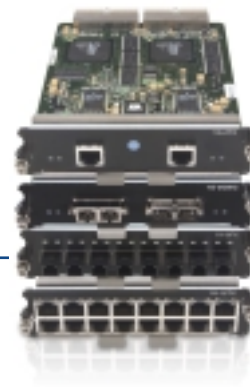


- **Flexible, high-performance connectivity with wire-speed switching and routing on every port**
- **Complete range of Ethernet technology and media options that fully integrate into Matrix EI WS and GWS switches**
- **Supports all Matrix EI multilayer features and functionality to protect existing investments**



Expansion Modules for Matrix EI Workgroup Switch and Gigabit Workgroup Switch

The Matrix EI WS (48 10/100 ports, RJ45) and the Matrix EI GWS (6 10/100/1000 ports, RJ45) both offer three expansion slots, which accept a variety of copper and fiber Fast Ethernet and Gigabit Ethernet expansion modules. All features and functionality are supported on all ports, and any combination of expansion modules may be installed in the base system.

The flexibility of the Matrix EI mixed fixed-modular platform allows network administrators to match their network media preference easily, whether fiber Fast Ethernet, high-density copper 10/100, or triple-speed 10/100/1000. The Matrix EI switches also support a variety of fiber Gigabit Ethernet expansion modules.

Matrix EI Expansion Modules Fast Ethernet

IH-16TX—This expansion module provides 16 10/100 ports via RJ45 connectors at distances up to 100 meters.

IH-8FX—This expansion module provides 8 100Base-FX ports via MTRJ connectors allowing for multimode fiber optic connections (MMF). Distances can go up to 2 kilometers. MTRJ connectors are small form factor connectors for maximum port density in the smallest possible space.

Gigabit Ethernet

IG-2TX—This expansion module provides 2 10/100/1000 ports via RJ45 connectors at distances up to 100 meters.

IG-2GBIC—This expansion module provides 2 Gigabit Ethernet ports via 2 Gigabit Ethernet interface card (GBIC) slots.

IG-2MGBIC—2 Gigabit Ethernet ports via 2 Mini Gigabit Ethernet interface card (Mini-GBIC) slots

The following GBIC modules are supported:

- **GPIM-01**—Gigabit Ethernet port interface module with one 1000Base-SX MMF port via SC connector at distances up to 550 meters
- **GPIM-08**—Gigabit Ethernet port interface module with one 1000Base-SX SMF port via SC connector at distances up to 70 kilometers
- **GPIM-09**—Gigabit Ethernet port interface module with one 1000Base-SX/LX MMF/SMF port via SC connector at distances up to 10 kilometers

Mini-GBICs have a smaller form factor than classic GBICs, providing the ability to populate more Gigabit Ethernet ports. To meet each customer's unique needs, Enterasys offers LC and MTRJ types of connectors. The following Mini-GBIC modules are supported:

- **MGBIC-LC01**—Mini-Gigabit Ethernet port interface card with one 1000Base-SX MMF port via LC connector at distances up to 550 meters
- **MGBIC-LC09**—Mini-Gigabit Ethernet port interface card with one 1000Base-SX/LX MMF/SMF port via LC connector at distances up to 10 kilometers
- **MGBIC-MT01**—Mini-Gigabit Ethernet port interface card with one 1000Base-SX MMF port via MTRJ connector at distances up to 550 meters

- **Flexible connectivity to fit any environment**
 - Wire-speed switching and routing on every expansion port
 - Easy to install and user configurable
- **Choose from several technology and media options**
 - Fully integrated into Matrix EI WS and GWS switches
 - Provides Fast Ethernet over copper or fiber connectivity
 - Provides Gigabit Ethernet over copper or fiber connectivity
- **Investment protection for the long run**
 - All Matrix EI multilayer features and functionality supported on each expansion module
 - All Matrix EI Layer 3 routing functionality supported on each expansion module
 - Any combination of modules can be installed in the base system

SPECIFICATIONS

TECHNICAL SPECIFICATIONS

GIGABIT ETHERNET SPECIFICATIONS

The following specifications for the Gigabit Ethernet GBICs and Mini-GBICs meet or exceed the IEEE 802.3z standard specifications.

GPIM-01/MGBIC-LC01/MGBIC-MT01 (1000BASE-SX) OPTICAL SPECIFICATIONS

62.5 μ m MMF

Transmit Power (minimum): -9.5 dBm

Receive Sensitivity: -17 dBm

Link Power Budget: 7.5 dBm

50 μ m MMF

Transmit Power (minimum): -9.5 dBm

Receive Sensitivity: -17 dBm

Link Power Budget: 7.5 dBm

OPERATING RANGE

62.5 μ m MMF

Modal Bandwidth @ 50nm: 160 MHz/km

Range: 2-220 meters

62.5 μ m MMF

Modal Bandwidth @ 50nm: 200 MHz/km

Range: 2-275 meters

50 μ m MMF

Modal Bandwidth @ 50nm: 400 MHz/km

Range: 2-500

50 μ m MMF

Modal Bandwidth @ 50nm: 500 MHz/km

Range: 2-550

GPIM-08 (1000BASE-SX) OPTICAL SPECIFICATIONS

10 μ m SMF

Transmit Power (minimum): 0 dBm

Receive Sensitivity: -22 dBm

Link Power Budget: 22 dB

OPERATING RANGE

10 μ m SMF

1550 nm Wavelength: 70 km

GPIM-09/MGBIC-LC09 (1000BASE-SX/LX) OPTICAL SPECIFICATIONS

62.5 μ m MMF

Transmit Power (minimum): -11.5 dBm

Receive Sensitivity: -20 dBm

Link Power Budget: 8.5 dBm

50 μ m MMF

Transmit Power (minimum): -11.5 dBm

Receive Sensitivity: -20 dBm

Link Power Budget: 8.5 dBm

10 μ m MMF

Transmit Power (minimum): -9.5 dBm

Receive Sensitivity: -20 dBm

Link Power Budget: 10.5 dBm

OPERATING RANGE

62.5 μ m MMF

Modal Bandwidth @ 1300 nm: 500 MHz/km

Range: 2-550 meters*

50 μ m MMF

Modal Bandwidth @ 1300 nm: 400 MHz/km

Range: 2-550 meters*

50 μ m MMF

Modal Bandwidth @ 1300 nm: 500 MHz/km

Range: 2-550 meters*

10 μ m SMF

Modal Bandwidth @ 1300 nm: N/A

Range: 2-10,000 meters*

*Launch Mode Conditioning Cable must be used to obtain the distance of 550m (MMF) for the GPIM-09 and MGBIC-LC09.

PHYSICAL SPECIFICATIONS

ETHERNET EXPANSION MODULES

Dimensions

2.06 cm (0.81") H x 13.41 cm (5.28") W x 17.75 D cm (0.45")

Approximate Weight (Unit)

0.45 kg (1.0 lb)

GBICS

Dimensions

1.2 cm (0.47") H x 3.4 cm (1.34") W x 6.5 cm (2.56") D

MINI-GBICS

Dimensions

0.86 cm (0.337") H x 1.39 cm (0.547") W x 5.35 cm (2.108") D

SPECIFICATIONS

ENVIRONMENTAL SPECIFICATIONS

Operating Temperature

5°C to 40°C (41°F to 104°F)

Storage Temperature

-30°C to 73°C (-22°F to 164°F)

Operating Humidity

5% to 90% (non-condensing)

REGULATORY COMPLIANCE

The expansion modules, GBICs and Mini-GBICs meet the following safety and electromagnetic compatibility (EMC) requirements:

Safety

UL 1950, CSA C22.2 No. 950, 73/23/EEC, EN 60950, IEC 950, EN 60825, 21 CFR 1040.10, 21 CFR 1040.11

Electromagnetic Compatibility (EMC)

FCC Part 15, CSA C108.8, 89/336/EEC, EN 55022, EN 61000-3-2, EN 61000-3-3, EN 55024, AS/NZS 3548, VCCI V-3

ORDERING INFORMATION

MATRIX EI EXPANSION MODULES

IH-16TX	16 10/100 ports, RJ45 connectors
IH-8FX	8 100Base-FX MMF ports, MTRJ connectors
IG-2TX	2 10/100/1000 ports, RJ45 connectors
IG-2GBIC	2 Gigabit Ethernet ports via GBICs
IG-2MGBIC	2 Gigabit Ethernet ports via Mini-GBICs

GIGABIT ETHERNET PORT INTERFACE CARDS (GBICs)

GPIM-01	Gigabit port interface module (GPIM), 1000Base-SX MMF, SC connector
GPIM-08	Long-haul Gigabit port interface module (GPIM), 1000Base-LX/LH (70Km) SMF, SC connector
GPIM-09	Gigabit port interface module (GPIM), 1000Base-SX/LX MMF/SMF, SC connector

MINI-GIGABIT ETHERNET PORT INTERFACE CARDS (MINI-GBICs)

MGBIC-LC01	Mini-Gigabit Ethernet port interface card, 1000Base-SX MMF, LC connector
MGBIC-LC09	Long-haul Mini-Gigabit Ethernet port interface card, 1000Base-SX/LX MMF/SMF, LC connector
MGBIC-MT01	Mini-Gigabit Ethernet port interface card, 1000Base-SX MMF, MTRJ connector

WARRANTY

As a customer-centric company, Enterasys is committed to providing the best possible workmanship and design in our product set. In the event that one of our products fails due to a defect in one of these factors, we have developed a comprehensive warranty that protects you and provides a simple way to get your products repaired as soon as possible.

SERVICE AND SUPPORT

Enterasys Networks understands that superior service and support is a critical component for your Business-Driven Network. The Enterasys **SupportNet Portfolio**—a suite of innovative and flexible service and support offerings—completes the Enterasys Business-Driven Network solution. SupportNet offers all the post-implementation support services you need—online, onsite or over the phone—to maintain your network availability and performance.

ADDITIONAL INFORMATION

For additional information on the Matrix EI, please refer to the following documents:

- Matrix Matrix EI Workgroup Switch Data Sheet <http://www.enterasys.com/products/switching/IH582-5I/>
- Matrix EI Gigabit Workgroup Switch Data Sheet <http://www.enterasys.com/products/switching/IG582-09/>

CONTACT INFORMATION

Contact Enterasys Sales at: **978-684-1000** or enterasys.com/corporate/contact/contact-sales.html

Corporate Headquarters:
50 Minuteman Road
Andover, MA 01810

enterasys.com

Matrix is a trademarks or registered trademark of Enterasys Networks. All other products or services mentioned are identified by the trademarks or service marks of their respective companies or organizations. NOTE: Enterasys Networks reserves the right to change specifications without notice. Please contact your representative to confirm current specifications.

All contents are copyright © 2003 Enterasys Networks, Inc. All rights reserved.
Lit. #9013222 3/03