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Port Interface Module (PIM) Installation Guide

Port Interface Modules (*PIMs*) are single port modules for a segment or backbone connection of any cabling media type. *PIMs* are for use in IMC Networks' modular *LANrepeaters* and *EtherWay* Hubs. Each PIM requires one slot in a *LANrepeater* chassis or in the additional slot featured on the rear of an *EtherWay Hub Module* (HM) and can be installed in any combination. The following *PIMs* are available:

BNC PIM – one BNC connector for a 10Base-2 thin coaxial segment

TP PIM – one RJ-45 connector for a 10Base-T UTP/STP link segment

FO PIM – one pair STII connectors for a 10Base-FL fiber optic link segment

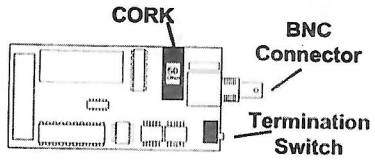
FO-SingleMode PIM – one pair STII connectors for a single-mode fiber optic link segment

AUI/12v PIM – one AUI slide-lock 15-pin female connector for a 10Base-5 DTE to transceiver connection

WS PIM – one AUI 15-pin male connector for a 10Base-5 DCE to workstation connection

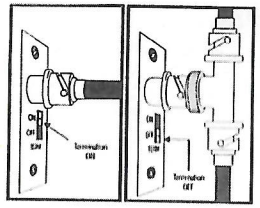
About BNC PIMs

BNC PIMs include one BNC connector for a 10Base-2 50 Ohm or, optionally, 75 or 93 Ohm thin coaxial segment, a 50 Ohm Cabling Option Resistor Kit (*CORK*) and a Termination Switch.



BNC Port Termination

The Termination Switch next to the BNC connector allows a thin coaxial segment to be terminated at the hub/repeater without an additional 'T' connector and terminator.



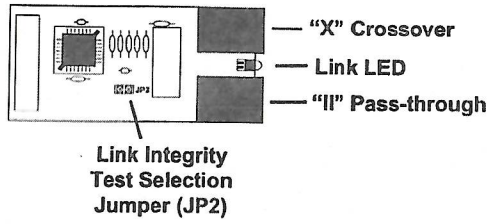
If a thin Ethernet segment is to be terminated at the unit, attach the cable directly to the BNC connector and move the Termination Switch to the ON (enabled) position.

If the unit is attached to a midpoint of a thin Ethernet segment, attach a 'T' connector to the BNC port. The Termination Switch *must* be set to the OFF (disabled) position (factory default) when this configuration is used.

Note: Thin Ethernet segments must be properly terminated at both ends and grounded at one end (refer to *Coaxial Ethernet Cabling* in the *LANrepeater/x Installation Manual* or *EtherWay Installation Manual*). If the BNC port is not terminated correctly, the ERROR light on the front panel will glow.

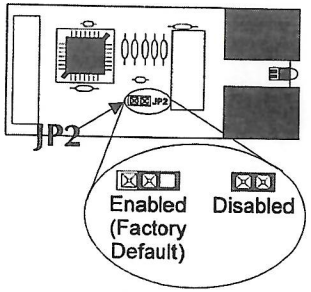
About TP PIMs

TP PIMs include two RJ-45 connectors for a single 10Base-T shielded or unshielded twisted pair link segment. One connector is a crossover connector (labeled "X") for connection to a network interface card and one is a pass-through connector (labeled "II") for connection to a hub/repeater. **Note:** Only one RJ-45 connector or the other may be used.



Link Integrity Test Selection

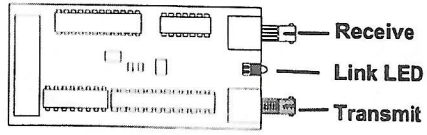
To *enable* Link Integrity Test (the factory default setting), move the jumper shunt at position JP2 on the *TP PIM*. The Link Integrity Test jumper block is comprised of two pins. With the shunt removed (or on only one pin), Link Integrity Test is enabled, ensuring compatibility with the 10Base-T specifications. In this mode, the green LINK LED will glow only when a twisted pair link has been established with an operational MAU.



With the jumper shunt on both pins, Link Integrity Test is disabled. In this mode, the green LINK LED will glow, even if there is no connection.

About FO PIMs

FO PIMs with STII connectors and *FO PIMs* with SC or SMA connectors are functionally the same. The only difference is the connector design.



Each *FO PIM* features two connectors, one for transmit and one for receive, for a single fiber optic link segment. A *LANrepeater* can be connected to any other 10Base-FL device (hub/repeater, network interface card or *FO MAU*) by running a fiber optic cable from the transmit connector on one device to the receive connector on the other device, and vice versa.

Once the unit is connected to another 10Base-FL device, and both devices are powered on, the TRANSMIT and RECEIVE LEDs on the front panel of the unit should flicker during normal LAN operation and the LINK LED on the *FO PIM* should light. The LINK LED acts as a link integrity check and low light indicator. If it does not light, or goes out, a physical problem with the fiber optic link segment is indicated.

About FO-SingleMode PIMs

FO-SingleMode PIMs are functionally the same as multi-mode *FO PIMs*. The only difference is the type of fiber optic cabling used. Single-mode cabling allows the signal to be transmitted parallel (in a straight line). This maintains the integrity of the signal for longer distances than multi-mode.

With normal single-mode operation, the fiber optic cable distance may be from 10 to 20km. But, due to the timing restrictions of Ethernet, the maximum distance with a single-mode *FO PIM* is about 4 to 5 kilometers. Variances depend on the number of segments being used and the number of hubs/repeaters at either end of the single-mode link segment.

About AUI and WS PIMs

IMC Networks offers two *PIMs* for AUI connections, *AUI PIM* and *WS PIM*. *AUI PIM* includes one DB-15 female connector with slide lock for a single AUI (DTE) to transceiver connection.

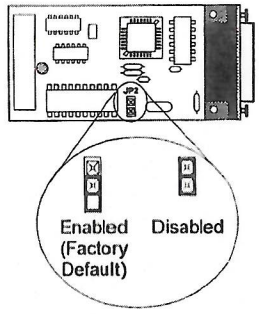
WS PIMs are for direct connection to a workstation (DCE) using AUI cable. *WS PIM* includes one DB-15 male connector and is primarily used for connection of a cluster of workstations via AUI cable. WS PIMs also include an SQE Heartbeat jumper.

Setting SQE Heartbeat

The jumper block at position JP2 on *WS PIMs* is for SQE Heartbeat enable/disable.

With the jumper shunt removed or on only one pin, SQE is *enabled* (factory default configuration), for direct connection to a workstation.

The only time SQE needs to be disabled is when the AUI cable connects the *WS PIM* to a hub/repeater device. To *disable* SQE, position the jumper shunt over both pins.

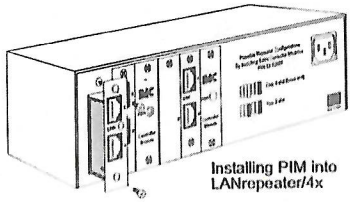


Note: If SQE is not disabled, the receiving hub/repeater device will pick up the SQE signal as a short packet, causing a jam.

Installing PIMs

The only adjustments that may be necessary before inserting *PIMs* are to the Link Integrity Test jumper (see *Link Integrity Test Selection*)on the *TP PIM* , to BNC Port Termination (see *BNC Port Termination)* and coaxial cable impedance selection (contact IMC Networks for details)on the *BNC PIM* and and to the SQE jumper (see *SQE Heartbeat*)on the *WS PIM.*

When installing *PIMs* in a *LANrepeater,* a minimum of two *PIMs* is required to have a functional repeater. The maximum number of *PIMs* that may be installed depends on the unit being configured — for example, *LANrepeater/8x* can be configured with 2 to 8 *PIMs.*

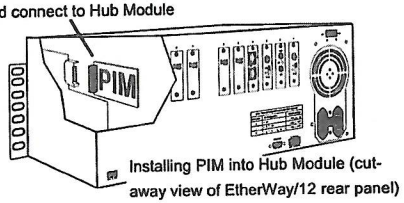


Installing PIM into LANrepeater/4x

Note: If no *PIMs* are installed in an *EtherWay HM, HM* operation is not effected.

Note: The *EtherWay 3-PIM HM* features three slots (two to the front, one to the rear) for installing from 1 to 3 *PIMs* in any combination.

PIMs plug into slots in the rear of *LANrepeaters* and *EtherWay* hubs and are shipped with brackets to secure the *PIM* to the unit. To install a *PIM,* simply unscrew and remove the blank bracket covering any unused *PIM* slot, insert the *PIM* until it fits securely in its socket, mount the supplied *PIM* bracket to the unit with the screws that were previously removed, then connect the cable.



Installing PIM into Hub Module (cut-away view of EtherWay/12 rear panel)

Cabling Configurations

If connecting to thick or thin coax, the unit can be placed anywhere on a network segment. If connecting to twisted pair or fiber optic, the unit can be placed only at the end of a segment.

PIMs may be installed in any combination. For example, if a network running on twisted pair needs to be extended to another building, a fiber optic segment may be added using a *FO PIM.* The flexibility of *LANrepeater* and *EtherWay* hubs is limited only by the IEEE 802.3 configuration and distance specifications for each cabling type.

Once the unit is properly configured and the appropriate cables attached to it, plug the power supply into a reliable, filtered power source, then connect it to the unit.

Both TRANSMIT and RECEIVE LEDs on the front panel should flicker during normal LAN operation.

For additional information on IEEE 802.3 hub/repeater and cabling configuration specifications, refer to *Network Installation Guidelines* in the *LANrepeater/x Installation Manual* or *EtherWay Installation Manual.*

Technical Support

TEL: (714) 724-1070 — 6:00 A.M. to 5:00 P.M. Monday through Friday, Pacific Standard/Daylight Time (PST/PDT)

e-mail: techsupport@imcnetworks.com

WEB: http://www.imcnetworks.com

BBS: (714) 724-0930 — the BBS uses a Telebit T3000 modem with V.32 V.42bis support for 300, 1200, 2400, 4800 and 9600 baud access and up to 38,400 baud file transfer speed with V.42bis data compression. The modem settings are 8 data bits, 1 stop bit and no parity at up to 9600 baud.

Federal Communications Commission Radio Frequency Interference Statement

This equipment has been tested and found to comply with the limits for a Class A computing device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which chassis the user will be required to correct the interference at his own expense.

Any changes or modifications not expressly approved by the manufacturer could void the user's authority to operate the equipment.

The use of non-shielded I/O cables may not guarantee compliance with FCC RFI limits.

Safety Certifications

UL: Listed to UL1950 and CSA 22.2, No. 950, Safety of Information Technology Equipment, Including Electrical Business Equipment.

TUV/GS: Certified to EN 60 950, Safety of Information Technology Equipment, Including Electrical Business Equipment.

CE: The products described herein comply with the Council Directive on Electromagnetic Compatibility (89/336/EEC) and the Council Directive on Electrical Equipment Designed for use within Certain Voltage Limits (73/23/EEC). For further details, contact IMC Networks.

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