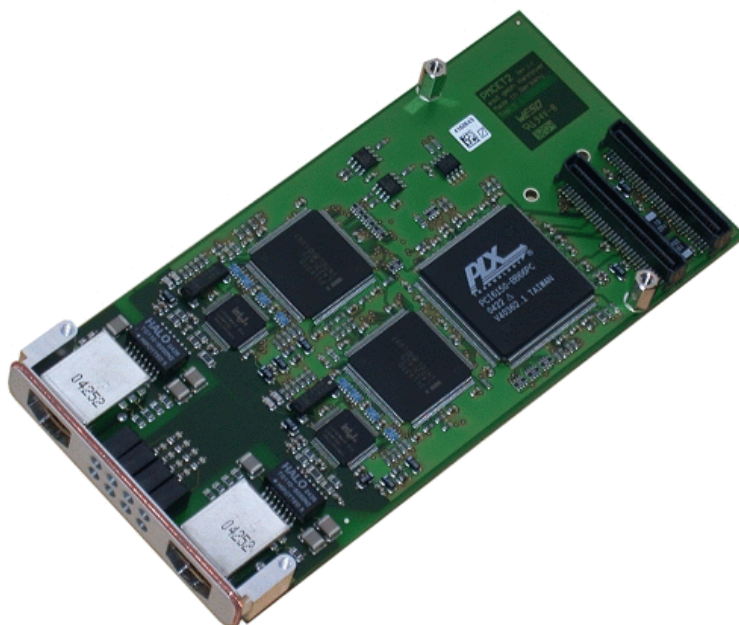


PMC-ETH2

2-Port Fast-Ethernet Adapter



Hardware Manual

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Changes in the chapters

The changes in the document listed below affect changes in the hardware as well as changes in the description of the facts, only.

Chapter	Changes as compared with previous version
-	First issue
-	-

Technical details are subject to change without further notice.

NOTE

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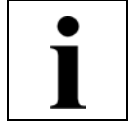
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1. Overview

1.1 Description of the PMC-ETH2 Board

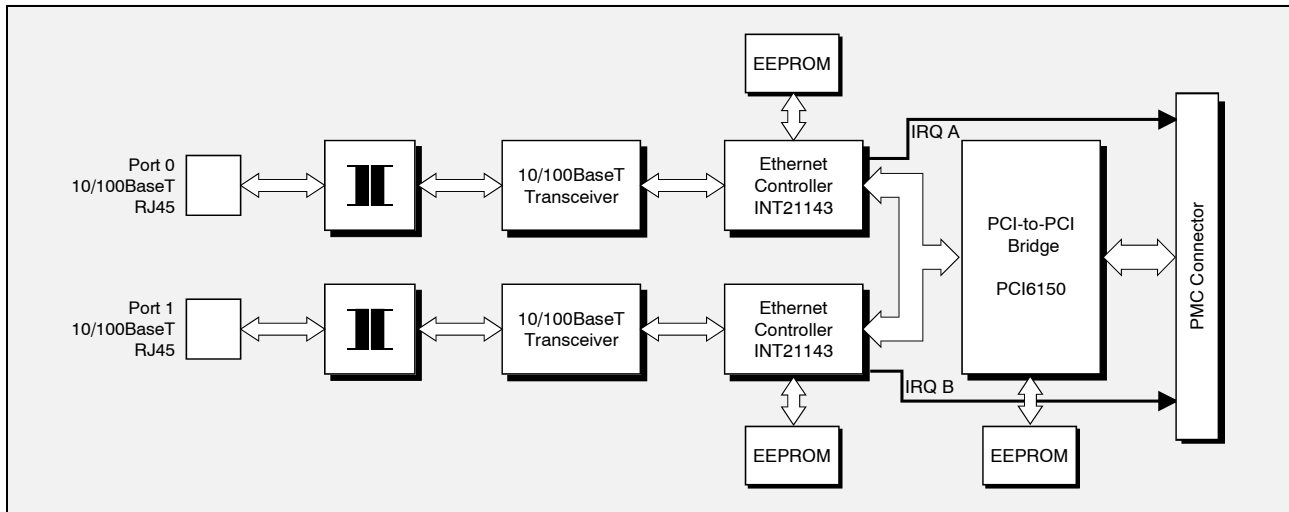


Figure 1: Block circuit diagram

The PMC-ETH2 is a PMC target board in ‘single’ PCI -Mezzanine Card size. The PCI-to-PCI bridge enables the board to run at 33 MHz and 66 MHz PCI-bus clock rate.

The two independent Ethernet interfaces are designed for 10 Mbit/s and 100 Mbit/s networks. The full duplex mode is supported at both speeds. The ports are accessible via RJ45-sockets in the front panel.

The initialization and functional configuration of the PMC-ETH2 module is automatically performed by software. The module operates with standard Ethernet system drivers of Linux and VxWorks.

The LEDs in the front panel indicate activity, link and data rate.



Overview

1.2 PCB View with Connector Assignment

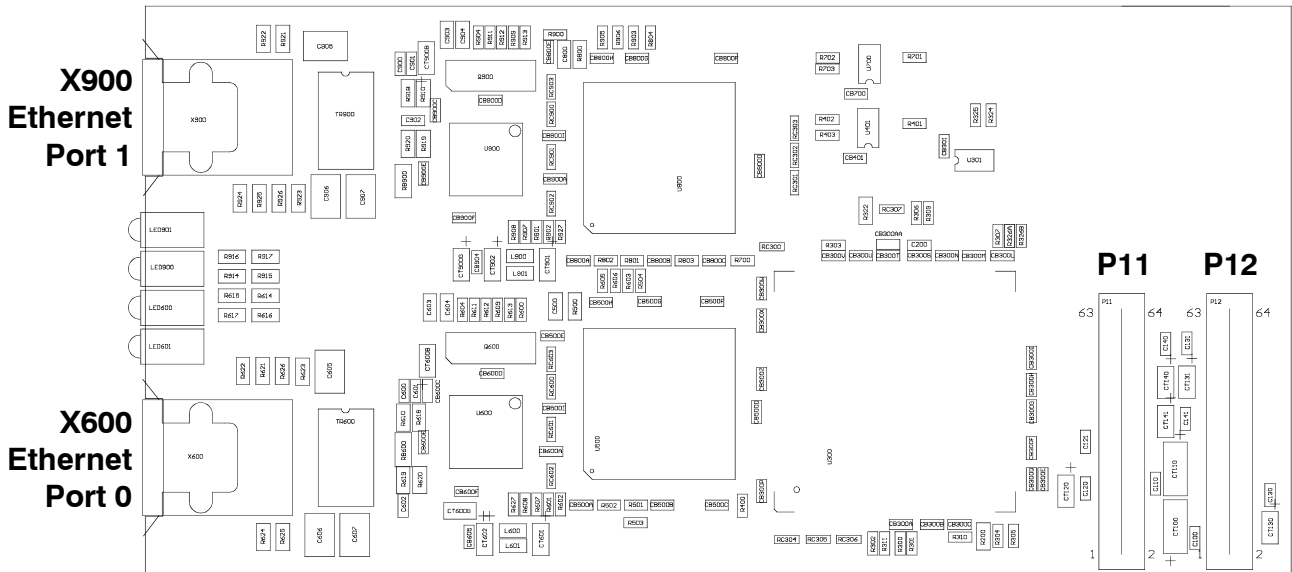
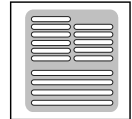


Figure 2: PCB view (PCB side turned to the carrier board) with connector position



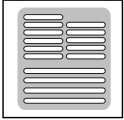
2. Summary of Technical Data

2.1 General Technical Data

Ambient temperature	operating temperature: 0...60 °C storage temperature: -40...+85 °C
Humidity	max. 90 %, non condensing
Power supply	via PMC bus, required voltages: 5 V 400 mA (typ.) <u>and</u> 3.3 V 300 mA (typ.)
UL94 Classification	the PCB fulfills at least the limit values of the UL-Classification UL94V-1 / 105°C, the connector material fulfills at least the UL-Classification UL94V-1.
Connectors	P11 (64-pin PMC connector) - PCI-signals (Pn1/Jn1) P12 (64-pin PMC connector) - PCI-signals (Pn2/Jn2) X600 (8-pin RJ45 socket) - Ethernet (Port 0) X900 (8-pin RJ45 socket) - Ethernet (Port 1)
Dimensions	'Single' PCI -Mezzanine Card format 152 mm x 74 mm, length including front panel
Weight	approx. 82 g

2.2 PMC-Interface

Standards	PCI-to-PCI bridge: according to PCI Local Bus Specification 2.3 Ethernet controller: according to PCI Local Bus Specification 2.1 PMC: IEEE Std. P1386.1-2001
Interrupts	Ethernet Port 0: IRQ A, Port 1: IRQ B
Clock speed, Signalling voltage	33 MHz with 3.3 V or 5 V signalling voltage or 66 MHz with 3.3 V signalling voltage
Power supply voltage	3.3 V <u>and</u> 5 V via PCI-Bus
Connectors	P11, P12 according to IEEE Std. P1386.1-2001



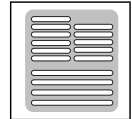
Technical Data

2.3 ETHERNET Interface

Number	2 ports
Bit rate	10 Mbit/s and 100 Mbit/s, both Full Duplex automatic speed configuration
Physical interface	Twisted Pair (IEEE802.3) 10/100BaseT
Electrical isolation	via repeating coil
Connector	8-pin RJ45-socket in the front panel

2.4 Software Support

The module runs with standard Ethernet system drivers of Linux and VxWorks.

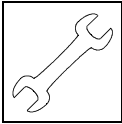


2.5 Order Information

Type	Properties	Order No.
PMC-ETH2	PMC target module with 2x Ethernet on RJ45	V.2086.01
PMC-ETH2-ME	User manual in English 1*) (this manual)	V.2086.21
PMC-ETH2-ENG	Engineering manual in English 2*) Content: circuit diagrams, PCB top overlay drawing, data sheets of significant components	V.2086.25

1*) If module and manual are ordered together, the manual is free of charge.

2*) This manual is liable to charges, please contact our support.



3. Hardware Installation

Because the PMC-ETH2 module can be installed on different carrier boards, the carrier system is referred to as 'computer' in this chapter.

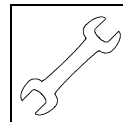
Attention !

Electrostatic discharges may cause damage to electronic components. To avoid this, please perform the following steps *before* you touch the PMC-ETH2 module, in order to discharge the static electricity from your body:

- ▶ Switch off the power of your computer, but leave it connected to the mains.
- ▶ Please touch the metal case of the computer now to discharge yourself.
- ▶ Furthermore, you should prevent your clothes from touching the computer, because your clothes might be electrostatically charged as well.

1. Switch off your computer and all connected peripheral devices (monitor, printer, etc.).
2. Discharge your body as described above.
3. Disconnect the computer from the mains.
If the computer does not have a flexible network cable, but is directly connected to mains, disconnect the power supply via the safety fuse and make sure that the fuse cannot switch on again unintentionally (caution label).
4. Open the case.
5. Remove the carrier board (if already installed) and plug the PMC-ETH2 module carefully on the carrier board. Pay attention that the PMC module is correctly installed on the carrier board.
Fix the module with the screws on the carrier board. Use the four M 2.5 x 6 mm screws which are contained in the product package of the module.
8. Install the carrier board in your system.
9. Close the computer case again.





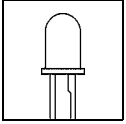
10. Connect the Ethernet.

The first Ethernet interface is connected via the RJ45-socket X600 and the second Ethernet interface is connected via the RJ45 socket X900.

11. Connect the computer to mains again (mains connector or safety fuse).

12. Switch on the computer and the peripheral devices.

13. End of hardware installation.



Front Panel View with LEDs

4. Front Panel View with LEDs

The module is equipped with eight green LEDs in the front panel.

4.1 LEDs in the Front Panel

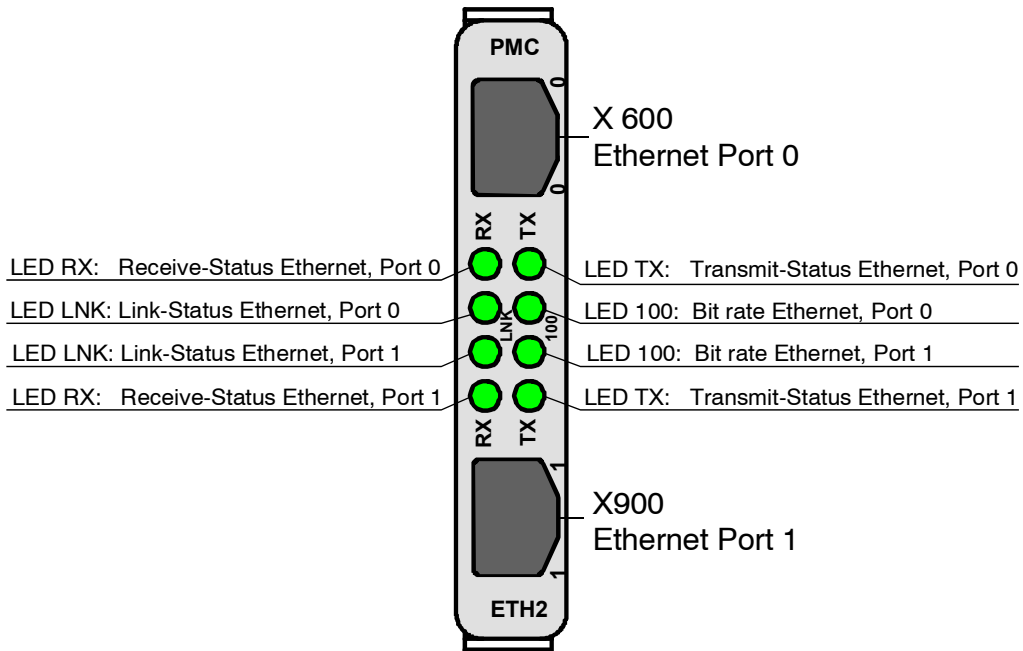
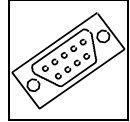


Figure 3: Position of the LEDs

Interface	LED	Name	Description (LED on)
Ethernet Port0	LED04	RX	Receive-Status Ethernet (reception of Ethernet data packages)
	LED03	TX	Transmit-Status Ethernet (transmission of Ethernet data packages)
	LED02	LNK	Link-Status Ethernet (Link to hub, switch, etc.)
	LED01	100	Ethernet bit rate: 100 Mbit/s (LED on) (10 Mbit/s, LED off)
Ethernet Port1	LED12	LNK	Link-Status Ethernet (Link to hub, switch, etc.)
	LED11	100	Ethernet bit rate: 100 Mbit/s (LED on) (10 Mbit/s, LED off)
	LED14	RX	Receive-Status Ethernet (reception of Ethernet data packages)
	LED13	TX	Transmit-Status Ethernet (transmission of Ethernet data packages)



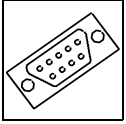
5. Connector Assignment

5.1 Assignment of the 64-pin PMC Connector P11

Signal	Pin	Pin	Signal
n.c.	1	2	-12V
GND	3	4	INTA#
INTB#	5	6	INTC#
PRESENT#	7	8	+5V
INTD#	9	10	n.c.
GND	11	12	n.c.
PCI-CLK	13	14	GND
GND	15	16	GNT#
REQ#	17	18	+5V
V (I/O)	19	20	AD31
AD28	21	22	AD27
AD25	23	24	GND
GND	25	26	C/BE3#
AD22	27	28	AD21
AD19	29	30	+5V
V (I/O)	31	32	AD17
FRAME#	33	34	GND
GND	35	36	IRDY#
DEVSEL#	37	38	+5V
GND	39	40	LOCK#
n.c.	41	42	n.c.
PAR	43	44	GND
V (I/O)	45	46	AD15
AD12	47	48	AD11
AD09	49	50	+5V
GND	51	52	C/BE0#
AD06	53	54	AD05
AD04	55	56	GND
V (I/O)	57	58	AD03
AD02	59	60	AD01
AD00	61	62	+5V
GND	63	64	n.c.

Connector type complies with PMC SPECIFICATION IEEE1386.1-2001

n.c. ... not connected



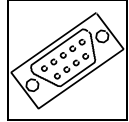
Connector Assignment

5.2 Assignment of the 64-pin PMC Connector P12

Signal	Pin	Pin	Signal
+12 V	1	2	n.c.
n.c.	3	4	TDO
TDI	5	6	GND
GND	7	8	n.c.
n.c.	9	10	n.c.
n.c.	11	12	+3,3V
RST#	13	14	n.c.
+3,3V	15	16	n.c.
n.c.	17	18	GND
AD30	19	20	AD29
GND	21	22	AD26
AD24	23	24	+3,3V
IDSEL	25	26	AD23
+3,3V	27	28	AD20
AD18	29	30	GND
AD16	31	32	C/BE2#
GND	33	34	n.c.
TRDY#	35	36	+3,3V
GND	37	38	STOP#
PERR#	39	40	GND
+3,3V	41	42	SERR#
C/BE1#	43	44	GND
AD14	45	46	AD13
M66EN	47	48	AD10
AD08	49	50	+3,3V
AD07	51	52	n.c.
+3,3V	53	54	n.c.
n.c.	55	56	GND
n.c.	57	58	n.c.
GND	59	60	n.c.
n.c.	61	62	+3,3V
GND	63	64	n.c.

Connector type complies with PMC SPECIFICATION IEEE1386.1-2001

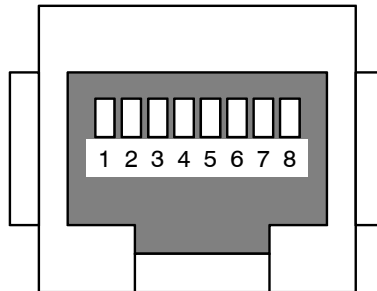
n.c. ... not connected



5.3 Ethernet 10/100BaseT Connection (X600, X900)

Connector type (device): 8-pin low profile RJ45 socket of AMP (AMP-no.: 0-1116062-1)

Pin Position:



Pin Assignment:

Pin	Port 0 X600 Signal	Port 1 X900 Signal
1	TP010 (TxD+)	TP011 (TxD+)
2	TP020 (TxD-)	TP021 (TxD-)
3	TP030 (RxD+)	TP031 (RxD+)
4	TP040 (CT1)	TP041 (CT1)
5	TP050 (CT1)	TP051 (CT1)
6	TP060 (RxD-)	TP061 (RxD-)
7	TP070 (CT0)	TP071 (CT0)
8	TP080 (CT0)	TP081 (CT0)