

SIEMENS

Catalog

SIMATIC NET

Networking Components

RUGGEDCOM Modules

For MX5000

Edition

05/2020

<https://www.siemens.com>

SIEMENS

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Networking Components RUGGEDCOM Modules

Catalog

For MX5000

05/2020
C79000-G8976-1332-06

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Warning Notice System

This manual contains notices you have to observe in order to ensure your personal safety, as well as to prevent damage to property. The notices referring to your personal safety are highlighted in the manual by a safety alert symbol, notices referring only to property damage have no safety alert symbol. These notices shown below are graded according to the degree of danger.

DANGER

indicates that death or severe personal injury will result if proper precautions are not taken.

WARNING

indicates that death or severe personal injury may result if proper precautions are not taken.

CAUTION

indicates that minor personal injury can result if proper precautions are not taken.

NOTICE

indicates that property damage can result if proper precautions are not taken.

If more than one degree of danger is present, the warning notice representing the highest degree of danger will be used. A notice warning of injury to persons with a safety alert symbol may also include a warning relating to property damage.

Qualified Personnel

The product/system described in this documentation may be operated only by **personnel qualified** for the specific task in accordance with the relevant documentation, in particular its warning notices and safety instructions. Qualified personnel are those who, based on their training and experience, are capable of identifying risks and avoiding potential hazards when working with these products/systems.

Proper Use of Siemens Products

Note the following:

WARNING

Siemens products may only be used for the applications described in the catalog and in the relevant technical documentation. If products and components from other manufacturers are used, these must be recommended or approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to ensure that the products operate safely and without any problems. The permissible ambient conditions must be complied with. The information in the relevant documentation must be observed.

Trademarks

All names identified by ® are registered trademarks of Siemens AG. The remaining trademarks in this publication may be trademarks whose use by third parties for their own purposes could violate the rights of the owner.

Disclaimer of Liability

We have reviewed the contents of this publication to ensure consistency with the hardware and software described. Since variance cannot be precluded entirely, we cannot guarantee full consistency. However, the information in this publication is reviewed regularly and any necessary corrections are included in subsequent editions.

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Preface

This document details RUGGEDCOM power and line modules available for use with devices in the RUGGEDCOM MX5000 series of multi-service routers and switches.

It is intended for use by network technical support personnel responsible for the installation, commissioning and maintenance of routers and switches. It is also recommended for use by network and system planners, system programmers, and line technicians.

Related Documents

Other documents that may be of interest include:

Document Title	Link
RUGGEDCOM MX5000 Installation Manual	https://support.industry.siemens.com/cs/ww/en/view/88885213

Accessing Documentation

The latest user documentation for RUGGEDCOM MX5000 is available online at <https://support.industry.siemens.com> . To request or inquire about a user document, contact Siemens Customer Support.

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The registered trademark Linux® is used pursuant to a sublicense from LMI, the exclusive licensee of Linus Torvalds, owner of the mark on a world-wide basis.

Other designations in this manual might be trademarks whose use by third parties for their own purposes would infringe the rights of the owner.

Warranty

Refer to the License Agreement for the applicable warranty terms and conditions, if any.

For warranty details, visit <https://www.siemens.com> or contact a Siemens customer service representative.

Training

Siemens offers a wide range of educational services ranging from in-house training of standard courses on networking, Ethernet switches and routers, to on-site customized courses tailored to the customer's needs, experience and application.

Siemens' Educational Services team thrives on providing our customers with the essential practical skills to make sure users have the right knowledge and expertise to understand the various technologies associated with critical communications network infrastructure technologies.

Siemens' unique mix of IT/Telecommunications expertise combined with domain knowledge in the utility, transportation and industrial markets, allows Siemens to provide training specific to the customer's application.

For more information about training services and course availability, visit <https://www.siemens.com> or contact a Siemens Sales representative.

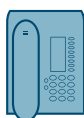
Customer Support

Customer support is available 24 hours, 7 days a week for all Siemens customers. For technical support or general information, contact Siemens Customer Support through any of the following methods:



Online

Visit <http://www.siemens.com/automation/support-request> to submit a Support Request (SR) or check on the status of an existing SR.



Telephone

Call a local hotline center to submit a Support Request (SR). To locate a local hotline center, visit https://w3.siemens.com/aspa_app/-?lang=en.



Mobile App

Install the Industry Online Support app by Siemens AG on any Android, Apple iOS or Windows mobile device and be able to:

- Access Siemens' extensive library of support documentation, including FAQs and manuals
- Submit SRs or check on the status of an existing SR
- Contact a local Siemens representative from Sales, Technical Support, Training, etc.
- Ask questions or share knowledge with fellow Siemens customers and the support community

Contacting Siemens

Address	Siemens AG Industry Sector
---------	-------------------------------

	300 Applewood Crescent Concord, Ontario Canada, L4K 5C7
Telephone	Toll-free: 1 888 264 0006 Tel: +1 905 856 5288 Fax: +1 905 856 1995
E-Mail	ruggedcom.info.i-ia@siemens.com
Web	https://www.siemens.com

Ordering RUGGEDCOM Products

Use the RUGGEDCOM -Selector to select and configure RUGGEDCOM products and accessories. Once selected, an item(s) can be transferred to the Siemens Industry Mall and ordered.



RUGGEDCOM-Selector

<http://www.siemens.com/ruggedcom-selector>.

For more information, refer to <https://www.siemens.com>.

Introduction

This catalog details the various power and line modules available for the RUGGEDCOM MX5000. Modules allow network designers to quickly and cost effectively adjust their communications infrastructure to the needs of the facilities and the network.

It is intended to be used as a supplement to the *Installation Manual* for the device. For a list of related Installation Manuals, refer to ["Related Documents \(Page v\)"](#).

NOTICE

Only qualified personnel should be allowed to install and work on this equipment. Qualified persons in the sense of the safety-related notices in this manual are defined as persons who are authorized to commission, to ground, and to tag circuits, equipment, and systems in accordance with established safety practices and standards.

1.1 Available Modules

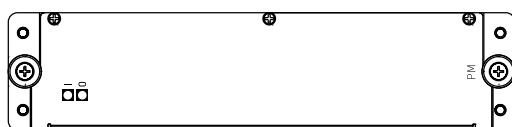
The following is a list of all power and line modules available for use in the RUGGED-COM MX5000.

Note

All modules are conformal coated.

Power Supply Modules

RUGGEDCOM MX5000PN PS MHIF



Specifications

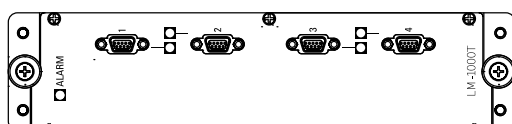
Input Range: 88 to 300 VDC or 85 to 264 VAC
Terminal Type: Terminal located on chassis

Article Numbers

6GK6050-OML16-0AA1

Copper Ethernet Modules

RUGGEDCOM MX5000PN LM M4CG02



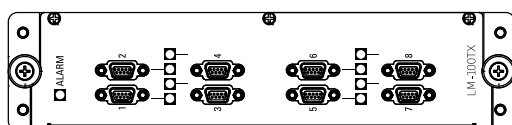
Specifications

Ports: 4
Speed: 1000 Mbps
Interface: TX
Port Type: Micro-D
Distance: 100 m (328.1 ft)

Article Numbers

6GK6050-OML20-0FD1

RUGGEDCOM MX5000PN LM M8TX02



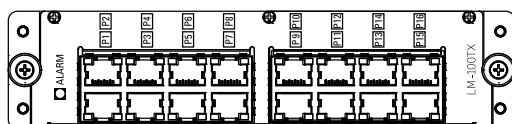
Specifications

Ports: 8
Speed: 100 Mbps
Interface: TX
Port Type: Micro-D
Distance: 100 m (328.1 ft)

Article Numbers

6GK6050-OML20-0ND1

RUGGEDCOM MX5000PN LM M16TX01



Specifications

Ports: 16
Speed: 100 Mbps
Interface: TX
Port Type: RJ45
Distance: 100 m (328.1 ft)

Article Numbers

6GK6050-OML20-0NB1

Fiber Optic Ethernet Modules

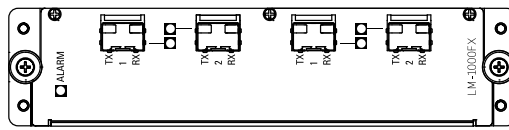
RUGGEDCOM MX5000PN LM M4FG01

Specifications

Mode: MM
Speed: 1000 Mbps

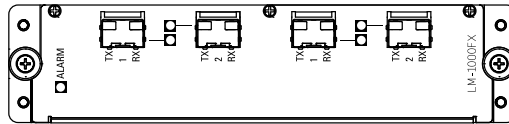
Article Numbers

6GK6050-OML20-0BK1



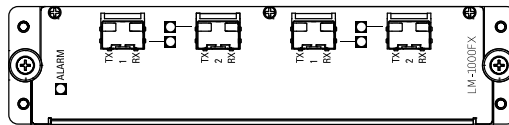
Interface: SX
Wavelength: 850 nm
Ports: 4
Port Type: LC
Distance: 500 m (1640 ft)

RUGGEDCOM MX5000PN LM M4FG03



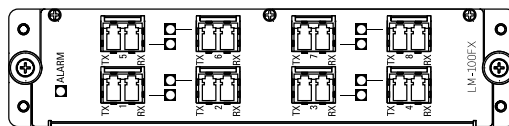
Specifications	Article Numbers
Mode: Single	6GK6050-0ML20-OCR1
Speed: 1000 Mbps	
Interface: LX	
Wavelength: 1310 nm	
Ports: 4	
Port Type: LC	
Distance: 10 km (6 mi)	

RUGGEDCOM MX5000PN LM M4FG05



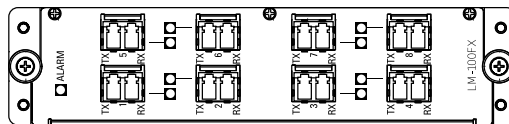
Specifications	Article Numbers
Mode: Single	6GK6050-0ML20-OSL1
Speed: 1000 Mbps	
Interface: LX	
Wavelength: 1310 nm	
Ports: 4	
Port Type: LC	
Distance: 25 km (15 mi)	

RUGGEDCOM MX5000PN LM M8FX06



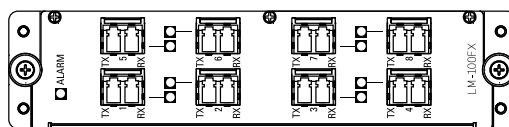
Specifications	Article Numbers
Mode: Single	6GK6050-0ML20-0CD1
Speed: 100 Mbps	
Interface: FX	
Wavelength: 1310 nm	
Ports: 8	
Port Type: LC	
Distance: 20 km (12 mi)	

RUGGEDCOM MX5000PN LM M8FX08

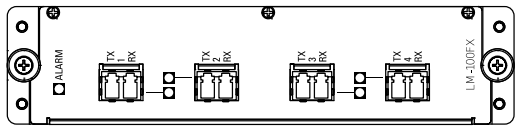


Specifications	Article Numbers
Mode: Single	6GK6050-0ML20-0CF1
Speed: 100 Mbps	
Interface: FX	
Wavelength: 1310 nm	
Ports: 8	
Port Type: LC	
Distance: 50 km (31 mi)	

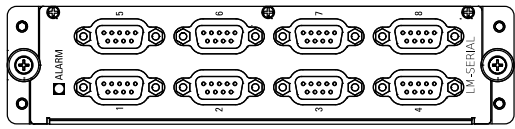
RUGGEDCOM MX5000PN LM M8FX11



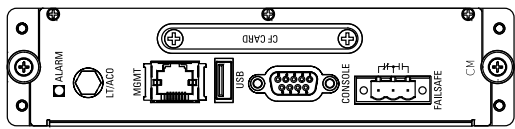
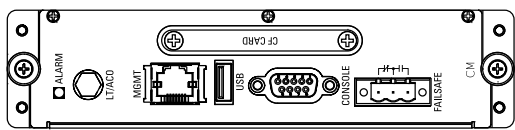
Specifications	Article Numbers
Mode: MM	6GK6050-0ML20-0BD1
Speed: 100 Mbps	
Interface: FX	
Wavelength: 1300 nm	

	Ports: 8 Port Type: LC Distance: 2 km (1.2 mi)	
	Specifications Mode: MM Speed: 100 Mbps Interface: FX Wavelength: 1300 nm	Article Numbers 6GK6050-0ML20-0BH1
	Ports: 4 Port Type: LC Distance: 2 km (1.2 mi)	

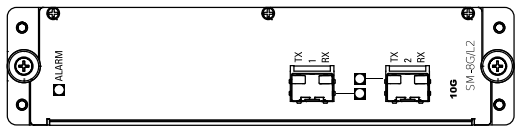
Serial Modules

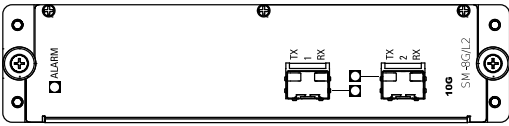
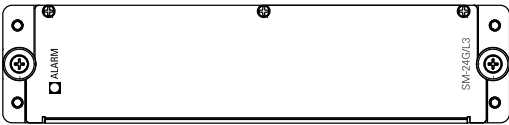
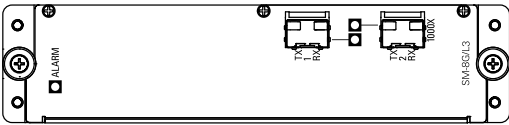
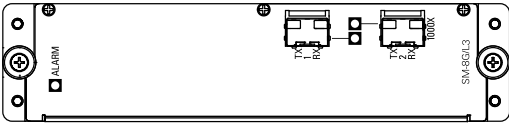
	Specifications Speed: RS232/RS422/ RS485 Ports: 8 Port Type: RJ45	Article Numbers 6GK6050-0ML20-0KB1
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Control Modules

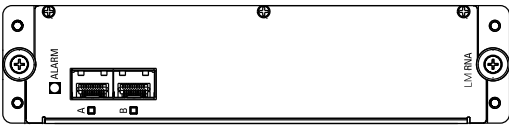
	Specifications Layer 3 Standard Edition, Layer 3 Hardware	Article Numbers 6GK6050-0ML30-0BA1
	Specifications Layer 3 Security Edition, Layer 3 Hardware	Article Numbers 6GK6050-0ML30-0CA1

Switch Modules

	Specifications Mode: MM Speed: 1000 Mbps Interface: SX Wavelength: 850 nm Ports: 2 Port Type: LC	Article Numbers 6GK6050-0ML40-0PA1
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	Distance: 500 m (1640 ft)	
RUGGEDCOM MX5000PN MSM36	Specifications Mode: SM Speed: 1000 Mbps Interface: LX Wavelength: 1310 nm Ports: 2 Port Type: LC Distance: 10 km (6 mi)	Article Numbers 6GK6050-0ML40-0RA1
		
RUGGEDCOM MX5000PN MSM61	Specifications Network Layer: Layer 3	Article Numbers 6GK6050-0ML40-0VA1
		
RUGGEDCOM MX5000PN MSM69	Specifications SFP Sockets: 2 Speed: 10 Gbps Network Layer: Layer 3	Article Numbers 6GK6050-0ML40-0WA1
		
RUGGEDCOM MX5000PN MSM70	Specifications Ports: 2 Speed: 10 Gbps Network Layer: Layer 3	Article Numbers 6GK6050-0ML40-0XA1
		

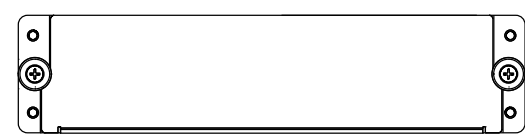
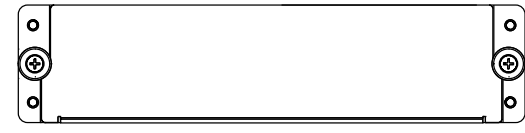
Network Redundancy Modules

RUGGEDCOM MX5000PN LM MPRP	Specifications Ports: 2 Speed: 1000 Mbps Interface: LX Port Type: RJ45 Distance: 10 km (6.2 mi) Protocol: PRP	Article Numbers 6GK6050-0ML20-0PR1
		

Blank Modules

RUGGEDCOM MX5000PN PS XX	Specifications —	Article Numbers 6GK6050-0ML10-0AA1
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1.1 Available Modules

	Specifications	Article Numbers
	—	6GK6050-0ML20-0AA1

1.2 Installing/Removing Modules

Always refer to the *Installation Manual* for the RUGGEDCOM MX5000 for instructions on how to install or remove a power or line module. The *Installation Manual* cites important, chassis-specific safety warnings that should be followed to avoid damage to the module and/or device.

Additional installation/removal instructions may also be provided in this Catalog for select modules. Make sure to review all information provided for a module before installing or removing it.

1.3 Dimensions

Power and line modules conform to the following dimensions:

Note

All dimensions are in millimeters (mm).

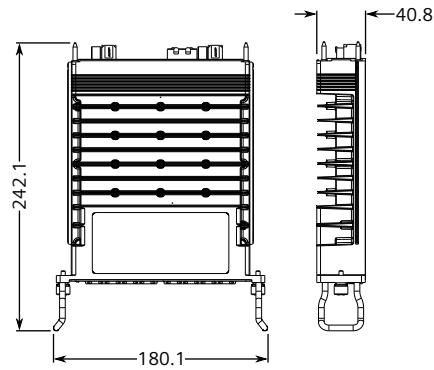


Figure 1.1 Power and Line Module Dimensions

Power Supply Modules

The following power supply modules are available for the RUGGEDCOM MX5000.

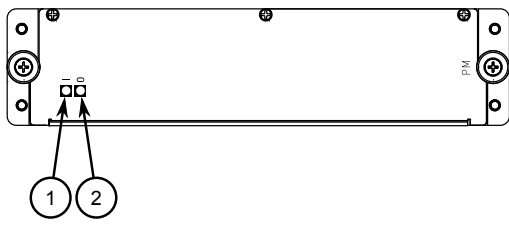
2.1 RUGGEDCOM MX5000PN PS MHIF

The RUGGEDCOM MX5000 PN PS MHIF power supply module provides high VDC or VAC power to the RUGGEDCOM MX5000 and features a failsafe relay to protect against critical error conditions. The module accepts either AC or DC power inputs from an external power supply.

 **NOTICE**

The required power input for the RUGGEDCOM MX5000 PN PS MHIF is located on the chassis. For more information about the RUGGEDCOM MX5000 chassis options, refer to Article Number 6GK6050-0MB00-0AG1 and 6GK6050-0MB00-0AG2.

LEDs indicate when the module is receiving and supplying power.



① I LED

② O LED

LED	State	Description
O	Green	The module is supplying power
I	Green	The module is receiving power

Figure 2.1 RUGGEDCOM MX5000PN PS MHIF

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Characteristics		Environment	
Input Range	88 to 300 VDC or 85 to 264 VAC	Ingress Protection	IP30
Internal Fuse Rating	6.3 A, 250 V(T) ^a	Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Maximum Power Consumption ^b	110 W ^c	Operating Relative Humidity	5 to 95% (non-condensing)
Insulation	2800 VDC for 1 minute	Storage Temperature	-40 to 85 °C (-40 to 185 °F)

^a (T) denotes time-delay fuse. Internal fuse is not user-replaceable.
^b Power consumption varies based on the device configuration.
^c Rating at 85 °C (185 °F) ambient temperature at worst-case load.

Ordering Information

Description	88-300VDC or 85 264VAC, supports terminal block on front.
Article Numbers	6GK6050-0ML16-0AA1

Copper Ethernet Modules

The following copper Ethernet modules are available for the RUGGEDCOM MX5000.

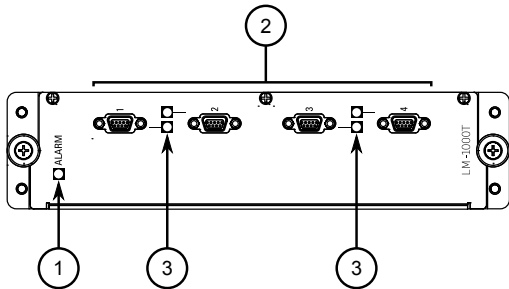
3.1 RUGGEDCOM MX5000PN LM M4CG02

The RUGGEDCOM MX5000PN LM M4CG02 module features four 10/100/1000Base-TX Micro-D ports.

 **NOTICE**

This module is only compatible with [RUGGEDCOM MX5000PN SM 61](#), [RUGGEDCOM MX5000PN SM 69](#), and [RUGGEDCOM MX5000PN SM 70](#).

Each port features a dedicated LED that indicates its link/activity state.



State	Description
Green (Solid)	Link established
Green (Blinking)	Activity
Off	No link detected

① Alarm LED

② Micro-D Ports

③ Port LEDs

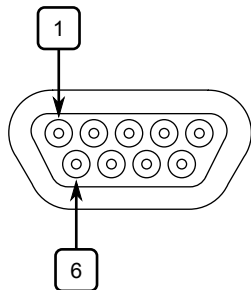
Figure 3.1 RUGGEDCOM MX5000PN LM M4CG02

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Pin-Out Description

The following are the pin-out descriptions for the Micro-D ports:



Pin	10/100Base-TX	1000Base-TX
1	TX+	B+
2	Reserved (Do Not Connect)	D+
3	Reserved (Do Not Connect)	
4	Reserved (Do Not Connect)	C+
5	RX+	A+
6	TX-	B-
7	Reserved (Do Not Connect)	D-

Figure 3.2 Micro-D 10/100Base-TX Port Pin Configuration

Pin	10/100Base-TX	1000Base-TX
8	Reserved (Do Not Connect)	C-
9	RX-	A-

Technical Specifications

Characteristics

Speed	10/100/1000 Mbps
Interface	TX
Connector	Micro-D
Cable Type	> CAT-5
Duplex	FDX/HDX
Wiring Standard	TIA/EIA T568A/B
Nominal Distance	100 m (328.1 ft)
Isolation	1.5 kV

Environment

Ingress Protection	IP40
Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	5 to 95% (non-condensing)
Storage Temperature	-40 to 85 °C (-40 to 185 °F)

Certification

This module has been certified to comply with the requirements of the relevant standards.

Category	Standard
EMC	FCC Part 15 (Class A), EN 55022 (CISPR22 Class A), IEC 61850-3, IEEE 1613
Safety	UL 60950-1, CSA C22.2 No. 60950-7
Hazardous Location (CSA/UL)	Class I, Div 2
Emitted Interference	EN 61000-6-4 (Class A)
Interference Immunity	EN 61000-6-2
Railway	EN 50155, EN 50124-1

Ordering Information

Description	4 x 10/100/1000TX Micro-D
Article Numbers	6GK6050-0ML20-0FD1

3.2 RUGGEDCOM MX5000PN LM M8TX02

The RUGGEDCOM MX5000PN LM M8TX02 module features eight 10/100Base-TX Micro-D ports.

Each port features a dedicated LED that indicates its link/activity state.

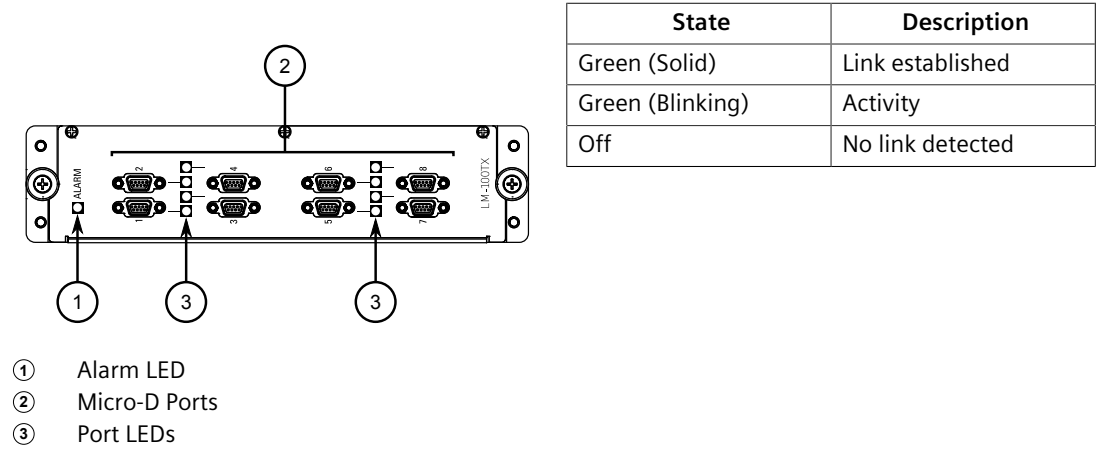


Figure 3.3 RUGGEDCOM MX5000PN LM M8TX02

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Pin-Out Description

The following are the pin-out descriptions for the Micro-D ports:

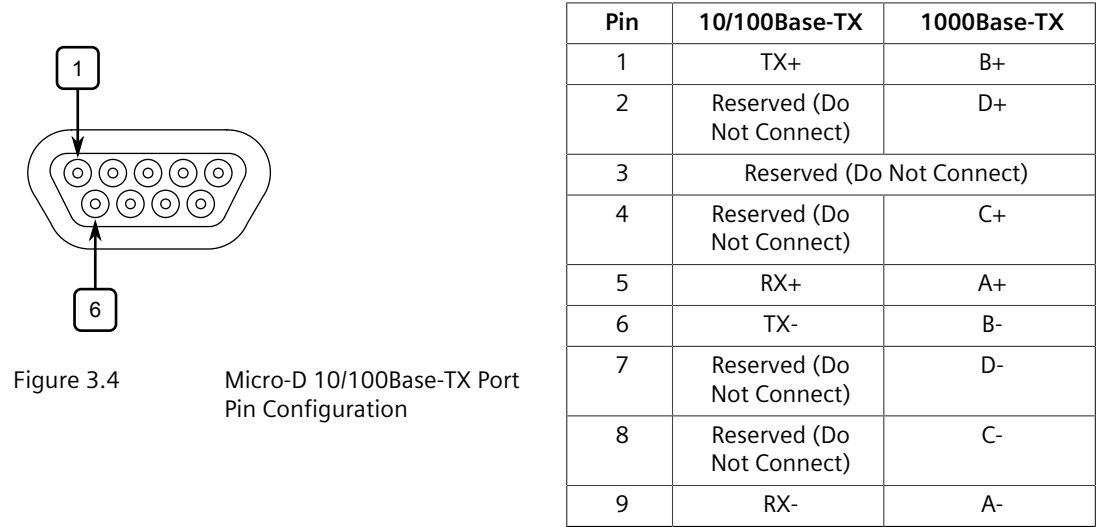


Figure 3.4 Micro-D 10/100Base-TX Port Pin Configuration

Technical Specifications

Characteristics

Speed	10/100 Mbps
Interface	TX
Connector	Micro-D
Duplex	FDX/HDX
Cable Type	> CAT-5
Wiring Standard	TIA/EIA T568A/B
Nominal Distance	100 m (328.1 ft)
Isolation	1.5 kV

Environment

Ingress Protection	IP40
Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	5 to 95% (non-condensing)
Storage Temperature	-40 to 85 °C (-40 to 185 °F)

Certification

This module has been certified to comply with the requirements of the relevant standards.

Category	Standard
EMC	FCC Part 15 (Class A), EN 55022 (CISPR22 Class A), IEC 61850-3, IEEE 1613
Safety	UL 60950-1, CSA C22.2 No. 60950-7
Hazardous Location (CSA/UL)	Class I, Div 2
Emitted Interference	EN 61000-6-4 (Class A)
Interference Immunity	EN 61000-6-2
Railway	EN 50155, EN 50124-1

Ordering Information

Description	8 x 10/100Base-TX Micro-D
Article Numbers	6GK6050-0ML20-0ND1

3.3 RUGGEDCOM MX5000PN LM M16TX01

The RUGGEDCOM MX5000PN LM M16TX01 module features sixteen 10/100 Base-TX RJ45 ports.

The module features two dedicated LEDs to indicate link/activity state.

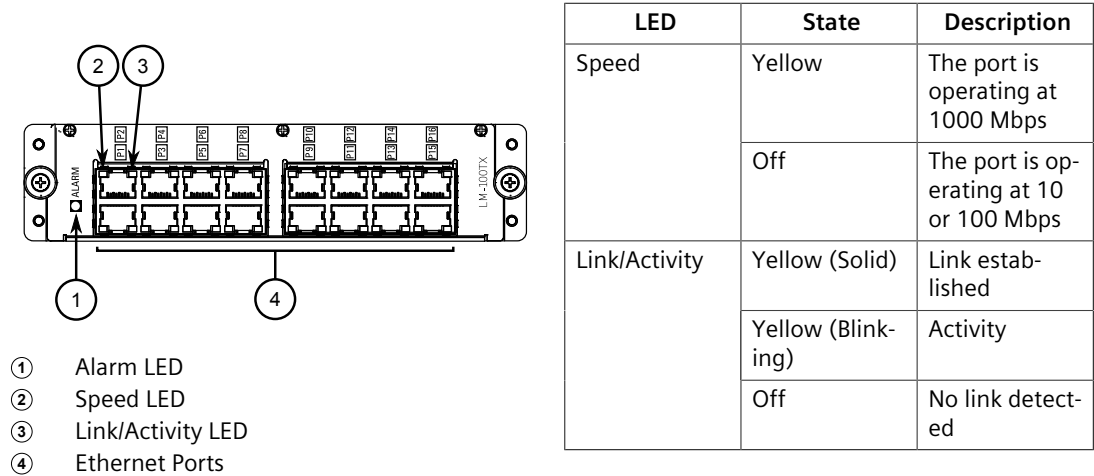


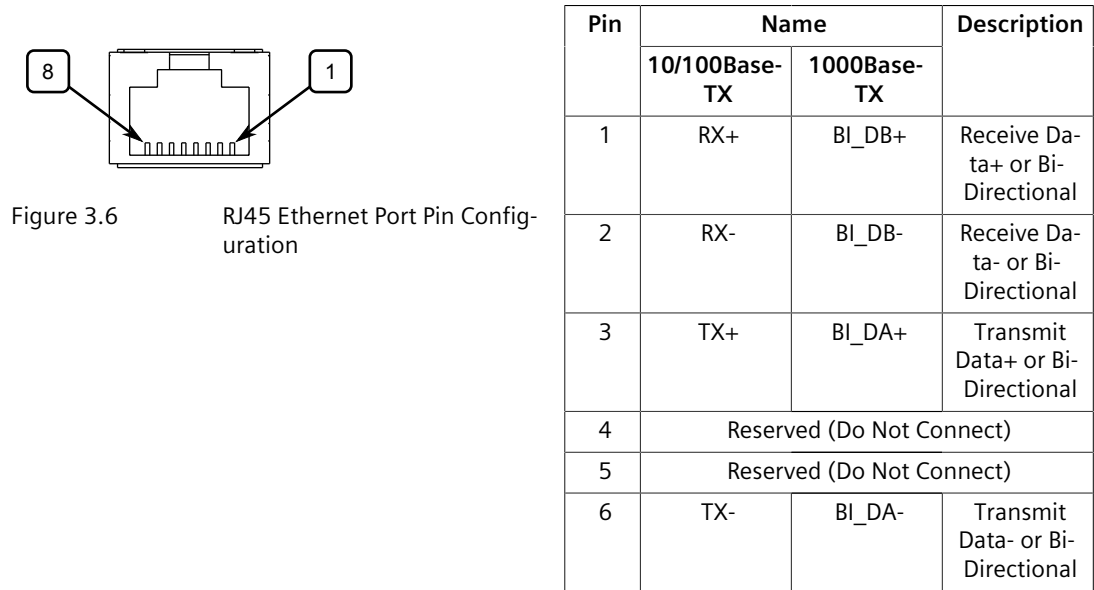
Figure 3.5 RUGGEDCOM MX5000PN LM M16TX01

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Pin-Out Description

The following are the pin-out descriptions for the RJ45 ports:



Pin	Name		Description
	10/100Base-TX	1000Base-TX	
7	Reserved (Do Not Connect)		
8	Reserved (Do Not Connect)		

Technical Specifications

Characteristics

Speed	10/100 Mbps
Interface	TX
Connector	RJ45
Cable Type	> CAT-5
Duplex	FDX/HDX
Wiring Standard	TIA/EIA T568A/B
Nominal Distance	100 m (328.1 ft)
Isolation	1.5 kV

Environment

Ingress Protection	IP40
Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	5 to 95% (non-condensing)
Storage Temperature	-40 to 85 °C (-40 to 185 °F)

Certification

This module has been certified to comply with the requirements of the relevant standards.

Category	Standard
EMC	FCC Part 15 (Class A), EN 55022 (CISPR22 Class A), IEC 61850-3, IEEE 1613
Safety	UL 60950-1, CSA C22.2 No. 60950-7
Hazardous Location (CSA/UL)	Class I, Div 2
Emitted Interference	EN 61000-6-4 (Class A)
Interference Immunity	EN 61000-6-2
Railway	EN 50155, EN 50124-1

Ordering Information

Description	16 x 10/100Base-TX RJ45
Article Numbers	6GK6050-OML20-ONB1

Fiber Optic Ethernet Modules

The following fiber optic Ethernet modules are available for the RUGGEDCOM MX5000.

4.1 RUGGEDCOM MX5000PN LM M4FG01

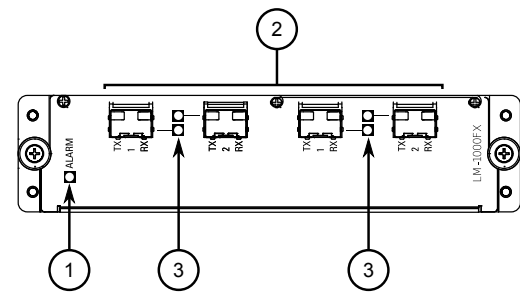
The RUGGEDCOM MX5000PN LM M4FG01 module features four 1000Base-SX fiber optic Ethernet ports.

**NOTICE**

This module is only compatible with [RUGGEDCOM MX5000PN SM 61](#), [RUGGEDCOM MX5000PN SM 69](#), and [RUGGEDCOM MX5000PN SM 70](#).

Note
When connecting cables, make sure the Transmit (Tx) and Receive (Rx) connections of each port are properly connected and matched to establish a proper link.

Each port set (transmit/receive) features a dedicated LED that indicates its link/activity state.



① Alarm LED
② Ethernet Ports
③ Port LEDs

State	Description
Green (Solid)	Link established
Green (Blinking)	Activity
Off	No link detected

Figure 4.1 RUGGEDCOM MX5000PN LM M4FG01

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Optical Characteristics

Transmit Power	-9 to -2.5 dBm
Receiver Sensitivity	-20 dBm
Receiver Saturation	0 dBm
Power Budget	11 dB

Environment

Ingress Protection	IP40
--------------------	------

Cabling

Speed	1 Gbps
Mode	MM (Multi-Mode)
Interface	SX
Connector	LC
Cable Type	62.5/125 μm
Wavelength ^a	850 nm

Operating Temperature	-40 to 85 °C (-40 to 185 °F)	Nominal Distance^a	0.5 km (0.3 mi)
Operating Relative Humidity	5 to 95% (non-condensing)		
Storage Temperature	-40 to 85 °C (-40 to 185 °F)		

^a Typical.

Certification

This module has been certified to comply with the requirements of the relevant standards.

Category	Standard
EMC	FCC Part 15 (Class A), EN 55022 (CISPR22 Class A), IEC 61850-3, IEEE 1613
Safety	UL 60950-1, CSA C22.2 No. 60950-7
Hazardous Location (CSA/UL)	Class I, Div 2
Emitted Interference	EN 61000-6-4 (Class A)
Interference Immunity	EN 61000-6-2
Railway	EN 50155, EN 50124-1

Ordering Information

Description	4 x 1000SX, Multimode, 850nm, LC, 500m
Article Numbers	6GK6050-0ML20-0BK1

4.2 RUGGEDCOM MX5000PN LM M4FG03

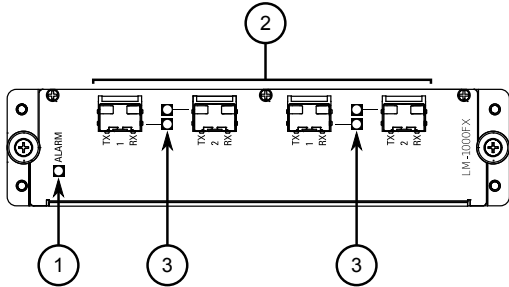
The RUGGEDCOM MX5000PN LM M4FG03 module features four 1000Base-LX fiber optic Ethernet ports.

**NOTICE**

This module is only compatible with [RUGGEDCOM MX5000PN SM 61](#), [RUGGEDCOM MX5000PN SM 69](#), and [RUGGEDCOM MX5000PN SM 70](#).

Note
When connecting cables, make sure the Transmit (Tx) and Receive (Rx) connections of each port are properly connected and matched to establish a proper link.

Each port set (transmit/receive) features a dedicated LED that indicates its link/activity state.



① Alarm LED
② Ethernet Ports
③ Port LEDs

State	Description
Green (Solid)	Link established
Green (Blinking)	Activity
Off	No link detected

Figure 4.2 RUGGEDCOM MX5000PN LM M4FG03

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Optical Characteristics		Cabling	
Transmit Power	-9.5 to -3 dBm	Speed	1000Base-LX
Receiver Sensitivity	-21 dBm	Mode	Single-Mode
Receiver Saturation	-3 dBm	Interface	LC
Power Budget	11.5 dB	Cable Type	9/125 μm
Environment		Wavelength ^a	1310 nm
Ingress Protection	IP40	Nominal Distance ^a	10 km (6.2 mi)

Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	5 to 95% (non-condensing)
Storage Temperature	-40 to 85 °C (-40 to 185 °F)

^a Typical.

Certification

This module has been certified to comply with the requirements of the relevant standards.

Category	Standard
EMC	FCC Part 15 (Class A), EN 55022 (CISPR22 Class A), IEC 61850-3, IEEE 1613
Safety	UL 60950-1, CSA C22.2 No. 60950-7
Hazardous Location (CSA/UL)	Class I, Div 2
Emitted Interference	EN 61000-6-4 (Class A)
Interference Immunity	EN 61000-6-2
Railway	EN 50155, EN 50124-1

Ordering Information

Description	4x 1000LX Singlemode, 1310nm, LC, 10km
Article Numbers	6GK6050-0ML20-OCR1

4.3 RUGGEDCOM MX5000PN LM M4FG05

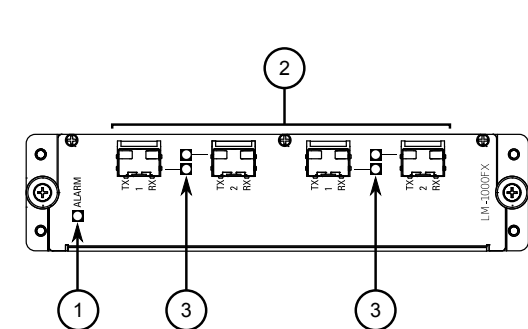
The RUGGEDCOM MX5000PN LM M4FG05 module features four 1000Base-LX fiber optic Ethernet ports.

 **NOTICE**

This module is only compatible with [RUGGEDCOM MX5000PN SM 61](#), [RUGGEDCOM MX5000PN SM 69](#), and [RUGGEDCOM MX5000PN SM 70](#).

Note
When connecting cables, make sure the Transmit (Tx) and Receive (Rx) connections of each port are properly connected and matched to establish a proper link.

Each port set (transmit/receive) features a dedicated LED that indicates its link/activity state.



State	Description
Green (Solid)	Link established
Green (Blinking)	Activity
Off	No link detected

① Alarm LED

② Ethernet Ports

③ Port LEDs

Figure 4.3 RUGGEDCOM MX5000PN LM M4FG05

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Optical Characteristics		Cabling	
Transmit Power	-7 to -3 dBm	Speed	1 Gbps
Receiver Sensitivity	-24 dBm	Mode	Single-Mode
Receiver Saturation	-3 dBm	Interface	LX
Power Budget	17 dB	Connector	LC
Environment		Cable Type	9/125 μm
Ingress Protection	IP40	Wavelength ^a	1310 nm

Operating Temperature	-40 to 85 °C (-40 to 185 °F)	Nominal Distance^a	25 km (15.5 mi)
Operating Relative Humidity	5 to 95% (non-condensing)		
Storage Temperature	-40 to 85 °C (-40 to 185 °F)		

^a Typical.

Certification

This module has been certified to comply with the requirements of the relevant standards.

Category	Standard
EMC	FCC Part 15 (Class A), EN 55022 (CISPR22 Class A), IEC 61850-3, IEEE 1613
Safety	UL 60950-1, CSA C22.2 No. 60950-7
Hazardous Location (CSA/UL)	Class I, Div 2
Emitted Interference	EN 61000-6-4 (Class A)
Interference Immunity	EN 61000-6-2
Railway	EN 50155, EN 50124-1

Ordering Information

Description	4x 1000LX Singlemode, 1310nm, LC, 25km
Article Numbers	6GK6050-0ML20-0SL1

4.4 RUGGEDCOMMX5000PN LM M8FX06

The RUGGEDCOM MX5000PN LM M8FX06 module features eight 100Base-FX fiber optic Ethernet ports.

Note
When connecting cables, make sure the Transmit (Tx) and Receive (Receiver) connections of each port are properly connected and matched to establish a proper link.

Each port set (transmit/receive) features a dedicated LED that indicates its link/activity state.

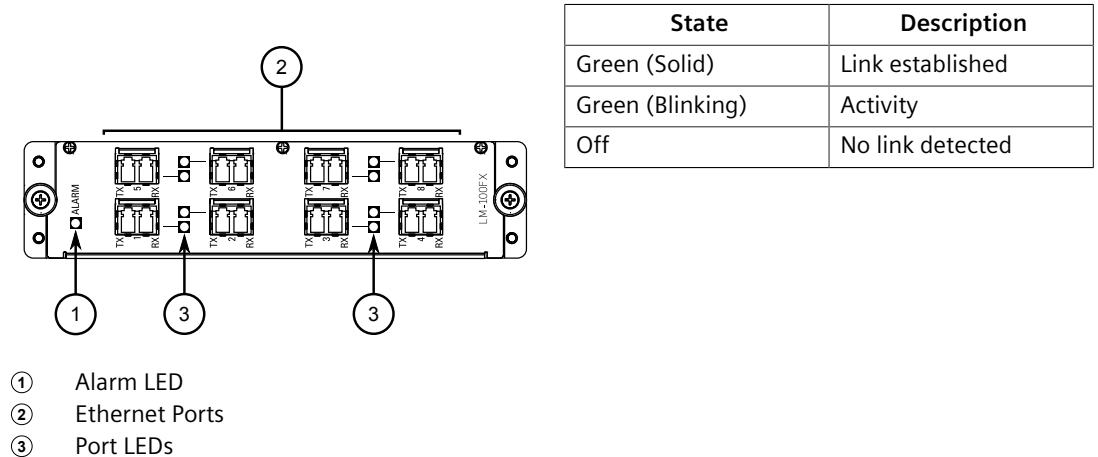


Figure 4.4 RUGGEDCOM MX5000PN LM M8FX06

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Optical Characteristics		Cabling	
Transmit Power	-15 to -8 dBm	Speed	100 Mbps
Receiver Sensitivity	-34 dBm	Mode	SM (Single-Mode)
Receiver Saturation	-7 dBm	Interface	FX
Power Budget	19 dB	Connector	LC
Environment		Cable Type	9/125 μm
Ingress Protection	IP40	Wavelength ^a	1310 nm
Operating Temperature	-40 to 85 °C (-40 to 185 °F)	Nominal Distance ^a	20 km
Operating Relative Humidity	5 to 95% (non-condensing)		

Storage Temperature	-40 to 85 °C (-40 to 185 °F)
----------------------------	------------------------------

^a Typical.

Certification

This module has been certified to comply with the requirements of the relevant standards.

Category	Standard
EMC	FCC Part 15 (Class A), EN 55022 (CISPR22 Class A), IEC 61850-3, IEEE 1613
Safety	UL 60950-1, CSA C22.2 No. 60950-7
Hazardous Location (CSA/UL)	Class I, Div 2
Emitted Interference	EN 61000-6-4 (Class A)
Interference Immunity	EN 61000-6-2
Railway	EN 50155, EN 50124-1

Ordering Information

Description	8 x 100FX, Singlemode, 1310nm, LC, 20km
Article Numbers	6GK6050-0ML20-0CD1

4.5 RUGGEDCOMMX5000PN LM M8FX08

The RUGGEDCOM MX5000PN LM M8FX08 module features eight 100Base-FX fiber optic Ethernet ports.

Note
When connecting cables, make sure the Transmit (Tx) and Receive (Rx) connections of each port are properly connected and matched to establish a proper link.

Each port set (transmit/receive) features a dedicated LED that indicates its link/activity state.

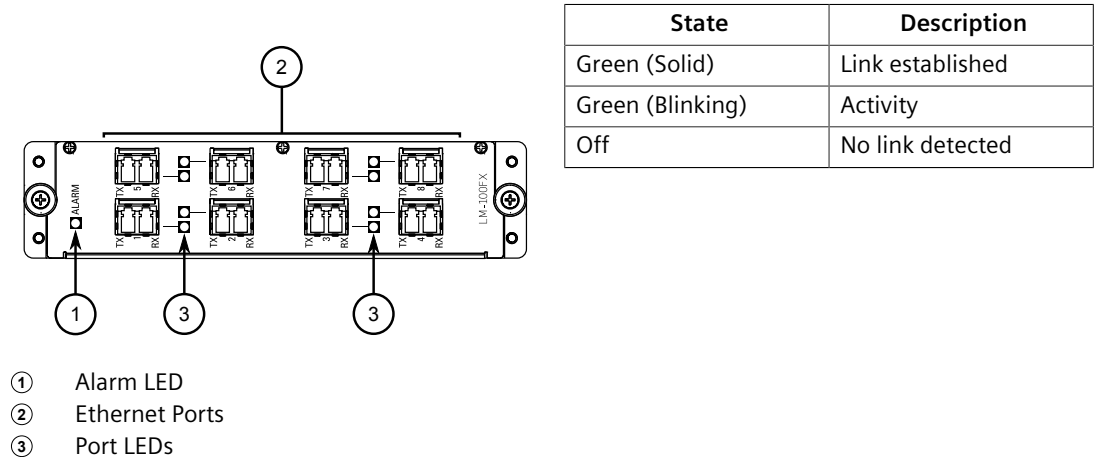


Figure 4.5 RUGGEDCOM MX5000PN LM M8FX08

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Optical Characteristics		Cabling	
Transmit Power	-5 to 0 dBm	Speed	100 Mbps
Receiver Sensitivity	-35 dBm	Mode	SM (Single-Mode)
Receiver Saturation	3 dBm	Interface	FX
Power Budget	30dB	Connector	LC
Environment		Cable Type	9/125 μm
Ingress Protection	IP40	Wavelength ^a	1310 nm
Operating Temperature	-40 to 85 °C (-40 to 185 °F)	Nominal Distance ^a	50 km (31.1 mi)
Operating Relative Humidity	5 to 95% (non-condensing)		

Storage Temperature	-40 to 85 °C (-40 to 185 °F)
----------------------------	------------------------------

^a Typical.

Certification

This module has been certified to comply with the requirements of the relevant standards.

Category	Standard
EMC	FCC Part 15 (Class A), EN 55022 (CISPR22 Class A), IEC 61850-3, IEEE 1613
Safety	UL 60950-1, CSA C22.2 No. 60950-7
Hazardous Location (CSA/UL)	Class I, Div 2
Emitted Interference	EN 61000-6-4 (Class A)
Interference Immunity	EN 61000-6-2
Railway	EN 50155, EN 50124-1

Ordering Information

Description	8 x 100FX, Singlemode, 1310nm, LC, 50km
Article Numbers	6GK6050-0ML20-0CF1

4.6 RUGGEDCOM MX5000PN LM M4FX11

The RUGGEDCOM MX5000PN LM M4FX11 module features four 100Base-FX fiber optic Ethernet ports.

Note

When connecting cables, make sure the Transmit (Tx) and Receive (Rx) connections of each port are properly connected and matched to establish a proper link.

Each port set (transmit/receive) features a dedicated LED that indicates its link/activity state.

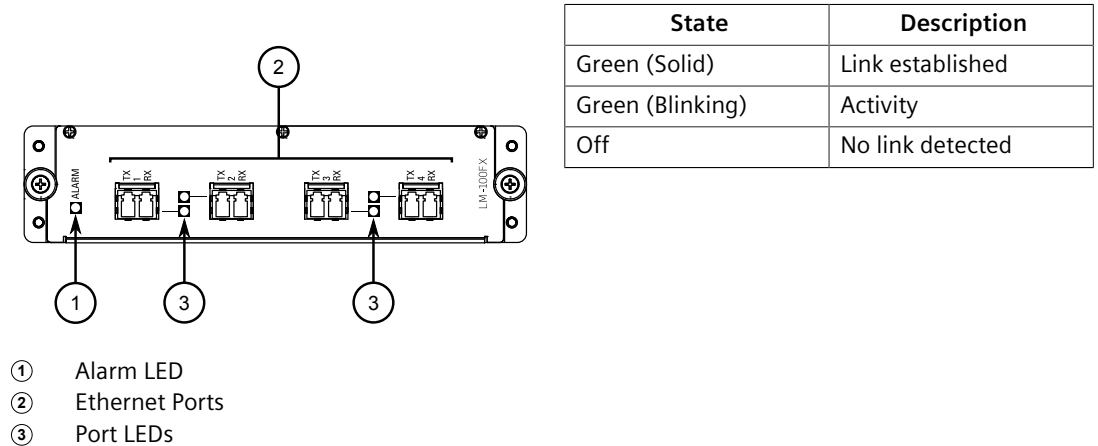


Figure 4.6 RUGGEDCOM MX5000PN LM M4FX11

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Optical Characteristics		Cabling	
Transmit Power	-19 to -14 dBm	Speed	100 Mbps
Receiver Sensitivity	-32 dBm	Mode	MM (Multi-Mode)
Receiver Saturation	-14 dBm	Interface	FX
Power Budget	13 dB	Connector	LC
Environment		Cable Type	62.5/125 μm
Ingress Protection	IP40	Wavelength ^a	1300 nm
Operating Temperature	-40 to 85 °C (-40 to 185 °F)	Nominal Distance ^a	2 km (1.2 mi)
Operating Relative Humidity	5 to 95% (non-condensing)		

Storage Temperature	-40 to 85 °C (-40 to 185 °F)
----------------------------	------------------------------

^a Typical.

Certification

This module has been certified to comply with the requirements of the relevant standards.

Category	Standard
EMC	FCC Part 15 (Class A), EN 55022 (CISPR22 Class A), IEC 61850-3, IEEE 1613
Safety	UL 60950-1, CSA C22.2 No. 60950-7
Hazardous Location (CSA/UL)	Class I, Div 2
Emitted Interference	EN 61000-6-4 (Class A)
Interference Immunity	EN 61000-6-2
Railway	EN 50155, EN 50124-1

Ordering Information

Description	4 x 100FX, Multimode, 1300nm, LC, 2km
Article Numbers	6GK6050-0ML20-0BH1

4.7 RUGGEDCOM MX5000PN LM M8FX11

The RUGGEDCOM MX5000PN LM M8FX11 module features eight 100Base-FX fiber optic Ethernet ports.

Note

When connecting cables, make sure the Transmit (Tx) and Receive (Rx) connections of each port are properly connected and matched to establish a proper link.

Each port set (transmit/receive) features a dedicated LED that indicates its link/activity state.

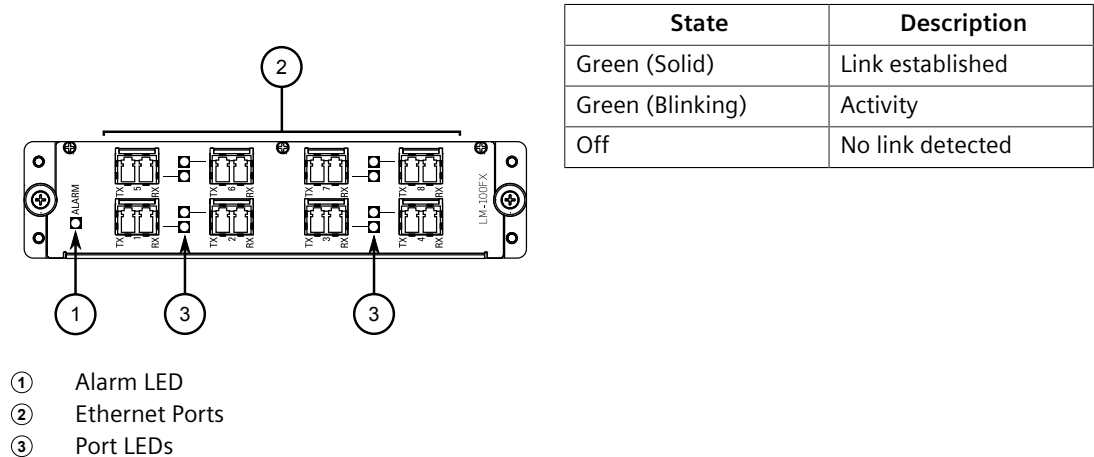


Figure 4.7 RUGGEDCOM MX5000PN LM M8FX11

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Optical Characteristics

Transmit Power	-19 to -14 dBm
Receiver Sensitivity	-32 dBm
Receiver Saturation	-14 dBm
Power Budget	13 dB

Environment

Ingress Protection	IP40
Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	5 to 95% (non-condensing)

Cabling

Speed	100 Mbps
Mode	MM (Multi-Mode)
Interface	FX
Connector	LC
Cable Type	62.5/125 μm
Wavelength ^a	1300 nm
Nominal Distance	2 km (1.2 mi)

Storage Temperature	-40 to 85 °C (-40 to 185 °F)
----------------------------	------------------------------

^a Typical.

Certification

This module has been certified to comply with the requirements of the relevant standards.

Category	Standard
EMC	FCC Part 15 (Class A), EN 55022 (CISPR22 Class A), IEC 61850-3, IEEE 1613
Safety	UL 60950-1, CSA C22.2 No. 60950-7
Hazardous Location (CSA/UL)	Class I, Div 2
Emitted Interference	EN 61000-6-4 (Class A)
Interference Immunity	EN 61000-6-2
Railway	EN 50155, EN 50124-1

Ordering Information

Description	8 x 100FX, Multimode, 1300nm, LC, 2km
Article Numbers	6GK6050-0ML20-0BD1

Serial Modules

The following serial modules are available for the RUGGEDCOM MX5000.

5.1 RUGGEDCOM MX5000PN LM MS01

The RUGGEDCOM MX5000PN LM MS01 module features eight serial DB9 ports that may be used with a null modem (crossover) serial cable.

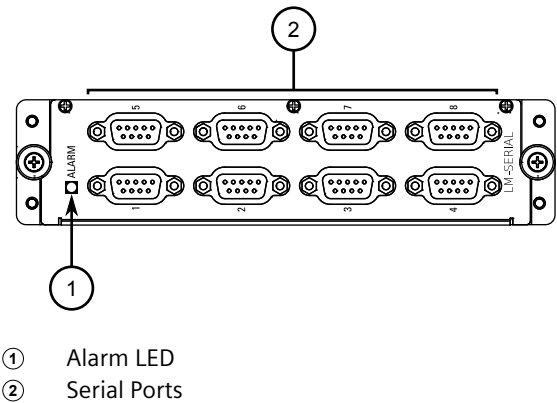


Figure 5.1 RUGGEDCOM MX5000PN LM MS01

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Operating Modes

Each serial port can be run in **RS232**, **RS485** or **RS422** mode.

On initial power-up, all serial ports default to RS485 mode. However, each port can be individually set to RS232, RS485 or RS422 mode via RUGGEDCOM MX5000 . For more information, refer to the *RUGGEDCOM ROX Configuration Manual* for the RUGGEDCOM MX5000.

Pin-Out Description

The following are the pin-outs for the DB9 connectors:

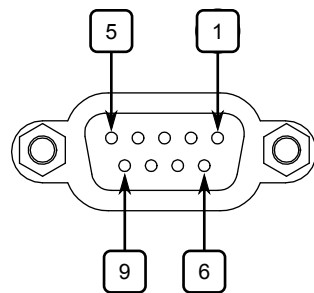


Figure 5.2 DB9 Serial Port

Pin	Function		
	RS232 Mode	RS422 Mode	RS485 Mode
1		RX-	
2	RX	TX+	TX+/RX+
3	TX	RX+	
4	Reserved (Do Not Connect)		
5	COM (Isolated GND)		
6	COM (Isolated GND)		
7		TX-	TX-/RX-

Pin	Function		
	RS232 Mode	RS422 Mode	RS485 Mode
8	Reserved (Do Not Connect)		
9	COM (Isolated GND)		
Body	Chassis GND ^a		
Screws	Chassis GND ^a		

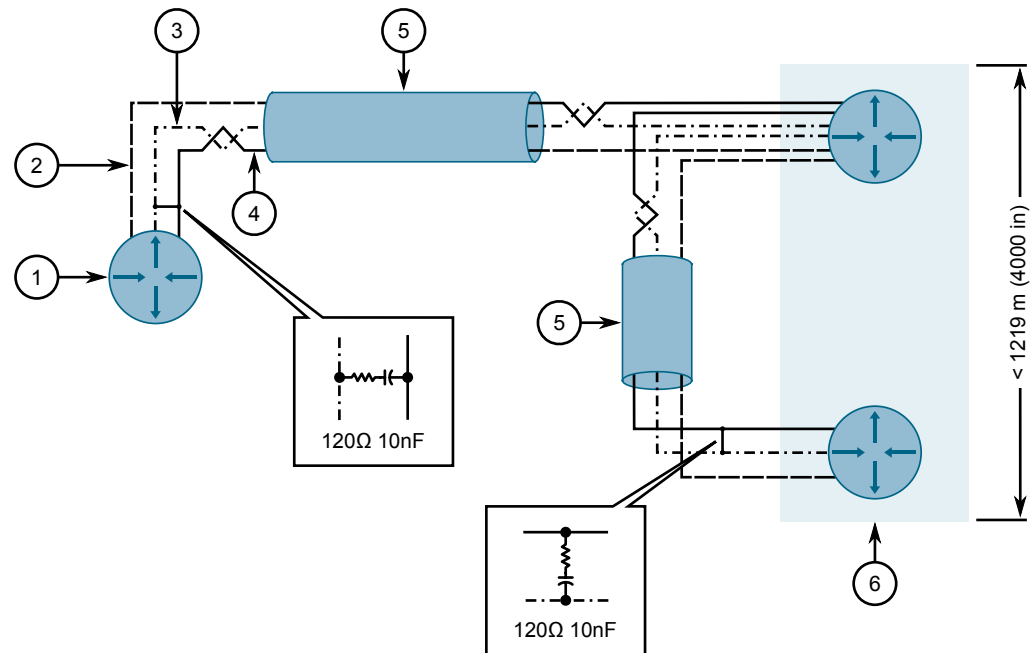
^a Connected internally.

Connecting to RS485 Devices

Each RS485 port can communicate with multiple RS485 devices by wiring devices together in sequence over a single twisted pair with transmit and receive signals on the same two wires (half duplex). For reliable, continuous communication, adhere to the following guidelines:

- To minimize the effects of ambient electrical noise, use shielded cabling.
- The correct polarity must be observed throughout a single sequence or ring.
- The number of devices wired should not exceed 32, and total distance should be less than 1219 m (4000 ft) at 100 kbps.
- The Common terminals should be connected to the common wire inside the shield.
- The shield should be connected to earth ground at a single point to avoid loop currents.
- The twisted pair should be terminated at each end of the chain.

The following shows the recommended RS485 wiring.



- ① RUGGEDCOM MX5000 Device
- ② Common (Isolated Ground)
- ③ Negative
- ④ Positive
- ⑤ Shield to Earth (Connected At a Single Point)
- ⑥ RS485 Devices (32 Total)

Figure 5.3 Recommended RS485 Wiring

Characteristics

Baud Rate	1200 to 230400 kbps
Connector	DB9
Isolation	2.5 kV

Environment

Ingress Protection	IP40
Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	5 to 95% (non-condensing)
Storage Temperature	-40 to 85 °C (-40 to 185 °F)

Certification

This module has been certified to comply with the requirements of the relevant standards.

Category	Standard
EMC	FCC Part 15 (Class A), EN 55022 (CISPR22 Class A), IEC 61850-3, IEEE 1613
Safety	UL 60950-1, CSA C22.2 No. 60950-7
Hazardous Location (CSA/UL)	Class I, Div 2
Emitted Interference	EN 61000-6-4 (Class A)

Category	Standard
Interference Immunity	EN 61000-6-2
Railway	EN 50155, EN 50124-1

Ordering Information

Description	8 x RS232/RS422/RS485 via DB9 Serial Line Module
Article Numbers	6GK6050-0ML20-0KB1

Control Modules

Control modules are the central processing engine for the device. The RUGGEDCOM MX5000 operating system running on the module controls and coordinates the functions of all modules installed in the system.

Each control module is equipped with an RS232 serial console port for initial management functions, and a locally connected 10/100Base-T Ethernet port for system management out-of-band from the switch fabric.

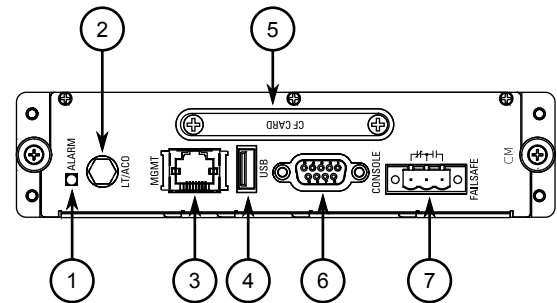
Other features include:

- Alarm LED to indicate the system status
- Removable 1 GB Compact Flash (CF) card, which contains active and fallback installations of the RUGGEDCOM MX5000 operating system, the configuration database, and other system data
- A failsafe alarm relay, activated by the operating system to indicate a critical alarm.
- A lamp test and alarm cutoff button
- A utility USB port for uploading/downloading files

The following control modules are available for the RUGGEDCOM MX5000.

6.1 RUGGEDCOM MX5000PN MCM01 L3SEL3HW

The RUGGEDCOM MX5000 PN MCM01 L3SEL3HW control module features Layer 3 hardware and is pre-configured with RUGGEDCOM MX5000 Layer 3 Standard Edition.



- ① Alarm LED
- ② LT/ACO Button
- ③ MGMT Port
- ④ USB Port
- ⑤ CF Card Slot
- ⑥ Console Port
- ⑦ Failsafe Relay

Figure 6.1 RUGGEDCOM MX5000PN MCM01 L3SEL3HW

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

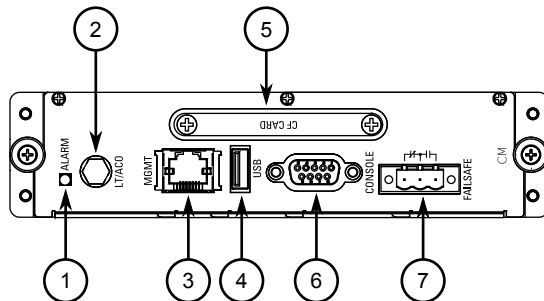
Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	5 to 95% (non-condensing)
Storage Temperature	-40 to 85 °C (-40 to 185 °F)

Ordering Information

Description	Control module with Layer 3 Standard Edition Layer 3 hardware
Article Numbers	6GK6050-0ML30-0BA1

6.2 RUGGEDCOM MX5000PN CM01 L3SECL3HW

The RUGGEDCOM MX5000 PN CM01 L3SECL3HW control module features Layer 3 hardware and is pre-configured with RUGGEDCOM MX5000 Layer 3 Security Edition.



- ① Alarm LED
- ② LT/ACO Button
- ③ MGMT Port
- ④ USB Port
- ⑤ CF Card Slot
- ⑥ Console Port
- ⑦ Failsafe Relay

Figure 6.2 RUGGEDCOM MX5000PN CM01 L3SECL3HW

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	5 to 95% (non-condensing)
Storage Temperature	-40 to 85 °C (-40 to 185 °F)

Ordering Information

Description	Control module with Layer 3 Security Edition Layer 3 hardware
Article Numbers	6GK6050-0ML30-0CA1

Switch Modules

Switch modules connect devices together on a computer network by using packet switching to receive, process and forward data to the destination device.

The following switch modules are available for the RUGGEDCOM MX5000.

7.1 RUGGEDCOM MX5000PN LM MSM34

The RUGGEDCOM MX5000PN LM MSM34 module features two 1000Base-SX fiber optic Ethernet ports.

Note

When connecting cables, make sure the Transmit (Tx) and Receive (Rx) connections of each port are properly connected and matched to establish a proper link.

Each port set (transmit/receive) features a dedicated LED that indicates its link/activity state.

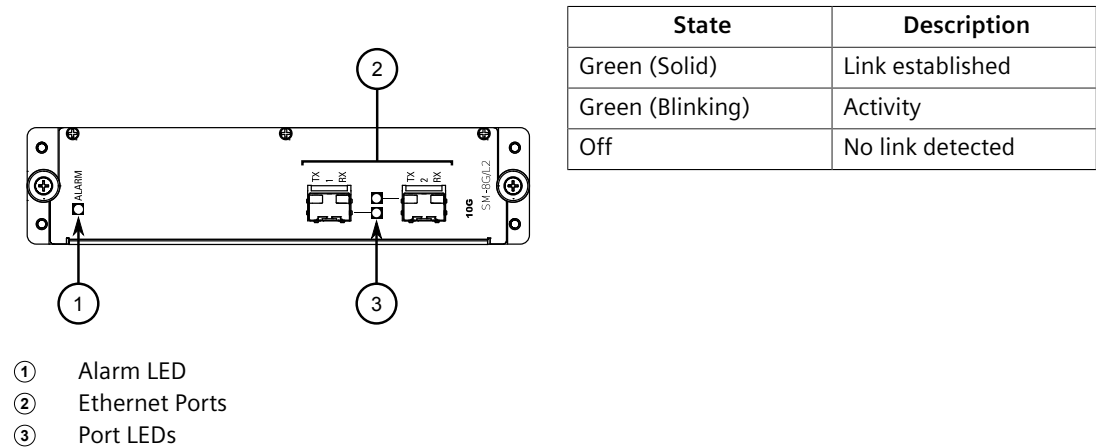


Figure 7.1 RUGGEDCOM MX5000PN LM MSM34

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Optical Characteristics

Transmit Power	-9 to -2.5 dBm
Receiver Sensitivity	-20 dBm
Receiver Saturation	0 dBm
Power Budget	11 dB

Environment

Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	5 to 95% (non-condensing)

Cabling

Speed	1 Gbps
Mode	MM (Multi-Mode)
Interface	SX
Connector	LC
Cable Type	50/125 or 62.5/125 µm
Wavelength ^a	850 nm
Nominal Distance ^a	0.5 km (0.3 mi)

Storage Temperature	-40 to 85 °C (-40 to 185 °F)
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^a Typical.

Ordering Information

Description	2 x 1000SX, Multimode, 850nm, LC, 500m
Article Numbers	6GK6050-0AM40-0PA1

7.2 RUGGEDCOM MX5000PN LM MSM36

The RUGGEDCOM MX5000PN LM MSM36 module features two 1000Base-LX fiber optic Ethernet ports.

Note

When connecting cables, make sure the Transmit (Tx) and Receive (Rx) connections of each port are properly connected and matched to establish a proper link.

Each port set (transmit/receive) features a dedicated LED that indicates its link/activity state.

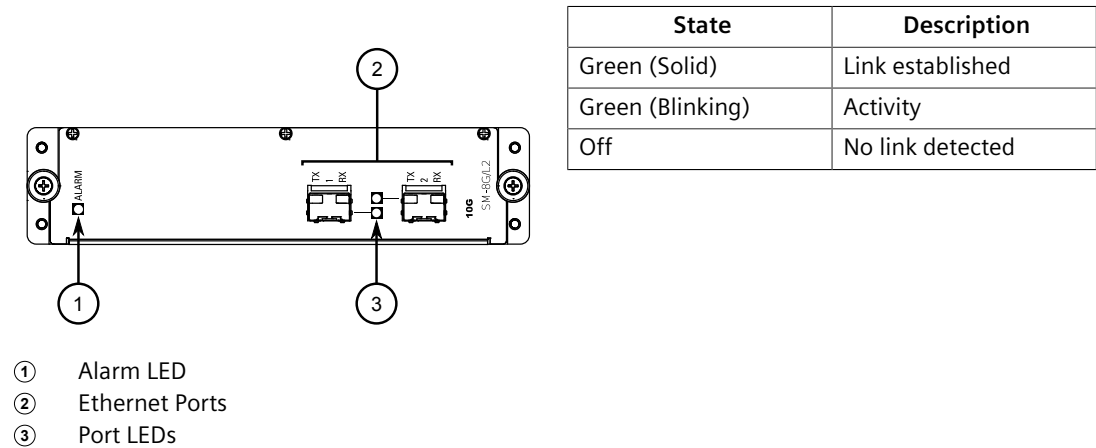


Figure 7.2 RUGGEDCOM MX5000PN LM MSM36

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Optical Characteristics

Transmit Power	-10 to -3 dBm
Receiver Sensitivity	-20 dBm
Receiver Saturation	-3 dBm
Power Budget	10 dB

Environment

Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	5 to 95% (non-condensing)

Cabling

Speed	1 Gbps
Mode	SM (Single-Mode)
Interface	LX
Connector	LC
Cable Type	9/125 μm
Wavelength ^a	1310 nm
Nominal Distance ^a	10 km (6.2 mi)

Storage Temperature	-40 to 85 °C (-40 to 185 °F)
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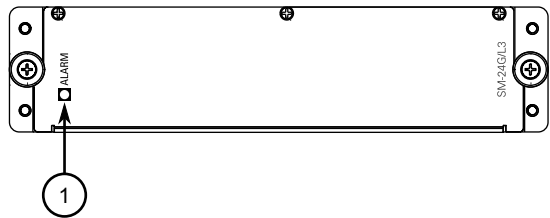
^a Typical.

Ordering Information

Description	2x 1000LX singlemode, 1310nm, LC, 10km
Article Numbers	6GK6050-0ML40-0RA1

7.3 RUGGEDCOM MX5000PN SM MSM61

The RUGGEDCOM MX5000PN SM MSM61 is a Layer 3/88 Gigabit throughput switch module that enables Gigabit throughput for up to 24 fiber optic Ethernet ports.



① Alarm LED

Figure 7.3 RUGGEDCOM MX5000PN SM MSM61

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Operating Temperature	-40 to 85 °C (-40 to 185 °F)
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Ordering Information

Description	Layer 3/88 Gigabit Throughput, no uplink ports
Article Numbers	6GK6050-0ML40-0VA1

7.4 RUGGEDCOM MX5000PN SM MSM69

The RUGGEDCOM MX5000PN SM MSM69 is a Layer 3/88 Gigabit throughput switch module that enables Gigabit throughput for up to 24 fiber optic Ethernet ports. It also features sockets for up to two Small Form-factor Pluggable (SFP) transceivers.

Note
When connecting cables, make sure the Transmit (Tx) and Receive (Rx) connections of each port are properly connected and matched to establish a proper link.

Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver.

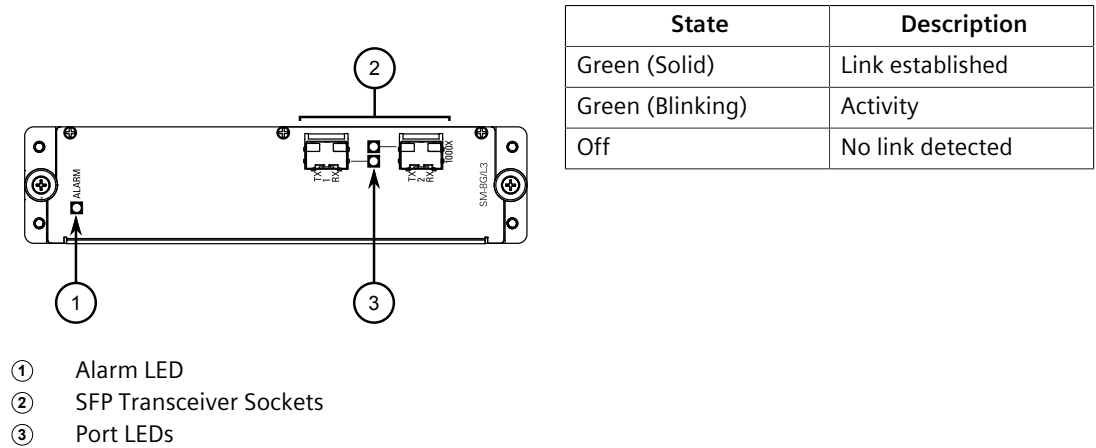


Figure 7.4 RUGGEDCOM MX5000PN SM MSM69

Compatible SFP Transceivers

For information about which SFP transceivers are compatible with this module, as well as instructions for ordering and installation/removal, refer to the [RUGGEDCOM SFP Transceiver Catalog \[https://support.industry.siemens.com/cs/ca/en/view/109482309\]](https://support.industry.siemens.com/cs/ca/en/view/109482309).

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Operating Temperature	Dependent on the installed SFP transceiver.
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Ordering Information

Description	Layer 3/88 Gigabit Throughput, 2x 10G SFP+ Slots Blank
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7.4 RUGGEDCOM MX5000PN SM MSM69

Article Numbers	6GK6050-0ML40-0WA1
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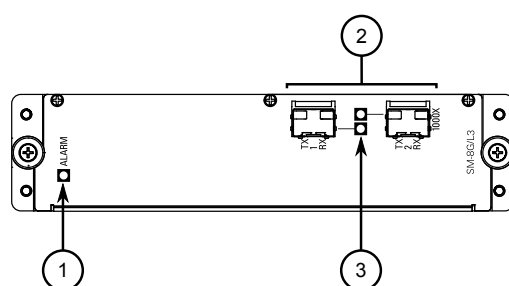
7.5 RUGGEDCOM MX5000PN SM MSM70

The RUGGEDCOM MX5000PN SM MSM70 is a Layer 3/88 Gigabit throughput switch module that enables Gigabit throughput for up to 24 fiber optic Ethernet ports.

Note

When connecting cables, make sure the Transmit (Tx) and Receive (Rx) connections of each port are properly connected and matched to establish a proper link.

Each port features a dedicated LED that indicates its link/activity state.



- ① Alarm LED
- ② SFP Transceiver Sockets
- ③ Port LEDs

Figure 7.5 RUGGEDCOM MX5000PN SM MSM70

State	Description
Green (Solid)	Link established
Green (Blinking)	Activity
Off	No link detected

Installing the Module

For information about installing this module, refer to the *Installation Guide* for the RUGGEDCOM MX5000.

Technical Specifications

Optical Characteristics

Transmit Power	-8.2 to 0.5 dBm
Tx Minimum OMA	-5.2
Minimum Extinction Ratio	3.5
Receiver Sensitivity OMA (dBm)	-12.6
Stressed RX Sensitivity (dBm)	-10.3
Receiver Saturation (dBm)	0.5
Power Budget (dB)	4.4
Channel Insertion Loss (dB)	5.1

Cabling

Speed	10 Gbps
Mode	SM (Single-Mode)
Interface	LR
Connector	LC
Cable Type	9/125 μ m
Wavelength	1310 nm
Nominal Distance	10 km (6.2 mi)

Allocation for Penalties (dB)	2.3
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Environment

Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	0 to 85% (non-condensing)
Storage Temperature	-40 to 85 °C (-40 to 185 °F)

Ordering Information

Description	Layer 3/88 Gigabit Throughput, 2x 10G
Article Numbers	6GK6050-0ML40-0XA1

Network Redundancy Modules

The following modules provide network redundancy functionality for the RUGGEDCOM MX5000.

8.1 RUGGEDCOM MX5000PN LM MPRP

The RUGGEDCOM MX5000PN LM MPRP module enables the device the interact with a redundancy network using the Parallel Redundancy Protocol (PRP). The module features individual Ethernet ports for connecting to each side of the network.

Note

For more information about PRP, refer to the *RUGGEDCOM ROX Configuration Manual* for the RUGGEDCOM MX5000.

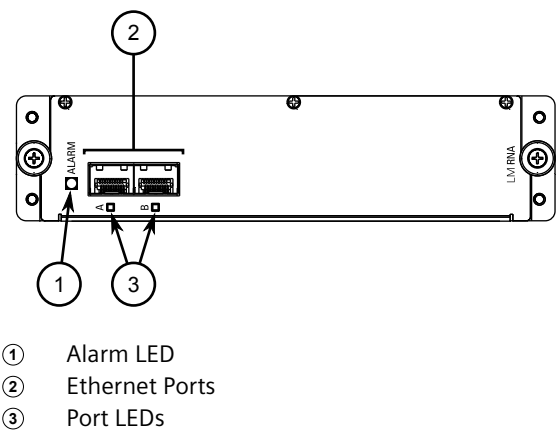


Figure 8.1 RUGGEDCOM MX5000PN LM MPRP

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Technical Specifications

Optical Characteristics

Transmit Power	-9.5 to -3.0 dBm
Receiver Sensitivity	-19.0 to -3.0 dBm
Power Budget	9.5 dB

Environment

Operating Temperature	-40 to 85 °C (-40 to 185 °F)
Operating Relative Humidity	5 to 95% (non-condensing)
Storage Temperature	-40 to 85 °C (-40 to 185 °F)

Cabling

Speed	1 Gbps
Mode	SM (Single-Mode)
Interface	LX
Connector	LC
Cable Type	9/125 μm
Wavelength	1310 nm
Nominal Distance	10 km (6.2 mi)

Ordering Information

Description	1x Pair (A/B) Gigabit PRP with 2x single-mode LC 10km Conformal Coating
Article Numbers	6GK6050-0ML20-0PR1

Blank Modules

The following blank modules are available for the RUGGEDCOM MX5000 .

NOTICE

Blank modules should be installed in empty slots to prevent the ingress of dirt or debris in the chassis.

9.1 RUGGEDCOM MX5000PN PS XX

The RUGGEDCOM MX5000 PN PS XX is a blank module designed to occupy empty power supply module slots in the RUGGEDCOM MX5000 chassis.



Figure 9.1 RUGGEDCOM MX5000PN PS XX

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Ordering Information

Description	Power Supply Blank Module
Article Numbers	6GK6050-0ML10-0AA1

9.2 RUGGEDCOM MX5000PN LM Blank

The RUGGEDCOM MX5000 PN LM Blank is a blank module designed to occupy empty line module slots in the RUGGEDCOM MX5000 chassis.

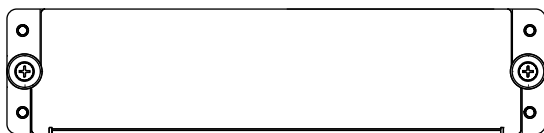


Figure 9.2 RUGGEDCOM MX5000PN LM Blank

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM MX5000.

Ordering Information

Description	Blank Module
Article Numbers	6GK6050-0ML20-0AA1

Further Information

Siemens RUGGEDCOM

<https://www.siemens.com/ruggedcom>

Industry Online Support (service and support)

<https://support.industry.siemens.com>

Industry Mall

<https://mall.industry.siemens.com>

Siemens AG

Digital Industry

Process Automation

Postfach 48 48

90026 NÜRNBERG

GERMANY