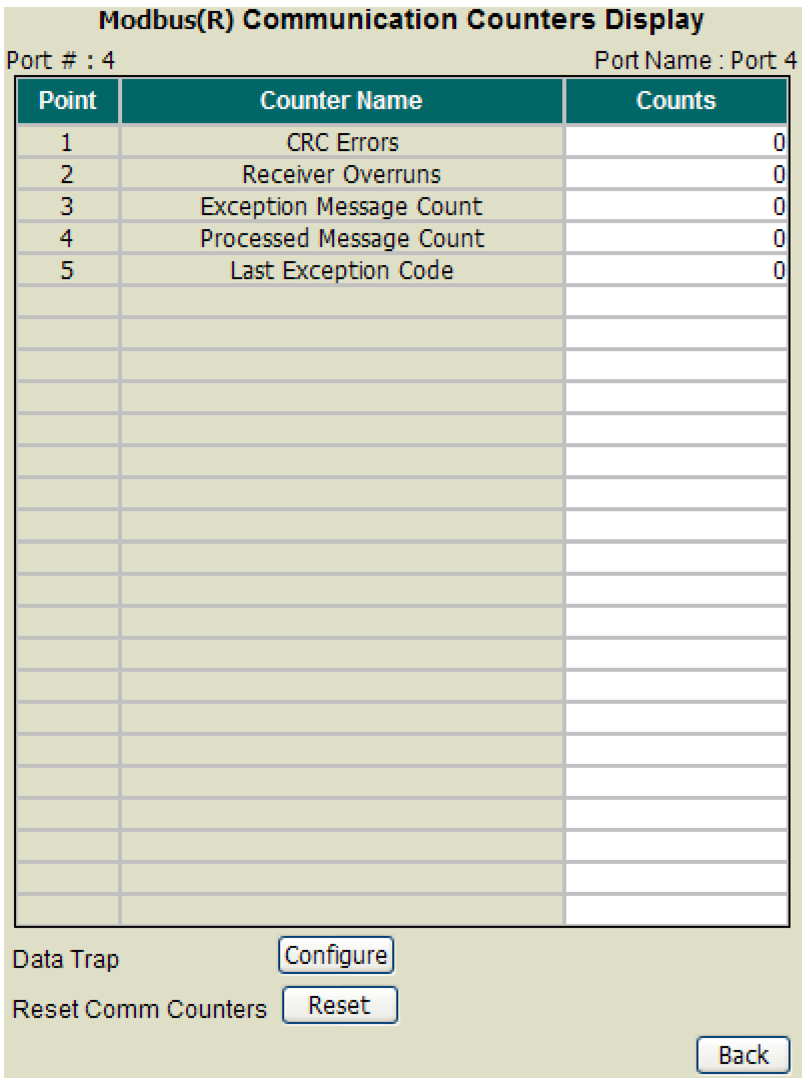
Navigation

Click the Back button to return to the previous screen.

10.5.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 2-25.

Figure 10-19 Modbus (R) Communication Counters Display



Point Number
A logical point number for reference only.

Counter Name

The following counters are monitored:

CRC Errors

This indicates the cumulative number of received messages with CRC errors since the last reset or power-up. This can be affected by parity and MTO.

Receiver Overruns

This indicates the cumulative number of over-run errors since the last reset or power-up.

Exception Message Count

This is the number of messages the RTU has received that contain some error such as illegal function code, invalid holding register number, invalid holding register value, etc. The specific error will be returned to the polling master in response to the erroneous message. The codes returned are as outlined:

01 : Illegal function code
02 : Invalid holding register or # of registers
03 : Invalid holding register value.

Processed Message Count

This is the number of Modbus messages received from the polling master, considered valid, processed and responded to. This is the equivalent of "Number of good messages".

Last Exception Code

Reports the last exception code returned.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

Reset

Resets the comm counters.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

10.5.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 2-28.

Figure 10-20 Modbus (R) Communication Display

Modbus(R) Communication Display

Port # : 3 Port Name : Port 3

Type	Base Reg #	Number	View
Analog Inputs	8192	16	View
RTU Status Reg	0		View
Status Inputs	1	16	View
Accumulators	4096	16	View
Global Freeze Accumulators	4224		View
Floating Point Inputs	16384	16	View
Latch Digital Outputs*	0	36	View
MOM Digital Outputs*	512		
Analog Outputs	768	16	View
SBO*	1024	36	View

Back

Type
The type of point.

Base Reg #
The Base Register number for each type.

Number
The number of points of each type.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

10.5.2.1 Analog Inputs

From the Modbus (R) Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 2-29.

Figure 10-21 Modbus (R) Analog Inputs Display

Modbus(R) Analog Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To [ ] Go

Pnt	Reg	Device Name	Point Name	Point Status	Point Value	Point Counts
0	8192	Hardware Analogs	ANALOG 1		0.645	258
1	8193	Hardware Analogs	ANALOG 2		0.646	258
2	8194	Hardware Analogs	ANALOG 3		0.646	258
3	8195	Hardware Analogs	ANALOG 4		0.645	258
4	8196	Hardware Analogs	ANALOG 5		0.000	0
5	8197	Hardware Analogs	ANALOG 6		0.000	0
6	8198	Hardware Analogs	ANALOG 7		0.000	0
7	8199	Hardware Analogs	ANALOG 8		0.000	0
8	8200	DNPM_IED_1	IED_ANALOG 0	F	0.000	0
9	8201	DNPM_IED_1	IED_ANALOG 1	F	0.000	0
10	8202	DNPM_IED_1	IED_ANALOG 2	F	0.000	0
11	8203	DNPM_IED_1	IED_ANALOG 3	F	0.000	0
12	8204	DNPM_IED_1	IED_ANALOG 4	F	0.000	0
13	8205	DNPM_IED_1	IED_ANALOG 5	F	0.000	0
14	8206	DNPM_IED_1	IED_ANALOG 6	F	0.000	0
15	8207	DNPM_IED_1	IED_ANALOG 7	F	0.000	0

Back

Point
Protocol logical point number.

Reg
The register number of the point.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

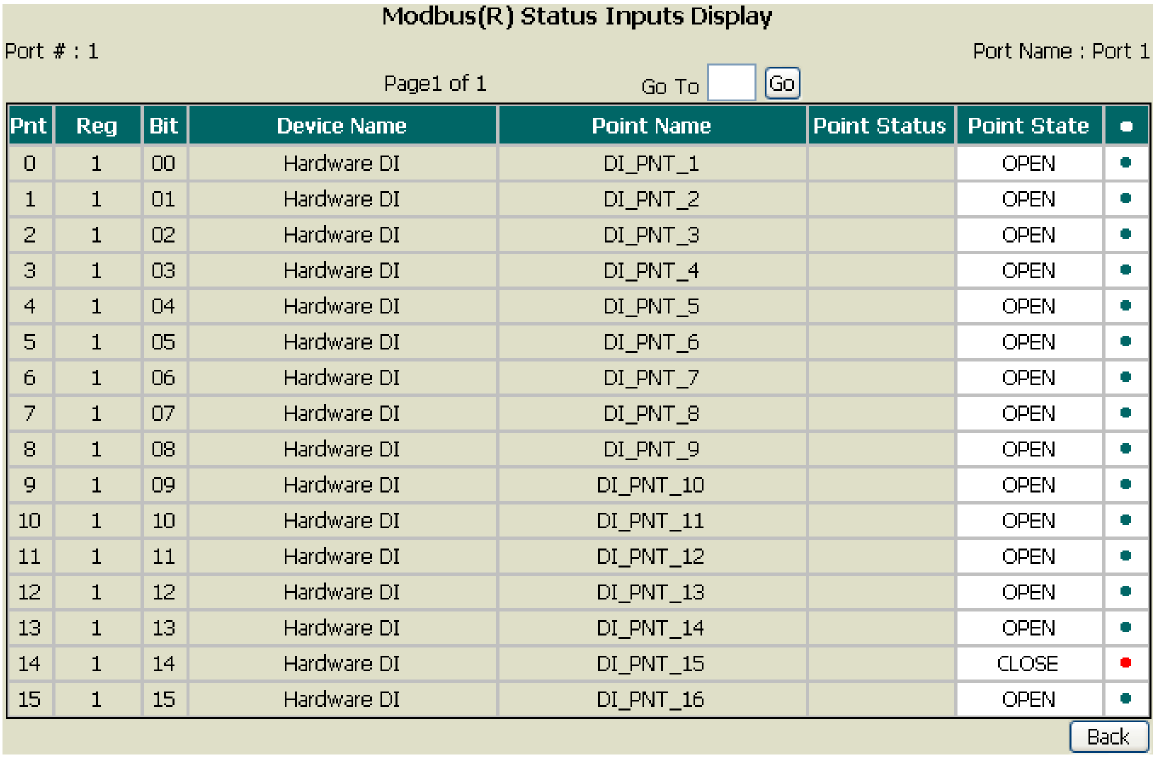
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

10.5.2.2 Status Inputs

From the Modbus (R) Communication Display screen, click View for Status Inputs to get the screen shown in Figure 2-30.

Figure 10-22 Modbus (R) Status Inputs Display



Modbus(R) Status Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To Go

Pnt	Reg	Bit	Device Name	Point Name	Point Status	Point State	●
0	1	00	Hardware DI	DI_PNT_1		OPEN	●
1	1	01	Hardware DI	DI_PNT_2		OPEN	●
2	1	02	Hardware DI	DI_PNT_3		OPEN	●
3	1	03	Hardware DI	DI_PNT_4		OPEN	●
4	1	04	Hardware DI	DI_PNT_5		OPEN	●
5	1	05	Hardware DI	DI_PNT_6		OPEN	●
6	1	06	Hardware DI	DI_PNT_7		OPEN	●
7	1	07	Hardware DI	DI_PNT_8		OPEN	●
8	1	08	Hardware DI	DI_PNT_9		OPEN	●
9	1	09	Hardware DI	DI_PNT_10		OPEN	●
10	1	10	Hardware DI	DI_PNT_11		OPEN	●
11	1	11	Hardware DI	DI_PNT_12		OPEN	●
12	1	12	Hardware DI	DI_PNT_13		OPEN	●
13	1	13	Hardware DI	DI_PNT_14		OPEN	●
14	1	14	Hardware DI	DI_PNT_15		CLOSE	●
15	1	15	Hardware DI	DI_PNT_16		OPEN	●

Back

Pnt
Protocol logical point number.

Reg
The register number of the point.

Bit
The bit number within the register number of the point.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

10.5.2.3 Accumulator Inputs

From the Modbus (R) Communication Display screen, click View for Accumulators to get the screen shown below.

Figure 10-23 Modbus (R) Accumulators Display

Modbus(R) Accumulators Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To [ ] Go Next>>

Pnt	Reg	Device Name	Point Name	Count
0	4096	DNPM_IED_1	IED_ACC_ 0	0
1	4098	DNPM_IED_1	IED_ACC_ 1	0
2	4100	DNPM_IED_1	IED_ACC_ 2	0
3	4102	DNPM_IED_1	IED_ACC_ 3	0
4	4104	DNPM_IED_1	IED_ACC_ 4	0
5	4106	DNPM_IED_1	IED_ACC_ 5	0
6	4108	DNPM_IED_1	IED_ACC_ 6	0
7	4110	DNPM_IED_1	IED_ACC_ 7	0
8	4112	DNPM_IED_1	IED_ACC_ 8	0
9	4114	DNPM_IED_1	IED_ACC_ 9	0
10	4116	DNPM_IED_1	IED_ACC_ 10	0
11	4118	DNPM_IED_1	IED_ACC_ 11	0
12	4120	DNPM_IED_1	IED_ACC_ 12	0
13	4122	DNPM_IED_1	IED_ACC_ 13	0
14	4124	DNPM_IED_1	IED_ACC_ 14	0
15	4126	DNPM_IED_1	IED_ACC_ 15	0

Back

Pnt
Protocol logical point number.

Reg
The register number of the point.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Please note: These values will only update when the accumulators are frozen.

Navigation

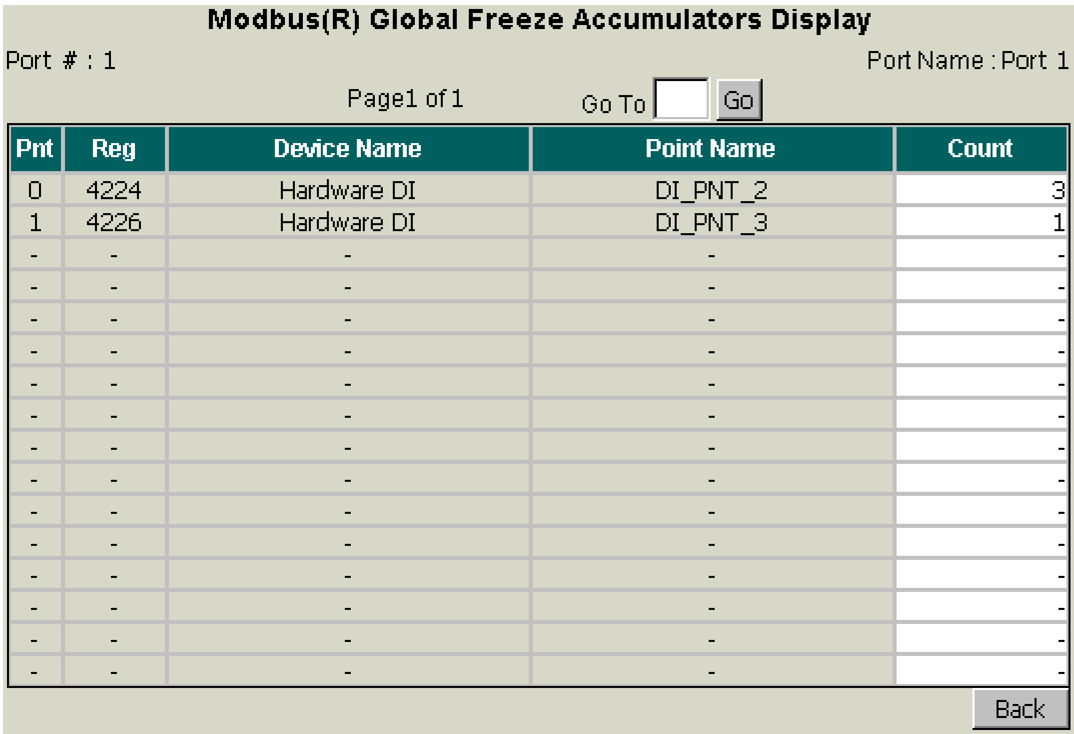
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of

pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

10.5.2.4 Global Freeze Accumulator Inputs

From the Modbus (R) Communication Display screen, click View for Global Freeze Accumulators to get the screen shown below.

Figure 10-24 Modbus (R) Global Freeze Accumulators Display



Pnt
Protocol logical point number.

Reg
The register number of the point.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Please note: These values will only update when the accumulators are frozen.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

10.5.2.5 Floating Point Inputs

From the Modbus (R) Communication Display screen, click View for Floating Point Inputs to get the screen shown below.

Figure 10-25 Modbus (R) Floating Point Inputs Display

Modbus(R) Floating Points Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To [ ] Go

Pnt	Reg	Device Name	Point Name	Value
0	16384	MB_IED_1	IED_FLT 0	0.000
1	16386	MB_IED_1	IED_FLT 1	0.000
2	16388	MB_IED_1	IED_FLT 2	0.000
3	16390	MB_IED_1	IED_FLT 3	0.000
4	16392	MB_IED_1	IED_FLT 4	0.000
5	16394	MB_IED_1	IED_FLT 5	0.000
6	16396	MB_IED_1	IED_FLT 6	0.000
7	16398	MB_IED_1	IED_FLT 7	0.000
8	16400	MB_IED_1	IED_FLT 8	0.000
9	16402	MB_IED_1	IED_FLT 9	0.000
10	16404	MB_IED_1	IED_FLT 10	0.000
11	16406	MB_IED_1	IED_FLT 11	0.000
12	16408	MB_IED_1	IED_FLT 12	0.000
13	16410	MB_IED_1	IED_FLT 13	0.000
14	16412	MB_IED_1	IED_FLT 14	0.000
15	16414	MB_IED_1	IED_FLT 15	0.000

Back

Pnt
Protocol logical point number.

Reg
The register number of the point.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Value
The value of the point.

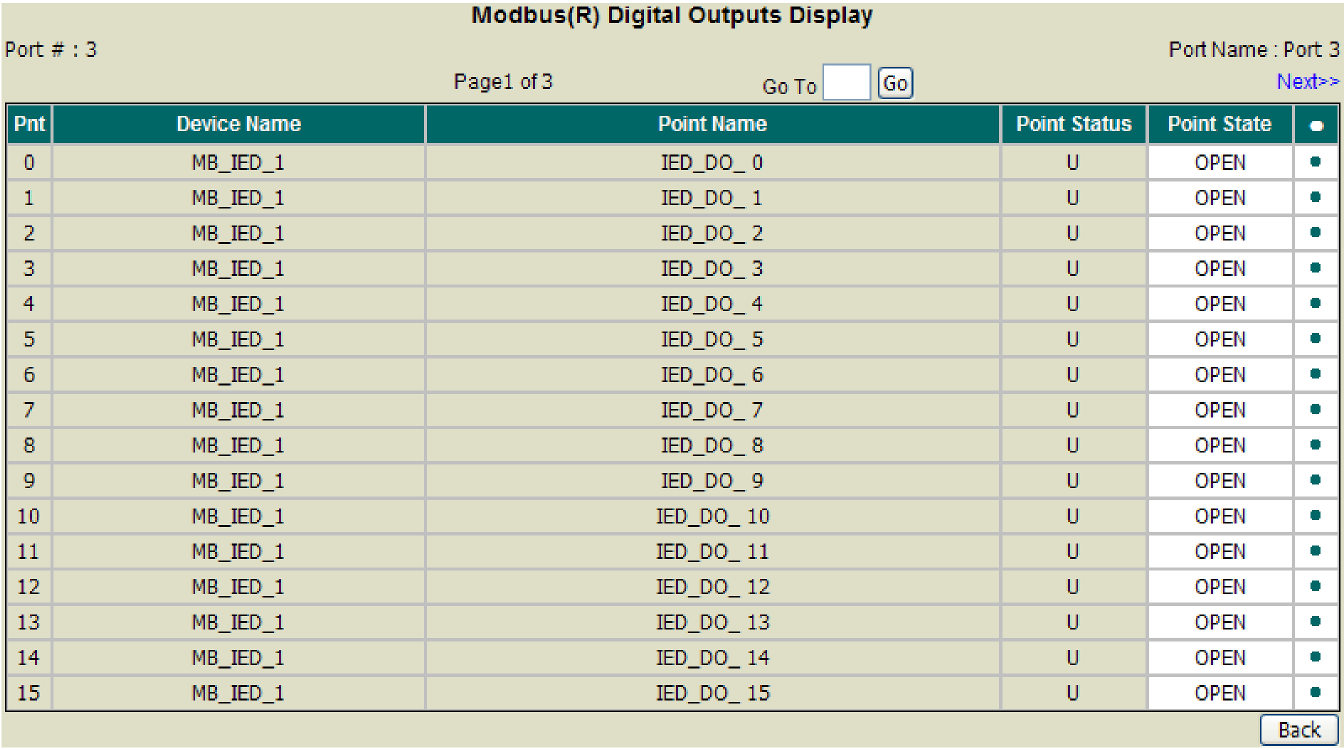
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

10.5.2.6 Latch Digital Outputs / MOM Digital Outputs

From the Modbus (R) Communication Display screen, click View for Latch Digital Outputs / MOM Digital Outputs to get the screen shown below.

Figure 10-26 Modbus (R) Latch Digital Outputs / MOM Digital Outputs Display



Modbus(R) Digital Outputs Display

Port # : 3 Port Name : Port 3

Page1 of 3 Go To Go Next>>

Pnt	Device Name	Point Name	Point Status	Point State	●
0	MB_IED_1	IED_DO_ 0	U	OPEN	●
1	MB_IED_1	IED_DO_ 1	U	OPEN	●
2	MB_IED_1	IED_DO_ 2	U	OPEN	●
3	MB_IED_1	IED_DO_ 3	U	OPEN	●
4	MB_IED_1	IED_DO_ 4	U	OPEN	●
5	MB_IED_1	IED_DO_ 5	U	OPEN	●
6	MB_IED_1	IED_DO_ 6	U	OPEN	●
7	MB_IED_1	IED_DO_ 7	U	OPEN	●
8	MB_IED_1	IED_DO_ 8	U	OPEN	●
9	MB_IED_1	IED_DO_ 9	U	OPEN	●
10	MB_IED_1	IED_DO_ 10	U	OPEN	●
11	MB_IED_1	IED_DO_ 11	U	OPEN	●
12	MB_IED_1	IED_DO_ 12	U	OPEN	●
13	MB_IED_1	IED_DO_ 13	U	OPEN	●
14	MB_IED_1	IED_DO_ 14	U	OPEN	●
15	MB_IED_1	IED_DO_ 15	U	OPEN	●

Back

Pnt
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

10.5.2.7 Analog Outputs

From the Modbus (R) Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 2-32.

Figure 10-27 Modbus (R) Analog Outputs Display

Modbus(R) Analog Outputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To [ ] Go

Pnt	Reg	Device Name	Point Name	Point Status	Point Value	Point Counts
0	768	Hardware AO	ANA_OUT 1	F	-5.000	0
1	769	Hardware AO	ANA_OUT 2	F	-5.000	0
2	770	Hardware AO	ANA_OUT 3	F	-5.000	0
3	771	Hardware AO	ANA_OUT 4	F	-5.000	0
4	772	Hardware AO	ANA_OUT 5	F	-5.000	0
5	773	Hardware AO	ANA_OUT 6	F	-5.000	0
6	774	Hardware AO	ANA_OUT 7	F	-5.000	0
7	775	Hardware AO	ANA_OUT 8	F	-5.000	0
8	776	Hardware AO	ANA_OUT 9	F	-5.000	0
9	777	Hardware AO	ANA_OUT 10	F	-5.000	0
10	778	Hardware AO	ANA_OUT 11	F	-5.000	0
11	779	Hardware AO	ANA_OUT 12	F	-5.000	0
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-
-	-	-	-	-	-	-

Back

Pnt
Protocol logical point number.

Reg
The register number of the point.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value. This value is calculated based on the EGU min and EGU max settings for the target analog output point along with the current binary count sent from the master station.

Point Counts
The binary counts being sent from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

10.5.2.8 SBO

From the Modbus (R) Communication Display screen, click View for SBO to get the screen shown below.

Figure 10-28 Modbus (R) SBO Display

Modbus(R) SBO Points Display

Port # : 3 Port Name : Port 3

Page1 of 3 Go To [ ] Go Next>>

Pnt	Device Name	Point Name	Point Status	Point State	●
0	Hardware Controls	SBO 1		CLOSE	●
1	Hardware Controls	SBO 2	U	OPEN	●
2	Hardware Controls	SBO 3	U	OPEN	●
3	Hardware Controls	SBO 4		CLOSE	●
4	DNPM_IED_1	IED_BO 0	F	OPEN	●
5	DNPM_IED_1	IED_BO 1	F	OPEN	●
6	DNPM_IED_1	IED_BO 2	F	OPEN	●
7	DNPM_IED_1	IED_BO 3	F	OPEN	●
8	DNPM_IED_1	IED_BO 4	F	OPEN	●
9	DNPM_IED_1	IED_BO 5	F	OPEN	●
10	DNPM_IED_1	IED_BO 6	F	OPEN	●
11	DNPM_IED_1	IED_BO 7	F	OPEN	●
12	DNPM_IED_1	IED_BO 8	F	OPEN	●
13	DNPM_IED_1	IED_BO 9	F	OPEN	●
14	DNPM_IED_1	IED_BO 10	F	OPEN	●
15	DNPM_IED_1	IED_BO 11	F	OPEN	●

Back

Pnt
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

10.6 Configuring Modbus-R to Look Like a SAGE 2100 or Micro/1C

The following documents explain how to configure the config@WEB RTU to look like a SAGE 2100 or MICRO/1C having MODBUS Slave protocol:

Map the base registers as follows. The number of points will change based on the number of points you need to return the MODBUS master station. You must add 4 to the analogs to account for the reference points defined and 32 to the status to account for the status defined to make the config@WEB RTU appear to the MTU as a SAGE 2100 or MICRO/1C.

Figure 10-29 Communication Mapping

Modbus(R) Communication Mapping

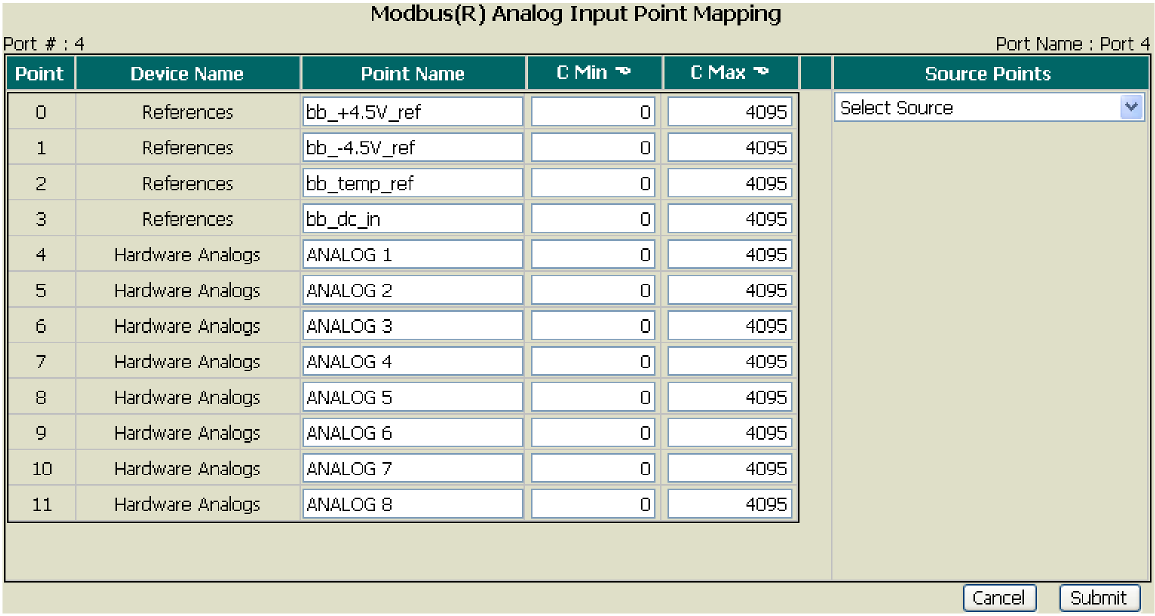
Port # 1 Port Name : Port 1

Type	Base Reg #	Number	Map
Analog Inputs	8192	0	MAP
RTU Status Reg	0		
Status Inputs	1	0	MAP
Accumulators	4096	0	MAP
Global Freeze Accumulators	4224		
Floating Point Inputs	16384	0	MAP
Latch Digital Outputs	0	0	MAP
MOM Digital Outputs	512		
Analog Outputs	768	0	MAP
SBO	1024	0	MAP

Back

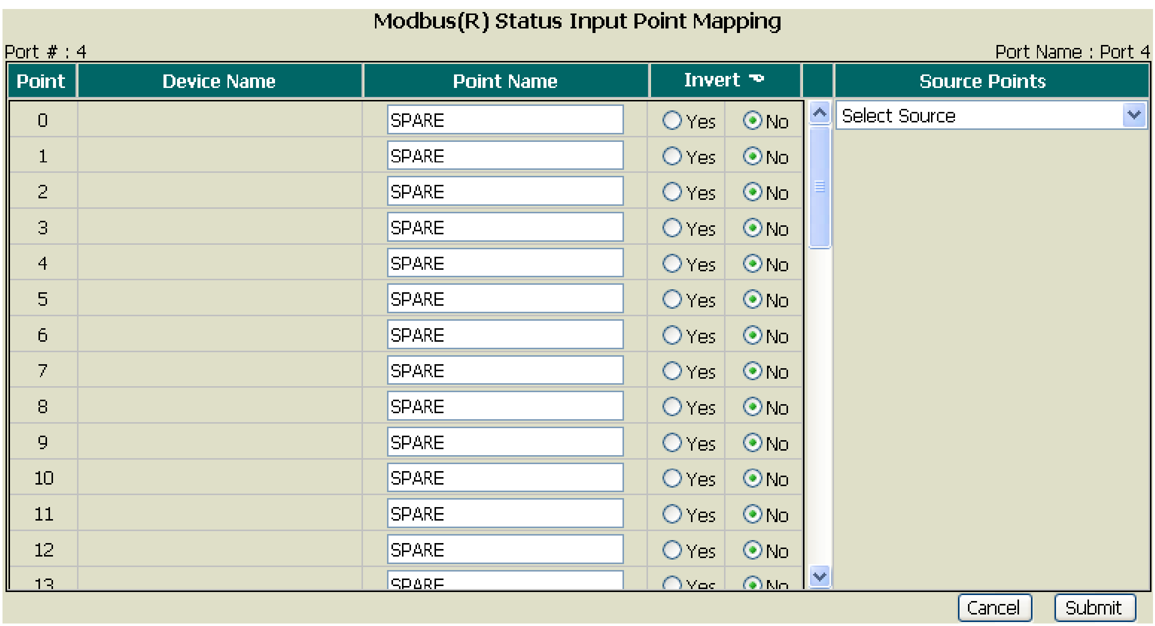
For the Analogs, the first four points must be configured as follows:

Figure 10-30 Analog Input Point Mapping



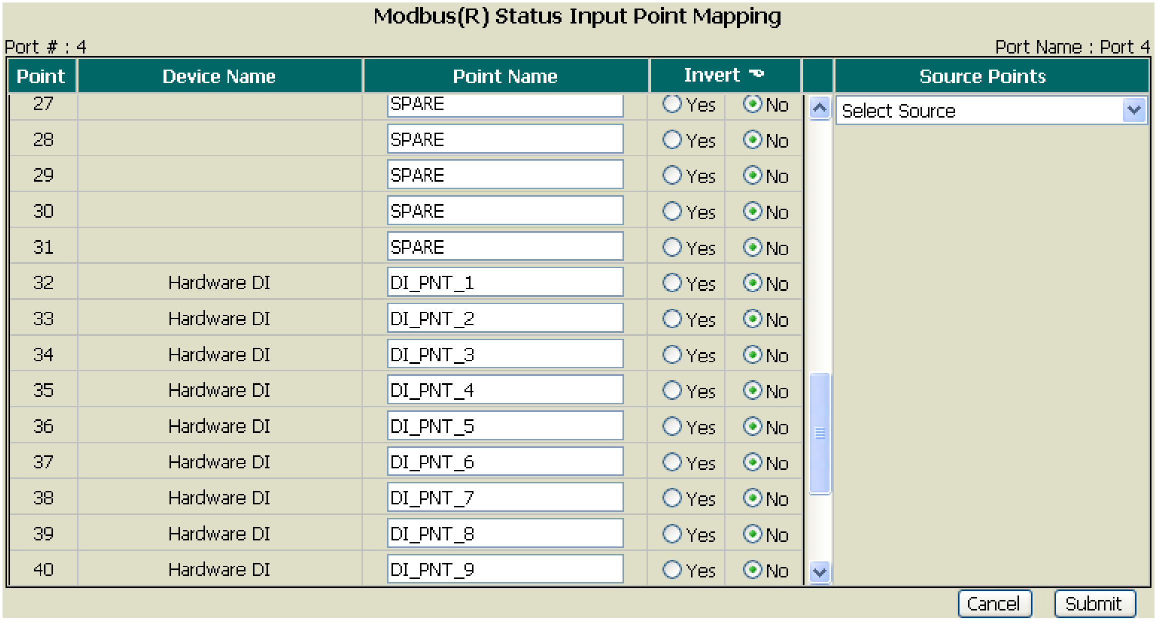
For the status, the first 32 points must be defined as spare.

Figure 10-31 Status Input Point Mapping



Status point 32 will be the first real status point.

Figure 10-32 Status Input Point Mapping



Modbus(R) Status Input Point Mapping

Port # : 4 Port Name : Port 4

Point	Device Name	Point Name	Invert		Source Points
27		SPARE	Yes	No	Select Source
28		SPARE	Yes	No	
29		SPARE	Yes	No	
30		SPARE	Yes	No	
31		SPARE	Yes	No	
32	Hardware DI	DI_PNT_1	Yes	No	
33	Hardware DI	DI_PNT_2	Yes	No	
34	Hardware DI	DI_PNT_3	Yes	No	
35	Hardware DI	DI_PNT_4	Yes	No	
36	Hardware DI	DI_PNT_5	Yes	No	
37	Hardware DI	DI_PNT_6	Yes	No	
38	Hardware DI	DI_PNT_7	Yes	No	
39	Hardware DI	DI_PNT_8	Yes	No	
40	Hardware DI	DI_PNT_9	Yes	No	

Cancel Submit

10.7 Explanation of Modbus Implementation

This section describes the details of this Modbus implementation, including opcodes, register usage, and special features.

10.7.1 Opcodes

The following opcodes have been implemented in this Modbus implementation:

02 – Read Input Status
03 – Read Multiple Holding Registers
04 – Read Input Registers
05 – Force Single Coil
06 – Preset Holding Register
08 – Loopback Test (subcodes: 00, 10, 11, 12, 13, 18)
15 – Force Multiple Coils
16 – Preset Multiple Holding Register
65 – User Opcode (subcode: 01 – bulk poll function)

10.7.2 Status (Binary Inputs)

Status or binary input points may be read using opcode 02, Read Input Status, or 03, Read Holding Register. The status points will be packed 16 status bits to a register. By default a “closed” state is returned as a “1”.

IMPORTANT NOTE: Holding register 0 is RESERVED. Register 0 can be read to obtain important RTU diagnostic information (see table below). The first holding register a binary input can be mapped to is register 1.

RTU Status Register 0 is defined as follows:

0x0000	Status Record
0x8000	RTU power fail bit (RTU power has cycled)
0x4000	Remote/Local switch in LOCAL mode
0x2000	COS queue overflow – indicates status changes have been missed
0x1000	Analog reference fail

By writing to Register 1042 (0x412) using opcode 16, preset holding register, with the appropriate mask the master can clear these state bits.

10.7.3 Accumulators

Accumulators or counters may be read using opcode 03, Read Holding Register. They are returned in two (2) 16 bit registers and must be combined by the polling master to make one (1) 32 bit value. Mapped accumulators are either frozen or free running, depending on if "Accumulator Freeze" support was set to "Yes" or "No" in the configuration.

To freeze accumulators:

- Set Accumulator Freeze support to "Yes" in configuration.
- Master station sends a sequence number (any 16 bit number) via opcode 06, Preset Holding Register to register 1040 (0x410).
- Master station may then Read Holding Register via opcode 03 register 5000 (0x1388). The RTU will duplicate the value placed in register 1040 into register 5000 to indicate a freeze has just occurred. If these two values match, the freeze was successful and the new frozen accumulators are ready to be read. The idea here is that the master can bump up its sequence number each time a freeze is issued so registers 1040 and 5000 will be constantly changing together.
- Master station may now read registers starting at register 4096 (0x1000) to obtain 32 bit accumulator values.
- Accumulator values will remain "frozen" until next freeze is issued.

10.7.4 Analog Inputs

Analog values may be read using opcode 03, Read Holding Register or opcode 04, Read Input Register. Analog values may have quality flags "OR'd" into their values if the "Analog Quality Flag" is set to "Yes" in the user setup (see section on Configure Protocol).

10.7.5 Floating Points

Floating Point values may be read using opcode 03, Read Holding Register. These will only exist in the RTU if there are special applications in the RTU that contain floating point numbers. The format of the floating point numbers is excess 128 normalized between 0 and 1 with hidden bit (ie. PDP-11 format). Conversion routines are included at end of this chapter.

10.7.6 COS Queue

The RTU contains a COS (change of state) Queue which may be read using opcode 03, Read Holding Register. The following steps describe how to use this feature:

- Using opcode 03, Read Holding Register, read register 20481 (0x5001). This will contain the number of COS entries available (max 63). If more than 63 COS events have occurred, the RTU status 0x2000, COS Queue Overflow will be set.

- COS entries will start with register 20482 (0x5002). Each COS entry read will return 2 registers as follows: point number, point state.
- Using opcode 06, Preset holding Register, the master station writes to register 1041 (0x0411) how many entries it received so the RTU can remove them from the queue. This will also reset the COS overflow bit in the RTU status if this is set.

10.7.7 Error Responses

Error responses from the MODBUS protocol

```
/* error codes returned from RTU */
#define MB_EXC_ILL_FUNC 01      - illegal function code
#define MB_EXC_ILL_ADDR 02      - invalid holding register or # registers
#define MB_EXC_ILL_VALU 03      - invalid holding register value
```

10.7.8 Digital Outputs

Digital outputs may be controlled with the following opcodes as follows:

- Opcode 05, Force Single Coil: Coil address in Modbus message should be the individual relay number as it relates to the mapped control point. Data field in Modbus message should be 0xFF to “close” and 0x00 to “open”.

- Opcode 06, Preset Single Register: This will control groups of 16 relays at a time by filling in a register with a bit mask. The Register Address in the Modbus message should correlate with the register number of the first coil of the group of 16 as it relates to the mapped points. The data portion of the Modbus message will be treated as a mask to control a group of up to 16 relays.

- Opcode 15, Force Multiple Coils: This will control a group of up to 16 relays at one time. Coil address in Modbus message should be the starting relay number as it relates to the mapped control point. Quantity of Coils in the Modbus message should be the number of contiguous relays that are to operate. The Force Data field in the Modbus message should be a bit mask that corresponds to the control desired for each point. First data byte operates first group of 8 coils with least significant bit addressing lowest coil in the set of 8. Second data byte operates the next group of coils with the least significant bit operating the lowest coil in that set of 8.

The same point may be “latched” or may be momentarily closed (based on the duration setup on the user interface for that point). By default, digital output 0 (the first digital output in the RTU) is assigned to register 0 **AND** register 512. If the master station sends a “close” to register 0, digital output 0 will “latch closed”. Sending an “open” to register 0 will cause it to “latch open”. (note “close” will be a “1” in opcode 6 and 15 but a 0xFF in opcode 05) On the other hand, sending a “close” to register 512 will momentarily close the exact same relay (digital output 0). The two registers, 0 and 512, command the exact same relay but commands to register 0 will latch the relay and commands to register 512 will pulse the relay.

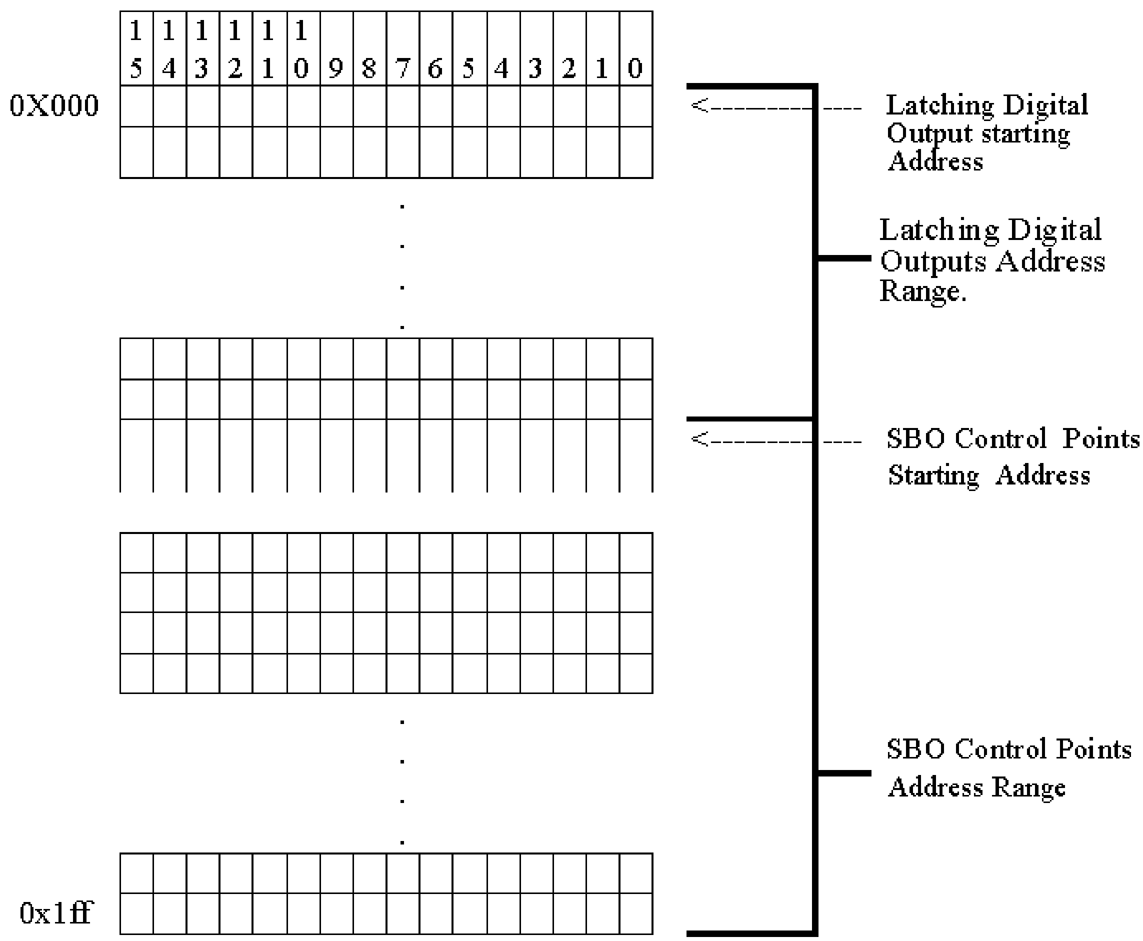
10.7.9 SBO Controls

The SBO points may be controlled by using the Force Multiple Coils function of the MODBUS protocol (Function Code 0x0f). The Force Multiple Coils Query message format is shown in Figure 10-33. The latched digital output points and SBO control points share the same holding register address range (0x000 through 0x1ff). The latched digital output points storage start from the beginning of holding register address range reserved for latched digital outputs. The starting address for the SBO control points is the last holding register for the latched digital output points plus 1. This is illustrated in Figure 10-34.

Figure 10-33 SBO Force Multiple Coils

ADDR	FUNC	H.O. ADDR	ADDR	QUANTITY		BYTE CNT	DATA COIL STATUS	ERROR CHECK FIELD	ERROR CHECK FIELD
0X01	0X0F	0X00	0X00	0X00	0X01	0X01	0X00	0X2E	0X97

Figure 10-34 SBO Control Point Data Positions



Control is issued only to one point at a time and the point must satisfy the following validity requirements:

- The point number must be less or equal to the maximum number of SBO controls points configured.

- The holding register address for the point must be greater than the holding register address of the highest latched digital output point and must be less than the starting holding register address for the first momentary digital output point.
- The Quantity high order byte must be equal to 0x00.
- The Quantity low order byte must be equal to 0x01.
- The Byte count must be equal to 0x01.
- The Data Coil Status must be 0x00 for a TRIP operation and 0x01 for a CLOSE operation.

The execution time for a SBO control command is set by the entry in the Edit SBO Execute Time Record menu. If the entry is zero, the entry in the Momentary Relay Duration prompt in the RTU Setup menu is used. The Momentary Digital output command always uses the entry in the Momentary Relay Duration prompt.

The following table shows possible operations for 4 points:

Table 10-1 Modbus(R) Four Points Operations

	POINT 1 **TRIP CLOSE**	**POINT 2** **TRIP CLOSE**	**POINT 3** **TRIP CLOSE**	**POINT 4** **TRIP CLOSE**
Byte 0	0x01 0x01	0x01 0x01	0x01 0x01	0x01 0x01
Byte 1	0x0F 0x0F	0x0F 0x0F	0x0F 0x0F	0x0F 0x0F
Byte 2	0x00 0x00	0x00 0x00	0x00 0x00	0x00 0x00
Byte 3	0x00 0x00	0x01 0x01	0x02 0x02	0x03 0x03
Byte 4	0x00 0x00	0x00 0x00	0x00 0x00	0x00 0x00
Byte 5	0x01 0x01	0x01 0x01	0x01 0x01	0x01 0x01
Byte 6	0x01 0x01	0x01 0x01	0x01 0x01	0x01 0x01
Byte 7	0x00 0x01	0x00 0x01	0x00 0x01	0x00 0x01
Byte 8	0x2E 0xEF	0x13 0xD2	0x57 0x96	0x6A 0xAB
Byte 9	0x97 0x57	0x57 0x97	0x57 0x97	0x97 0x57

Time execution is determined by setup in SBO setup in RTU user interface.

10.7.10 Analog Outputs

Analog outputs may be controlled using the Preset Holding Register (06) or Preset Multiple Registers (16) opcodes.

10.7.11 Time

The time in the RTU may be set using preset multiple holding registers, opcode 16 by writing 7 holding registers in the following order:

- 1024 (0x400) = seconds (0-59)
- 1025 (0x401) = minutes (0-59)
- 1026 (0x402) = hours (0-23)
- 1027 (0x403) = day of month (0-31 depending on month)
- 1028 (0x404) = month (0-11)
- 1029 (0x405) = year (since 1900)
- 1030 (0x406) = day of week (0-6 0 = Sunday...6=Saturday)

10.7.12 User Defined Opcodes

0x41 - User opcode (subcode: 0x01 - bulk poll function)

This opcode is used by the Schneider Electric OASyS system to acquire data from the RTU. As many data items will be returned as requested by the number of holding registers.

Data is returned as follows:

- All status points
- All accumulator points
- All analog points
- All floating point data

10.7.13 Loopback Test

0x08 - Loopback Test (subcodes: 0x00, 0x0A, 0x0B, 0x0C, 0x0D, 0x12)
The loopback test is used to check the communications with the RTU.

- Code 0x00 returns data sent by the MTU.
- Code 0x0A clears the counters and diagnostic registers.
- Code 0x0B returns the message counter.
- Code 0x0C returns the CRC error counter.
- Code 0x0D returns the exception error counter.
- Code 0x12 returns the overrun counter.

10.7.14 Sample MODBUS Opcodes

To read analog data with MODBUS RTU protocol, use the Read holding register function starting with holding register 2004. Sample reads 32 analogs.

- Byte 0 0x01 RTU ID
- Byte 1 0x03 Function Code
- Byte 2 0x20 Data register start high order
- Byte 3 0x04 Data register start low order
- Byte 4 0x00 # of registers high order
- Byte 5 0x20 # of registers low order
- Byte 6 0x0e CRC-16
- Byte 7 0x13 CRC-16

To read status data with MODBUS RTU protocol, use the Read holding register function starting with holding register 0003. Sample reads 16 points.

- Byte 0 0x01 RTU ID
- Byte 1 0x03 Function Code
- Byte 2 0x00 Data register start high order
- Byte 3 0x03 Data register start low order
- Byte 4 0x00 # of registers high order
- Byte 5 0x01 # of registers low order
- Byte 6 0x74 CRC-16
- Byte 7 0x0a CRC-16

Use the Force Multiple Coils function to operate the SBO outputs with MODBUS RTU protocol. Sample is for point 1 trip.

- Byte 0 0x01 RTU ID

- Byte 1 0x0F Function Code
- Byte 2 0x00 Address high order
- Byte 3 0x00 Address low order
- Byte 4 0x00 Quantity high order
- Byte 5 0x01 Quantity low order
- Byte 6 0x01 Byte count
- Byte 7 0x00 Data coil status
- Byte 8 0x2E CRC-16
- Byte 9 0x97 CRC-16

10.8 Sample Code For Floating Point Conversions

```
   /* put a float to a buffer. Convert float from IEEE format to DEC
                                 format. */
void putfloat(float value, UCHAR **ptr)
{
   UCHAR temp[sizeof(float)];
   UCHAR tint[sizeof(unsigned int)];
   BOOL negative;
   BOOL carry;
   /* Check for zero value. */
   if (value == 0.0)
   {
      memcpy(*ptr, &value, sizeof(float));
      *ptr += sizeof(float);
      return;
   }
   /* Convert float to dec format. */
   memcpy(temp, &value, sizeof(float));
   /* Swap bytes 0 and 1. */
   swap_bytes(&temp[0], &temp[1]);
   /* Swap bytes 2 and 3. */
   swap_bytes(&temp[2], &temp[3]);
   /* Transfer bytes 2 and 3 to a temp holder. */
   memcpy(&tint[0], &temp[2], sizeof(unsigned int));
   /* Remember sign. */
   if (tint[0] & 128)
      negative = YES;
   else
      negative = NO;
   /* Shift left by one, manually account for carryover between bytes.
                                 */
   if (tint[1] & 128)
      carry = YES;
   else
      carry = NO;
   tint[1] = tint[1] << 1;
   tint[0] = tint[0] << 1;
   if (carry)
      tint[0] = tint[0] | 1;
   /* Add 2 to leftmost byte. */
   tint[0] += 2;
```

```
   /* Shift right by one, manually account for carryover between bytes.
                                  */
   if (tint[0] & 1)
      carry = YES;
   else
      carry = NO;
   tint[0] = tint[0] >> 1;
   tint[1] = tint[1] >> 1;
   if (carry)
      tint[1] = tint[1] | 128;
   /* Restore sign bit (leftmost). */
   if (negative)
   {
      tint[0] = tint[0] | 128;
   }
   /* Transfer temporary holder to bytes 3 and 4. */
   memcpy(&temp[2], &tint[0], 2);
   /* Swap hi and lo words. */
   swap_bytes(&temp[0], &temp[2]);
   swap_bytes(&temp[1], &temp[3]);
   /* Transfer to buffer. */
   memcpy(*ptr, temp, sizeof(float));
   *ptr += sizeof(float);
}
   /* get a float from a buffer. Convert float from DEC format to IEEE
                                  format. */
float getfloat(UCHAR **ptr)
{
   float value;
   UCHAR temp[sizeof(float)];
   UCHAR tint[sizeof(unsigned int)];
   BOOL negative;
   BOOL carry;
   /* Transfer from buffer. */
   memcpy(temp, *ptr, sizeof(float));
   *ptr += sizeof(float);
   /* Check for zero value. */
   if ((temp[0] == 0) &&
      (temp[1] == 0) &&
      (temp[2] == 0) &&
      (temp[3] == 0))
   {
      return(0.0);
   }
   /* Swap hi and lo words. */
   swap_bytes(&temp[0], &temp[2]);
   swap_bytes(&temp[1], &temp[3]);
   /* Transfer bytes 3 and 4 to temporary holder. */
   memcpy(&tint[0], &temp[2], 2);
   /* Remember sign. */
   if (tint[0] & 128)
      negative = YES;

   else
   negative = NO;
   /* Shift left by one, manually account for carryover between bytes.
                                  */
   if (tint[1] & 128)
      carry = YES;
```

```
   else
      carry = NO;
   tint[1] = tint[1] << 1;
   tint[0] = tint[0] << 1;
   if (carry)
      tint[0] = tint[0] | 1;
   /* Subtract 2 from leftmost byte. */
   tint[0] -= 2;
   /* Shift right by one, manually account for carryover between bytes.
                                      */
   if (tint[0] & 1)
      carry = YES;
   else
      carry = NO;
   tint[0] = tint[0] >> 1;
   tint[1] = tint[1] >> 1;
   if (carry)
      tint[1] = tint[1] | 128;
   /* Restore sign bit (leftmost). */
   if (negative)
   {
      tint[0] = tint[0] | 128;
   }
   /* Transfer temp holder to bytes 2 and 3. */
   memcpy(&temp[2], &tint[0], sizeof(unsigned int));
   /* Swap bytes 0 and 1. */
   swap_bytes(&temp[0], &temp[1]);
   /* Swap bytes 2 and 3. */
   swap_bytes(&temp[2], &temp[3]);
   /* Transfer to return value. */
   memcpy(&value, &temp[0], sizeof(float));
   return(value);
}
```

11 SES 92

11.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

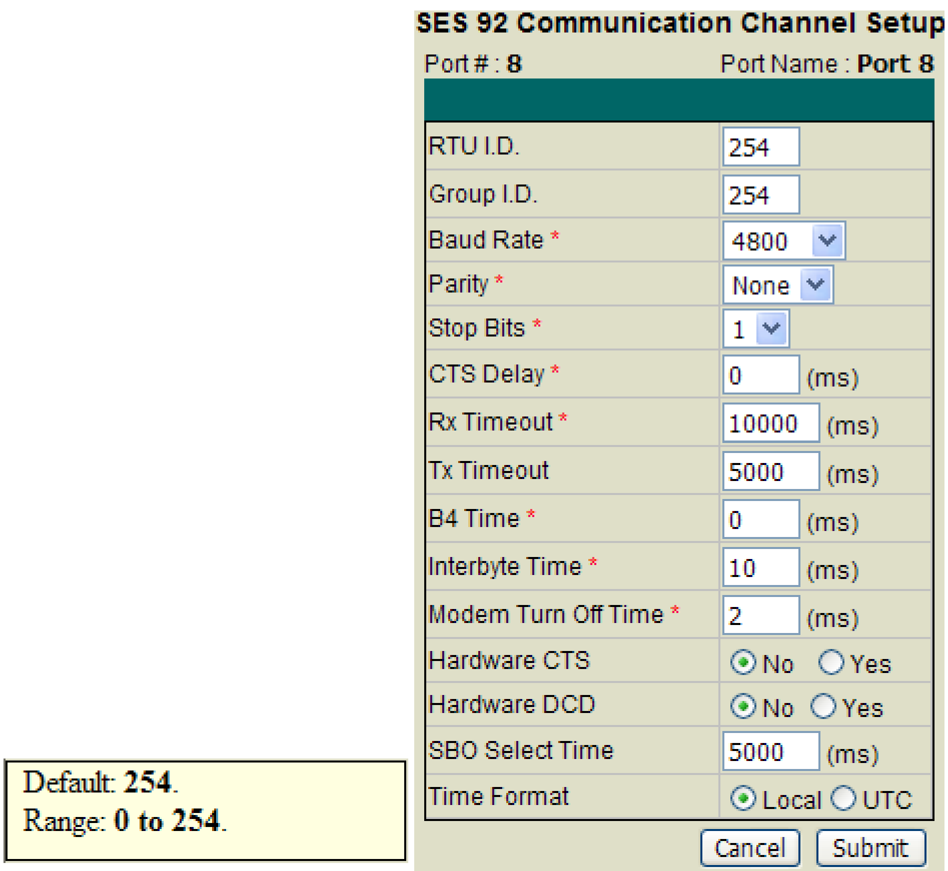
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

11.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 11-1.

Figure 11-1 Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D. (0 – 254)
Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Note that multiported RTUs may have distinct station IDs on each channel. Default setting is 254.

Goup I.D. (0 – 254)
Enter the Group I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 254.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 4800.

Parity (None, Odd, Even)
From the drop-down menu, select the parity for the associated channel. The default setting is None.

Stop Bits (0,1,2)
From the drop-down menu, select the stop bits for the associated channel. The default setting is 1.

CTS Delay (0 – 1000ms)
Enter the Clear-To-Send (CTS) Delay in milliseconds for the associated channel. This is the delay of time the channel will wait to start transmitting following Request-To-Send being asserted. The default setting is 0.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 10000 (10 seconds).

Tx Timeout (0 – 30,000ms)
Enter the transmit timeout for the associated channel. This value limits the maximum transmission time from the RTU to the master. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 0.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 10.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 2.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

SBO Select Time (0 – 60,000msec)

Enter the SBO select timeout value. The SBO Select Timeout provides a time window for an SBO execute request to reach the RTU after the Select Request has been received. This value operates for all control points. Default setting is 5000 (5 sec).

Time Format (Local, UTC)

Note: The coordination between UTC and local time is a feature that may be ignored. If you want your RTU to act as it always has in regards to time syncs, set Time Format to Local Time. See Time Configuration Settings in the Configuration chapter of the hardware manual for time settings under the CPU block.

If you want time synchronization from the master, you must know whether the master is sending Local time or UTC time, then set this radio button to match the master's format.

Navigation

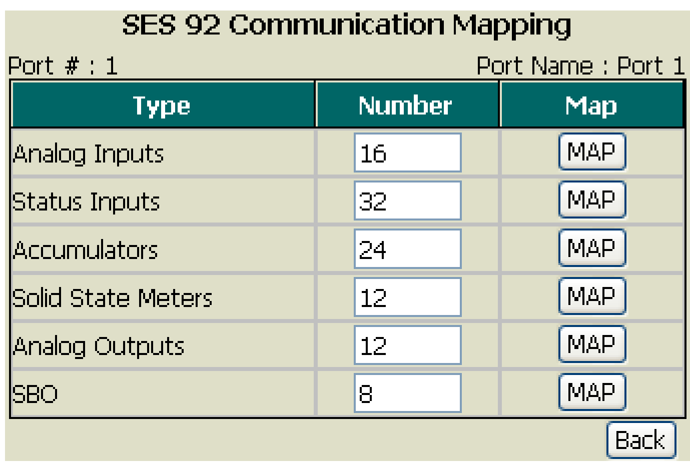
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

11.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 11-2 will appear. Enter the Number for each type of point, then click MAP before moving on to the next point type.

Figure 11-2 SES 92 Communication Mapping



Type
The different types of I/O points supported by this protocol.

Number
Enter the quantity of points for the given type.

Map
Click the MAP button to map the points.

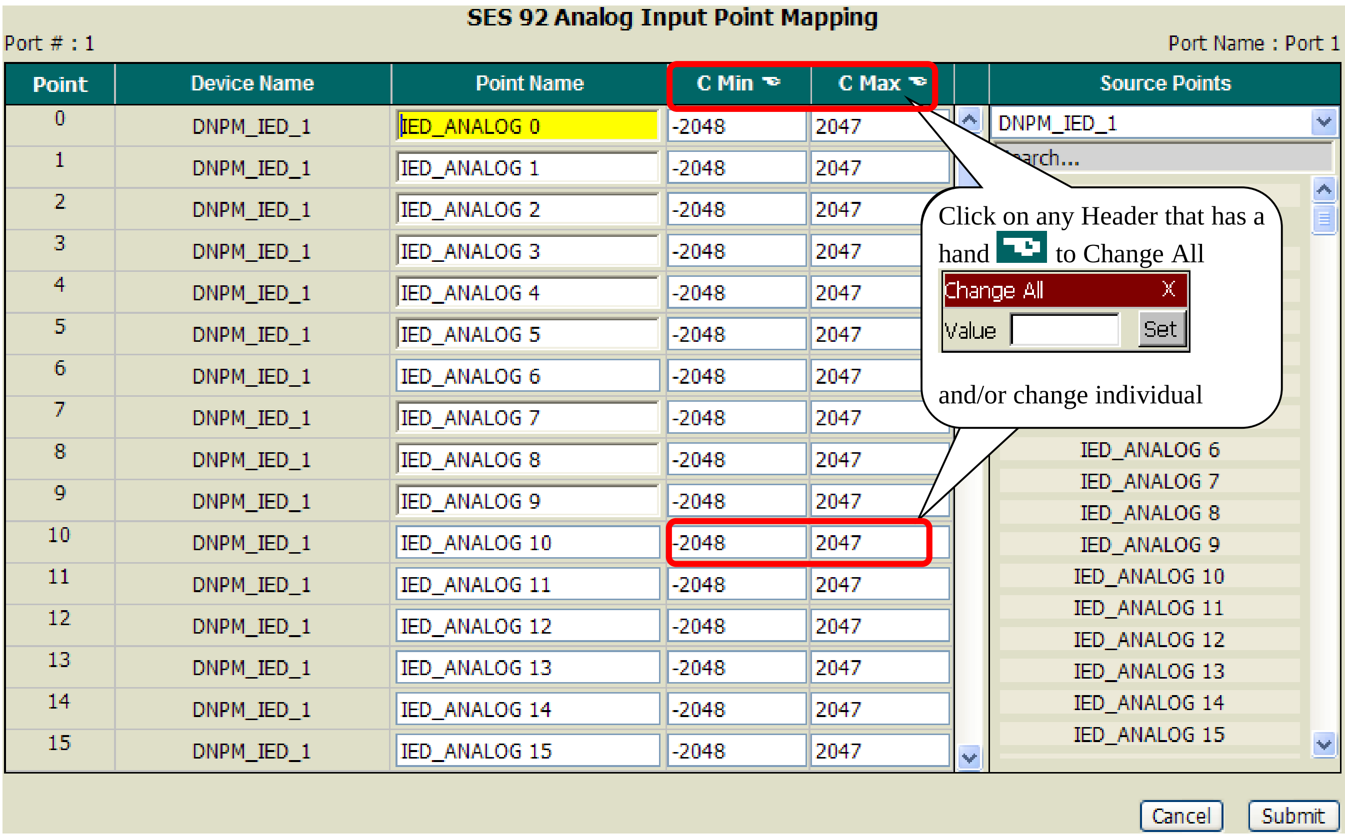
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the IED Configuration screen.

11.3.1 Map Analog Inputs

From the SES 92 Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 11-3 will appear.

Figure 11-3 Analog Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2048.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2047.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

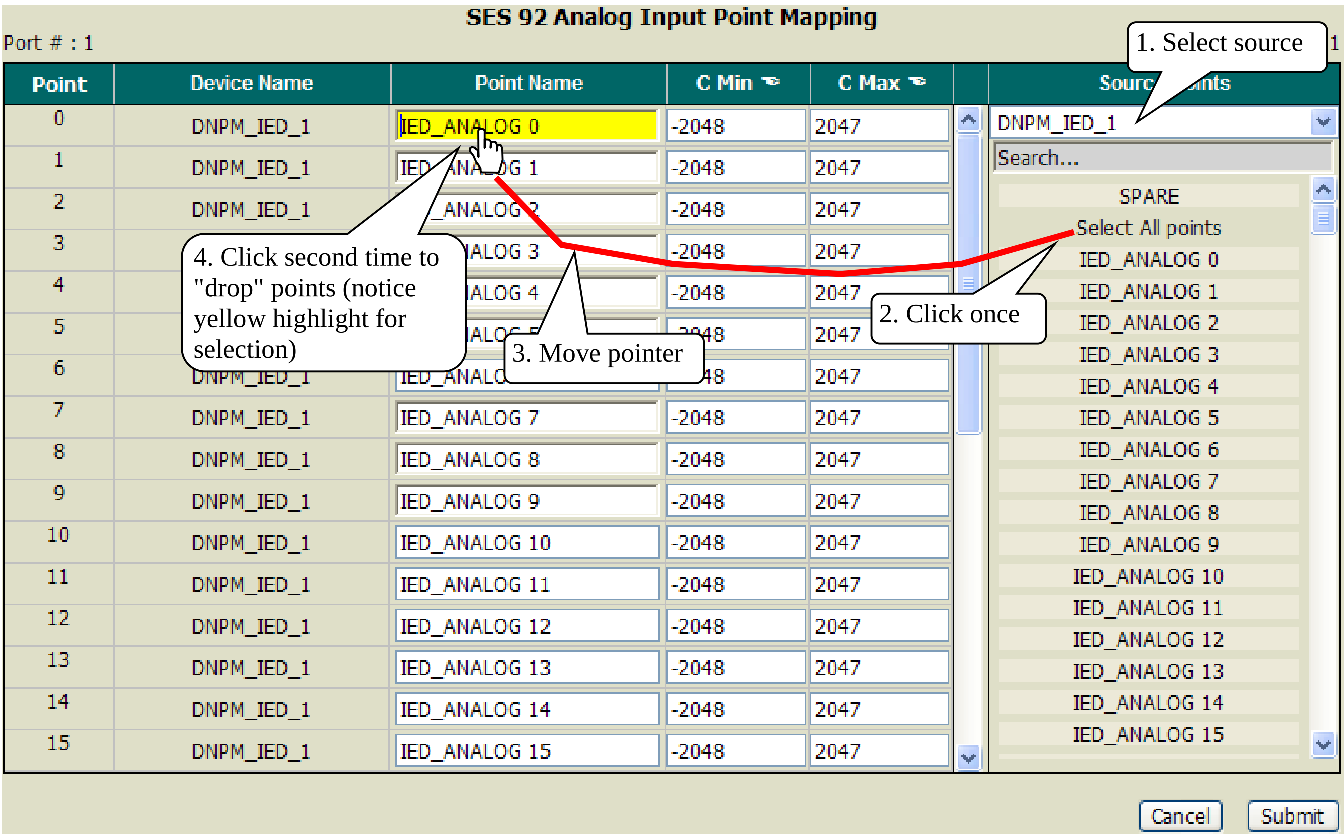
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

11.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

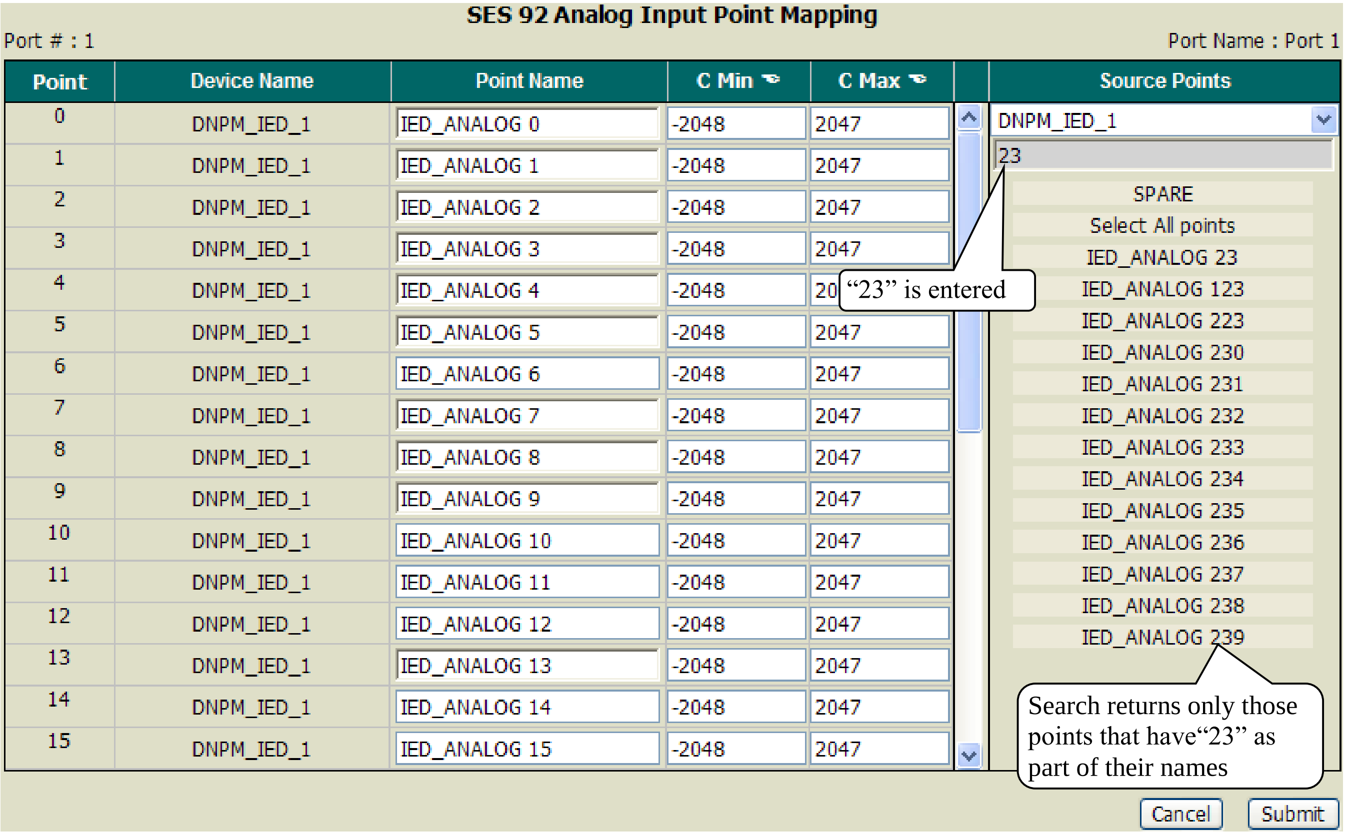
Figure 11-4 Point Mapping Highlight



11.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

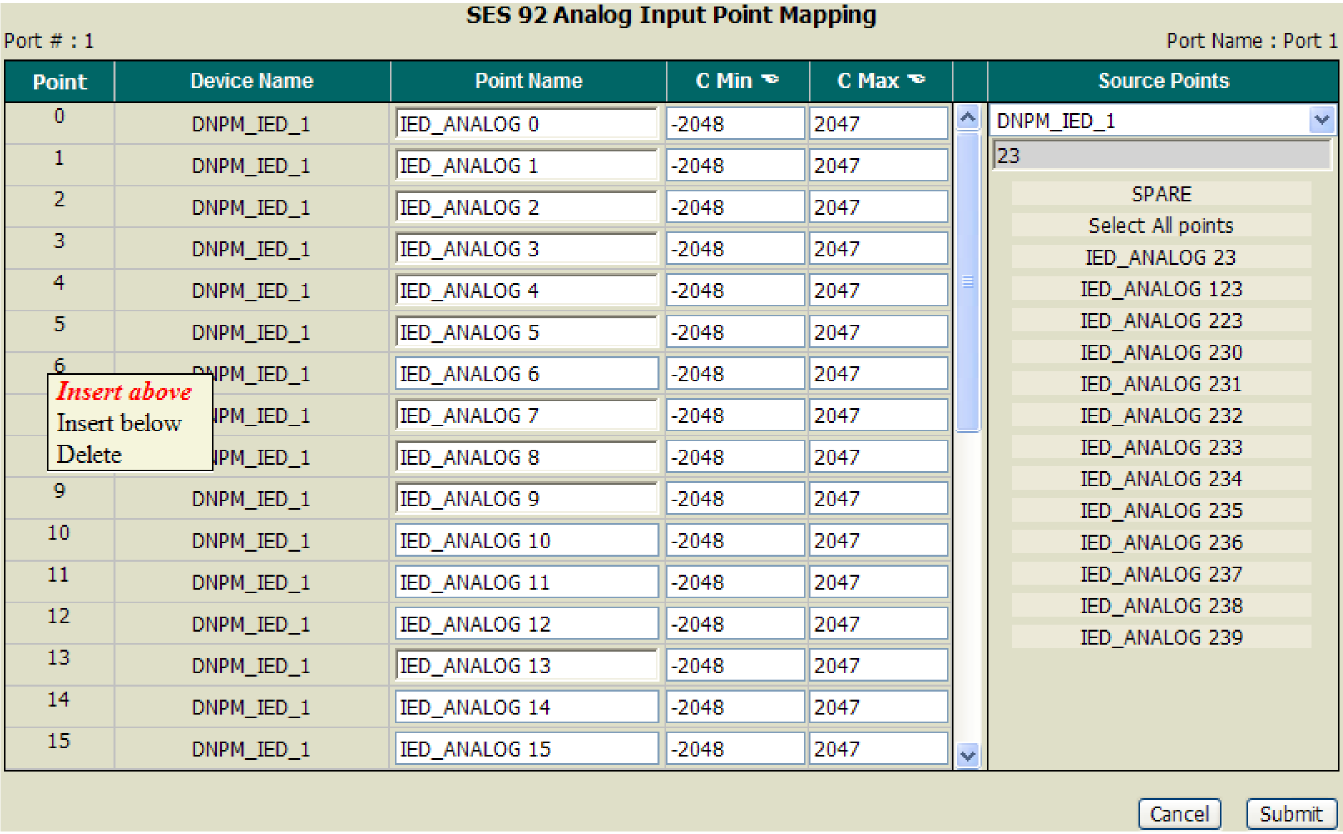
Figure 11-5 Point Database Search



11.3.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #6) and right click the mouse. The message box shown below appears. Select Insert above (or below) and left click.

Figure 11-6 Insert a Point

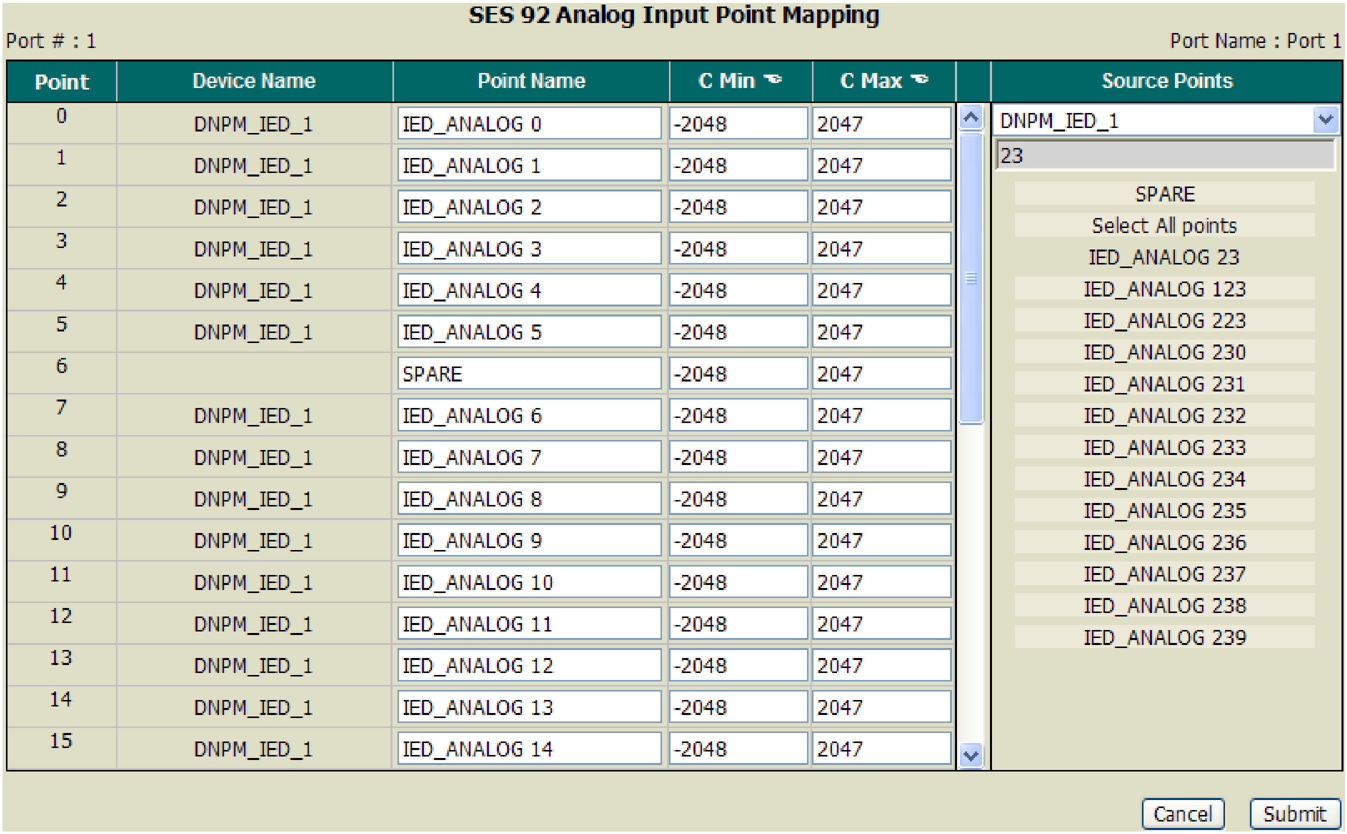


The results of Insert is shown in the next Figure. Notice that the old Point #6, IED_ANALOG 6, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 11-7 Results of Insert Above



SES 92 Analog Input Point Mapping

Port # : 1

Port Name : Port 1

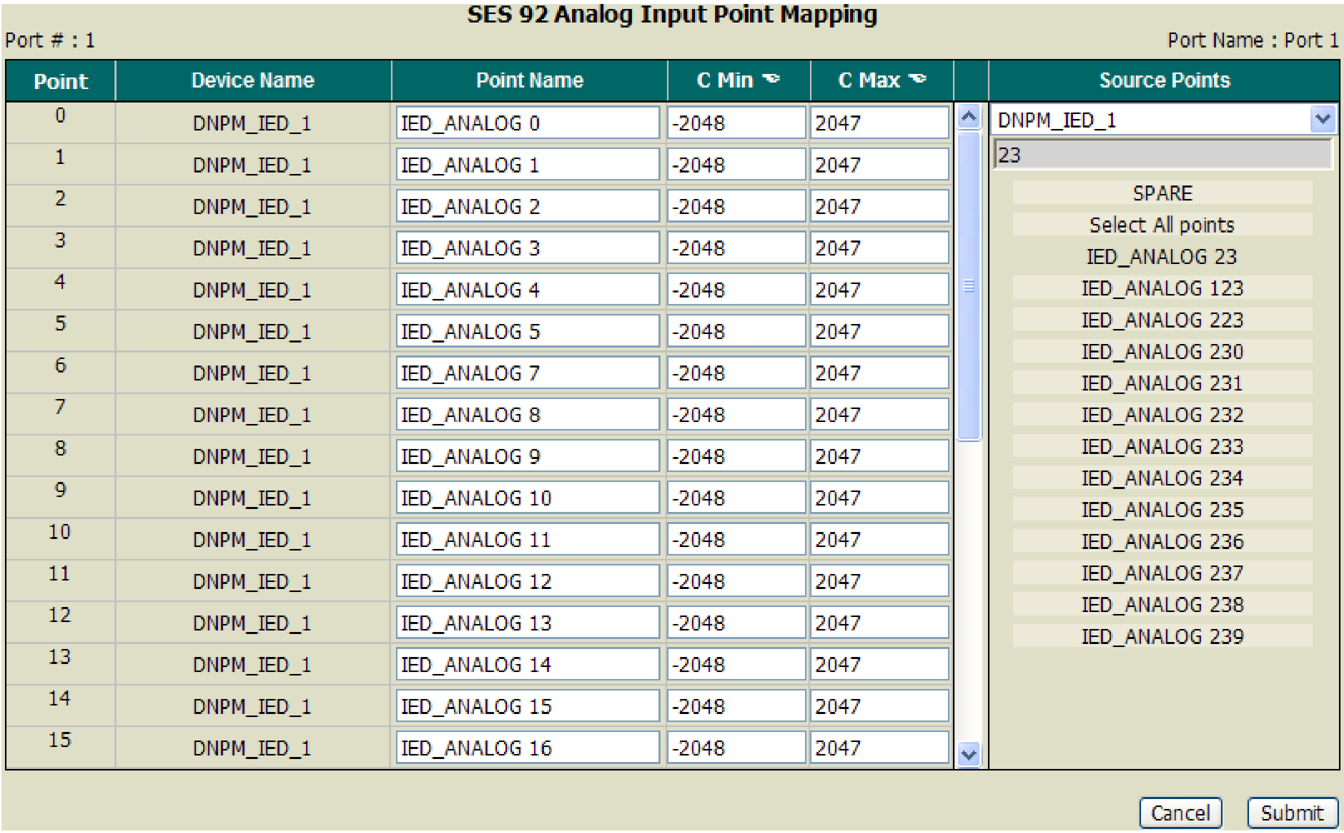
Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2048	2047
1	DNPM_IED_1	IED_ANALOG 1	-2048	2047
2	DNPM_IED_1	IED_ANALOG 2	-2048	2047
3	DNPM_IED_1	IED_ANALOG 3	-2048	2047
4	DNPM_IED_1	IED_ANALOG 4	-2048	2047
5	DNPM_IED_1	IED_ANALOG 5	-2048	2047
6		SPARE	-2048	2047
7	DNPM_IED_1	IED_ANALOG 6	-2048	2047
8	DNPM_IED_1	IED_ANALOG 7	-2048	2047
9	DNPM_IED_1	IED_ANALOG 8	-2048	2047
10	DNPM_IED_1	IED_ANALOG 9	-2048	2047
11	DNPM_IED_1	IED_ANALOG 10	-2048	2047
12	DNPM_IED_1	IED_ANALOG 11	-2048	2047
13	DNPM_IED_1	IED_ANALOG 12	-2048	2047
14	DNPM_IED_1	IED_ANALOG 13	-2048	2047
15	DNPM_IED_1	IED_ANALOG 14	-2048	2047

Source Points
DNPM_IED_1
23
SPARE
Select All points
IED_ANALOG 23
IED_ANALOG 123
IED_ANALOG 223
IED_ANALOG 230
IED_ANALOG 231
IED_ANALOG 232
IED_ANALOG 233
IED_ANALOG 234
IED_ANALOG 235
IED_ANALOG 236
IED_ANALOG 237
IED_ANALOG 238
IED_ANALOG 239

Cancel Submit

The Spare point can also be deleted. The following example shows the results of deleting Point#6, IED_ANALOG 6.

Figure 11-8 Results of Deleting a Point



SES 92 Analog Input Point Mapping

Port # : 1

Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2048	2047
1	DNPM_IED_1	IED_ANALOG 1	-2048	2047
2	DNPM_IED_1	IED_ANALOG 2	-2048	2047
3	DNPM_IED_1	IED_ANALOG 3	-2048	2047
4	DNPM_IED_1	IED_ANALOG 4	-2048	2047
5	DNPM_IED_1	IED_ANALOG 5	-2048	2047
6	DNPM_IED_1	IED_ANALOG 7	-2048	2047
7	DNPM_IED_1	IED_ANALOG 8	-2048	2047
8	DNPM_IED_1	IED_ANALOG 9	-2048	2047
9	DNPM_IED_1	IED_ANALOG 10	-2048	2047
10	DNPM_IED_1	IED_ANALOG 11	-2048	2047
11	DNPM_IED_1	IED_ANALOG 12	-2048	2047
12	DNPM_IED_1	IED_ANALOG 13	-2048	2047
13	DNPM_IED_1	IED_ANALOG 14	-2048	2047
14	DNPM_IED_1	IED_ANALOG 15	-2048	2047
15	DNPM_IED_1	IED_ANALOG 16	-2048	2047

Source Points

DNPM_IED_1

23

SPARE

Select All points

IED_ANALOG 23

IED_ANALOG 123

IED_ANALOG 223

IED_ANALOG 230

IED_ANALOG 231

IED_ANALOG 232

IED_ANALOG 233

IED_ANALOG 234

IED_ANALOG 235

IED_ANALOG 236

IED_ANALOG 237

IED_ANALOG 238

IED_ANALOG 239

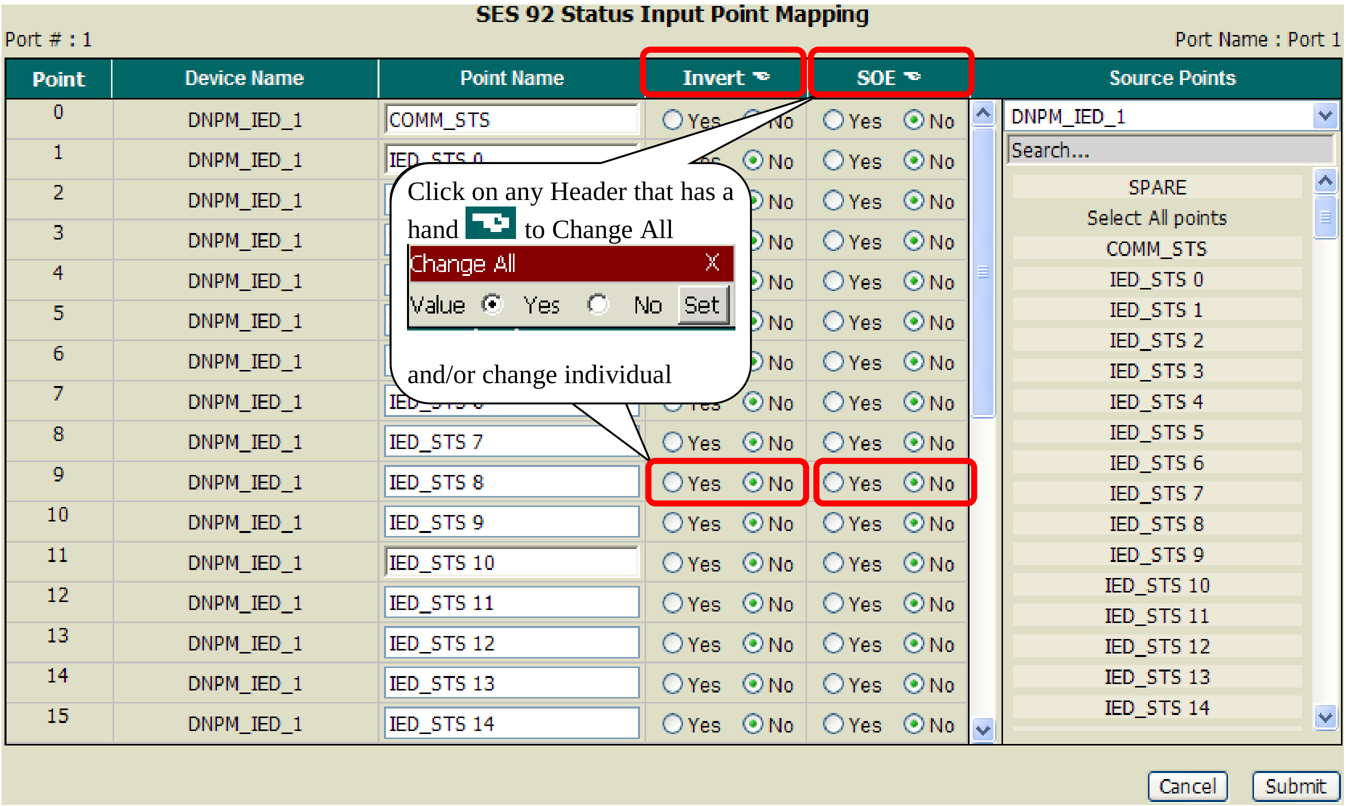
Cancel Submit

Notice that IED_ANALOG 6 is now missing, although Point numbers remain contiguous.

11.3.2 Map Status Inputs

From the Communication Mapping screen, click the MAP button for Status Inputs. A screen similar to Figure 11-9 will appear.

Figure 11-9 Status Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

SOE
Click Yes to map the point as an SOE point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

11.3.2.1 Point Mapping Highlight

See the Analog example.

11.3.2.2 Point Database Search

See the Analog example.

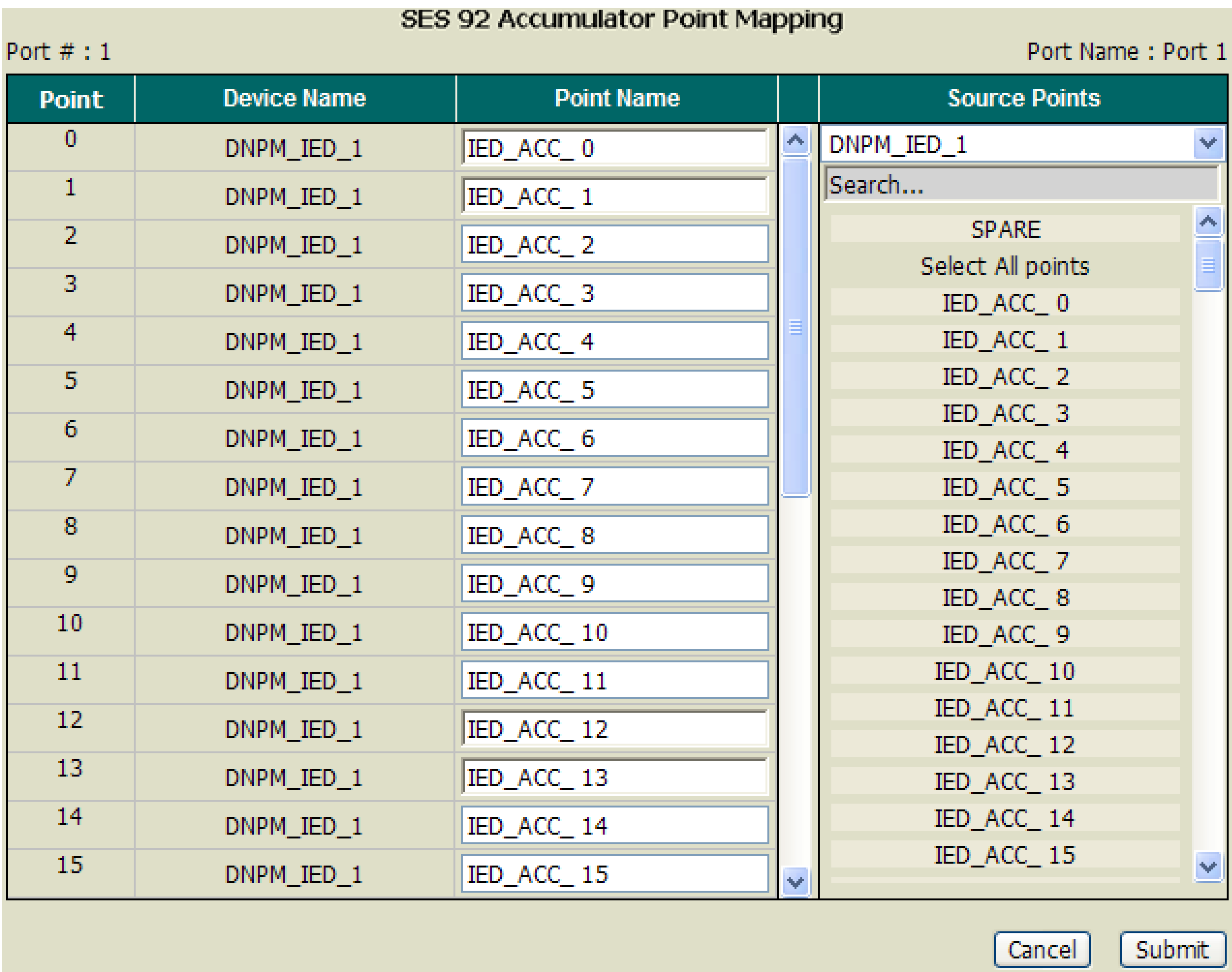
11.3.2.3 Insert & Delete Points

See the Analog example.

11.3.3 Map Accumulators

From the Communication Mapping screen, click the MAP button for Accumulators. A screen similar to Figure 11-10 will appear.

Figure 11-10 Accumulator Point Mapping



Point
The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

11.3.3.1 Point Mapping Highlight

See the Analog example.

11.3.3.2 Point Database Search

See the Analog example.

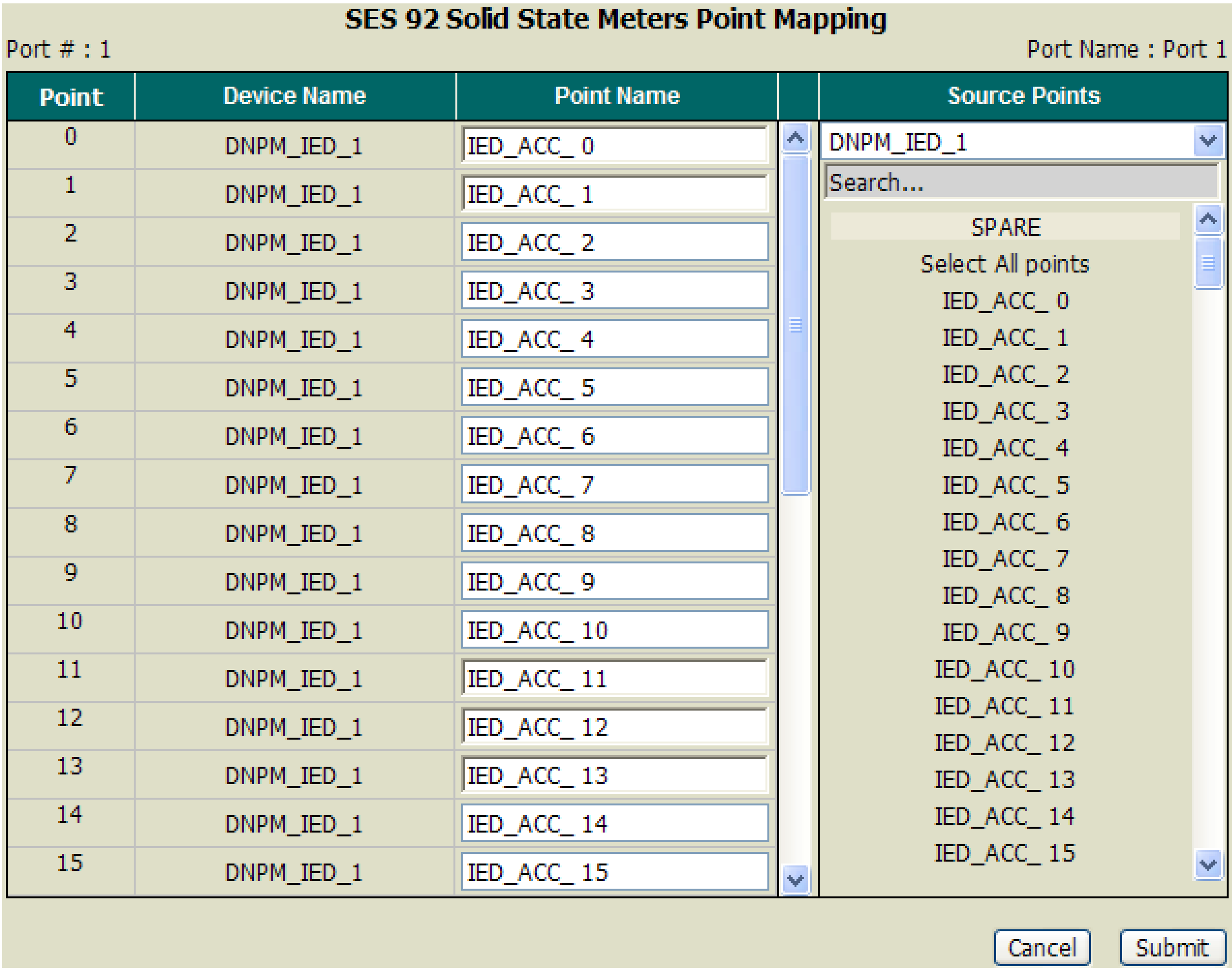
11.3.3.3 Insert & Delete Points

See the Analog example.

11.3.4 Map Solid State Meters

From the Communication Mapping screen, click the MAP button for Solid State Meters. A screen similar to Figure 11-11 will appear.

Figure 11-11 Solid State Meters Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

11.3.4.1 Point Mapping Highlight

See the Analog example.

11.3.4.2 Point Database Search

See the Analog example.

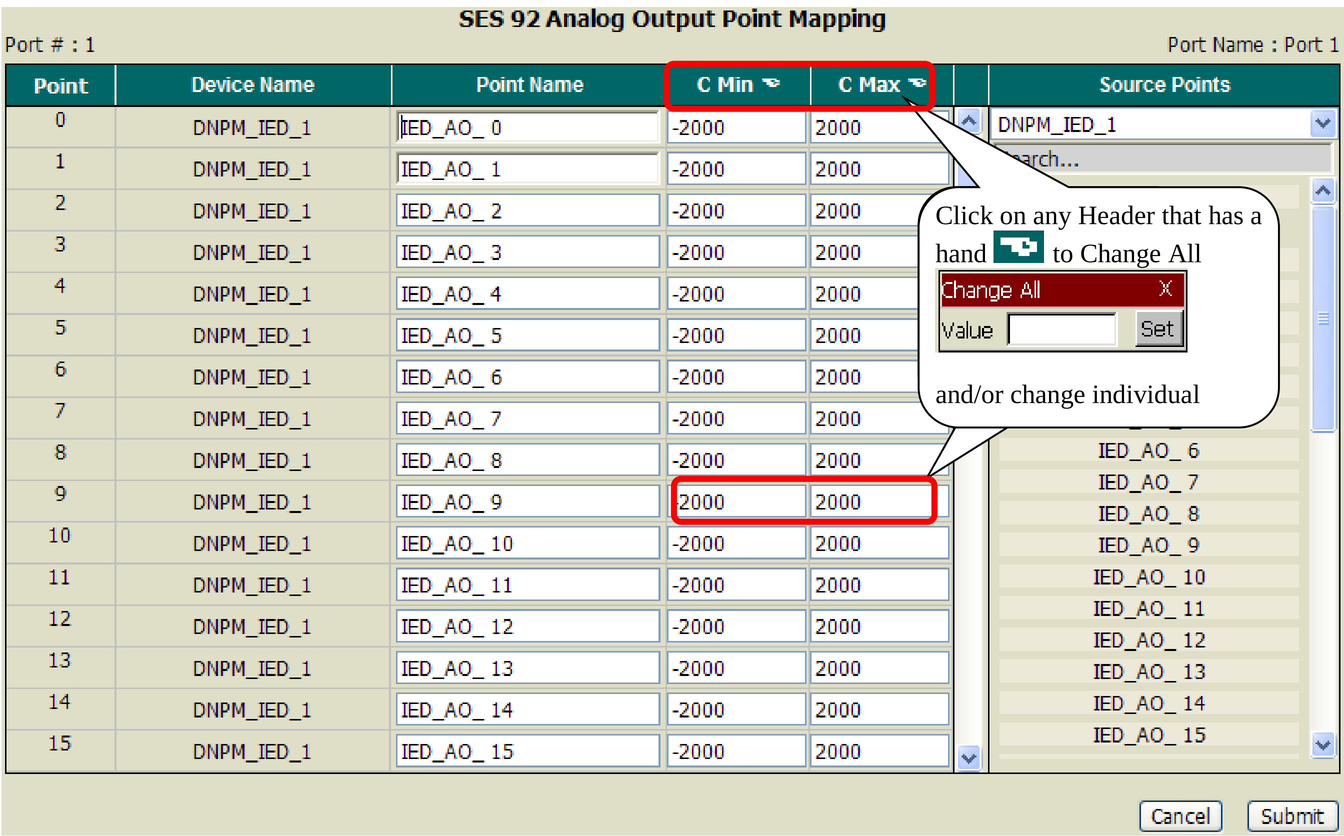
11.3.4.3 Insert & Delete Points

See the Analog example.

11.3.5 Map Analog Outputs

From the SES 92 Communication Mapping screen, click the MAP button for Analog Outputs. A screen similar to Figure 11-12.

Figure 11-12 Analog Output Point Mapping



Point

The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name

The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

11.3.5.1 Point Mapping Highlight

See the Analog example.

11.3.5.2 Point Database Search

See the Analog example.

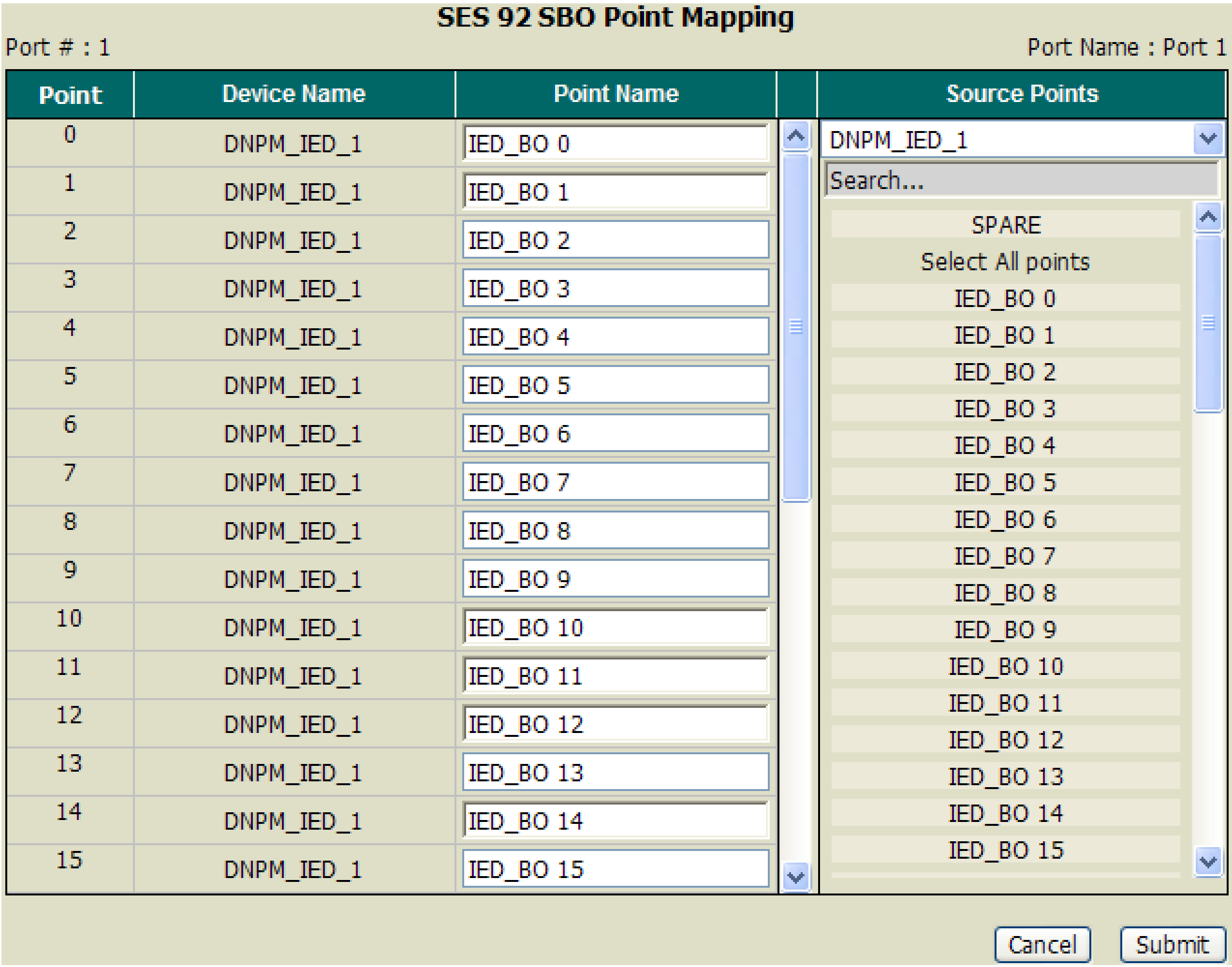
11.3.5.3 Insert & Delete Points

See the Analog example.

11.3.6 Map SBOs

From the Communication Mapping screen, click the MAP button for SBOs. A screen similar to Figure 11-13.

Figure 11-13 SBO Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

11.3.6.1 Point Mapping Highlight

See the Analog example.

11.3.6.2 Point Database Search

See the Analog example.

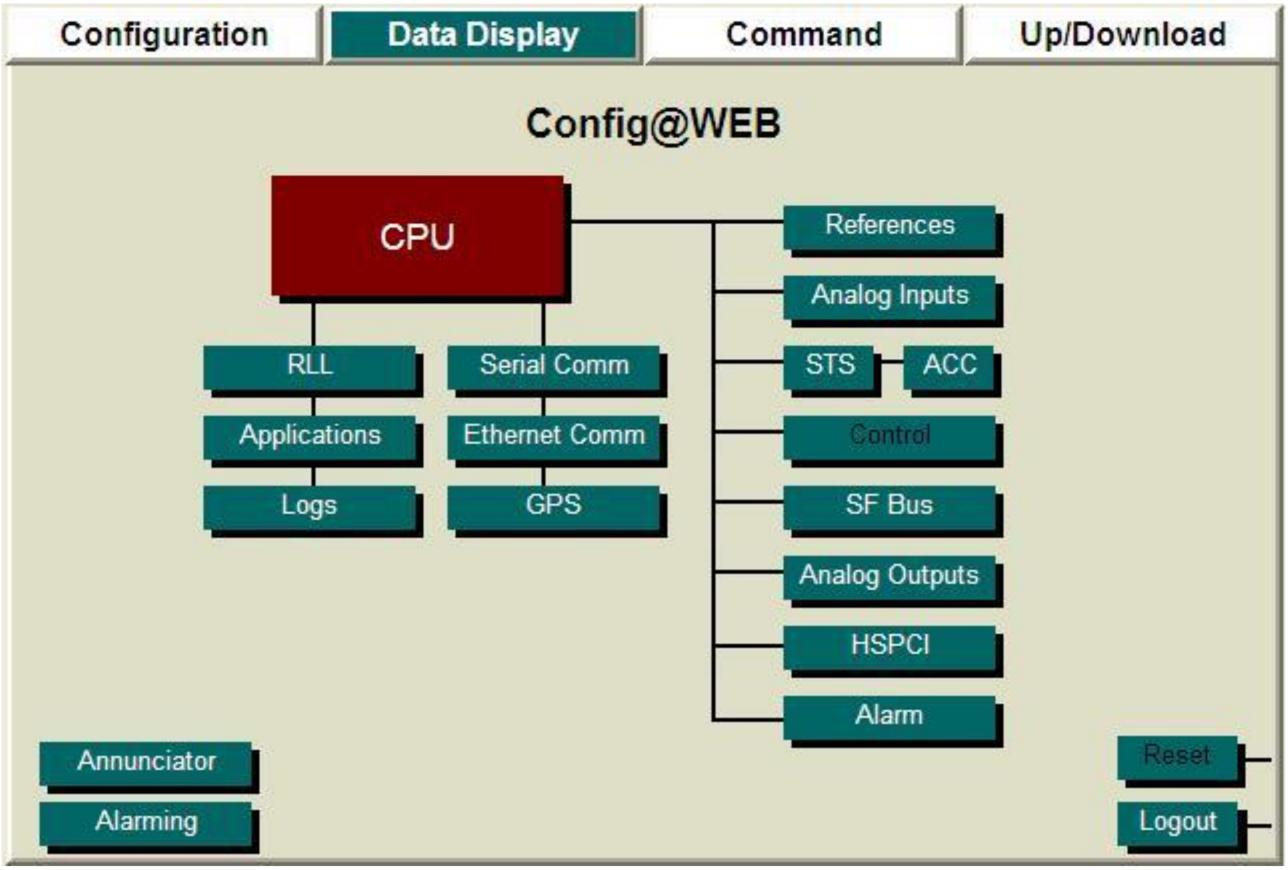
11.3.6.3 Insert & Delete Points

See the Analog example.

11.4 Data Display

Click the Data Display tab as shown in Figure 11-14.

Figure 11-14 Data Display Screen



Click Serial Comm to get the screen shown in Figure 11-15.

Figure 11-15 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	SES 92	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).

The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.

When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.

The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data

Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

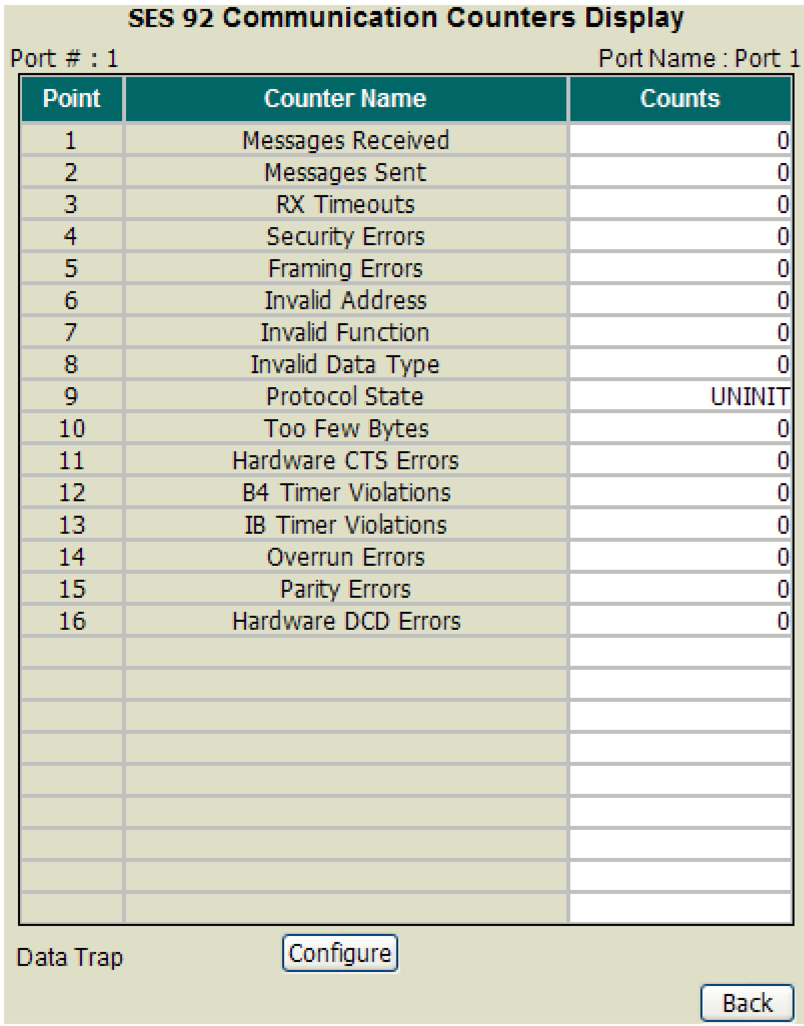
Navigation

Click the Back button to return to the previous screen.

11.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 11-16.

Figure 11-16 Communication Counters Display



SES 92 Communication Counters Display

Port # : 1 Port Name : Port 1

Point	Counter Name	Counts
1	Messages Received	0
2	Messages Sent	0
3	RX Timeouts	0
4	Security Errors	0
5	Framing Errors	0
6	Invalid Address	0
7	Invalid Function	0
8	Invalid Data Type	0
9	Protocol State	UNINIT
10	Too Few Bytes	0
11	Hardware CTS Errors	0
12	B4 Timer Violations	0
13	IB Timer Violations	0
14	Overrun Errors	0
15	Parity Errors	0
16	Hardware DCD Errors	0

Data Trap Configure

Back

Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Messages Received

This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Framing Errors

This indicates the cumulative number of received bytes with framing errors since the last reset or power-up. This can be affected by parity and MTO.

Invalid Address

This indicates the cumulative number of messages received for which the system global group address was used by the RTU address was neither the broadcast address nor the RTU ID.

Invalid Function

This field is not used for SES 92.

Invalid Data Type

This field is not used for SES 92.

Protocol State

"UNINIT" - corresponds to the UNINIT state in the SES-92 Protocol Document

"SYNC" - corresponds to the SYNCED state in the SES-92 Protocol Document

"ONLINE" - corresponds to the ONLINE state in the SES-92 Protocol Document

Too Few Bytes

This field is not used for SES 92.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

B4 Timer Violation

This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

IB Timer Violations

This indicates the cumulative number of Interbyte timer violations since the last reset or power-up. This count can be affected by the setting of the Interbyte Time in configuration.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Parity Errors

This indicates the cumulative number of parity errors since the last reset or power-up.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap
Please see the config@WEB Secure Software Users Guide.

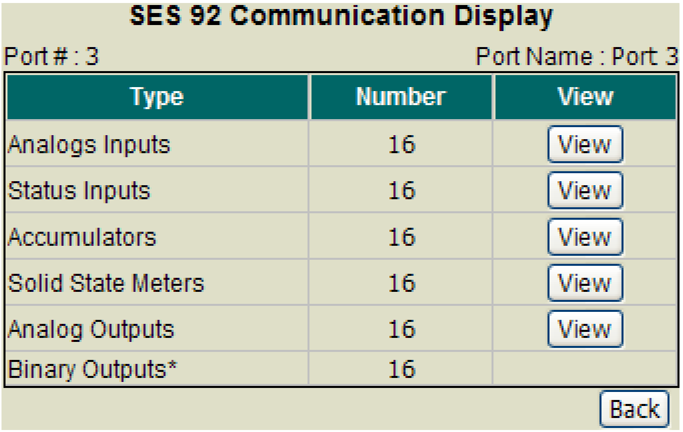
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

11.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 11-17.

Figure 11-17 Communication Display


SES 92 Communication Display

Port # : 3 Port Name : Port 3

Type	Number	View
Analogs Inputs	16	View
Status Inputs	16	View
Accumulators	16	View
Solid State Meters	16	View
Analog Outputs	16	View
Binary Outputs*	16	

Back

Type
The type of point.

Number
The number of points of each type.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

11.4.2.1 Analog Inputs

From the Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 11-18.

Figure 11-18 Analog Inputs Display

SES 92 Analog Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	References	bb_gnd_ref		-0.001	0
1	References	bb_+5.0V_ref		5.000	2046
2	References	bb_+4.5V_ref		4.499	1841
3	References	bb_-4.5V_ref		-4.499	-1841
4	References	bb_temp_ref		74.127	-1445
5	References	bb_dc_in		23.496	419
6	Hardware Analogs	ANALOG 1		0.000	0
7	Hardware Analogs	ANALOG 2		0.000	0
8	Hardware Analogs	ANALOG 3		0.000	0
9	Hardware Analogs	ANALOG 4		0.000	0
10	Hardware Analogs	ANALOG 5		0.000	0
11	Hardware Analogs	ANALOG 6		0.000	0
12	Hardware Analogs	ANALOG 7		0.000	0
13	Hardware Analogs	ANALOG 8		0.000	0
14	References	Ground		0.000	0
15	References	Ground		0.000	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

11.4.2.2 Status Inputs

From the Communication Display screen, click View for Status Inputs to get the screen shown in Figure 11-19.

Figure 11-19 Status Inputs Display

SES 92 Status Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To [Go] Next>>

Point	Device Name	Point Name	Point Status	Point State	●
0	DNPM_IED_1	COMM_STS		CLOSE	●
1	DNPM_IED_1	IED_STS 0	F	OPEN	●
2	DNPM_IED_1	IED_STS 1	F	OPEN	●
3	DNPM_IED_1	IED_STS 2	F	OPEN	●
4	DNPM_IED_1	IED_STS 3	F	OPEN	●
5	DNPM_IED_1	IED_STS 4	F	OPEN	●
6	DNPM_IED_1	IED_STS 5	F	OPEN	●
7	DNPM_IED_1	IED_STS 6	F	OPEN	●
8	DNPM_IED_1	IED_STS 7	F	OPEN	●
9	DNPM_IED_1	IED_STS 8	F	OPEN	●
10	DNPM_IED_1	IED_STS 9	F	OPEN	●
11	DNPM_IED_1	IED_STS 10	F	OPEN	●
12	DNPM_IED_1	IED_STS 11	F	OPEN	●
13	DNPM_IED_1	IED_STS 12	F	OPEN	●
14	DNPM_IED_1	IED_STS 13	F	OPEN	●
15	DNPM_IED_1	IED_STS 14	F	OPEN	●

[Back]

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

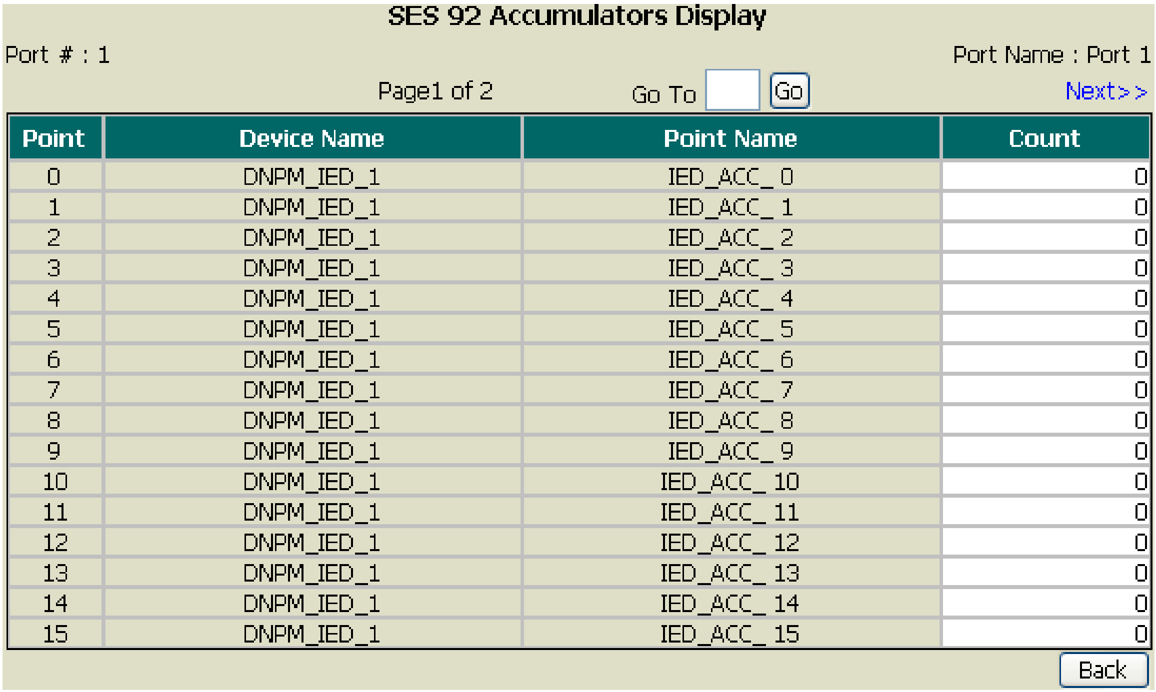
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

11.4.2.3 Accumulator Inputs

From the Communication Display screen, click View for Accumulators to get the screen shown below.

Figure 11-20 Accumulators Display


SES 92 Accumulators Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To Go Next>>

Point	Device Name	Point Name	Count
0	DNPM_IED_1	IED_ACC_ 0	0
1	DNPM_IED_1	IED_ACC_ 1	0
2	DNPM_IED_1	IED_ACC_ 2	0
3	DNPM_IED_1	IED_ACC_ 3	0
4	DNPM_IED_1	IED_ACC_ 4	0
5	DNPM_IED_1	IED_ACC_ 5	0
6	DNPM_IED_1	IED_ACC_ 6	0
7	DNPM_IED_1	IED_ACC_ 7	0
8	DNPM_IED_1	IED_ACC_ 8	0
9	DNPM_IED_1	IED_ACC_ 9	0
10	DNPM_IED_1	IED_ACC_ 10	0
11	DNPM_IED_1	IED_ACC_ 11	0
12	DNPM_IED_1	IED_ACC_ 12	0
13	DNPM_IED_1	IED_ACC_ 13	0
14	DNPM_IED_1	IED_ACC_ 14	0
15	DNPM_IED_1	IED_ACC_ 15	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Please note: These values will only update when the accumulators are frozen.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

11.4.2.4 Solid State Meters

From the Communication Display screen, click View for Solid State Meters to get the screen shown below.

Figure 11-21 Solid State Meters Display

SES 92 Solid State Meters Display

Port # : 3 Port Name : Port 3

Page1 of 1 Go To [ ] Go

Point	Device Name	Point Name	Count
0	DNPM_IED_1	IED_ACC_ 0	0
1	DNPM_IED_1	IED_ACC_ 1	0
2	DNPM_IED_1	IED_ACC_ 2	0
3	DNPM_IED_1	IED_ACC_ 3	0
4	DNPM_IED_1	IED_ACC_ 4	0
5	DNPM_IED_1	IED_ACC_ 5	0
6	DNPM_IED_1	IED_ACC_ 6	0
7	DNPM_IED_1	IED_ACC_ 7	0
8	DNPM_IED_1	IED_ACC_ 8	0
9	DNPM_IED_1	IED_ACC_ 9	0
10	DNPM_IED_1	IED_ACC_ 10	0
11	DNPM_IED_1	IED_ACC_ 11	0
12	DNPM_IED_1	IED_ACC_ 12	0
13	DNPM_IED_1	IED_ACC_ 13	0
14	DNPM_IED_1	IED_ACC_ 14	0
15	DNPM_IED_1	IED_ACC_ 15	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Please note: These values will only update when the accumulators are frozen.

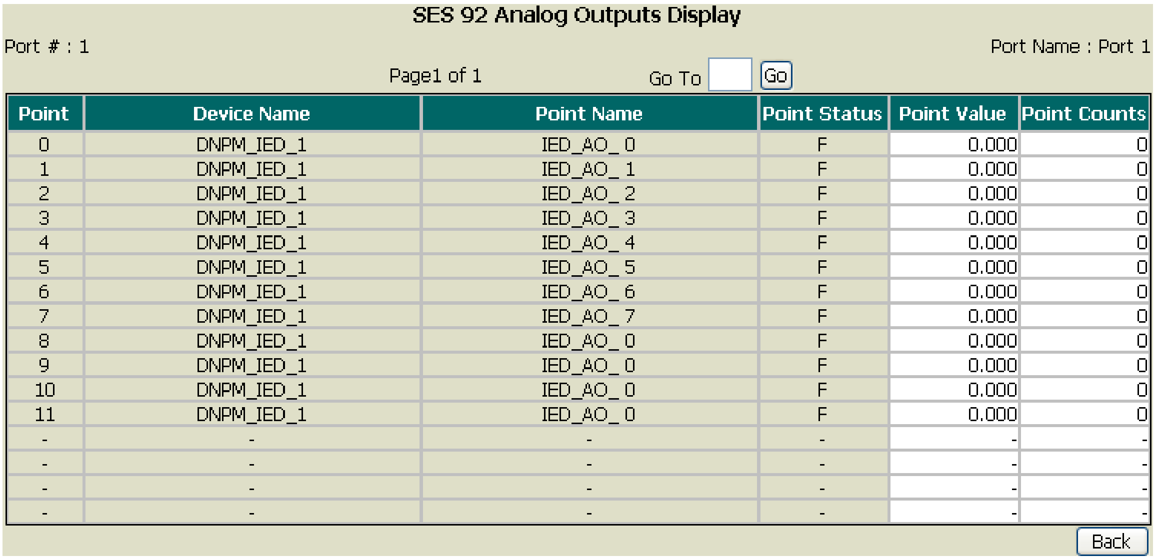
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

11.4.2.5 Analog Outputs

From the Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 11-22.

Figure 11-22 SES-92 Analog Outputs Display



SES 92 Analog Outputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	DNPM_IED_1	IED_AO_ 0	F	0.000	0
1	DNPM_IED_1	IED_AO_ 1	F	0.000	0
2	DNPM_IED_1	IED_AO_ 2	F	0.000	0
3	DNPM_IED_1	IED_AO_ 3	F	0.000	0
4	DNPM_IED_1	IED_AO_ 4	F	0.000	0
5	DNPM_IED_1	IED_AO_ 5	F	0.000	0
6	DNPM_IED_1	IED_AO_ 6	F	0.000	0
7	DNPM_IED_1	IED_AO_ 7	F	0.000	0
8	DNPM_IED_1	IED_AO_ 0	F	0.000	0
9	DNPM_IED_1	IED_AO_ 0	F	0.000	0
10	DNPM_IED_1	IED_AO_ 0	F	0.000	0
11	DNPM_IED_1	IED_AO_ 0	F	0.000	0
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value. This value is calculated based on the EGU min and EGU max settings for the target analog output point along with the current binary count sent from the master station.

Point Counts
The binary counts being sent from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

12 L&N C300/C2020/C3000

12.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

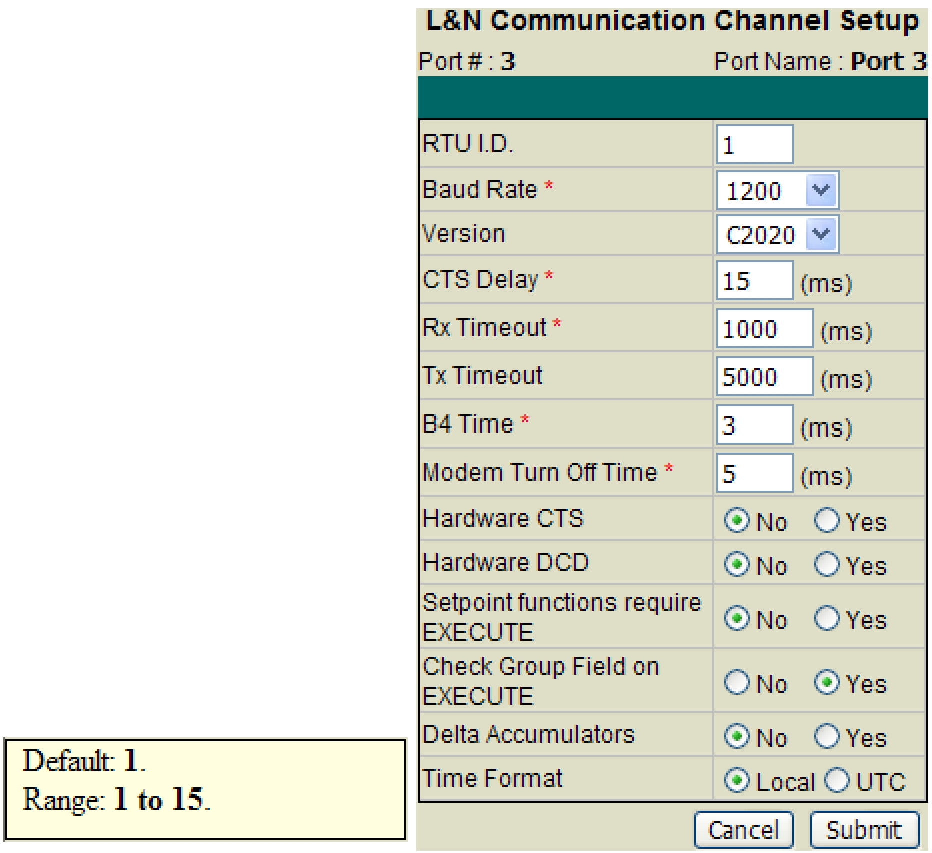
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

12.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 12-1.

Figure 12-1 Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D.   (1 – 15)

Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Note that multi-ported RTUs may have distinct station IDs on each channel. Default setting is 1.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 1200.

Version (C300, C2020, C3000)
Select the Conitel protocol version for the associated channel. Default setting is C2020.

CTS Delay (0 – 1000ms)
Enter the Clear-To-Send (CTS) Delay in milliseconds for the associated channel. This is the delay of time the channel will wait to start transmitting following Request-To-Send being asserted. The default setting is 15.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 1000 (1 seconds).

Tx Timeout (0 – 30,000ms)
Enter the transmit timeout for the associated channel. This value limits the maximum transmission time from the RTU to the master. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 3.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 5.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data frames only if carrier is detected by the modem. If carrier is not detected, the data frames are discarded. Default setting is No.

Setpoint functions require EXECUTE (No, Yes)
Set to Yes if the Setpoint A and Setpoint B functions need to do a select-before-operate functionality for compatibly with the master station. Set to No if the RTU is to treat the Setpoint A and Setpoint B functions as immediate operate functions. Default setting is No.

Check Group Field on EXECUTE (No, Yes)
Enter Yes if the Group Field of the A section of the EXECUTE function (function code 1) is to be compared to the Group Field received from the TRIP (function code 2) or CLOSE (function code 4) and if **Setpoint functions require EXECUTE** is set to Yes, SETPOINT A (function code 3), or SETPOINT B (function code 5). If this flag is set to Yes, and the group fields of the select function and the EXECUTE function match, the control operation will be performed. If the group fields do not match, the selection will be canceled.

If this flag is set to No, any value in the EXECUTE function group field will be accepted with no comparison done to the group field sent with the select function before the control operation is performed.

In either case, the RTU will transmit an echo of the A and B sections of the EXECUTE function it received from the Master Station. Default setting is Yes.

Delta Accumulators (No, Yes)

Default setting is No.

Objective

To allow a status point on a Schneider Electric RTU to represent an accumulator freeze or freeze and reset command to the L&N Conitel protocol.

Description

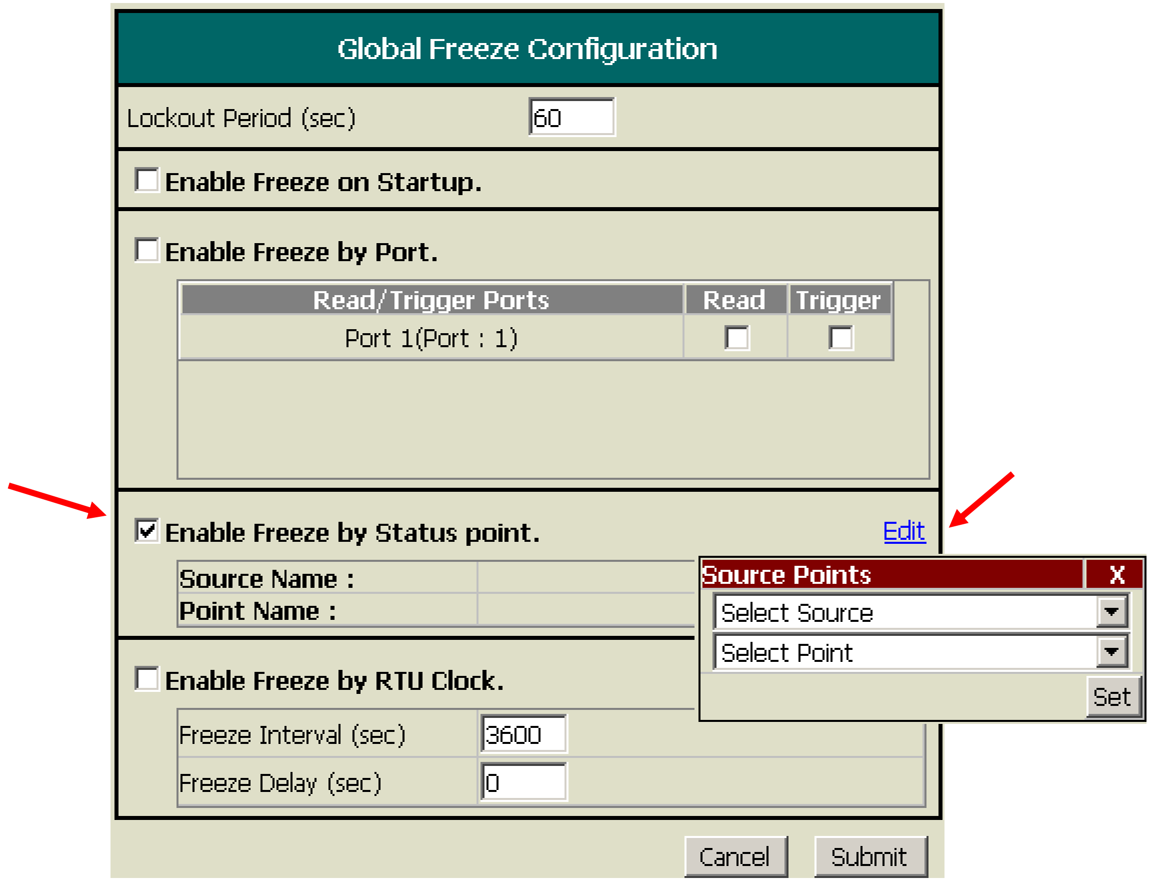
A configurable status point can be used to allow external control of the accumulator freeze/reset functionality of the Conitel protocol. The status point and the delta (freeze and reset) accumulator option are both configured using the RTU GUI.

The master station will still have full functionality of sending freeze and freeze with reset commands to the RTU via the Conitel protocol.

Configuration

Select No for a FREEZE or Yes for a FREEZE and RESET. This will allow the application to know what type of freeze you want whenever the configured status point goes to "close". To configure the status point, from the main configuration screen, select CPU. At the bottom right hand corner select "Edit" on Global Freeze Configuration. On the Global Freeze Configuration screen, select Enable Freeze by Status point. Then select "Edit" to select the status source and point to be used as the freeze trigger. See below.

Figure 12-2 Global Freeze Configuration



Time Format (Local, UTC)

Note: The coordination between UTC and local time is a feature that may be ignored. If you want your RTU to act as it always has in regards to time syncs, set Time Format to Local Time. See Time Configuration Settings in the Configuration chapter of the hardware manual for time settings under the CPU block.

If you want time synchronization from the master, you must know whether the master is sending Local time or UTC time, then set this radio button to match the master's format.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

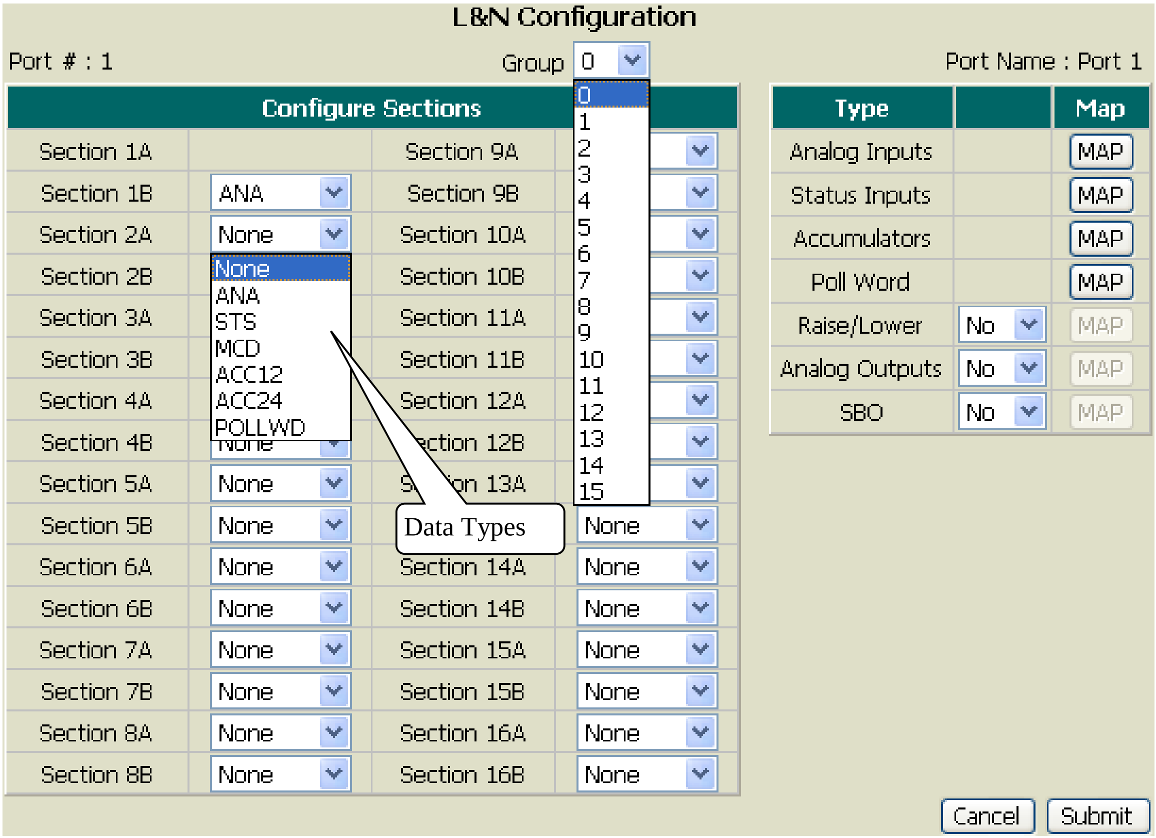
Please note: No configuration changes take effect until the RTU is reset.

12.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 12-3 will appear. The screen is shown with both the Group drop-down menu and the point-type drop-down menus in view.

After selecting a Group number and data type for each Section, the data points for this group may be mapped on the right side of this screen.

Figure 12-3 L&N Configuration Mapping



Configure Sections

Section

Each configurable Section represents 12 bits of data. A section could be one 12-bit analog, 12 status points, six 2-bit MCD points, one 12-bit accumulator, the upper 12 bits of a 24-bit accumulator, or a poll word.

ANA

Analog Inputs, 12-bit. Uses one section. See Analog Inputs MAP function.

STS

Status, 1-bit. Twelve status points will fit in one section. See Status Inputs MAP function.

MCD

Multiple Change Detect, 2-bit. Six MCD points will fit in one section. See Status MAP function.

ACC12

Accumulator, 12-bit. The 12-bit accumulator (ACC12) may be configured in either the A section or the B section. See Accumulator MAP function.

ACC24

Accumulator, 24-bit. The 24-bit accumulator (ACC24) may be configured in section A only. This accumulator will automatically take up both the A section and B section of a frame. See Accumulator MAP function.

POLL WD

Poll Word. Tells the state of the frame. See Poll Word MAP function.

Type
The different types of I/O points supported by this protocol.

Map
Click the MAP button to map the sections configured for this group.

Navigation

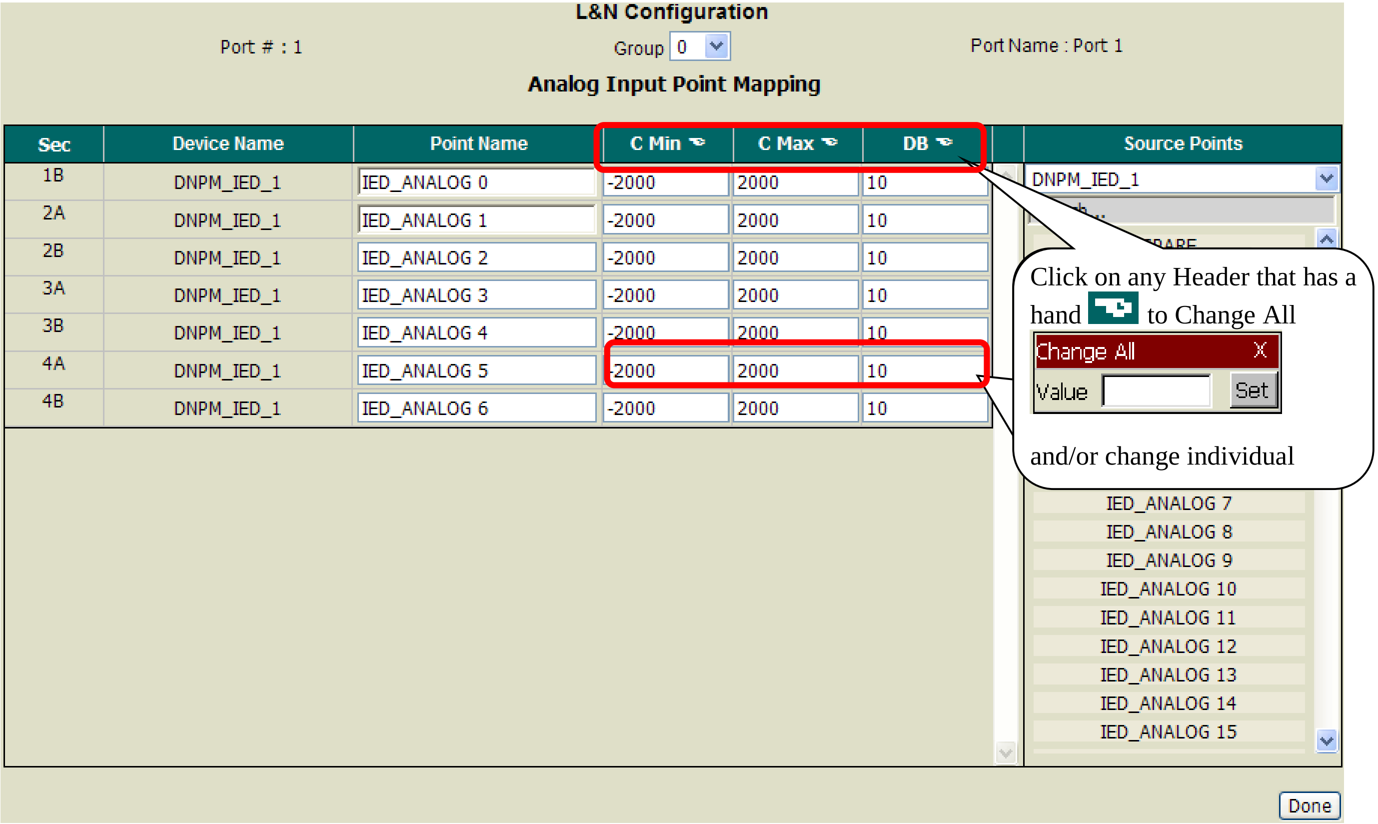
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

12.3.1 Map Analog Inputs

From the L&N Configuration screen, click the MAP button for Analog Inputs. A screen similar to Figure 12-4 will appear.

Figure 12-4 Analog Input Point Mapping



Sec
Section. The section location in the Group Scan response to be mapped.

Dev Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min

Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max

Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

DB

Deadband counts for each enabled Analog Input are used to limit exception reporting of analog inputs to significant changes. The deadband counts apply to the counts sent to the master. For instance, a deadband of 41 when sending -2048 to +2047 counts is 1%. If you send a count range of 65,534 (+/- 32,767) 1% equals 655 counts. Enter the analog deadband value. Default setting is 10.

Source Points

Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

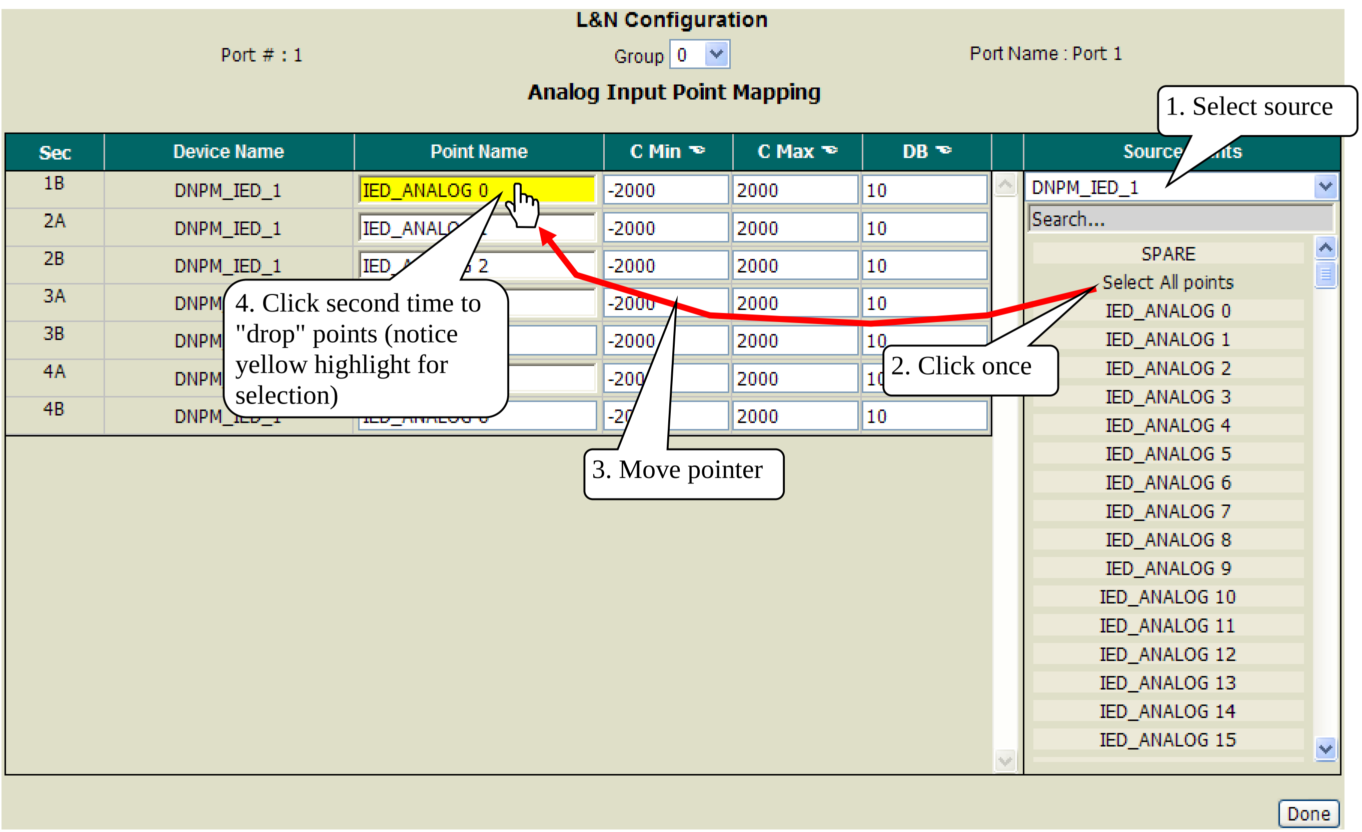
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

12.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

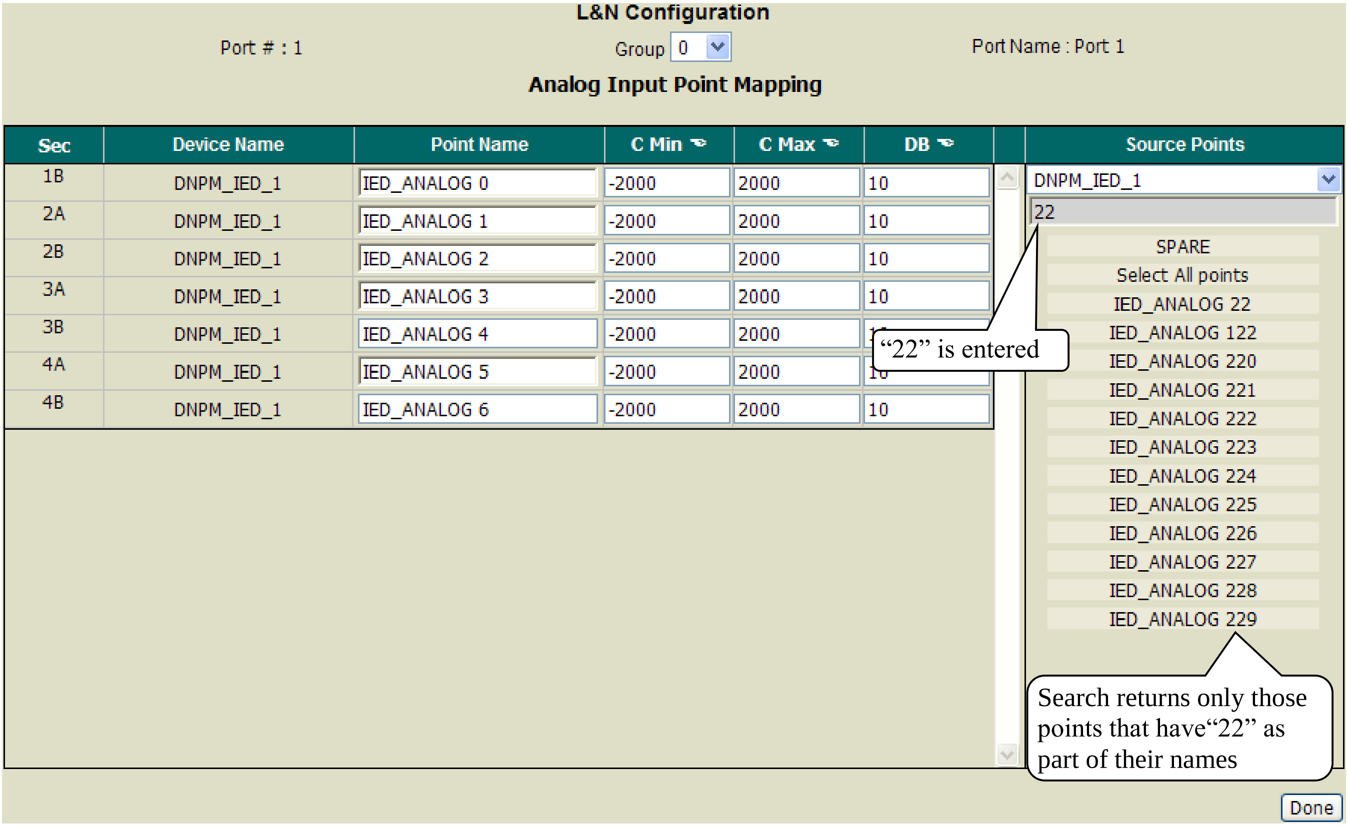
Figure 12-5 Point Mapping Highlight



12.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

Figure 12-6 Point Database Search



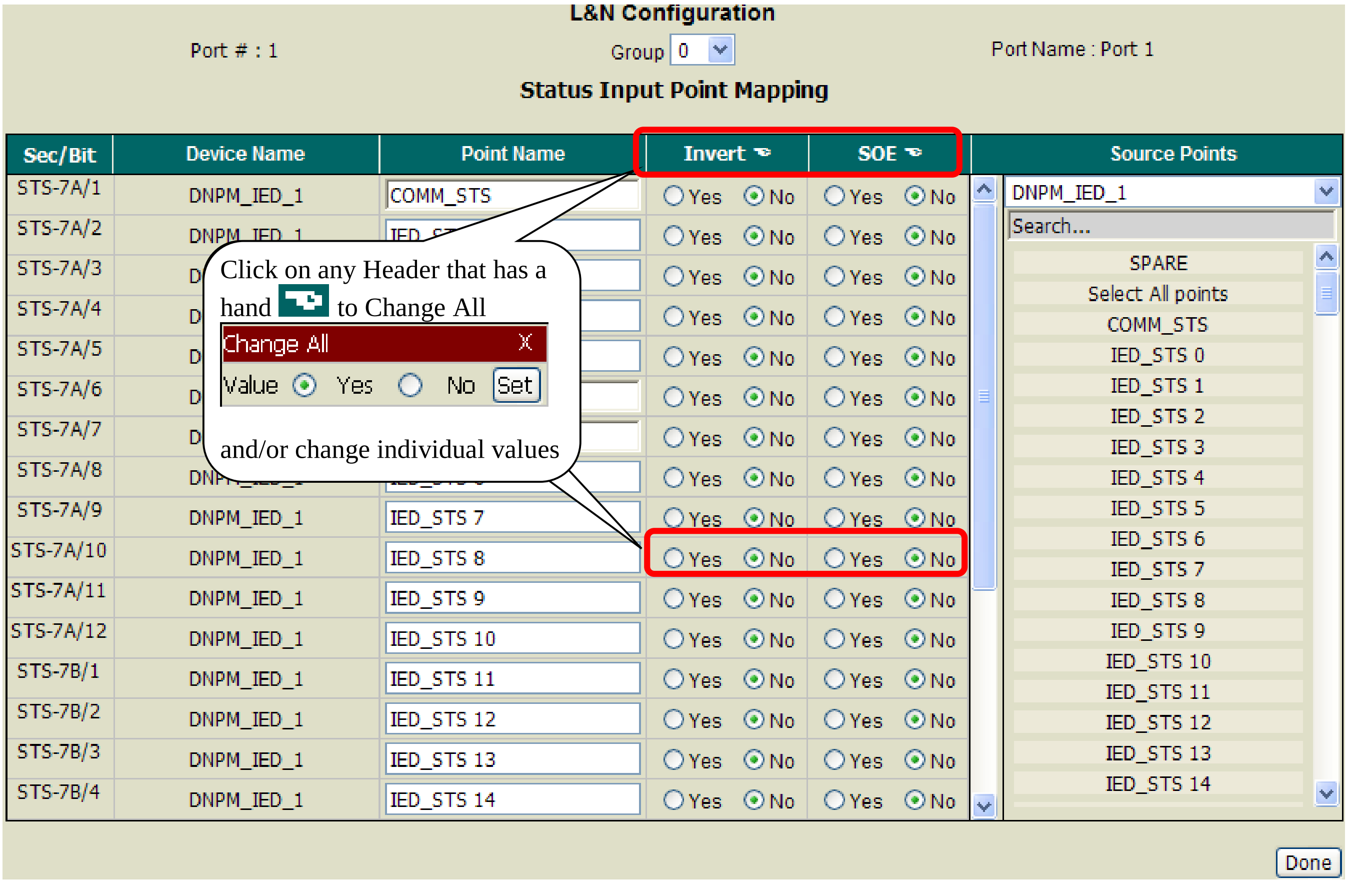
12.3.1.3 Insert & Delete Points

Insert & Delete not applicable to L&N C300/C2020/C3000 protocol.

12.3.2 Map Status Inputs

From the L&N Configuration screen, click the MAP button for Status and MCD Inputs. A screen similar to Figure 12-7 will appear.

Figure 12-7 Status/SOE Input Point Mapping



Sec/Bit
The type of point (STS/MCD) and the Section number followed by the bit number within the section.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point for both status and SOE (if enabled). The default is No.

SOE (C300 and C3000 only)
Click Yes to assign the point as an SOE point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

12.3.2.1 Point Mapping Highlight

See the Analog Input example.

12.3.2.2 Point Database Search

See the Analog Input example.

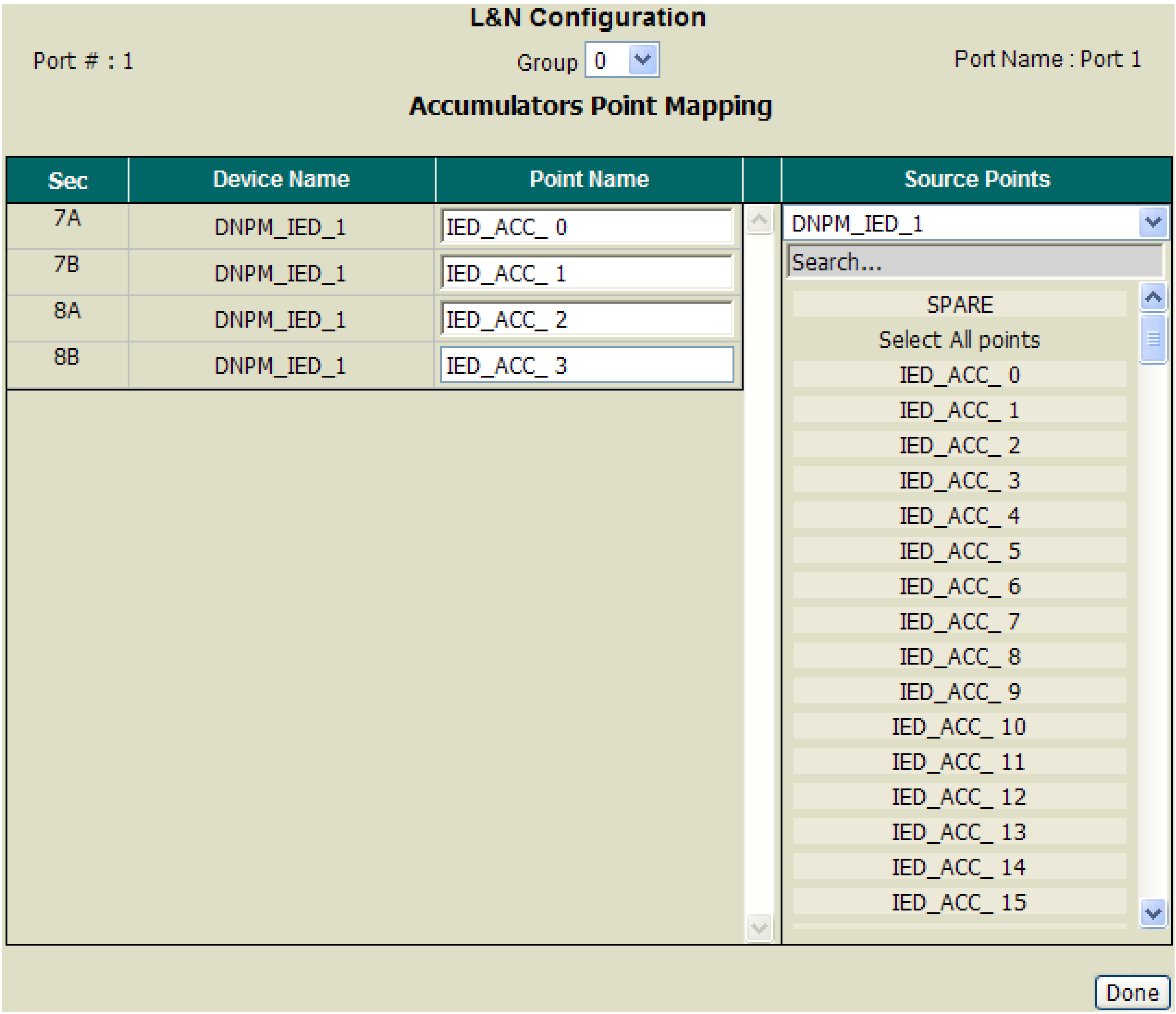
12.3.2.3 Insert & Delete Points

Insert & Delete not applicable to L&N C300/C2020/C3000 protocol.

12.3.3 Map Accumulators

From the L&N Configuration screen, click the MAP button for Accumulators. A screen similar to Figure 12-8 will appear.

Figure 12-8 Accumulator Point Mapping



Sec
The Section number. Section A could be 12-bit or 24-bit. Section B can be only 12-bit. For 24 bit accumulators, only the A section will appear to be mapped.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

12.3.3.1 Point Mapping Highlight

See the Analog Input example.

12.3.3.2 Point Database Search

See the Analog Input example.

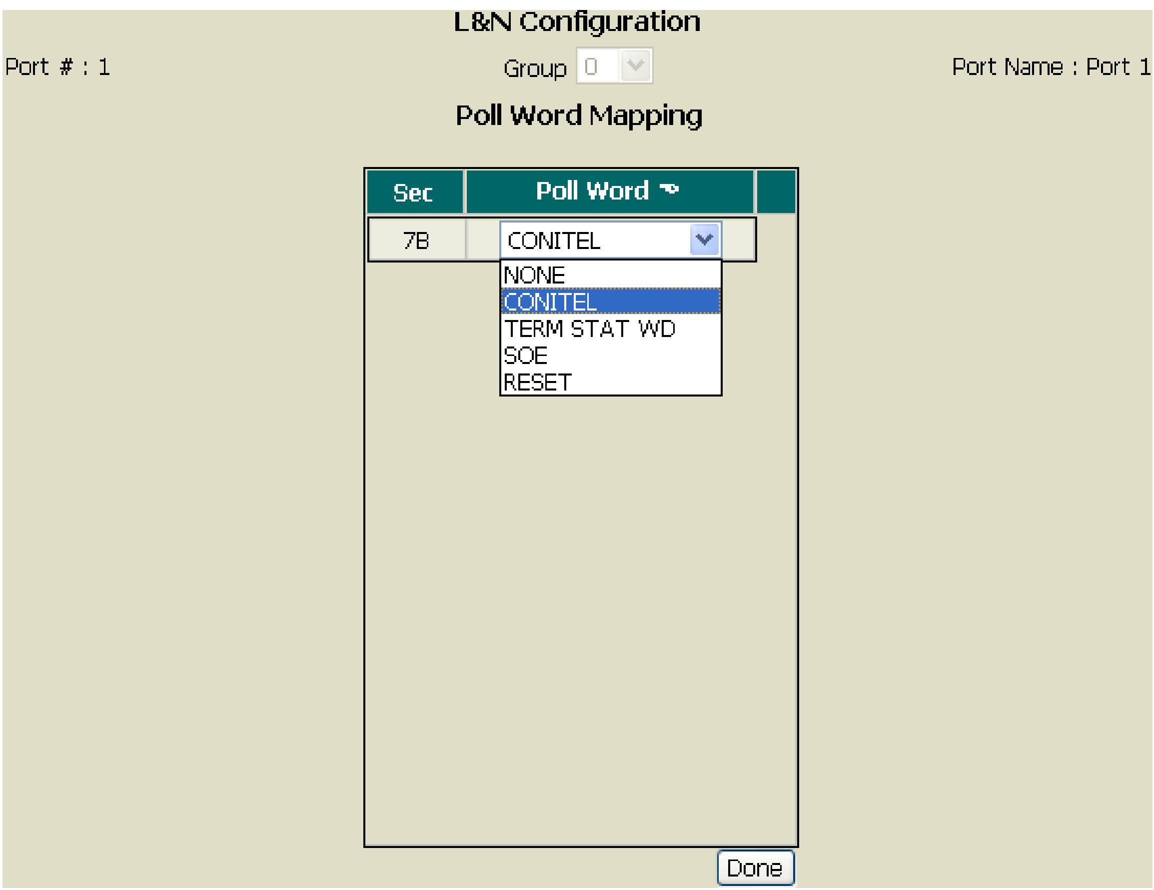
12.3.3.3 Insert & Delete Points

Insert & Delete not applicable to L&N C300/C2020/C3000 protocol.

12.3.4 Map Poll Word

From the L&N Configuration screen, click the MAP button for Poll Word. A screen similar to Figure 12-9 will appear.

Figure 12-9 Poll Word Mapping



Sec
Section. The section location in the Group Scan response to be mapped.

Poll Word

Poll Word. Tells the state of the frame.

Navigation

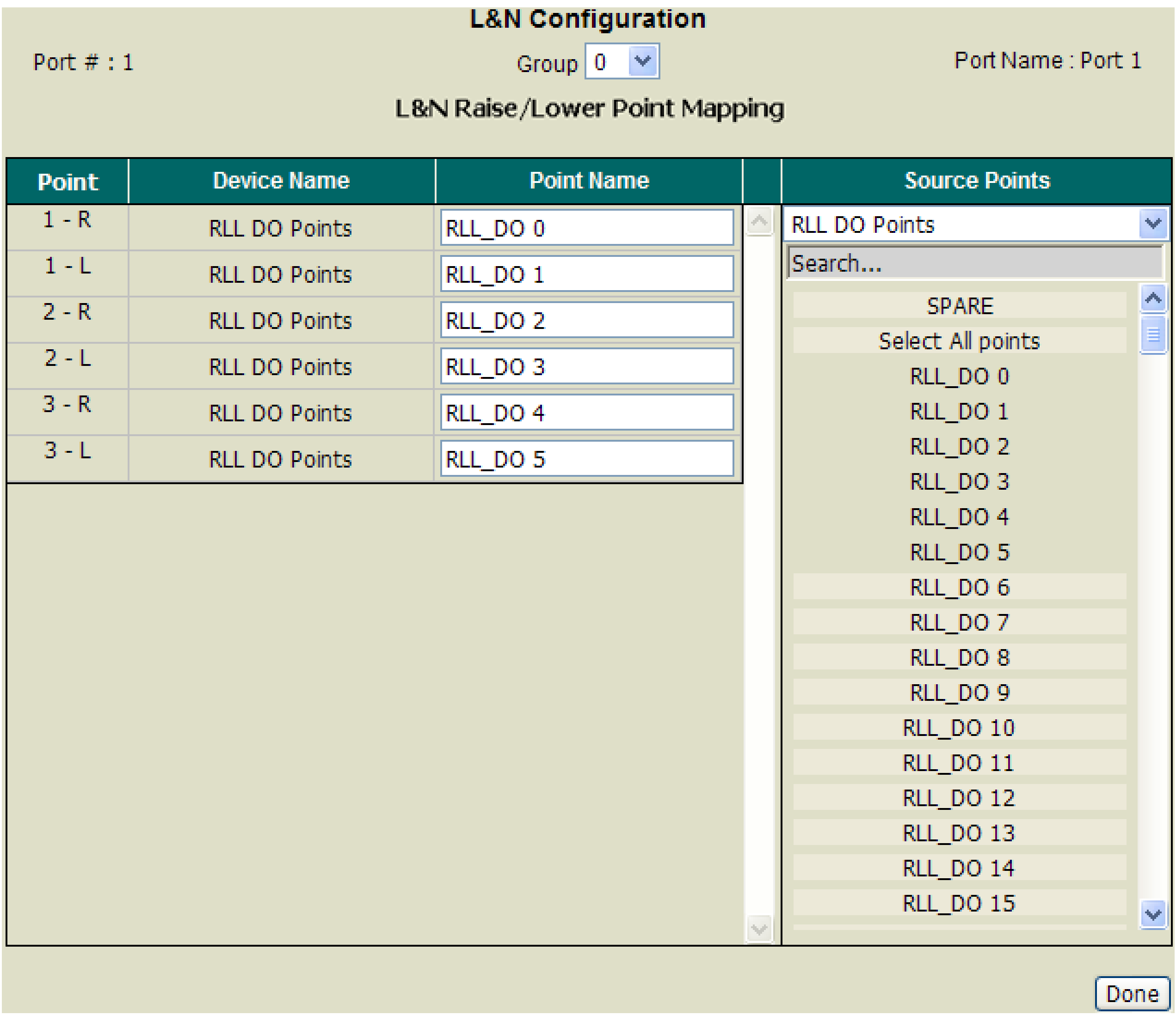
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

12.3.5 Map Raise/Lower

From the L&N Configuration screen, click the (Yes/No) drop-down menu for Raise/Lower and select Yes. Click MAP. A screen similar to Figure 12-10 will appear. Up to three Raise/Lower points are configurable per group. The Raise point (momentary relay duration defined in the DO setup) determines the duration of the Raise/Lower operation.

Figure 12-10 Raise/Lower Point Mapping



Point

The Raise/Lower point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

12.3.5.1 Point Mapping Highlight

See the Analog Input example.

12.3.5.2 Point Database Search

See the Analog Input example.

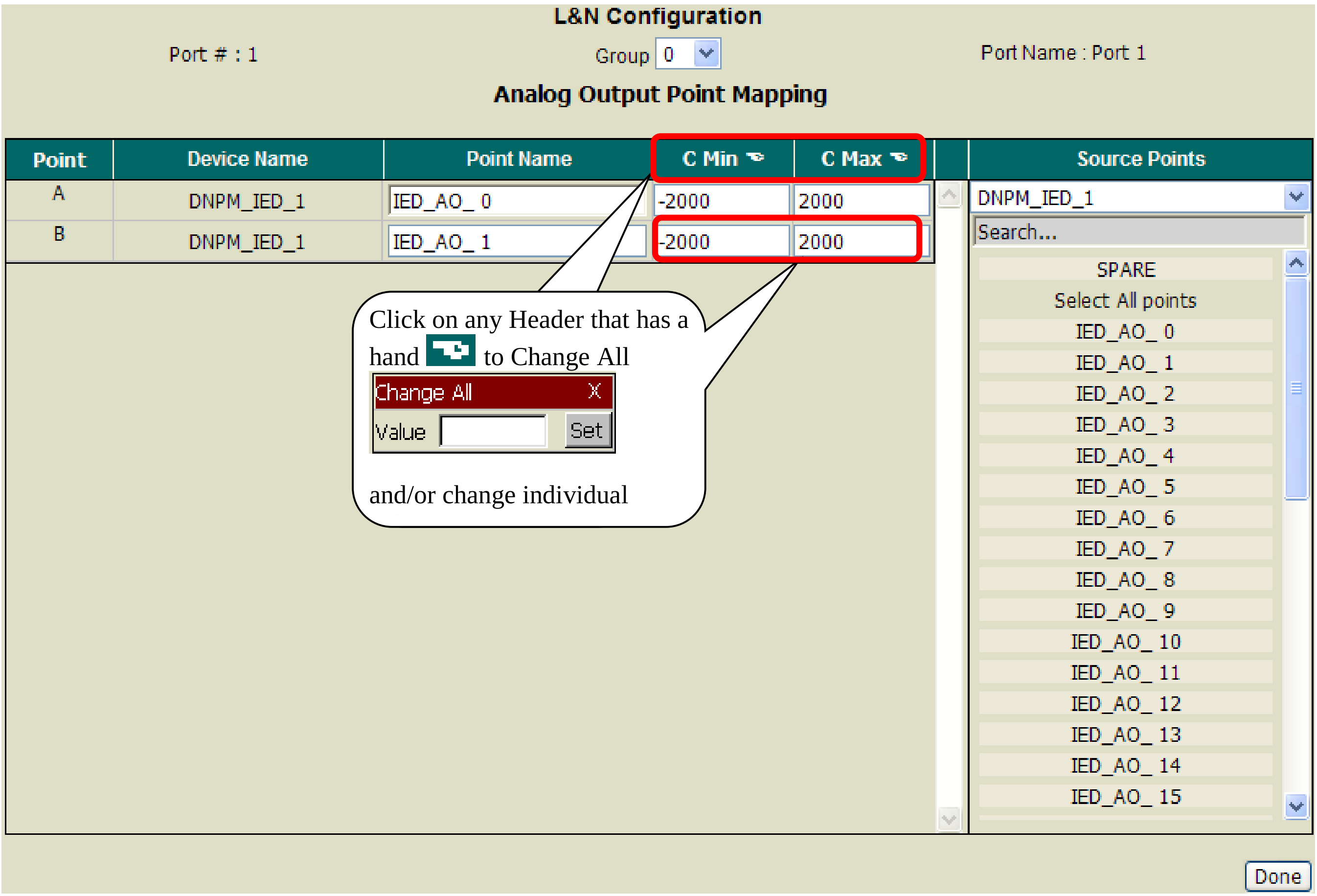
12.3.5.3 Insert & Delete Points

Insert & Delete not applicable to L&N C300/C2020/C3000 protocol.

12.3.6 Map Analog Outputs

From the L&N Configuration screen, click the (Yes/No) drop-down menu for Analog Outputs and select Yes. Click MAP. A screen similar to Figure 12-11 will appear. Up to two analog output points are configurable per group.

Figure 12-11 Analog Output Point Mapping



Point
The Analog Output point.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected from the master station for a minimum output value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected from the master station for a maximum output value or accept the default counts. Default setting is 2000.

Source Points

Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

12.3.6.1 Point Mapping Highlight

See the Analog Input example.

12.3.6.2 Point Database Search

See the Analog Input example.

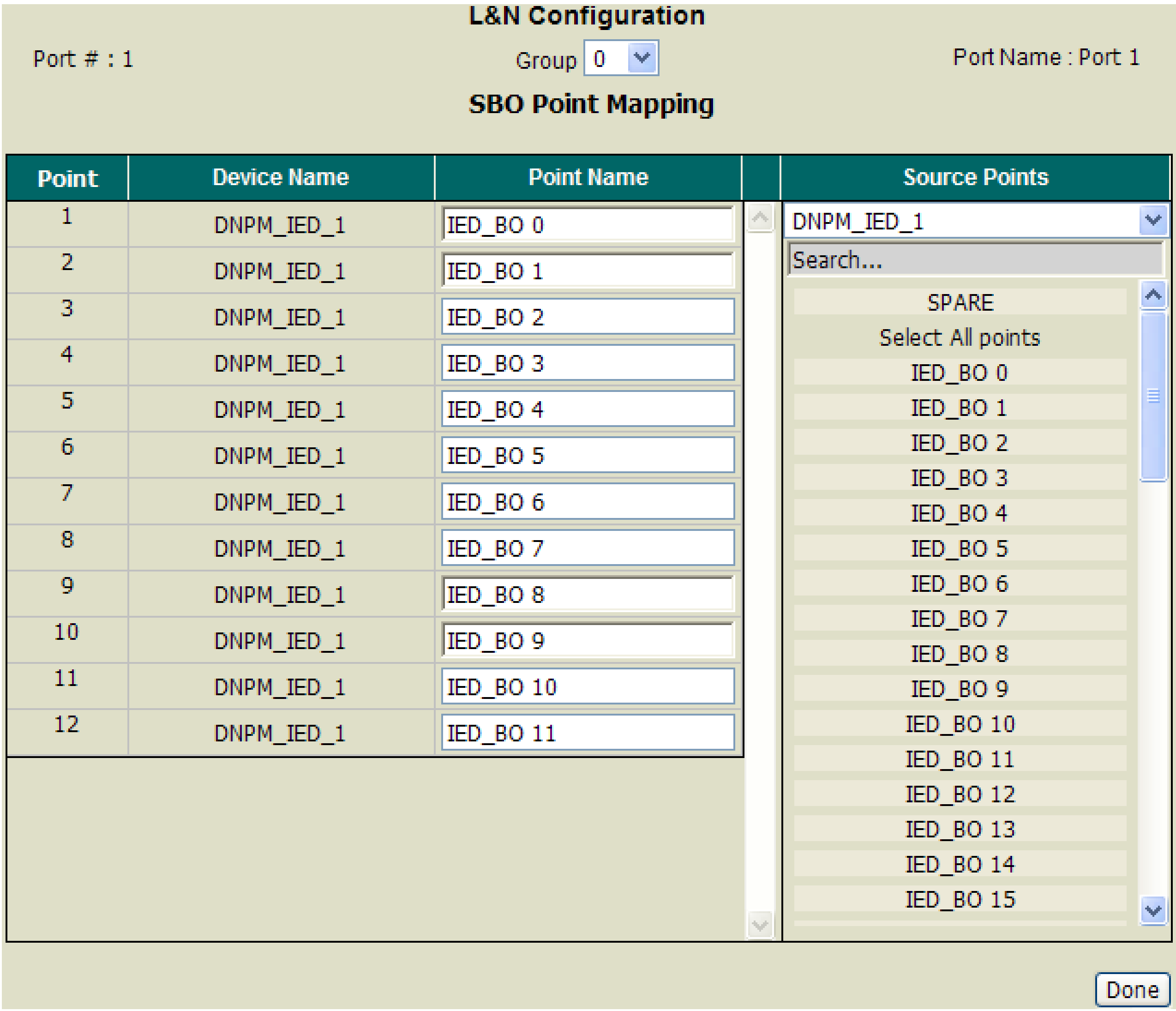
12.3.6.3 Insert & Delete Points

Insert & Delete not applicable to L&N C300/C2020/C3000 protocol.

12.3.7 Map SBOs

From the L&N Configuration screen, click the (Yes/No) drop-down menu for SBOs and select Yes. Click MAP. A screen similar to Figure 12-12 will appear. Up to twelve SBO Output points are configurable per group.

Figure 12-12 SBO Point Mapping



Point
The physical number of the point.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

12.3.7.1 Point Mapping Highlight

See the Analog Input example.

12.3.7.2 Point Database Search

See the Analog Input example.

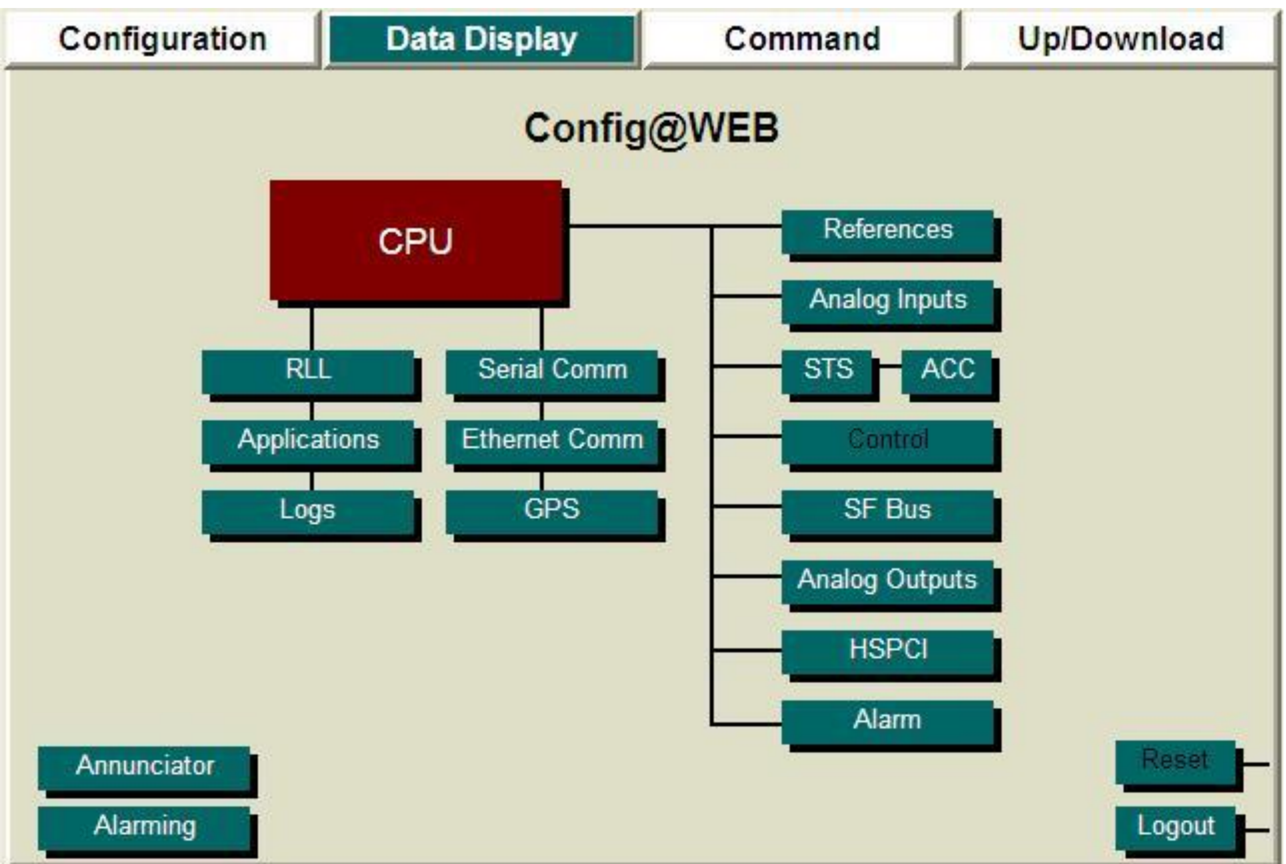
12.3.7.3 Insert & Delete Points

Insert & Delete not applicable to L&N C300/C2020/C3000 protocol.

12.4 Data Display

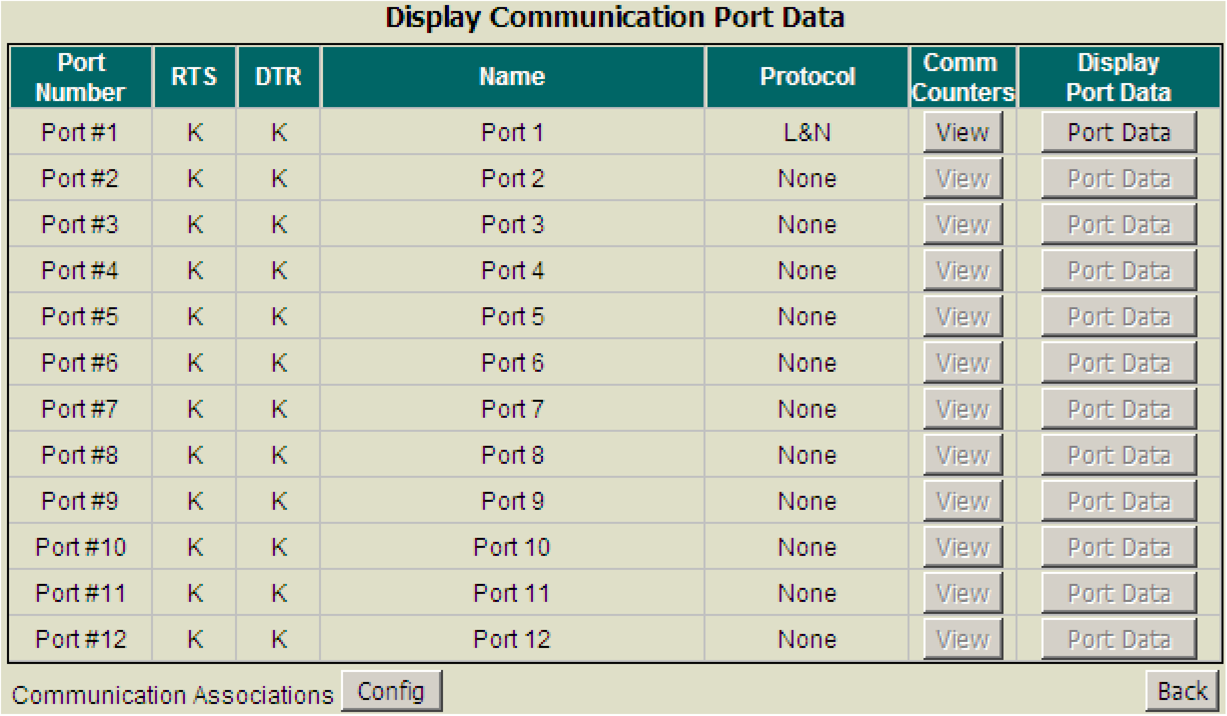
Click the Data Display tab as shown in Figure 12-13.

Figure 12-13 Data Display Screen



Click Serial Comm to get the screen shown in Figure 12-14.

Figure 12-14 Display Communication Port Data



Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	L&N	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).

The RTU firmware asserts/de-asserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.

When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.

The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data

Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

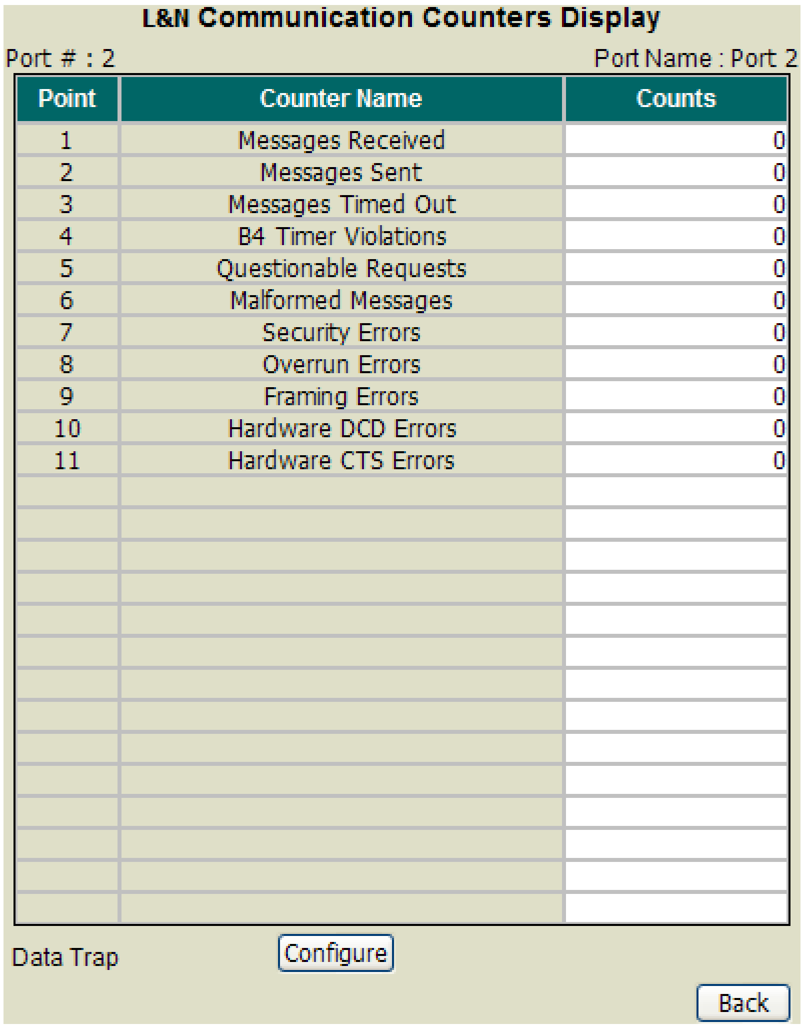
Navigation

Click the Back button to return to the previous screen.

12.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 12-15.

Figure 12-15 Communication Counters Display



Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Messages Received

This indicates the cumulative number of valid received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

Messages Timed Out

This indicates the cumulative number of messages where the RTU received a start bit but failed to receive a complete message.

B4 Timer Violations

This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

Questionable Requests

This indicates the cumulative number of messages where the RTU is receiving a global message but the function is not a freeze, freeze reset or set clock.

Malformed Messages

This indicates the cumulative number of messages that fail proper A,B bit formatting.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Framing Errors

This indicates the cumulative number of received bytes with framing errors since the last reset or power-up. This can be affected by parity and MTO.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

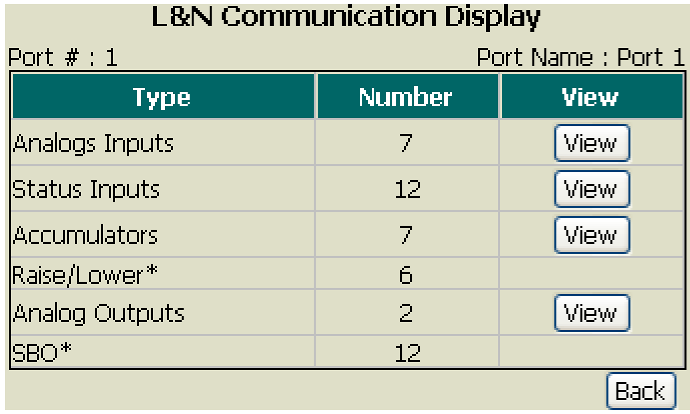
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

12.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 12-16.

Figure 12-16 Communication Display



Type
The type of point.

Number
The number of points of each type configured for this port.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

12.4.2.1 Analog Inputs

From the Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 12-17.

Figure 12-17 Analog Inputs Display

L&N Analog Inputs Display

Port # : 1 Port Name : Port 1

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Pnt	Grp	Sec	Device Name	Point Name	Point Status	Point Value	Point Counts
1	0	1B	Hardware Analogs	ANALOG 1		0.000	1000
2	0	4A	Hardware Analogs	ANALOG 2		0.000	1000
3	0	4B	Hardware Analogs	ANALOG 3		0.000	1000
4	0	5A	Hardware Analogs	ANALOG 4		0.000	1000
5	0	5B	Hardware Analogs	ANALOG 5		0.000	1000
6	0	6A	Hardware Analogs	ANALOG 6		0.000	1000
7	0	6B	Hardware Analogs	ANALOG 7		0.000	1000
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-

Back

Pnt (Point)
The point number for this type of point, numbered from 1 through *n*, with *n* being the sum total of all points of this type defined in all groups. For reference only.

Grp (Group)
Group number.

Sec (Section)
Section number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of

pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

12.4.2.2 Status Inputs

From the Communication Display screen, click View for Status Inputs to get the screen shown in Figure 12-18.

Figure 12-18 Status Inputs Display

L&N Status Inputs Display

Port # : 1 Port Name : Port 1

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Pnt	Grp	Sec	Bit	Device Name	Point Name	Point Status	Point State	●
1	0	7A	1	Hardware DI	DI_PNT_1		OPEN	●
2	0	7A	2	Hardware DI	DI_PNT_2		OPEN	●
3	0	7A	3	Hardware DI	DI_PNT_3		OPEN	●
4	0	7A	4	Hardware DI	DI_PNT_4		OPEN	●
5	0	7A	5	No Device	Spare		OPEN	●
6	0	7A	6	No Device	Spare		OPEN	●
7	0	7A	7	No Device	Spare		OPEN	●
8	0	7A	8	No Device	Spare		OPEN	●
9	0	7A	9	Hardware DI	DI_PNT_5		OPEN	●
10	0	7A	10	Hardware DI	DI_PNT_6		OPEN	●
11	0	7A	11	Hardware DI	DI_PNT_7		OPEN	●
12	0	7A	12	Hardware DI	DI_PNT_8		OPEN	●
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-
-	-	-	-	-	-	-	-	-

Back

Pnt (Point)
The point number for this type of point, numbered from 1 through *n*, with *n* being the sum total of all points of this type defined in all groups. For reference only.

Grp (Group)
Group number.

Sec (Section)
Section number.

Bit
Bit number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

- A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

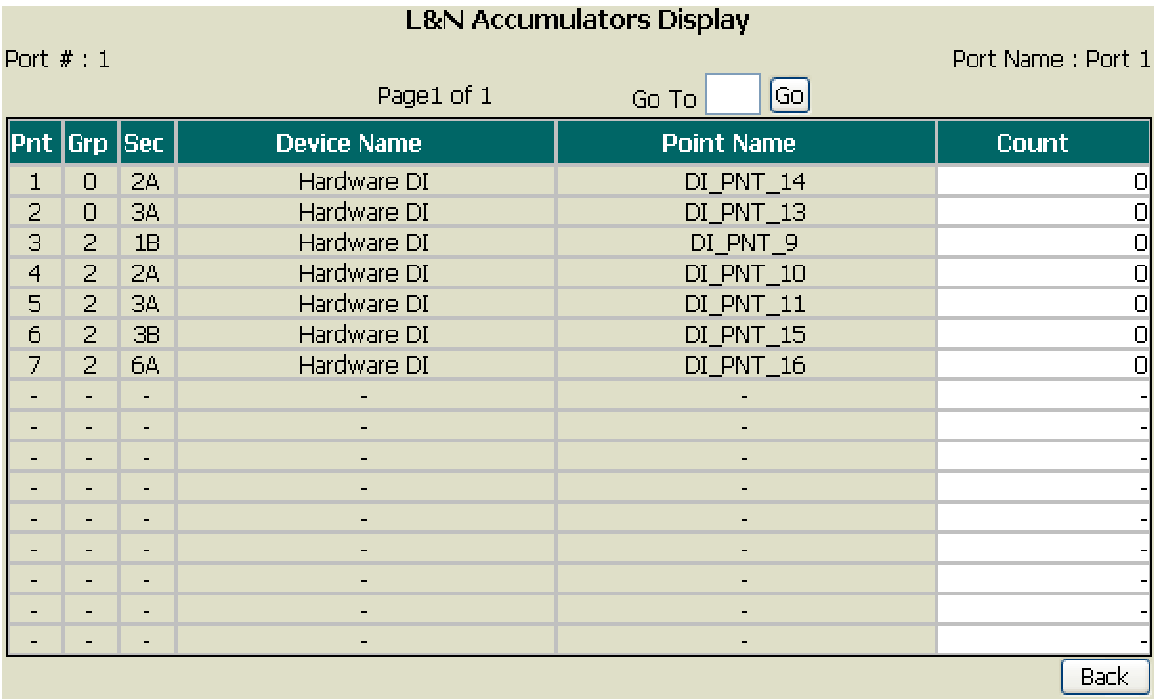
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

12.4.2.3 Accumulator

From the Communication Display screen, click View for Accumulators to get the screen shown in Figure 12-19.

Figure 12-19 Accumulators Display



L&N Accumulators Display

Port # : 1 Port Name : Port 1

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Pnt	Grp	Sec	Device Name	Point Name	Count
1	0	2A	Hardware DI	DI_PNT_14	0
2	0	3A	Hardware DI	DI_PNT_13	0
3	2	1B	Hardware DI	DI_PNT_9	0
4	2	2A	Hardware DI	DI_PNT_10	0
5	2	3A	Hardware DI	DI_PNT_11	0
6	2	3B	Hardware DI	DI_PNT_15	0
7	2	6A	Hardware DI	DI_PNT_16	0
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Pnt (Point)
The point number for this type of point, numbered from 1 through *n*, with *n* being the sum total of all points of this type defined in all groups. For reference only.

Grp (Group)
Group number.

Sec (Section)
Section number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Please note: These values will only update when the accumulators are frozen.

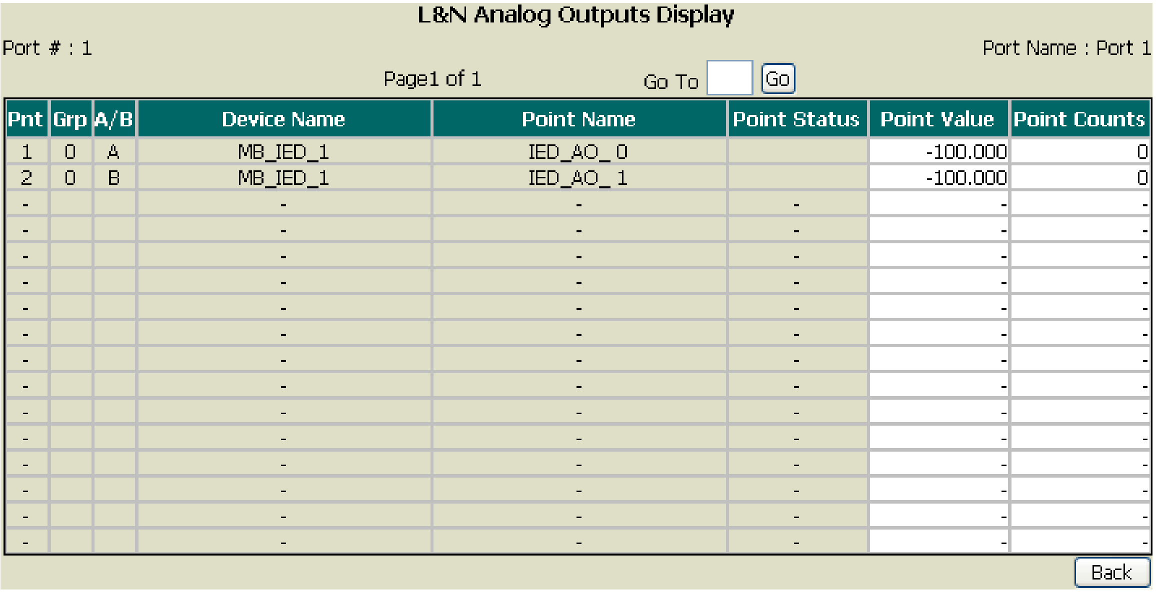
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

12.4.2.4 Analog Outputs

From the Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 12-20.

Figure 12-20 Analog Outputs Display


L&N Analog Outputs Display

Port # : 1 Port Name : Port 1

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Pnt	Grp	A/B	Device Name	Point Name	Point Status	Point Value	Point Counts
1	0	A	MB_IED_1	IED_AO_ 0		-100.000	0
2	0	B	MB_IED_1	IED_AO_ 1		-100.000	0
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-
-			-	-	-	-	-

Back

Pnt (Point)
The point number for this type of point, numbered from 1 through *n*, with *n* being the sum total of all points of this type defined in all groups. For reference only.

Grp (Group)
Group number.

A/B
Designates the half of the Section number to which the point was assigned.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value. This value is calculated based on the EGU min and EGU max settings for the target analog output point along with the current binary count sent from the master station.

Point Counts

The binary counts being sent from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

13 L&N C2100H

13.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

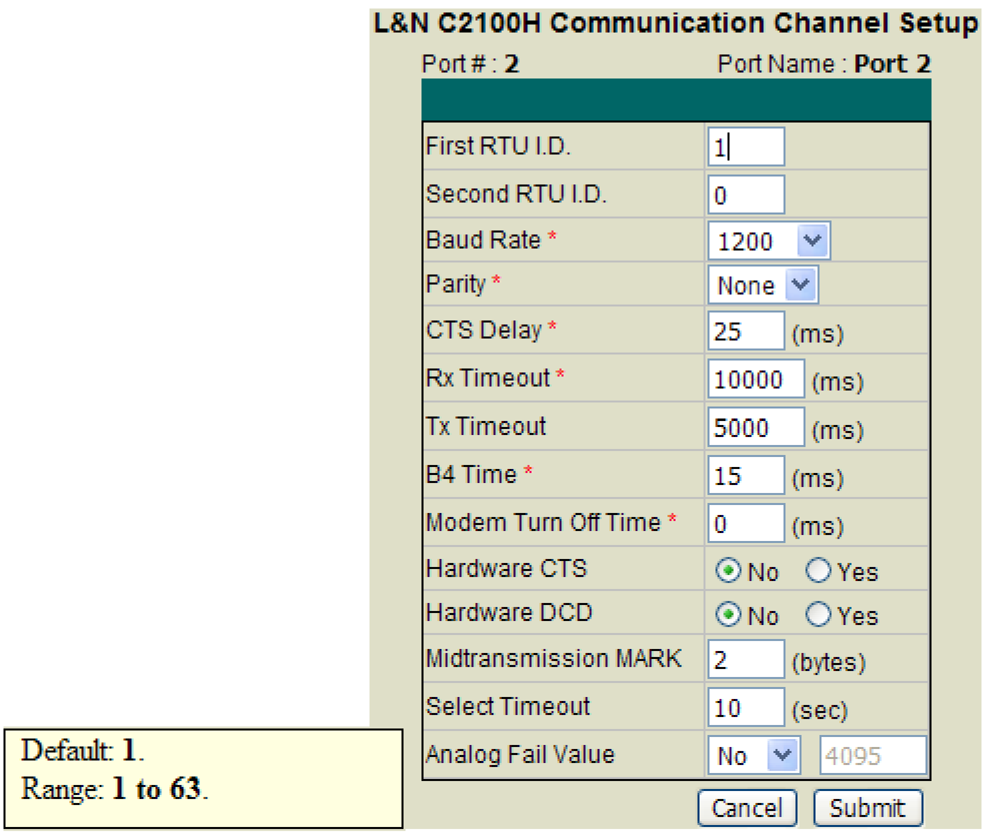
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

13.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 13-1.

Figure 13-1 Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for First RTU I.D.

First RTU I.D.   (1 – 63)

Enter the RTU I.D. number for the first logical RTU. This number is used to allow an RTU to respond to the master when it is received in a message. Because of the limited point counts available in C2100H, two RTU I.D.s may be defined which support two separate databases appearing to an MTU as two separate RTUs. Default setting is 1.

Second RTU I.D. (0 – 63)
Enter the RTU I.D. number for the second logical RTU. This number is used to allow an RTU to respond to the master when it is received in a message. A value of zero disables the second I.D. Default setting is 0.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 1200.

Parity (None, Odd, Even)
From the drop-down menu, select the parity for the associated channel. The default setting is None.

CTS Delay (0 – 1000ms)
Enter the Clear-To-Send (CTS) Delay in milliseconds for the associated channel. This is the delay of time the channel will wait to start transmitting following Request-To-Send being asserted. The default setting is 25.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 10000 (10 seconds).

Tx Timeout (0 – 30,000ms)
Enter the transmit timeout for the associated channel. This value limits the maximum transmission time from the RTU to the master. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 15.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data frames only if carrier is detected by the modem. If carrier is not detected, the data frames are discarded. Default setting is No.

Midtransmission MARK (0 – 255 bytes)
Enter the number of 8 bit marks to be transmitted between data blocks 8 and 9 of transmissions longer than 8 blocks. Default is 2.

Select Timeout (1 – 25 sec)
Enter the time in seconds that an SBO Select will be armed. Default is 10.

Analog Fail Value (Yes/No) (0-4095)
If set to "Yes", the configured value will replace all analog values in the C2100H protocol if the RTU determines they are failed. Analog values that do not have the fail flag set will return as normal. Default is No and 4095.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

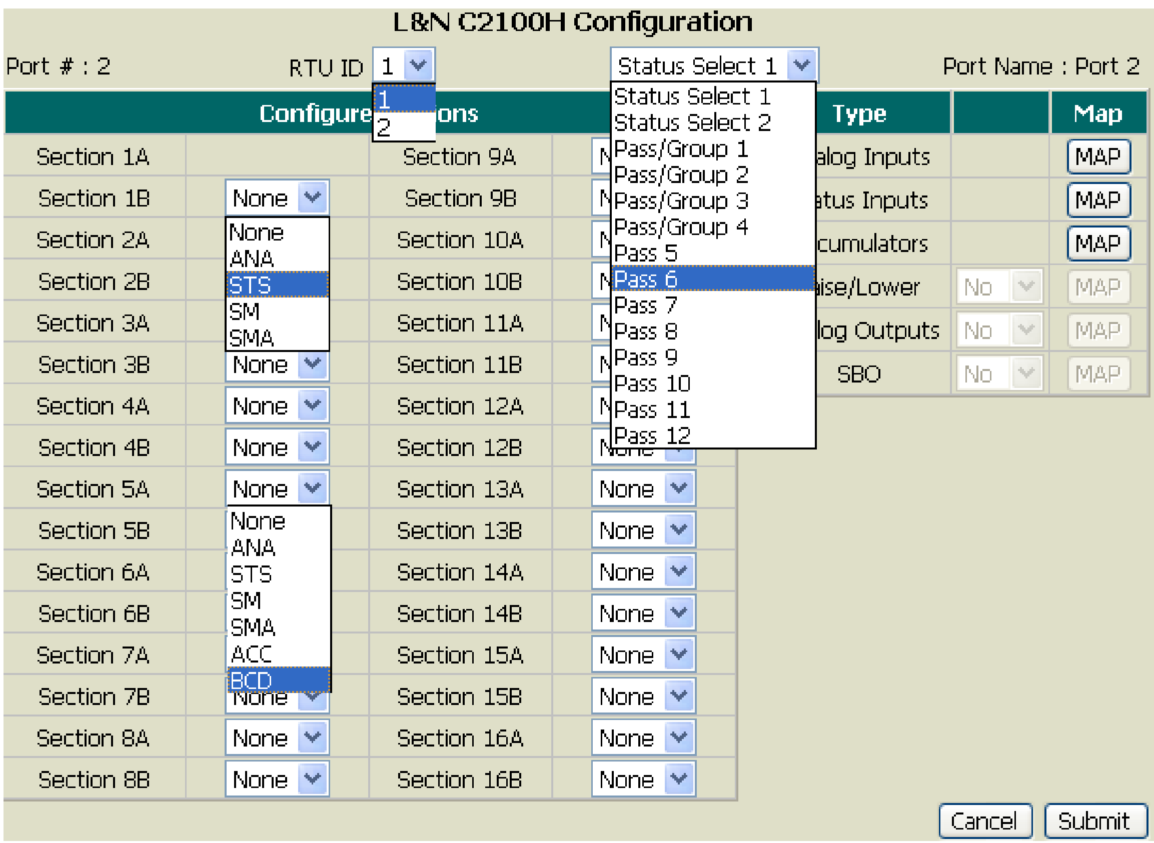
Please note: No configuration changes take effect until the RTU is reset.

13.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 13-2 will appear. The screen is shown with both the Group drop-down menu and the point-type drop-down menus in view.

After selecting a Group number and data type for each Section, the data points for this group may be mapped on the right side of this screen.

Figure 13-2 L&N C2100H Configuration Mapping



RTU ID

Select RTU ID = 1 to edit the database for the first logical RTU. Select RTU ID = 2 to edit the database for the second logical RTU. Default setting is 1.

Status Select, Pass/Group, or Pass

Status Select 1 or 2

Select Status Select 1 or 2 to edit what types of points are to be included in the response message.

Pass/Group 1 through 4

Select Pass/Group 1 through 4 to edit what types of points are to be included in the response message.

Pass 5 through 12

Select Pass 5 through 12 to edit what types of points are to be included in the response message.

Configure Sections

ANA

Analog Inputs, 12-bit. Uses one section. See Analog Inputs MAP function.

STS

Status, 1-bit. Twelve status points will fit in one section. See Status Inputs MAP function.

SM

Status, 2-bit. Six status with Memory Change Detect (MCD) points fit in one section. See Status Inputs MAP function.

SMA

Status, 3-bit. Four status with MCD and Automatic Recloser/Carrier Removal (ATCR) points fit in one section. See Status Inputs MAP function.

ACC

Block is an accumulator. This is valid only in the 1st data block as required by the protocol. It uses both the 1st and 2nd data blocks to return a 24 bit value in binary format. The 1st data block contains the most significant 12 bits and the 2nd data block contains the least significant 12 bits.

BCD

Block is an accumulator. This is valid only in the 1st data block as required by the protocol. It uses both the 1st and 2nd data blocks to return 6 BCD digits. The 1st data block contains the most significant 3 BCD digits and the 2nd data block contains the least significant 3 BCD digits.

Type

The different types of I/O points supported by this protocol.

Map

Click the MAP button to map the sections configured for this group.

Navigation

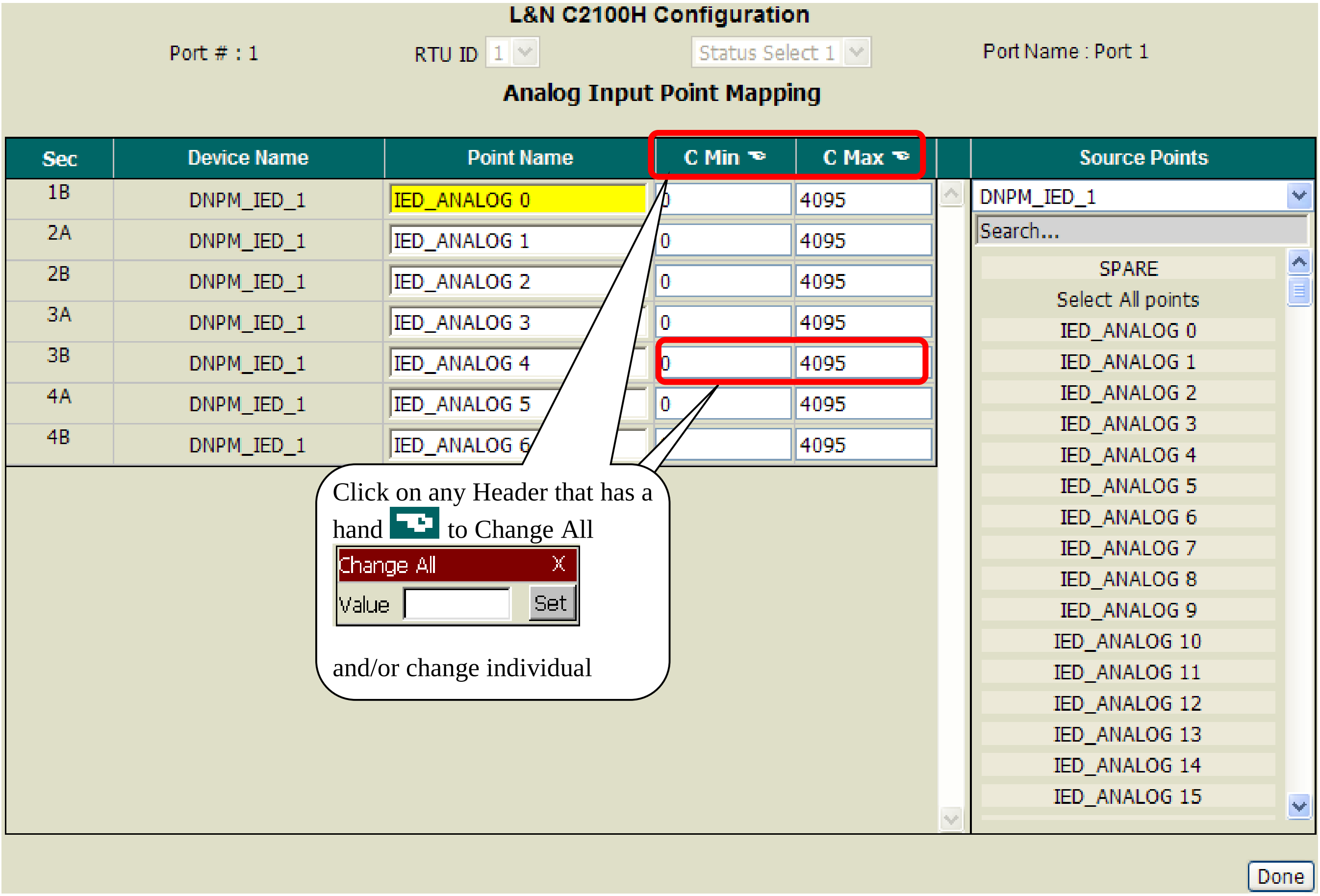
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

13.3.1 Map Analog Inputs

From the L&N Configuration screen, click the MAP button for Analog Inputs. A screen similar to Figure 13-3 will appear.

Figure 13-3 Analog Input Point Mapping



Sec
Section. The section location in the Group Scan response to be mapped.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is 0.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 4095.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

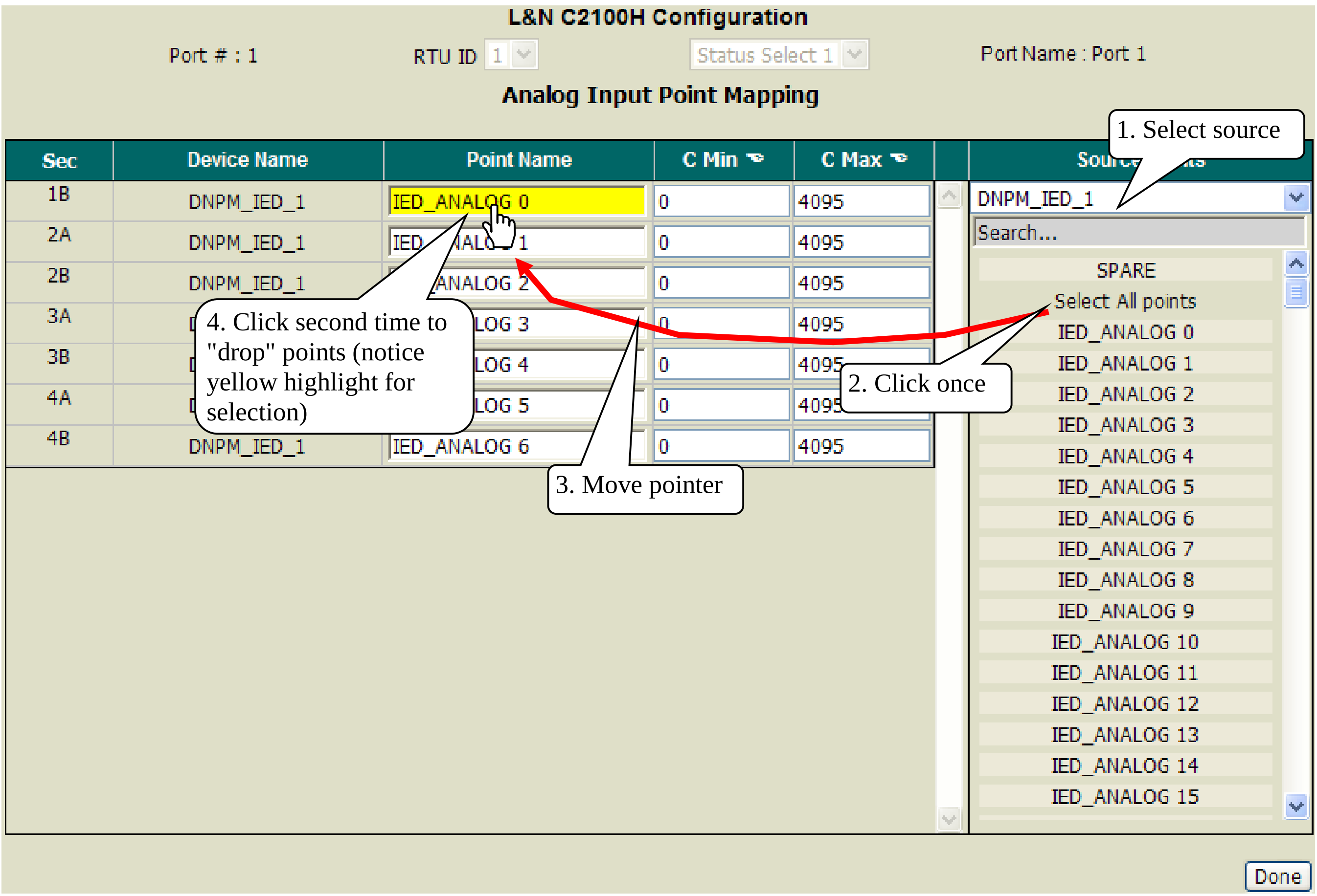
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

13.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

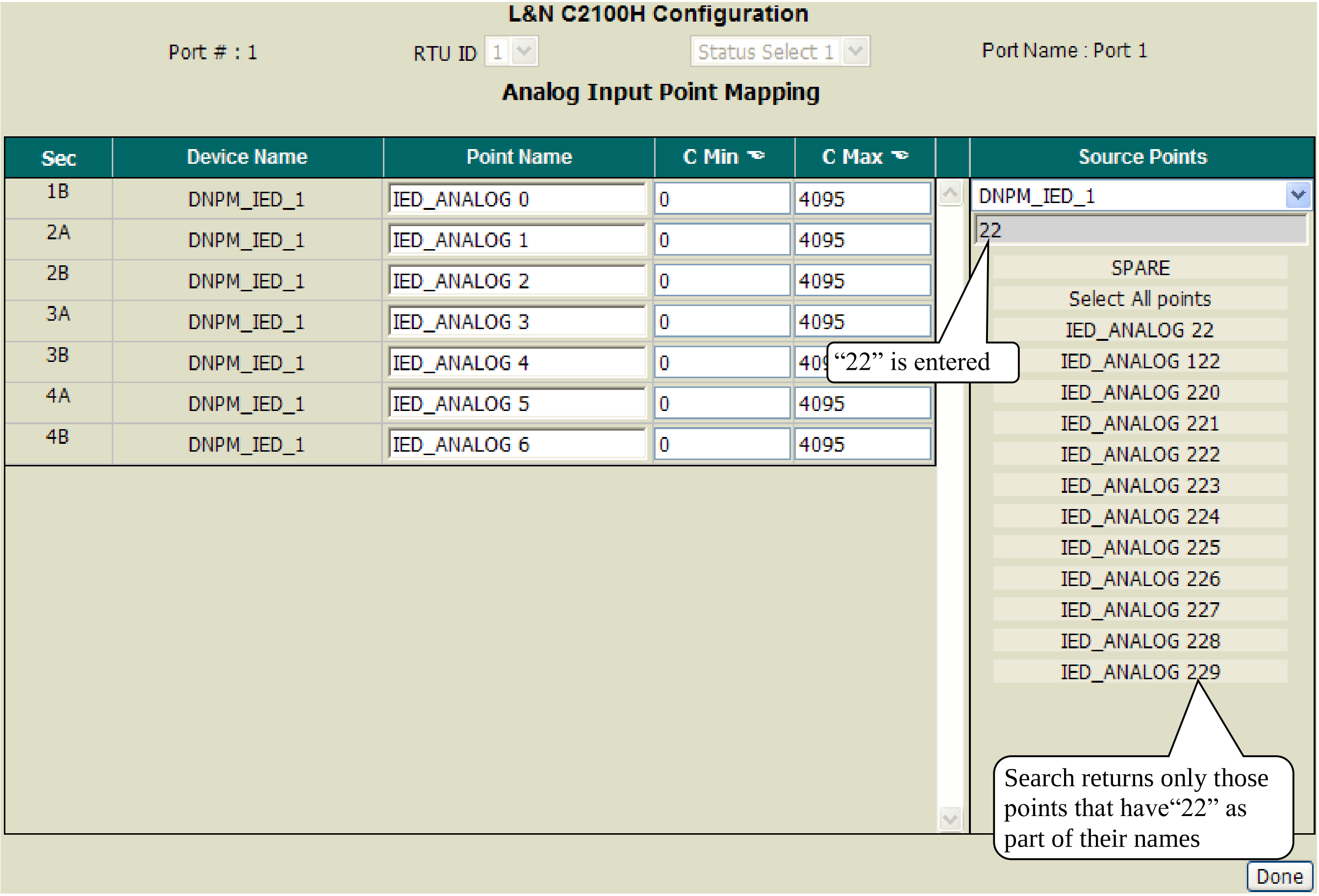
Figure 13-4 Point Mapping Highlight



13.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

Figure 13-5 Point Database Search



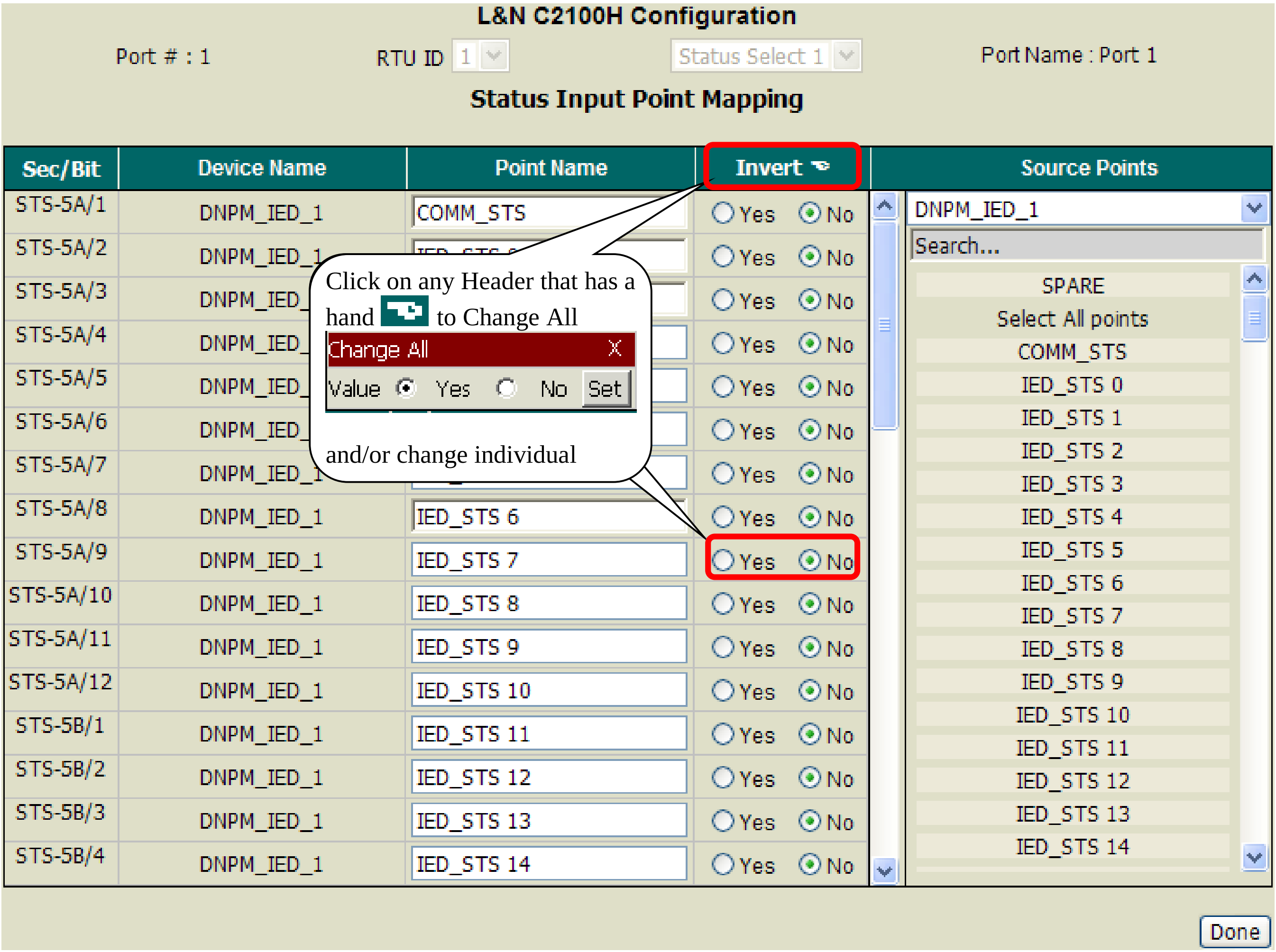
13.3.1.3 Insert & Delete Points

Insert & Delete not applicable to L&N C2100H protocol.

13.3.2 Map Status Inputs

From the L&N Configuration screen, click the MAP button for Status Inputs. A screen similar to Figure 13-6 will appear.

Figure 13-6 Status Input Point Mapping



Sec/Bit
The type of point (STS/SM/SMA) and the Section number followed by the bit number within the section.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

13.3.2.1 Point Mapping Highlight

See the Analog Input example.

13.3.2.2 Point Database Search

See the Analog Input example.

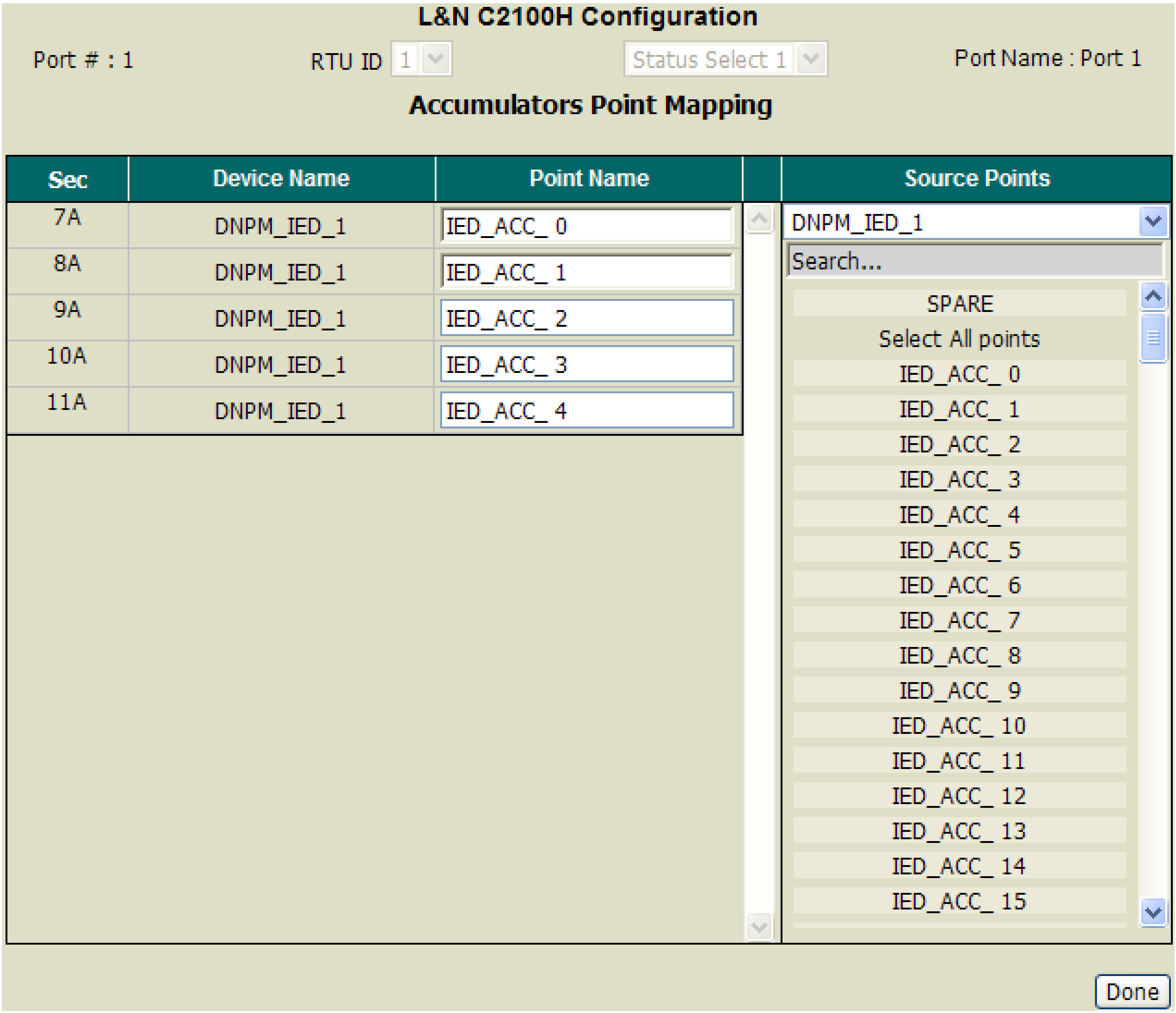
13.3.2.3 Insert & Delete Points

Insert & Delete not applicable to L&N C2100H protocol.

13.3.3 Map Accumulators

From the L&N C2100H Configuration screen, click the MAP button for Accumulators. A screen similar to Figure 13-7 will appear.

Figure 13-7 Accumulator Point Mapping



Sec
The Section number. For 24 bit accumulators (all C2100H protocol accumulators are 24-bit), only the A section will appear to be mapped.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

13.3.3.1 Point Mapping Highlight

See the Analog Input example.

13.3.3.2 Point Database Search

See the Analog Input example.

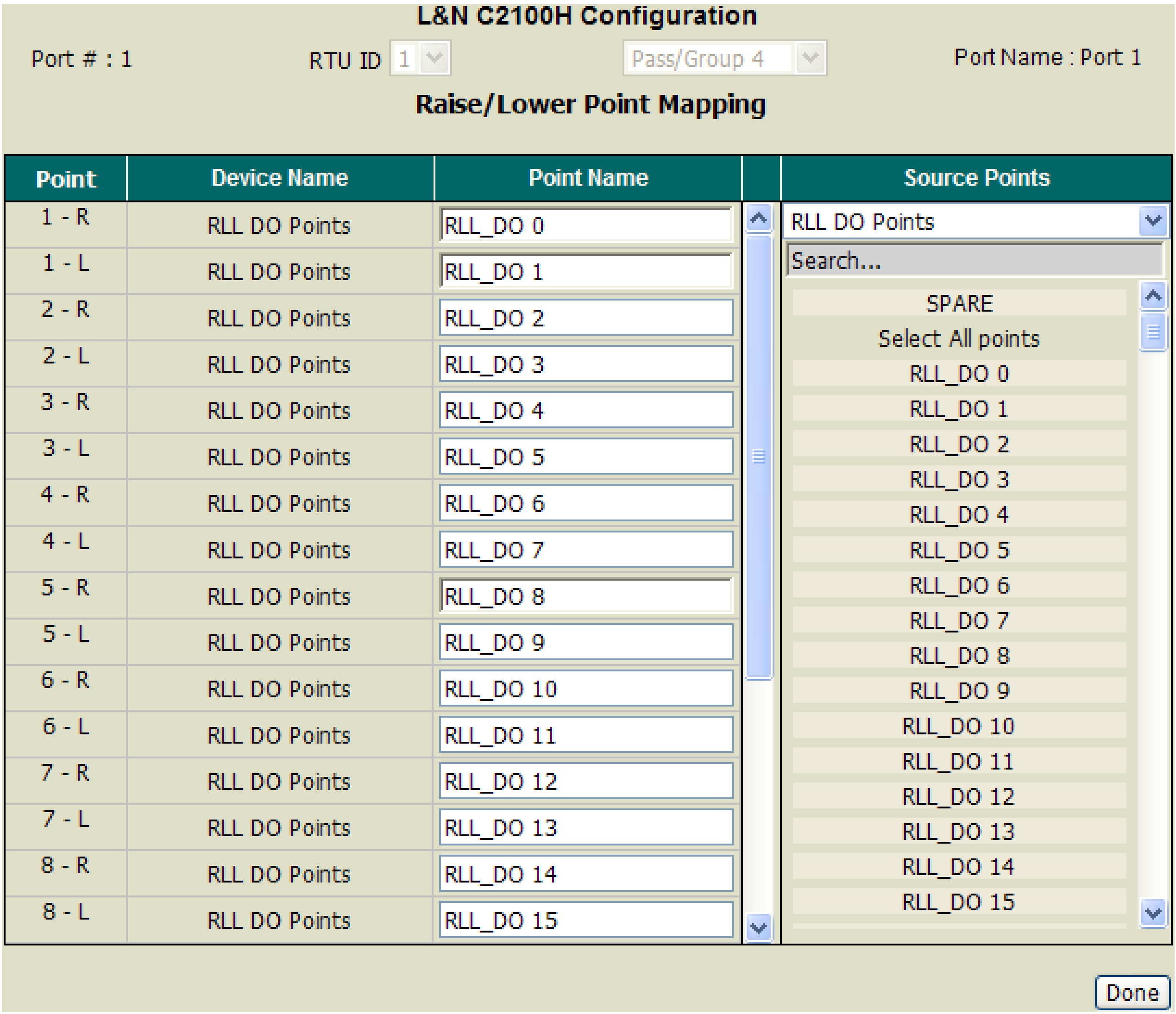
13.3.3.3 Insert & Delete Points

Insert & Delete not applicable to L&N C2100H protocol.

13.3.4 Map Raise/Lower

From the L&N C2100H Configuration screen, click the (Yes/No) drop-down menu for Raise/Lower and select Yes. Click MAP. A screen similar to Figure 13-8 will appear. Up to twelve Raise/Lower points are configurable in Pass/Groups 1 thru 4. No other Groups enable the Raise/Lower points to be defined.

Figure 13-8 Raise/Lower Point Mapping



Point
The Raise/Lower point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

13.3.4.1 Point Mapping Highlight

See the Analog Input example.

13.3.4.2 Point Database Search

See the Analog Input example.

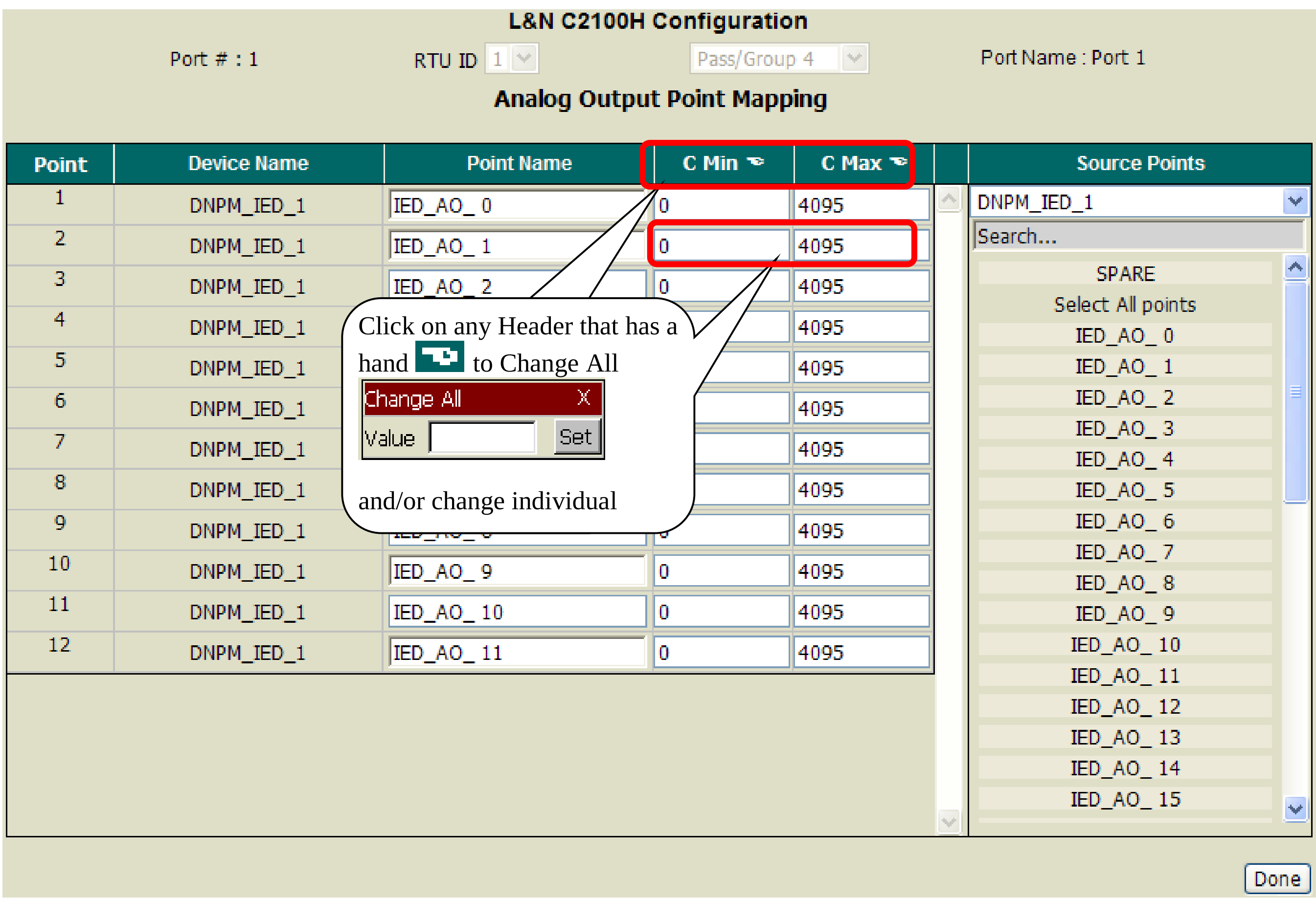
13.3.4.3 Insert & Delete Points

Insert & Delete not applicable to L&N C2100H protocol.

13.3.5 Map Analog Outputs

From the L&N C2100H Configuration screen, click the (Yes/No) drop-down menu for Analog Outputs and select Yes. Click MAP. A screen similar to Figure 13-9 will appear. Up to twelve analog output points are configurable in Pass/Groups 1 thru 4. No other Groups enable the analog outputs to be defined.

Figure 13-9 Analog Output Point Mapping



Point

The Analog Output point.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected from the master station for a minimum output value or accept the default counts. Default setting is 0.

C Max
Enter the maximum counts expected from the master station for a maximum output value or accept the default counts. Default setting is 4095.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

13.3.5.1 Point Mapping Highlight

See the Analog Input example.

13.3.5.2 Point Database Search

See the Analog Input example.

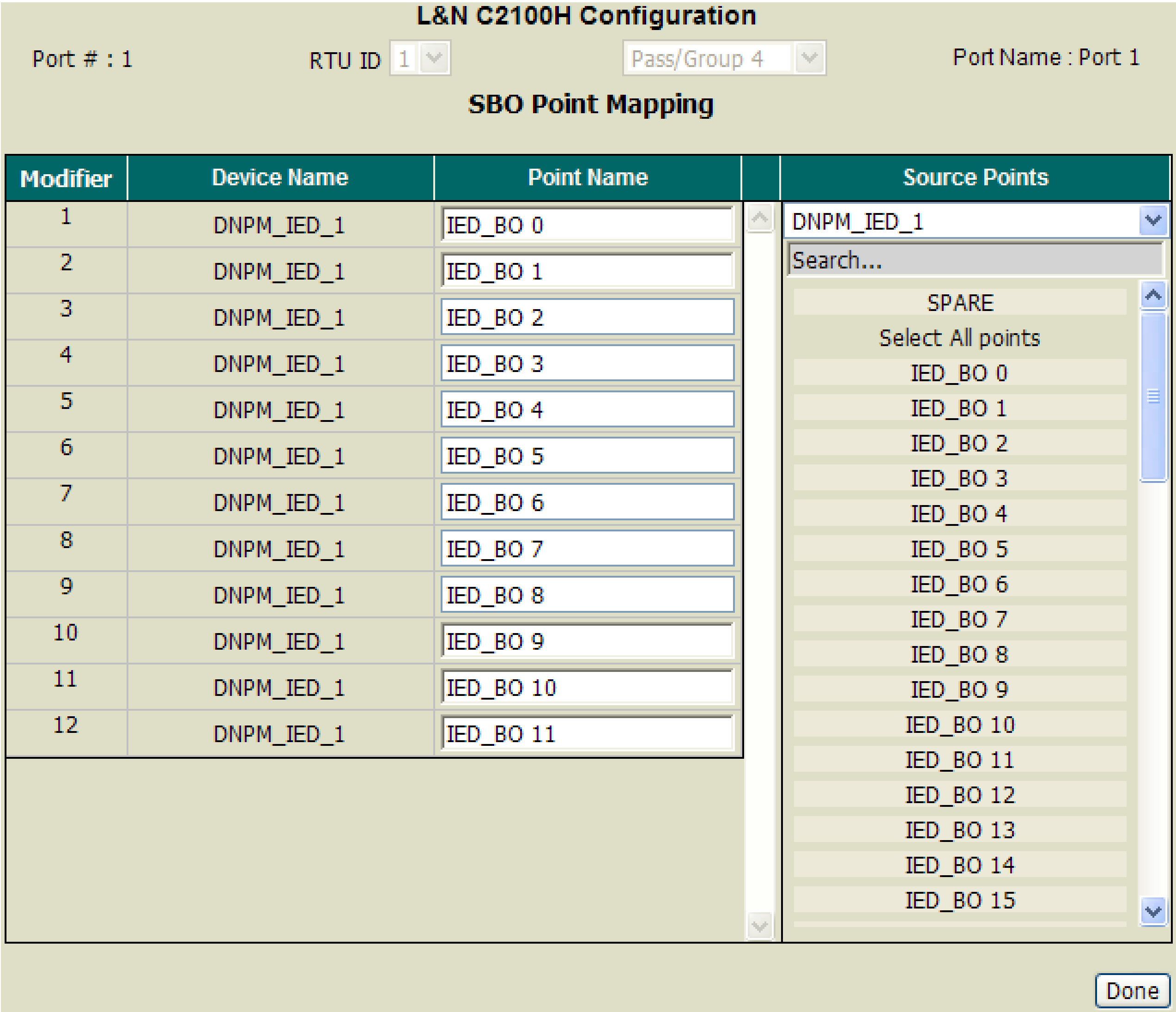
13.3.5.3 Insert & Delete Points

Insert & Delete not applicable to L&N C2100H protocol.

13.3.6 Map SBOs

From the L&N C2100H Configuration screen, click the (Yes/No) drop-down menu for SBOs and select Yes. Click MAP. A screen similar to Figure 13-10 will appear. Up to twelve SBO Output points are configurable in Pass/Group 1 through 4. No other Groups enable the SBO outputs to be defined.

Figure 13-10 SBO Point Mapping



Modifier
The Modifier bit from this group to be mapped.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

13.3.6.1 Point Mapping Highlight

See the Analog Input example.

13.3.6.2 Point Database Search

See the Analog Input example.

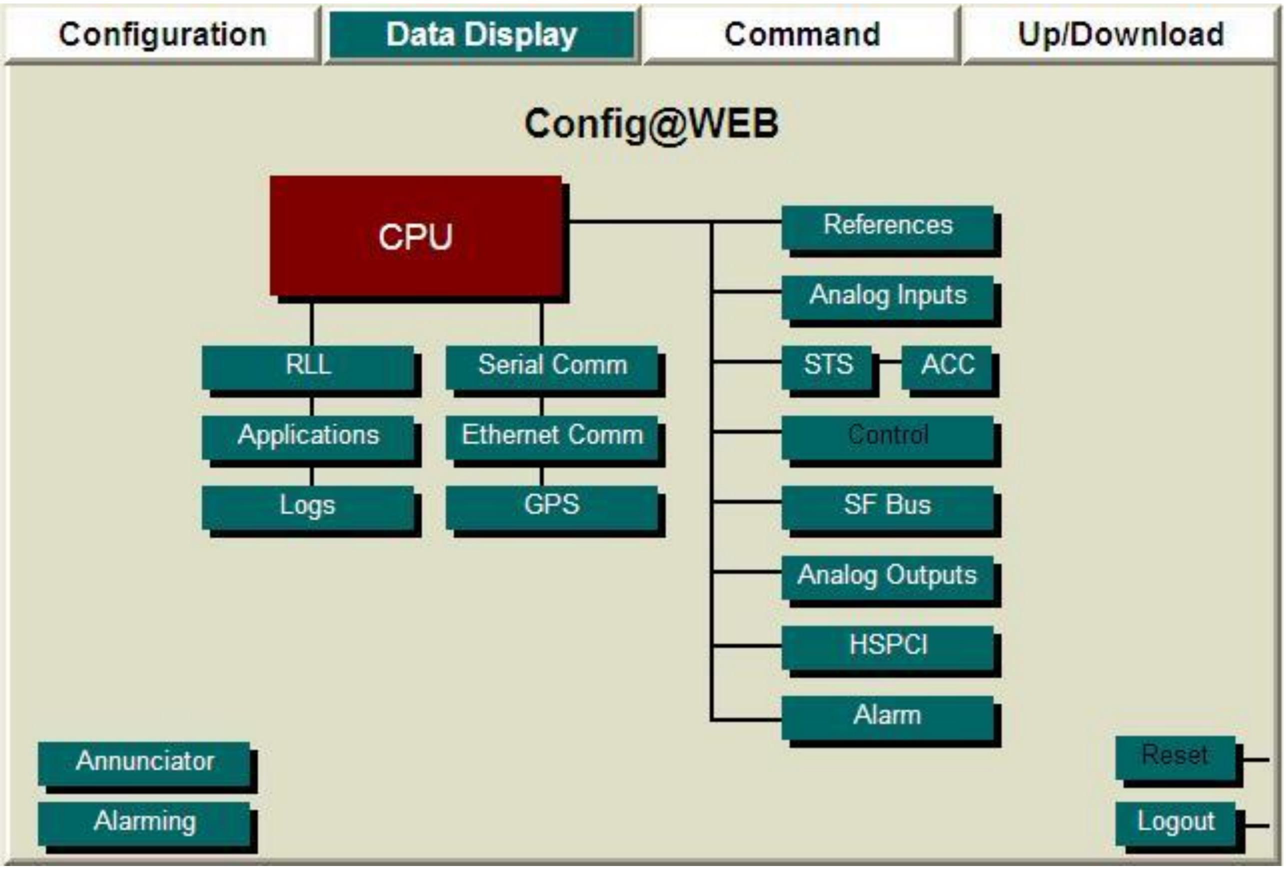
13.3.6.3 Insert & Delete Points

Insert & Delete not applicable to L&N C2100H protocol.

13.4 Data Display

Click the Data Display tab as shown in Figure 13-11.

Figure 13-11 Data Display Screen



Click Serial Comm to get the screen shown in Figure 13-12.

Figure 13-12 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	C2100H	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/de-asserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data

Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

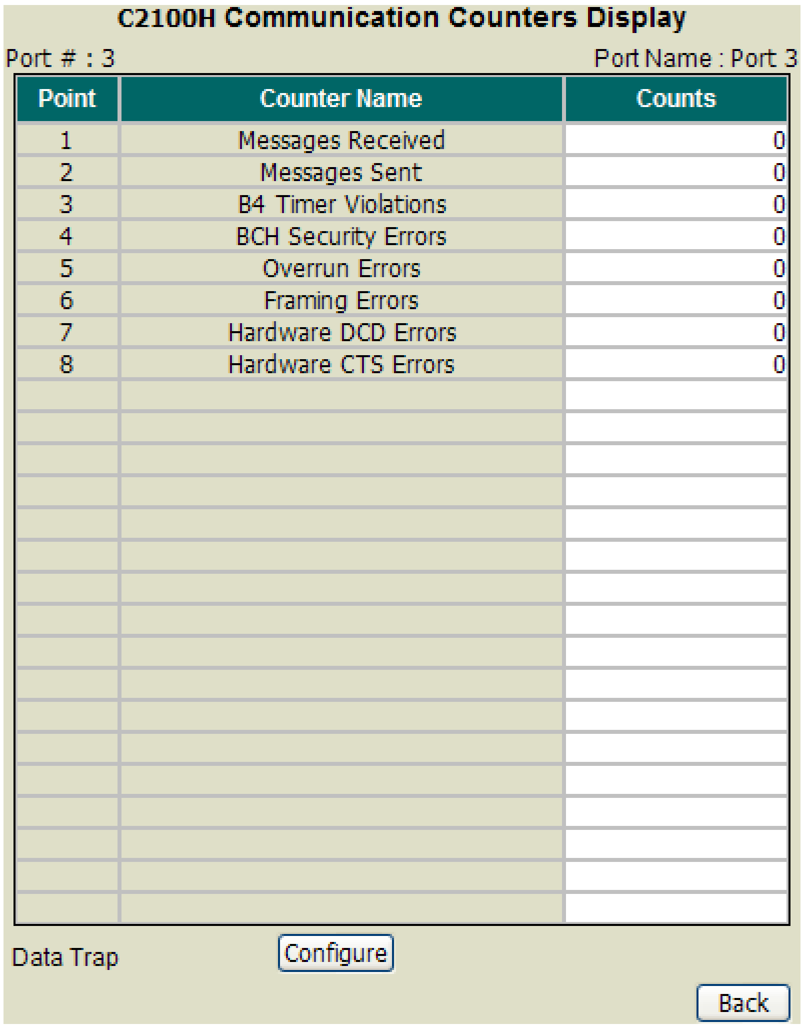
Navigation

Click the Back button to return to the previous screen.

13.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 13-13.

Figure 13-13 Communication Counters Display



Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Messages Received

This indicates the cumulative number of valid received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

B4 Timer Violations

This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

BCH Security Errors

This indicates the cumulative number of BCH security errors received since the last reset or power-up.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Framing Errors

This indicates the cumulative number of received bytes with framing errors since the last reset or power-up. This can be affected by parity and MTO.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

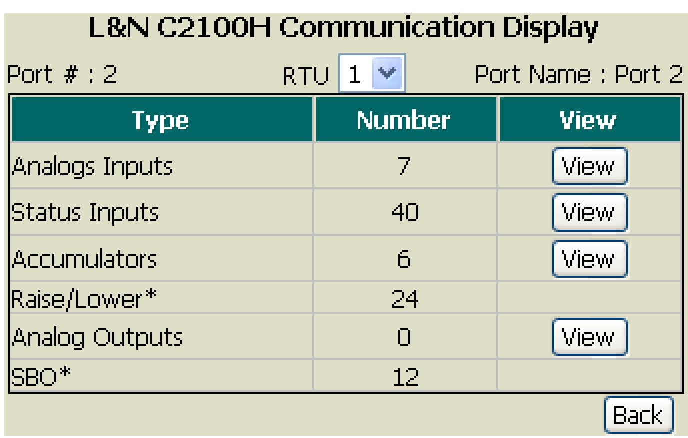
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

13.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 13-14.

Figure 13-14 Communication Display


L&N C2100H Communication Display

Port # : 2   RTU 1   Port Name : Port 2

Type	Number	View
Analogs Inputs	7	View
Status Inputs	40	View
Accumulators	6	View
Raise/Lower*	24	
Analog Outputs	0	View
SBO*	12	

Back

RTU

The logical RTU that we want to display the data from.

Type
The type of point.

Number
The number of points of each type configured for this logical RTU.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

13.4.2.1 Analog Inputs

From the Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 13-15.

Figure 13-15 Analog Inputs Display

L&N C2100H Analog Inputs Display

Port # : 2 RTU ID : 1 Port Name : Port 2

Page1 of 2 Go To [ ] Go Next>>

Pnt	Grp	Sec	Device Name	Point Name	Point Status	Point Value	Point Counts
1	SS0	1B	Hardware Analogs	ANALOG 1		1.977	2857
2	SS0	2A	Hardware Analogs	ANALOG 2		2.293	2986
3	SS0	2B	Hardware Analogs	ANALOG 3		0.000	2047
4	SS0	3A	Hardware Analogs	ANALOG 4		0.000	2047
5	SS0	3B	Hardware Analogs	ANALOG 5		0.253	2151
6	SS0	4A	Hardware Analogs	ANALOG 6		0.000	2047
7	SS0	4B	Hardware Analogs	ANALOG 7		0.000	2047
8	SS0	5A	Hardware Analogs	ANALOG 8		0.000	2047
9	SS0	5B	ACI on BUS 1	Volts Phase A RMS	F	0.000	0
10	SS0	6A	ACI on BUS 1	Volts Phase B RMS	F	0.000	0
11	SS0	6B	ACI on BUS 1	Volts Phase C RMS	F	0.000	0
12	SS0	7A	ACI on BUS 1	Amps Phase A RMS	F	0.000	0
13	SS0	7B	ACI on BUS 1	Amps Phase B RMS	F	0.000	0
14	SS0	8A	ACI on BUS 1	Amps Phase C RMS	F	0.000	0
15	SS0	8B	ACI on BUS 1	Amps RMS Neutral	F	0.000	0
16	SS0	9A	ACI on BUS 2	Volts Phase A RMS	F	0.000	0

Back

Pnt (Point)
The point number for this type of point, numbered from 1 through *n*, with *n* being the sum total of all points of this type defined in all groups for this logical RTU. For reference only.

Grp (Group)
Group number.

Sec (Section)
Section number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status

Please see the config@WEB Secure Software Users Guide.

Point Value

The engineering unit (EGU) value.

Point Counts

The counts being sent to the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

13.4.2.2 Status Inputs

From the Communication Display screen, click View for Status Inputs to get the screen shown in Figure 13-16.

Figure 13-16 Status Inputs Display

L&N C2100H Status Inputs Display

Port # : 2 RTU ID : 1 Port Name : Port 2

Page1 of 3 Go To Go Next>>

Pnt	Grp	Sec	Bit	Device Name	Point Name	Point Status	Point State	●
1	SS0	5A	1	Hardware DI	DI_PNT_1		OPEN	●
2	SS0	5A	3	Hardware DI	DI_PNT_2		OPEN	●
3	SS0	5A	4	Hardware DI	DI_PNT_3		OPEN	●
4	SS0	5A	6	Hardware DI	DI_PNT_4		OPEN	●
5	SS0	5A	7	Hardware DI	DI_PNT_5		OPEN	●
6	SS0	5A	9	Hardware DI	DI_PNT_6		OPEN	●
7	SS0	5A	10	Hardware DI	DI_PNT_7		OPEN	●
8	SS0	5A	12	Hardware DI	DI_PNT_8		OPEN	●
9	SS0	8A	1	Hardware DI	DI_PNT_9		OPEN	●
10	SS0	8A	2	Hardware DI	DI_PNT_10		OPEN	●
11	SS0	8A	3	Hardware DI	DI_PNT_11		OPEN	●
12	SS0	8A	4	Hardware DI	DI_PNT_12		OPEN	●
13	SS0	8A	5	Hardware DI	DI_PNT_13		OPEN	●
14	SS0	8A	6	Hardware DI	DI_PNT_14		OPEN	●
15	SS0	8A	7	Hardware DI	DI_PNT_15		OPEN	●
16	SS0	8A	8	Hardware DI	DI_PNT_16		OPEN	●

Back

Pnt (Point)

The point number for this type of point, numbered from 1 through *n*, with *n* being the sum total of all points of this type defined in all groups for this logical RTU. For reference only.

Grp (Group)

Group number.

Sec (Section)

Section number.

Bit

Bit number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

13.4.2.3 Accumulator

From the Communication Display screen, click View for Accumulators to get the screen shown in Figure 13-17.

Figure 13-17 Accumulators Display

L&N C2100H Accumulators Display

Port # : 2 RTU ID : 1 Port Name : Port 2

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Pnt	Grp	Sec	Device Name	Point Name	Count
1	SS0	6A	DNPM_IED_1	IED_ACC_ 0	0
2	SS0	7A	DNPM_IED_1	IED_ACC_ 1	0
3	SS0	10A	DNPM_IED_1	IED_ACC_ 2	0
4	SS0	11A	DNPM_IED_1	IED_ACC_ 3	0
5	SS0	12A	DNPM_IED_1	IED_ACC_ 4	0
6	SS0	13A	DNPM_IED_1	IED_ACC_ 5	0
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Pnt (Point)
The point number for this type of point, numbered from 1 through *n*, with *n* being the sum total of all points of this type defined in all groups for this logical RTU. For reference only.

Grp (Group)
Group number.

Sec (Section)
Section number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Please note: These values will only update when the accumulators are frozen.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

13.4.2.4 Analog Outputs

From the Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 13-18.

Figure 13-18 L&N C2100H Analog Outputs Display

L&N C2100H Analog Outputs Display

Port # : 3 RTU ID : 1 Port Name : Port 3

Page1 of 1 Go To Go

Group	Pnt	Device Name	Point Name	Point Status	Point Value	Point Counts
1	1	DNPM_IED_1	IED_AO_ 0	F	-100.000	0000
1	2	DNPM_IED_1	IED_AO_ 1	F	-100.000	0000
1	3	DNPM_IED_1	IED_AO_ 2	F	-100.000	0000
1	4	DNPM_IED_1	IED_AO_ 3	F	-100.000	0000
1	5	DNPM_IED_1	IED_AO_ 4	F	-100.000	0000
1	6	DNPM_IED_1	IED_AO_ 5	F	-100.000	0000
1	7	DNPM_IED_1	IED_AO_ 6	F	-100.000	0000
1	8	DNPM_IED_1	IED_AO_ 7	F	-100.000	0000
1	9	DNPM_IED_1	IED_AO_ 8	F	-100.000	0000
1	10	DNPM_IED_1	IED_AO_ 9	F	-100.000	0000
1	11	DNPM_IED_1	IED_AO_ 10	F	-100.000	0000
1	12	DNPM_IED_1	IED_AO_ 11	F	-100.000	0000

Back

Group
The Group number.

Pnt (Point)
The point number for this type of point, numbered from 1 through *n*, with *n* being the number of points defined for this logical RTU. For reference only.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value. This value is calculated based on the EGU min and EGU max settings for the target analog output point along with the current binary count sent from the master station.

Point Counts
The binary counts being sent from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

14 PG&E

14.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

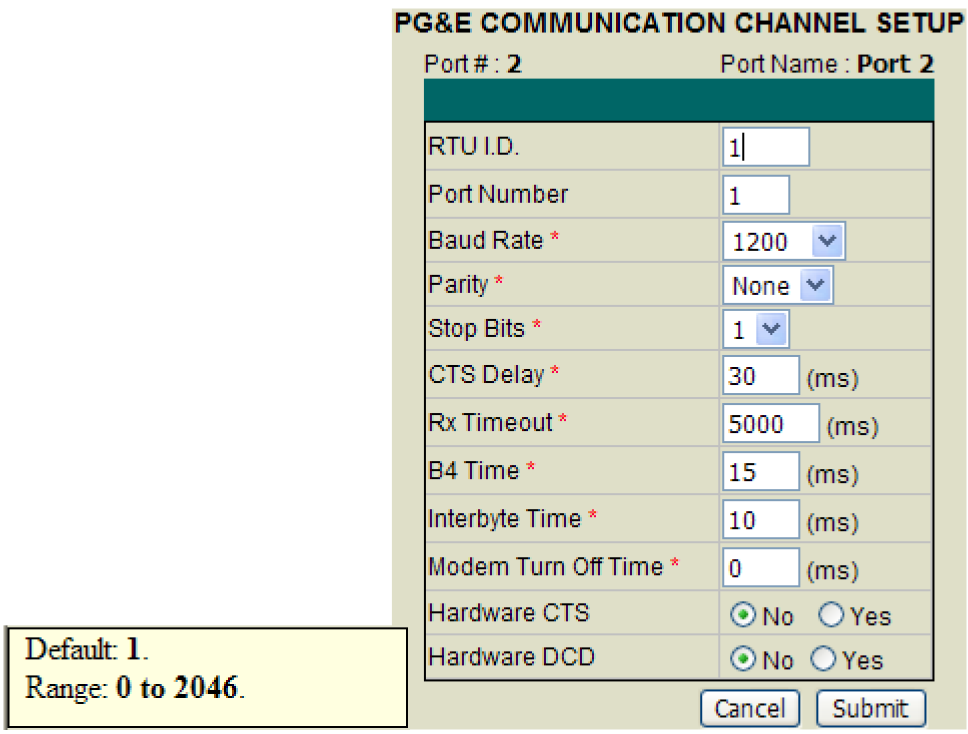
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

14.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 14-1.

Figure 14-1 PG&E Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D. (0 – 2046)
Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 1.

Port Number (1 – 4)

Enter the Port Number. Default setting is 1.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 1200.

Parity (None, Odd, Even)
Select the parity for the associated channel. The default setting is None.

Stop Bits (0,1,2)
Select the stop bits from the pull-down menu. The default is 1.

CTS Delay (0 – 1000ms)
Enter the Clear-To-Send delay in milliseconds for the associated channel. This is the time delay the channel will wait to start transmitting following Request-To-Send signal being asserted. Default setting is 30.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 15.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 10.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

Navigation

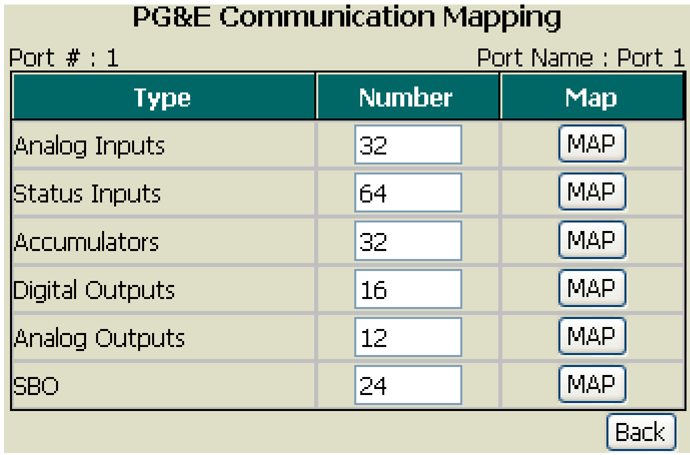
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

14.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 14-2 will appear. Enter the number of points for each type of point, then click MAP before moving on to the next point type.

Figure 14-2 PG&E Communication Mapping



Type
The different types of I/O points supported by this protocol.

Number
Enter the quantity of points for the given type.

Note: You must Map the points entered before moving to the next point type.

Map
Click the MAP button to map the points.

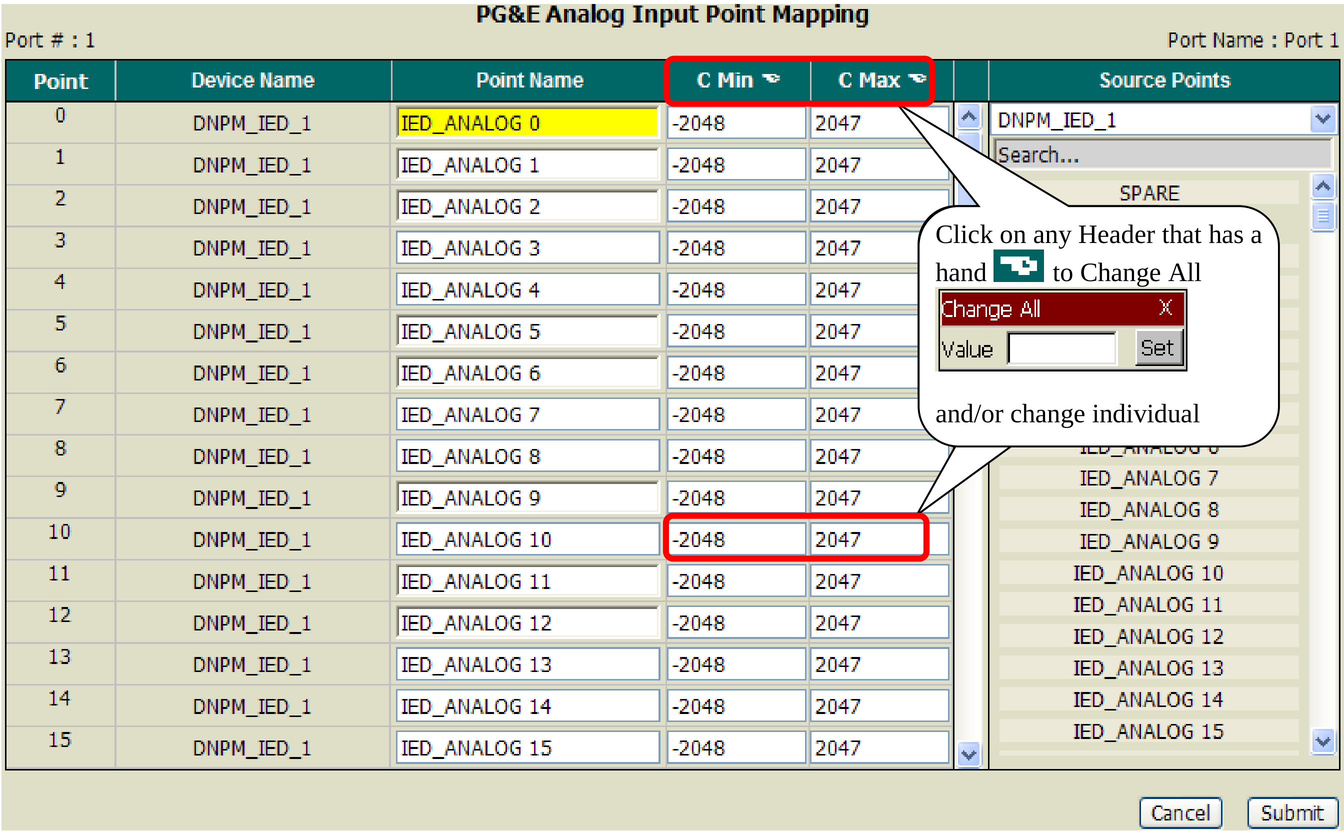
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the IED Configuration screen.

14.3.1 Map Analog Inputs

From the PG&E Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 14-3 will appear.

Figure 14-3 PG&E Analog Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2048.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2047.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

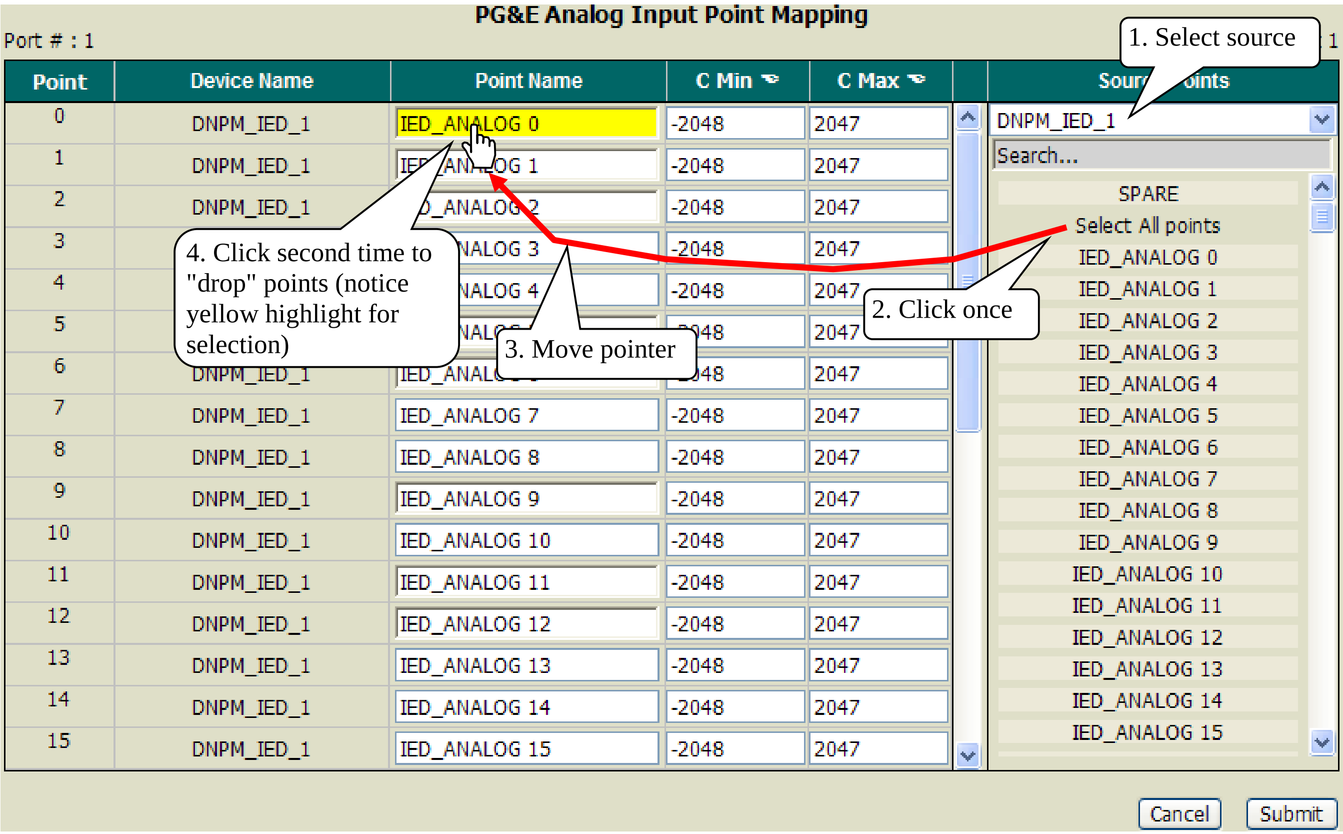
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

14.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

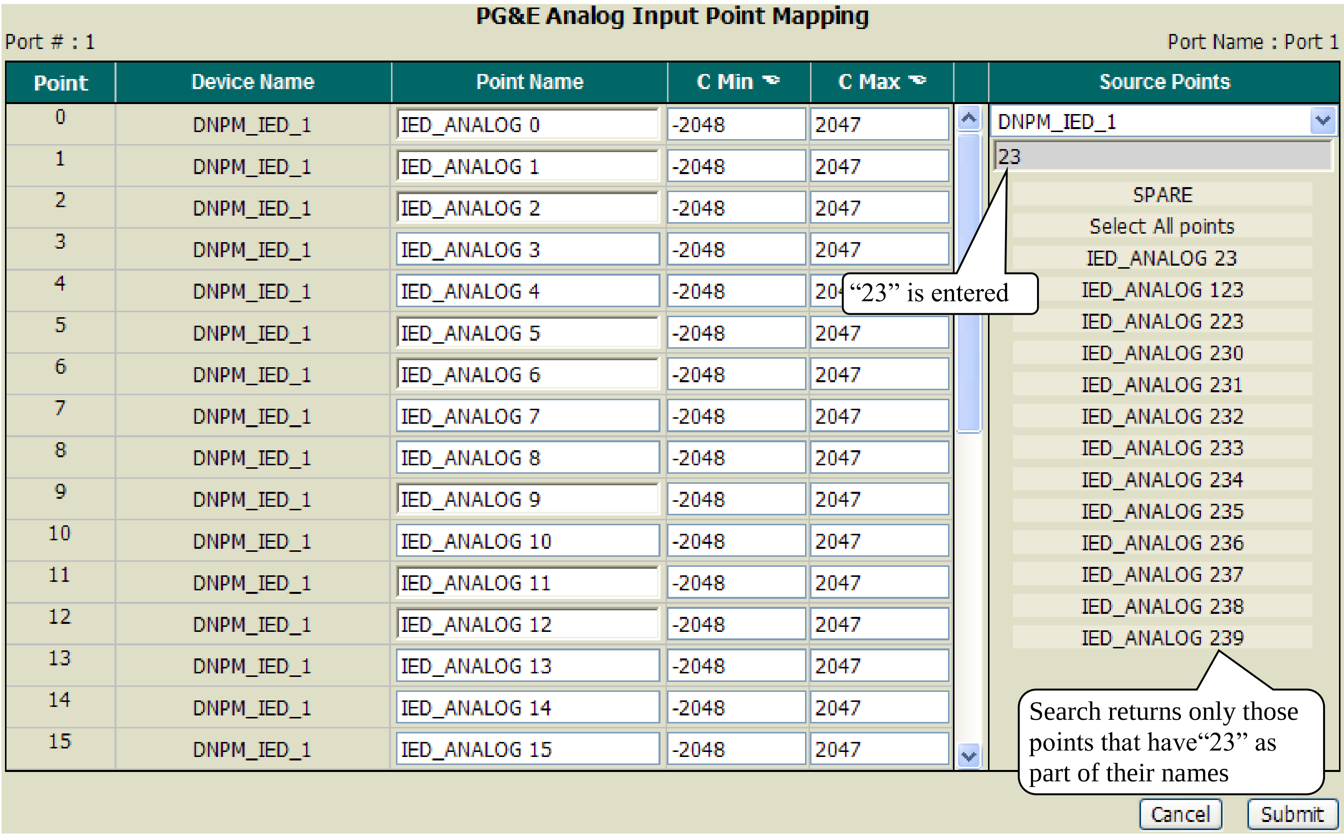
Figure 14-4 Point Mapping Highlight



14.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

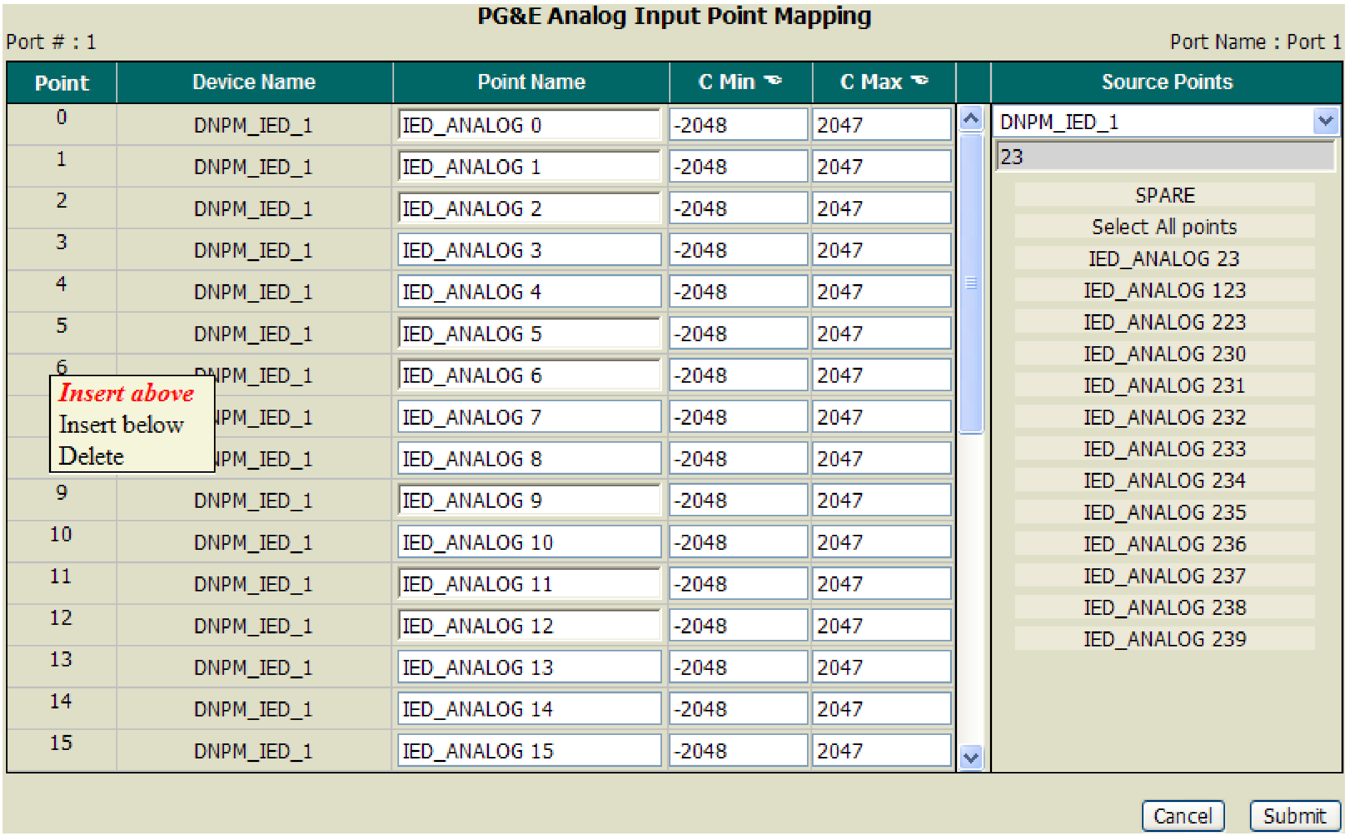
Figure 14-5 Point Database Search



14.3.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #6) and right click the mouse. The message box shown below appears. Select Insert above (or below) and left click.

Figure 14-6 Insert a Point



The results of Insert is shown in the next Figure. Notice that the old Point #6, IED_ANALOG 6, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 14-7 Results of Insert Above

PG&E Analog Input Point Mapping

Port # : 1 Port Name : Port 1

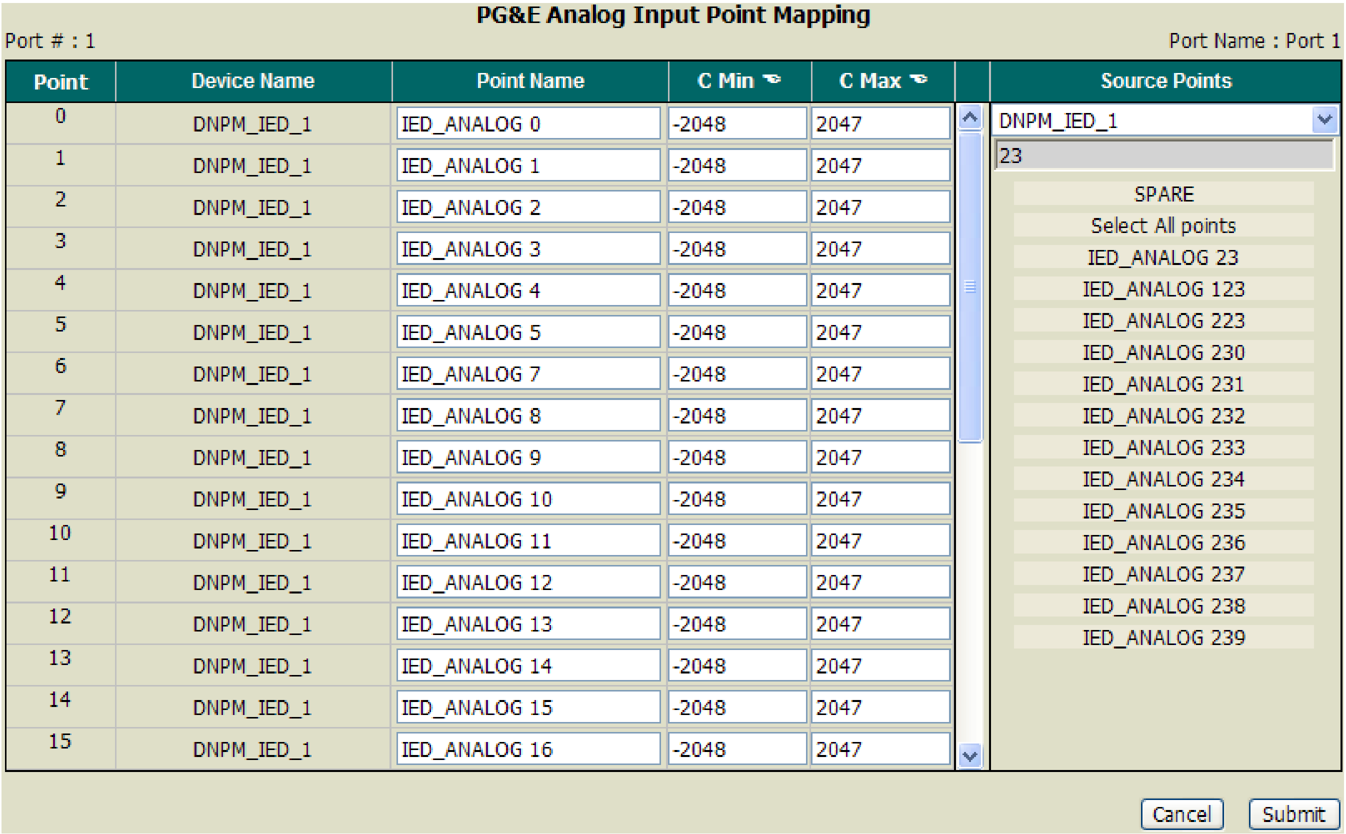
Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2048	2047
1	DNPM_IED_1	IED_ANALOG 1	-2048	2047
2	DNPM_IED_1	IED_ANALOG 2	-2048	2047
3	DNPM_IED_1	IED_ANALOG 3	-2048	2047
4	DNPM_IED_1	IED_ANALOG 4	-2048	2047
5	DNPM_IED_1	IED_ANALOG 5	-2048	2047
6		SPARE	-2048	2047
7	DNPM_IED_1	IED_ANALOG 6	-2048	2047
8	DNPM_IED_1	IED_ANALOG 7	-2048	2047
9	DNPM_IED_1	IED_ANALOG 8	-2048	2047
10	DNPM_IED_1	IED_ANALOG 9	-2048	2047
11	DNPM_IED_1	IED_ANALOG 10	-2048	2047
12	DNPM_IED_1	IED_ANALOG 11	-2048	2047
13	DNPM_IED_1	IED_ANALOG 12	-2048	2047
14	DNPM_IED_1	IED_ANALOG 13	-2048	2047
15	DNPM_IED_1	IED_ANALOG 14	-2048	2047

Source Points
DNPM_IED_1
23
SPARE
Select All points
IED_ANALOG 23
IED_ANALOG 123
IED_ANALOG 223
IED_ANALOG 230
IED_ANALOG 231
IED_ANALOG 232
IED_ANALOG 233
IED_ANALOG 234
IED_ANALOG 235
IED_ANALOG 236
IED_ANALOG 237
IED_ANALOG 238
IED_ANALOG 239

Cancel Submit

The Spare point can also be deleted. The following example shows the results of deleting Point#6, IED_ANALOG 6.

Figure 14-8 Results of Deleting a Point



PG&E Analog Input Point Mapping

Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2048	2047
1	DNPM_IED_1	IED_ANALOG 1	-2048	2047
2	DNPM_IED_1	IED_ANALOG 2	-2048	2047
3	DNPM_IED_1	IED_ANALOG 3	-2048	2047
4	DNPM_IED_1	IED_ANALOG 4	-2048	2047
5	DNPM_IED_1	IED_ANALOG 5	-2048	2047
6	DNPM_IED_1	IED_ANALOG 7	-2048	2047
7	DNPM_IED_1	IED_ANALOG 8	-2048	2047
8	DNPM_IED_1	IED_ANALOG 9	-2048	2047
9	DNPM_IED_1	IED_ANALOG 10	-2048	2047
10	DNPM_IED_1	IED_ANALOG 11	-2048	2047
11	DNPM_IED_1	IED_ANALOG 12	-2048	2047
12	DNPM_IED_1	IED_ANALOG 13	-2048	2047
13	DNPM_IED_1	IED_ANALOG 14	-2048	2047
14	DNPM_IED_1	IED_ANALOG 15	-2048	2047
15	DNPM_IED_1	IED_ANALOG 16	-2048	2047

Source Points
DNPM_IED_1
23
SPARE
Select All points
IED_ANALOG 23
IED_ANALOG 123
IED_ANALOG 223
IED_ANALOG 230
IED_ANALOG 231
IED_ANALOG 232
IED_ANALOG 233
IED_ANALOG 234
IED_ANALOG 235
IED_ANALOG 236
IED_ANALOG 237
IED_ANALOG 238
IED_ANALOG 239

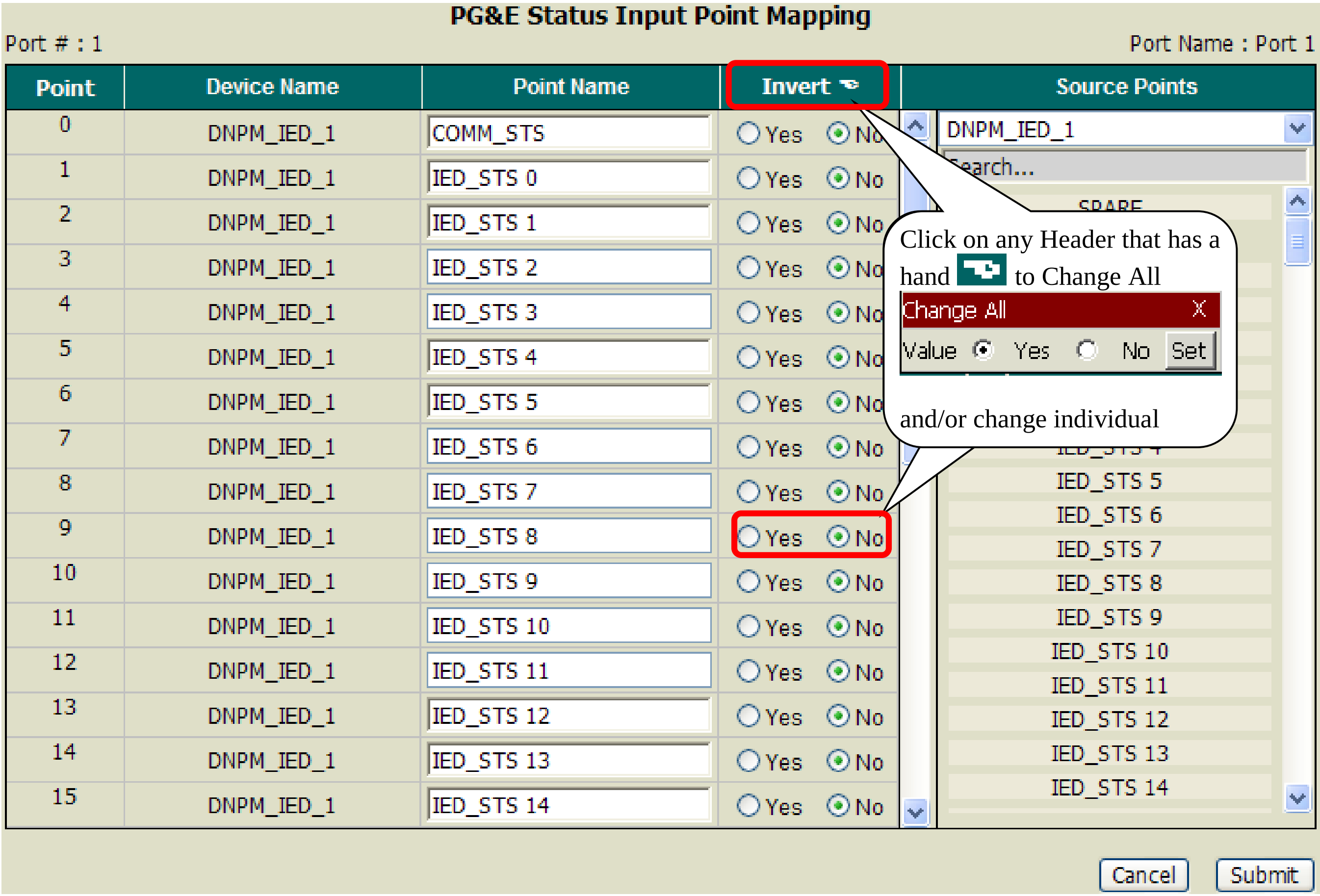
Cancel Submit

Notice that IED_ANALOG 6 is now missing, although Point numbers remain contiguous.

14.3.2 Map Status Inputs

From the PG&E Communication Mapping screen, click the MAP button for Status Inputs. A screen similar to Figure 14-9 will appear.

Figure 14-9 PG&E Status Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

14.3.2.1 Point Mapping Highlight

See the Analog Input example.

14.3.2.2 Point Database Search

See the Analog Input example.

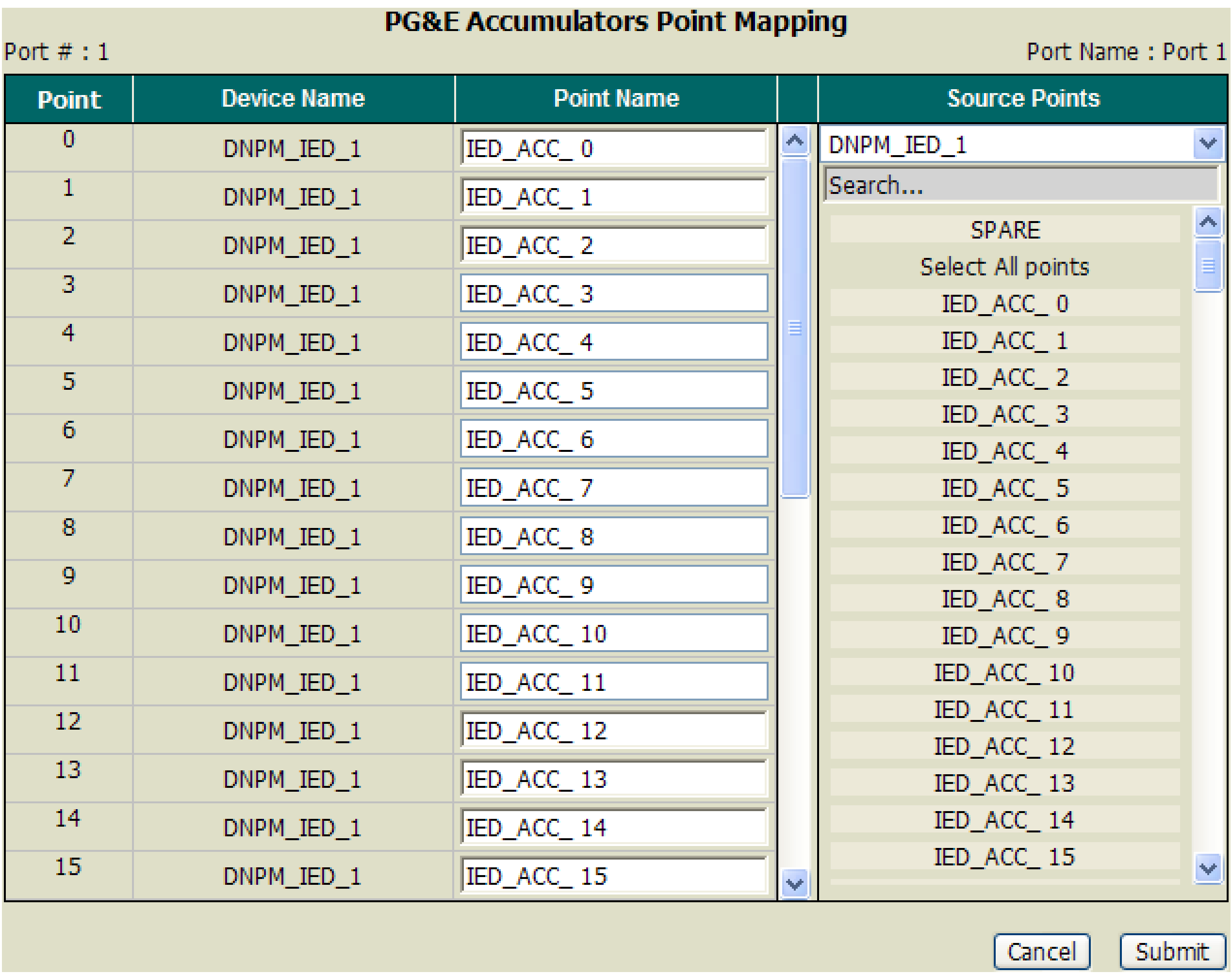
14.3.2.3 Insert & Delete Points

See the Analog Input example.

14.3.3 Map Accumulators

From the PG&E Communication Mapping screen, click the MAP button for Accumulators. A screen similar to Figure 14-10 will appear.

Figure 14-10 PG&E Accumulator Point Mapping



Point
The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

14.3.3.1 Point Mapping Highlight

See the Analog Input example.

14.3.3.2 Point Database Search

See the Analog Input example.

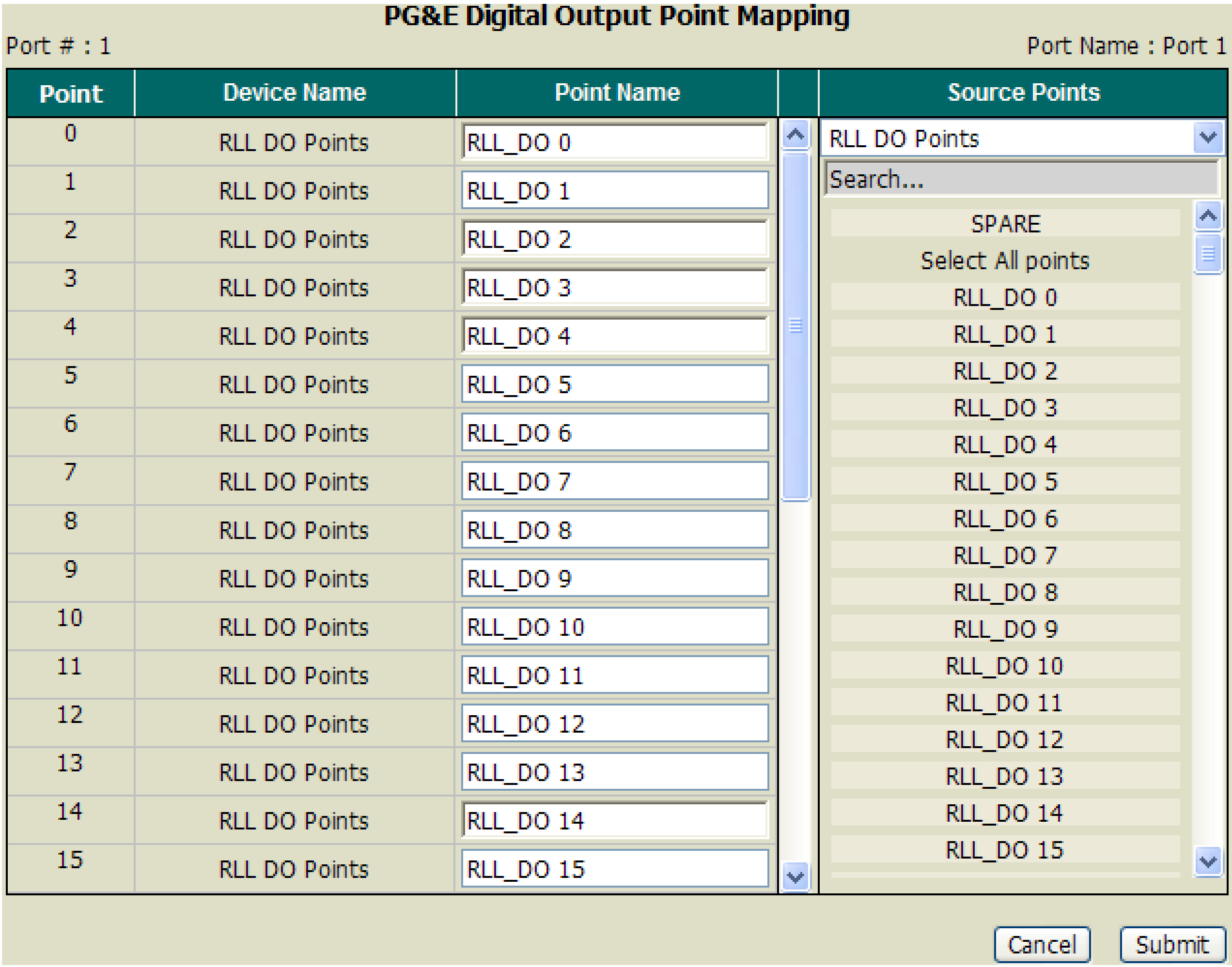
14.3.3.3 Insert & Delete Points

See the Analog Input example.

14.3.4 Map Digital Outputs

From the PG&E Communication Mapping screen, click the MAP button for Digital Outputs. A screen similar to Figure 14-11 will appear.

Figure 14-11 PG&E Digital Outputs Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

14.3.4.1 Point Mapping Highlight

See the Analog Input example.

14.3.4.2 Point Database Search

See the Analog Input example.

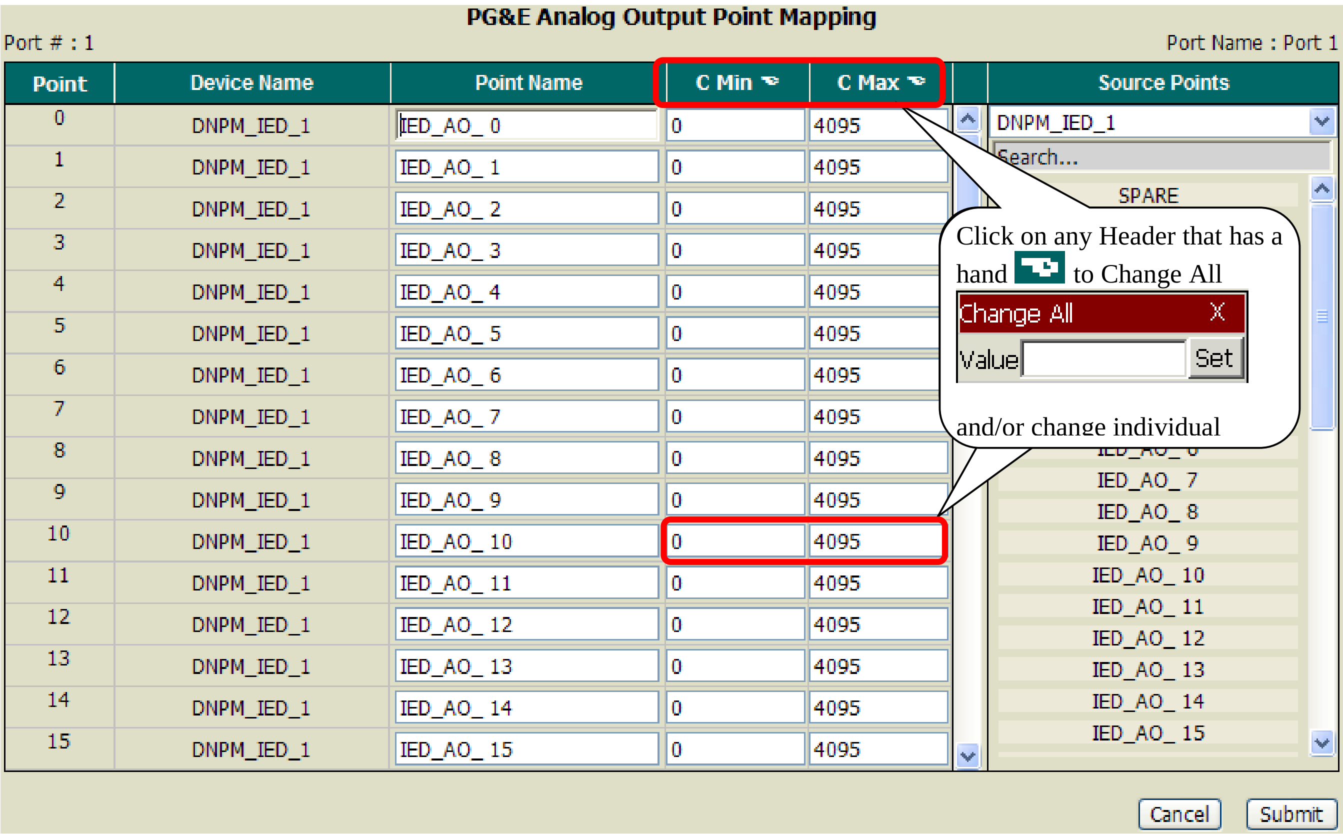
14.3.4.3 Insert & Delete Points

See the Analog Input example.

14.3.5 Map Analog Outputs

From the PG&E Communication Mapping screen, click the MAP button for Analog Outputs. A screen similar to Figure 14-12 will appear.

Figure 14-12 PG&E Analog Output Point Mapping



Point

The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name

The name of the mapped point.

C Min
Enter the minimum counts to be sent by the master station for a minimum EU value. Default setting is 0.

C Max
Enter the maximum counts to be sent by the master station for a maximum EU value. Default setting is 4095.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

14.3.5.1 Point Mapping Highlight

See the Analog Input example.

14.3.5.2 Point Database Search

See the Analog Input example.

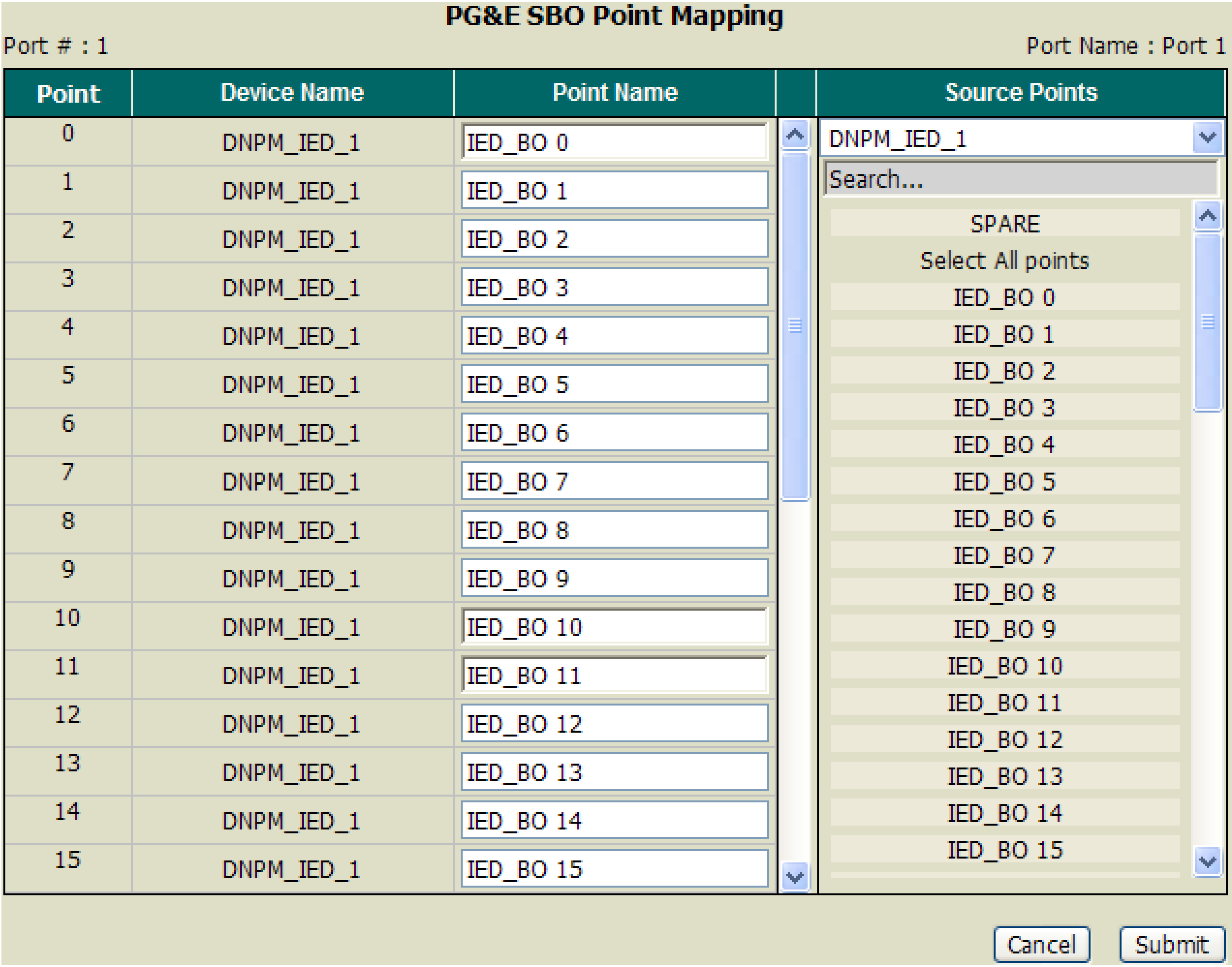
14.3.5.3 Insert & Delete Points

See the Analog Input example.

14.3.6 Map SBOs

From the PG&E Communication Mapping screen, click the MAP button for SBOs. A screen similar to Figure 14-13 will appear.

Figure 14-13 PG&E SBO Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

14.3.6.1 Point Mapping Highlight

See the Analog Input example.

14.3.6.2 Point Database Search

See the Analog Input example.

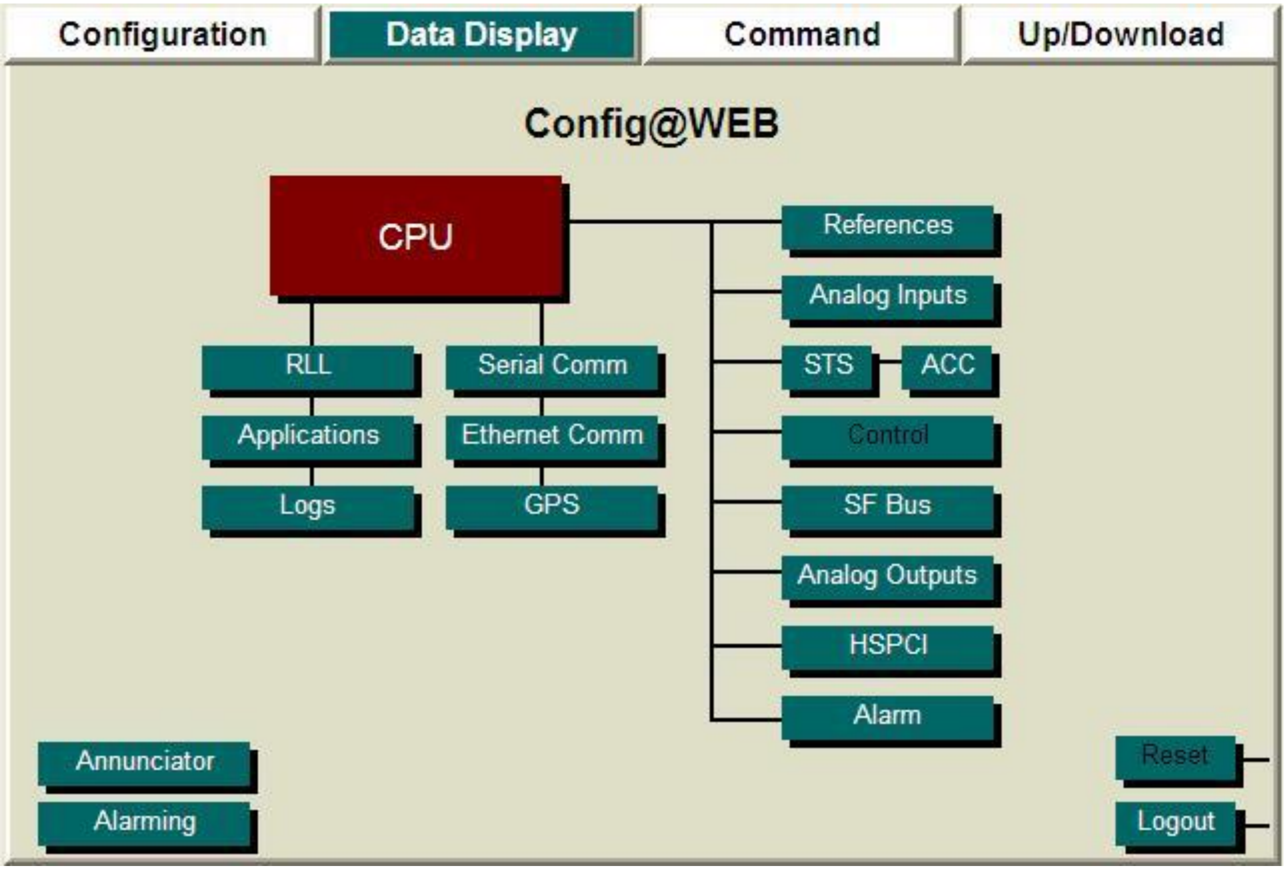
14.3.6.3 Insert & Delete Points

See the Analog Input example.

14.4 Data Display

Click the Data Display tab as shown in Figure 14-14.

Figure 14-14 Data Display Screen



Click Serial Comm to get the screen shown in Figure 14-15

Figure 14-15 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	PG&E	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

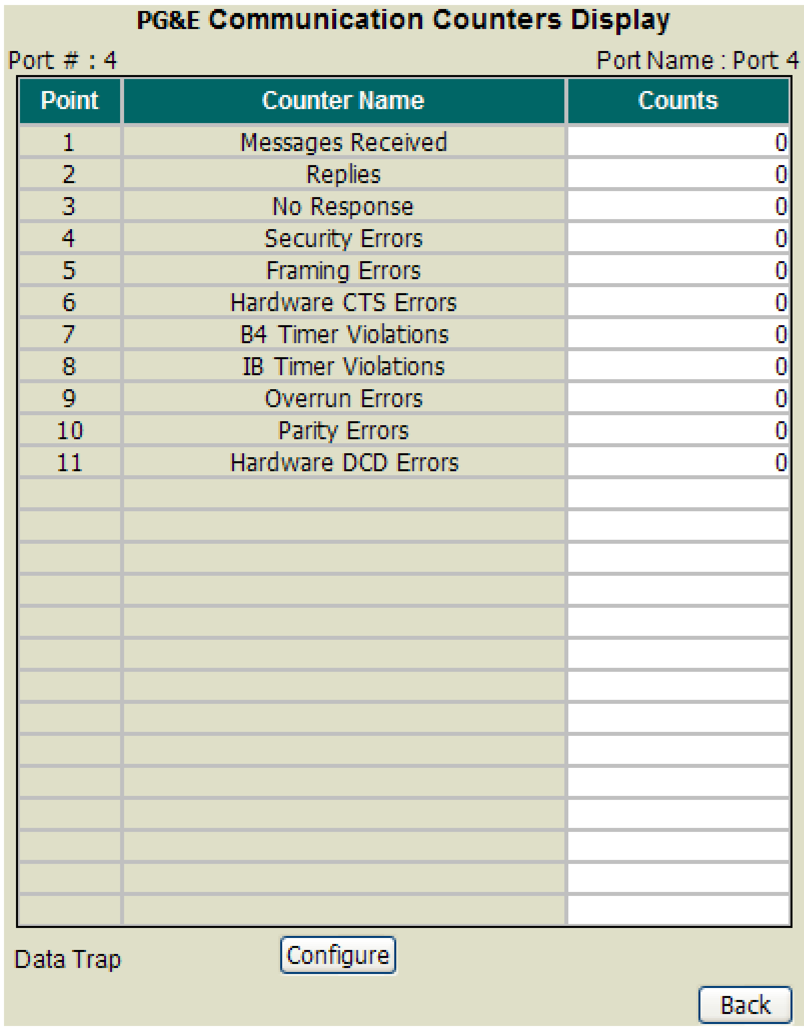
Display Port Data
Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

Navigation
Click the Back button to return to the previous screen.

14.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 14-16.

Figure 14-16 PG&E Communication Counters Display



Point Number
A logical point number for reference only.

Counter Name
The following counters are monitored:

Messages Received
This indicates the cumulative number of received messages since the last reset or power-up.

Replies

This indicates the cumulative number of frames received since the last reset or power-up.

No Response

This indicates the cumulative number of times that no response was received since the last reset or power-up.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Framing Errors

This indicates the cumulative number of received bytes with framing errors since the last reset or power-up. This can be affected by parity and MTO.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

B4 Timer Violations

This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

IB Timer Violations

This indicates the cumulative number of Interbyte timer violations since the last reset or power-up. This count can be affected by the setting of the Interbyte Time in configuration.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Parity Errors

This indicates the cumulative number of parity errors since the last reset or power-up.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

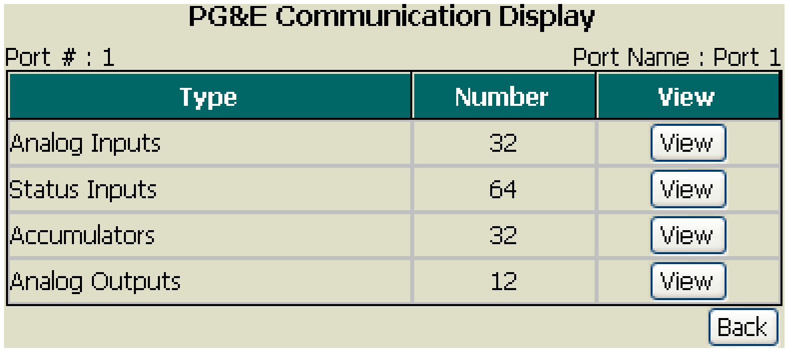
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

14.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 14-17.

Figure 14-17 PG&E Communication Display


PG&E Communication Display

Port # : 1 Port Name : Port 1

Type	Number	View
Analog Inputs	32	View
Status Inputs	64	View
Accumulators	32	View
Analog Outputs	12	View

Back

Type
The type of point.

Number
The number of points of each type.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

14.4.2.1 Analog Inputs

From the PG&E Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 14-18.

Note: AIs are displayed as 12 bit analogs.

Figure 14-18 PG&E Analog Inputs Display

PG&E Analog Inputs Display

(displayed as 12 bit analogs)

Port # : 1 Port Name : Port 1

Page1 of 1 Go To [ ] Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	DNPM_IED_1	IED_ANALOG 0	F	0.000	0
1	DNPM_IED_1	IED_ANALOG 1	F	0.000	0
2	DNPM_IED_1	IED_ANALOG 2	F	0.000	0
3	DNPM_IED_1	IED_ANALOG 3	F	0.000	0
4	DNPM_IED_1	IED_ANALOG 4	F	0.000	0
5	DNPM_IED_1	IED_ANALOG 5	F	0.000	0
6	DNPM_IED_1	IED_ANALOG 6	F	0.000	0
7	DNPM_IED_1	IED_ANALOG 7	F	0.000	0
8	DNPM_IED_1	IED_ANALOG 8	F	0.000	0
9	DNPM_IED_1	IED_ANALOG 9	F	0.000	0
10	DNPM_IED_1	IED_ANALOG 10	F	0.000	0
11	DNPM_IED_1	IED_ANALOG 11	F	0.000	0
12	DNPM_IED_1	IED_ANALOG 12	F	0.000	0
13	DNPM_IED_1	IED_ANALOG 13	F	0.000	0
14	DNPM_IED_1	IED_ANALOG 14	F	0.000	0
15	DNPM_IED_1	IED_ANALOG 15	F	0.000	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

14.4.2.2 Status Inputs

From the PG&E Communication Display screen, click View for Status Inputs to get the screen shown in Figure 14-19.

Figure 14-19 PG&E Status Inputs Display

PG&E Status Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 4 Go To [ ] Go Next>>

Point	Device Name	Point Name	Point Status	Point State	●
0	Hardware DI	DI_PNT_1		CLOSE	●
1	Hardware DI	DI_PNT_2		CLOSE	●
2	Hardware DI	DI_PNT_3		CLOSE	●
3	Hardware DI	DI_PNT_4		CLOSE	●
4	Hardware DI	DI_PNT_5		OPEN	●
5	Hardware DI	DI_PNT_6		OPEN	●
6	Hardware DI	DI_PNT_7		OPEN	●
7	Hardware DI	DI_PNT_8		OPEN	●
8	AC Analog Inputs	Comm Status		OPEN	●
9	AC Analog Inputs	Fault Phase A		OPEN	●
10	AC Analog Inputs	Fault Phase B		OPEN	●
11	AC Analog Inputs	Fault Phase C		OPEN	●
12	AC Analog Inputs	Fault Neutral		OPEN	●
13	AC Analog Inputs	Battery PWR Fail		OPEN	●
14	AC Analog Inputs	Primary PWR Fail		OPEN	●
15	No Device	Spare		OPEN	●

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

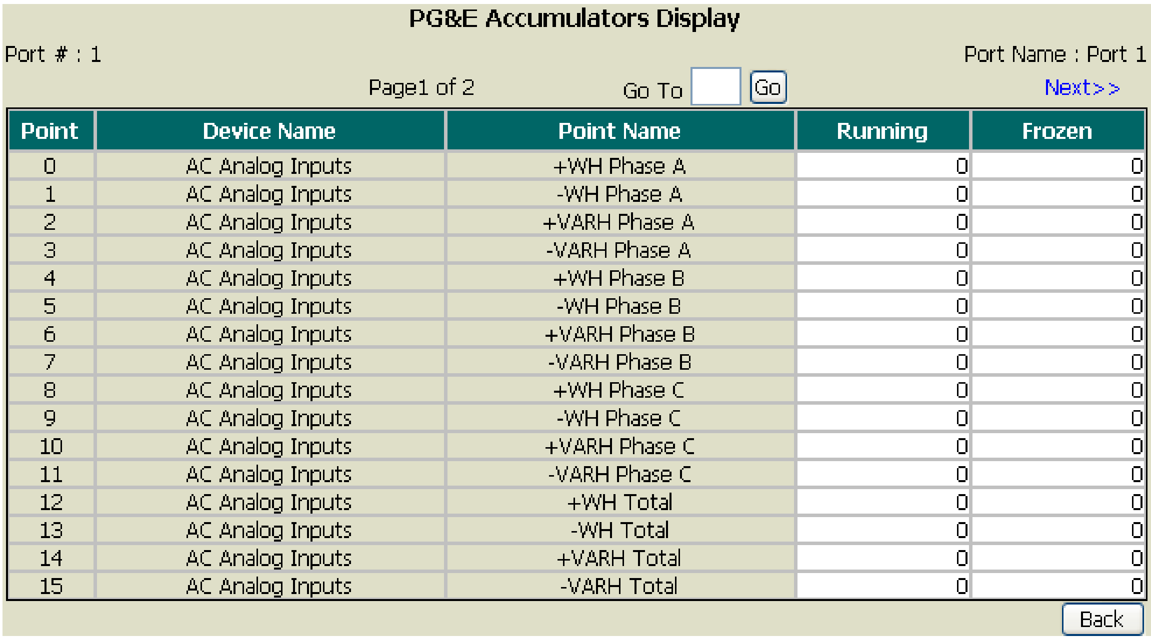
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

14.4.2.3 Accumulators

From the PG&E Communication Display screen, click View for Accumulators to get the screen shown in Figure 14-20.

Figure 14-20 PG&E Accumulators Display



PG&E Accumulators Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To Go Next>>

Point	Device Name	Point Name	Running	Frozen
0	AC Analog Inputs	+WH Phase A	0	0
1	AC Analog Inputs	-WH Phase A	0	0
2	AC Analog Inputs	+VARH Phase A	0	0
3	AC Analog Inputs	-VARH Phase A	0	0
4	AC Analog Inputs	+WH Phase B	0	0
5	AC Analog Inputs	-WH Phase B	0	0
6	AC Analog Inputs	+VARH Phase B	0	0
7	AC Analog Inputs	-VARH Phase B	0	0
8	AC Analog Inputs	+WH Phase C	0	0
9	AC Analog Inputs	-WH Phase C	0	0
10	AC Analog Inputs	+VARH Phase C	0	0
11	AC Analog Inputs	-VARH Phase C	0	0
12	AC Analog Inputs	+WH Total	0	0
13	AC Analog Inputs	-WH Total	0	0
14	AC Analog Inputs	+VARH Total	0	0
15	AC Analog Inputs	-VARH Total	0	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Running
The running count.

Frozen
The frozen count.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

14.4.2.4 Analog Outputs

From the PG&E Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 14-21.

Figure 14-21 PG&E Analog Outputs Display

PG&E Analog Outputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To [ ] Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	DNPM_IED_1	IED_AO_ 0	F	0.000	0
1	DNPM_IED_1	IED_AO_ 1	F	0.000	0
2	DNPM_IED_1	IED_AO_ 2	F	0.000	0
3	DNPM_IED_1	IED_AO_ 3	F	0.000	0
4	DNPM_IED_1	IED_AO_ 4	F	0.000	0
5	DNPM_IED_1	IED_AO_ 5	F	0.000	0
6	DNPM_IED_1	IED_AO_ 6	F	0.000	0
7	DNPM_IED_1	IED_AO_ 7	F	0.000	0
8	DNPM_IED_1	IED_AO_ 8	F	0.000	0
9	DNPM_IED_1	IED_AO_ 9	F	0.000	0
10	DNPM_IED_1	IED_AO_ 10	F	0.000	0
11	DNPM_IED_1	IED_AO_ 11	F	0.000	0
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value. This value is calculated based on the EGU min and EGU max settings for the target analog output point along with the current binary count sent from the master station.

Point Counts
The binary counts being sent from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

15 PMS 80

15.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

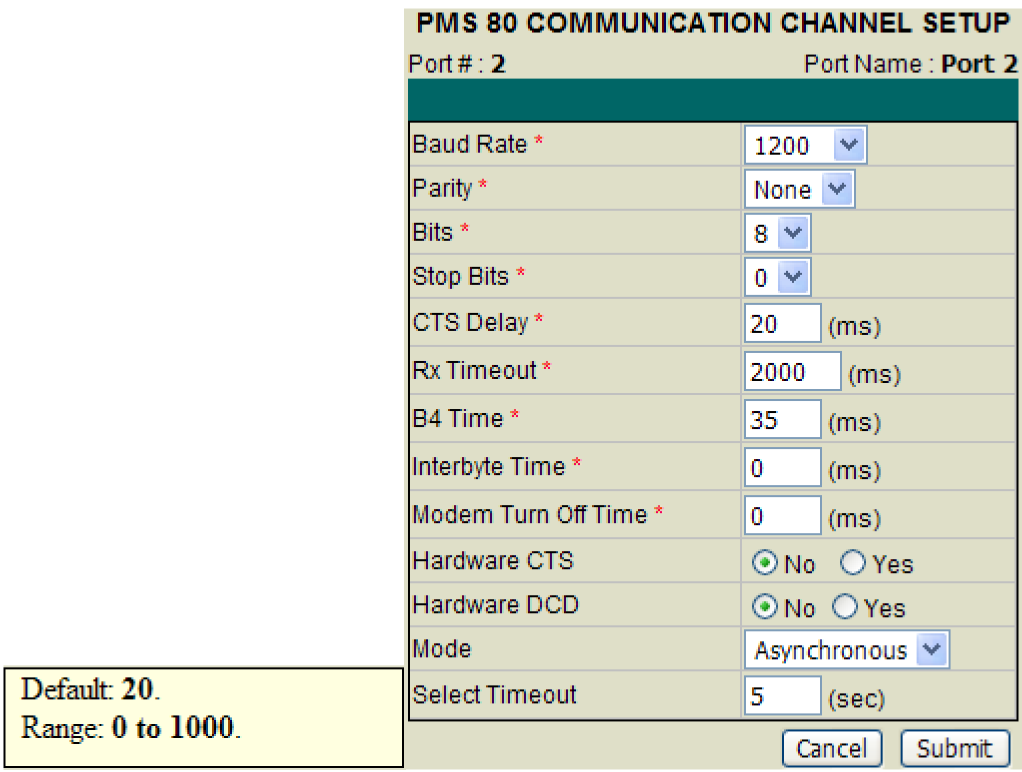
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

15.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 15-1.

Figure 15-1 Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for CTS Delay.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 1200.

Parity (None, Odd, Even)

From the drop-down menu, select the parity for the associated channel. The default setting is None.

Bits
Select the number of data bits per byte for the associated channel. The default is 8.

Stop Bits (0,1,2)
From the drop-down menu, select the stop bits for the associated channel. The default setting is 0.

CTS Delay (0 – 1000ms)
Enter the Clear-To-Send (CTS) Delay in milliseconds for the associated channel. This is the delay of time the channel will wait to start transmitting following Request-To-Send being asserted. The default setting is 20.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 2000 (2 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 35.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 0.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

Mode (Asynchronous, Synchronous)
If set to Synchronous, the communications device must provide a clock on pin 1 to be used for the reception of the master station request. The default is Asynchronous.

Note: The Synchronous communication function does not apply to the SAGE 3030.

Select Timeout (0 – 900 sec.)
Enter the SBO select timeout value. The Control Select Timeout provides a time window for an SBO execute request to reach the RTU after the Select Request has been received. This value operates for all control points. Default setting is 5.

Navigation

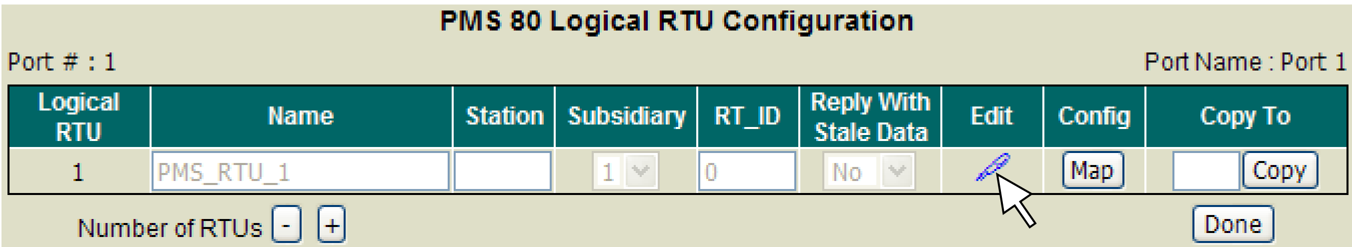
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

15.3 Logical RTU Configuration

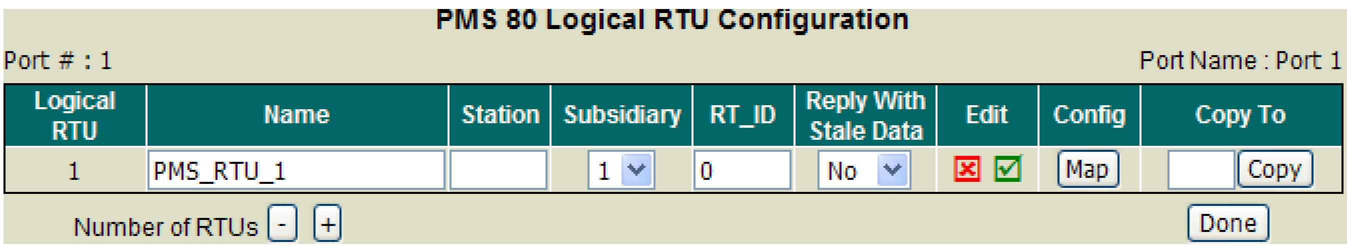
From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 15-2 will appear. By default, one (1) RTU exists for you to edit. To Edit, click the pencil icon as shown below.

Figure 15-2 PMS 80 Logical RTU Configuration



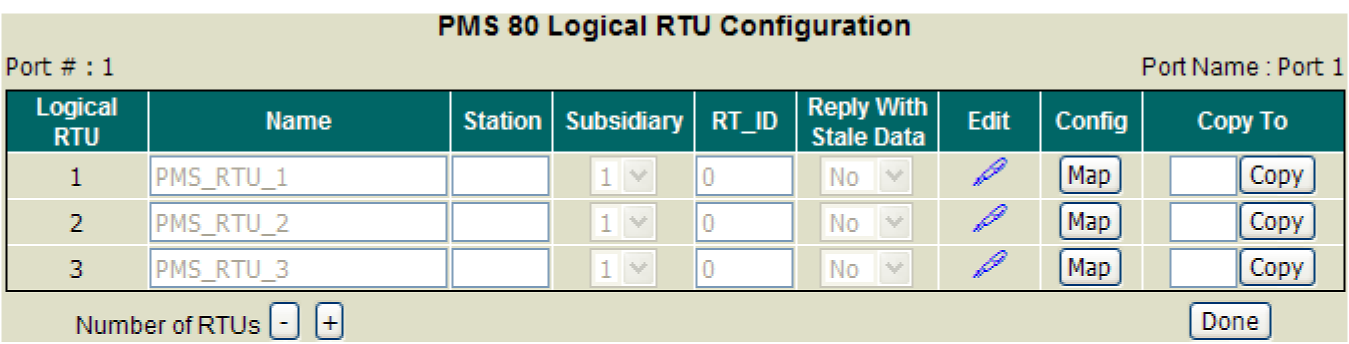
You will get a screen as shown in Figure 15-3. The name of the RTU is now editable, along with the Station field, the Subsidiary, and the RT_ID. Click the to save your changes, or the to discard your changes.

Figure 15-3 PMS 80 Logical RTU Configuration



If you wish to add logical RTUs, click the + sign with the result as shown below. You may also delete RTUs by clicking the - sign as shown. When you add logical RTUs, the Address field is initially blank so that addresses are not duplicated. A logical RTU with a blank address will not respond to any master message.

Figure 15-4 PMS 80 Logical RTU Configuration



Logical RTU
The logical number of the RTU.

Name

The name of the logical RTU. You may accept the default name or edit the name.

Station
The polling station address of this logical RTU.

Subsidiary (1 – 4)
The Subsidiary is the Operating company as follows. This value is combined with the Southern Company RT_ID field to form the RTID. The default setting is 1.

1 = Alabama Power

2 = Georgia Power

3 = Gulf Power

4 = Mississippi Power

Reply With Stale Data (No, Yes)
Click Yes if you wish to reply to the Master with stale data from a Logical RTU. The default is No.

RT_ID (0 – 999)
Enter the unique RTU I.D. number for the Southern Company. This value is combined with the Subsidiary field to form the RTID. The default is 0.

Edit
Allows editing of the RTU information. See above.

Config
Click the Map button under the Config heading to configure the number of points and map those points.

Copy To
When configuring more than one logical RTU, allows an RTU configuration to be copied to another logical RTU configuration.

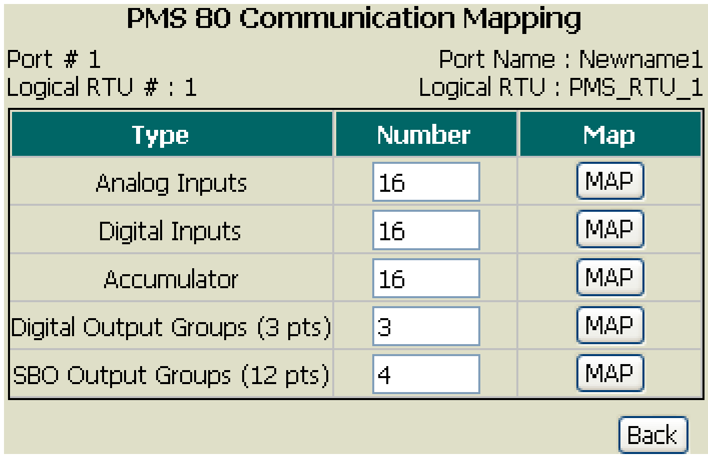
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button to return to the Communication Port Configuration screen.

15.4 Point Operations

From the Logical RTU Configuration screen, click the Map button. A screen similar to Figure 15-5 will appear. Enter the Number for each type of point, then click MAP before moving on to the next point type.

Figure 15-5 PMS 80 Communication Mapping



Type
The different types of I/O points supported by this protocol.

Number
Enter the quantity of points for the given type.

Map
Click the MAP button to map the points.

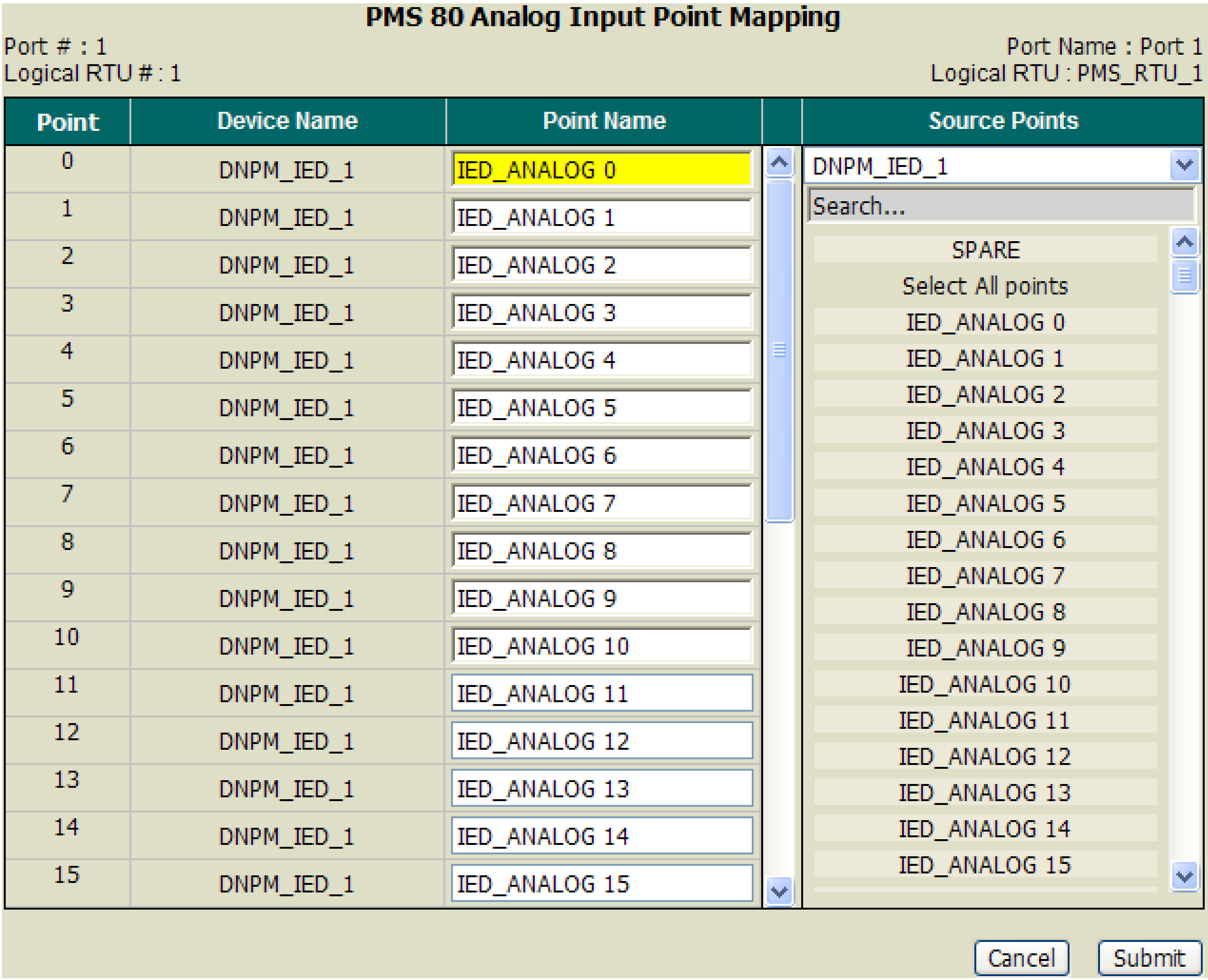
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Logical RTU # :*number* tells you the number of the logical RTU you are mapping and Logical RTU : *name* tell you the name of the logical RTU. Click the Back button to return to the previous screen.

15.4.1 Map Analog Inputs

From the PMS 80 Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 15-6 will appear.

Figure 15-6 Analog Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

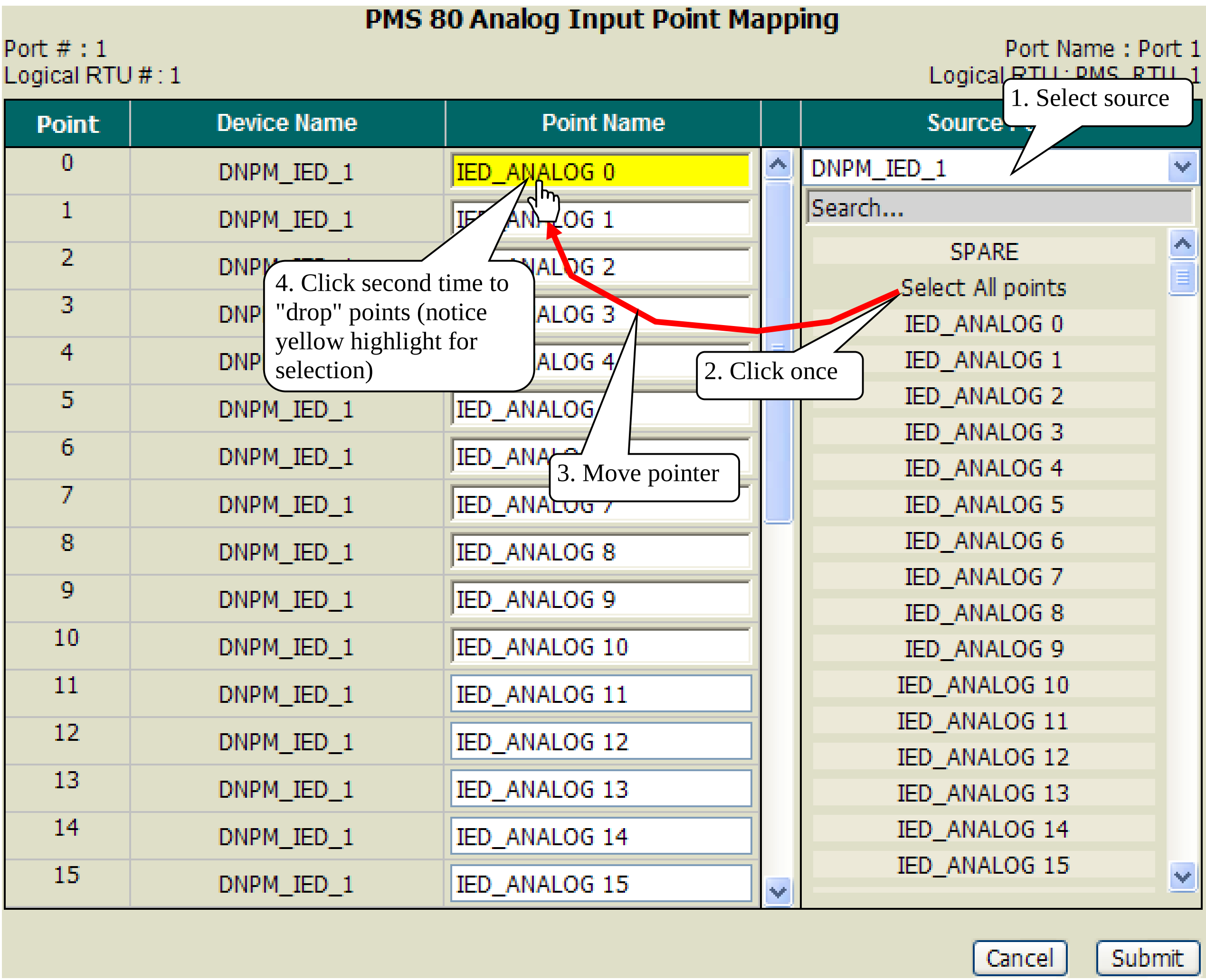
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Logical RTU # :*number* tells you the number of the logical RTU you are mapping and Logical RTU : *name* tell you the name of the logical RTU. Click the Back button to return to the previous screen.

Please note: No configuration changes take effect until the RTU is reset.

15.4.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

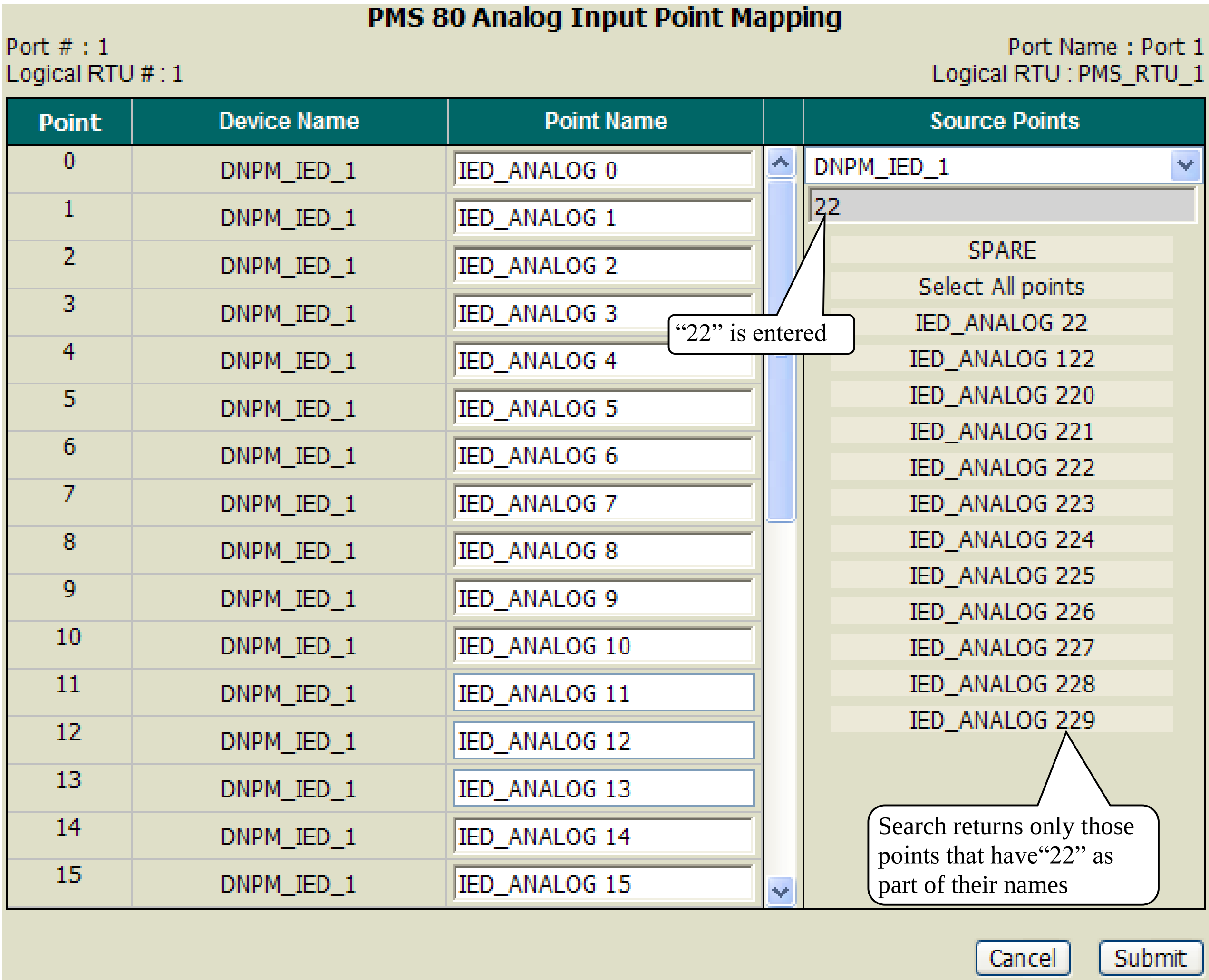
Figure 15-7 Point Mapping Highlight



15.4.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

Figure 15-8 Point Database Search



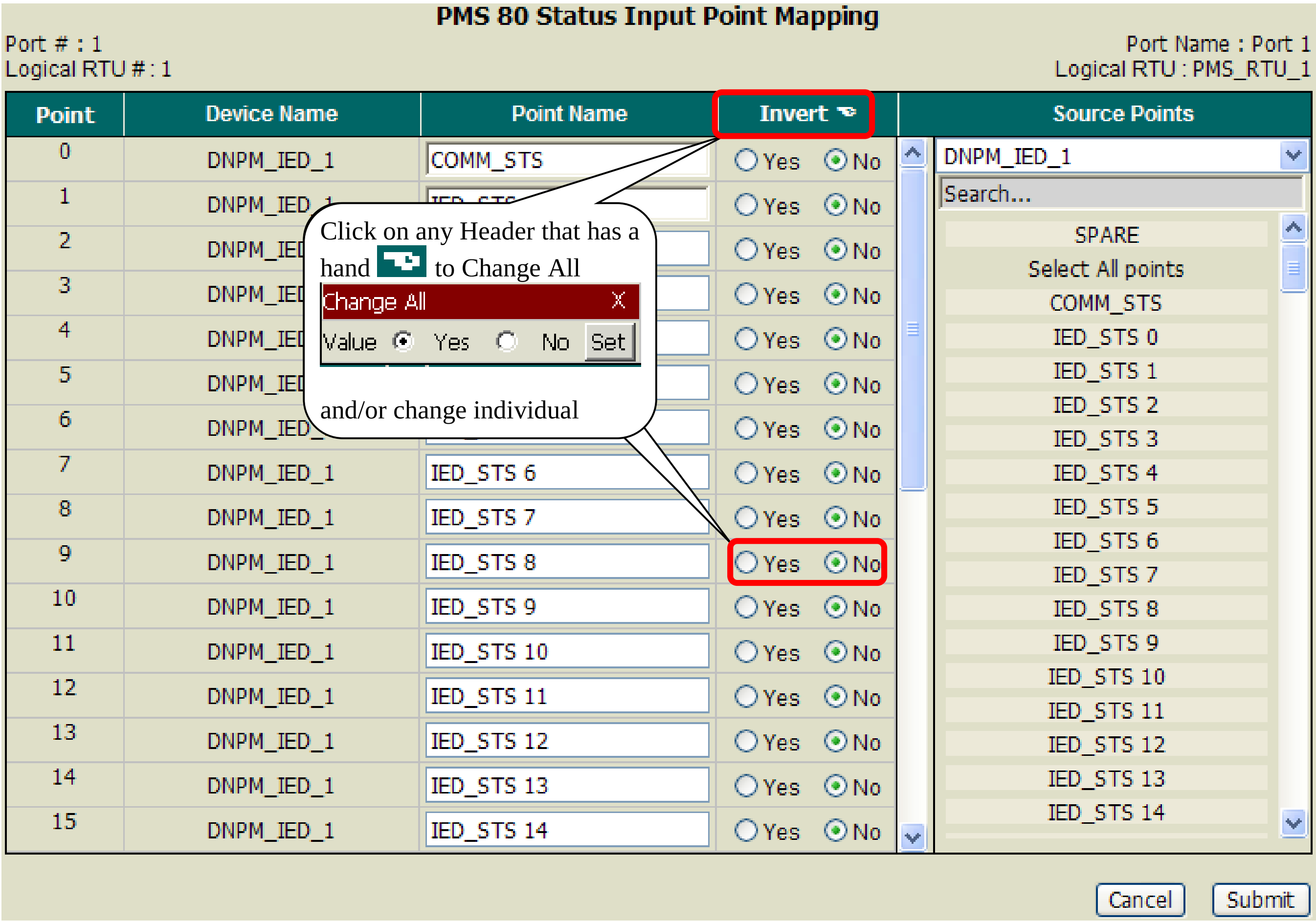
15.4.1.3 Insert & Delete Points

Insert & Delete not applicable to PMS 80 protocol.

15.4.2 Map Digital Inputs

From the Communication Mapping screen, click the MAP button for Digital Inputs. A screen similar to Figure 15-9 will appear.

Figure 15-9 Digital Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Logical RTU # :*number* tells you the number of the logical RTU you are mapping and Logical RTU : *name* tell you the name of the logical RTU. Click the Back button to return to the previous screen.

Please note: No configuration changes take effect until the RTU is reset.

15.4.2.1 Point Mapping Highlight

See the Analog Input example.

15.4.2.2 Point Database Search

See the Analog Input example.

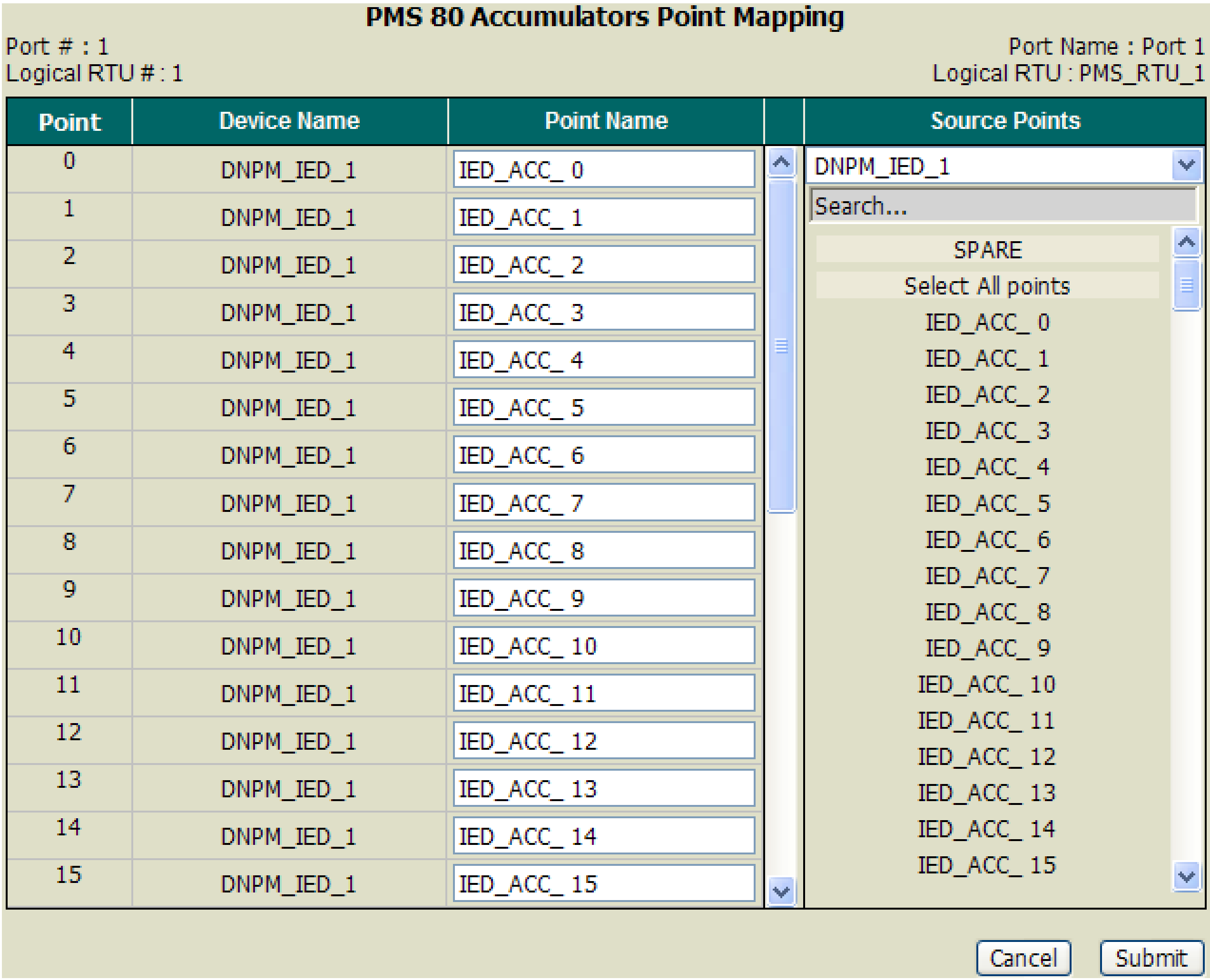
15.4.2.3 Insert & Delete Points

Insert & Delete not applicable to PMS 80 protocol.

15.4.3 Map Accumulators

From the Communication Mapping screen, click the MAP button for Accumulators. A screen similar to Figure 15-10 will appear.

Figure 15-10 Accumulator Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Logical RTU # :*number* tells you the number of the logical RTU you are mapping and Logical RTU : *name* tell you the name of the logical RTU. Click the Back button to return to the previous screen.

Please note: No configuration changes take effect until the RTU is reset.

15.4.3.1 Point Mapping Highlight

See the Analog Input example.

15.4.3.2 Point Database Search

See the Analog Input example.

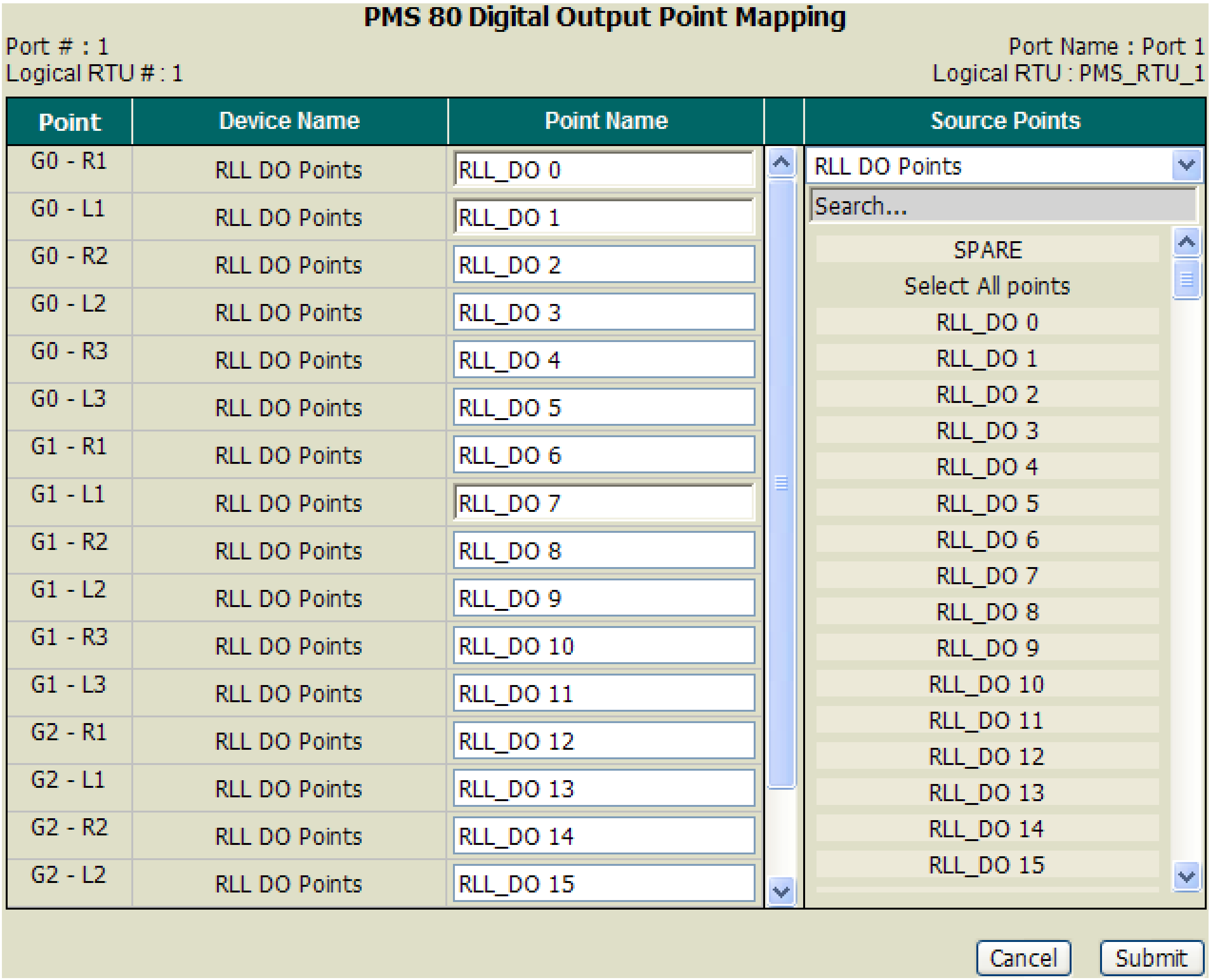
15.4.3.3 Insert & Delete Points

Insert & Delete not applicable to PMS 80 protocol.

15.4.4 Map Digital Outputs

From the Communication Mapping screen, click the MAP button for Digital Output Groups. A screen similar to Figure 15-11 will appear.

Figure 15-11 Digital Output Point Mapping



Point
The Group number and the Raise/Lower point number (3ea. R/L points per group).

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Logical RTU # :*number* tells you the number of the logical RTU you are mapping and Logical RTU : *name* tell you the name of the logical RTU. Click the Back button to return to the previous screen.

Please note: No configuration changes take effect until the RTU is reset.

15.4.4.1 Point Mapping Highlight

See the Analog Input example.

15.4.4.2 Point Database Search

See the Analog Input example.

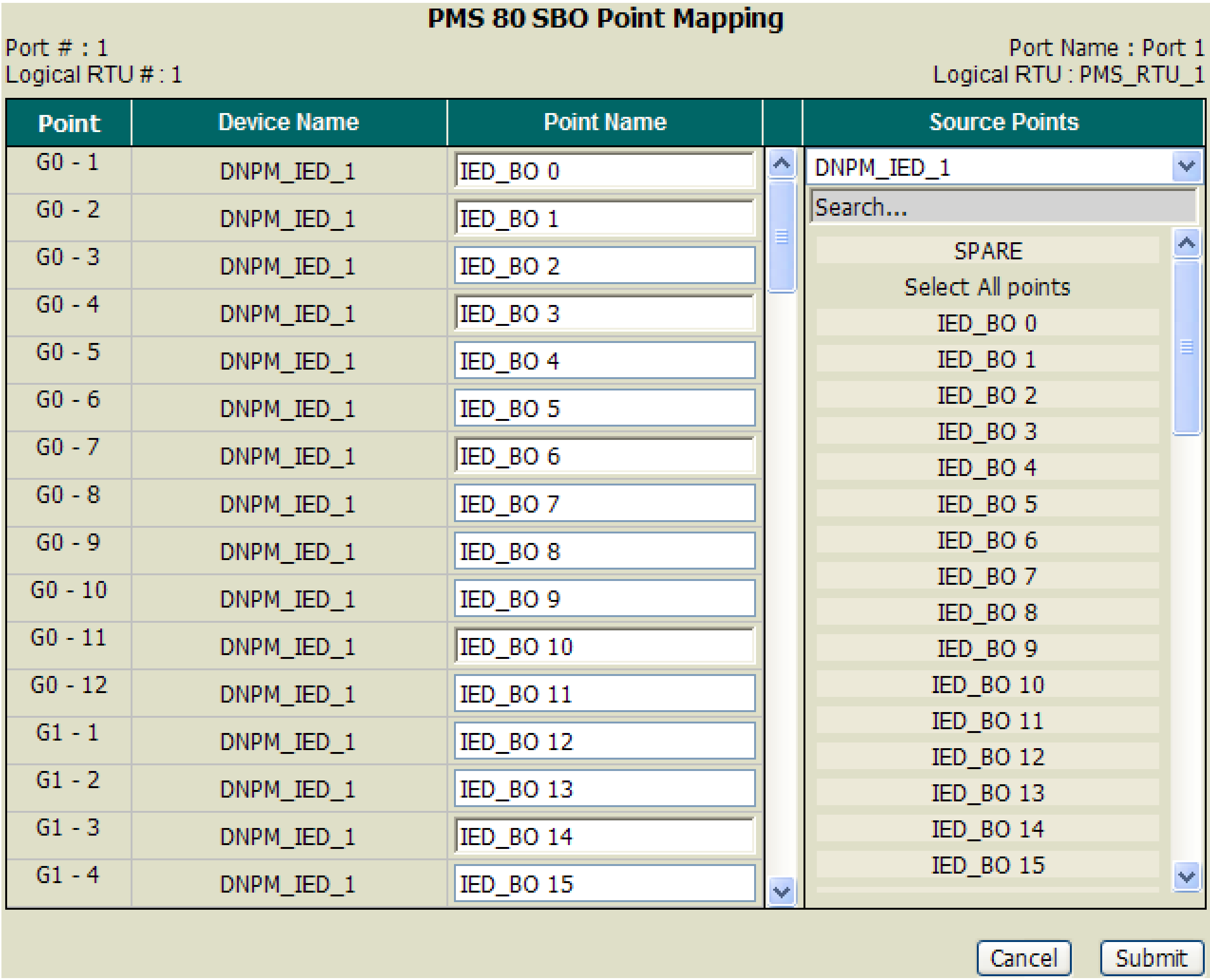
15.4.4.3 Insert & Delete Points

Insert & Delete not applicable to PMS 80 protocol.

15.4.5 Map SBOs

From the Communication Mapping screen, click the MAP button for SBO Output Groups. A screen similar to Figure 15-12 will appear.

Figure 15-12 SBO Point Mapping



Point
The Group number and the point number (12ea. points per group).

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Logical RTU # :*number* tells you the number of the logical RTU you are mapping and Logical RTU : *name* tell you the name of the logical RTU. Click the Back button to return to the previous screen.

Please note: No configuration changes take effect until the RTU is reset.

15.4.5.1 Point Mapping Highlight

See the Analog Input example.

15.4.5.2 Point Database Search

See the Analog Input example.

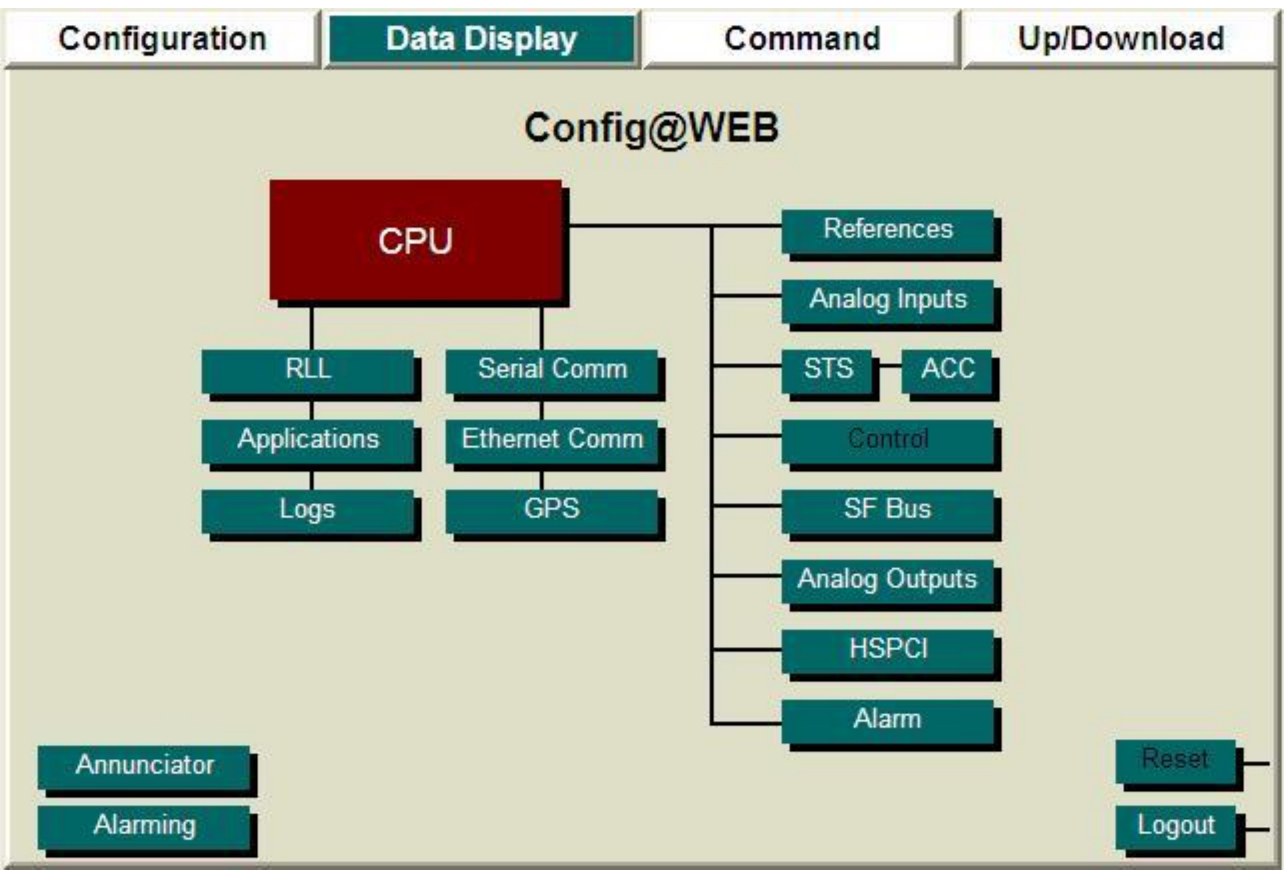
15.4.5.3 Insert & Delete Points

Insert & Delete not applicable to protocol.

15.5 Data Display

Click the Data Display tab as shown in Figure 15-13.

Figure 15-13 Data Display Screen



Click Serial Comm to get the screen shown in Figure 15-14.

Figure 15-14 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	PMS 80	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data
Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

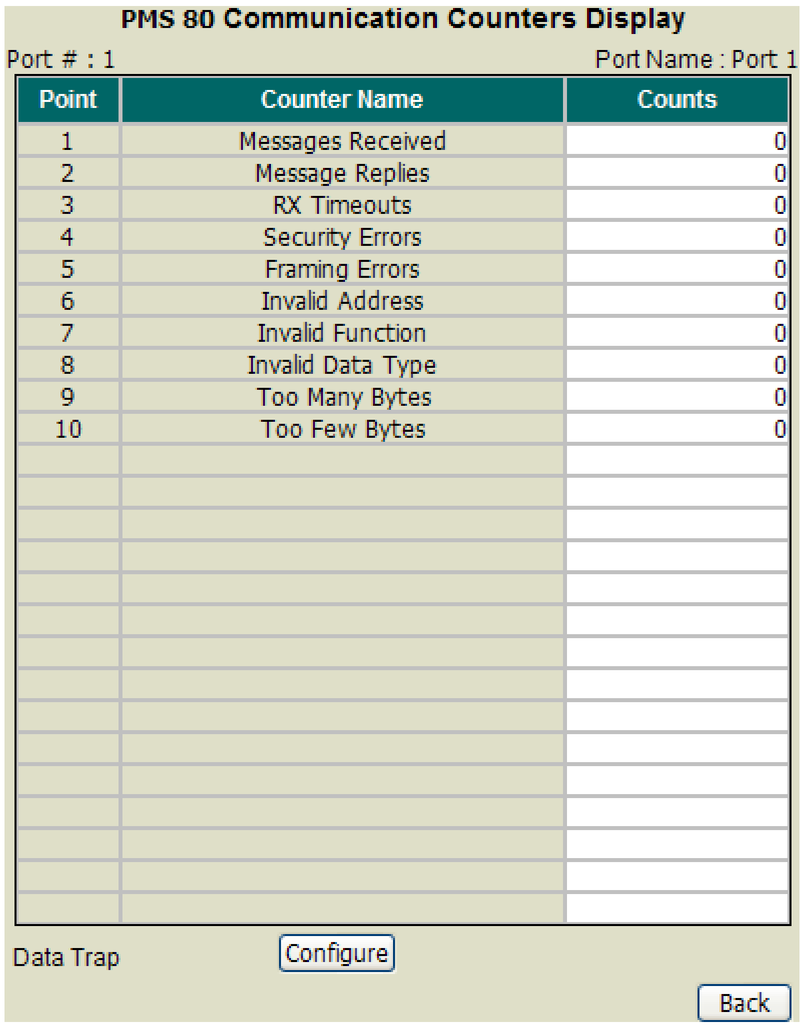
Navigation

Click the Back button to return to the previous screen.

15.5.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 15-15.

Figure 15-15 Communication Counters Display



Point Number
A logical point number for reference only.

Counter Name
The following counters are monitored:

Messages Received

This indicates the cumulative number of received messages since the last reset or power-up.

Messages Replies

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Framing Errors

This indicates the cumulative number of received bytes with framing errors since the last reset or power-up. This can be affected by parity and MTO.

Invalid Address

This indicates the cumulative number of messages received for which the system global group address was used by the RTU address was neither the broadcast address nor the RTU ID.

Invalid Function

This field is not used for PMS 80.

Invalid Data Type

This field is not used for PMS 80.

Too Many Bytes

This field is not used for PMS 80.

Too Few Bytes

This field is not used for PMS 80.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

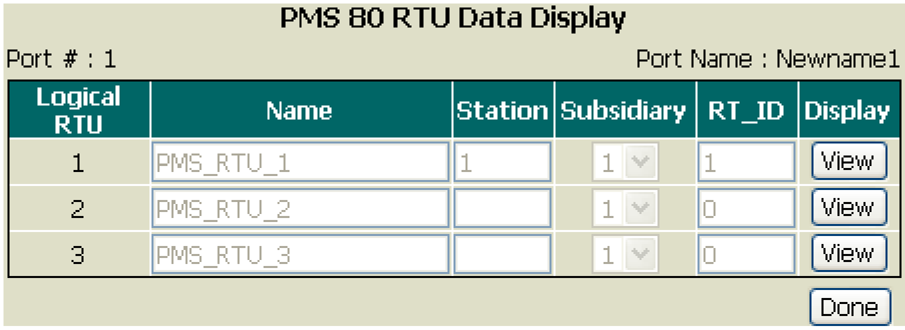
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

15.5.2 RTU Data Display

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 15-16.

Figure 15-16 RTU Data Display



RTU
The logical number of the RTU.

Name
The name of the RTU.

Station
The polling address of the RTU.

RT_ID
The unique RTU I.D. number for the Southern Company.

Subsidiary (1 – 4)
The Subsidiary is the Operating company as follows:

1 = Alabama Power

2 = Georgia Power

3 = Gulf Power

4 = Mississippi Power

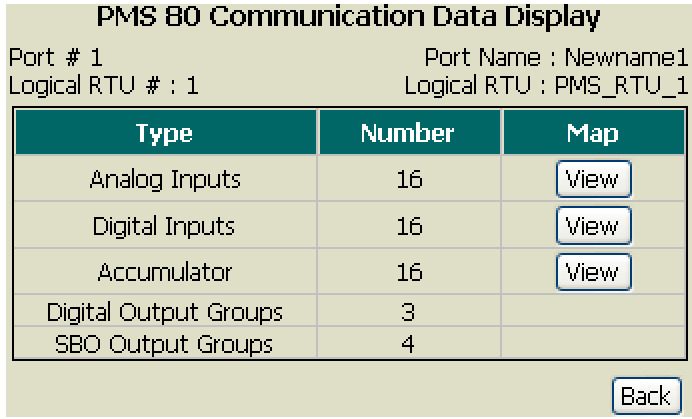
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Done button to return to the previous screen.

15.5.3 Communication Data Display

From the RTU Configuration Display screen, click View for the RTU of interest to get the screen shown in Figure 15-17.

Figure 15-17 Communication Data Display



Type
The type of point.

Number
The number of points of each type.

Map
Click the View button to view points.

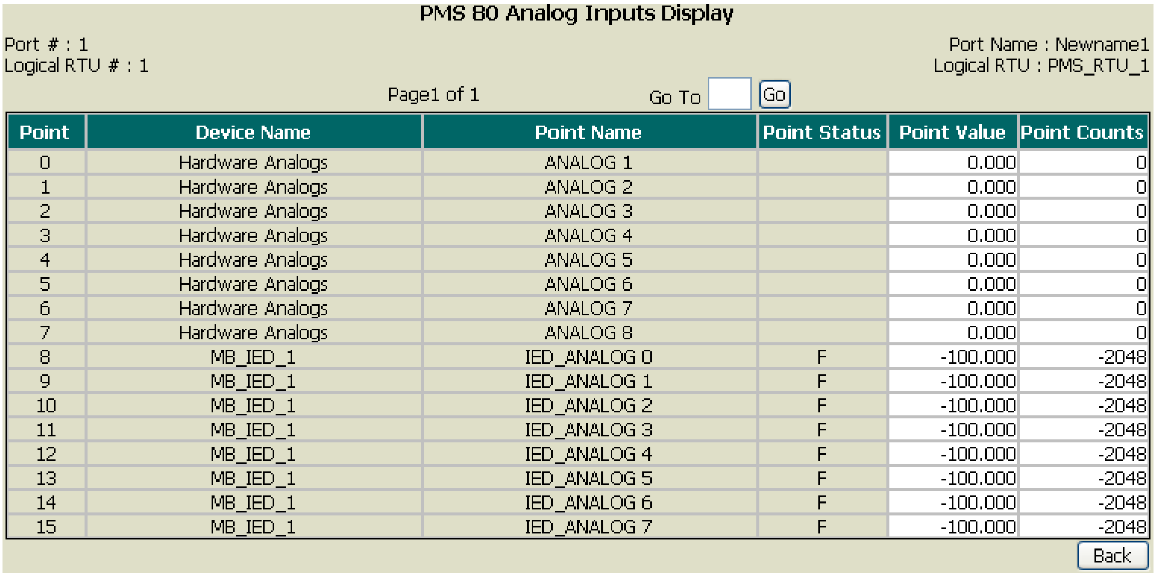
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Logical RTU # :*number* tells you the number of the logical RTU you are mapping and Logical RTU : *name* tell you the name of the logical RTU. Click the Back button to return to the previous screen.

15.5.3.1 Analog Inputs

From the Communication Data Display screen, click View for Analog Inputs to get the screen shown in Figure 15-18.

Figure 15-18 Analog Inputs Display



PMS 80 Analog Inputs Display

Port # : 1 Port Name : Newname1
Logical RTU # : 1 Logical RTU : PMS_RTU_1

Page1 of 1 Go To Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	Hardware Analogs	ANALOG 1		0.000	0
1	Hardware Analogs	ANALOG 2		0.000	0
2	Hardware Analogs	ANALOG 3		0.000	0
3	Hardware Analogs	ANALOG 4		0.000	0
4	Hardware Analogs	ANALOG 5		0.000	0
5	Hardware Analogs	ANALOG 6		0.000	0
6	Hardware Analogs	ANALOG 7		0.000	0
7	Hardware Analogs	ANALOG 8		0.000	0
8	MB_IED_1	IED_ANALOG 0	F	-100.000	-2048
9	MB_IED_1	IED_ANALOG 1	F	-100.000	-2048
10	MB_IED_1	IED_ANALOG 2	F	-100.000	-2048
11	MB_IED_1	IED_ANALOG 3	F	-100.000	-2048
12	MB_IED_1	IED_ANALOG 4	F	-100.000	-2048
13	MB_IED_1	IED_ANALOG 5	F	-100.000	-2048
14	MB_IED_1	IED_ANALOG 6	F	-100.000	-2048
15	MB_IED_1	IED_ANALOG 7	F	-100.000	-2048

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master in decimal.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Logical RTU # :*number* tells you the number of the logical RTU you are mapping and Logical RTU : *name* tell you the name of the logical RTU. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

15.5.3.2 Digital Inputs

From the Communication Data Display screen, click View for Digital Inputs to get the screen shown in Figure 15-19.

Figure 15-19 Digital Inputs Display

PMS 80 Digital Inputs Display

Port # : 1 Port Name : Newname1
Logical RTU # : 1 Logical RTU : PMS_RTU_1

Page1 of 1 Go To [ ] Go

Point	Device Name	Point Name	Point Status	Point State	●
0	Hardware DI	DI_PNT_1		OPEN	●
1	Hardware DI	DI_PNT_2		OPEN	●
2	Hardware DI	DI_PNT_3		OPEN	●
3	Hardware DI	DI_PNT_4		OPEN	●
4	Hardware DI	DI_PNT_5		OPEN	●
5	Hardware DI	DI_PNT_6		OPEN	●
6	Hardware DI	DI_PNT_7		OPEN	●
7	Hardware DI	DI_PNT_8		OPEN	●
8	1MSSOE on BUS 2	MSSOE_PNT1	F	OPEN	●
9	1MSSOE on BUS 2	MSSOE_PNT2	F	OPEN	●
10	1MSSOE on BUS 2	MSSOE_PNT3	F	OPEN	●
11	1MSSOE on BUS 2	MSSOE_PNT4	F	OPEN	●
12	1MSSOE on BUS 2	MSSOE_PNT5	F	OPEN	●
13	1MSSOE on BUS 2	MSSOE_PNT6	F	OPEN	●
14	1MSSOE on BUS 2	MSSOE_PNT7	F	OPEN	●
15	1MSSOE on BUS 2	MSSOE_PNT8	F	OPEN	●

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Logical RTU # :*number* tells you the number of the logical RTU you are mapping and Logical RTU : *name* tell you the name of the logical RTU. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

15.5.3.3 Accumulator Inputs

From the Communication Display screen, click View for Accumulators to get the screen shown in Figure 15-20.

Figure 15-20 PMS 80 Accumulator Display

PMS 80 Accumulator Display

Port # : 1 Port Name : Newname1
Logical RTU # : 1 Logical RTU : PMS_RTU_1

Page1 of 1 Go To Go

Point	Device Name	Point Name	Count
0	MB_IED_1	IED_ACC_ 0	0
1	MB_IED_1	IED_ACC_ 1	0
2	MB_IED_1	IED_ACC_ 2	0
3	MB_IED_1	IED_ACC_ 3	0
4	MB_IED_1	IED_ACC_ 4	0
5	MB_IED_1	IED_ACC_ 5	0
6	MB_IED_1	IED_ACC_ 6	0
7	MB_IED_1	IED_ACC_ 7	0
8	MB_IED_1	IED_ACC_ 8	0
9	MB_IED_1	IED_ACC_ 9	0
10	MB_IED_1	IED_ACC_ 10	0
11	MB_IED_1	IED_ACC_ 11	0
12	MB_IED_1	IED_ACC_ 12	0
13	MB_IED_1	IED_ACC_ 13	0
14	MB_IED_1	IED_ACC_ 14	0
15	MB_IED_1	IED_ACC_ 15	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Please note: These values will only update when the accumulators are frozen.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Logical RTU # :*number* tells you the number of the logical RTU you are mapping and Logical RTU : *name* tell you the name of the logical RTU. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

16 Feeder Management System (FMS)

16.1 Serial Communication Port Configuration

FMS protocol is used in conjunction with FMS program for AC feeder information.

From the Config Home Page, click Serial Comm to setup a communication port.

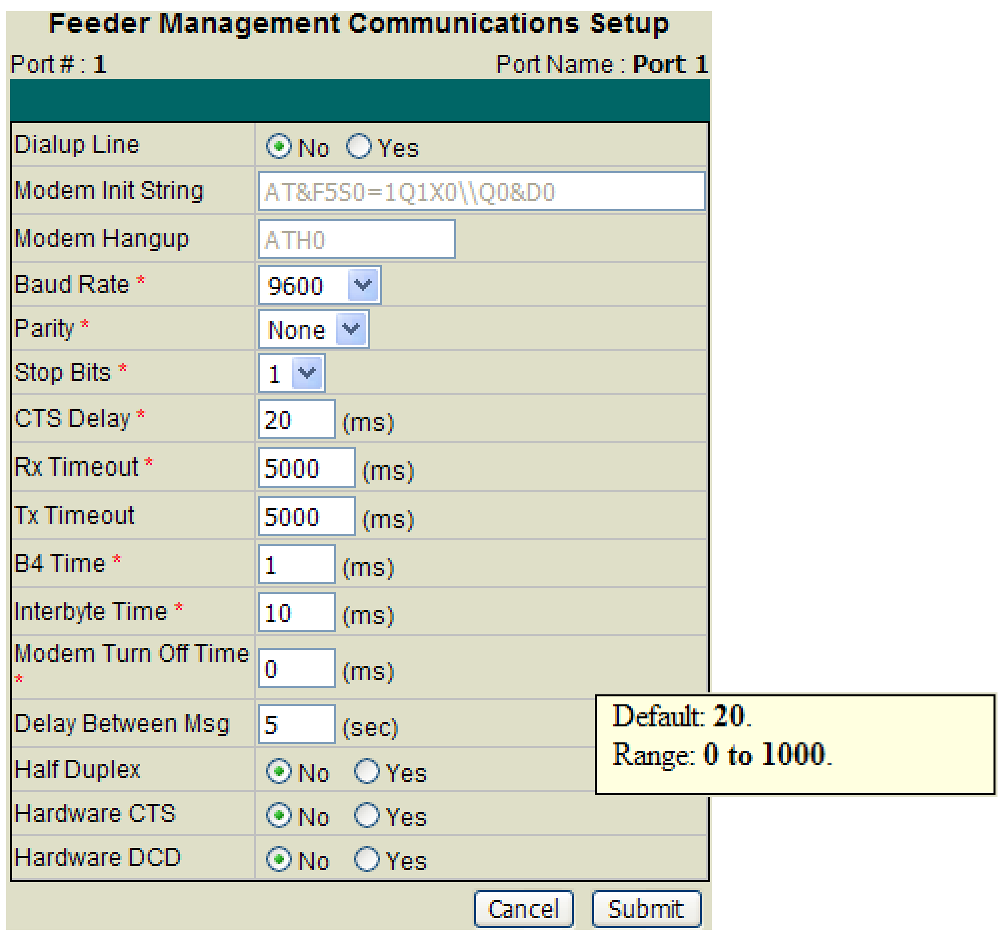
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

16.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 16-1.

Figure 16-1 Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for CTS Delay.

Dialup Line (No, Yes)
Select whether or not the FM port is connected to a dialup line. Default is No.

Modem Init String
Enter the modem initiation string for the dialup line if Dialup Line is Yes. Default is AT&F5S0=1Q1X0\\Q0&D0.

Modem Hangup
Enter the modem hangup string for the dialup line if Dialup Line is Yes. Default is ATH0.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 9600.

Parity (None, Odd, Even)
From the drop-down menu, select the parity for the associated channel. The default setting is None.

Stop Bits (0,1,2)
From the drop-down menu, select the stop bits for the associated channel. The default setting is 1.

CTS Delay (0 – 1000ms)
Enter the Clear-To-Send (CTS) Delay in milliseconds for the associated channel. This is the delay of time the channel will wait to start transmitting following Request-To-Send being asserted. The default setting is 20.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 5000 (5 seconds).

Tx Timeout (0 – 30,000ms)
Enter the transmit timeout for the associated channel. This value limits the maximum transmission time from the RTU to the master. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 1.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 10.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Delay Between Msg (0 – 250ms)
Enter the time delay between messages. The default is 5.

Half Duplex
Select either Half Duplex (Yes) or Full Duplex (No). The default is No.

Hardware CTS (No, Yes)

If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

Navigation

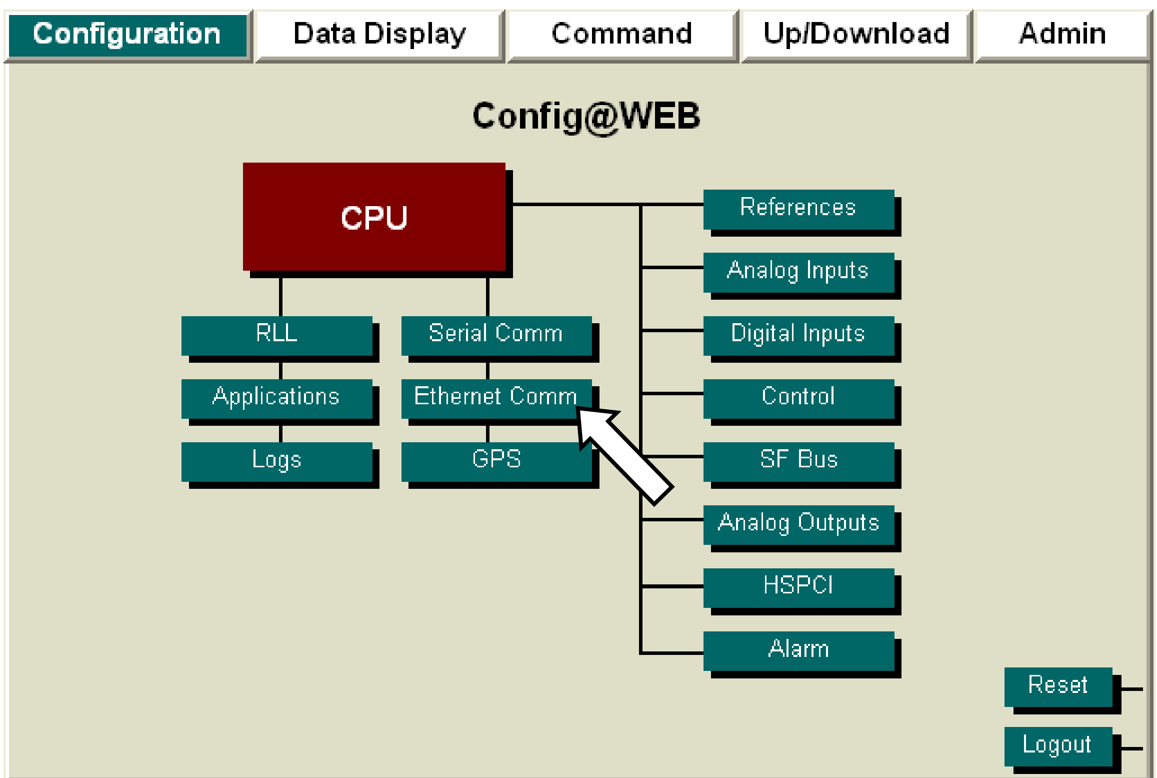
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

16.2.1 Configure Ethernet Comm

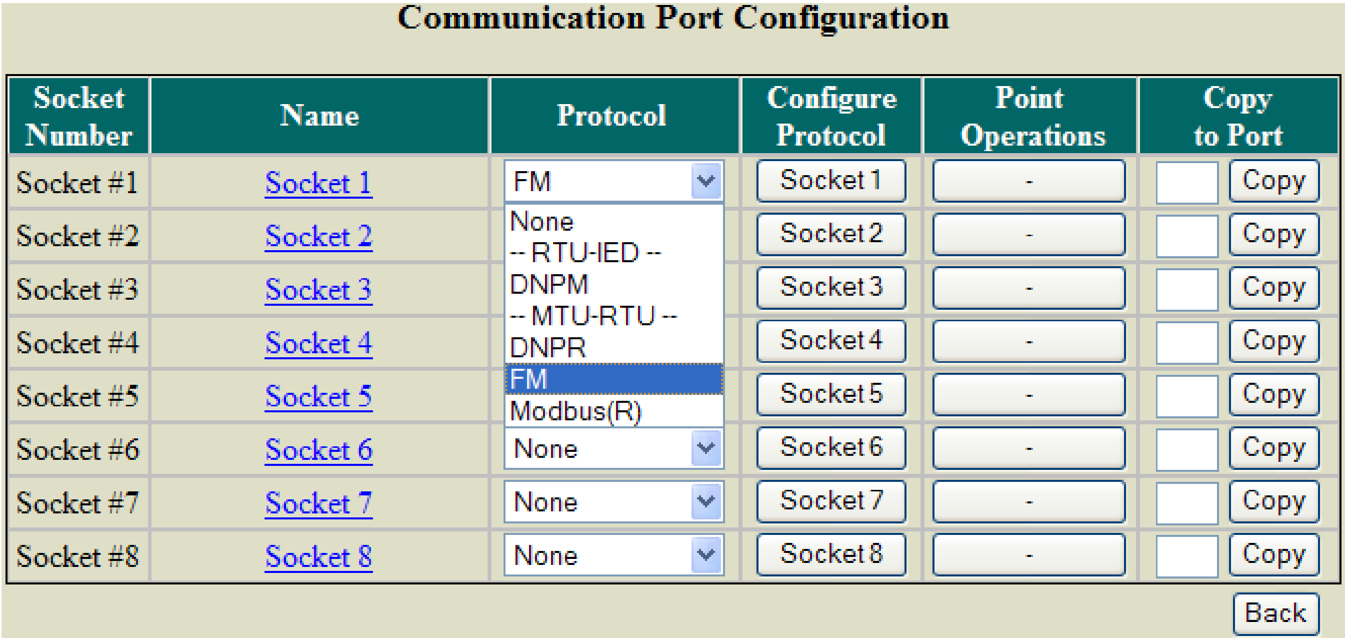
Click on Ethernet Comm as shown Below.

Figure 16-2 Configuring Ethernet Comm



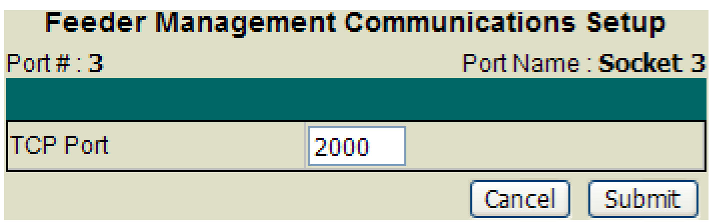
From the Communication Port Configuration screen, select a port and select FM from the Protocol drop-down menu as shown below.

Figure 16-3 Communication Port Configuration



From the above screen, click the Socket under Configure Protocol as shown in Figure 16-3, to get the screen shown in Figure 16-4.

Figure 16-4 Feeder Management Communications Setup



Enter the appropriate TCP Port value, or accept the default.

Note: The FMS system always uses UTC time format. Every item it stores in the third party database is time stamped with UTC time and it converts the time stamps to local time when the user requests the data.

Navigation

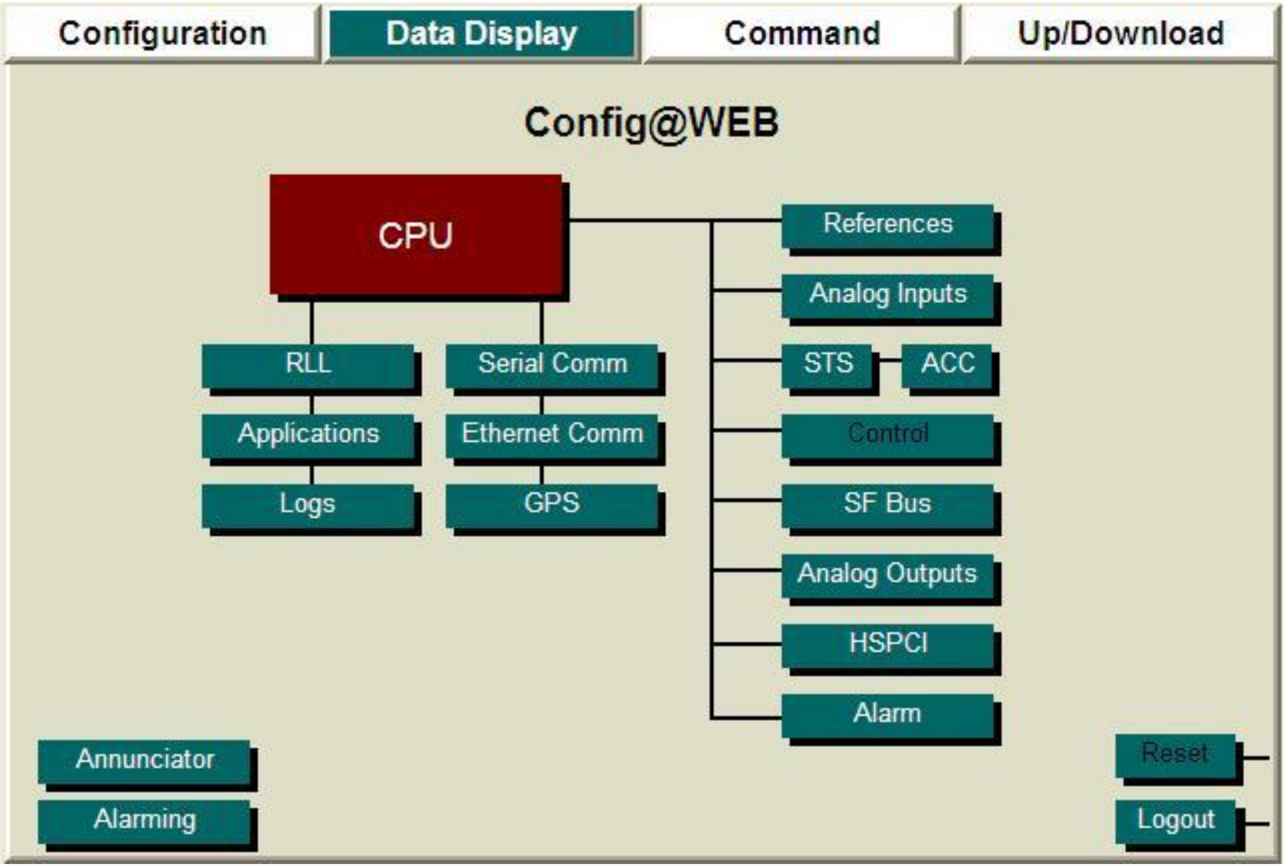
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

16.3 FMS Data Display

Click the Data Display tab as shown in Figure 16-5.

Figure 16-5 Data Display Screen



16.3.1 Display Serial Comm

Click Serial Comm to get the screen shown in Figure 16-6.

Figure 16-6 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	FM	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data
Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

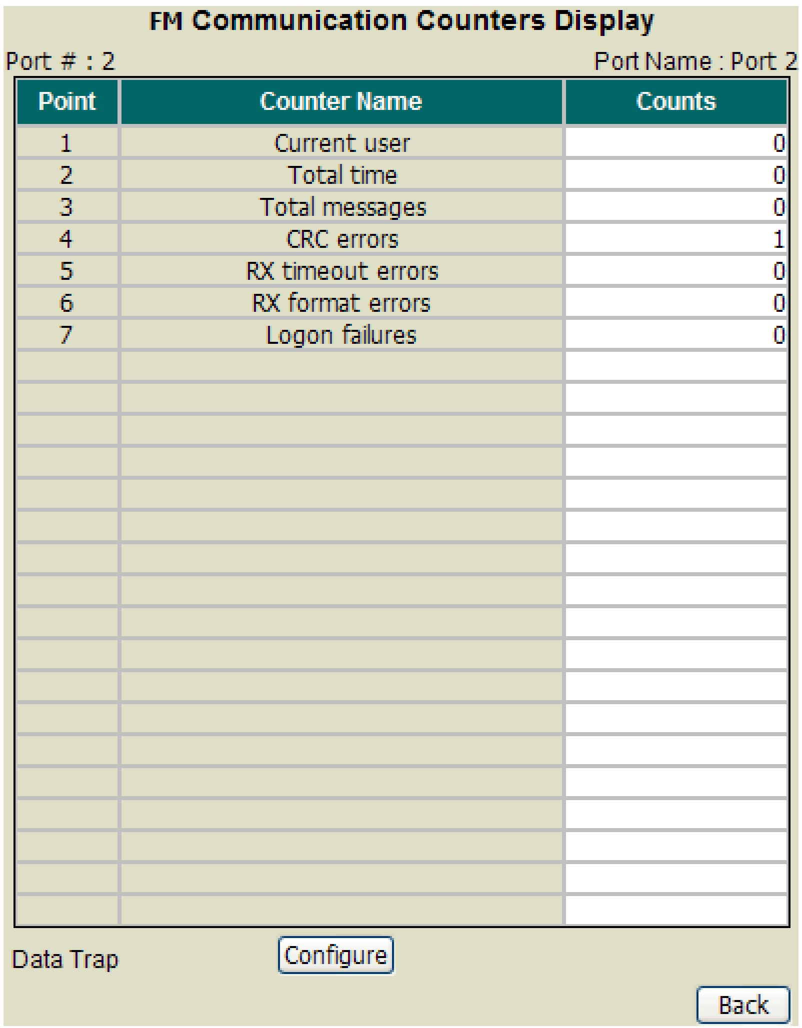
Navigation

Click the Back button to return to the previous screen.

16.3.1.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 16-7.

Figure 16-7 Communication Counters Display



Point Number
A logical point number for reference only.

Counter Name
The following counters are monitored:

Current User

The assigned number of the logged-on user.

Total Time

The total time that a user has been logged on..

Total Messages

The number of FMS messages requested since the last reset or power-up.

CRC Errors

This indicates the cumulative number of CRC errors since the last reset or power-up.

RX Timeout Errors

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

RX Format Errors

Indicate the total number of RX format errors since the last reset or power-up.

Logon Failures

Indicates the total number of logon failures since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

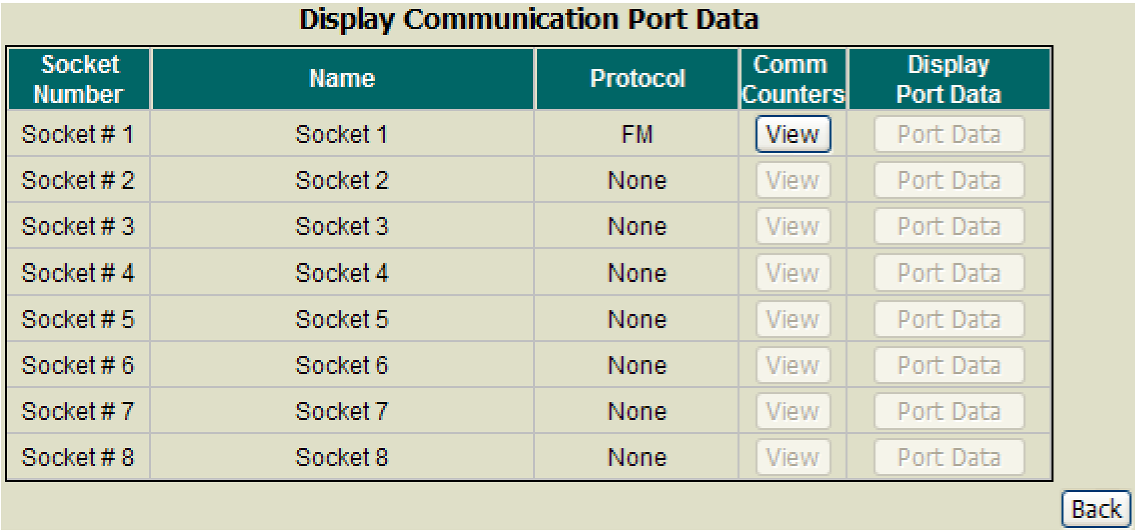
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

16.3.2 Display Ethernet Comm

From the Display Communication Port Data screen, click Ethernet Comm to get the screen shown below.

Figure 16-8 Display Communication Port Data



Display Communication Port Data

Socket Number	Name	Protocol	Comm Counters	Display Port Data
Socket # 1	Socket 1	FM	View	Port Data
Socket # 2	Socket 2	None	View	Port Data
Socket # 3	Socket 3	None	View	Port Data
Socket # 4	Socket 4	None	View	Port Data
Socket # 5	Socket 5	None	View	Port Data
Socket # 6	Socket 6	None	View	Port Data
Socket # 7	Socket 7	None	View	Port Data
Socket # 8	Socket 8	None	View	Port Data

Back

Socket Number

The physical number of the socket.

Name
The name of the socket as determined in Configuration.

Protocol
The protocol assigned to the socket determined in Configuration.

Comm Counters
Click the View button to see the Comm Counters.

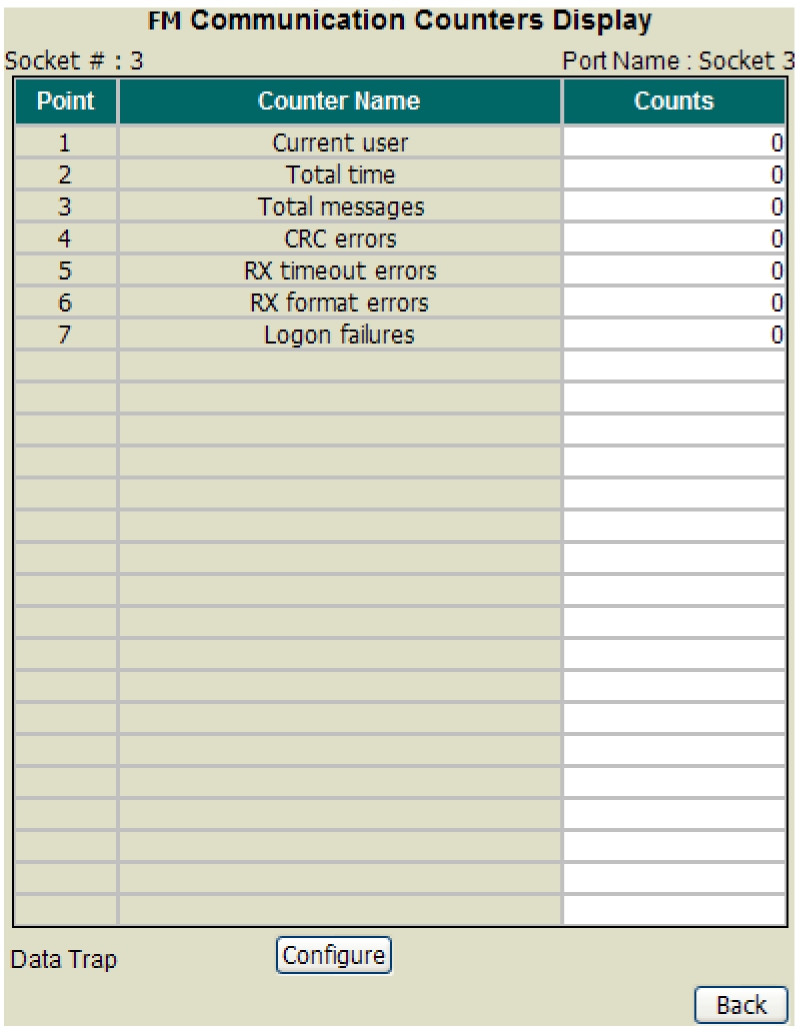
Navigation

Click the Back button to return to the previous screen.

16.3.2.1 Comm Counters

From the Display Communication Port Data, click on View to get the screen shown below.

Figure 16-9 FM Communication Counters Display


FM Communication Counters Display

Socket # : 3 Port Name : Socket 3

Point	Counter Name	Counts
1	Current user	0
2	Total time	0
3	Total messages	0
4	CRC errors	0
5	RX timeout errors	0
6	RX format errors	0
7	Logon failures	0

Data Trap Configure

Back

Point Number
A logical point number for reference only.

Counter Name

The following counters are monitored:

Current User
The number of the current user.

Total Time
The total login time of the current user.

Total Messages
The number of FMS messages requested since the last reset or power-up.

CRC Errors
This indicates the cumulative number of CRC errors since the last reset or power-up.

RX Timeout Errors
This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

RX Format Errors
Indicate the total number of RX format errors since the last reset or power-up.

Logon Failures
Indicates the total number of logon failures since the last reset or power-up.

Counts
The counts for each type of Counter.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

17 IDLC

17.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

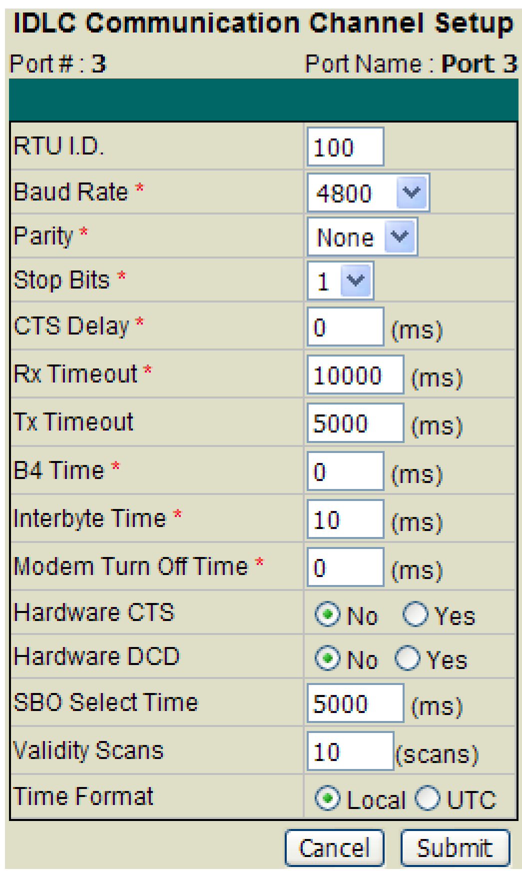
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

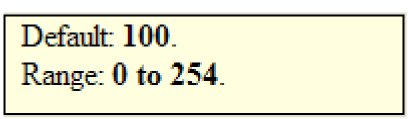
From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

17.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the IDLC port. You may accept all defaults or fill in the form according to the information following Figure 17-1.

Figure 17-1 IDLC Communication Channel Configuration





Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D. (0 – 254)
Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 100.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 4800.

Parity (None, Odd, Even)
Select the parity for the associated channel. The default setting is None.

Stop Bits (0,1,2)
Select the stop bits from the pull-down menu. The default is 1.

CTS Delay (0 – 1000ms)
Enter the Clear-To-Send delay in milliseconds for the associated channel. This is the time delay the channel will wait to start transmitting following Request-To-Send signal being asserted. Default setting is 0.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 10000 (10 seconds).

Tx Timeout (0 – 30,000ms)
Enter the transmit timeout for the associated channel. This value limits the maximum transmission time from the RTU to the master. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 0.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 10.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

SBO Select Time (0 – 60,000ms)
Default setting is 5000 (5 seconds).

Validity Scans (0 – 60000)
Default setting is 10 scans.

Time Format (Local, UTC)

Note: The coordination between UTC and local time is a feature that may be ignored. If you want your RTU to act as it always has in regards to time syncs, set Time Format to Local Time. See Time Configuration Settings in the Configuration chapter of the hardware manual for time settings under the CPU block.

If you want time synchronization from the master, you must know whether the master is sending Local time or UTC time, then set this radio button to match the master's format.

Navigation

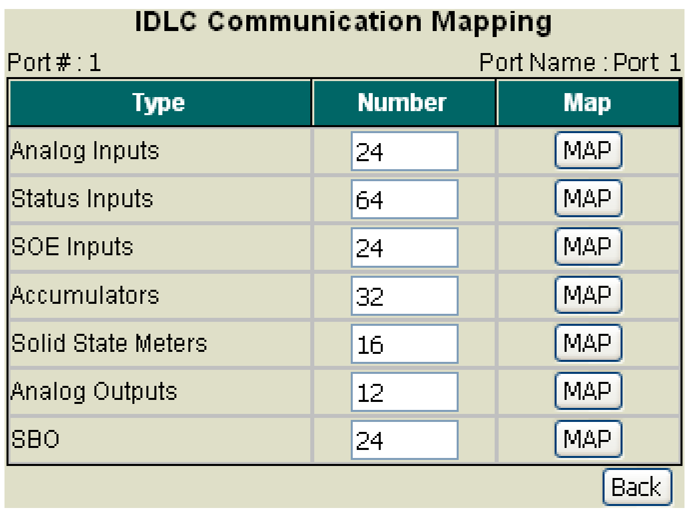
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

17.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 17-2 will appear. Enter the number of points for each type of point, then click MAP before moving on to the next point type.

Figure 17-2 IDLC Communication Mapping



Type

The different types of I/O points supported by this protocol.

Number

Enter the quantity of points for the given type.

Note: You must Map the points entered before moving to the next point type.

Map

Click the MAP button to map the points.

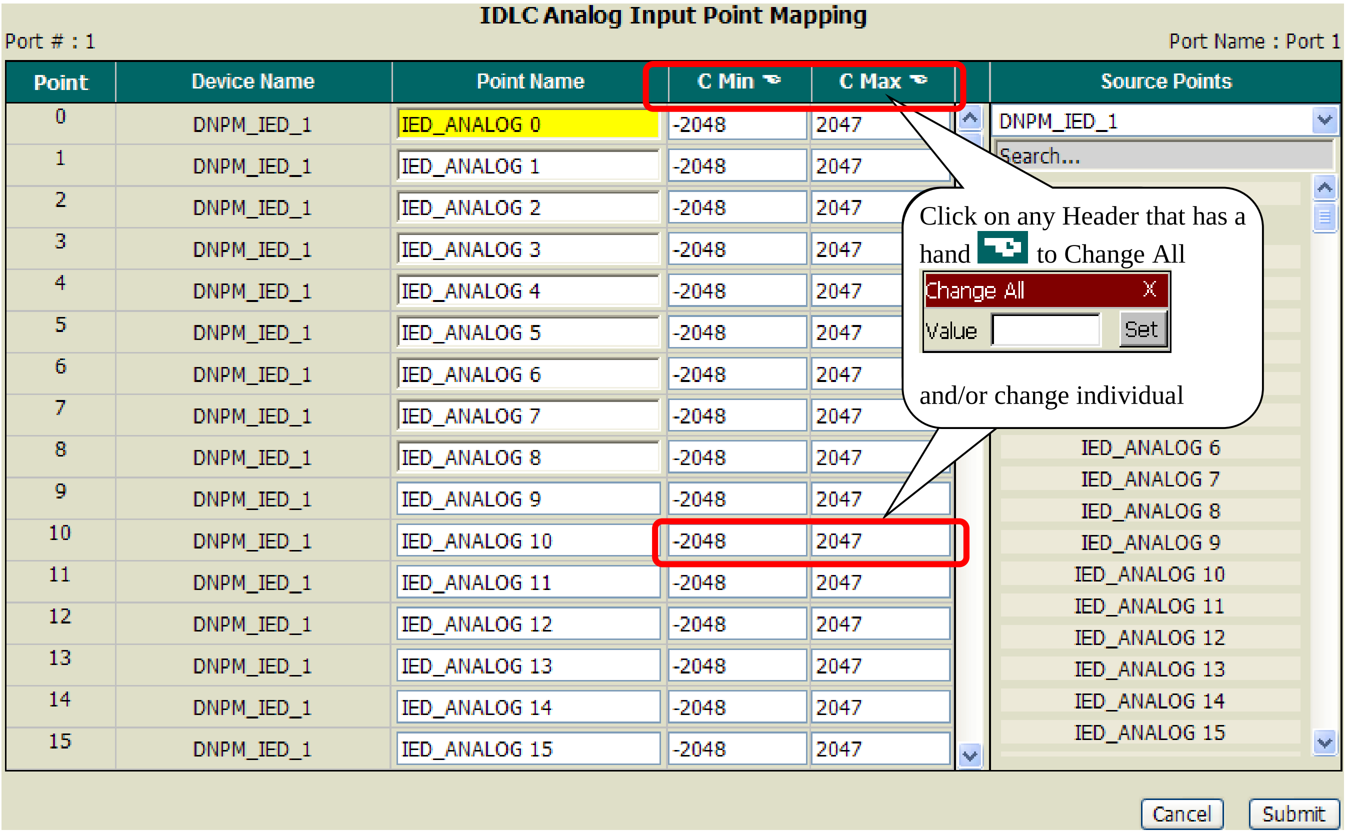
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the IED Configuration screen.

17.3.1 Map Analog Inputs

From the Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 17-3 will appear.

Figure 17-3 Analog Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2048.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2047.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

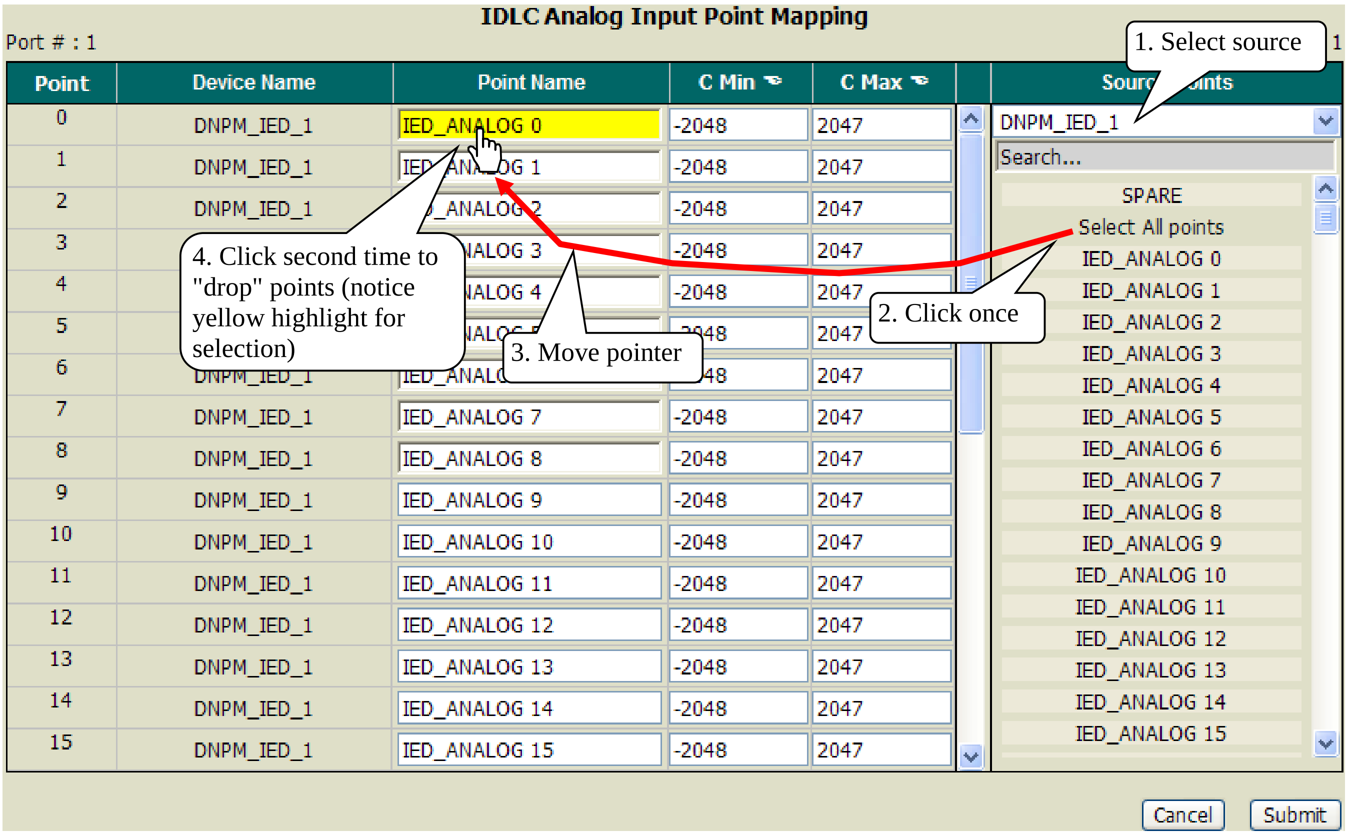
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

17.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

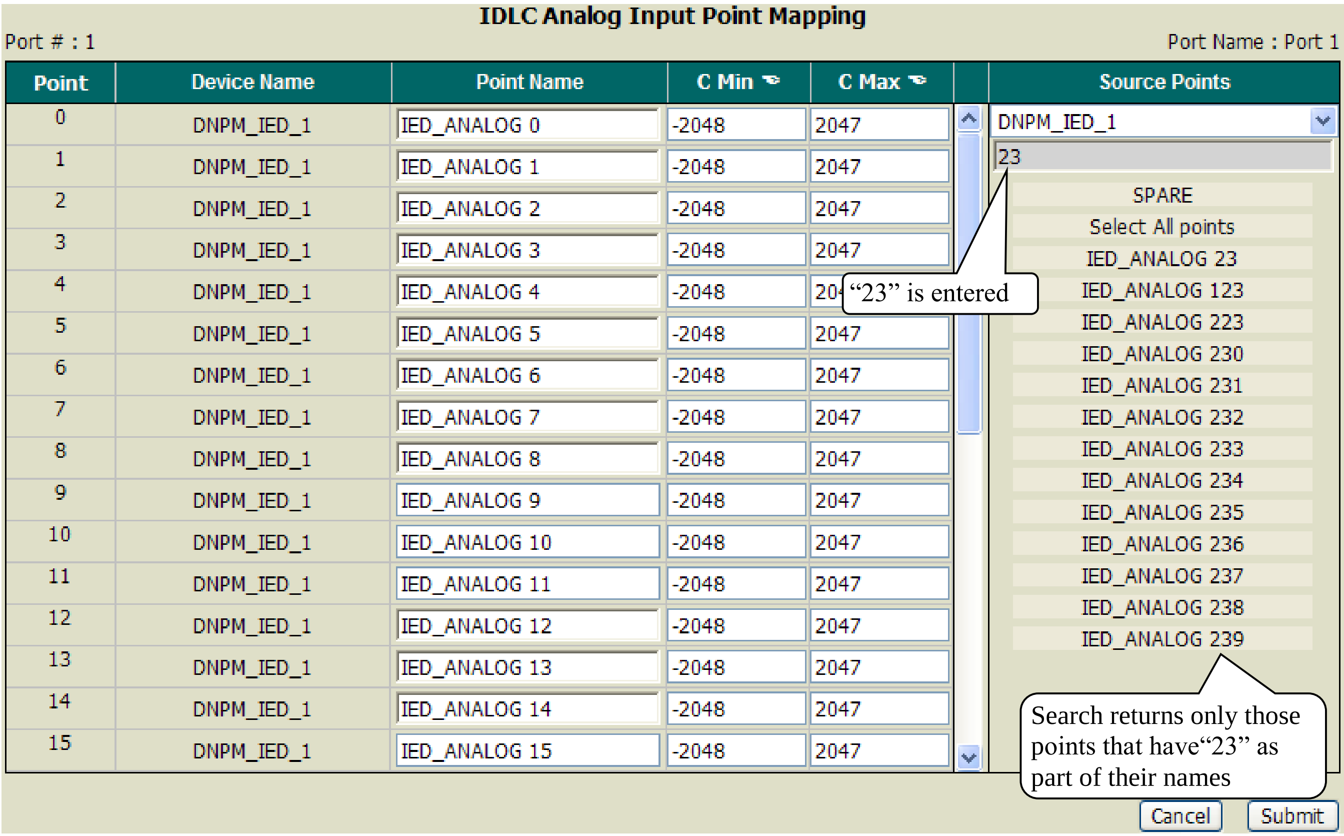
Figure 17-4 Point Mapping Highlight



17.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

Figure 17-5 Point Database Search



IDLC Analog Input Point Mapping

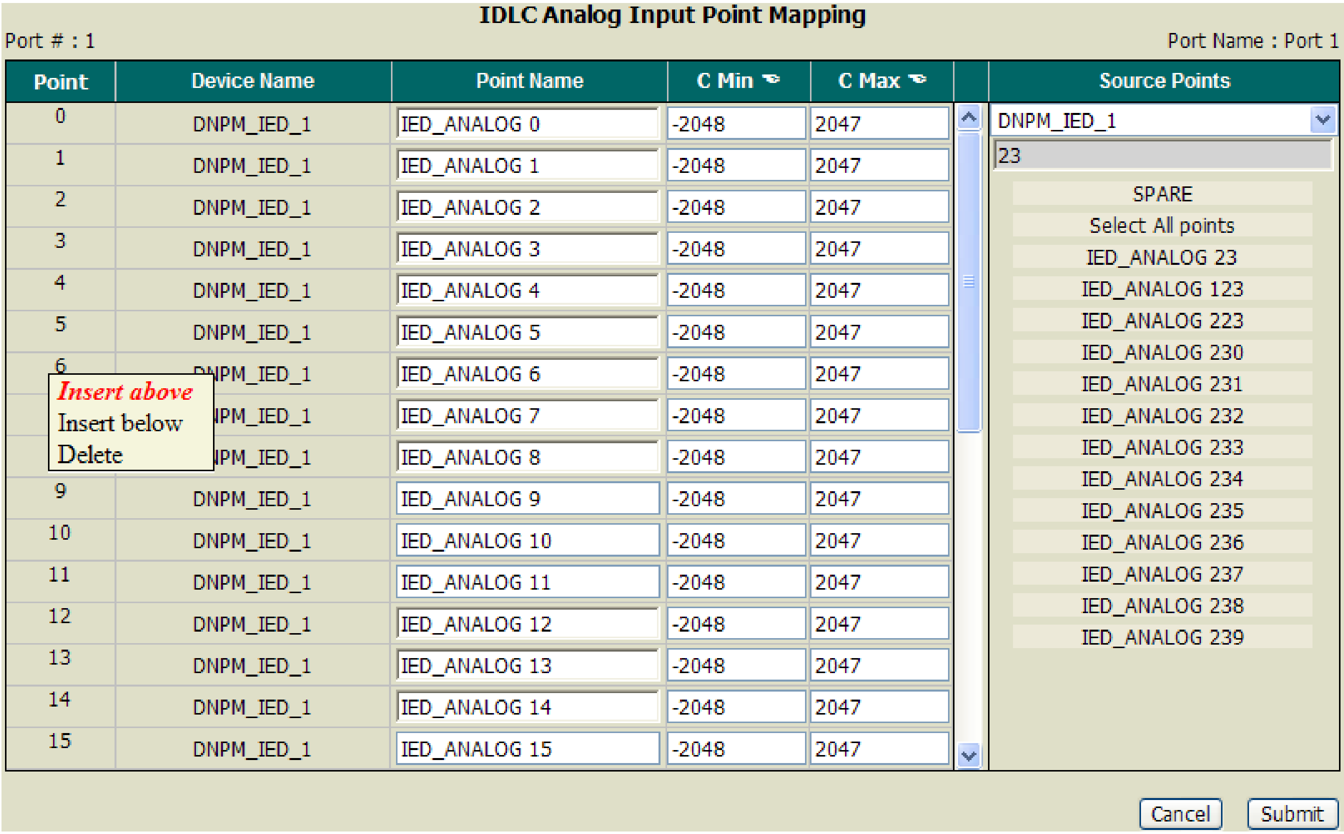
Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2048	2047
1	DNPM_IED_1	IED_ANALOG 1	-2048	2047
2	DNPM_IED_1	IED_ANALOG 2	-2048	2047
3	DNPM_IED_1	IED_ANALOG 3	-2048	2047
4	DNPM_IED_1	IED_ANALOG 4	-2048	20
5	DNPM_IED_1	IED_ANALOG 5	-2048	2047
6	DNPM_IED_1	IED_ANALOG 6	-2048	2047
7	DNPM_IED_1	IED_ANALOG 7	-2048	2047
8	DNPM_IED_1	IED_ANALOG 8	-2048	2047
9	DNPM_IED_1	IED_ANALOG 9	-2048	2047
10	DNPM_IED_1	IED_ANALOG 10	-2048	2047
11	DNPM_IED_1	IED_ANALOG 11	-2048	2047
12	DNPM_IED_1	IED_ANALOG 12	-2048	2047
13	DNPM_IED_1	IED_ANALOG 13	-2048	2047
14	DNPM_IED_1	IED_ANALOG 14	-2048	2047
15	DNPM_IED_1	IED_ANALOG 15	-2048	2047

17.3.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #6) and right click the mouse. The message box shown below appears. Select Insert above (or below) and left click.

Figure 17-6 Insert a Point

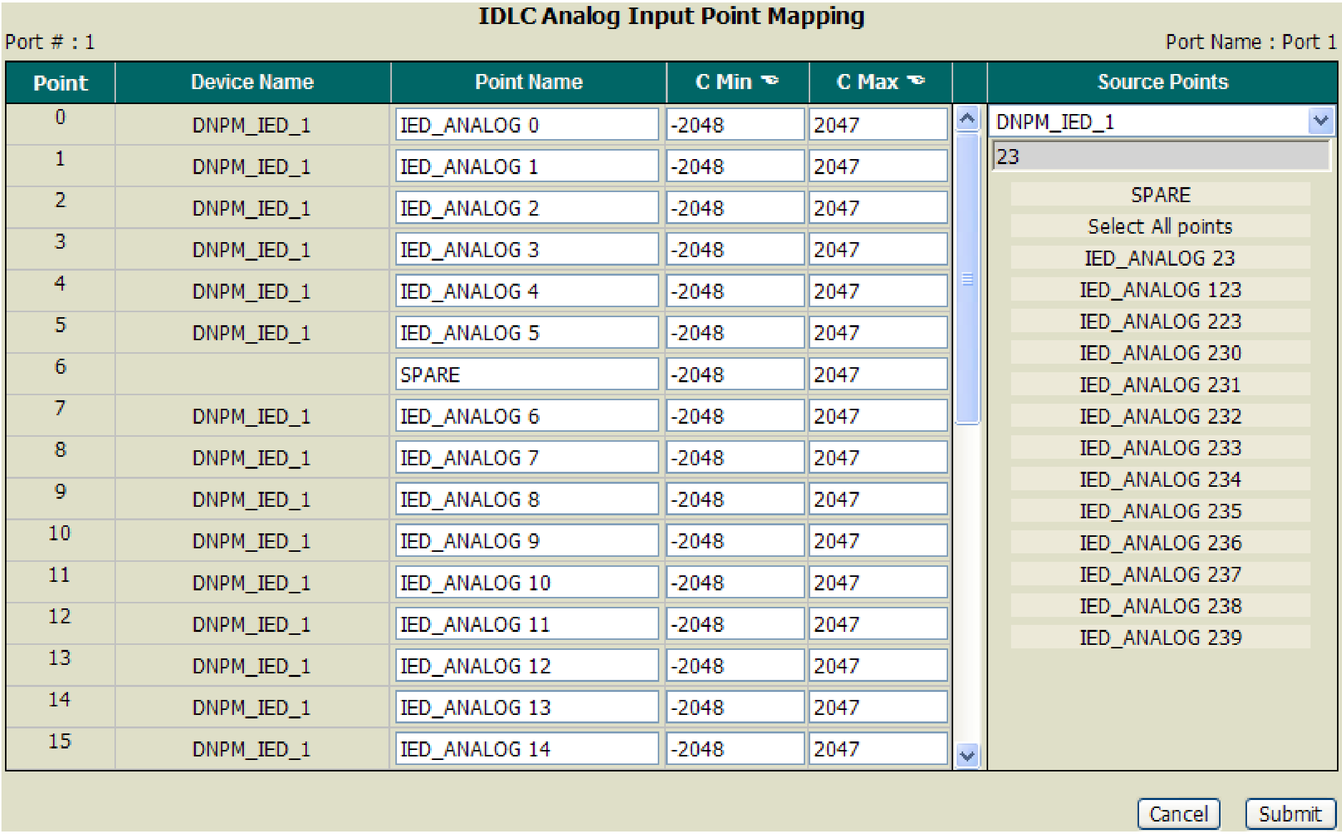


The results of Insert is shown in the next Figure. Notice that the old Point #6, IED_ANALOG 6, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 17-7 Results of Insert Above



IDLC Analog Input Point Mapping

Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2048	2047
1	DNPM_IED_1	IED_ANALOG 1	-2048	2047
2	DNPM_IED_1	IED_ANALOG 2	-2048	2047
3	DNPM_IED_1	IED_ANALOG 3	-2048	2047
4	DNPM_IED_1	IED_ANALOG 4	-2048	2047
5	DNPM_IED_1	IED_ANALOG 5	-2048	2047
6		SPARE	-2048	2047
7	DNPM_IED_1	IED_ANALOG 6	-2048	2047
8	DNPM_IED_1	IED_ANALOG 7	-2048	2047
9	DNPM_IED_1	IED_ANALOG 8	-2048	2047
10	DNPM_IED_1	IED_ANALOG 9	-2048	2047
11	DNPM_IED_1	IED_ANALOG 10	-2048	2047
12	DNPM_IED_1	IED_ANALOG 11	-2048	2047
13	DNPM_IED_1	IED_ANALOG 12	-2048	2047
14	DNPM_IED_1	IED_ANALOG 13	-2048	2047
15	DNPM_IED_1	IED_ANALOG 14	-2048	2047

Source Points

DNPM_IED_1

23

SPARE

Select All points

IED_ANALOG 23

IED_ANALOG 123

IED_ANALOG 223

IED_ANALOG 230

IED_ANALOG 231

IED_ANALOG 232

IED_ANALOG 233

IED_ANALOG 234

IED_ANALOG 235

IED_ANALOG 236

IED_ANALOG 237

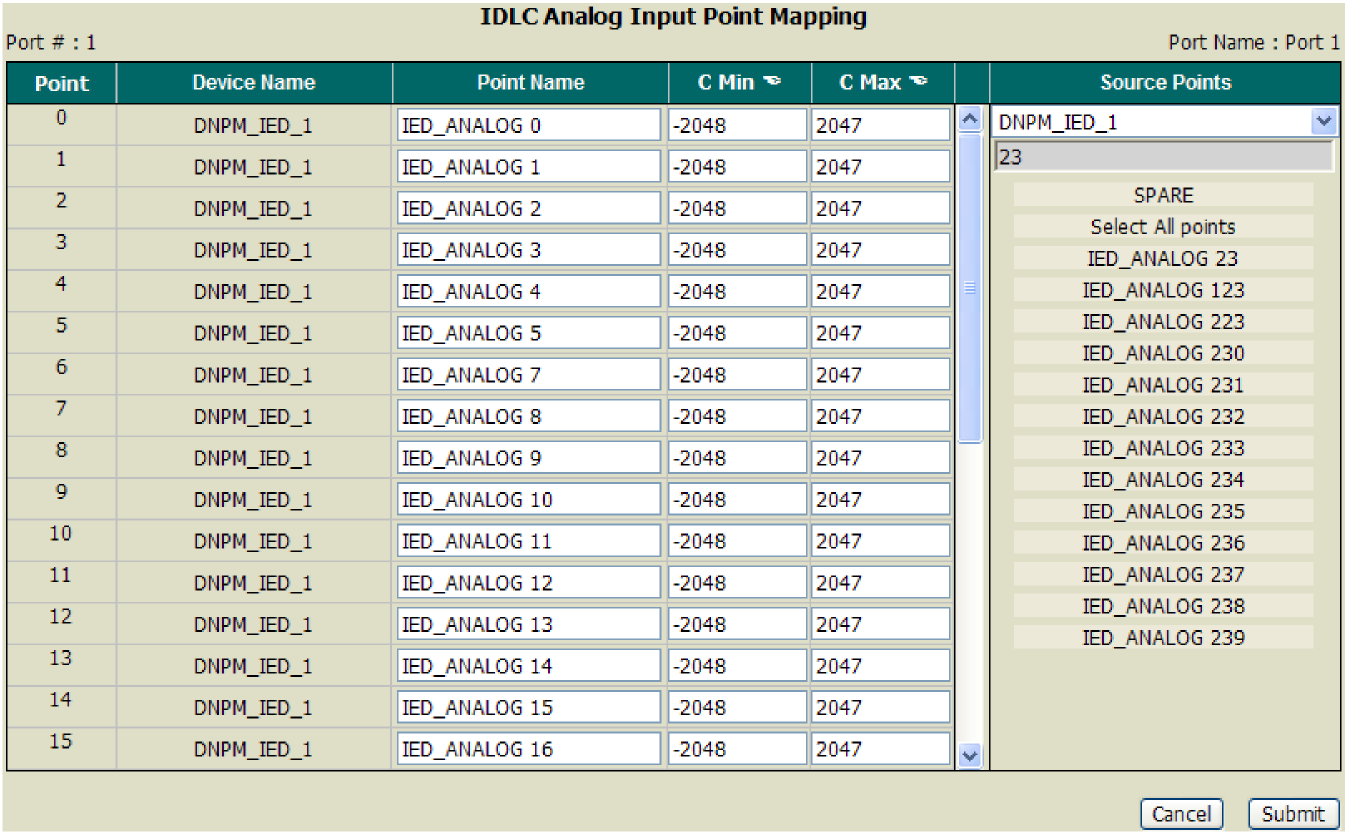
IED_ANALOG 238

IED_ANALOG 239

Cancel Submit

The Spare point can also be deleted. The following example shows the results of deleting Point#6, IED_ANALOG 6.

Figure 17-8 Results of Deleting a Point



IDLC Analog Input Point Mapping

Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2048	2047
1	DNPM_IED_1	IED_ANALOG 1	-2048	2047
2	DNPM_IED_1	IED_ANALOG 2	-2048	2047
3	DNPM_IED_1	IED_ANALOG 3	-2048	2047
4	DNPM_IED_1	IED_ANALOG 4	-2048	2047
5	DNPM_IED_1	IED_ANALOG 5	-2048	2047
6	DNPM_IED_1	IED_ANALOG 7	-2048	2047
7	DNPM_IED_1	IED_ANALOG 8	-2048	2047
8	DNPM_IED_1	IED_ANALOG 9	-2048	2047
9	DNPM_IED_1	IED_ANALOG 10	-2048	2047
10	DNPM_IED_1	IED_ANALOG 11	-2048	2047
11	DNPM_IED_1	IED_ANALOG 12	-2048	2047
12	DNPM_IED_1	IED_ANALOG 13	-2048	2047
13	DNPM_IED_1	IED_ANALOG 14	-2048	2047
14	DNPM_IED_1	IED_ANALOG 15	-2048	2047
15	DNPM_IED_1	IED_ANALOG 16	-2048	2047

Source Points: DNPM_IED_1; 23; SPARE; Select All points; IED_ANALOG 23; IED_ANALOG 123; IED_ANALOG 223; IED_ANALOG 230; IED_ANALOG 231; IED_ANALOG 232; IED_ANALOG 233; IED_ANALOG 234; IED_ANALOG 235; IED_ANALOG 236; IED_ANALOG 237; IED_ANALOG 238; IED_ANALOG 239

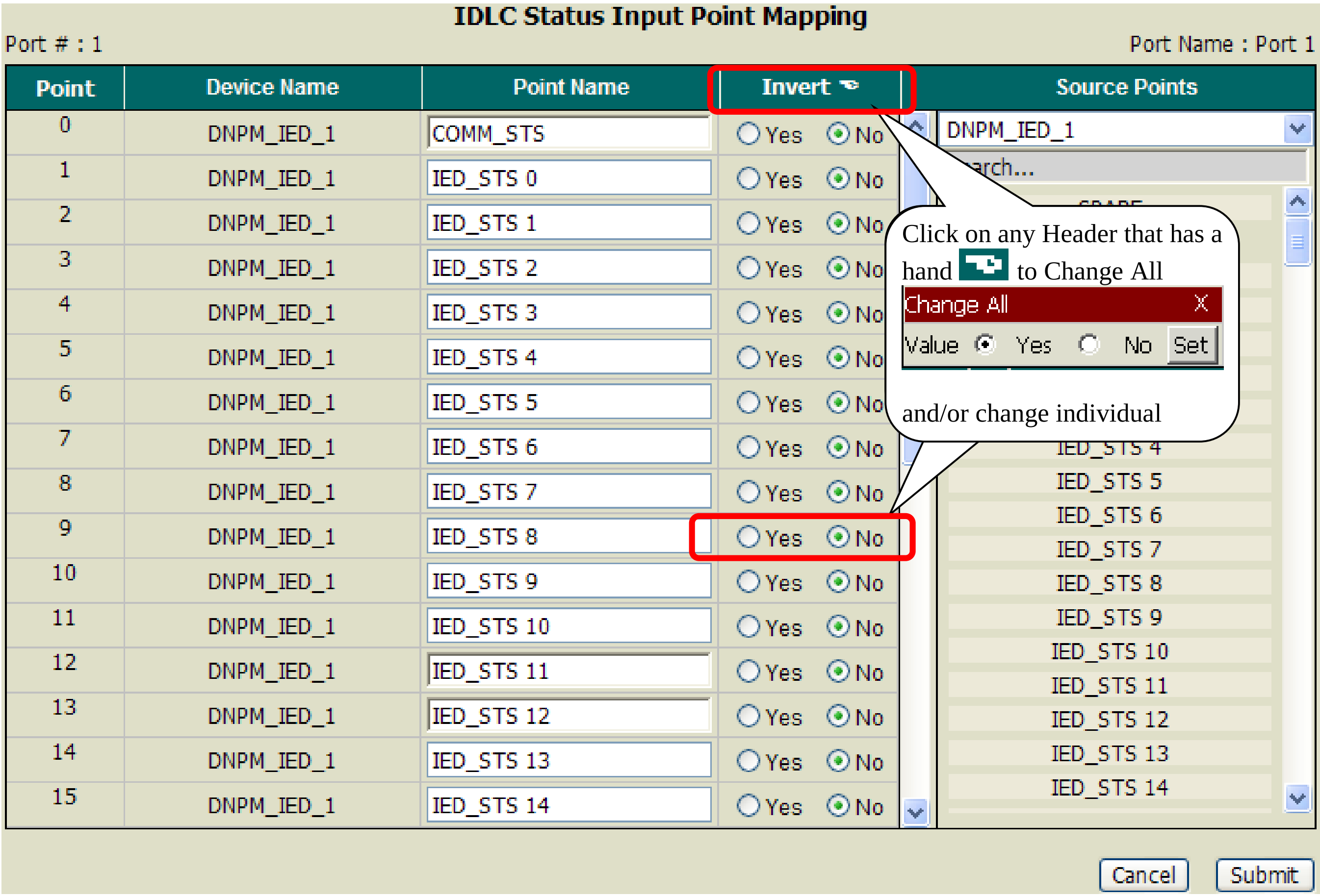
Cancel Submit

Notice that IED_ANALOG 6 is now missing, although Point numbers remain contiguous.

17.3.2 Map Status Inputs

From the Communication Mapping screen, click the MAP button for Status Inputs. A screen similar to Figure 17-9 will appear.

Figure 17-9 Status Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

17.3.2.1 Point Mapping Highlight

See the Analog Input example.

17.3.2.2 Point Database Search

See the Analog Input example.

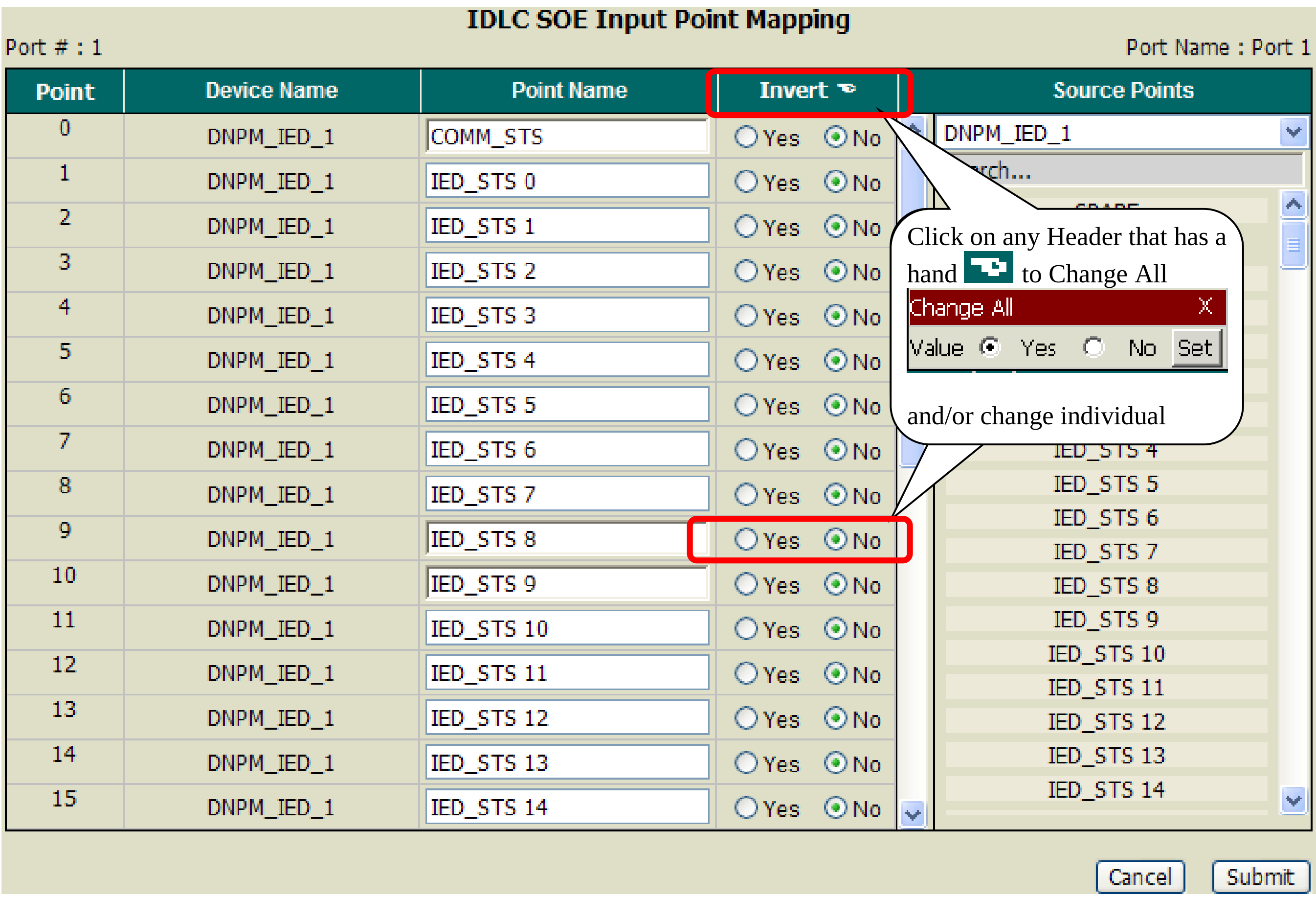
17.3.2.3 Insert & Delete Points

See the Analog Input example.

17.3.3 Map SOE Inputs

From the Communication Mapping screen, click the MAP button for SOE Inputs. A screen similar to Figure 17-10 will appear.

Figure 17-10 SOE Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name

The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

17.3.3.1 Point Mapping Highlight

See the Analog Input example.

17.3.3.2 Point Database Search

See the Analog Input example.

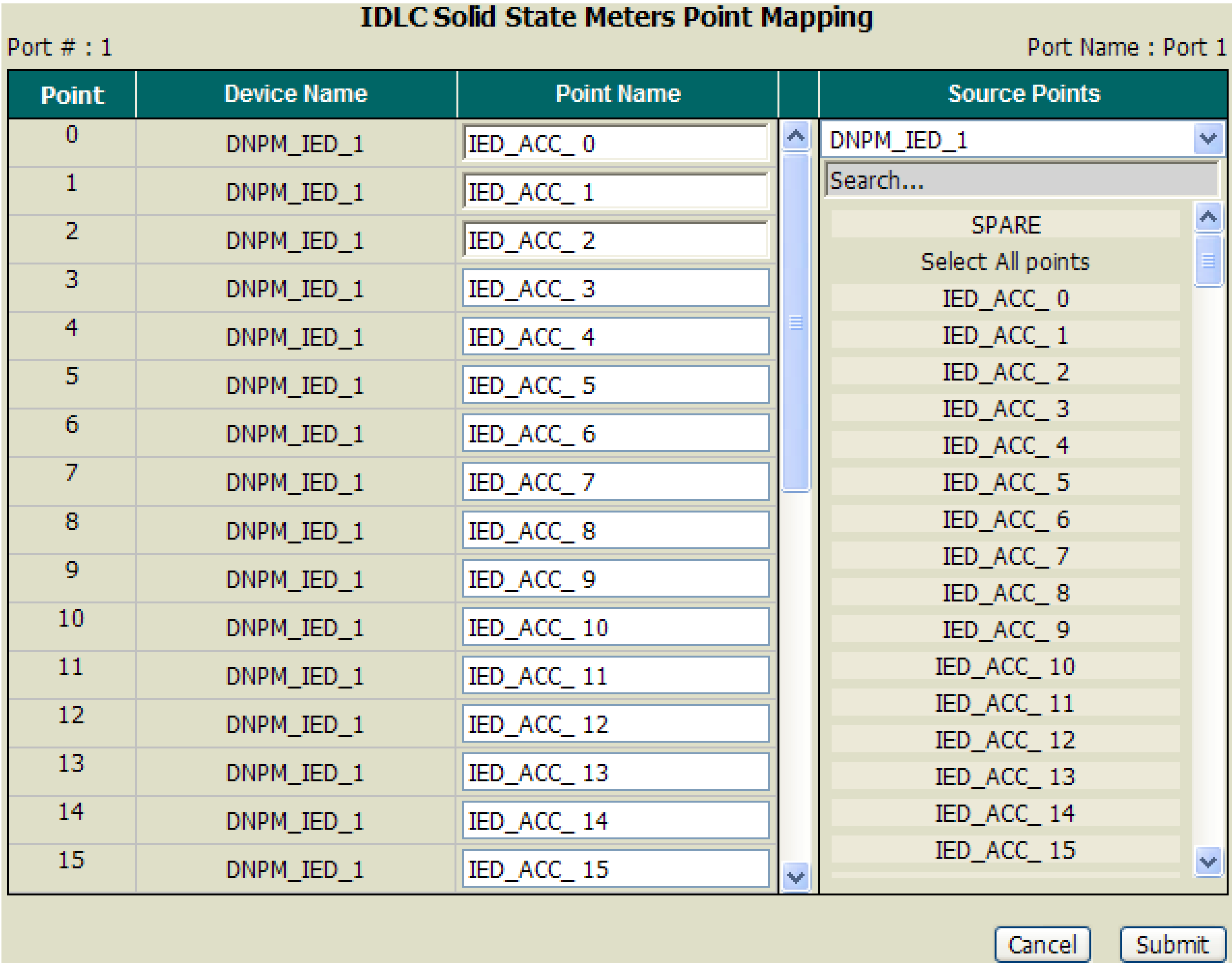
17.3.3.3 Insert & Delete Points

See the Analog Input example.

17.3.4 Map Accumulators

From the Communication Mapping screen, click the MAP button for Accumulators. A screen similar to Figure 17-11 will appear.

Figure 17-11 Accumulator Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

17.3.4.1 Point Mapping Highlight

See the Analog Input example.

17.3.4.2 Point Database Search

See the Analog Input example.

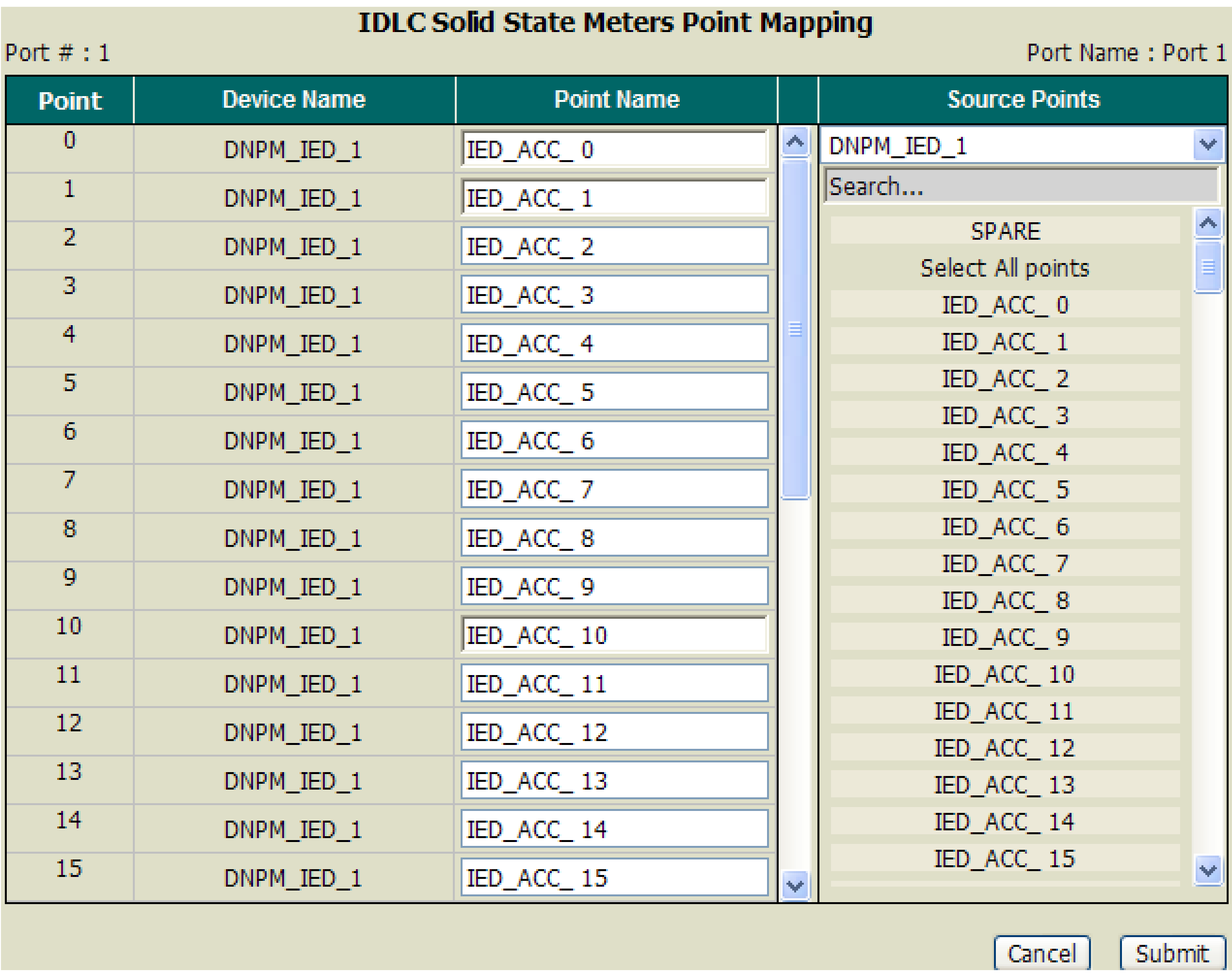
17.3.4.3 Insert & Delete Points

See the Analog Input example.

17.3.5 Map Solid State Meters

From the Communication Mapping screen, click the MAP button for Solid State Meters. A screen similar to Figure 17-12 will appear.

Figure 17-12 Solid State Meters Point Mapping



Point
The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

17.3.5.1 Point Mapping Highlight

See the Analog Input example.

17.3.5.2 Point Database Search

See the Analog Input example.

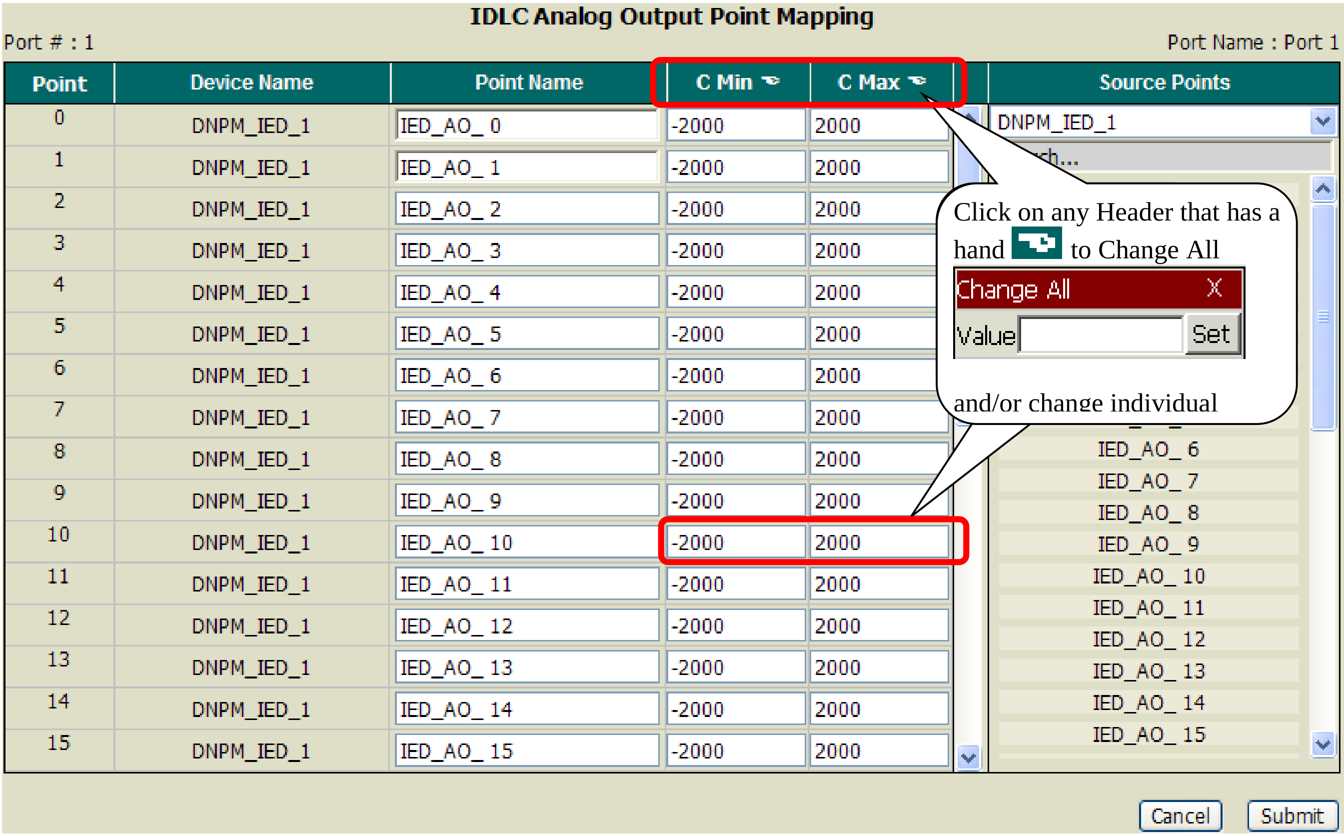
17.3.5.3 Insert & Delete Points

See the Analog Input example.

17.3.6 Map Analog Outputs

From the Communication Mapping screen, click the MAP button for Analog Outputs. A screen similar to Figure 17-13 will appear.

Figure 17-13 Analog Output Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts to be sent by the master station for a minimum EU value. Default setting is -2000.

C Max
Enter the maximum counts to be sent by the master station for a maximum EU value. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

17.3.6.1 Point Mapping Highlight

See the Analog Input example.

17.3.6.2 Point Database Search

See the Analog Input example.

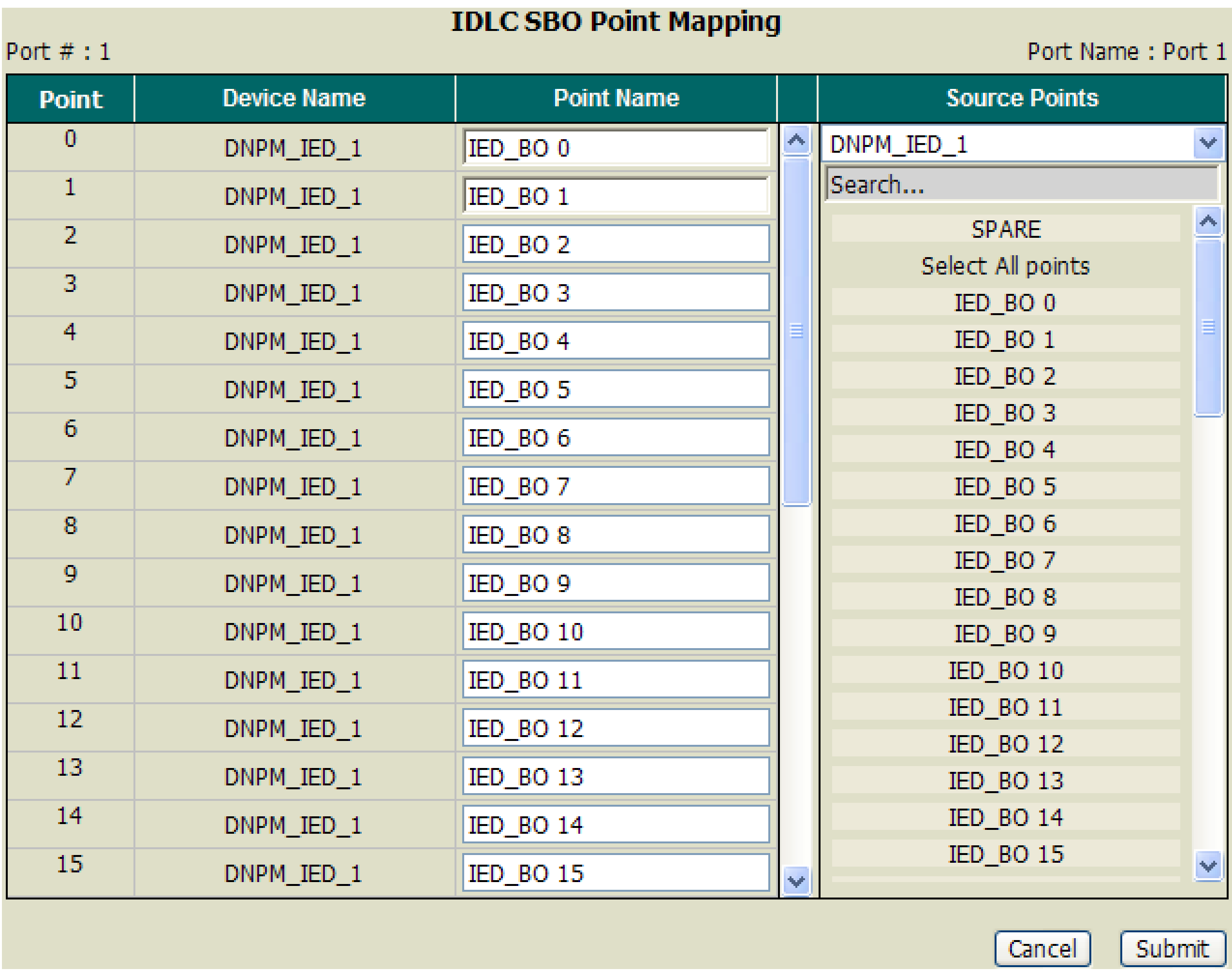
17.3.6.3 Insert & Delete Points

See the Analog Input example.

17.3.7 Map SBOs

From the Communication Mapping screen, click the MAP button for SBOs. A screen similar to Figure 17-14 will appear.

Figure 17-14 SBO Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

17.3.7.1 Point Mapping Highlight

See the Analog Input example.

17.3.7.2 Point Database Search

See the Analog Input example.

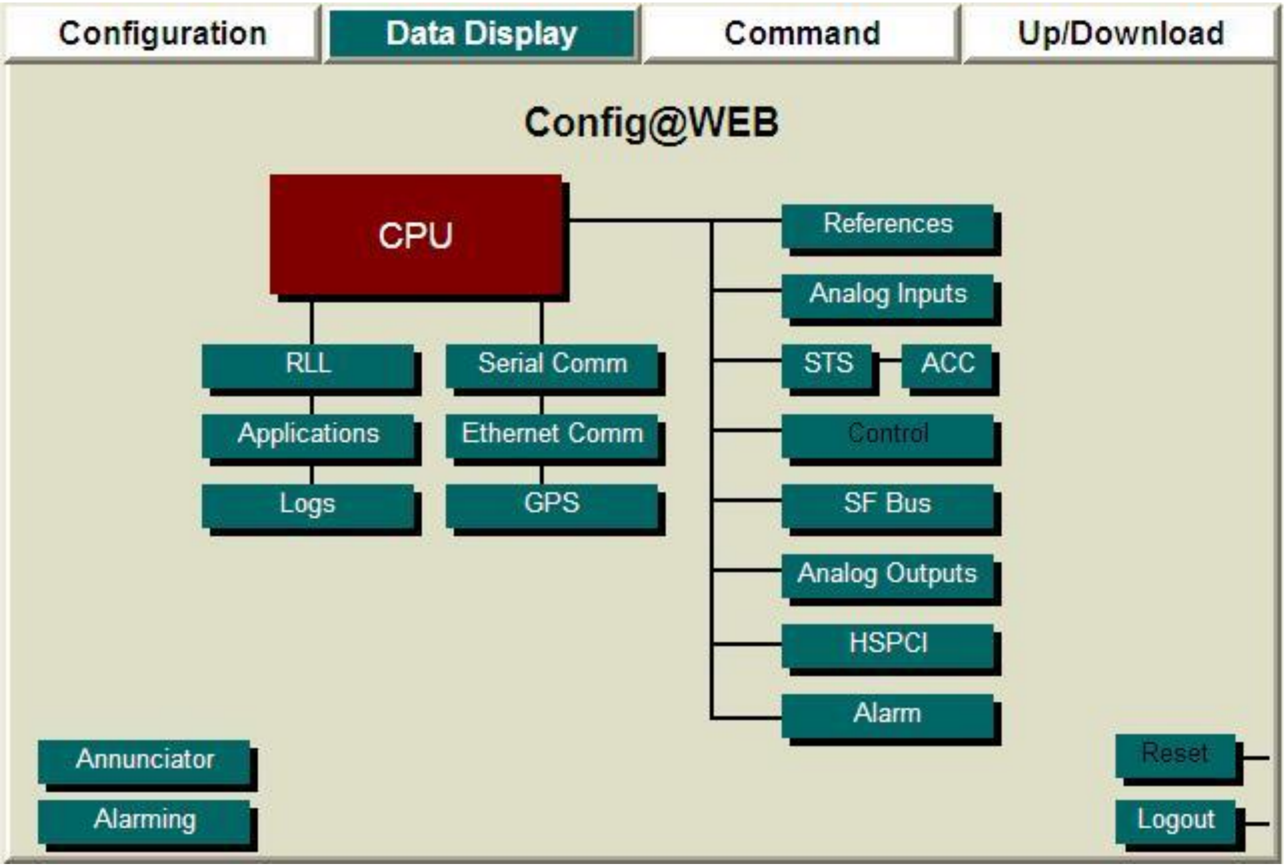
17.3.7.3 Insert & Delete Points

See the Analog Input example.

17.4 Data Display

Click the Data Display tab as shown in Figure 17-15.

Figure 17-15 IDLC Data Display Screen



Click Serial Comm to get the screen shown in Figure 17-16.

Figure 17-16 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	IDLC	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data
Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

Navigation
Click the Back button to return to the previous screen.

17.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 17-17.

Figure 17-17 Communication Counters Display

IDLC Communication Counters Display

Port # : 3 Port Name : Port 3

Point	Counter Name	Counts
1	Messages Received	0
2	Messages Sent	0
3	RX Timeouts	0
4	Security Errors	0
5	Framing Errors	0
6	Invalid Address	0
7	Invalid Function	0
8	Invalid Data Type	0
9	Too Many Bytes	0
10	Too Few Bytes	0
11	Hardware CTS Errors	0
12	B4 Timer Violations	0
13	IB Timer Violations	0
14	Overrun Errors	0
15	Parity Errors	0
16	Hardware DCD Errors	0

Data Trap Configure

Back

Point Number
A logical point number for reference only.

Counter Name
The following counters are monitored:

Messages Received
This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent
This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts
This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

Security Errors
This indicates the cumulative number of security errors since the last reset or power-up.

Framing Errors
This indicates the cumulative number of received bytes with framing errors since the last reset or power-up. This can be affected by parity and MTO.

Invalid Address
This indicates the cumulative number of messages received for which the system global group address was used by the RTU address was neither the broadcast address nor the RTU ID.

Invalid Function
This field is not used for IDLC.

Invalid Data Type
This field is not used for IDLC.

Too Many Bytes
This field is not used for IDLC.

Too Few Bytes
This field is not used for IDLC.

Hardware CTS Errors
This indicates the cumulative number of CTS errors since the last reset or power-up.

B4 Timer Violations
This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

IB Timer Violations
This indicates the cumulative number of Interbyte timer violations since the last reset or power-up. This count can be affected by the setting of the Interbyte Time in configuration.

Overrun Errors
This indicates the cumulative number of overrun errors since the last reset or power-up.

Parity Errors
This indicates the cumulative number of parity errors since the last reset or power-up.

Hardware DCD Errors
This indicates the cumulative number of DCD errors since the last reset or power-up.

Counts
The counts for each type of Counter.

Data Trap
Please see the config@WEB Secure Software Users Guide.

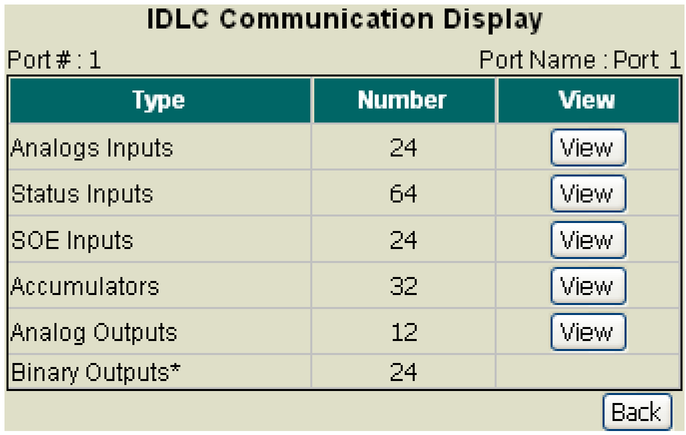
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

17.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 17-18.

Figure 17-18 Communication Display



Type
The type of point.

Number
The number of points of each type.

View
Click the View button to view points.

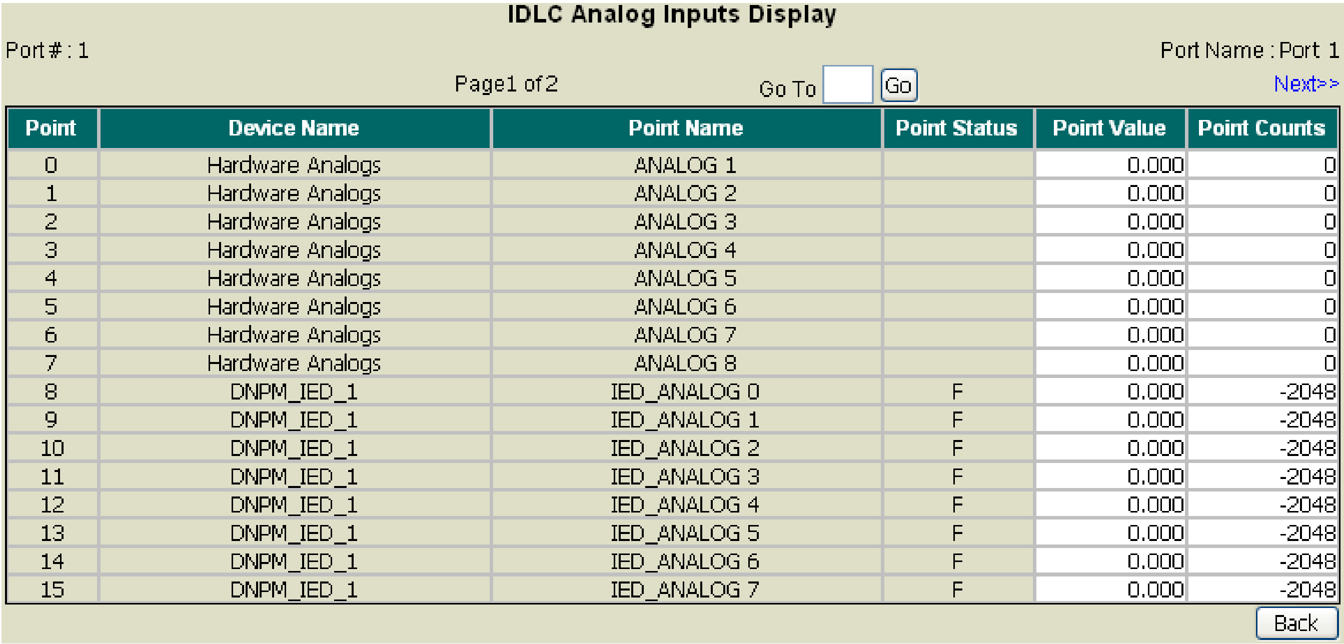
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

17.4.2.1 Analog Inputs

From the Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 17-19.

Figure 17-19 Analog Inputs Display



IDLC Analog Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To [ ] Go Next>>

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	Hardware Analogs	ANALOG 1		0.000	0
1	Hardware Analogs	ANALOG 2		0.000	0
2	Hardware Analogs	ANALOG 3		0.000	0
3	Hardware Analogs	ANALOG 4		0.000	0
4	Hardware Analogs	ANALOG 5		0.000	0
5	Hardware Analogs	ANALOG 6		0.000	0
6	Hardware Analogs	ANALOG 7		0.000	0
7	Hardware Analogs	ANALOG 8		0.000	0
8	DNPM_IED_1	IED_ANALOG 0	F	0.000	-2048
9	DNPM_IED_1	IED_ANALOG 1	F	0.000	-2048
10	DNPM_IED_1	IED_ANALOG 2	F	0.000	-2048
11	DNPM_IED_1	IED_ANALOG 3	F	0.000	-2048
12	DNPM_IED_1	IED_ANALOG 4	F	0.000	-2048
13	DNPM_IED_1	IED_ANALOG 5	F	0.000	-2048
14	DNPM_IED_1	IED_ANALOG 6	F	0.000	-2048
15	DNPM_IED_1	IED_ANALOG 7	F	0.000	-2048

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

17.4.2.2 Status Inputs

From the Communication Display screen, click View for Status Inputs to get the screen shown in Figure 17-20.

Figure 17-20 Status Inputs Display

IDLC Status Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 4 Go To [ ] Go Next>>

Point	Device Name	Point Name	Point Status	Point State	●
0	Hardware DI	DI_PNT_1		OPEN	●
1	Hardware DI	DI_PNT_2		OPEN	●
2	Hardware DI	DI_PNT_3		OPEN	●
3	Hardware DI	DI_PNT_4		OPEN	●
4	Hardware DI	DI_PNT_5		OPEN	●
5	Hardware DI	DI_PNT_6		OPEN	●
6	Hardware DI	DI_PNT_7		OPEN	●
7	Hardware DI	DI_PNT_8		OPEN	●
8	Hardware DI	DI_PNT_9		OPEN	●
9	Hardware DI	DI_PNT_10		OPEN	●
10	Hardware DI	DI_PNT_11		OPEN	●
11	Hardware DI	DI_PNT_12		OPEN	●
12	Hardware DI	DI_PNT_13		OPEN	●
13	Hardware DI	DI_PNT_14		OPEN	●
14	Hardware DI	DI_PNT_15		CLOSE	●
15	Hardware DI	DI_PNT_16		OPEN	●

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of

pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

17.4.2.3 SOE Inputs

From the Communication Display screen, click View for SOE Inputs to get the screen shown in Figure 17-21.

Figure 17-21 SOE Inputs Display

IDLC SOE Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To [ ] Go Next>>

Point	Device Name	Point Name	Point Status	Point State	●
0	Hardware DI	DI_PNT_1		OPEN	●
1	Hardware DI	DI_PNT_2		OPEN	●
2	Hardware DI	DI_PNT_3		OPEN	●
3	Hardware DI	DI_PNT_4		OPEN	●
4	Hardware DI	DI_PNT_5		OPEN	●
5	Hardware DI	DI_PNT_6		OPEN	●
6	Hardware DI	DI_PNT_7		OPEN	●
7	Hardware DI	DI_PNT_8		OPEN	●
8	Hardware DI	DI_PNT_9		OPEN	●
9	Hardware DI	DI_PNT_10		OPEN	●
10	Hardware DI	DI_PNT_11		OPEN	●
11	Hardware DI	DI_PNT_12		OPEN	●
12	Hardware DI	DI_PNT_13		OPEN	●
13	Hardware DI	DI_PNT_14		OPEN	●
14	Hardware DI	DI_PNT_15		OPEN	●
15	Hardware DI	DI_PNT_16		OPEN	●

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

17.4.2.4 Accumulator Inputs

From the Communication Display screen, click View for Accumulators to get the screen shown in Figure 17-22.

Figure 17-22 Accumulators Display

IDLC Accumulators Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To [ ] Go Next>>

Point	Device Name	Point Name	Count
0	DNPM_IED_1	IED_ACC_ 0	0
1	DNPM_IED_1	IED_ACC_ 1	0
2	DNPM_IED_1	IED_ACC_ 2	0
3	DNPM_IED_1	IED_ACC_ 3	0
4	DNPM_IED_1	IED_ACC_ 4	0
5	DNPM_IED_1	IED_ACC_ 5	0
6	DNPM_IED_1	IED_ACC_ 6	0
7	DNPM_IED_1	IED_ACC_ 7	0
8	DNPM_IED_1	IED_ACC_ 8	0
9	DNPM_IED_1	IED_ACC_ 9	0
10	DNPM_IED_1	IED_ACC_ 10	0
11	DNPM_IED_1	IED_ACC_ 11	0
12	DNPM_IED_1	IED_ACC_ 12	0
13	DNPM_IED_1	IED_ACC_ 13	0
14	DNPM_IED_1	IED_ACC_ 14	0
15	DNPM_IED_1	IED_ACC_ 15	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Please note: These values will only update when the accumulators are frozen.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

17.4.2.5 Analog Outputs

From the Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 17-23.

Figure 17-23 IDLC Analog Outputs Display

IDLC Analog Outputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To [ ] Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	DNPM_IED_1	IED_AO_ 0	F	-100.000	0
1	DNPM_IED_1	IED_AO_ 1	F	-100.000	0
2	DNPM_IED_1	IED_AO_ 2	F	-100.000	0
3	DNPM_IED_1	IED_AO_ 3	F	-100.000	0
4	DNPM_IED_1	IED_AO_ 4	F	-100.000	0
5	DNPM_IED_1	IED_AO_ 5	F	-100.000	0
6	DNPM_IED_1	IED_AO_ 6	F	-100.000	0
7	DNPM_IED_1	IED_AO_ 7	F	-100.000	0
8	DNPM_IED_1	IED_AO_ 8	F	-100.000	0
9	DNPM_IED_1	IED_AO_ 9	F	-100.000	0
10	DNPM_IED_1	IED_AO_ 10	F	-100.000	0
11	DNPM_IED_1	IED_AO_ 11	F	-100.000	0
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value. This value is calculated based on the EGU min and EGU max settings for the target analog output point along with the current binary count sent from the master station.

Point Counts
The binary counts being sent from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

17.4.2.6 Binary Outputs

There is no display for Binary Outputs.

18 Series V Georgia Power

18.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

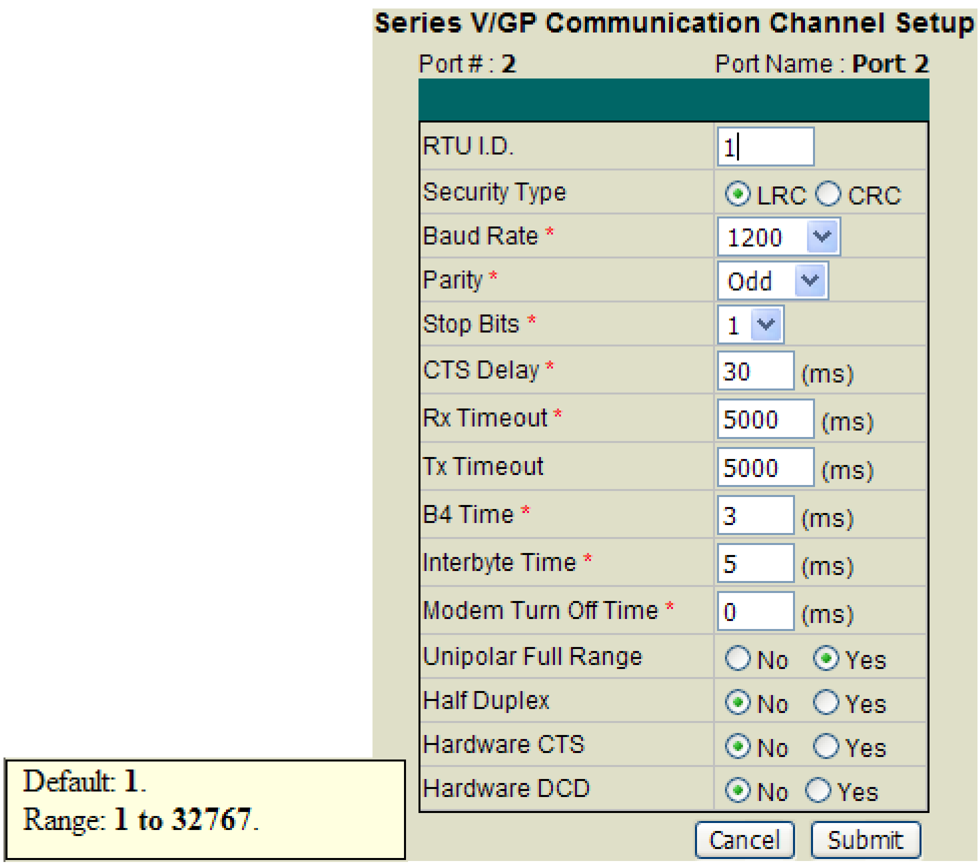
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

18.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 18-1.

Figure 18-1 Series V Georgia Power Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D. (1 – 32767)

Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 1.

Security Type
The Series V Communication Protocol uses two types of error detection techniques: Longitudinal Redundancy Check (LRC) or Cyclic Redundancy Check (CRC). Both security codes are described in the Series V Protocol Manual, B8300-AAA-00005. Default setting is LRC.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 1200.

Parity (None, Odd, Even)
Select the parity for the associated channel. The default setting is Odd.

Stop Bits (0,1,2)
Select the stop bits from the pull-down menu. The default is 1.

CTS Delay (0 – 1000ms)
Enter the Clear-To-Send delay in milliseconds for the associated channel. This is the time delay the channel will wait to start transmitting following Request-To-Send signal being asserted. Default setting is 30.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 5000 (5 seconds).

Tx Timeout (0 – 30,000ms)
Enter the transmit timeout for the associated channel. This value limits the maximum transmission time from the RTU to the master. Default setting is 5000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 3.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 5.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Unipolar Full Range (No, Yes)
Enter Yes if you want unipolar analogs to span the full range specified in the C Min and C Max count fields under Point Mapping. If No, unipolar analogs will span the range 0 to C Max count. Default setting is Yes.

Half Duplex (No, Yes)
Enter Yes for half duplex or No for full duplex. This field enables the RTU to properly condition the RS-232 control lines. The CTS delay is used for carrier conditioning. In full duplex operation, the CTS signal is used for collision avoidance. In Half duplex operation, the DCD signal is used for collision avoidance and to enable the receiver. The default setting is No.

Hardware CTS (No, Yes)

If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)

If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

Navigation

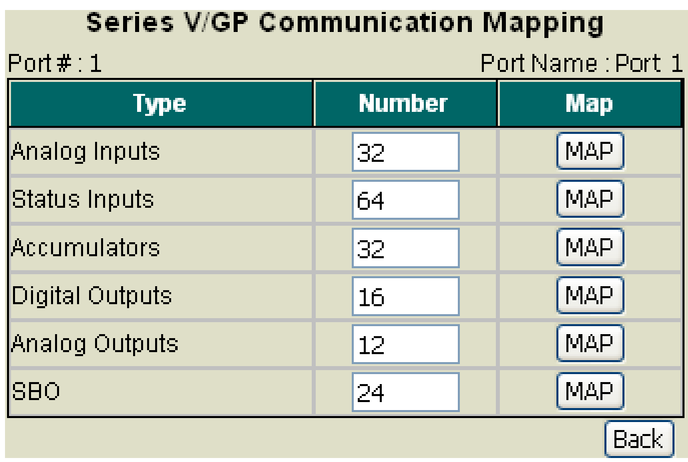
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

18.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 18-2 will appear. Enter the number of points for each type of point, then click MAP before moving on to the next point type.

Figure 18-2 Series V Communication Mapping



Type

The different types of I/O points supported by this protocol.

Number

Enter the quantity of points for the given type.

Note: You must Map the points entered before moving to the next point type.

Map

Click the MAP button to map the points.

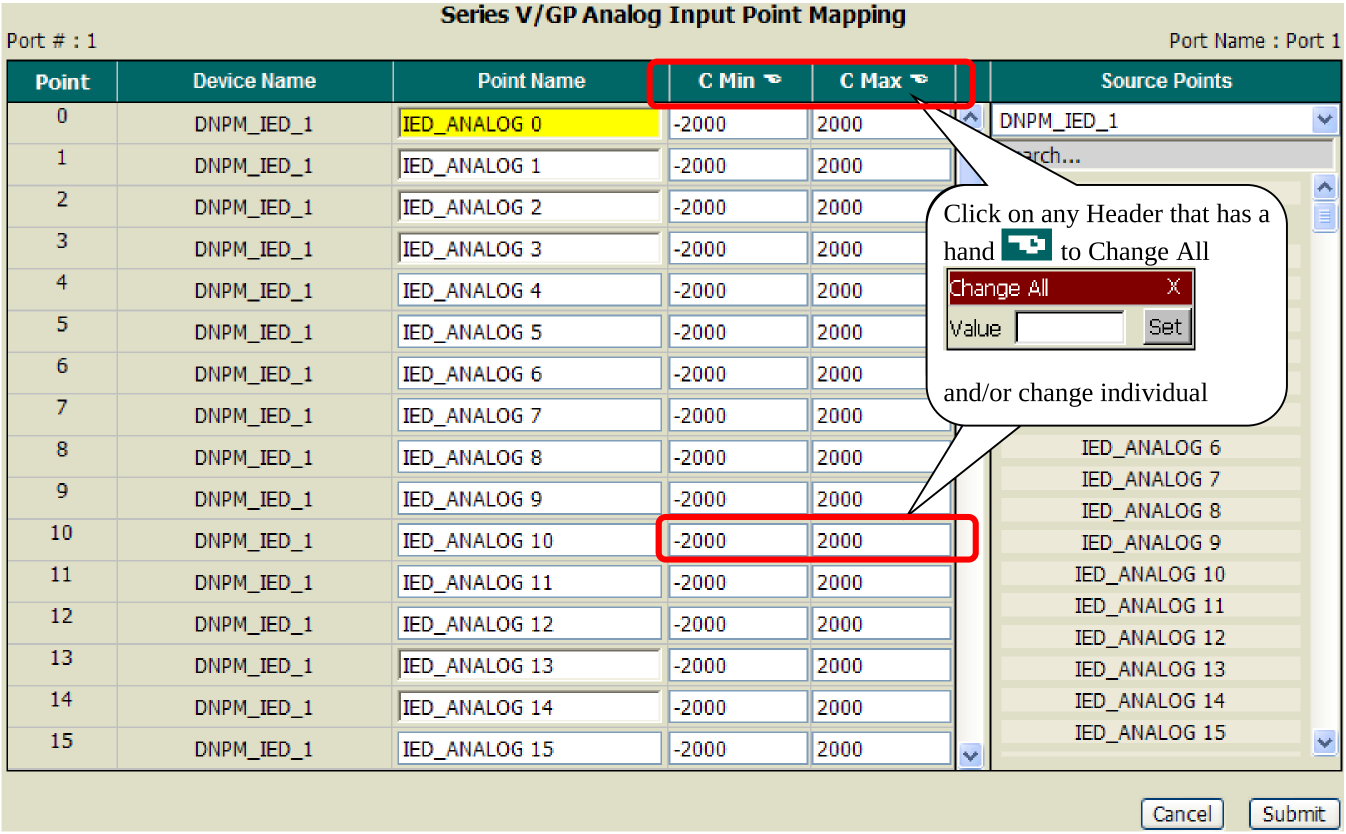
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the IED Configuration screen.

18.3.1 Map Analog Inputs

From the Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 18-3 will appear.

Figure 18-3 Analog Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is -2000.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

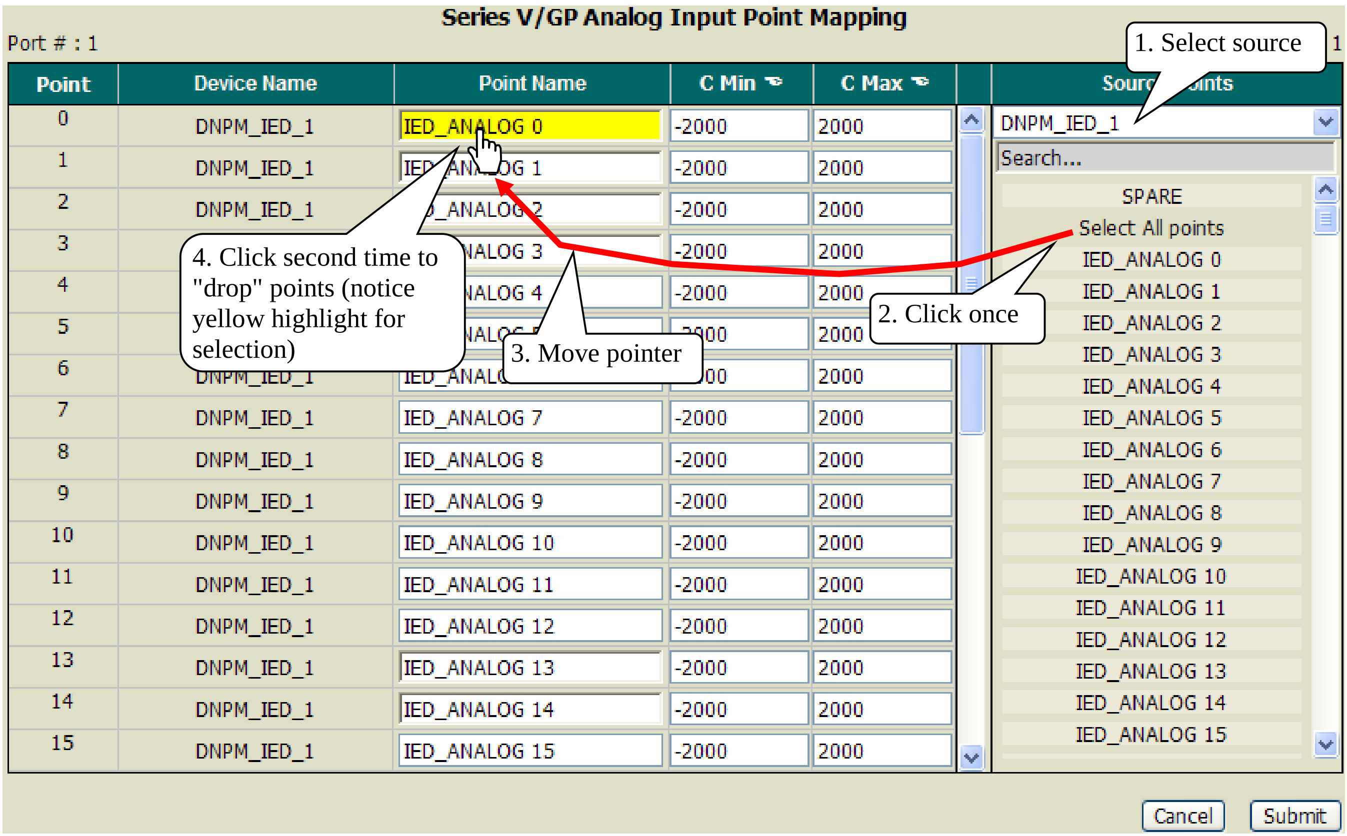
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

18.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

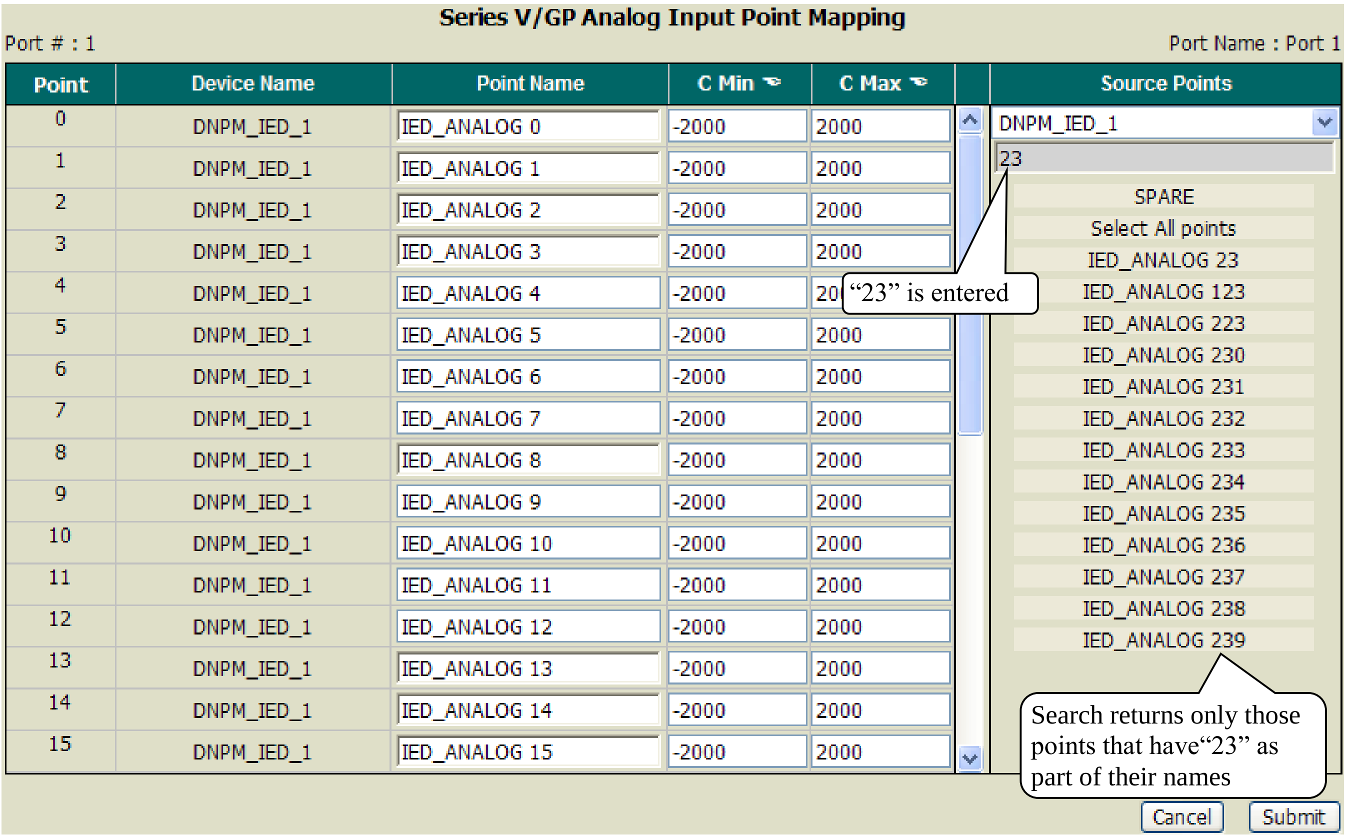
Figure 18-4 Point Mapping Highlight



18.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

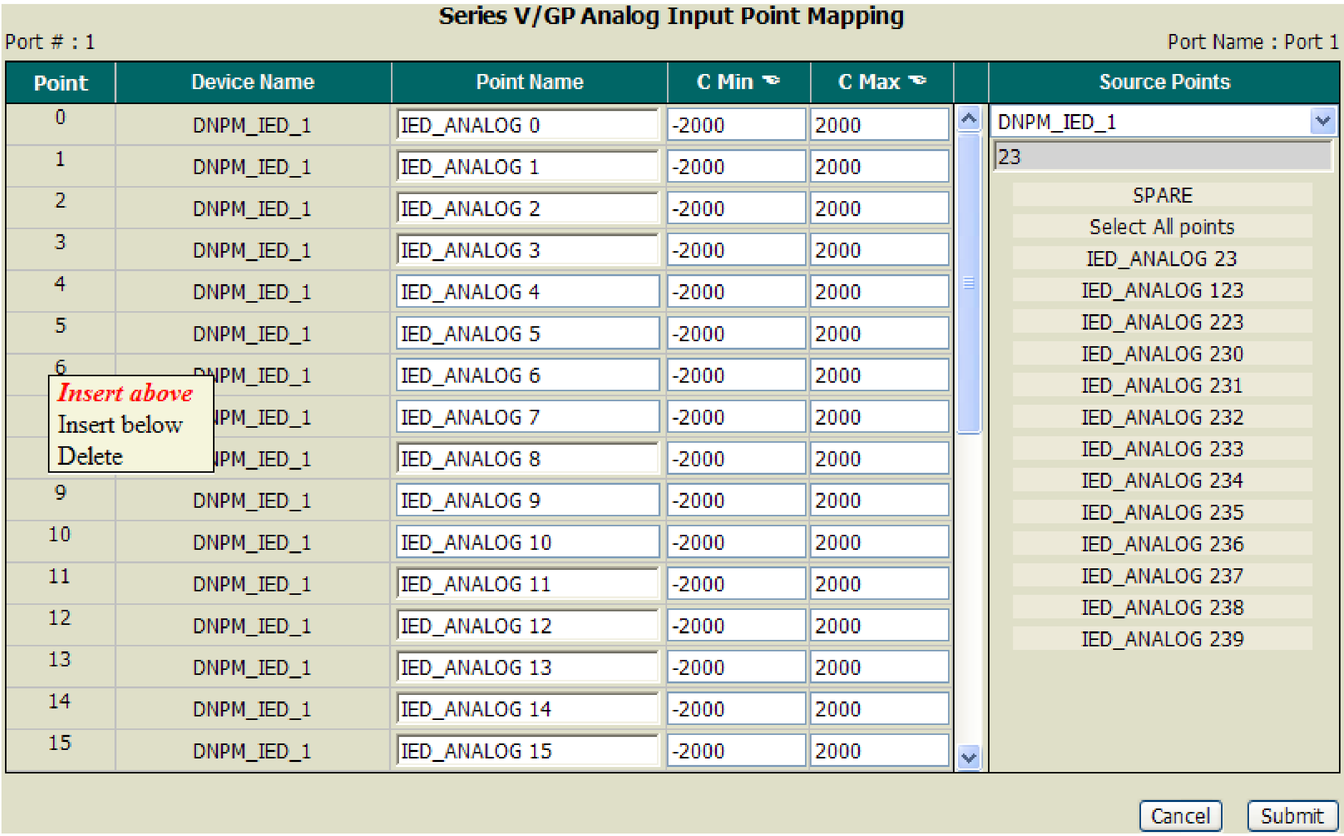
Figure 18-5 Point Database Search



18.3.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #6) and <u>right</u> click the mouse. The message box shown below appears. Select Insert above (or below) and <u>left</u> click.

Figure 18-6 Insert a Point

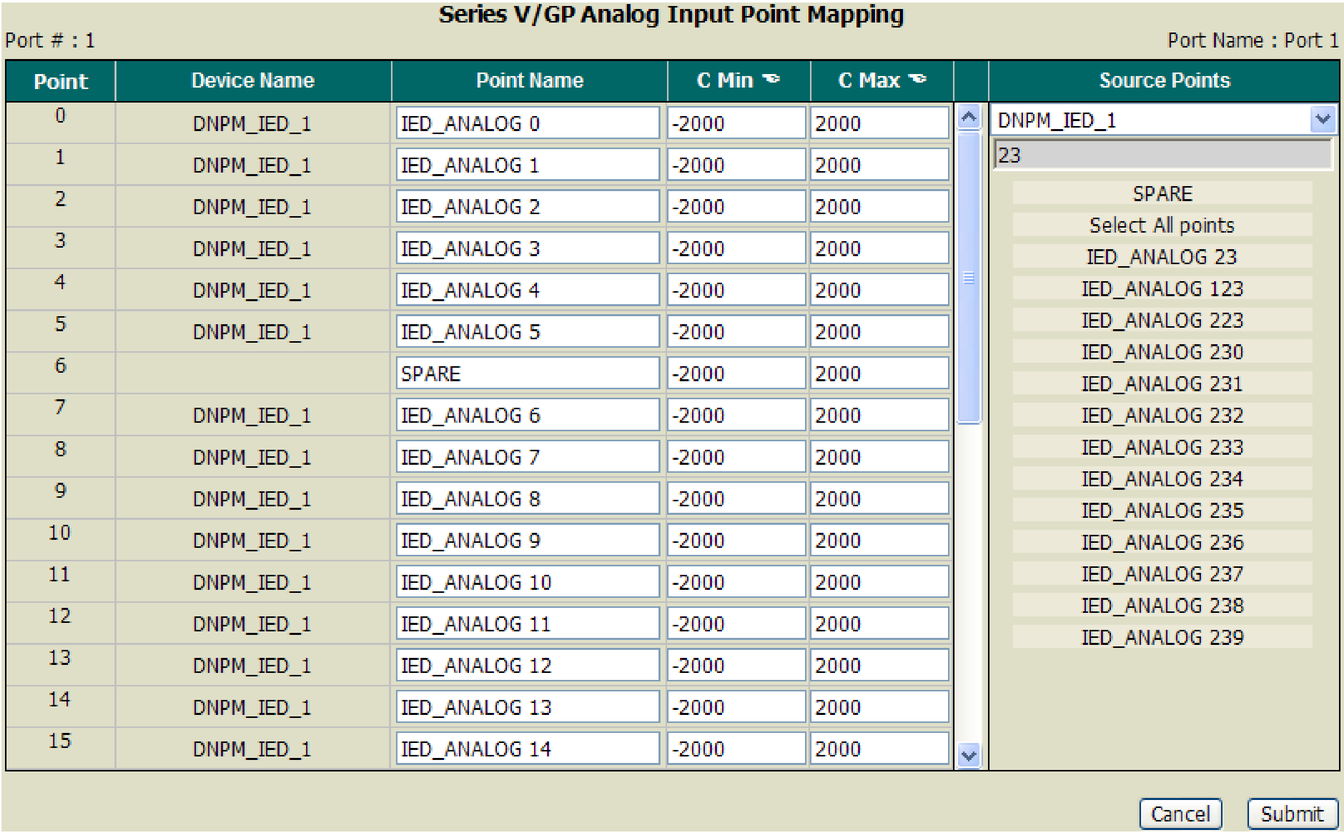


The results of Insert is shown in the next Figure. Notice that the old Point #6, IED_ANALOG 6, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 18-7 Results of Insert Above



Series V/GP Analog Input Point Mapping

Port # : 1 Port Name : Port 1

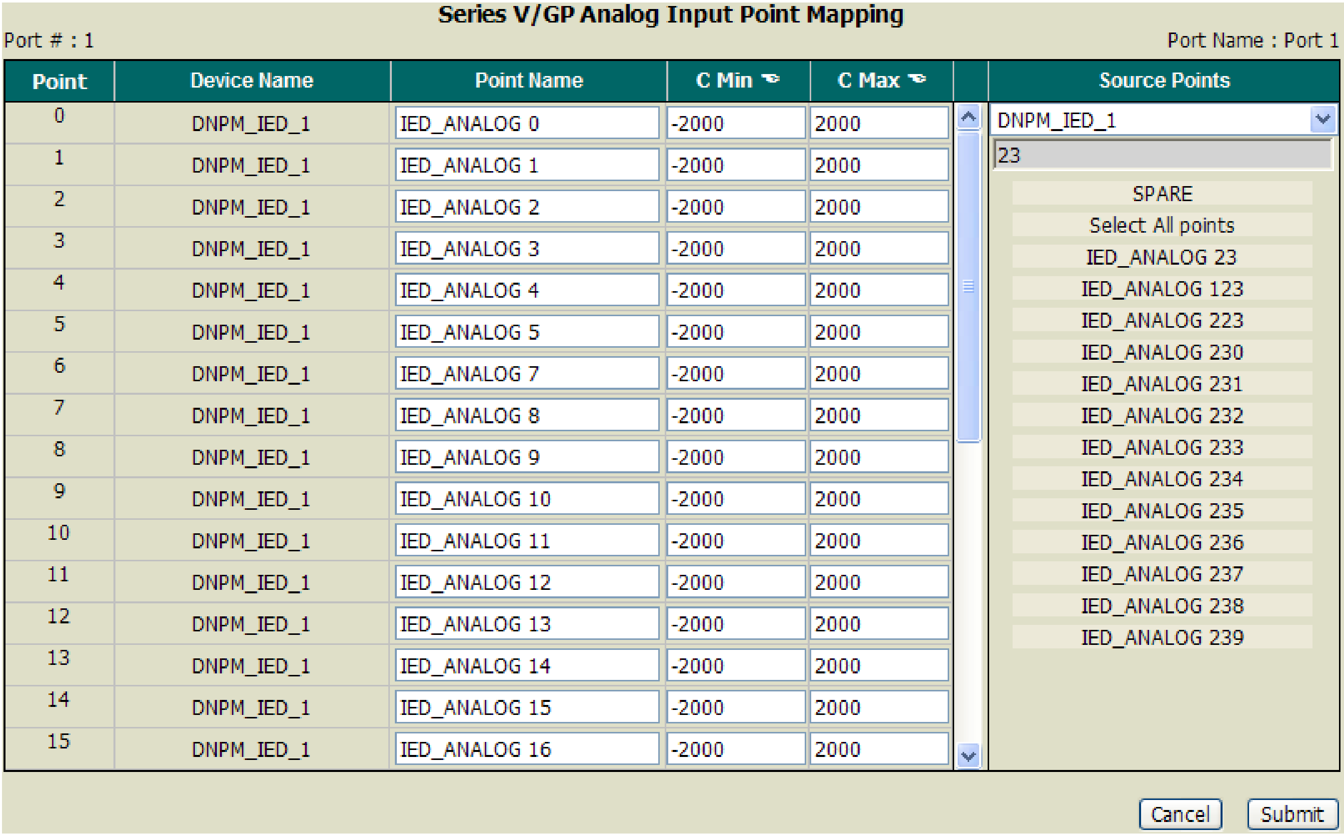
Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2000	2000
1	DNPM_IED_1	IED_ANALOG 1	-2000	2000
2	DNPM_IED_1	IED_ANALOG 2	-2000	2000
3	DNPM_IED_1	IED_ANALOG 3	-2000	2000
4	DNPM_IED_1	IED_ANALOG 4	-2000	2000
5	DNPM_IED_1	IED_ANALOG 5	-2000	2000
6		SPARE	-2000	2000
7	DNPM_IED_1	IED_ANALOG 6	-2000	2000
8	DNPM_IED_1	IED_ANALOG 7	-2000	2000
9	DNPM_IED_1	IED_ANALOG 8	-2000	2000
10	DNPM_IED_1	IED_ANALOG 9	-2000	2000
11	DNPM_IED_1	IED_ANALOG 10	-2000	2000
12	DNPM_IED_1	IED_ANALOG 11	-2000	2000
13	DNPM_IED_1	IED_ANALOG 12	-2000	2000
14	DNPM_IED_1	IED_ANALOG 13	-2000	2000
15	DNPM_IED_1	IED_ANALOG 14	-2000	2000

Source Points
DNPM_IED_1
23
SPARE
Select All points
IED_ANALOG 23
IED_ANALOG 123
IED_ANALOG 223
IED_ANALOG 230
IED_ANALOG 231
IED_ANALOG 232
IED_ANALOG 233
IED_ANALOG 234
IED_ANALOG 235
IED_ANALOG 236
IED_ANALOG 237
IED_ANALOG 238
IED_ANALOG 239

Cancel Submit

The Spare point can also be deleted. The following example shows the results of deleting Point#6, IED_ANALOG 6.

Figure 18-8 Results of Deleting a Point



Series V/GP Analog Input Point Mapping

Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	-2000	2000
1	DNPM_IED_1	IED_ANALOG 1	-2000	2000
2	DNPM_IED_1	IED_ANALOG 2	-2000	2000
3	DNPM_IED_1	IED_ANALOG 3	-2000	2000
4	DNPM_IED_1	IED_ANALOG 4	-2000	2000
5	DNPM_IED_1	IED_ANALOG 5	-2000	2000
6	DNPM_IED_1	IED_ANALOG 7	-2000	2000
7	DNPM_IED_1	IED_ANALOG 8	-2000	2000
8	DNPM_IED_1	IED_ANALOG 9	-2000	2000
9	DNPM_IED_1	IED_ANALOG 10	-2000	2000
10	DNPM_IED_1	IED_ANALOG 11	-2000	2000
11	DNPM_IED_1	IED_ANALOG 12	-2000	2000
12	DNPM_IED_1	IED_ANALOG 13	-2000	2000
13	DNPM_IED_1	IED_ANALOG 14	-2000	2000
14	DNPM_IED_1	IED_ANALOG 15	-2000	2000
15	DNPM_IED_1	IED_ANALOG 16	-2000	2000

Source Points
DNPM_IED_1
23
SPARE
Select All points
IED_ANALOG 23
IED_ANALOG 123
IED_ANALOG 223
IED_ANALOG 230
IED_ANALOG 231
IED_ANALOG 232
IED_ANALOG 233
IED_ANALOG 234
IED_ANALOG 235
IED_ANALOG 236
IED_ANALOG 237
IED_ANALOG 238
IED_ANALOG 239

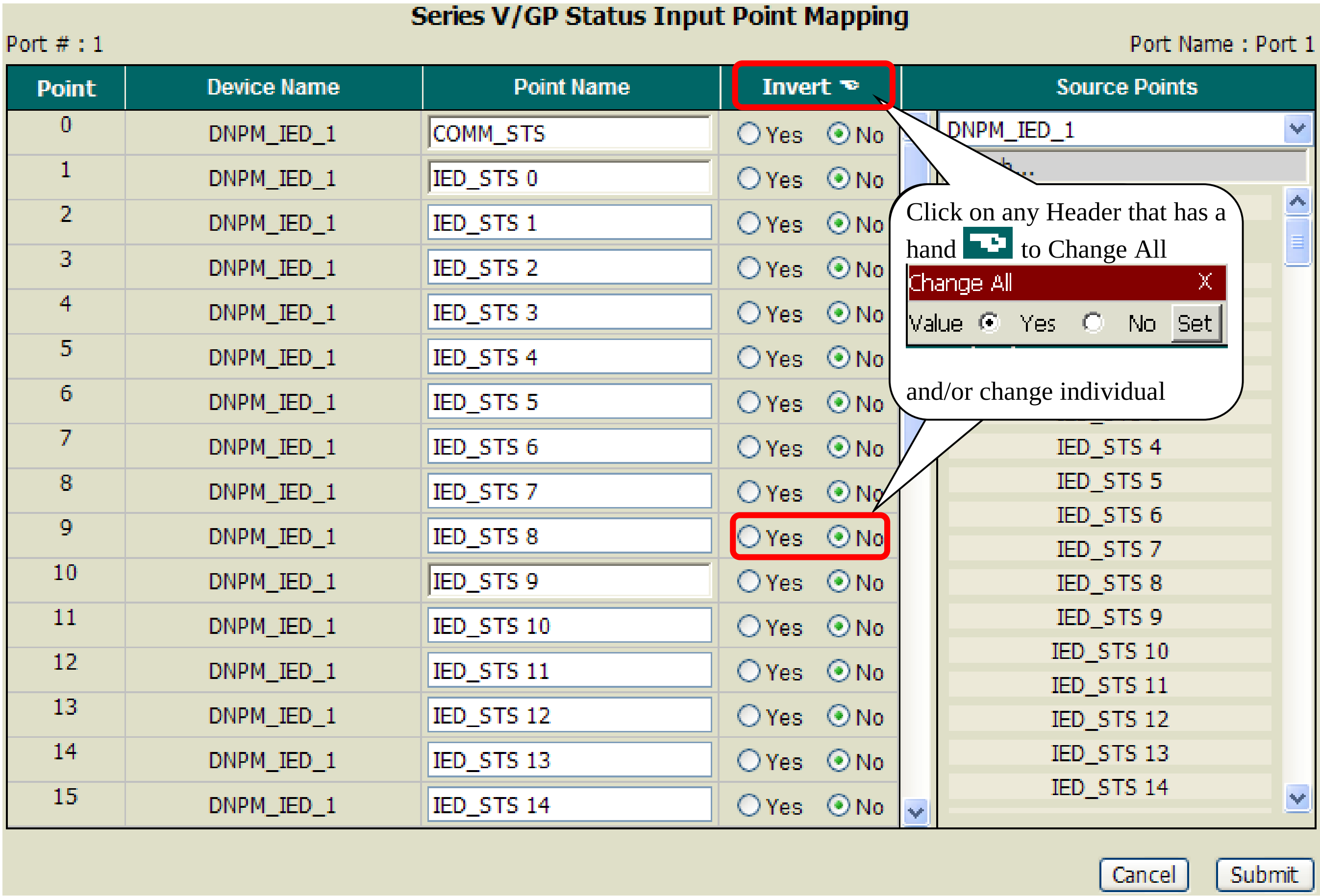
Cancel Submit

Notice that IED_ANALOG 6 is now missing, although Point numbers remain contiguous.

18.3.2 Map Status Inputs

From the Communication Mapping screen, click the MAP button for Status Inputs. A screen similar to Figure 18-9 will appear.

Figure 18-9 Status Input Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

18.3.2.1 Point Mapping Highlight

See the Analog Input example.

18.3.2.2 Point Database Search

See the Analog Input example.

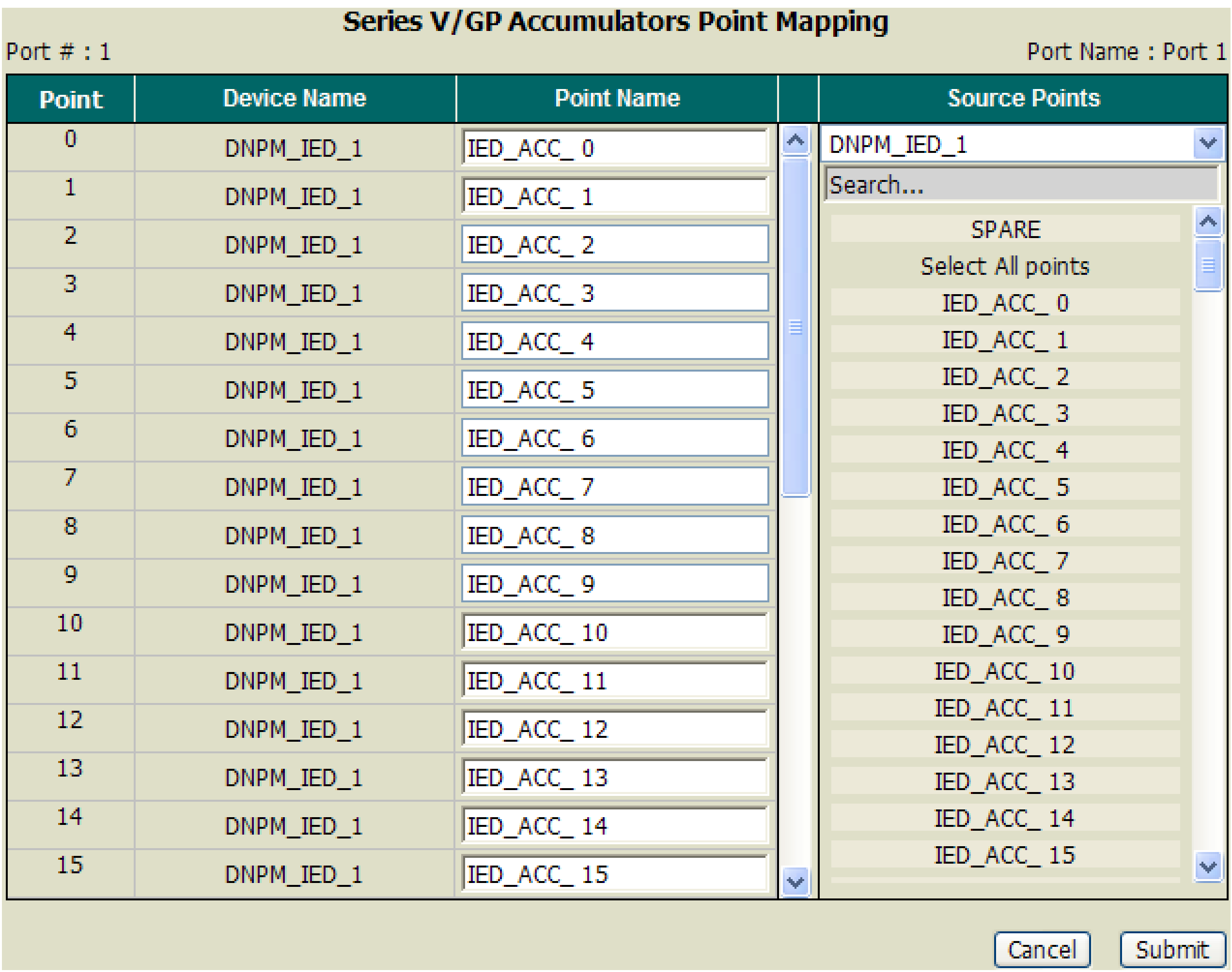
18.3.2.3 Insert & Delete Points

See the Analog Input example.

18.3.3 Map Accumulators

From the Communication Mapping screen, click the MAP button for Accumulators. A screen similar to Figure 2-18 will appear.

Figure 18-10 Accumulator Point Mapping



Point

The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

18.3.3.1 Point Mapping Highlight

See the Analog Input example.

18.3.3.2 Point Database Search

See the Analog Input example.

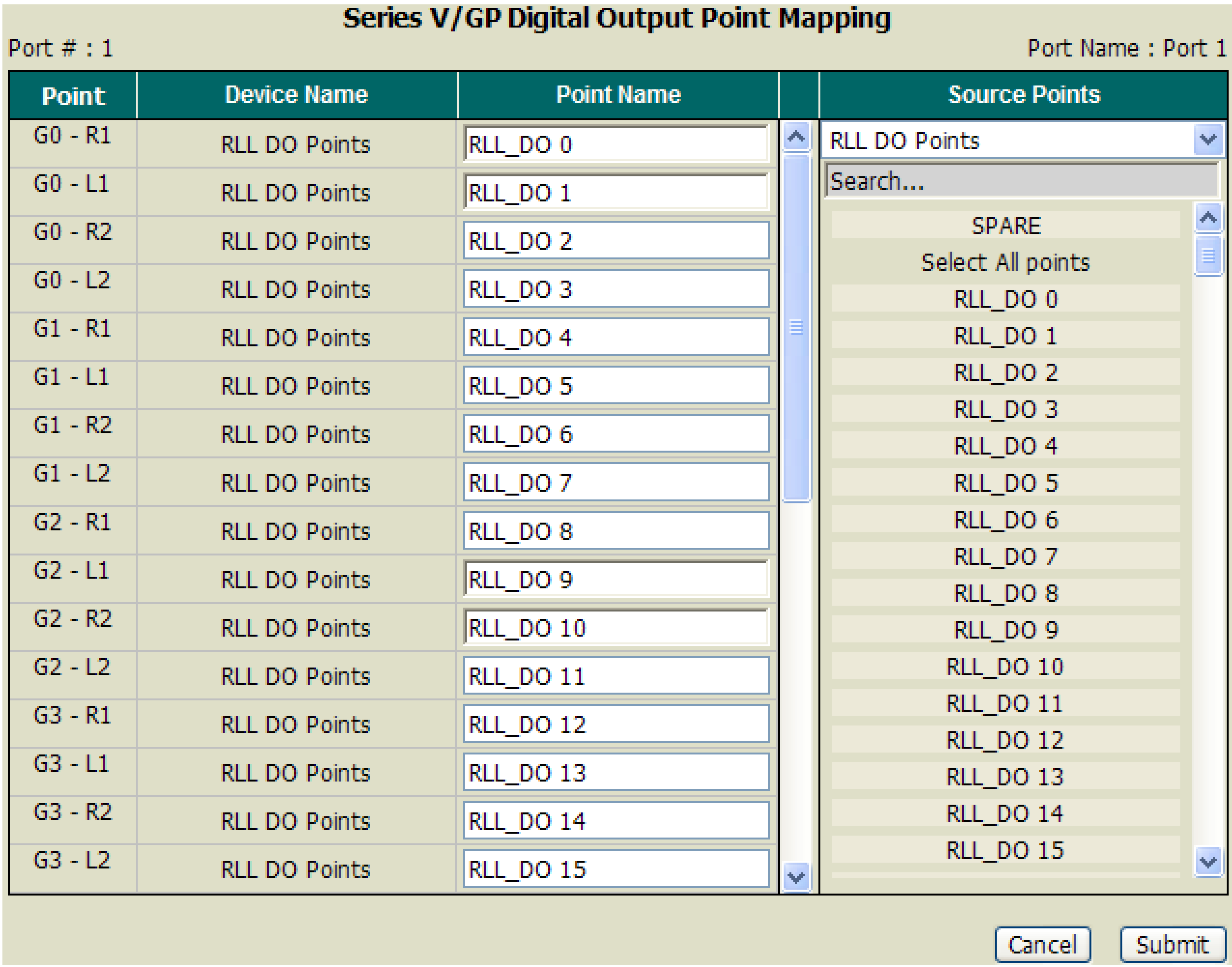
18.3.3.3 Insert & Delete Points

See the Analog Input example.

18.3.4 Map Digital Outputs

From the Communication Mapping screen, click the MAP button for Digital Outputs. A screen similar to Figure 18-11Figure 3-11 will appear.

Figure 18-11 Digital Outputs Point Mapping



Point
The protocol organizes the point numbers into four groups (G0-G3) of two raise/lower points each, R1-R2, and L1-L2.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

18.3.4.1 Point Mapping Highlight

See the Analog Input example.

18.3.4.2 Point Database Search

See the Analog Input example.

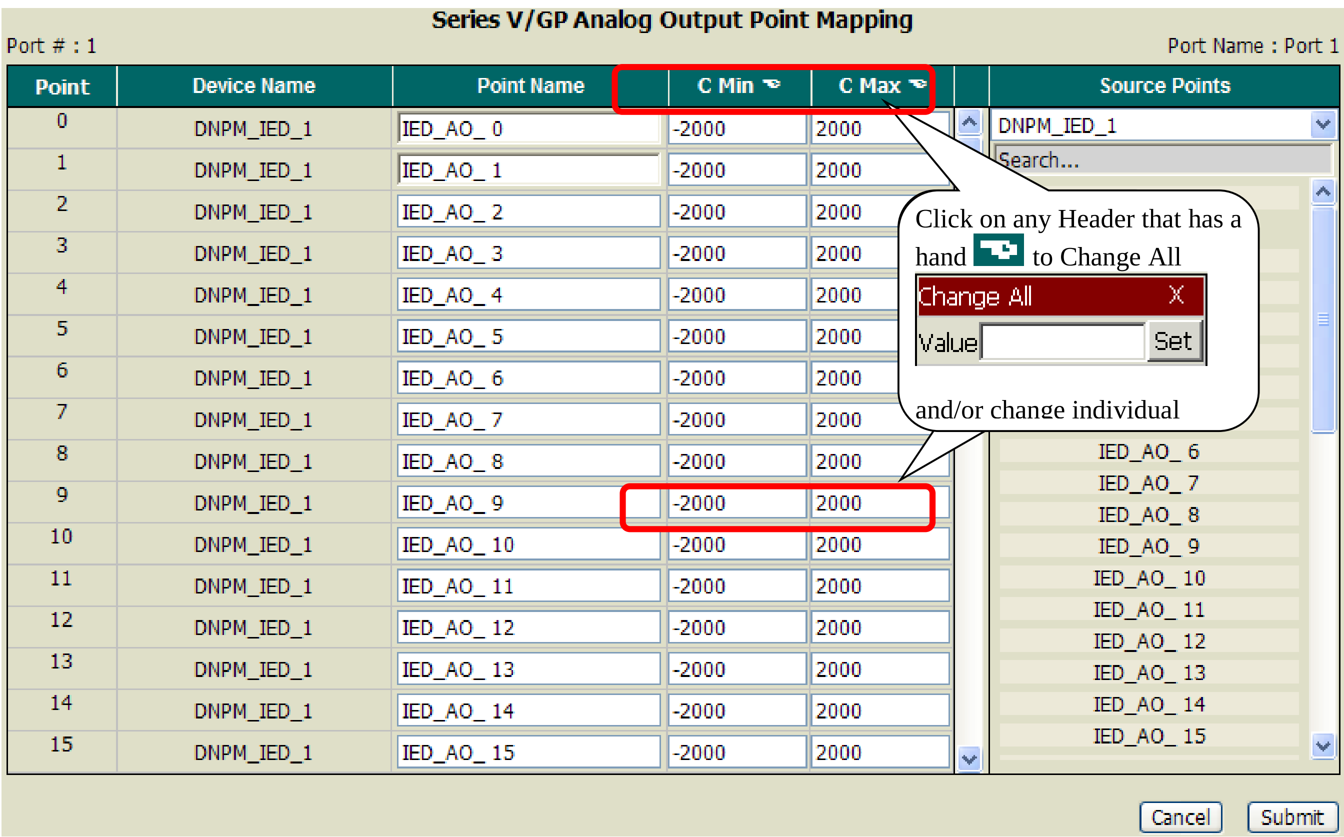
18.3.4.3 Insert & Delete Points

See the Analog Input example.

18.3.5 Map Analog Outputs

From the Communication Mapping screen, click the MAP button for Analog Outputs. A screen similar to Figure 18-12 will appear.

Figure 18-12 Analog Output Point Mapping



Point

The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name

The name of the mapped point.

C Min
Enter the minimum counts to be sent by the master station for a minimum EU value. Default setting is -2000.

C Max
Enter the maximum counts to be sent by the master station for a maximum EU value. Default setting is 2000.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

18.3.5.1 Point Mapping Highlight

See the Analog Input example.

18.3.5.2 Point Database Search

See the Analog Input example.

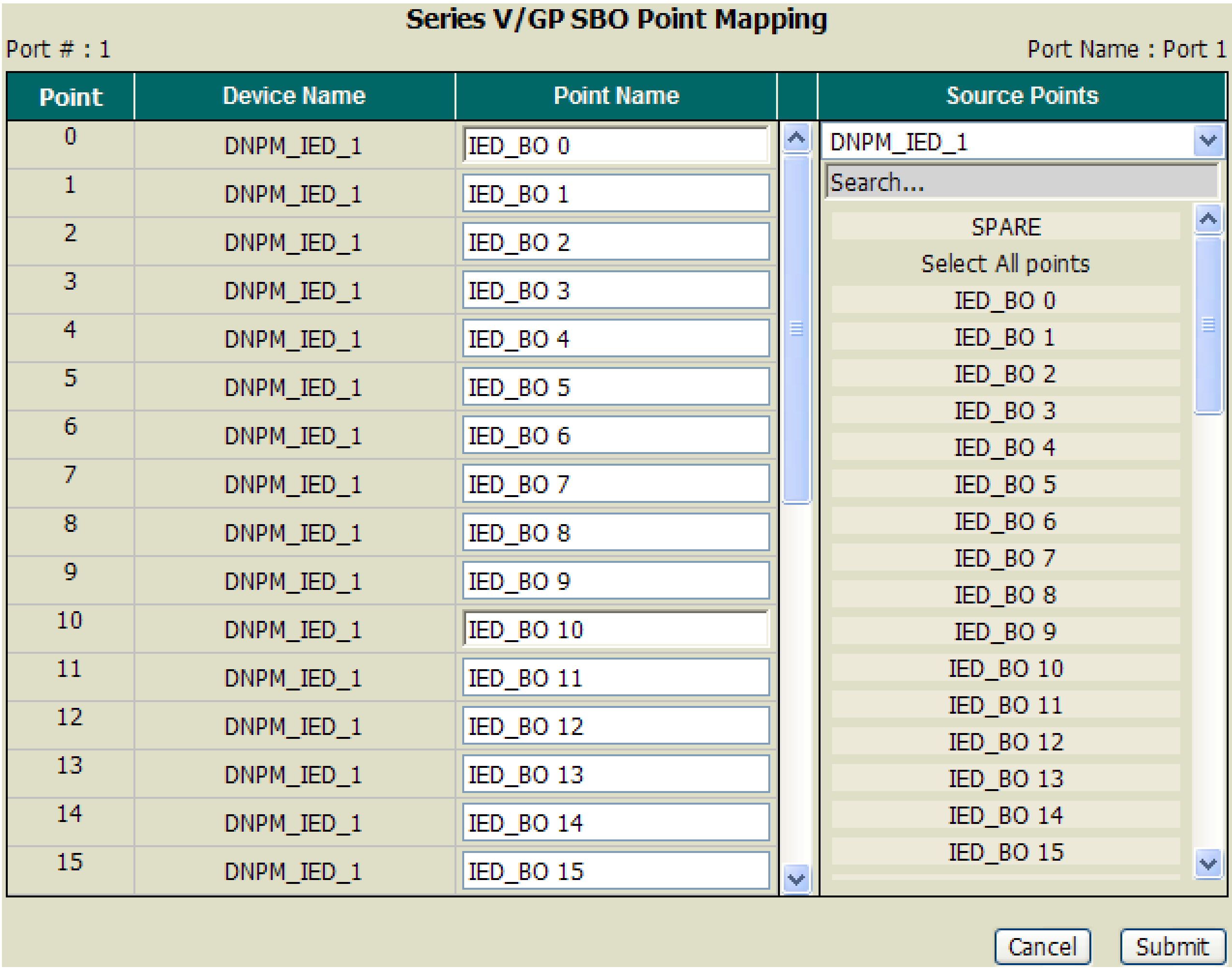
18.3.5.3 Insert & Delete Points

See the Analog Input example.

18.3.6 Map SBOs

From the Communication Mapping screen, click the MAP button for SBOs. A screen similar to Figure 18-13 will appear.

Figure 18-13 SBO Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

18.3.6.1 Point Mapping Highlight

See the Analog Input example.

18.3.6.2 Point Database Search

See the Analog Input example.

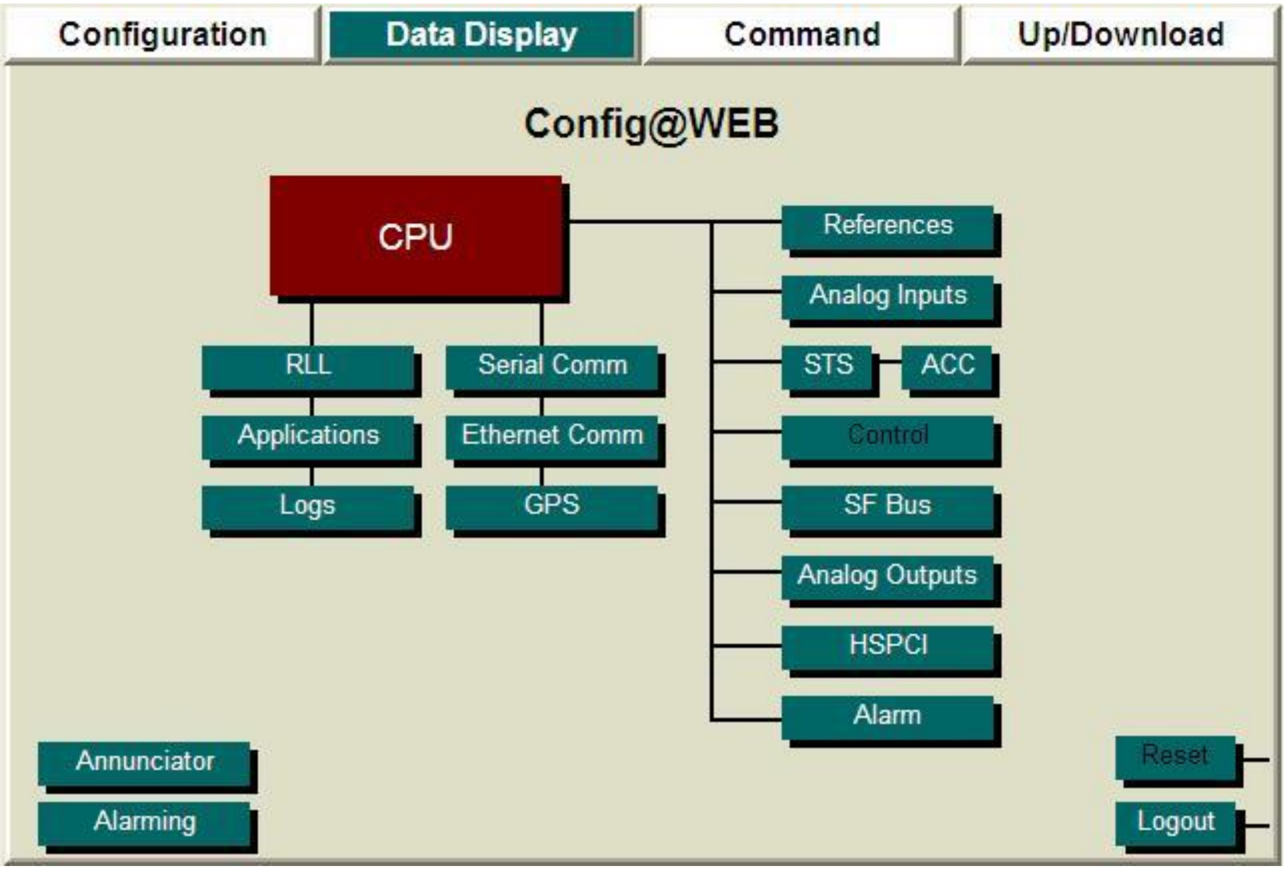
18.3.6.3 Insert & Delete Points

See the Analog Input example.

18.4 Data Display

Click the Data Display tab as shown in Figure 18-14.

Figure 18-14 Data Display Screen



Click Serial Comm to get the screen shown in Figure 18-15.

Figure 18-15 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	SVGP	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).

The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.

When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.

The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data

Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

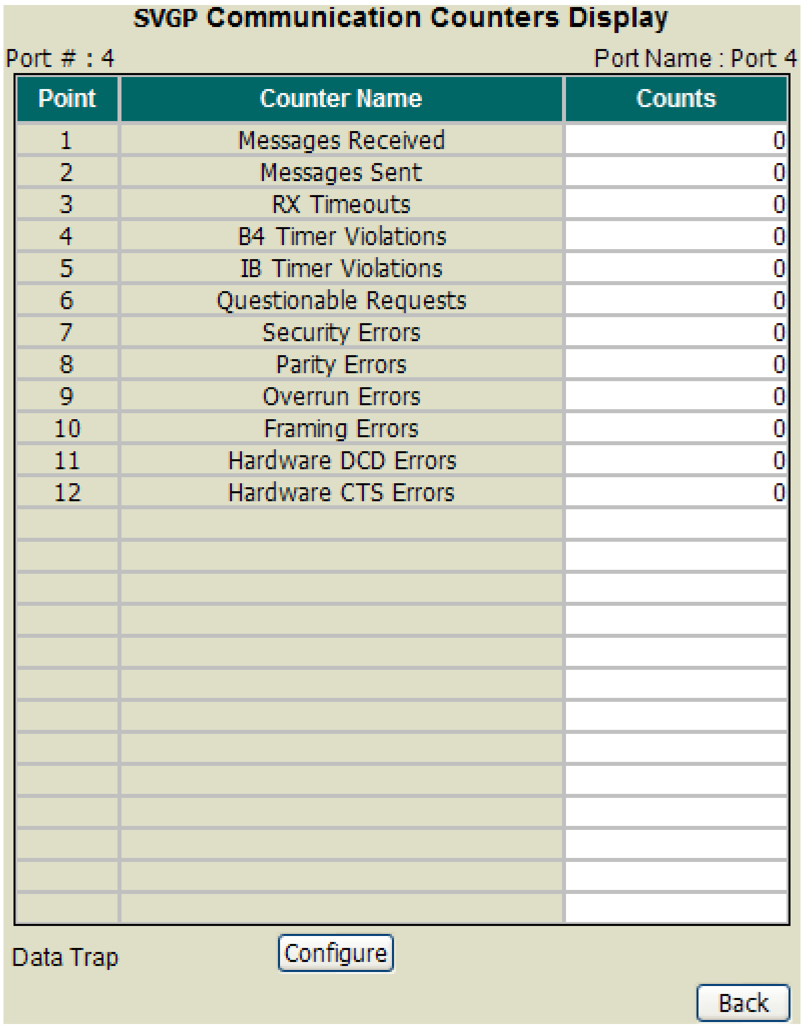
Navigation

Click the Back button to return to the previous screen.

18.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 18-16.

Figure 18-16 Communication Counters Display


SVGP Communication Counters Display

Port # : 4 Port Name : Port 4

Point	Counter Name	Counts
1	Messages Received	0
2	Messages Sent	0
3	RX Timeouts	0
4	B4 Timer Violations	0
5	IB Timer Violations	0
6	Questionable Requests	0
7	Security Errors	0
8	Parity Errors	0
9	Overrun Errors	0
10	Framing Errors	0
11	Hardware DCD Errors	0
12	Hardware CTS Errors	0

Data Trap Configure

Back

Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Messages Received

This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

B4 Timer Violations

This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

IB Timer Violations

This indicates the cumulative number of Interbyte timer violations since the last reset or power-up. This count can be affected by the setting of the Interbyte Time in configuration.

Questionable Requests

This indicates the cumulative number of messages where the RTU is receiving a global message but the function is not a freeze, freeze reset or set clock.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Parity Errors

This indicates the cumulative number of parity errors since the last reset or power-up.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Framing Errors

This indicates the cumulative number of received bytes with framing errors since the last reset or power-up. This can be affected by parity and MTO.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

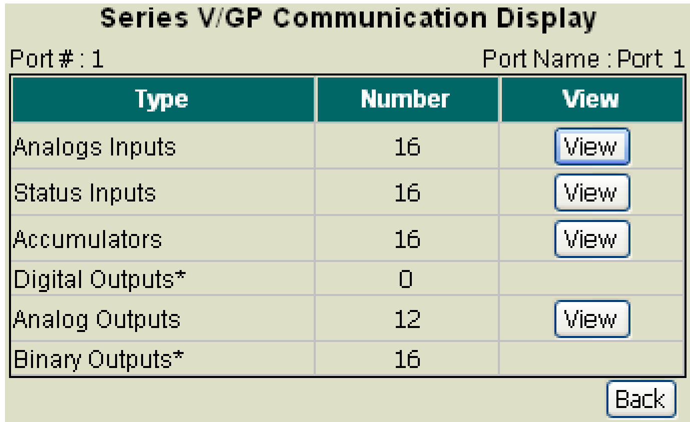
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

18.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 18-17.

Figure 18-17 Communication Display



Series V/GP Communication Display

Port # : 1 Port Name : Port 1

Type	Number	View
Analogs Inputs	16	View
Status Inputs	16	View
Accumulators	16	View
Digital Outputs*	0	
Analog Outputs	12	View
Binary Outputs*	16	

Back

Type
The type of point.

Number
The number of points of each type.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

18.4.2.1 Analog Inputs

From the Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 18-18.

Figure 18-18 Analog Inputs Display

SV/GP Analog Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To [Go] Next>>

Point	Device Name	Point Name	Quality	Point Value	Minimum	Maximum	Point Counts
0	References	bb_gnd_ref		0.000	-0.001	0.000	0
1	References	bb_+5.0V_ref		5.000	5.000	5.000	2000
2	References	bb_+4.5V_ref		4.501	4.501	4.502	1800
3	References	bb_-4.5V_ref		-4.500	-4.501	-4.500	-1800
4	References	bb_temp_ref		83.963	82.323	88.709	-1369
5	References	bb_dc_in		23.264	23.265	23.282	386
6	Hardware Analogs	ANALOG 1		1.313	0.000	1.344	-950
7	Hardware Analogs	ANALOG 2		1.313	0.000	1.344	-950
8	Hardware Analogs	ANALOG 3		1.313	0.000	1.344	-950
9	Hardware Analogs	ANALOG 4		1.313	0.000	1.344	-950
10	Hardware Analogs	ANALOG 5		0.000	0.000	1.295	-2000
11	Hardware Analogs	ANALOG 6		0.000	0.000	1.295	-2000
12	Hardware Analogs	ANALOG 7		0.000	0.000	1.295	-2000
13	Hardware Analogs	ANALOG 8		0.000	0.000	1.296	-2000
14	DNPM_IED_1	IED_ANALOG 0	F	0.000	0.000	0.000	0
15	DNPM_IED_1	IED_ANALOG 1	F	0.000	0.000	0.000	0

[Back]

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Quality
This code has the following meaning:

F	Failed, or offline
H	Violates high alarm limit
L	Violates low alarm limit

Point Value
The current engineering unit (EGU) value.

Minimum
The minimum engineering unit (EGU) value as calculated once per second. When the Master scans this value, it is reset to the current value.

Maximum
The maximum engineering unit (EGU) value as calculated once per second. When the Master scans this value, it is reset to the current value.

Point Counts
The current counts that will be sent to the Master station on the next scan.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

18.4.2.2 Status Inputs

From the Communication Display screen, click View for Status Inputs to get the screen shown in Figure 18-19.

Figure 18-19 Status Inputs Display

Series V/GP Status Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 3 Go To [Go] Next>>

Point	Device Name	Point Name	Point Status	Point State	●
0	Hardware DI	DI_PNT_1		OPEN	●
1	Hardware DI	DI_PNT_2		CLOSE	●
2	Hardware DI	DI_PNT_3		OPEN	●
3	Hardware DI	DI_PNT_4		CLOSE	●
4	Hardware DI	DI_PNT_5		OPEN	●
5	Hardware DI	DI_PNT_6		OPEN	●
6	Hardware DI	DI_PNT_7		OPEN	●
7	Hardware DI	DI_PNT_8		OPEN	●
8	Hardware DI	DI_PNT_9		OPEN	●
9	Hardware DI	DI_PNT_10		OPEN	●
10	Hardware DI	DI_PNT_11		OPEN	●
11	Hardware DI	DI_PNT_12		OPEN	●
12	Hardware DI	DI_PNT_13		OPEN	●
13	Hardware DI	DI_PNT_14		OPEN	●
14	Hardware DI	DI_PNT_15		OPEN	●
15	Hardware DI	DI_PNT_16		OPEN	●

[Back]

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

18.4.2.3 Accumulator Inputs

From the Communication Display screen, click View for Accumulators to get the screen shown in Figure 18-20.

Figure 18-20 Accumulators Display

Series V/GP Accumulators Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To [ ] Go

Point	Device Name	Point Name	Count
0	DNPM_IED_1	IED_ACC_ 0	0
1	DNPM_IED_1	IED_ACC_ 1	0
2	DNPM_IED_1	IED_ACC_ 2	0
3	DNPM_IED_1	IED_ACC_ 3	0
4	DNPM_IED_1	IED_ACC_ 4	0
5	DNPM_IED_1	IED_ACC_ 5	0
6	DNPM_IED_1	IED_ACC_ 6	0
7	DNPM_IED_1	IED_ACC_ 7	0
8	DNPM_IED_1	IED_ACC_ 8	0
9	DNPM_IED_1	IED_ACC_ 9	0
10	DNPM_IED_1	IED_ACC_ 10	0
11	DNPM_IED_1	IED_ACC_ 11	0
12	DNPM_IED_1	IED_ACC_ 12	0
13	DNPM_IED_1	IED_ACC_ 13	0
14	DNPM_IED_1	IED_ACC_ 14	0
15	DNPM_IED_1	IED_ACC_ 15	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Count
The accumulated count.

Please note: These values will only update when the accumulators are frozen.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

18.4.2.4 Analog Outputs

From the Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 18-21.

Figure 18-21 Series V Georgia Power Analog Outputs Display

Series V/GP Analog Outputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To [ ] Go

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	DNPM_IED_1	IED_AO_ 0	F	-100.000	-2000
1	DNPM_IED_1	IED_AO_ 1	F	-100.000	-2000
2	DNPM_IED_1	IED_AO_ 2	F	-100.000	-2000
3	DNPM_IED_1	IED_AO_ 3	F	-100.000	-2000
4	DNPM_IED_1	IED_AO_ 4	F	-100.000	-2000
5	DNPM_IED_1	IED_AO_ 5	F	-100.000	-2000
6	DNPM_IED_1	IED_AO_ 6	F	-100.000	-2000
7	DNPM_IED_1	IED_AO_ 7	F	-100.000	-2000
8	DNPM_IED_1	IED_AO_ 8	F	-100.000	-2000
9	DNPM_IED_1	IED_AO_ 9	F	-100.000	-2000
10	DNPM_IED_1	IED_AO_ 10	F	-100.000	-2000
11	DNPM_IED_1	IED_AO_ 11	F	-100.000	-2000
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-
-	-	-	-	-	-

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value. This value is calculated based on the EGU min and EGU max settings for the target analog output point along with the current binary count sent from the master station.

Point Counts
The binary counts being sent from the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of

pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

18.4.2.5 Binary Outputs

There is no display for Binary Outputs.

19 Moore 9000

19.1 Communication Port Configuration

The Moore 9000 (M9000) protocol is an asynchronous only implementation of the protocol originally documented in document # 1005101000 released by Moore Systems in early 1983. The protocol lives in the SAGE series of substation based equipment and is designed to communicate between the SAGE RTU and a MTU.

From the Config Home Page, click Serial Comm to setup a communication port.

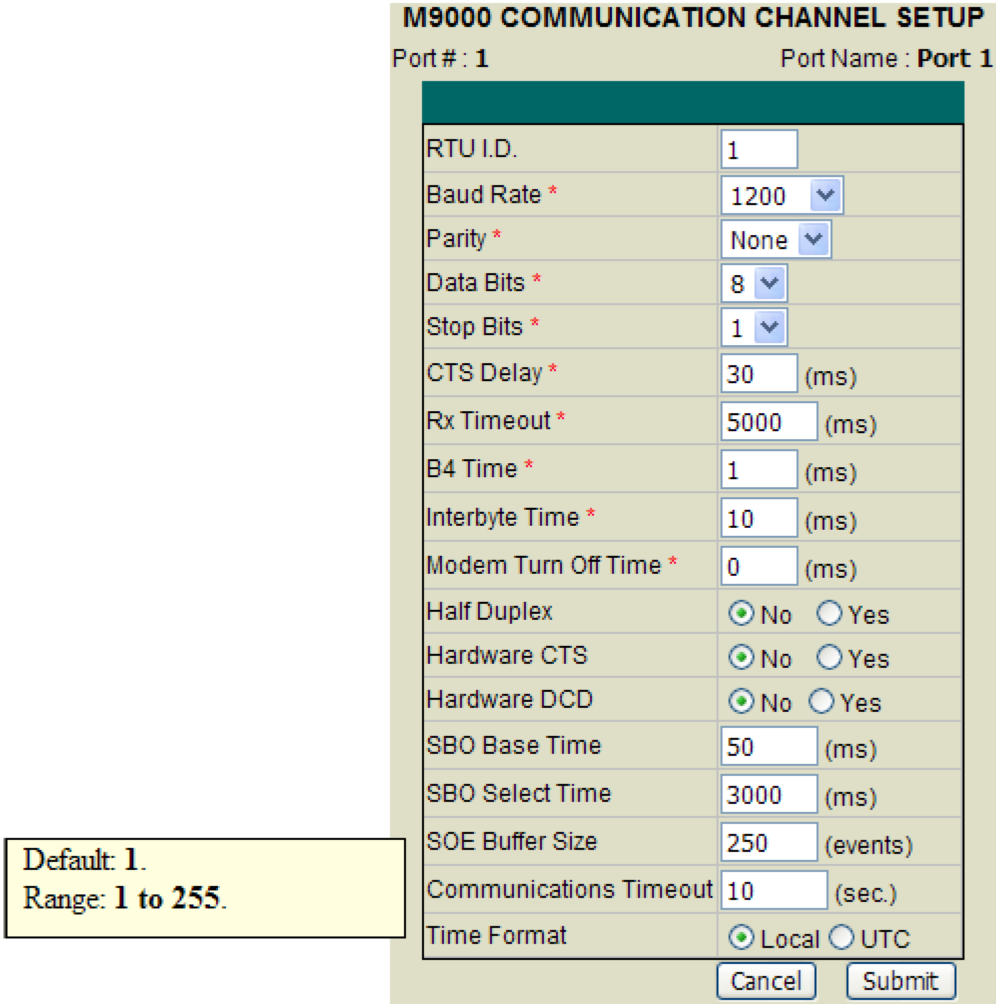
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

19.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 19-1.

Figure 19-1 Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D. (1 – 255)

Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 1.

Baud Rate (300 – 19200)

Select the communications speed for the associated channel. Default setting is 1200.

Parity (None, Odd, Even)

Select the parity for the associated channel. The default setting is None.

Data Bits (5,6,7,8)
From the drop-down menu, select the data bits for the associated channel. The default setting is 8.

Stop Bits (0,1,2)
Select the stop bits from the pull-down menu. The default is 1.

CTS Delay (0 – 250ms)
Enter the Clear-To-Send delay in milliseconds for the associated channel. This is the time delay the channel will wait to start transmitting following Request-To-Send signal being asserted. Default setting is 30.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 5,000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 1.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 10.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Half Duplex (No, Yes)
Enter Yes for half duplex or No for full duplex. This field enables the RTU to properly condition the RS-232 control lines. The CTS delay is used for carrier conditioning. In full duplex operation, the CTS signal is used for collision avoidance. In Half duplex operation, the DCD signal is used for collision avoidance and to enable the receiver. The default setting is No.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

SBO Base Time (5 – 100ms)
Enter the length of time in milliseconds that will be multiplied by the protocol value to generate the control execute length. Default setting is 50.

SBO Select Time (5 – 30,000ms)
Enter the Select before Operate control select time in milliseconds. If a valid execute command is not received by the RTU before the SBO Select Time expires, the select will be reset. Default setting is 3,000.

SOE Buffer Size (0 – 1000)
Enter the SOE event buffer size. Default setting is 250.

Communications Timeout (1 to 86,400 sec.)

Enter the communications timeout for the associated channel. The communications timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. The default setting is 10 sec.

Time Format (Local, UTC)

Note: The coordination between UTC and local time is a feature that may be ignored. If you want your RTU to act as it always has in regards to time syncs, set Time Format to Local Time. See Time Configuration Settings in the Configuration chapter of the hardware manual for time settings under the CPU block.

If you want time synchronization from the master, you must know whether the master is sending Local time or UTC time, then set this radio button to match the master's format.

Navigation

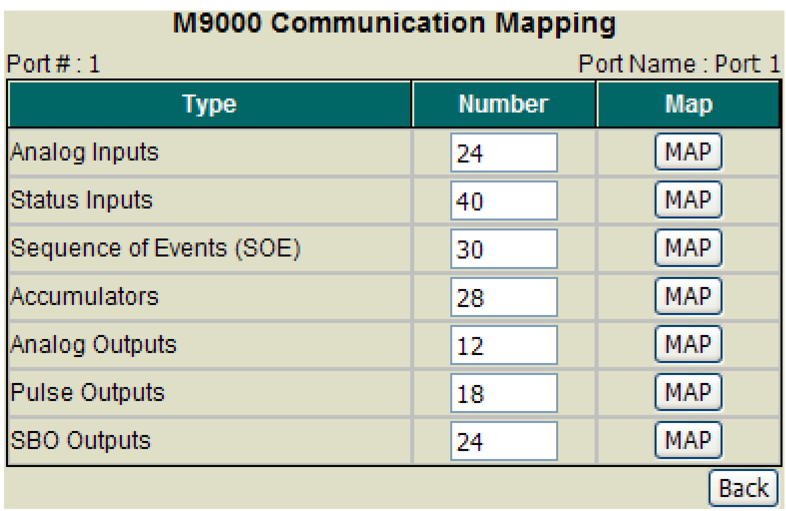
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

19.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 19-2 will appear. Enter the number of points for each type of point, then click MAP before moving on to the next point type.

Figure 19-2 Communication Mapping



M9000 Communication Mapping

Port # : 1 Port Name : Port 1

Type	Number	Map
Analog Inputs	24	MAP
Status Inputs	40	MAP
Sequence of Events (SOE)	30	MAP
Accumulators	28	MAP
Analog Outputs	12	MAP
Pulse Outputs	18	MAP
SBO Outputs	24	MAP

Back

Type
The different types of I/O points supported by this protocol.

Number
Enter the quantity of points for the given type.

Note: You must Map the points entered before moving to the next point type.

Map
Click the MAP button to map the points.

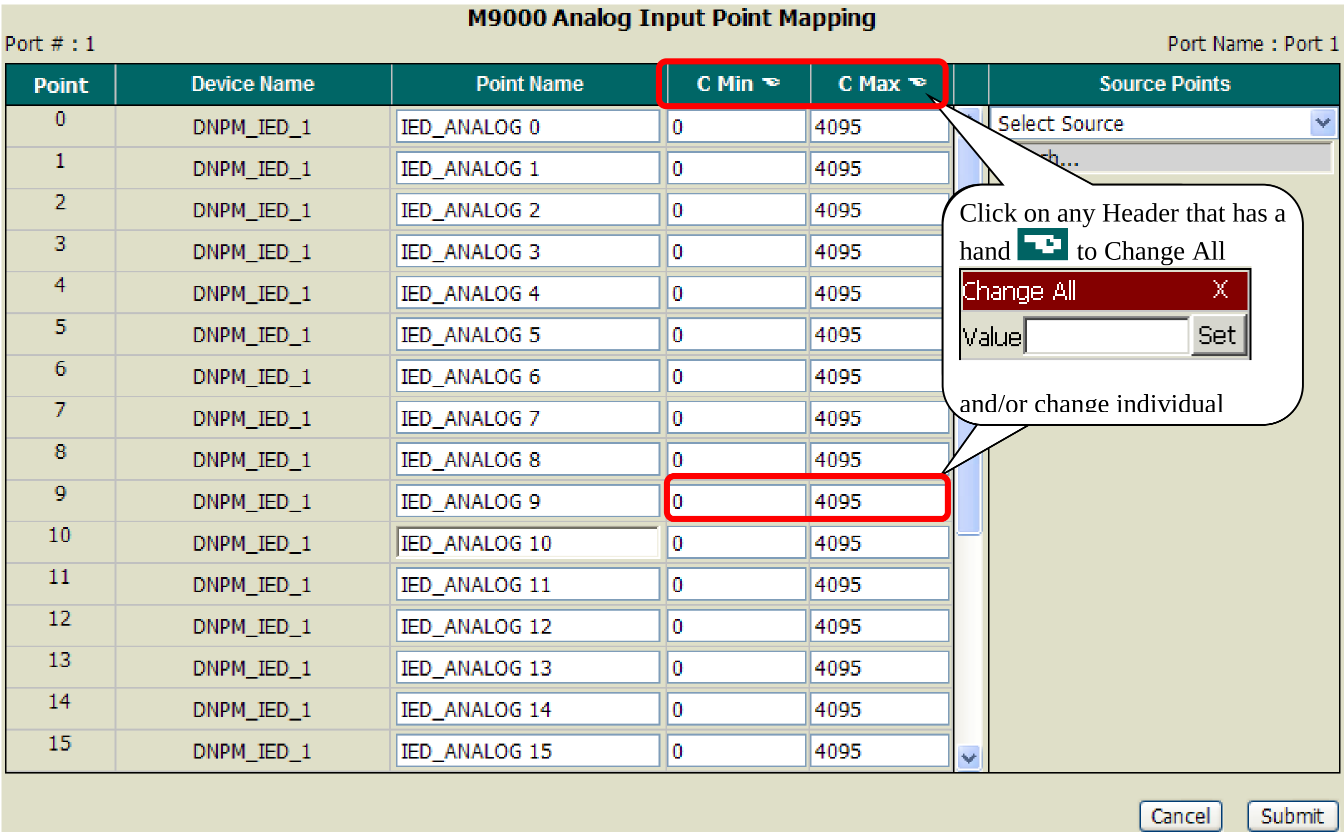
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the Port Configuration screen.

19.3.1 Map Analog Inputs

From the Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 19-3 will appear.

Figure 19-3 Analog Input Point Mapping



Point

The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name

The name of the mapped point.

C Min

Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is 0.

C Max

Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 4095.

Source Points

Select the device name from which to map points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

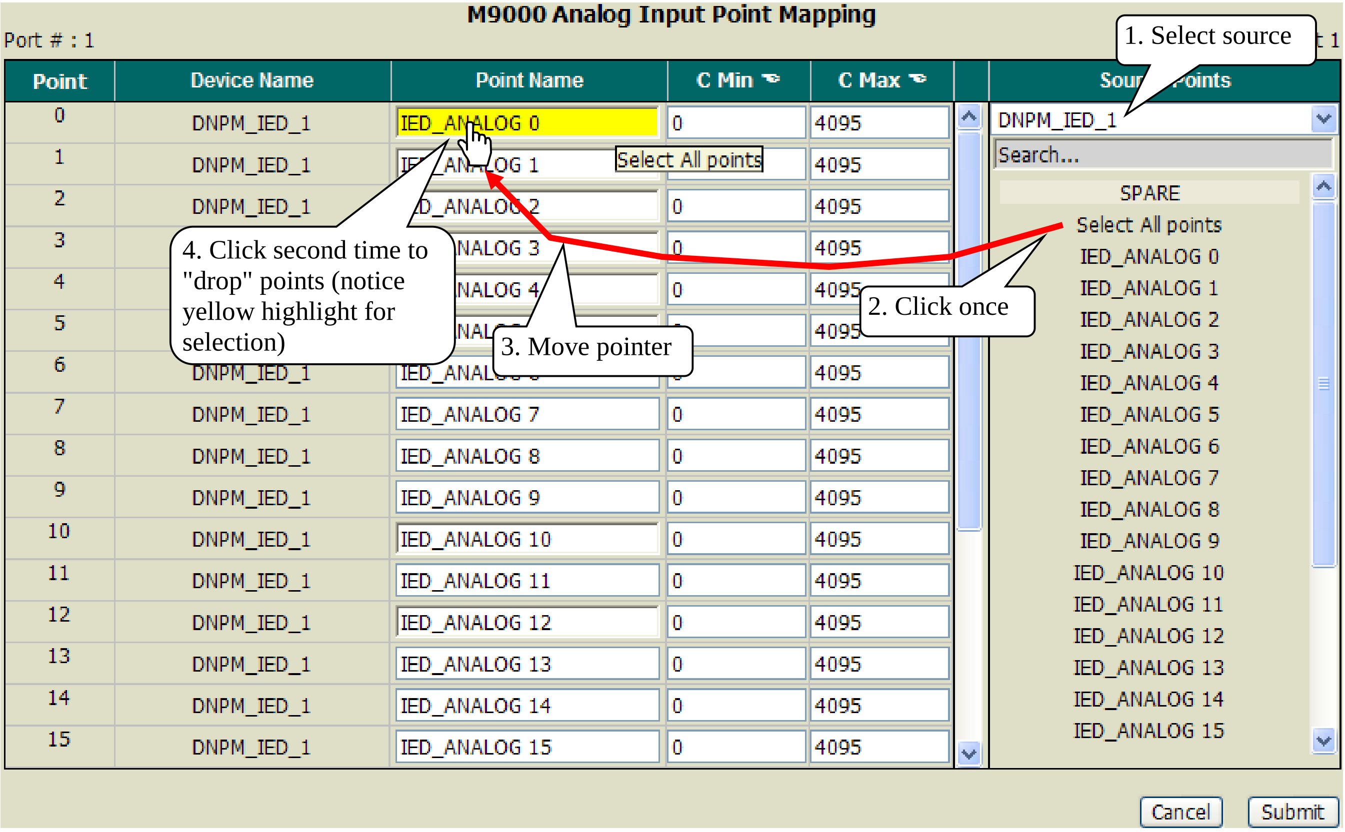
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

19.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

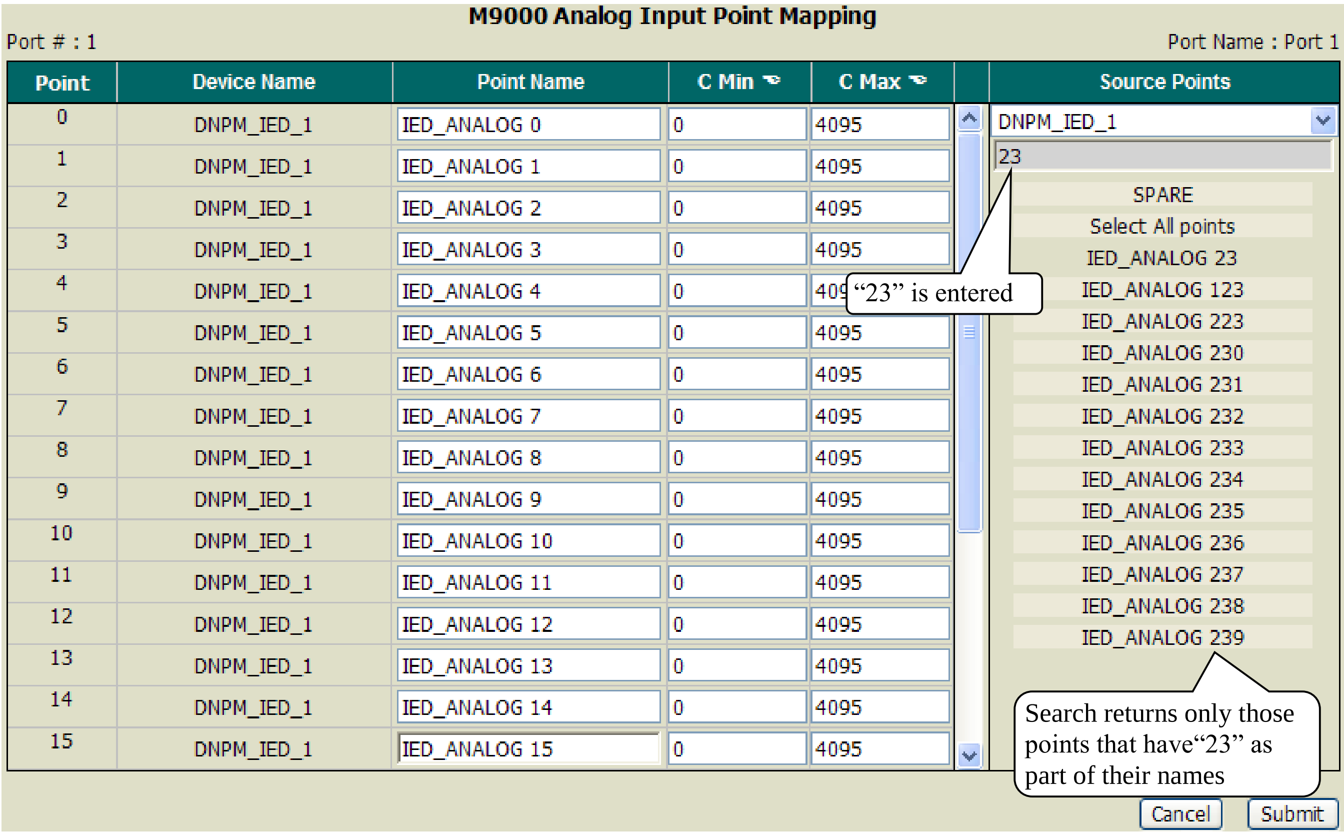
Figure 19-4 Point Mapping Highlight



19.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

Figure 19-5 Point Database Search



M9000 Analog Input Point Mapping

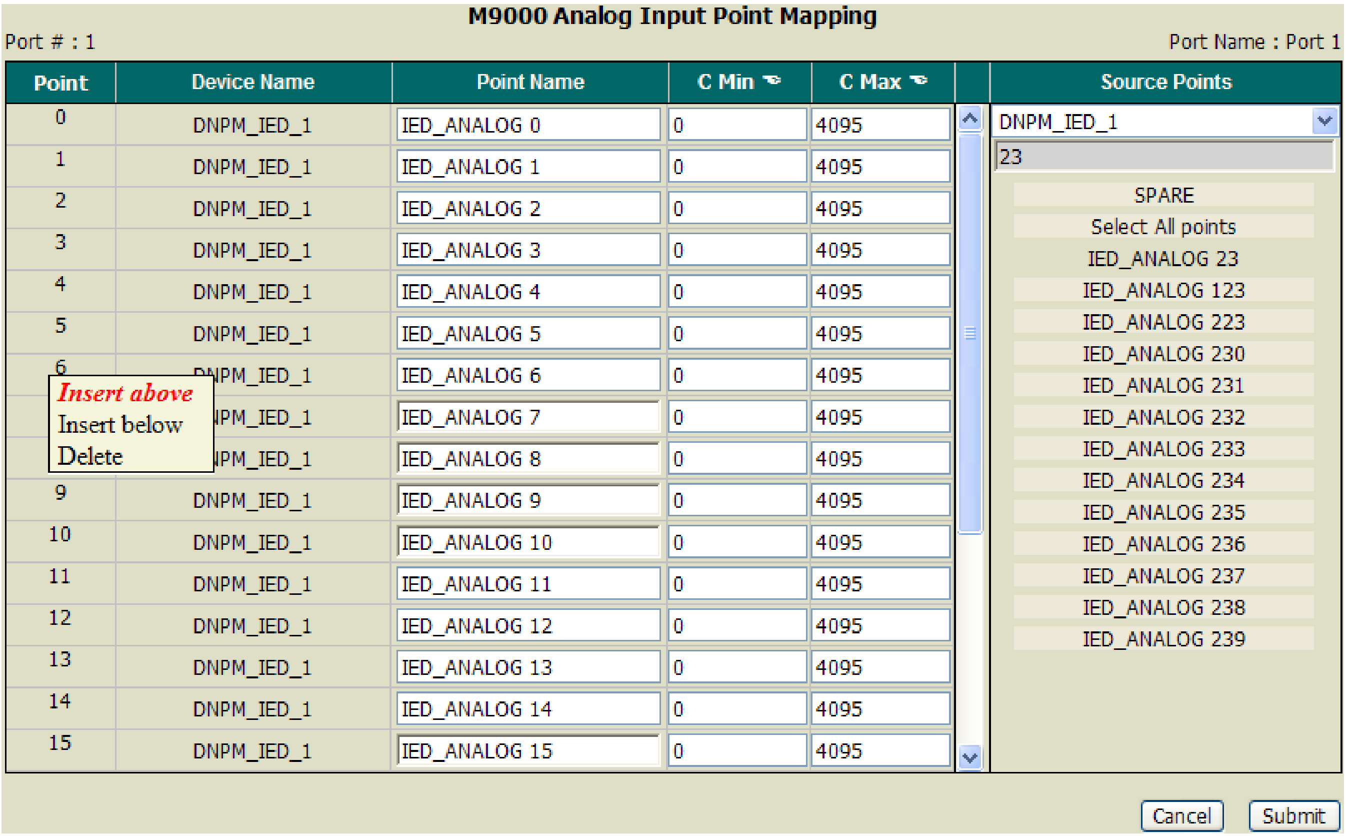
Port # : 1 Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	0	4095
1	DNPM_IED_1	IED_ANALOG 1	0	4095
2	DNPM_IED_1	IED_ANALOG 2	0	4095
3	DNPM_IED_1	IED_ANALOG 3	0	4095
4	DNPM_IED_1	IED_ANALOG 4	0	409
5	DNPM_IED_1	IED_ANALOG 5	0	4095
6	DNPM_IED_1	IED_ANALOG 6	0	4095
7	DNPM_IED_1	IED_ANALOG 7	0	4095
8	DNPM_IED_1	IED_ANALOG 8	0	4095
9	DNPM_IED_1	IED_ANALOG 9	0	4095
10	DNPM_IED_1	IED_ANALOG 10	0	4095
11	DNPM_IED_1	IED_ANALOG 11	0	4095
12	DNPM_IED_1	IED_ANALOG 12	0	4095
13	DNPM_IED_1	IED_ANALOG 13	0	4095
14	DNPM_IED_1	IED_ANALOG 14	0	4095
15	DNPM_IED_1	IED_ANALOG 15	0	4095

19.3.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #6) and right click the mouse. The message box shown below appears. Select Insert above (or below) and left click.

Figure 19-6 Insert a Point

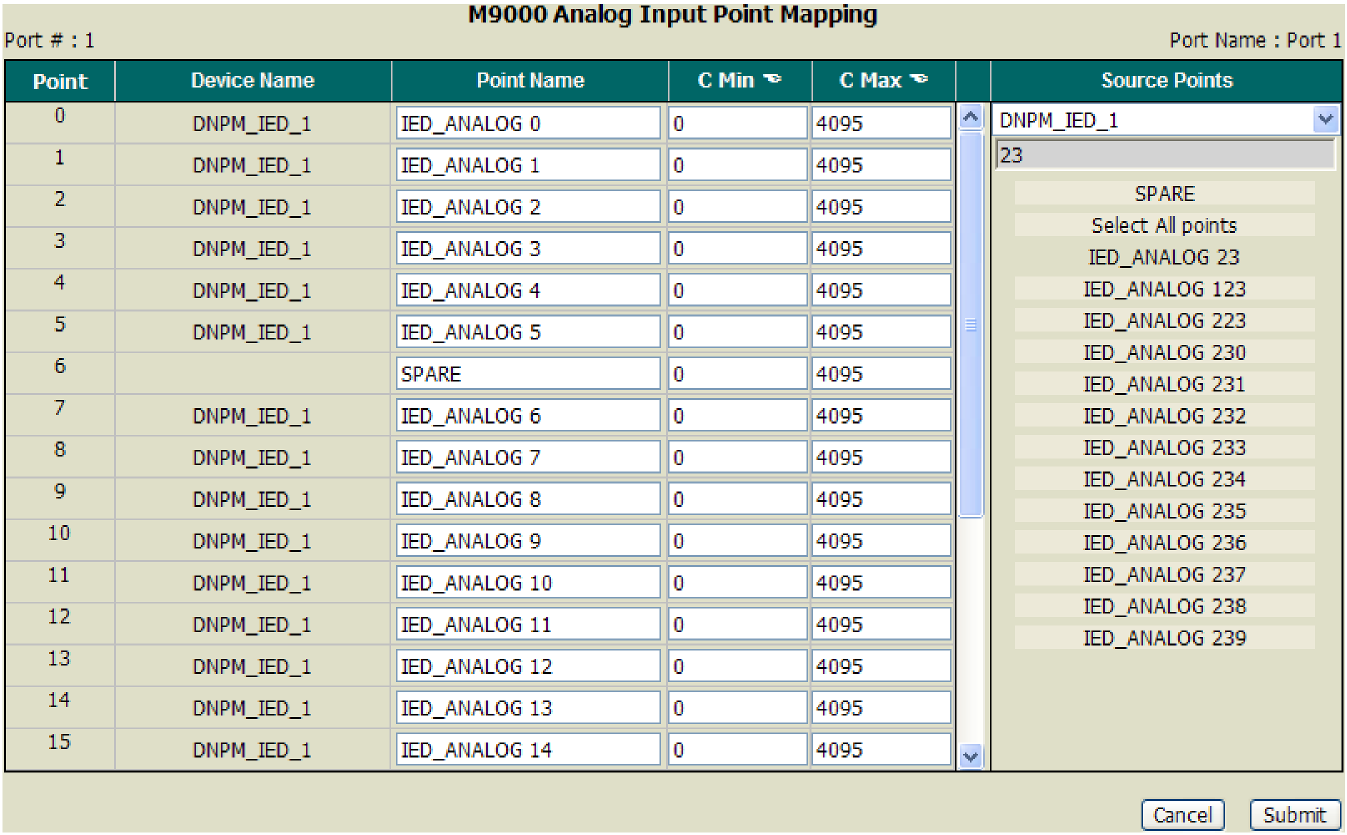


The results of Insert is shown in the next Figure. Notice that the old Point #6, IED_ANALOG 6, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 19-7 Results of Insert Above


M9000 Analog Input Point Mapping

Port # : 1

Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	0	4095
1	DNPM_IED_1	IED_ANALOG 1	0	4095
2	DNPM_IED_1	IED_ANALOG 2	0	4095
3	DNPM_IED_1	IED_ANALOG 3	0	4095
4	DNPM_IED_1	IED_ANALOG 4	0	4095
5	DNPM_IED_1	IED_ANALOG 5	0	4095
6		SPARE	0	4095
7	DNPM_IED_1	IED_ANALOG 6	0	4095
8	DNPM_IED_1	IED_ANALOG 7	0	4095
9	DNPM_IED_1	IED_ANALOG 8	0	4095
10	DNPM_IED_1	IED_ANALOG 9	0	4095
11	DNPM_IED_1	IED_ANALOG 10	0	4095
12	DNPM_IED_1	IED_ANALOG 11	0	4095
13	DNPM_IED_1	IED_ANALOG 12	0	4095
14	DNPM_IED_1	IED_ANALOG 13	0	4095
15	DNPM_IED_1	IED_ANALOG 14	0	4095

Source Points

DNPM_IED_1

23

SPARE

Select All points

IED_ANALOG 23

IED_ANALOG 123

IED_ANALOG 223

IED_ANALOG 230

IED_ANALOG 231

IED_ANALOG 232

IED_ANALOG 233

IED_ANALOG 234

IED_ANALOG 235

IED_ANALOG 236

IED_ANALOG 237

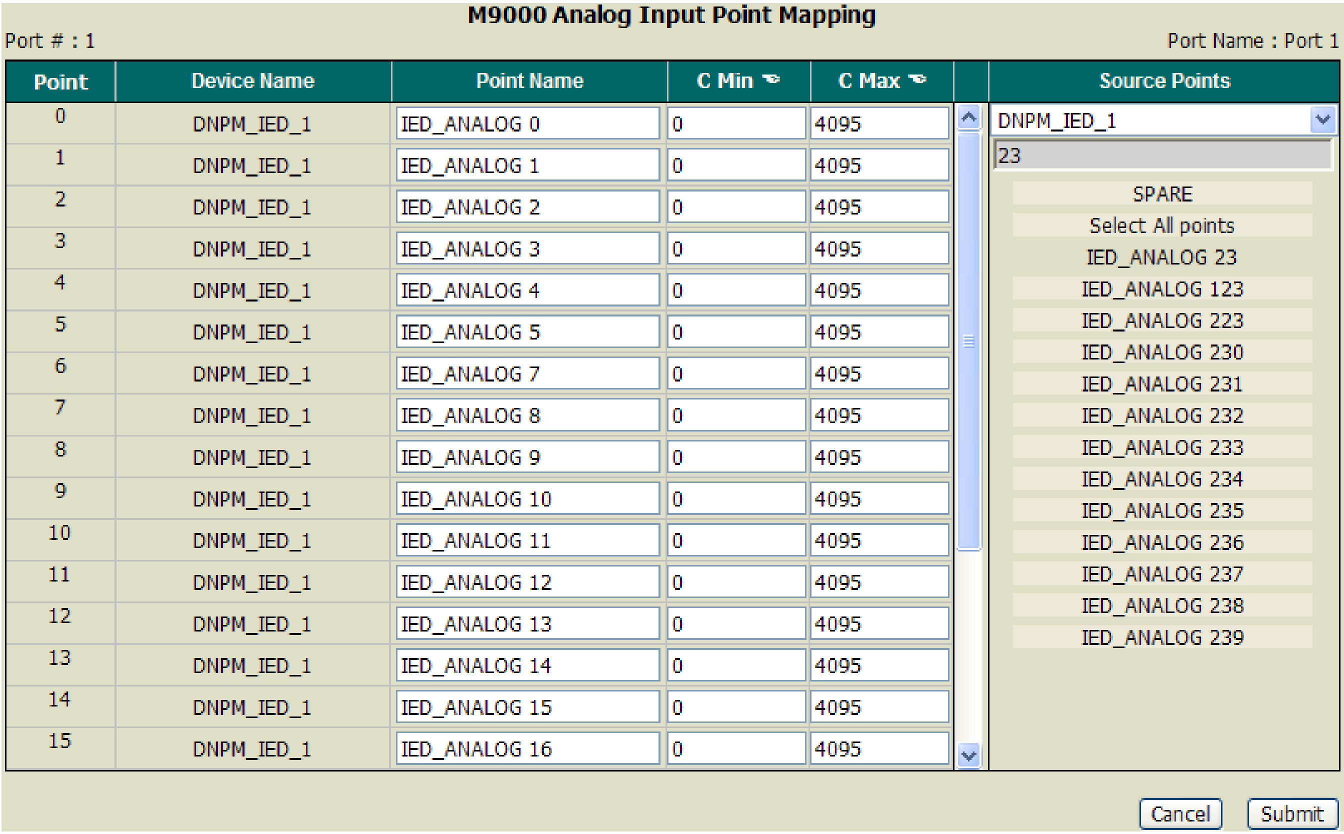
IED_ANALOG 238

IED_ANALOG 239

Cancel Submit

The Spare point can also be deleted. The following example shows the results of deleting Point#6, IED_ANALOG 6.

Figure 19-8 Results of Deleteing a Point



M9000 Analog Input Point Mapping

Port # : 1 — Port Name : Port 1

Point	Device Name	Point Name	C Min	C Max
0	DNPM_IED_1	IED_ANALOG 0	0	4095
1	DNPM_IED_1	IED_ANALOG 1	0	4095
2	DNPM_IED_1	IED_ANALOG 2	0	4095
3	DNPM_IED_1	IED_ANALOG 3	0	4095
4	DNPM_IED_1	IED_ANALOG 4	0	4095
5	DNPM_IED_1	IED_ANALOG 5	0	4095
6	DNPM_IED_1	IED_ANALOG 7	0	4095
7	DNPM_IED_1	IED_ANALOG 8	0	4095
8	DNPM_IED_1	IED_ANALOG 9	0	4095
9	DNPM_IED_1	IED_ANALOG 10	0	4095
10	DNPM_IED_1	IED_ANALOG 11	0	4095
11	DNPM_IED_1	IED_ANALOG 12	0	4095
12	DNPM_IED_1	IED_ANALOG 13	0	4095
13	DNPM_IED_1	IED_ANALOG 14	0	4095
14	DNPM_IED_1	IED_ANALOG 15	0	4095
15	DNPM_IED_1	IED_ANALOG 16	0	4095

Source Points

DNPM_IED_1

23

SPARE

Select All points

IED_ANALOG 23

IED_ANALOG 123

IED_ANALOG 223

IED_ANALOG 230

IED_ANALOG 231

IED_ANALOG 232

IED_ANALOG 233

IED_ANALOG 234

IED_ANALOG 235

IED_ANALOG 236

IED_ANALOG 237

IED_ANALOG 238

IED_ANALOG 239

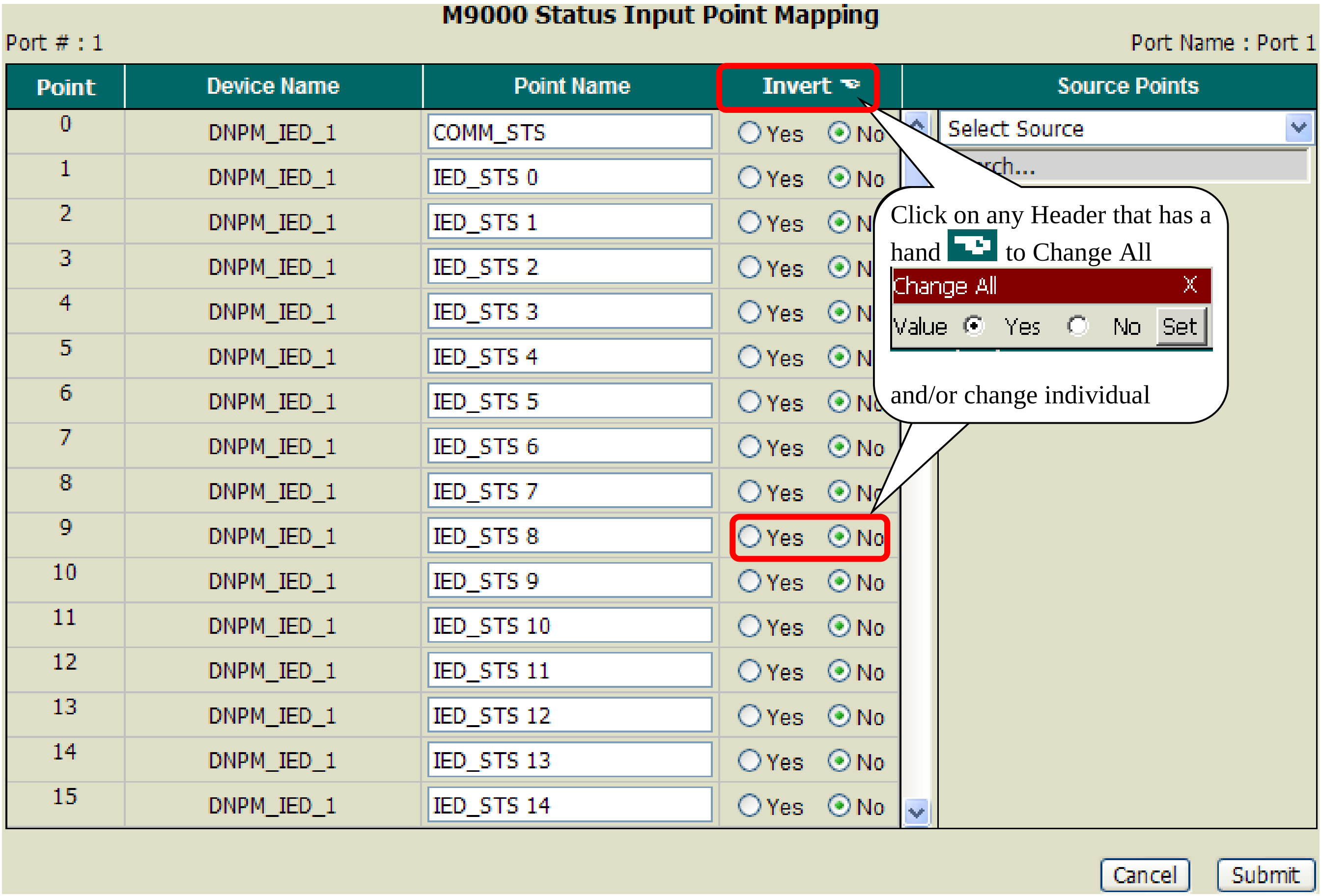
Cancel Submit

Notice that IED_ANALOG 6 is now missing, although Point numbers remain contiguous.

19.3.2 Map Status Inputs

From the Communication Mapping screen, click the MAP button for Status Inputs. A screen similar to Figure 19-9 will appear.

Figure 19-9 Status Input Point Mapping



Note: This protocol automatically creates a Comm Status point which may be mapped to any MTU to RTU protocol.

Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click the Yes radio button to invert the point. The default is No.

Source Points
Select the device name from which to map points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

19.3.2.1 Point Mapping Highlight

See the Analog example.

19.3.2.2 Point Database Search

See the Analog example.

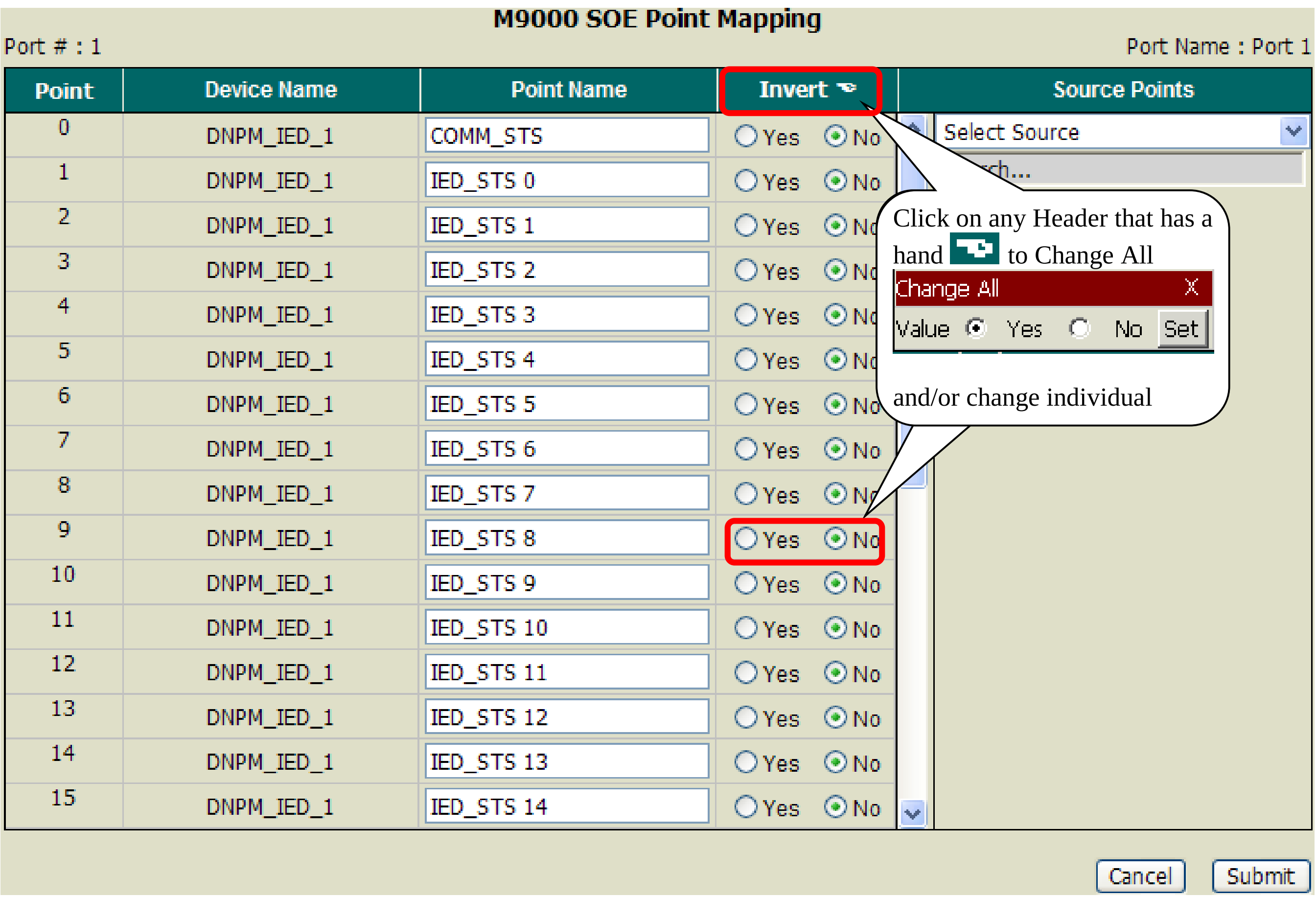
19.3.2.3 Insert & Delete Points

See the Analog example.

19.3.3 Map SOE Inputs

From the Communication Mapping screen, click the MAP button for SOE Inputs. A screen similar to the one below will appear.

Figure 19-10 SOE Input Point Mapping



Point

The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click Yes to invert the point. The default is No.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

19.3.3.1 Point Mapping Highlight

See the Analog example.

19.3.3.2 Point Database Search

See the Analog example.

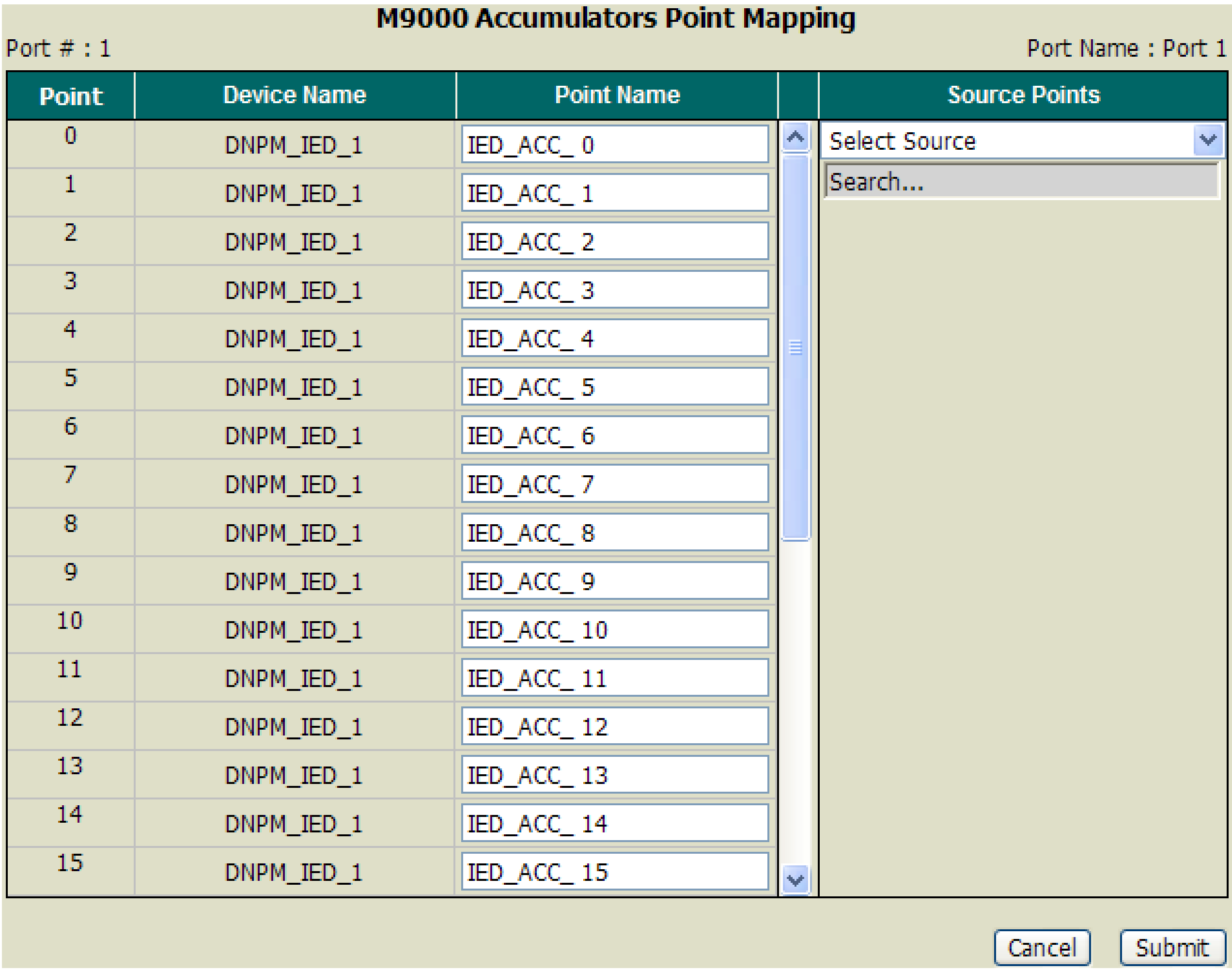
19.3.3.3 Insert & Delete Points

See the Analog example.

19.3.4 Map Accumulators

From the Communication Mapping screen, click the MAP button for Accumulators. A screen similar to Figure 19-11 will appear.

Figure 19-11 Accumulator Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

19.3.4.1 Point Mapping Highlight

See the Analog example.

19.3.4.2 Point Database Search

See the Analog example.

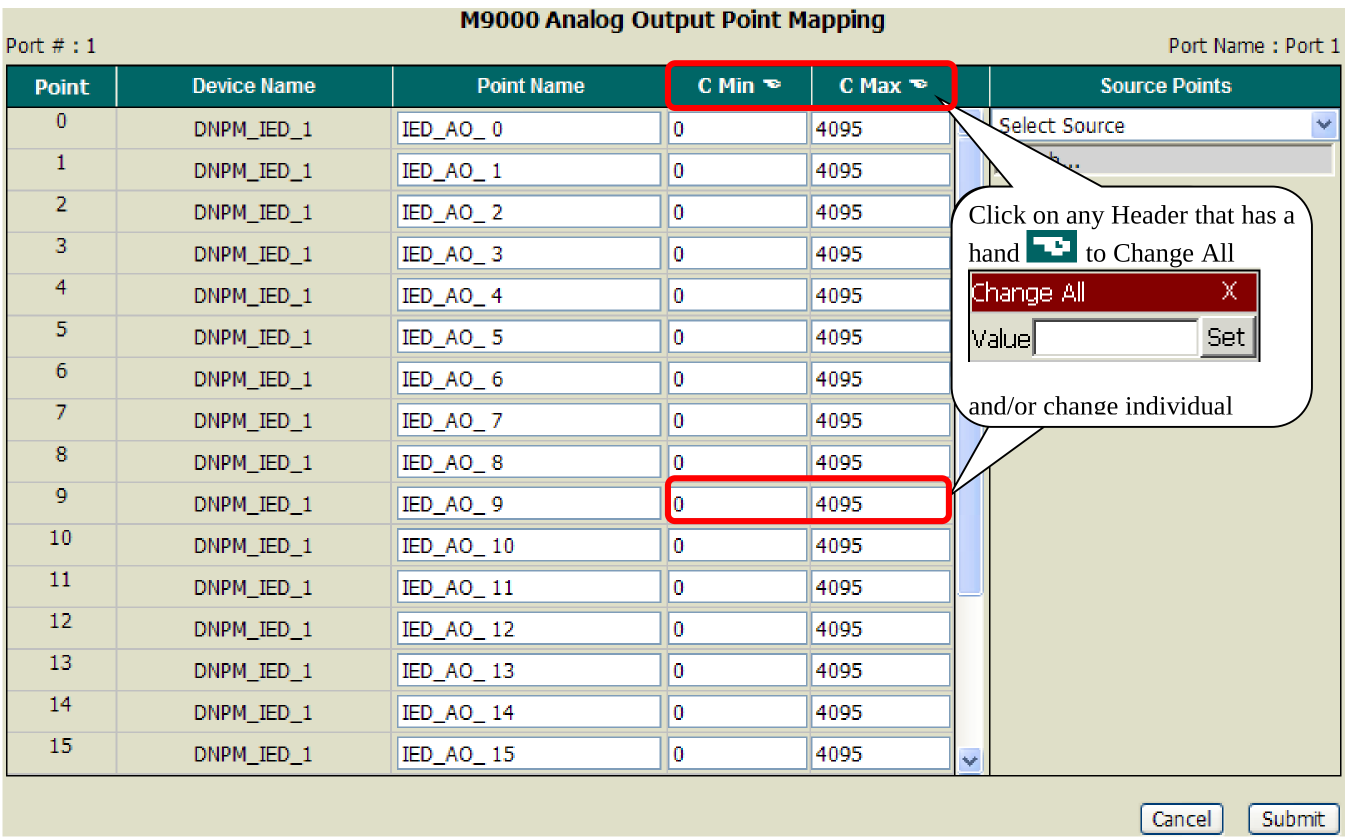
19.3.4.3 Insert & Delete Points

See the Analog example.

19.3.5 Map Analog Outputs

From the Communication Mapping screen, click the MAP button for Analog Outputs. A screen similar to Figure 19-12 will appear.

Figure 19-12 Analog Output Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

C Min
Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is 0.

C Max
Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 4095.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

19.3.5.1 Point Mapping Highlight

See the Analog example.

19.3.5.2 Point Database Search

See the Analog example.

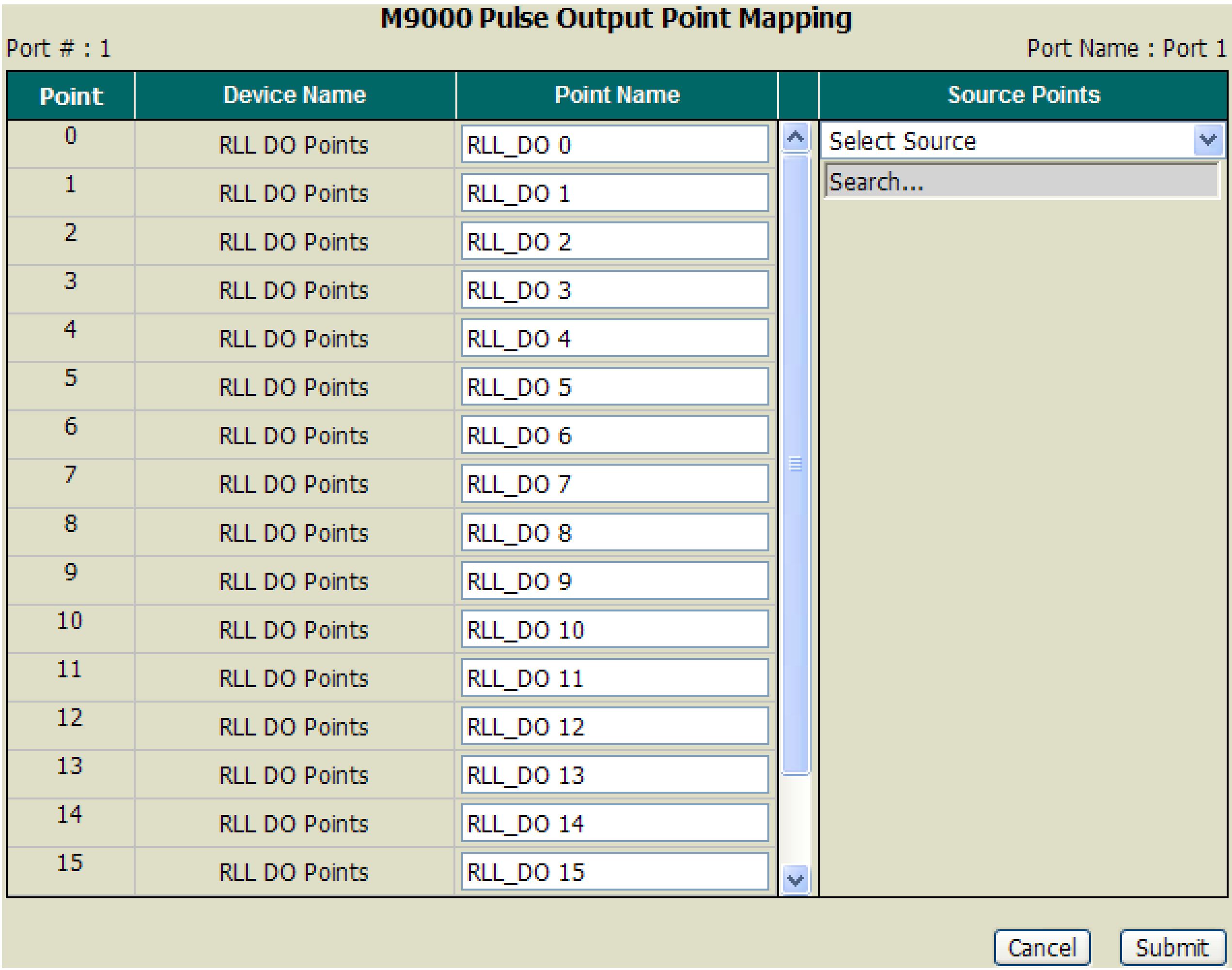
19.3.5.3 Insert & Delete Points

See the Analog example.

19.3.6 Map Pulse Outputs

From the Communication Mapping screen, click the MAP button for Pulse Outputs. A screen similar to Figure 19-13 will appear.

Figure 19-13 Pulse Outputs Point Mapping



Point
The protocol logical point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

19.3.6.1 Point Mapping Highlight

See the Analog example.

19.3.6.2 Point Database Search

See the Analog example.

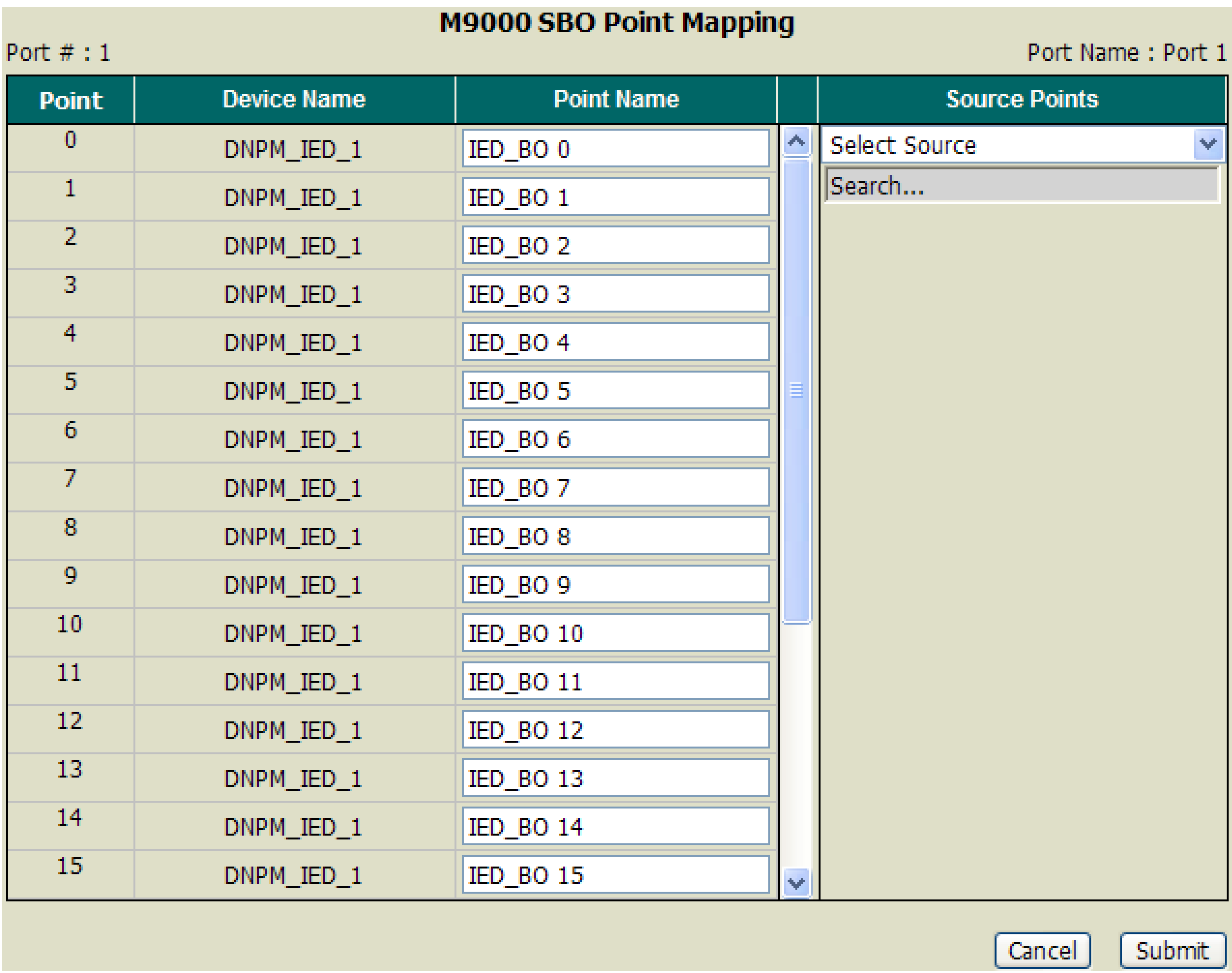
19.3.6.3 Insert & Delete Points

See the Analog example.

19.3.7 Map SBOs

From the Communication Mapping screen, click the MAP button for SBOs. A screen similar to the one below will appear.

Figure 19-14 SBO Point Mapping



Point
The protocol logical point number.

Device Name

The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

19.3.7.1 Point Mapping Highlight

See the Analog example.

19.3.7.2 Point Database Search

See the Analog example.

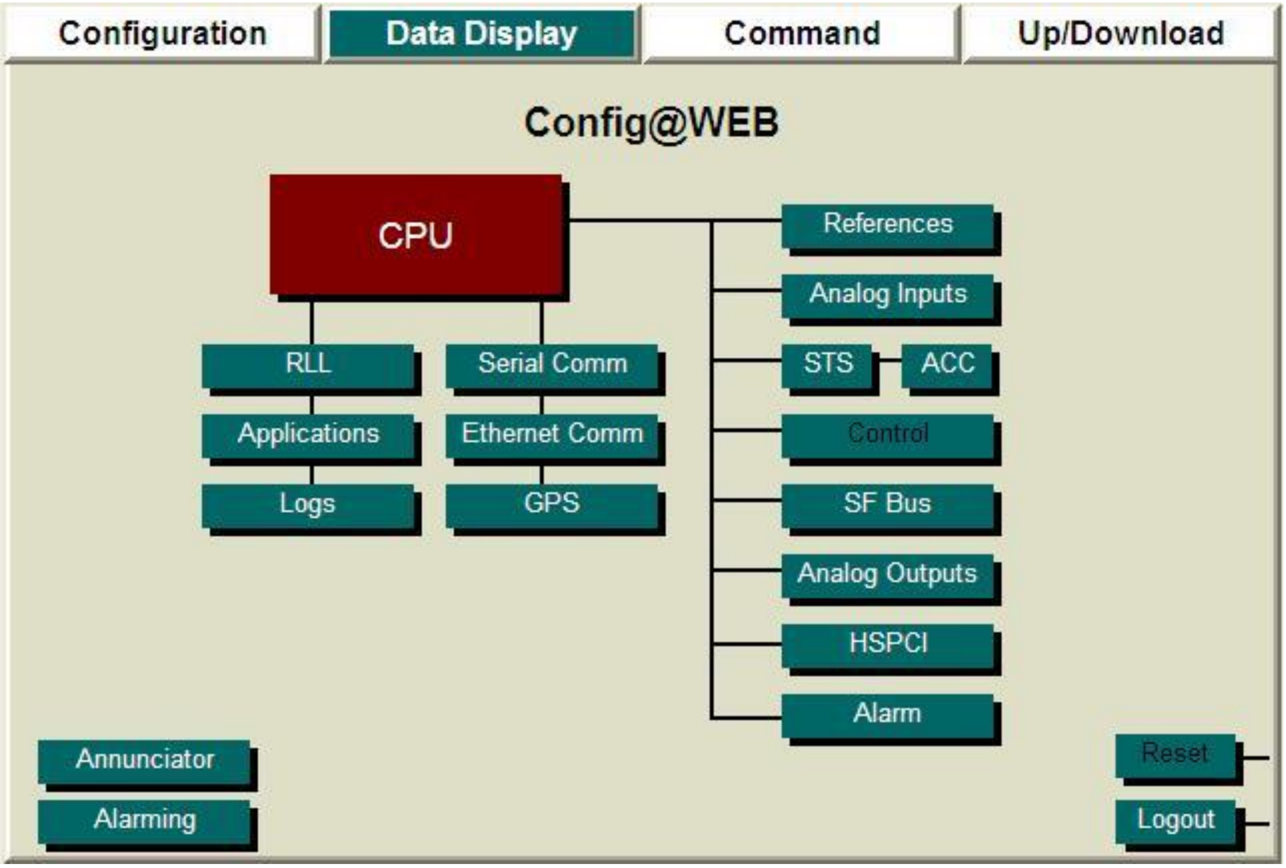
19.3.7.3 Insert & Delete Points

See the Analog example.

19.4 Data Display

Click the Data Display tab as shown in Figure 19-15.

Figure 19-15 Data Display Screen



Click Serial Comm to get the screen shown in Figure 19-16.

Figure 19-16 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	M9000	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number

Physical Port number of the RTU.

RTS and DTR

Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).

The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.

When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.

The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name

The port name given during configuration or default name accepted.

Protocol

The configured protocol for this port.

Comm Counters

Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data

Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

Navigation

Click the Back button to return to the previous screen.

19.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 19-17.

Figure 19-17 Communication Counters Display

Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Messages Received

This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

B4 Timer Violations

This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

IB Timer Violations

This indicates the cumulative number of Interbyte timer violations since the last reset or power-up. This count can be affected by the setting of the Interbyte Time in configuration.

Security Errors

This indicates the cumulative number of security errors since the last reset or power-up.

Parity Errors

This indicates the cumulative number of parity errors since the last reset or power-up.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Framing Errors

This indicates the cumulative number of received frames with CRC errors since the last reset or power-up. This can be affected by parity and MTO.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

19.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 19-18.

Figure 19-18 Communication Display

M9000 Communication Display

Port # : 1 Port Name : Port 1

Type	Number	View
Analog Inputs	23	View
Status Inputs	40	View
Sequence of Events (SOE)	30	View
Accumulators	28	View
Analog Outputs	20	View
Pulse Outputs*	9	
SBO Outputs*	24	

Back

Type
The type of point.

Number
The number of points of each type.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

19.4.2.1 Analog Inputs

From the Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 19-19.

Figure 19-19 Analog Inputs Display

M9000 Analog Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To Go Next>>

Point	Device Name	Point Name	Group	Deadband	Point Status	Point Value	Point Counts
0	Hardware Analogs	ANALOG 1	15	255		0.017	14
1	Hardware Analogs	ANALOG 2	15	255		0.017	14
2	Hardware Analogs	ANALOG 3	15	255		1.867	1529
3	Hardware Analogs	ANALOG 4	15	255		1.867	1529
4	Hardware Analogs	ANALOG 5	15	255		0.000	0
5	Hardware Analogs	ANALOG 6	15	255		0.000	0
6	Hardware Analogs	ANALOG 7	15	255		0.000	0
7	Hardware Analogs	ANALOG 8	15	255		0.000	0
8	DNPM_IED_1	IED_ANALOG 0	15	255	F	0.000	2048
9	DNPM_IED_1	IED_ANALOG 1	15	255	F	0.000	2048
10	DNPM_IED_1	IED_ANALOG 2	15	255	F	0.000	2048
11	DNPM_IED_1	IED_ANALOG 3	15	255	F	0.000	2048
12	DNPM_IED_1	IED_ANALOG 4	15	255	F	0.000	2048
13	DNPM_IED_1	IED_ANALOG 5	15	255	F	0.000	2048
14	DNPM_IED_1	IED_ANALOG 6	15	255	F	0.000	2048
15	DNPM_IED_1	IED_ANALOG 7	15	255	F	0.000	2048

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Group
The group, which is downloaded from the Master Station, displays the analog group that the point has been assigned. At reset, all points are assigned to group 15. The Master Station may then assign the points to any group in the range of 0 to 14. In addition, if the Master Station assigns the point to group 14 (the fast analog group), it becomes a member of all groups (in addition to the group it is assigned). The assignment to group 14 is maintained until the next reset and is shown by the suffix "F" being displayed after the group number shown on the display.

Deadband
The deadband, which is downloaded from the Master Station, displays the analog deadband used to determine the value the cumulative analog value must exceed before the point is marked in exception to be reported to the Master Station on the next valid scan for this point. At reset, all deadbands are assigned a value of 255 (never report an exception).

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts

The counts being sent to the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

19.4.2.2 Status Inputs

From the Communication Display screen, click View for Status Inputs to get the screen shown in Figure 19-20.

Figure 19-20 Status Inputs Display

M9000 Status Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 3 Go To [Go] Next>>

Point	Device Name	Point Name	Point Status	Point State	
0	Hardware DI	DI_PNT_1		CLOSE	
1	Hardware DI	DI_PNT_2		OPEN	
2	Hardware DI	DI_PNT_3		CLOSE	
3	Hardware DI	DI_PNT_4		OPEN	
4	Hardware DI	DI_PNT_5		OPEN	
5	Hardware DI	DI_PNT_6		OPEN	
6	Hardware DI	DI_PNT_7		OPEN	
7	Hardware DI	DI_PNT_8		OPEN	
8	Hardware DI	DI_PNT_9		OPEN	
9	Hardware DI	DI_PNT_10		OPEN	
10	DNPM_IED_1	COMM_STS		CLOSE	
11	DNPM_IED_1	IED_STS 0	F	OPEN	
12	DNPM_IED_1	IED_STS 1	F	OPEN	
13	DNPM_IED_1	IED_STS 2	F	OPEN	
14	DNPM_IED_1	IED_STS 3	F	OPEN	
15	DNPM_IED_1	IED_STS 4	F	OPEN	

Back

Point

Protocol logical point number.

Device Name

The origin of the point.

Point Name

The name of the point assigned during configuration.

Point Status

Please see the config@WEB Secure Software Users Guide.

Point State

Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

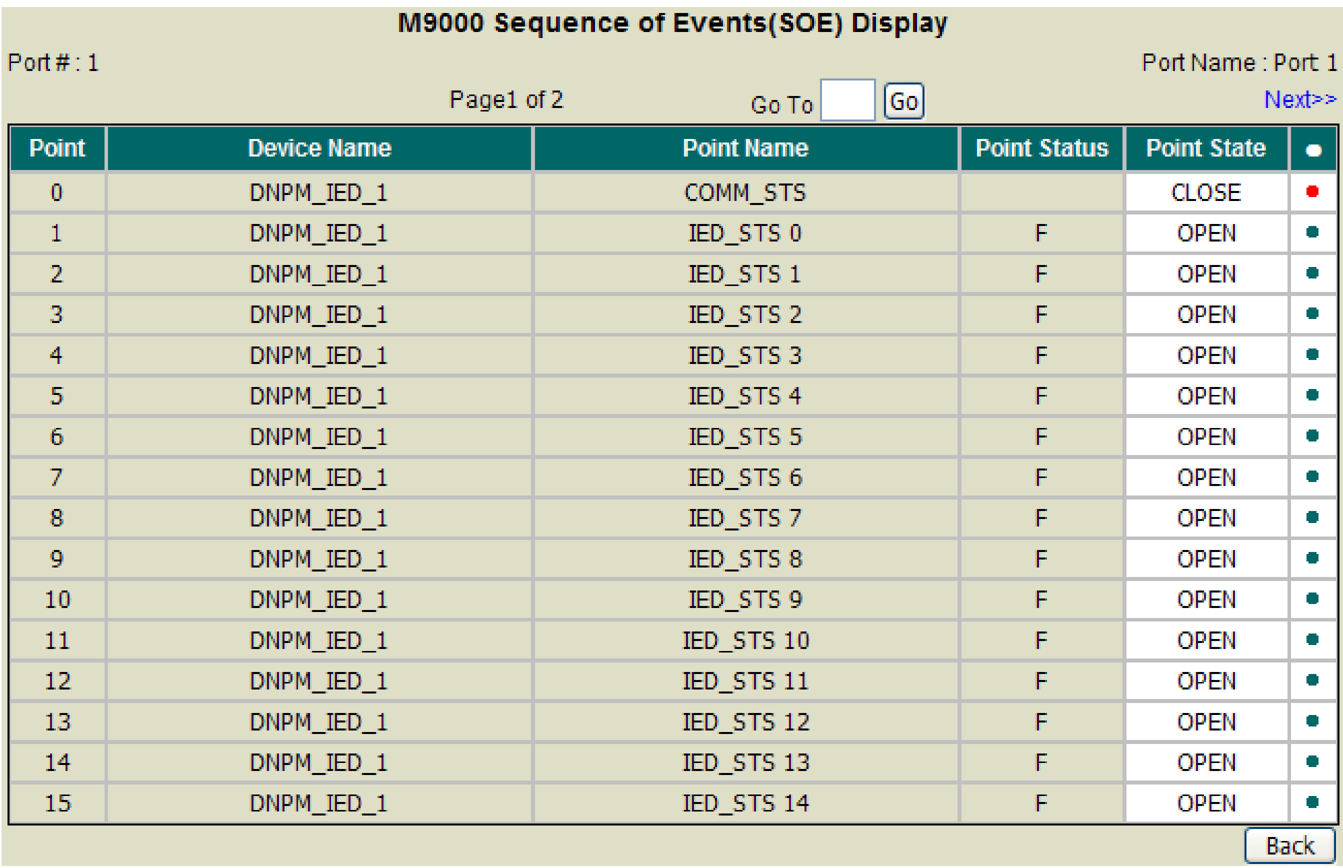
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

19.4.2.3 Sequence of Events (SOE)

From the Communication Display screen, click View for Sequence of Events (SOE) to get the screen shown below.

Figure 19-21 Sequence of Events (SOE) Display


M9000 Sequence of Events(SOE) Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To Go Next>>

Point	Device Name	Point Name	Point Status	Point State	●
0	DNPM_IED_1	COMM_STS		CLOSE	●
1	DNPM_IED_1	IED_STS 0	F	OPEN	●
2	DNPM_IED_1	IED_STS 1	F	OPEN	●
3	DNPM_IED_1	IED_STS 2	F	OPEN	●
4	DNPM_IED_1	IED_STS 3	F	OPEN	●
5	DNPM_IED_1	IED_STS 4	F	OPEN	●
6	DNPM_IED_1	IED_STS 5	F	OPEN	●
7	DNPM_IED_1	IED_STS 6	F	OPEN	●
8	DNPM_IED_1	IED_STS 7	F	OPEN	●
9	DNPM_IED_1	IED_STS 8	F	OPEN	●
10	DNPM_IED_1	IED_STS 9	F	OPEN	●
11	DNPM_IED_1	IED_STS 10	F	OPEN	●
12	DNPM_IED_1	IED_STS 11	F	OPEN	●
13	DNPM_IED_1	IED_STS 12	F	OPEN	●
14	DNPM_IED_1	IED_STS 13	F	OPEN	●
15	DNPM_IED_1	IED_STS 14	F	OPEN	●

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status

Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

19.4.2.4 Accumulator Inputs

From the Communication Display screen, click View for Accumulators to get the screen shown in Figure 19-22.

Figure 19-22 Accumulators Display

M9000 Accumulators Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To [ ] Go Next>>

Point	Device Name	Point Name	Cur Count	Frz Count
0	DNPM_IED_1	IED_ACC_ 0	0	0
1	DNPM_IED_1	IED_ACC_ 1	0	0
2	DNPM_IED_1	IED_ACC_ 2	0	0
3	DNPM_IED_1	IED_ACC_ 3	0	0
4	DNPM_IED_1	IED_ACC_ 4	0	0
5	DNPM_IED_1	IED_ACC_ 5	0	0
6	DNPM_IED_1	IED_ACC_ 6	0	0
7	DNPM_IED_1	IED_ACC_ 7	0	0
8	DNPM_IED_1	IED_ACC_ 8	0	0
9	DNPM_IED_1	IED_ACC_ 9	0	0
10	DNPM_IED_1	IED_ACC_ 10	0	0
11	DNPM_IED_1	IED_ACC_ 11	0	0
12	DNPM_IED_1	IED_ACC_ 12	0	0
13	DNPM_IED_1	IED_ACC_ 13	0	0
14	DNPM_IED_1	IED_ACC_ 14	0	0
15	DNPM_IED_1	IED_ACC_ 15	0	0

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Cur Count
The current count (same as "running" count).

Frz Count

The freeze count. This is the count that will be sent to the Master.

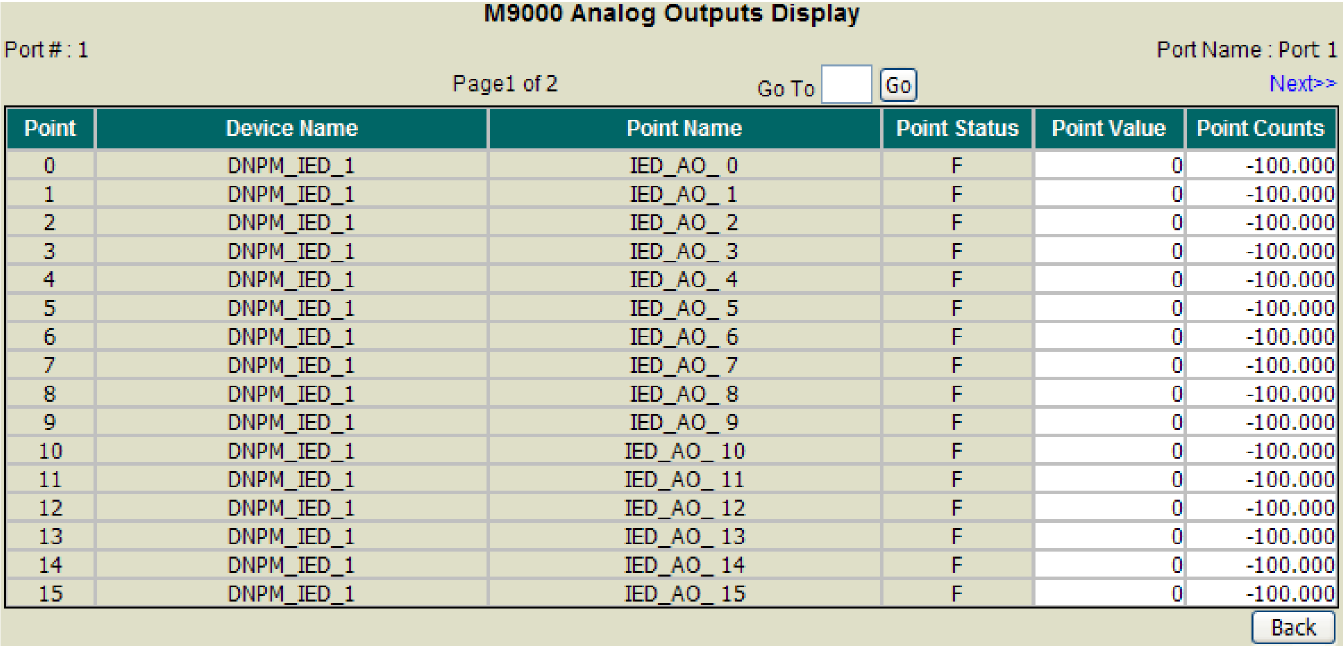
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

19.4.2.5 Analog Outputs

From the Communication Display screen, click View for Analog Outputs to get the screen shown in Figure 19-23.

Figure 19-23 Analog Outputs Display



M9000 Analog Outputs Display

Port # : 1 Port Name : Port 1

Page1 of 2 Go To Go Next>>

Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	DNPM_IED_1	IED_AO_ 0	F	0	-100.000
1	DNPM_IED_1	IED_AO_ 1	F	0	-100.000
2	DNPM_IED_1	IED_AO_ 2	F	0	-100.000
3	DNPM_IED_1	IED_AO_ 3	F	0	-100.000
4	DNPM_IED_1	IED_AO_ 4	F	0	-100.000
5	DNPM_IED_1	IED_AO_ 5	F	0	-100.000
6	DNPM_IED_1	IED_AO_ 6	F	0	-100.000
7	DNPM_IED_1	IED_AO_ 7	F	0	-100.000
8	DNPM_IED_1	IED_AO_ 8	F	0	-100.000
9	DNPM_IED_1	IED_AO_ 9	F	0	-100.000
10	DNPM_IED_1	IED_AO_ 10	F	0	-100.000
11	DNPM_IED_1	IED_AO_ 11	F	0	-100.000
12	DNPM_IED_1	IED_AO_ 12	F	0	-100.000
13	DNPM_IED_1	IED_AO_ 13	F	0	-100.000
14	DNPM_IED_1	IED_AO_ 14	F	0	-100.000
15	DNPM_IED_1	IED_AO_ 15	F	0	-100.000

Back

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of

pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

19.4.2.6 Pulse Outputs

There is no display available.

19.4.2.7 SBO Outputs

There is no display available.

20 Redac 80

20.1 Communication Port Configuration

From the Config Home Page, click Serial Comm to setup a communication port.

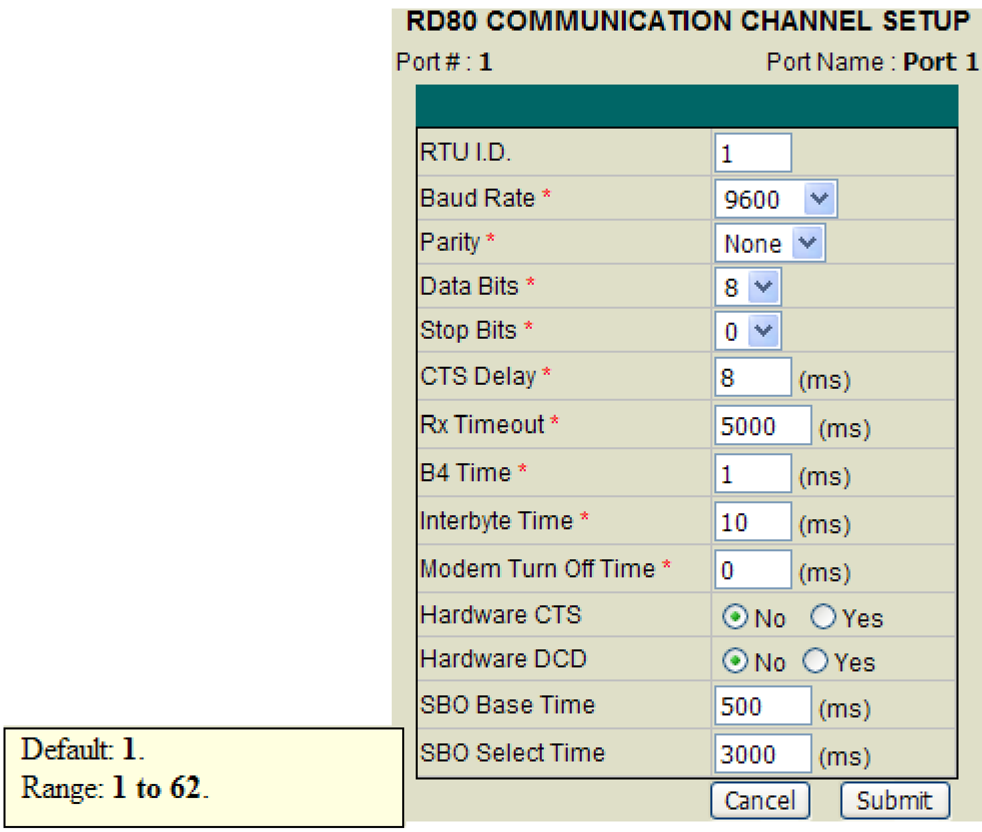
See Section 1.6 Communication Port Configuration Screen for a description of the fields on the screen.

From the Communications Port Configuration screen, click from the Protocol drop-down menu for the port of your choice.

20.2 Configure Protocol

Under the heading Configure Protocol, click Port *n* to configure the port. You may accept all defaults or fill in the form according to the information following Figure 20-1.

Figure 20-1 Communication Channel Configuration



Note 1: All communication parameters with an asterisk * beside their names can be changed on the fly. That is, the change will take effect after Submit without having to reset.

Note 2: The default value and range of acceptable entries for a field where your cursor is placed is shown at the bottom-left of your screen. The example shown is for RTU I.D.

RTU I.D.   (1 – 62)

Enter the RTU I.D. number. This number is used to allow an RTU to respond to the master when it is received in a message. Default setting is 1.

Baud Rate (300 – 19200)
Select the communications speed for the associated channel. Default setting is 9600.

Parity (None, Odd, Even)
Select the parity for the associated channel. The default setting is None.

Data Bits (5,6,7,8)
From the drop-down menu, select the data bits for the associated channel. The default setting is 8.

Stop Bits (0,1,2)
Select the stop bits from the pull-down menu. The default is 0.

CTS Delay (0 – 250ms)
Enter the Clear-To-Send delay in milliseconds for the associated channel. This is the time delay the channel will wait to start transmitting following Request-To-Send signal being asserted. Default setting is 8.

Rx Timeout (0 – 30,000ms)
Enter the receive timeout for the associated channel. The receive timeout is the length of time the channel will wait for valid communications prior to declaring the channel in communications error and resetting the channel. Default setting is 5,000 (5 seconds).

B4 Time (0 – 250ms)
Enter the B4 time for the associated channel. The B4 time is the length of quiet time required on the channel following a transmission from the RTU prior to turning on the RTUs receive interrupts. Default setting is 1.

Interbyte Time (0 – 250ms)
Enter the interbyte time allowed before the received message is terminated. Default setting is 10.

Modem Turn Off Time (0 – 250ms)
Enter the time delay after the last transmitted byte before turning off the modem. Default setting is 0.

Hardware CTS (No, Yes)
If the hardware Clear-To-Send option is selected for a channel, then reply data bytes will not be transmitted unless the CTS signal is detected by the communications controller chip. This signal is examined after the user programmed CTS delay time has timed out. At the point where the RTU starts its CTS timer, the RTS signal is asserted to the modem. The CTS signal is asserted by the modem to the RTU after the programmed CTS delay. Configuring a CTS delay in the RTU along with the hardware CTS will insure a minimum CTS delay of the configured time. Default setting is No.

Hardware DCD (No, Yes)
If the hardware data carrier detect option is selected for a channel, then the channel communications driver will accept requested message data bytes only if carrier is detected by the modem. If carrier is not detected, the data bytes are discarded. Default setting is No.

SBO Base Time (5 – 1000ms)
Enter the length of time in milliseconds that will be multiplied by the protocol value to generate the control execute length. Default setting is 500 milliseconds.

SBO Select Time (5 – 30,000ms)
Enter the Select before Operate control select time in milliseconds. If a valid execute command is not received by the RTU before the SBO Select Time expires, the select will be reset. Default setting is 3000 milliseconds.

Navigation

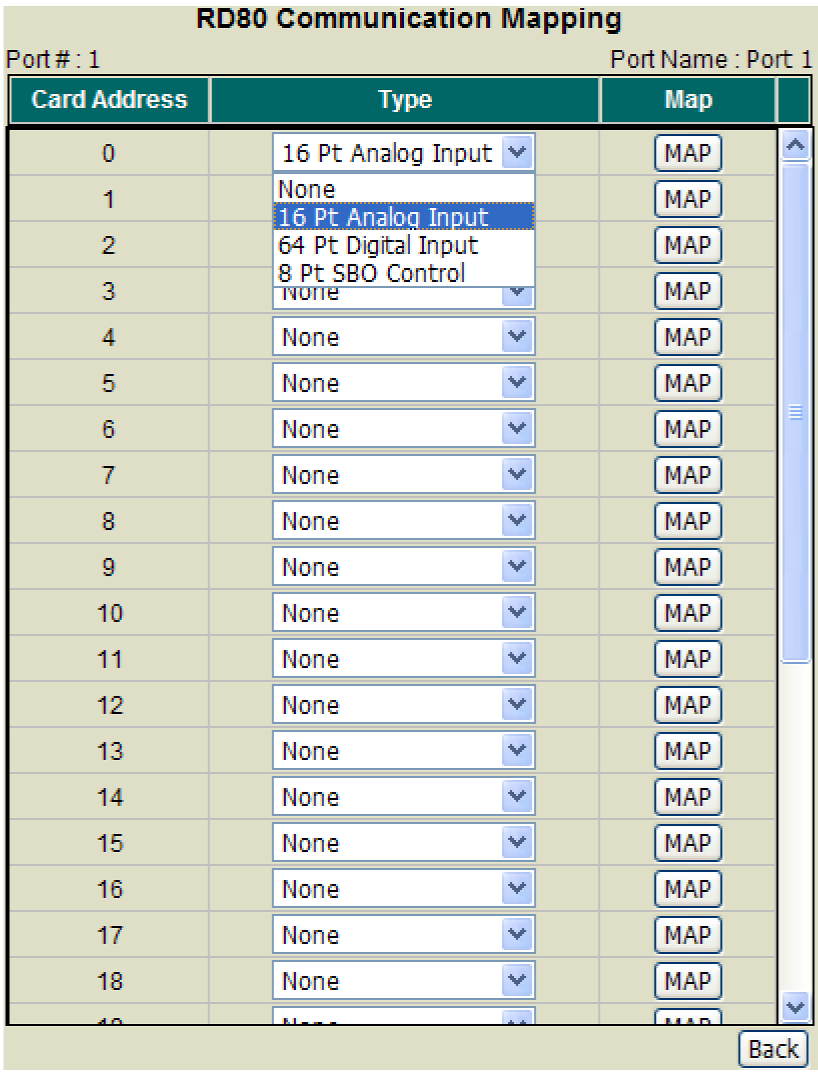
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

20.3 Point Operations

From the Communication Port Configuration screen, click the Map Points button under Point Operations. A screen similar to Figure 20-2 will appear. The protocol can be configured for either 16 Analogs, 64 Digital Inputs, or 8 SBOs on each card address. Enter your selection, then click MAP before moving on to the next Card Address.

Figure 20-2 Communication Mapping



Card Address

The logical address for the card. The protocol supports 32 card addresses.

Type

The different types and quantity of I/O points supported by this protocol.

Note: You must Map the points entered before moving to the next point type.

Map

Click the MAP button to map the points.

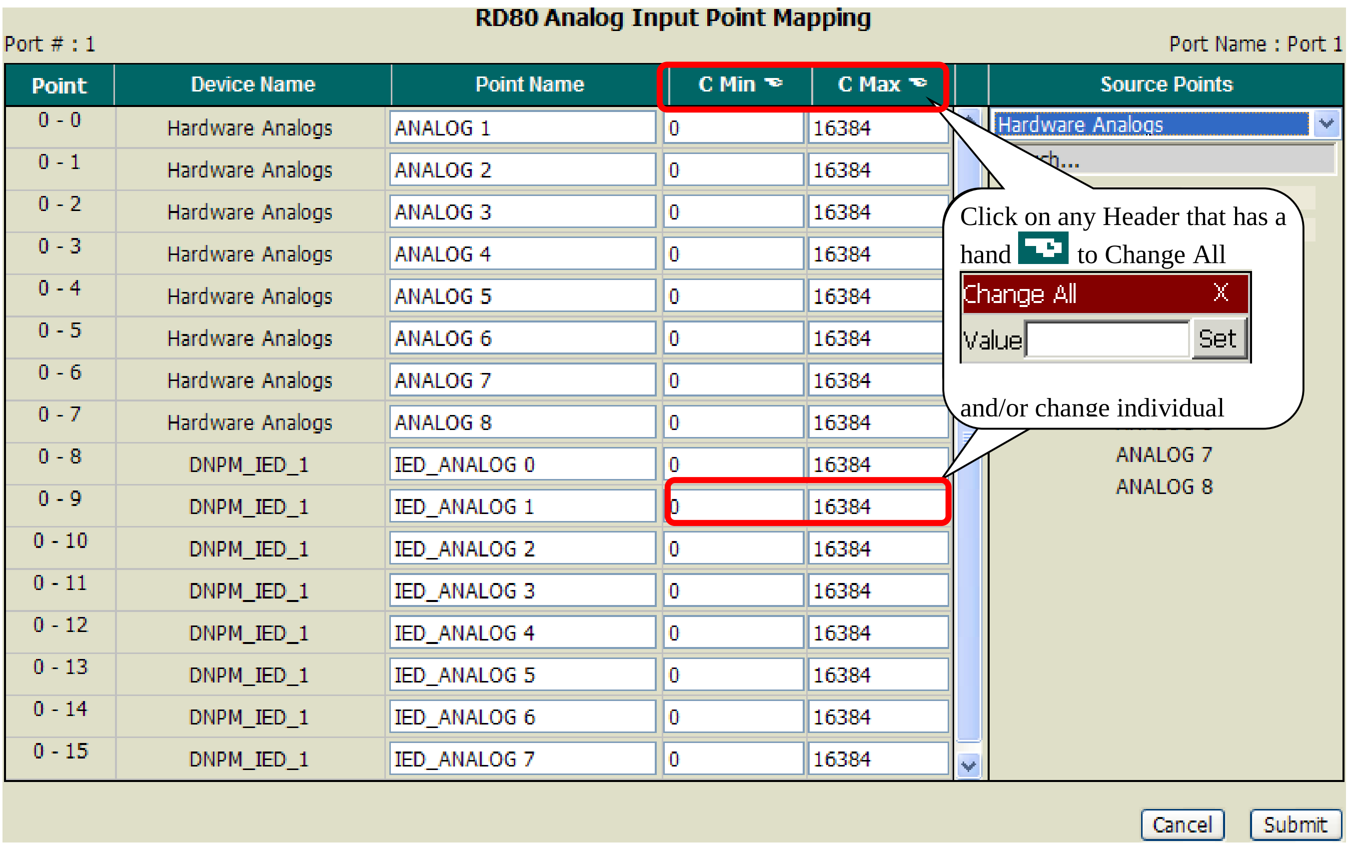
Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the Port Configuration screen.

20.3.1 Map Analog Inputs

From the Communication Mapping screen, click the MAP button for Analog Inputs. A screen similar to Figure 20-3 will appear.

Figure 20-3 Analog Input Point Mapping



Point

The protocol address and point number.

Device Name

The name of the source device for the mapped point.

Point Name

The name of the mapped point.

C Min

Enter the minimum counts expected by the master station for a minimum input value or accept the default counts. Default setting is 0.

C Max

Enter the maximum counts expected by the master station for a maximum input value or accept the default counts. Default setting is 16384.

Source Points

Select the device name from which to map points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

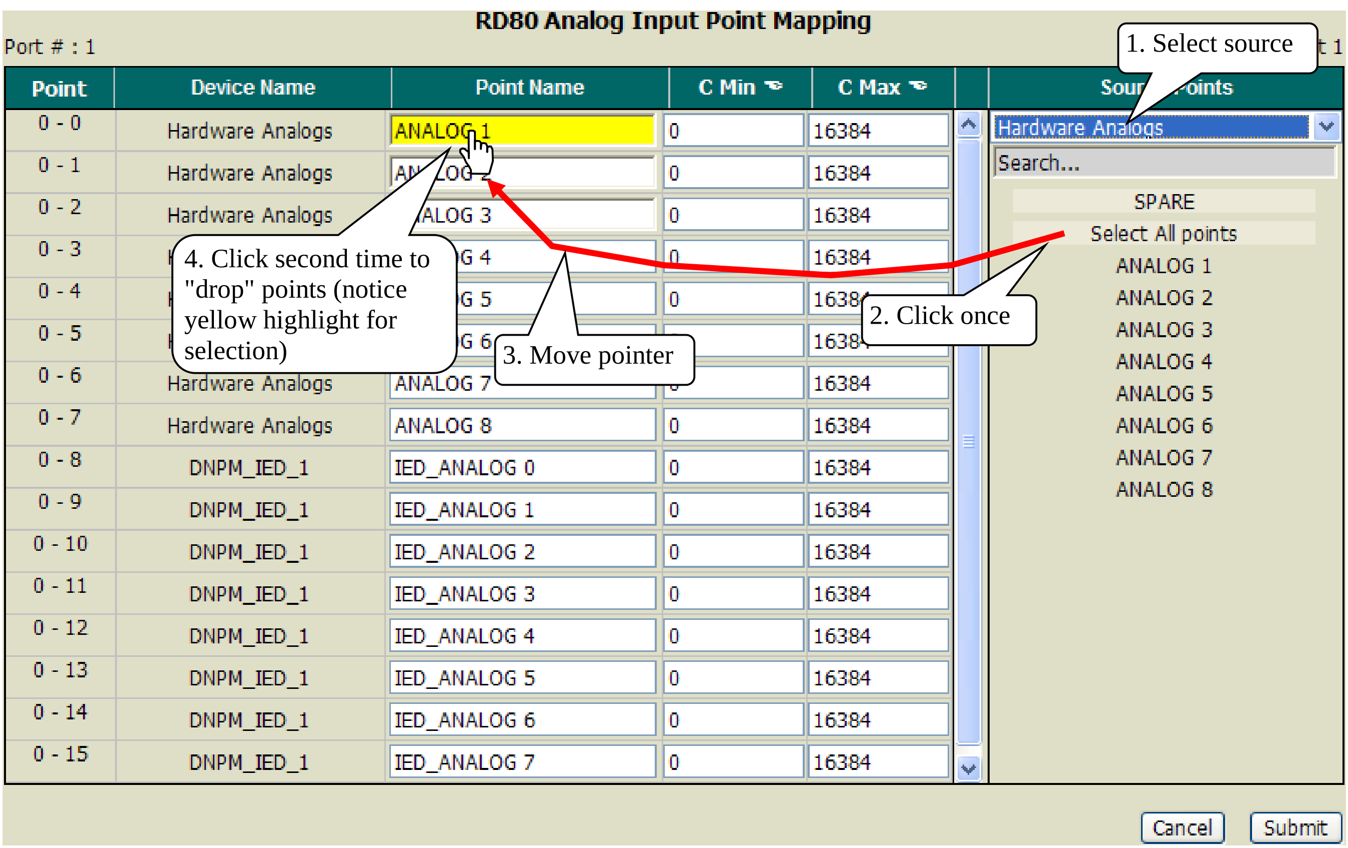
Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

20.3.1.1 Point Mapping Highlight

When you select and drop points, the target highlights in yellow.

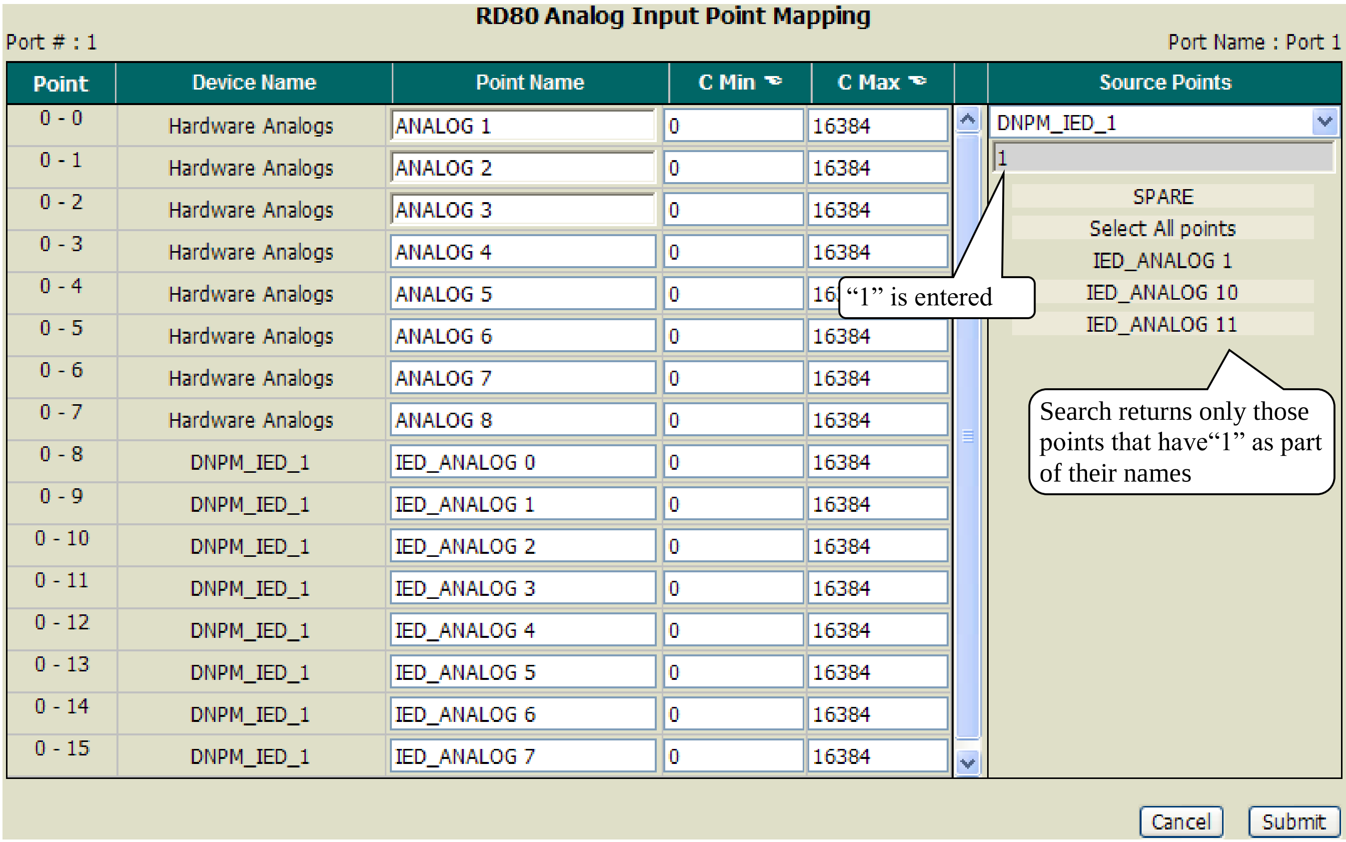
Figure 20-4 Point Mapping Highlight



20.3.1.2 Point Database Search

Put your cursor in the gray field below Source Points and type in any combination of numbers or letters. If there is a match, those points will be displayed, as shown.

Figure 20-5 Point Database Search

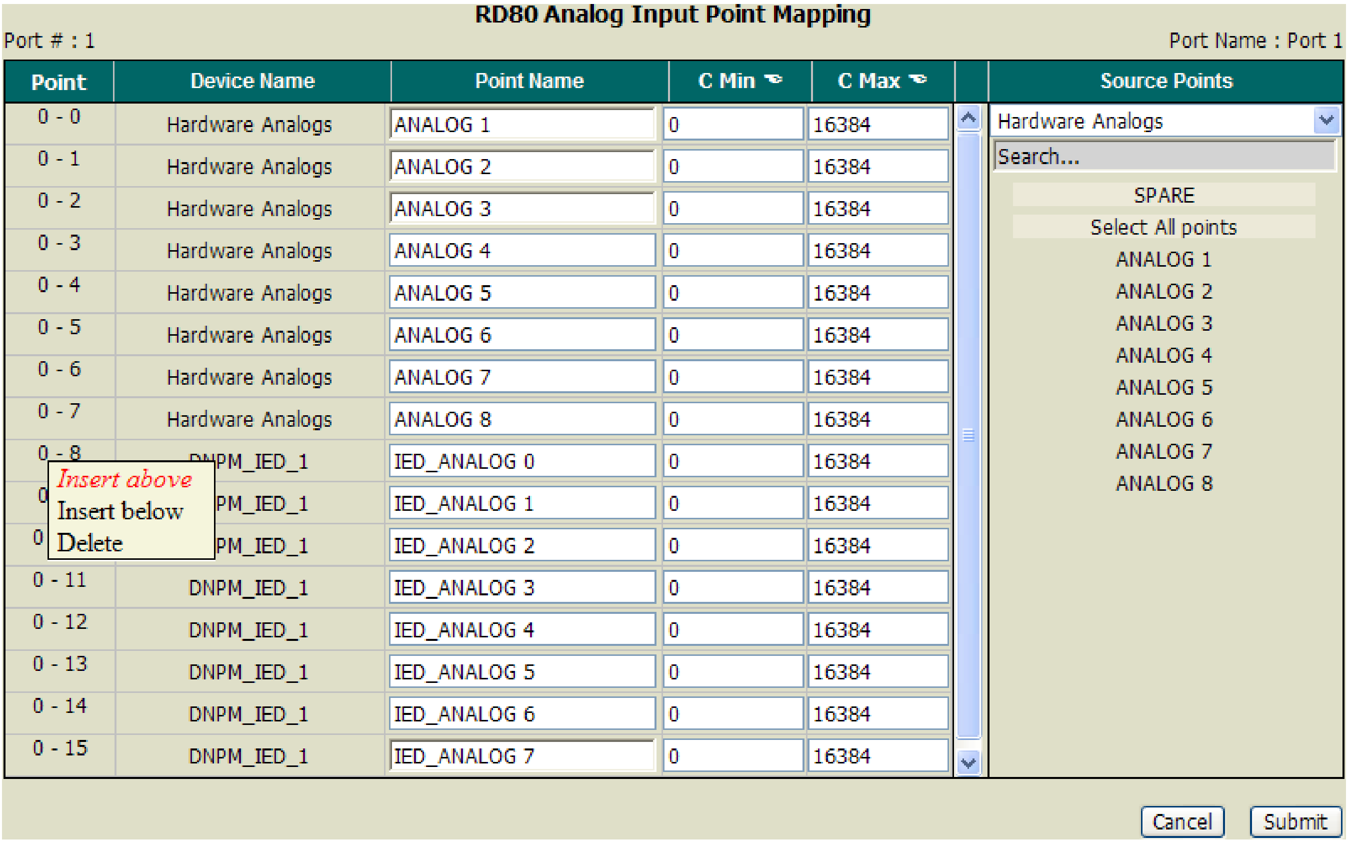


Point	Device Name	Point Name	C Min	C Max
0 - 0	Hardware Analogs	ANALOG 1	0	16384
0 - 1	Hardware Analogs	ANALOG 2	0	16384
0 - 2	Hardware Analogs	ANALOG 3	0	16384
0 - 3	Hardware Analogs	ANALOG 4	0	16384
0 - 4	Hardware Analogs	ANALOG 5	0	16
0 - 5	Hardware Analogs	ANALOG 6	0	16384
0 - 6	Hardware Analogs	ANALOG 7	0	16384
0 - 7	Hardware Analogs	ANALOG 8	0	16384
0 - 8	DNPM_IED_1	IED_ANALOG 0	0	16384
0 - 9	DNPM_IED_1	IED_ANALOG 1	0	16384
0 - 10	DNPM_IED_1	IED_ANALOG 2	0	16384
0 - 11	DNPM_IED_1	IED_ANALOG 3	0	16384
0 - 12	DNPM_IED_1	IED_ANALOG 4	0	16384
0 - 13	DNPM_IED_1	IED_ANALOG 5	0	16384
0 - 14	DNPM_IED_1	IED_ANALOG 6	0	16384
0 - 15	DNPM_IED_1	IED_ANALOG 7	0	16384

20.3.1.3 Insert & Delete Points

To Insert, place your cursor on a Point number (in this example, Point #0-8) and right click the mouse. The message box shown below appears. Select Insert above (or below) and left click.

Figure 20-6 Insert a Point

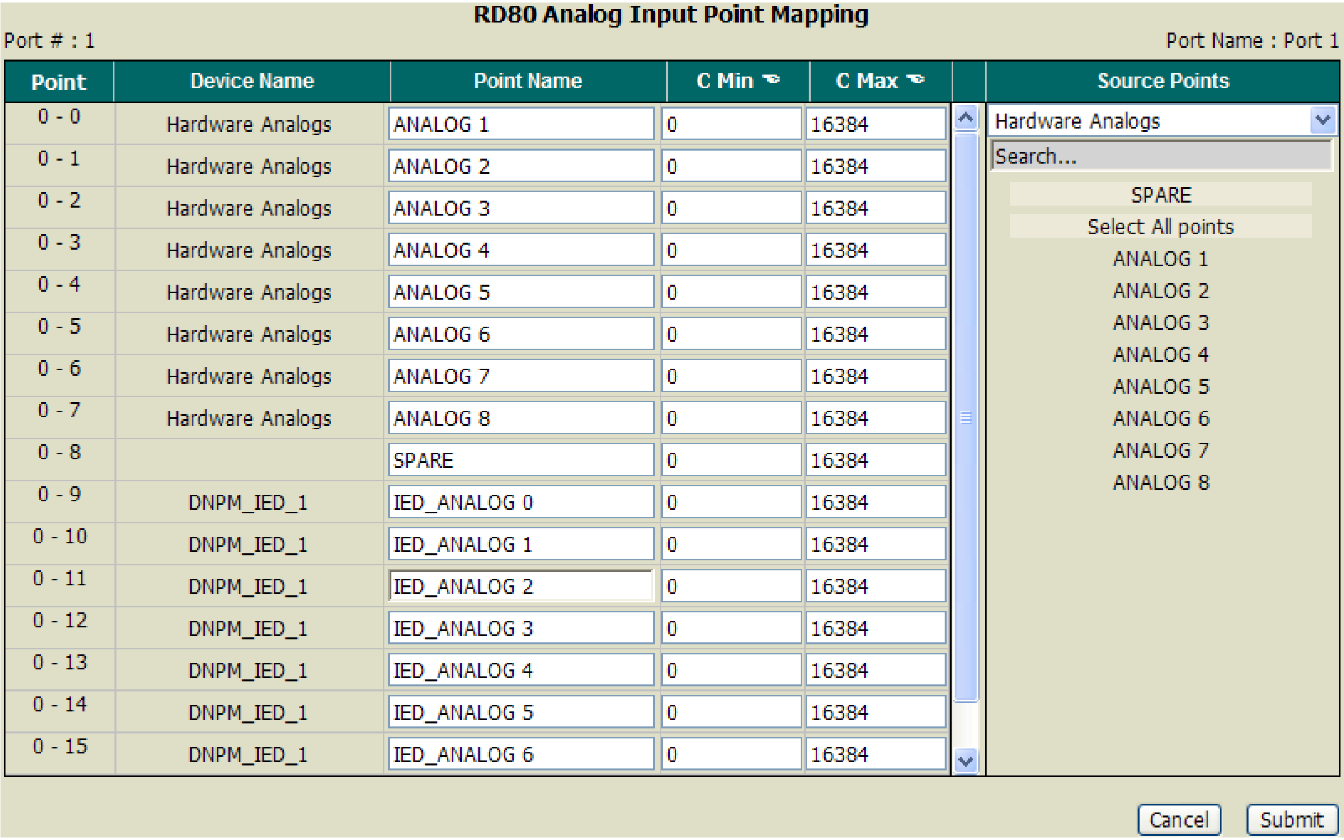


The results of Insert is shown in the next Figure. Notice that the old Point #0-8, IED_ANALOG 0, is now pushed down. A Spare takes its place. Also notice that the Point numbers remain contiguous.

Insert below works the same way, only the Spare is created below the designated point.

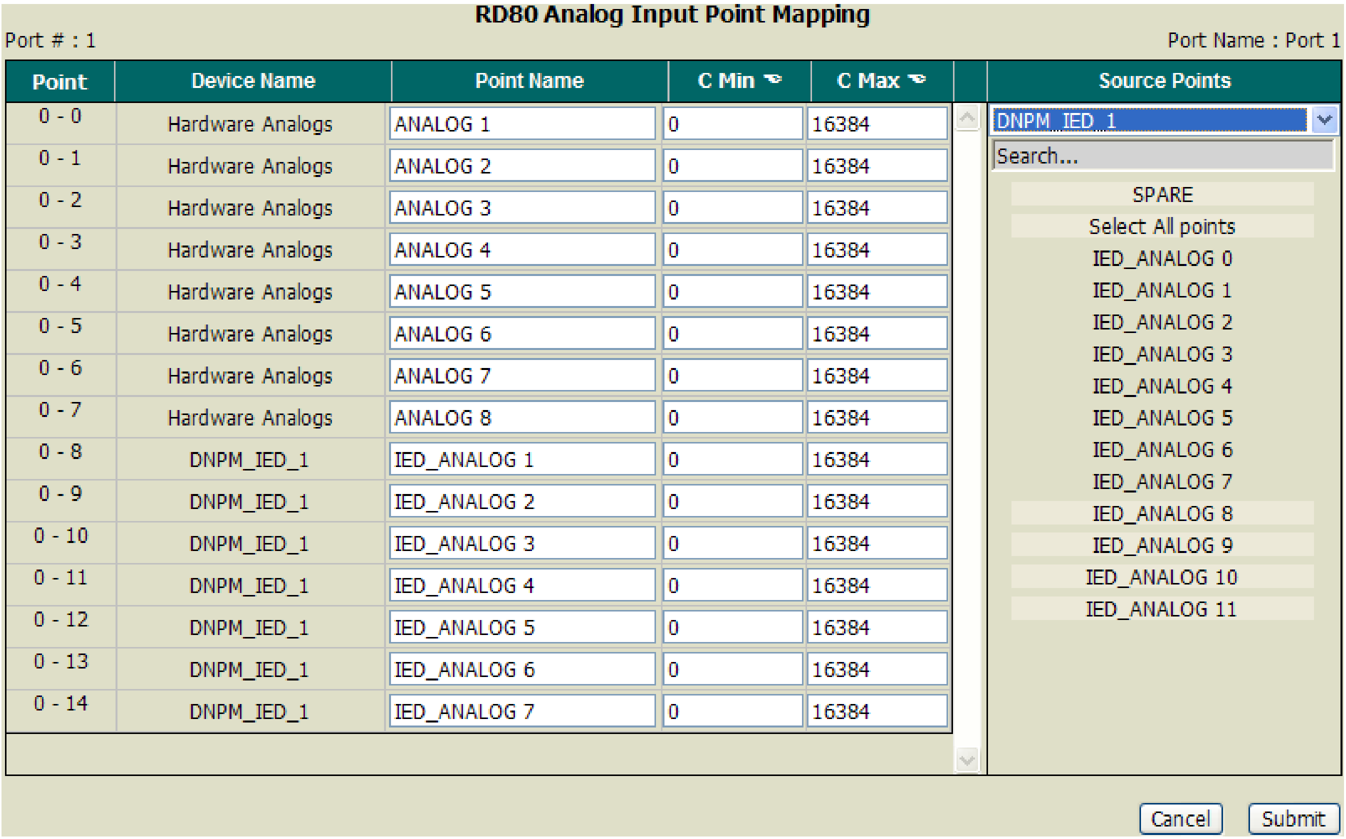
The usefulness of this procedure is that any desired point can now be mapped to the Spare point.

Figure 20-7 Results of Insert Above



The Spare point can also be deleted. The following example shows the results of deleting Point#08, IED_ANALOG 6.

Figure 20-8 Results of Deleting a Point



RD80 Analog Input Point Mapping

Port # : 1 Port Name : Port 1

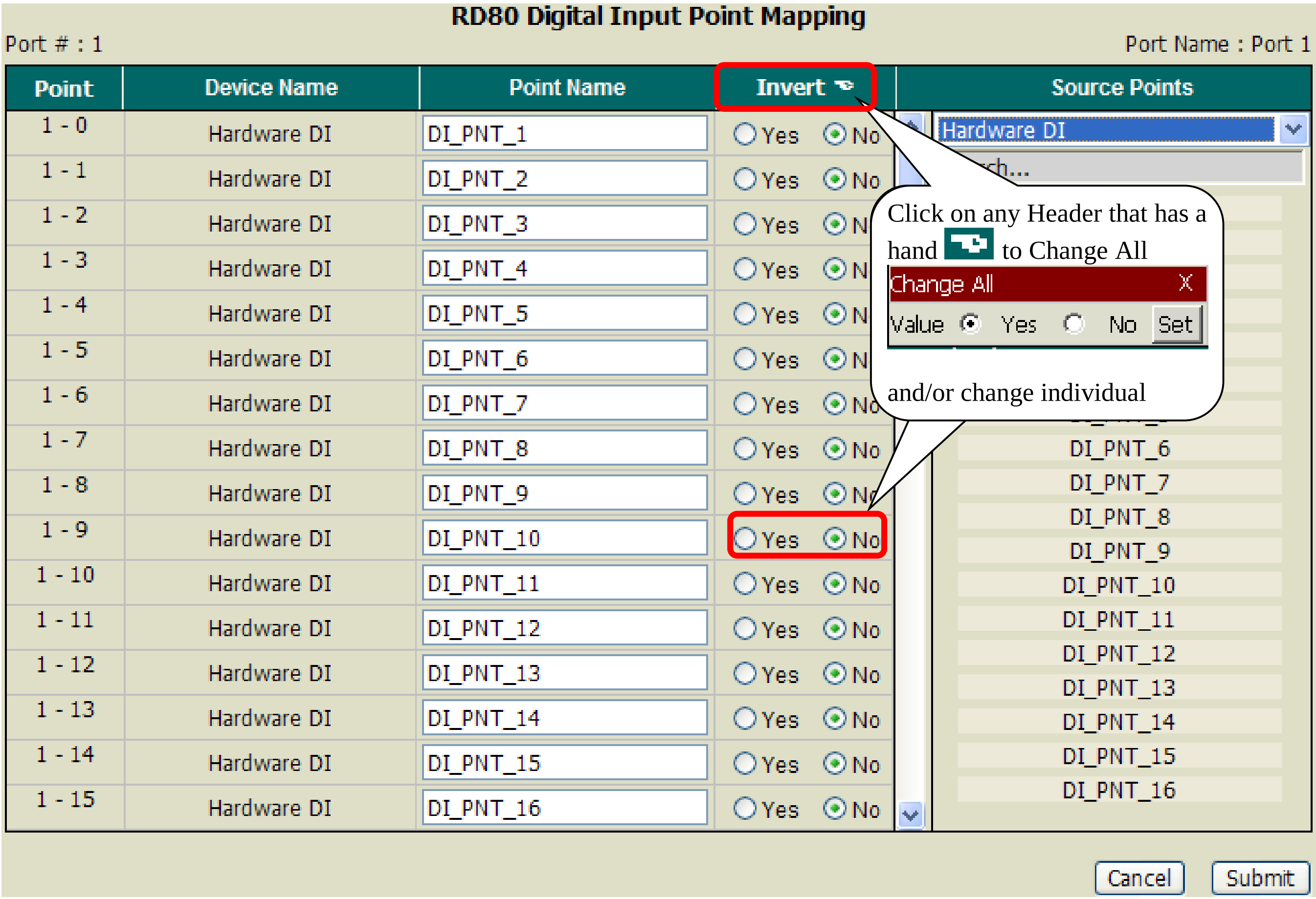
Point	Device Name	Point Name	C Min	C Max
0 - 0	Hardware Analogs	ANALOG 1	0	16384
0 - 1	Hardware Analogs	ANALOG 2	0	16384
0 - 2	Hardware Analogs	ANALOG 3	0	16384
0 - 3	Hardware Analogs	ANALOG 4	0	16384
0 - 4	Hardware Analogs	ANALOG 5	0	16384
0 - 5	Hardware Analogs	ANALOG 6	0	16384
0 - 6	Hardware Analogs	ANALOG 7	0	16384
0 - 7	Hardware Analogs	ANALOG 8	0	16384
0 - 8	DNPM_IED_1	IED_ANALOG 1	0	16384
0 - 9	DNPM_IED_1	IED_ANALOG 2	0	16384
0 - 10	DNPM_IED_1	IED_ANALOG 3	0	16384
0 - 11	DNPM_IED_1	IED_ANALOG 4	0	16384
0 - 12	DNPM_IED_1	IED_ANALOG 5	0	16384
0 - 13	DNPM_IED_1	IED_ANALOG 6	0	16384
0 - 14	DNPM_IED_1	IED_ANALOG 7	0	16384

Notice that IED_ANALOG 0 is now missing, although Point numbers remain contiguous.

20.3.2 Map Status Inputs

From the Communication Mapping screen, click the MAP button for Status Inputs. A screen similar to Figure 20-9 will appear.

Figure 20-9 Status Input Point Mapping



Point
The protocol address and point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Invert
Click the Yes radio button to invert the point. The default is No.

Note: Spare points will return as Off (low) for non-inverted, or On (high) for inverted.

Source Points
Select the device name from which to map points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

20.3.2.1 Point Mapping Highlight

See the Analog example.

20.3.2.2 Point Database Search

See the Analog example.

20.3.2.3 Insert & Delete Points

See the Analog example.

20.3.3 Type Zero, Type One and Cancel Type Zero/One Test

For this protocol function to work, the C3439 test card must be installed and all points in each group of 16 points to be tested must have a C3439 point in the map.

When a Type Zero Test is performed Alarm 2 output point (TB13) is closed until a Cancel Type Zero/One Test or a Type One Test extended function code is received by the RTU.

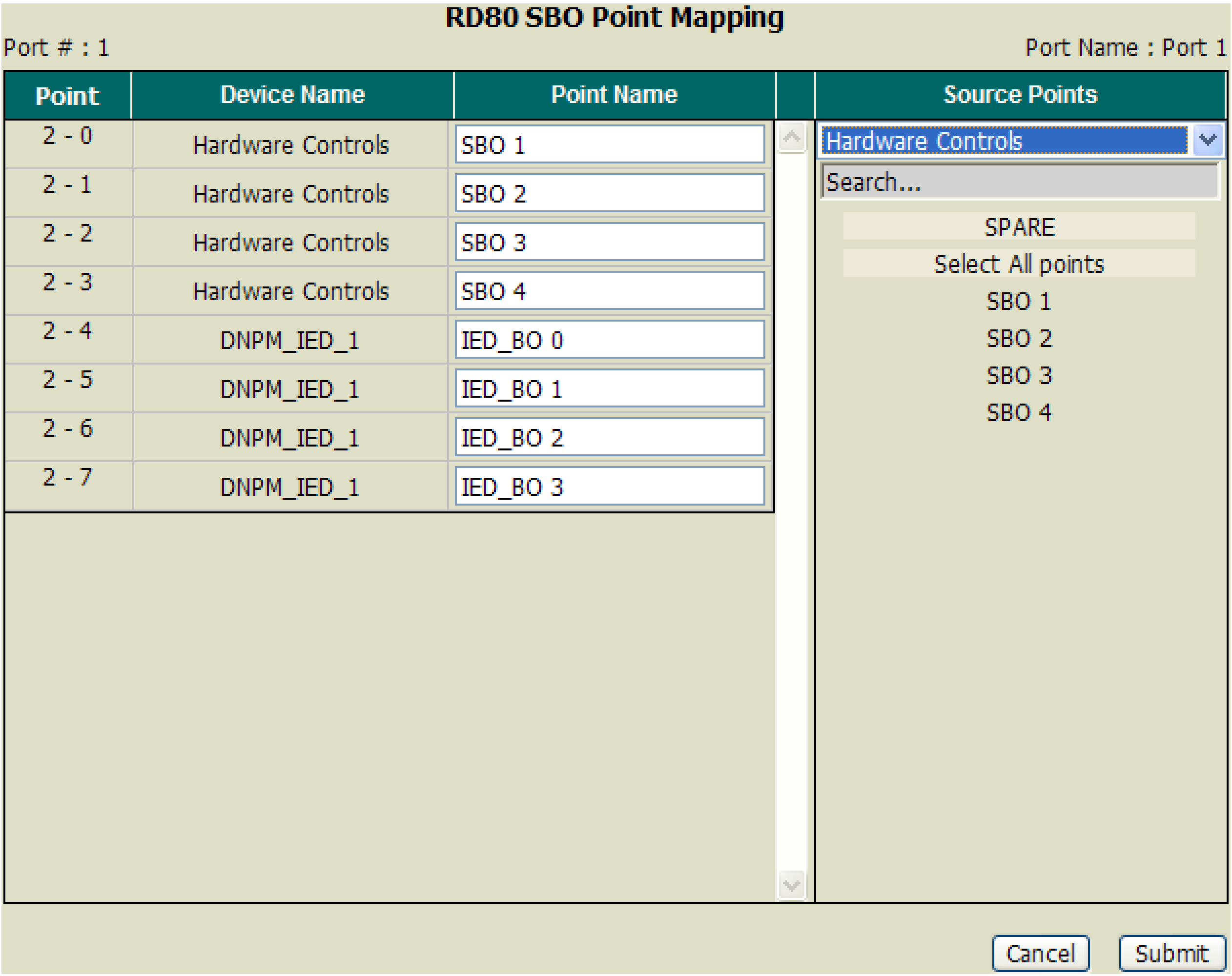
When a Type One Test is performed Alarm 1 output point (TB12) is closed until a Cancel Type Zero/One Test or a Type Zero Test extended function code is received by the RTU.

Please refer to the RTU drawings for wiring documentation for this function.

20.3.4 Map SBOs

From the Communication Mapping screen, click the MAP button for SBOs. A screen similar to the one below will appear.

Figure 20-10 SBO Point Mapping



Point
The protocol address and point number.

Device Name
The name of the source device for the mapped point.

Point Name
The name of the mapped point.

Source Points
Select the source points to place under Point Name from the drop-down list. Single points, or all points, or spare, may be selected.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Cancel button to discard changes. Click the Submit button to accept the changes.

Please note: No configuration changes take effect until the RTU is reset.

20.3.4.1 Point Mapping Highlight

See the Analog example.

20.3.4.2 Point Database Search

See the Analog example.

20.3.4.3 Insert & Delete Points

See the Analog example.

20.3.4.4 Mapping of the SBO points

The master station uses only the close function in the protocol. The hardware points are mapped as follows:

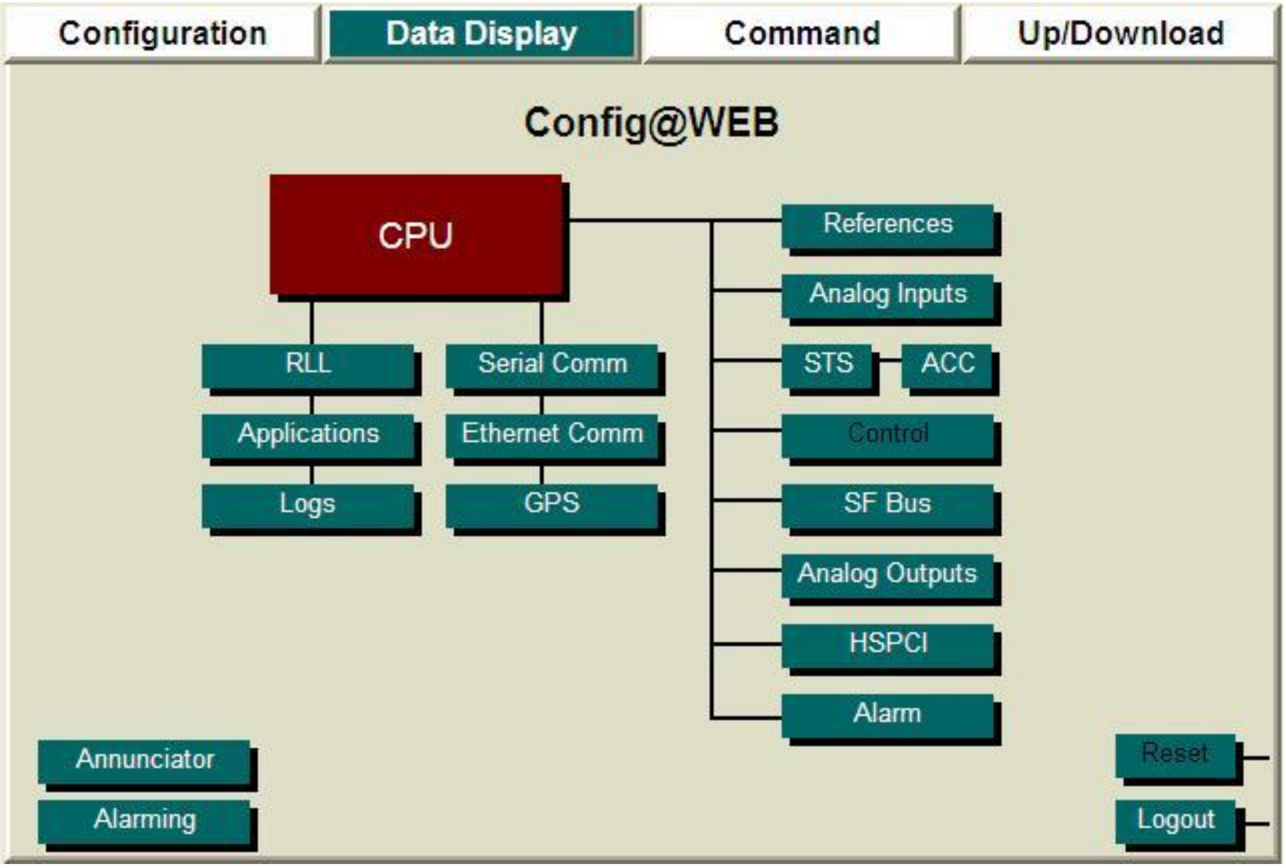
Protocol Single Point Address (SPA) field to RTU mapping screen

0 – point 0 trip
1 – point 0 close
2 – point 1 trip
3 – point 1 close
4 – point 2 trip
5 – point 2 close
6 – point 3 trip
7 – point 3 close
8 – point 4 trip
9 – point 4 close
10 – point 5 trip
11 – point 5 close
12 – point 6 trip
13 – point 6 close
14 – point 7 trip
15 – point 7 close

20.4 Data Display

Click the Data Display tab as shown in Figure 20-11.

Figure 20-11 Data Display Screen



Click Serial Comm to get the screen shown in Figure 20-12.

Figure 20-12 Display Communication Port Data

Display Communication Port Data

Port Number	RTS	DTR	Name	Protocol	Comm Counters	Display Port Data
Port #1	K	K	Port 1	Redac 80	View	Port Data
Port #2	K	K	Port 2	None	View	Port Data
Port #3	K	K	Port 3	None	View	Port Data
Port #4	K	K	Port 4	None	View	Port Data
Port #5	K	K	Port 5	None	View	Port Data
Port #6	K	K	Port 6	None	View	Port Data
Port #7	K	K	Port 7	None	View	Port Data
Port #8	K	K	Port 8	None	View	Port Data
Port #9	K	K	Port 9	None	View	Port Data
Port #10	K	K	Port 10	None	View	Port Data
Port #11	K	K	Port 11	None	View	Port Data
Port #12	K	K	Port 12	None	View	Port Data

Communication Associations Config Back

Port Number
Physical Port number of the RTU.

RTS and DTR
Request **T**o **S**end and **D**ata **T**erminal **R**eady. Selected during configuration, this value can be K, H, or L.

"K" represents Keyed (Radio/Modem).
The RTU firmware asserts/deasserts the signal according to the protocol timing configuration. Typically used as a Radio/Modem key output (Default Setting).

"H" represents Positive RS232 Voltage.
When the RTU firmware is active, the output will be driven to the positive RS232 voltage except when the Z85230 (Communications Controller chip) channel driving the output is being reset. While the reset is occurring, the output will drop to the negative RS232 voltage. When the reset is complete, the output will rise to the Positive RS232 Voltage. This setting can be used to power RS232 to RS485 converters, RS232 to Fiber Optic converters, or any other device requiring the Positive RS232 Voltage.

"L" represents Negative RS232 Voltage.
The output will be driven to the negative RS232 voltage at powerup and always be the negative RS232 voltage.

Name
The port name given during configuration or default name accepted.

Protocol
The configured protocol for this port.

Comm Counters
Click the View button under Comm Counters to display a set of Communication Counters for this port.

Display Port Data

Click the Port Data button under Display Port Data to display the types and values of points mapped to the Master.

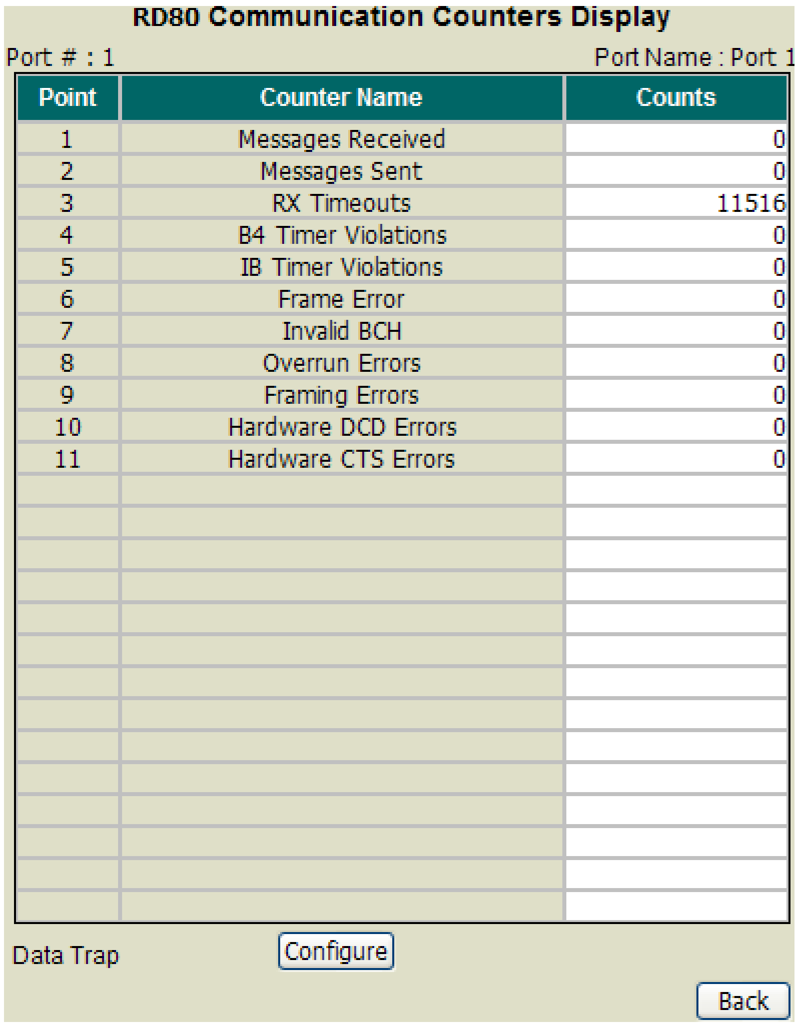
Navigation

Click the Back button to return to the previous screen.

20.4.1 Communication Counters

Under Comm Counters, click View to get the screen shown in Figure 20-13.

Figure 20-13 Communication Counters Display



Point Number

A logical point number for reference only.

Counter Name

The following counters are monitored:

Messages Received

This indicates the cumulative number of received messages since the last reset or power-up.

Messages Sent

This indicates the cumulative number of transmitted messages since the last reset or power-up.

RX Timeouts

This indicates the cumulative number of times that no response was received since the last reset or power-up. This count can be affected by the setting of the Rx Timeout in configuration.

B4 Timer Violations

This indicates the cumulative number of B4 Timer violations. This count can be affected by the setting of the B4 Time in configuration.

IB Timer Violations

This indicates the cumulative number of Interbyte timer violations since the last reset or power-up. This count can be affected by the setting of the Interbyte Time in configuration.

Frame Errors

Not used at this time.

Invalid BCH

This indicates a bad BCH error-correction code.

Overrun Errors

This indicates the cumulative number of overrun errors since the last reset or power-up.

Framing Errors

This indicates the cumulative number of received frames with CRC errors since the last reset or power-up. This can be affected by parity and MTO.

Hardware DCD Errors

This indicates the cumulative number of DCD errors since the last reset or power-up.

Hardware CTS Errors

This indicates the cumulative number of CTS errors since the last reset or power-up.

Counts

The counts for each type of Counter.

Data Trap

Please see the config@WEB Secure Software Users Guide.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

20.4.2 Communication Displays

From the Display Communication Port Data screen, click Port Data to get the screen shown in Figure 20-14.

Figure 20-14 Communication Display

RD80 Communication Display

Port # : 1 Port Name : Port 1

Type	Number	View
Analog Inputs	16	View
Status Inputs	64	View
SBO Outputs*	8	

Back

Type
The type of point.

Number
The number of points of each type.

View
Click the View button to view points.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click the Back button to return to the previous screen.

20.4.2.1 Analog Inputs

From the Communication Display screen, click View for Analog Inputs to get the screen shown in Figure 20-15.

Figure 20-15 Analog Inputs Display

RD80 Analog Inputs Display

Port # : 1 Port Name : Port 1

Page1 of 1 Go To Go

Card	Point	Device Name	Point Name	Point Status	Point Value	Point Counts
0	0	Hardware Analogs	ANALOG 1 Bennie		0.000	0
0	1	Hardware Analogs	ANALOG 2 Bennie		0.000	0
0	2	Hardware Analogs	ANALOG 3 Bennie		0.000	0
0	3	Hardware Analogs	ANALOG 4 Bennie		0.000	0
0	4	Hardware Analogs	ANALOG 5 Bennie		0.000	0
0	5	Hardware Analogs	ANALOG 6 Bennie		0.000	0
0	6	Hardware Analogs	ANALOG 7 Bennie		0.000	0
0	7	Hardware Analogs	ANALOG 8 Bennie		0.000	0
0	8	DNPM_IED_1	IED_ANALOG 0	F	0.000	8192
0	9	DNPM_IED_1	IED_ANALOG 1	F	0.000	8192
0	10	DNPM_IED_1	IED_ANALOG 2	F	0.000	8192
0	11	DNPM_IED_1	IED_ANALOG 3	F	0.000	8192
0	12	DNPM_IED_1	IED_ANALOG 4	F	0.000	8192
0	13	DNPM_IED_1	IED_ANALOG 5	F	0.000	8192
0	14	DNPM_IED_1	IED_ANALOG 6	F	0.000	8192
0	15	DNPM_IED_1	IED_ANALOG 7	F	0.000	8192

Back

Card
Protocol logical card address.

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point Value
The engineering unit (EGU) value.

Point Counts
The counts being sent to the Master.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

20.4.2.2 Status Inputs

From the Communication Display screen, click View for Status Inputs to get the screen shown in Figure 20-16.

Figure 20-16 Status Inputs Display

RD80 Status Inputs Display

Port # : 1 Port Name : Port 1

Page 1of 4 Go To Go Next>>

Card	Point	Device Name	Point Name	Point Status	Point State	●
1	0	Hardware DI	DI_PNT_1		CLOSE	●
1	1	Hardware DI	DI_PNT_2		OPEN	●
1	2	Hardware DI	DI_PNT_3		OPEN	●
1	3	Hardware DI	DI_PNT_4		OPEN	●
1	4	Hardware DI	DI_PNT_5		OPEN	●
1	5	Hardware DI	DI_PNT_6		OPEN	●
1	6	Hardware DI	DI_PNT_7		OPEN	●
1	7	Hardware DI	DI_PNT_8		OPEN	●
1	8	Hardware DI	DI_PNT_9		OPEN	●
1	9	Hardware DI	DI_PNT_10		OPEN	●
1	10	Hardware DI	DI_PNT_11		OPEN	●
1	11	Hardware DI	DI_PNT_12		OPEN	●
1	12	Hardware DI	DI_PNT_13		OPEN	●
1	13	Hardware DI	DI_PNT_14		OPEN	●
1	14	Hardware DI	DI_PNT_15		OPEN	●
1	15	Hardware DI	DI_PNT_16		OPEN	●

Back

Card
Protocol logical card address.

Point
Protocol logical point number.

Device Name
The origin of the point.

Point Name
The name of the point assigned during configuration.

Point Status
Please see the config@WEB Secure Software Users Guide.

Point State
Indicates that point is either OPEN or CLOSED.

●

A red dot indicates the point is CLOSED; a green dot indicates the point is OPEN.

Navigation

Port # : *n* tells you which port you are on. Port Name : *name* tells you the name of the port. Click <<Prev to navigate to the previous 16 points, if applicable. Page *n* of *n* tells you which page (of a total number of

pages) you are on. Go to a specific page by typing in the page number, then click the Go button. Click Next>> to go to the next 16 points, if applicable. Click the Back button to return to the previous screen.

20.4.2.3 SBO Outputs

There is no display available.