



kontron
... always a Jump ahead!

ECO Panel

104 / 121 / 150



User Manual

ECO PANEL

104 / 121 / 150

INDUSTRIAL MACHINE
CONTROL UNIT

USER MANUAL

Manual History

Date	Version	Changes
16.09.2003	01	First edition
08.04.2003	02	Redesign

Kontron Embedded Computer GmbH
Werner-von-Siemens-Str. 1
D-93426 Roding

Phone: +49 9461 950 -0
Fax: +49 9461 950 -100
e-mail: sales@kontron.com
Internet: <http://www.kontron.com>

User Manual : 1307-900-**
Revision: 02
First Release: Apr. 2004

© Copyright Kontron Embedded Computers GmbH 2004. All rights are reserved

COPYRIGHT

Copyright Kontron Embedded Computers GmbH
All rights are reserved

No part of this product, including the product and software may be reproduced, transmitted, transcribed, stored in a retrieval system, or translated into any language in any form by any means without the express written permission of Kontron Embedded Computers GmbH (hereinafter referred to as Kontron) except documentation kept by the purchaser for backup purposes.

TRADEMARKS

All trademarks mentioned in this manual are registered properly of the respective owners.

CE-CONFORMITY

The following requirements, standards, specifications constitute part of the declaration:

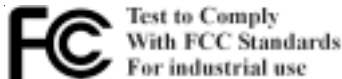
EN 55022 class A EN 55024 EN 60950
EN 61000-3-2 EN 61000-3-3 EN 61000-6-2

The validation of this declaration depends on the properly use of the product.

FCC Class A Radio Frequency

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to 1/47 CFR Part 15.109 Class A of FCC rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference and
2. This device must accept any interference received, including interference that may cause undesired operation.



The limits of FCC Part15 class A are designed to provide reasonable protection against harmful interference in residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interfer-

ence to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by more of one or more of the following measures:

1. Reorient or relocate the receiving antenna
2. Increase the separation between the equipment and receiver.
3. Connect the equipment into an outlet on a circuit different from that to which the receiver is connected
4. Consult the dealer or an experienced radio/television technician for help.

Notice1: The changes or modifications not expressly approved by the party responsible for compliance could void the user`s authority to operate the equipment.

Notice2: Shielded interface cables, if any, must be used in order to comply with emission limits.



TABLE OF CONTENTS

COPYRIGHT 3

TRADEMARKS 3

CE-CONFORMITY 3

1. INTRODUCTION 6

2. OVERVIEW 8

3. INSTALLATION 9

 3.1 CONNECT EXTERNAL DEVICES 9

 3.2 CONNECT INTERNAL DEVICES 10

 3.2.1 PC104 CARD 10

 3.2.2 FLASH MEMORY ON PCMCIA TRUE IDE 10

 3.3 INTERNAL JUMPER SETTING 12

 3.4 SOFTWARE INSTALLATION 13

4. MAINTENANCE 13

 4.1 CUSTOMER SERVICE 13

 4.2 CLEANING 14

 4.3 RETURN AND REPAIR 14

5. TROUBLESHOOTING 17

 5.1 LED STATUS INDICATORS TO FIELDBUS 17

 5.2 SYCON FIELDBUS CHECK 17

 5.3 GENERAL SOFTWARE GEODE BASIC BIOS SETTINGS 17

6. TECHNICAL DETAILS 18

 6.1 DIMENSIONS 18

 6.2 POWER 18

 6.3 SPECIFIC MEMORY AND I/O MAP 19

 6.4 FIELDBUS INTERFACES 19

 6.5 OPERATING SYSTEMS 20

 6.6 ENVIRONMENT SPECIFICATION 20

 6.7 CONNECTOR PINOUT 20

 6.8 BLOCK DIAGRAM 22

 6.9 INTERNAL BASEBOARD LAYOUT 23

7. DISPOSAL 24

8. APPENDIX 24

1. INTRODUCTION

1.1. APPROPRIATE USE

The main purpose of the ECO Panel is the use and operation with 24VDC-power-sources according to power supply implemented.

The surrounding area of the ECO Panel are closed and dry rooms.

The ECO Panel is intended for industrial applications in machine and plant control engineering.

The user is not entitled to change the system or open the body without consultation to Kontron.

1.2 ITEM CHECKLIST

Your ECO Panel comes securely packaged in a solid shipping carton. Upon receiving your ECO Panel, open the carton and carefully remove the contents.

The shipping carton should contain the following items:

- ECO Panel 104 / 121 / 150
- CPU Support CD
- This User Manual ECO Panel (optional)
- Fieldbus installation CD (if implemented)

Carefully inspect each component to ensure that nothing is missing and/or damaged. If any of these items is missing or damaged, please contact Kontron immediately. Take care of the packing material for future transportation.

1.3 IMPORTANT SAFETY INSTRUCTIONS

This section gives you detailed information about how to maintain a safe working environment while using the ECO Panel. You can maintain its condition and performance by following these guidelines. Please read it carefully to ensure maximum safety.

Be careful about the power supply input voltage. The ECO Panel has specific power requirements.

Please prevent the ECO Panel from humidity.

Never pour any liquid on ECO Panel, this may cause fire or electrical shock.

Place the ECO Panel on a reliable surface when installing. A drop or fall may cause damage.

Do not leave the ECO Panel in an unconditional environment. Storage temperature above 60°C may damage the ECO Panel.

The opening on the enclosure are for air convection, protect the ECO Panel from overheating.



DO NOT COVER THE OPENINGS

If the ECO Panel is not in use for a long time, disconnect it from mains to avoid possible damage by transient overvoltage.

If you had to open the housing of the ECO Panel in service cases, all single parts of the plant must first be switched off, after which the ECO Panel can be uncoupled from System. Protect each part to switch on again during service.

Following service activities on the ECO Panel could cause failures.

- Metal objects such as screws or tools fall into ECO Panel
- Internal cables are removed or inserted during operation.
- Plug-in cards are removed or inserted during the ECO Panel is switched on.

All cautions and warnings on the ECO Panel should be noted.

The system has to shut down and checked immediately by service staff, if one of the following situation appears:

- The power cord or plug is damaged.
- Liquid has penetrated into the ECO Panel.
- The ECO Panel has been exposed to moisture.
- The ECO Panel has dropped and damaged.
- The ECO Panel has obvious sign of breakage.
- The ECO Panel has not worked well or you can not get it work according to users manual.

2. OVERVIEW

The Kontron ECO Panel is a high performance system with field bus. The compact design enables an integration even under the condition of very restricted spaces. Our 100% industrially capable, scalable ECO Panel meet the highest requirements concerning shock, vibration and temperature resistance. The system also provides a high resistance under tough EMC conditions.

Features:

- Display sizes 10,4", 12,1" and 15"
- Display type TFT active Matrix LCD with resistive touch.
- Color depth 16 bit
- Max. Resolution 1024x 768 on 15" display
- Intel Celeron up to 650 Mhz, Pentium III 933 MHz and National Semiconductor Geode GX1 processor up to 300MHz
Intel MMX Instruction set, Virtual system architecture technology
- Main memory up to 512 MB on SDRAM
- Standard interfaces 2x USB, 2x PS/2, 1x LPT, 1x LAN, max. 3x RS232, 1x CRT
- Fieldbuses CANopen, DeviceNet, Profibus DP/ MPI in master and slave configuration. Optionally without fieldbus.
- 2K NVRAM (battery buffered)
- Input power of 24 VDC
- Installation of two PC104 extension card.
- Front side protection in IP65 (conform to EN 60529)
- Operating temperature up to 45°C
- Operating system Windows XP embedded, Windows CE.net, Linux
- Dimension 10" 325mm x 252mm x 102mm.
12" 360mm x 295mm x 102mm.
15" 420mm x 340mm x 102mm.
- Options: HDD, COM3, Fieldbuses and 2K NVRAM battery buffered.
- All connectors build for industrial standards
- Hardware developed by Kontron concerning for industrial use
- Shock and vibration tested
- Embedded architecture long-life electronic components

3. INSTALLATION



Attention!

**The weight of the ECO Panel is about 6kg
Carry it on with both hands!**

The ECO Panel of this type is developed to work in a control cabinet. Thereby it must be pointed that all the environmental conditions will be considered.

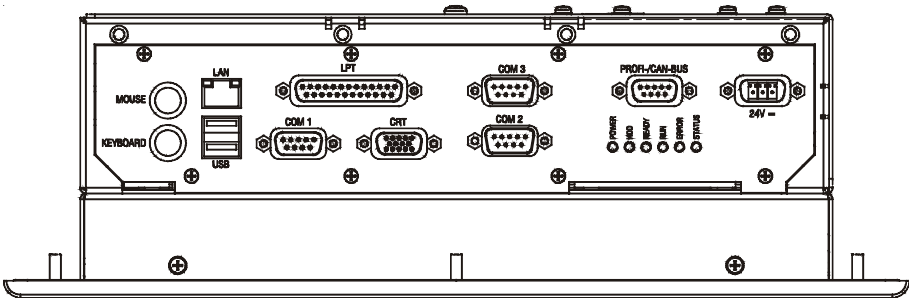
When installing the ECO Panel take care that there is enough area for ventilations on rear side. For details go to item housing dimensions.

If your ECO Panel was delivered without software install a keyboard and mouse. If operating system and software is installed, the touch is working and calibrated.

Look up for further settings e.g. BIOS on the single board manuals at the "Support CD".

3.1 CONNECT EXTERNAL DEVICES

To get detailed information about pinout of each connector please look to chapter "technical details".



App. 3-1

3.1.1 PS/2 Keyboard and Mouse

Use this connector to connect PS/2 mouse and keyboard.

3.1.2 LAN Port

This connector provides a external interfaces 10/100 BaseT on RJ45 to connect your ECO Panel to other devices in a network.

3.1.3 USB port

This connector provides two external USB 1.1 interfaces

3.1.4 Parallel port LPT

Use this port to connect a printer or other parallel devices.

3.1.5 Serial Interface COM1, COM2 (COM3 optional)

Two serial interfaces enables you to connect a external device with 9 pin DSUB connector such as mouse or modem. COM2 is selectable as a input for programming fielbuscontroller.

3.1.6 CRT Monitor

Connector and interface to VGA/CRT monitor .

3.1.7 Fieldbus CANOpen/ Profibus/DeviceNet/MPI

External connector of internal fieldbus controller. Interface to connect CANOpen, Profibus or MPI devices. Optionally you can have at this connector DeviceNet fieldbus. CANopen, Profibus and DeviceNet in master or slave configuration.

3.1.8 Main Power IN

Use this connector to connect the power supply of 24VDC. Please note the Power requirements (See chapter technical details).

3.2 CONNECT INTERNAL DEVICES

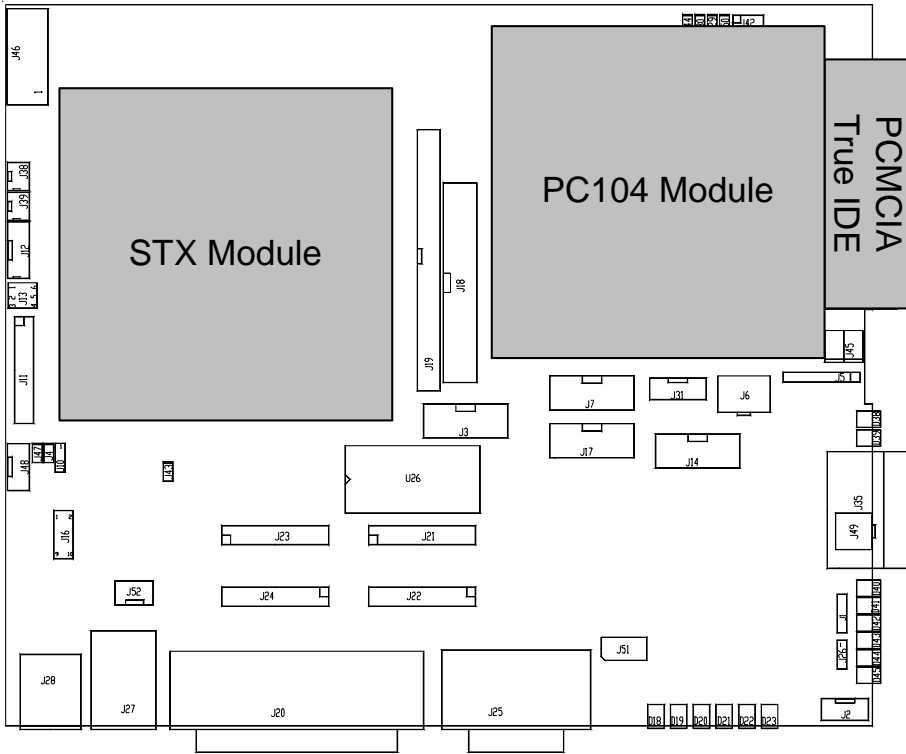
The ECO Panel provides additional functions witch could be implemented in the system by adding cards or changing the configuration of your ECO Panel.

3.2.1 PC104 card

To Install a additional PC104 card, open the cabinet of the ECO Panel and place the card directly over the connectors J32 and J33 of the Baseboard. Then compress both components by hand.

3.2.2 Flash memory on PCMCIA true IDE

Behind a device cover plate on the left upper corner you find the PCMCIA to IDE interface to connect ATA flash memory card. To connect a flash memory in this interface you must have a compact flash adapter. Remove one screw in the middle of the plate, open the cabinet and put the flash memory card which is connected to the compact flash adapter in the correct direction in the slot.



App. 3-2

3.3 INTERNAL JUMPER SETTING

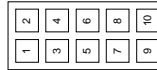
To identify the jumper location please look to chapter technical details. All described functions refers to the implemented Baseboard.

3.3.1 Base of external COM2 interface (J4)

Jumper	Function
J4 not set	Base is internal COM2 Port of STX CPU module
J4 set (default)	Base is internal serial interface of field bus controller EC1

3.3.2 Set Interrupt to field bus controller EC1 (J16) (optionally)

Setting	Interrupt IRQ
1-2	IRQ 5
3-4	IRQ 7
5-6	IRQ 9
7-8	IRQ 10
9-10	IRQ 11
No Jumper	Polling (default)



3.3.3 Address range NVSRAM (J29) (optionally)

Jumper	Function
J29 not set (default)	NVSRAM Address CC000-CFFFF
J29 set	NVSRAM Address D0000-D7FFF

*Address CC000 size 16K; Address D0000 size 32K

3.3.4 Address range address dual port memory (J30) (optionally)

Jumper	Function
J30 not set (default)	EC1 Address CA000-CBFFF
J30 set	EC1 Address DA000-DBFFF

3.3.5 Linked internal COM3 interface (J44)

Jumper	Function
J44 not set (default)	Interface is linked to external COM3 connector
J44 set	Interface is linked to external MDB (multi drop bus) connector

3.3.6 Select touch controller base (J47)

Jumper	Function
J47 not set (default)	COM1 is linked to COM1 connector
J47 set	COM1 is used by touch

3.3.7 Select PCMCIA function mode (J50)

Jumper	Function
J50 not set (default)	PCMCIA Connector as master
J50 set	PCMCIA Connector as slave

3.4 SOFTWARE INSTALLATION

3.4.1 Application software and operating system

The ECO Panel is designed to work with different operating systems. To install operating system and application software follow the installation instructions of the software.

3.4.2 Hardware drivers

To get full function of ECO Panel on different operating systems it is necessary to install drivers for the implemented hardware. All the drivers are stored on the provided Support CD. Drivers also available at the online support at **<http://www.kontron.com>**.

To install drivers from CD, put the CDROM in the CD Drive. If your operating system supports the autostart function the software will start automatic. If not look for hint in the root directory. After this choose your system and the unit to load the driver.

If you need additional help please contact the Kontron customer service.

4. MAINTENANCE

The ECO Panel is designed and produced according to DIN EN ISO 9000 :2000. One of the main development intentions was to reduce the terms of service. As a result, with exception changing CMOS-Ram battery and cleaning, no great service is to do.

In case off any error kindly note the remarks below.

To analyze the error please check first all connections and configuration of the software. Don't try to repair the hardware inside.

No warranty after unqualified intrusion

4.1 Customer service

To get more technical information and help depending error on your ECO Panel please contact Kontron embedded computers GmbH customer service.

Phone: +49 (0)94 61 950-104 or -102
FAX: +49 (0)94 61 950- 200
Email: service@kontron.com

4.2 Cleaning

To clean the surface of the ECO Panel use a soft lintfree cloth. It should be slightly moist with a mild detergent solution or any computer cleaning kit.

Never use alcohol, petroleum-based solvents or aggressive agents to clean the ECO Panel. Also never pour any liquids directly in the ECO Panel.

To clean the liquid-crystal display (LCD) screen use soft clean lintfree cloth, moist with a mild glass cleaner, and gently wipe the surface. Never apply liquids directly on the screen surface. Do not use paper towels to clean the display screen. Paper can scratch the display touch film.

4.3 Return and repair

Kontron Embedded Computers GmbH has started a service management system according DIN EN ISO 9001:2000 to reduce the terms of repair. This provides a fast, high quality and effective repair.

4.3.1 Return Material Authorization Numbers (RMA)

Before send back the defective device please follow the hints below then request a RMA number from Kontron customer service.

- Return only Kontron product specified on the RMA request.
- Request a separate new RMA number for each Kontron product.
- If we receive a shipment containing not authorized products, we may send it back.
- Please check before requesting an RMA number if there is a real defect on the system. If not we could charge the costs for handling.

To request a RMA number fill out the form „Fault report“ and send him to Kontron customer support. You can get the form as a download on <http://www.kontron.com>. For additional questions please contact the customer service by fax or Email.

Fill out all the menu items on the form and send it to Kontron by FAX or online. Describe the error as detailed as possible. A detailed report is a base for a fast and effective analyze of errors and repair.

After getting back the "Fault report" send the defective device, including the fault report and your delivery note, to the following address:

**Kontron Embedded Computers GmbH
Warenannahme Service
Werner-von-Siemens-Str. 1
D-93426 Roding**

4.3.2 Packaging

To return a system use the original Kontron or equivalent packaging. Parts or components of the system must be returned in anti-static-bags.

Always enclose a copy of the original delivery note and the fault report.

Kontron is not responsible for damage during shipment. We recommend you to insure the shipment.



Fault Report

RMA Nr.

Company: _____ Date: _____

Contact : _____ Email: _____

Address: _____

Phone: _____ Fax: _____

Hint: _____

Device description	Delivery Items
--------------------	----------------

Designation: _____	Delivery note number: _____
ROI-Article-No. : _____	Delivery note date _____
Serial number: _____	
Operating System: _____	Version: _____
For return single system components please note system serial number: _____	

Detailed error description (please fill out in type characters)

Error detected: always sporadically in constellation with: _____

Delivery to: Kontron Embedded Computers GmbH, Werner-von-Siemens Strasse1,
93426 RODING, Wareneingang Service

App. 4-1

5. TROUBLESHOOTING

5.1 LED status indicators to Fieldbus

Power	HDD	READY	RUN	ERROR	STATUS	ERRORS
Off						No Power Check Power supply
	Always Off					HDD defect or controller defective,
-	-	Flashing irregular	OFF	OFF	OFF	Fieldbus Hardware error
-	-	Flashing cyclic	OFF	OFF	OFF	Bootstraploader active
-	-	ON	Flashing irregular	OFF	OFF	None or error in configuration
-	-	ON	Flashing cyclic	OFF	ON	PC Application not ready
-	-	ON	Flashing cyclic	ON	OFF	Short circuit at Profibus
-	-	ON	Flashing cyclic	ON	ON	All slaves are missing or Profibus not connected
-	-	ON	ON	ON	ON	At least one slave is missing
-	-	ON	ON	OFF	ON	Communication is running faultless

5.2 SYCON fieldbus check

Use SYCON tool to read out Fieldbus controller configuration and to analyze if you could detect Fieldbus controller.

Use Program DEVVIEW under MS-DOS to check the Fieldbus firmware , Dual port memory Address, dual port memory size of the fieldbus controller.

For detailed description about the programs please follow the instructions on the Fieldbus installation CD.

5.3 General Software GEODE Basic BIOS settings

Compact Flash

To start your system from compact flash disk please set the value at **IDE DRIVE GEOMETRY** on the **Basic CMOS Configuration Setup** to „AUTOCONFIG, Physical“.

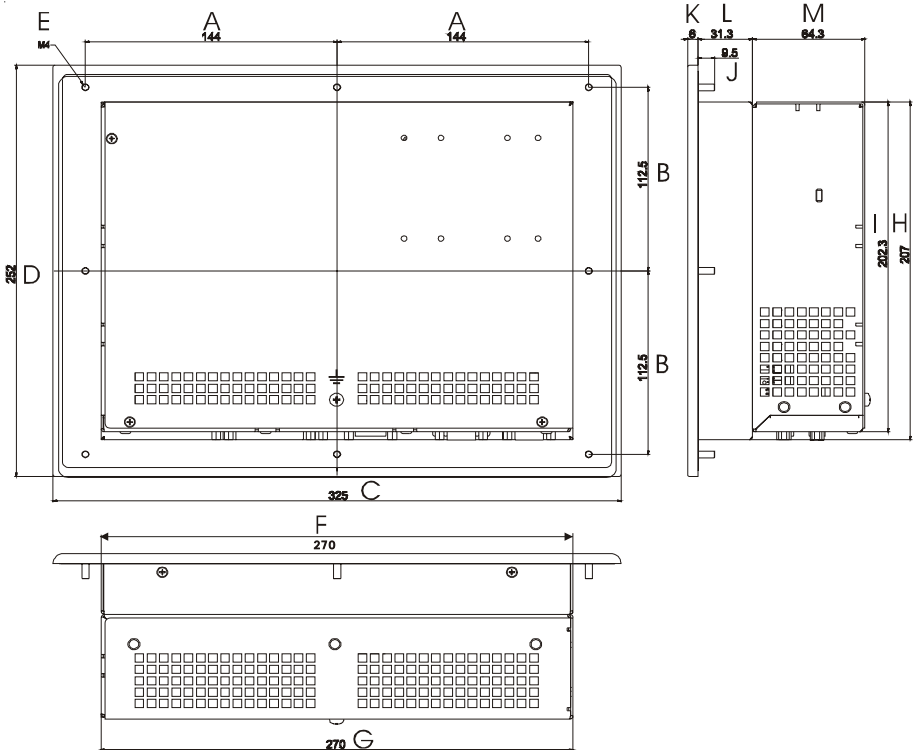
HDD Drive:

To start your system from Harddisk please set the value at **IDE DRIVE GEOMETRY** in the **Basic CMOS Configuration Setup** to „AUTOCONFIG, LBA“.

FOR ADDITIONAL INFORMATION ABOUT TROUBLESHOOTING PLEASE GO TO ONLINE SUPPORT AT WWW.KONTRON.COM

6. TECHNICAL DETAILS

6.1 Dimensions



App. 6-1

System type	A	B	C	D	E	F	G	H	I	J	K	L	M
10" EICS Economy	144	112,5	325	252	M4	270	270	207	202,3	9,5	6	31,3	64,3
12" EICS Economy	171,5	136,5	377	300	M4	325	270	255	202,3	9,5	6	36,3	64,3
15" EICS Economy	207,5	167,5	452	362	M4	400	270	322,5	202,3	9,5	6	31,3	64,3

*all values in mm

6.2 Power

6.2.1 Main Power input

V (In) = 24VDC +/- 20% with protection against reverse polarity.

Please note that between power Off and On is minimum time frame of 30sec.

6.2.2 External battery

External changeable battery. Voltage depending used STX -Module.

6.2.3 Internal UPS (optional)

Used to backup main power to close and save opened files. Time is depending used STX Modules.

6.3 Specific Memory and I/O Map

6.3.1 Fieldbus controller EC1

Dual port RAM size	8 KByte
Dual port RAM address	see chapter Jumper setting
I/O addresses	see chapter Jumper setting
Interrupt	see chapter Jumper setting

6.4 Fieldbus Interfaces

6.4.1 CANopen Interface

Connector	9 pin SUB-D male connector
Physical interface	ISO 11898 / RS485
max. Subscriber	127
max. Baudrate	1Mbaude
Busarbitration	CSMA/CA
max. Input/Output Buffer	4046/4046
Communication	Master/Slave
Terminating resistor	120 Ohm on both sides

6.4.2 DeviceNet Interface

Connector	CombiCon connector
Physical interface	ISO 11898 / RS485
max. Subscriber	64
max. Baudrate	500 kbaude
Busarbitration	CSMA/CA
max. Input/Output Buffer	unlimited
Communication	Producer/Consumer
Terminating resistor	120 Ohm on both sides

6.4.3 Profibus DP Interface/MPI

Connector	9 pin SUB-D female connector
Physical Interface	EN50170
max. Subscriber	126
max. Baudrate	12Mbaude
Busarbitration	Token

max. Input/Output Buffer 30750/30750
 Communication Master/Slave; Master/Master
 Terminating resistor 220 Ohm on both sides

6.5 Operating systems

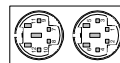
Depending on the installed STX-CPU Module your ECO PANEL is tested and works with the following operating systems. Windows CE.NET, WindowsXP embedded, LINUX.

6.6 Environment Specification

Operation 5 to +45°C
 Storage -20 to +60°C
 Relative humidity 20 to 80% non condensing

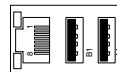
6.7 CONNECTOR PINOUT

6.7.1 PS/2 Keyboard/Mouse Connector



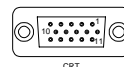
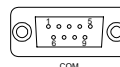
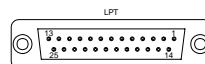
Keyboard				Mouse			
PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name
1	KBDATA#	4	VCC	7	MSDATA#	10	VCC
2	NC	5	KBCLK#	8	NC	11	MSCLK#
3	GND	6	NC	9	GND	12	NC

6.7.2 LAN + Dual USB Combo Connector



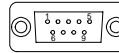
LAN		USB			
PIN	Signal Name	PIN	Signal Name	PIN	Signal Name
1	TX+	A1	VCC	B1	VCC
2	TX-	A2	Data-	B2	Data-
3	RX+	A3	Data+	B3	Data+
4	NC	A4	GND	B4	GND
5	NC				
6	RX-				
7	NC				
8	NC				

6.7.3 LPT, COM1, COM2, VGA Connector



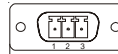
LPT		LPT		COM		CRT	
PIN	Signal Name	PIN	Signal Name	PIN	Signal Name	PIN	Signal Name
1	STROBE#	14	AFD#	1	DCD (Data Carrier Detect)	1	RED
2	DATA0	15	ERROR#	2	RXD (Receive Data)	2	GREEN
3	DATA1	16	INIT#	3	TXD (Transmit Data)	3	BLUE
4	DATA2	17	SLIN#	4	DTR (Data Terminal Ready)	4	NC
5	DATA3	18	GND	5	GND	5	CRTGND
6	DATA4	19	GND	6	DSR (Data Set Ready)	6	CRTGND
7	DATA5	20	GND	7	RTS (Request To Send)	7	CRTGND
8	DATA6	21	GND	8	CTS (Clear To Send)	8	CRTGND
9	DATA7	22	GND	9	RI (Ring Indicator)	9	VCC
10	ACK#	23	GND			10	CRTGND
11	BUSY#	24	GND			11	NC
12	PE	25	GND			12	DDCDAT
13	SELECT					13	HSYNC
						14	VSYNC
						15	DDCCLK

6.7.4 Fieldbus connectors.



CanOpen		Profibus DP /MPI		DeviceNet	
PIN	Signal Name	PIN	Signal Name	PIN	Signal Name
1	n.c	1	n.c	1	ISOGND
2	CANL	2	n.c	2	CANL
3	ISOGND0	3	RXD/TXT-P	3	DRAIN
4	n.c	4	ISODE	4	CANH
5	n.c	5	ISOGND1	5	ISOVCC
6	n.c	6	ISO5V1		
7	CANH	7	n.c		
8	n.c	8	RXT/TXT-M		
9	n.c	9	n.c		

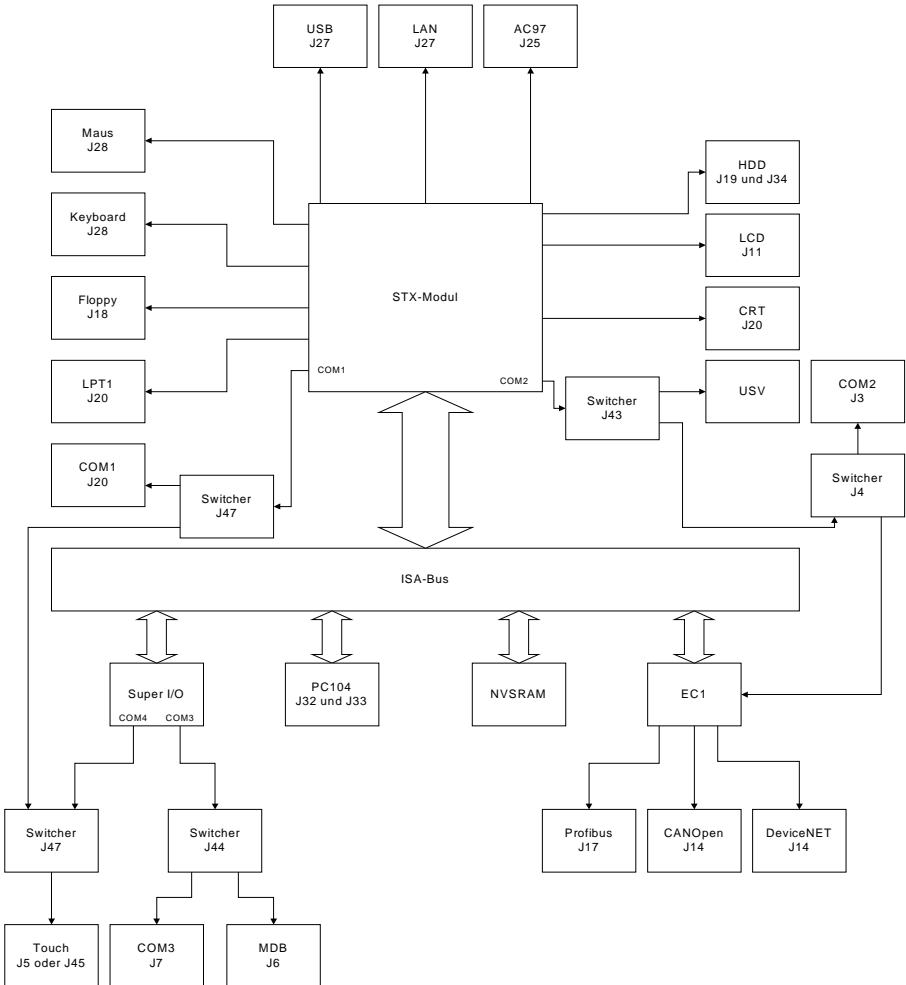
6.7.5 Power Connector



PIN	Signal Name
1	GND
2	NC
3	24V IN

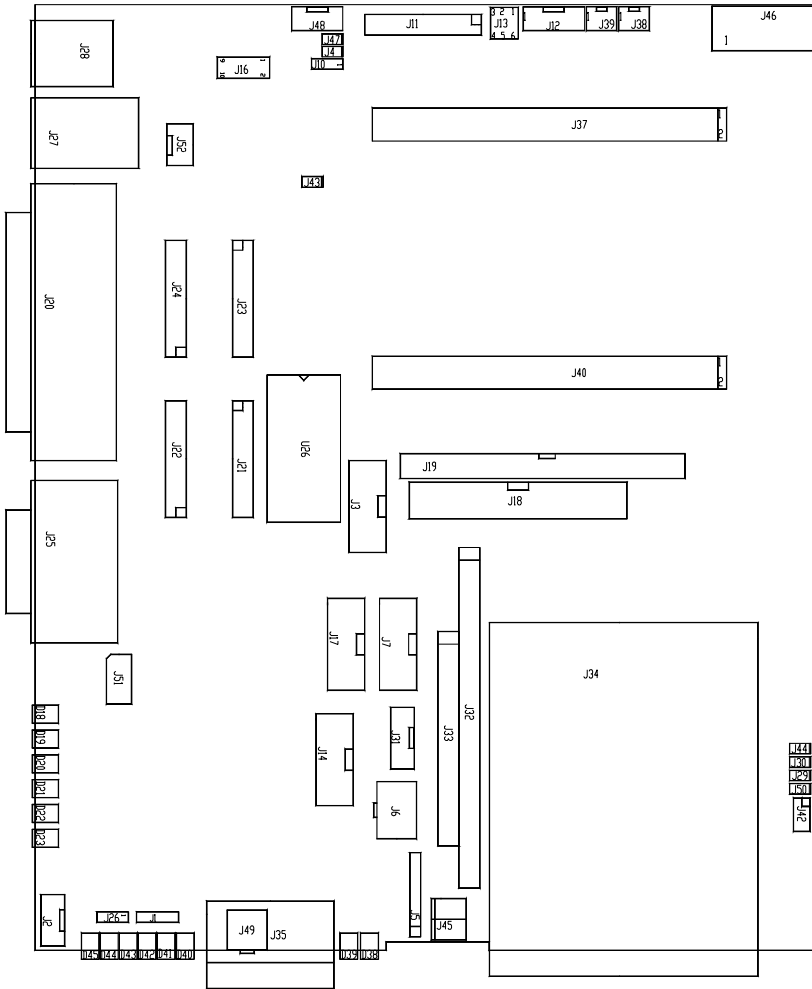
6.8 Block diagram

The diagram displayed below shows the main internal function blocks of the ECO Panel .



App. 6-2

6.9 Internal Baseboard layout



App. 6-3

7. DISPOSAL

In order to dispose your ECO Panel, it must be removed from the plant and fully dismantled. Electronic part such as disc drives and circuit boards must be disposed of in accordance with national electronic scrap regulations.

For details ask your local waste disposal department.

8. APPENDIX

ILLUSTRATION CONTENTS

App. 3-1	Connect external devices	9
App. 3-2	Connect internal devices	11
App. 4-1	Fault report	16
App. 6-1	Dimension	18
App. 6-2	Block diagram	22
App. 6-3	Internal baseboard layout	24