How to use Citect (SCADA) with ioLogik 4000 (Modbus TCP/IP NA-4010 and Modbus Serial NA-4020/NA-4021)

Alex Chen, Senior Engineer, Moxa Technical Support Dept.

In this Technical Note, we cover the following topics:

- 1. How to export the ioLogik 4000 Modbus address table
- 2. How to use Citect (SCADA) communication with NA-4010
- 3. How to use Citect (SCADA) communication with NA-4020 and NA-4021

1. How to export the ioLogik 4000 Modbus address table

1.1 Run ioAdmin by clicking on Start → Program Files → ioLogik → Utility → ioAdmin. Select the ioLogik4000 whose address table you wish to export, and then press the right mouse button. Next, select Export System Config to save the configuration file.



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Released on February 9, 2006

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The MOXA Group manufactures one of the world's leading brands of device networking solutions. Products include serial boards, USB-to-serial Hubs, media converters, device servers, embedded computers, Ethernet I/O servers, terminal servers, Modbus gateways, industrial switches, and Ethernet-to-fiber converters. Our products are key components of many networking applications, including industrial automation, manufacturing, POS, and medical treatment facilities.

How to Contact MOXA

Tel:	1-714-528-6777	Web:	www.moxa.com
Fax:	1-714-528-6778	Email:	info@moxa.com



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1.2 This table can be used to retrieve the ioLogik4000's slice model name, sequence, and Modbus address table.



(1) Slice Models

Slot No. Description

00	NA-4010, ioLogik 4000 Ethernet network adapter
01	M-4211, 2 AO, Voltage, -10 to 10V, 12-bit, RTB
02	M-3410, 4 AI, Voltage, 0 to 10V, 12-bit, RTB
03	M-1800, 8 DI, Sink, 24 VDC, RTB
04	M-2400, 4 DO, Sink, MOSFET, 24 VDC, 0.5A, RTB

(2) Modbus address table

Slot No	Channel No.	1/O type	Modbus Address	Modbus Address	I/O Data
SIUL NU.	Charmer NO.	I/O type	(WORD)	(BIT)	Length(bits)
01	00	Output	0x0800/0x00	0x1000	0x0010
01	01	Output	0x0801/0x00	0x1010	0x0010
02	00	Input	0x0000/0x00	0x0000	0x0010
02	01	Input	0x0001/0x00	0x0010	0x0010
02	02	Input	0x0002/0x00	0x0020	0x0010
02	03	Input	0x0003/0x00	0x0030	0x0010
03	00	Input	0x0004/0x00	0x0040	0x0001
03	01	Input	0x0004/0x01	0x0041	0x0001
03	02	Input	0x0004/0x02	0x0042	0x0001
03	03	Input	0x0004/0x03	0x0043	0x0001
03	04	Input	0x0004/0x04	0x0044	0x0001
03	05	Input	0x0004/0x05	0x0045	0x0001
03	06	Input	0x0004/0x06	0x0046	0x0001
03	07	Input	0x0004/0x07	0x0047	0x0001
04	00	Output	0x0802/0x00	0x1020	0x0001

04	01	Output	0x0802/0x01	0x1021	0x0001
04	02	Output	0x0802/0x02	0x1022	0x0001
04	03	Output	0x0802/0x03	0x1023	0x0001

1.3 The information can be summarized as follows:

Slice 1:	M4211 (2 channel Analog Output)		
	Modbus address(word) 0x0800=2048(Decimal)		
Slice 2:	M3410 (4 channel Analog Input)		
	Modbus address(word) 0x0000=0000(Decimal)		
Slice 3:	M1800 (8 channel Digital Input)		
	Modbus address(bit) 0x0040=0064(Decimal)		
Slice 4:	M2400 (4 channel Digital Output)		

Modbus address(bit) 0x1020=4128(Decimal)

In the Modbus Memory Map, you need to use different Address Formats to query the different slice models. For example: to Query the Digital Input, you need to use 10065 to get the status of M1800's channel 0. To get the Analog Input, you must use 30001. You will get the M3410 channel 0 value.

Modbus Data Type	Common Name	Read/Write Behavior	Address Format
Digital Outputs	Bits, binary values, flags	Single bit, alterable by an application program, read-write	00001 09999
Digital Inputs	Binary inputs	Single bit, provided by an I/O system, read-only	10001 19999
Analog Inputs	Analog inputs	16-bit quantity, provided by an I/O system, read-only	30001 39999
Analog Outputs	Analog values, variables, Registers	16-bit quantity, alterable by an application program, read-write	40001 49999

2. How to use Citect (SCADA) communication with NA-4010

2.1 Run the Citect (SCADA) Explorer and create a new project.

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2.2 Select **Communications** and then click on **Next**.

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2.3 Create a new I/O Server.



2.4 Create a new I/O Device.

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2.5 Select the External I/O device.



2.6 Select Drivers \rightarrow Modicon \rightarrow TSX Qnantum \rightarrow Ethernet (TCP/IP).



2.7 Define the NA-4010's default IP (192.168.127.254) and Modbus TCP port (502).

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System	Express Communications Wizard	
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	Selected driver Manufacturer: Modicon Model: TSX Quantum Communications: Ethernet (TCP/IP) < Back	

2.8 Select the Tags and choose the Variable Tag. Then, define the DI tag (Data type = DIGITAL, Address = 10065).

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2.9 Define the DO tag (Data type = DIGITAL, Address = 04129).

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2.10 Define the AI tag (Data type = INT, Address = 30001).

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2.11 Define the AO tag (Data type = INT, Address = 42049).

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	I/O Device Name IODev Address 42049	
	Raw Zero Scale Raw Hull Scale	
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	Comment	
	Add Replace Delete Help	
	Record : 8 Linked: No	×
	Record 8 of 8	

2.12Then, from the Citect Graphics builder, select the Symbol Set to represent the DI, and select the Number to represent the AI. Finally, select the button to set up the DO and AO values.



2.13 You will get the following result.



3. How to use Citect (SCADA) communication with NA-4020 and NA-4021

- 3.1 Follow the procedure in Sec. 2.1 to 2.6 to create a new I/O Server and Device.
- 3.2 However, you must select different drivers for NA-4020/NA-4021.

(Select the /Modicon/984/Serial Modbus (Binary protocol)).

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3.3 Fill in the correct Address (Modbus address) and then click on Next.

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3.4 Select the COM Port that connects with NA-4020 and NA-4021.

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3.5 The current serial parameters will show (baud rate = 19200, Data bit = 8, Parity = Even and COM Port = 5). Adjust the NA-4020/NA4021 DIP Switch to match the above serial parameters.

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	Press Finish to save this setup. Print Key Cancel Help	

3.6 Next, follow steps 2.8 to 2.13 to complete the tag definition and get a correct result for DI, DO, AI, and AO values.