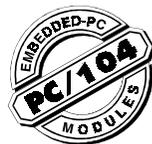


PCM-3660/3661 PC/104 Ethernet Module and 10BASE-2 Transceiver



Introduction

The PCM-3660 is a high-performance 16-bit Ethernet interface module that attaches to the PC/104 connector on your CPU card or PC/104 CPU module. The module automatically senses whether it is connected to an 8-bit or 16-bit PC/104 system. The PCM-3660 fully complies with IEEE 802.3 10 Mbps CSMA/CD standards and is 100% Novell NE2000 compatible.

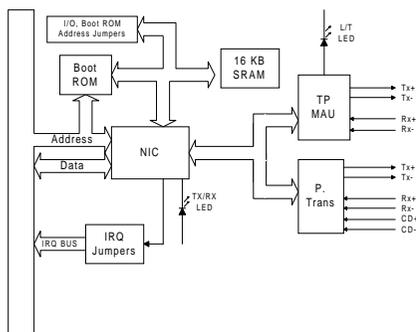
The module includes a built-in 10BASE-T transceiver and RJ-25 connector. An AUI connector supports external transceivers (MAU) for 10BASE-2, 10BASE-5 10BASE-FDRL, etc. Two diagnostic LEDs indicate the operating status of the module and the network.

The PCM-3661 5-V 10BASE-2 transceiver daughterboard connects to the PCM-3660's AUI connector. It supports IEEE 802.3, allowing connections of up to 185 m with thin coaxial cable. The daughterboard requires only 5-V input power. Surge protection circuits prevent damage from high voltages or currents on the cable.

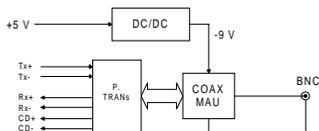
The PCM-3660 comes with drivers for a wide variety of networks and operating systems. An optional boot ROM lets you boot a remote PC/104 station automatically from a server, making hard or floppy disks unnecessary.

Block diagram

PCM-3660 PC/104 Ethernet Module



PCM-3661 Transceiver Daughterboard



Features

PCM-3660 PC/104 Ethernet module

- Conforms to IEEE 802.3 Ethernet standards, CSMA/CD protocol for 10 Mbps data transfer
- Hardware and software compatible with Novell NE2000 adapter
- Automatically detects 8-bit or 16-bit data bus
- Remote boot ROM socket for diskless operation
- Wide range of configurations (jumper selected, settings printed on PCB)
- Built-in 10BASE-T transceiver for unshielded twisted pair cabling up to 100 m
- AUI connector supports external MAUs such as 10BASE-2, 10BASE-5 thick cable or 10BASE-FDRL fiber optic cable
- Two diagnostic LEDs indicate network status
- On-board 16K memory for high-performance multi-package buffer
- Software drivers for most popular network environments

PCM-3661 5-V 10BASE-2 Transceiver Daughterboard

- Conforms to IEEE 802.3 10BASE-2 standard
- Requires only 5-V power (supplied by PCM-3660 board)
- Surge protection circuits resist abnormal voltage and current on cable
- Supports up to 185 m connections on RG-58 thin coaxial cable

PCM-3660 PC-104 Ethernet module

Hardware

- **PC/104 form-factor:** 90 x 96 mm (3.6" x 3.8")
- **I/O address:** 300, 320, 340 or 360H
- **Interrupt levels:** IRQ2, 3, 4, 5, 6, 7, 10, 11 or 12
- **Boot ROM address:** C0000, C8000, D0000 or D8000H
- **Data bus:** 8-bit or 16-bit, auto-sensing
- **Connectors:** 16-bit PC/104 stackthrough connector RJ45 connector for 10BASE-T, 16-pin insulation displacement connector for AUI

Software support

- NetWare 286/386 3.x, 4.x
- Novell Personal NetWare
- Microsoft LAN manager
- DECnet PathWorks
- 3Com 3+Open
- Banyan VINES
- IBM LAN
- FTP PC/TCP
- Windows for Workgroups
- Programs compatible with ODI, NDIS and packet drivers

Standards

- PC/104 8-bit and 16-bit compatible
- Built in IEEE 802.3 10 Mbps CSMA/CD 10BASE-T transceiver
- 10BASE-2, 10BASE-5 and 10 BASE-FOIRL by external transceiver

General

- **Power:** +5 V 400 mA max.
- **Temperature:** 0 C to 70°C (operating)
-15 to 80°C (storage)
- **Humidity:** 10% to 90% (operating)
10% to 90% (storage)

PCM-3661 5-V 10BASE-2 transceiver

Standard: IEEE 802.3 10BASE-2 medium

Connectors:

- 16-pin insulation displacement connector for AUI connection to PCM-3660
- BNC connector for T-connection to 10BASE-2 thin cable

Dimensions: 50 mm x 62 mm (2" x 2.5")

Power: +5 V @ 130 mA max.

Temperature: 0 to 70°C (operating), -15 to 80°C (storage)

Humidity: 10% to 90% (operating), 10% to 90% (storage)

Initial inspection

Your package should contain the following items. If they are missing, damaged or fail to meet specifications, contact your dealer/sales representative immediately.

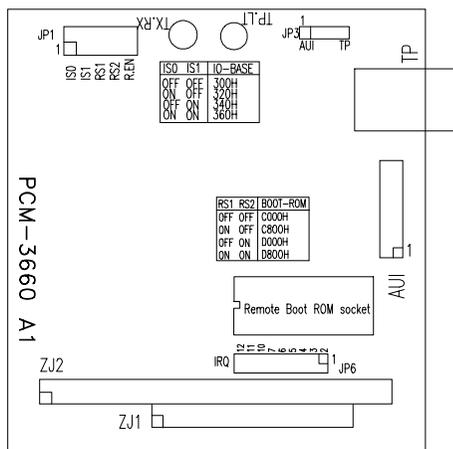
PCM-3660 PC/104 Ethernet Module

- This manual
- PCM-3660 board
- 3.5", 1.44 MB diskette with drivers

PCM-3661 5-V 10BASE-2 Transceiver Daughterboard (optional)

- PCM-3661 board
- 30-cm AUI cable with two 20-pin connectors
- T-connector

Locating components



Configuration

I/O base address (JP1 - ISO/IS1)

Set the ISO and IS1 pins on jumper JP1 according to the following chart

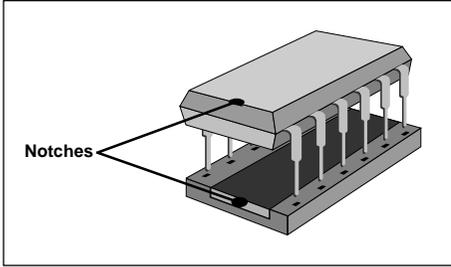
Module base address — JP1

ISO	IS1	Module base address
*OFF	OFF	300H
ON	OFF	320H
OFF	ON	340H
ON	ON	360H

OFF = pins open
ON = pins closed
* = default setting

Remote boot ROM

A boot ROM allows you to boot the workstation directly from the server, avoiding the need for local hard or floppy disks. Install the boot ROM as shown below. Make sure that you align the notch on the ROM chip with the notch on the socket.



Short the R.EN pins on JP1 to enable the boot ROM. The ROM will take up 8 KB of memory.

ROM base address (JP1 - RS1/RS2)

Jumpers RS1 and RS2 on JP1 select the ROM's base address. See the following chart

Boot ROM address — JP1

RS1	RS2	ROM base address
OFF	OFF	C000H
* ON	OFF	C800H
OFF	ON	D000H
ON	ON	D800H

OFF = pins open
ON = pins closed
* = default setting

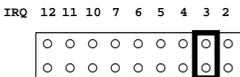
You will need to configure your server as a boot server and generate a boot image file. Refer to your operating system's manuals for more information.

Internal/external transceiver (JP3)

If you use the module's built-in 10BASE-T transceiver, set JP3 to TP. If you use the PCM-3661 daughterboard or another external MAU, set JP3 to AU1.

Interrupt level (JP6)

Jumper JP6 sets the interrupt level. The default is IRQ3. See the following figure:



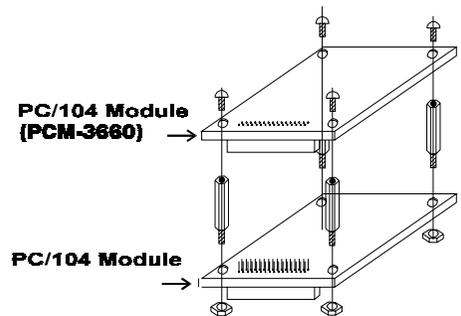
Hardware installation

The following instructions tell how to install the PCM-3660 module on a CPU card. The process is similar with PC/104 CPU modules—see the figure at the bottom of the page. Make sure that you have properly configured the module's jumpers and attached a boot ROM if necessary.

Warning! *TURN OFF your PC power supply whenever you install or remove the PCM-3660 or connect and disconnect cables.*

1. Turn the PC's power off. Turn the power off to any peripheral devices such as printers and monitors.
2. Disconnect the power cord and any other cables from the back of the computer.
3. Remove the system unit cover (see the user's guide for your chassis if necessary).
4. Remove the CPU card from the chassis (if necessary) to gain access to the card's PC/104 connector.
5. Screw the brass spacer (included with the module) into the threaded hole on the CPU card. Do not tighten too much, or the threads may be damaged.
6. Carefully align the connector pins of the PCM-3660 (Z11 and Z12) with the PC/104 connector. Slide the module into the connector. The module pins may not slide all the way into the connector; do not push too hard or the module may be damaged. If the CPU card has only an 8-bit bus, make sure that the pins on connector Z11 do not touch anything.
7. Secure the module to the CPU card to the threaded hole in the CPU card using the included screw.
8. Attach the flat-cable connector from the PCM-3661 10BASE-2 transceiver daughterboard (or other external MAU) to the module's AU1 connector. Attach the connector so that the red or blue wire on the flat cable matches pin 1 (printed on the board).
9. Reinstall the CPU card and replace the system unit cover. Reconnect the cables you removed in step 2. Turn the power on.

This completes the hardware installation. Install the software drivers according to the instructions for your operating system.



Connecting two PC/104 modules

Ethernet connection specifications

The following table shows the network specifications for each Ethernet type:

Ethernet type	Data transfer rate	Topology	Cable type	Segment length
10BASE-2	10 Mbps	Bus	50 Ohm Ethernet thin (RG-58)	185 m (607 ft.) max.
10BASE-5	10 Mbps	Bus	50 Ohm Ethernet thick (RG-11)	500 m (1640 ft.) max.
10BASE-T	10 Mbps	Star	100 Ohm unshielded twisted pair	100 m (328 ft.) max.

Pin assignments

16-pin AUI connector

GND	1	2	CD-
CD+	3	4	TX-
TX+	5	6	GND
GND	7	8	RX-
RX+	9	10	AUI+1.2V
GND	11	12	GND
	13	14	
	15	16	AUI+5V

RJ-45 connector

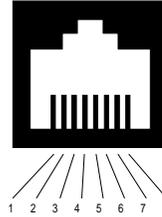
Pin	Signal	Description
1	TD+	Data transmission positive
2	TD-	Data transmission negative
3	RD+	Data reception positive
6	RD-	Data reception negative

LED indicators

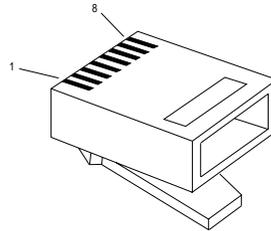
The module's two LED indicators show the status of the communication link and traffic.

LED	On	Flashing	Off
TP.LT	Link OK	Traffic on TP	Link failure
TX.RX	-	Traffic	No traffic

RJ-45 Jack



RJ-45 Plug



RJ-45 Pin Assignments