

SIEMENS

Catalog

SIMATIC NET

Networking Components

RUGGEDCOM Modules

For RSG2488, RSG2488F

Edition

06/2021

<https://www.siemens.com>

SIEMENS

SIMATIC NET

Networking Components RUGGEDCOM Modules

Catalog

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For RSG2488, RSG2488F

06/2021

C79000-G8976-1322-05

Legal Information

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 media modules available for use with RUGGEDCOM RSG2488/RSG2488F switches.

It is intended for use by network technical support personnel responsible for the installation, commissioning and maintenance of 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 RSG2488 Installation Manual	https://support.industry.siemens.com/cs/ww/en/view/82169156

Accessing Documentation

The latest user documentation for RUGGEDCOM RSG2488 is available online at <https://support.industry.siemens.com> . To request or inquire about a user document, contact Siemens Customer Support.

Registered Trademarks

RUGGEDCOM[®], ROS[®], RCDP[®], and RUGGEDCOM Discovery Protocol[®] are registered trademarks of Siemens Canada Ltd.

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.

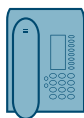
Customer Support

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	info.ruggedcom@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 media modules available for the RUGGEDCOM RSG2488. 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 \(Page v\)"](#).

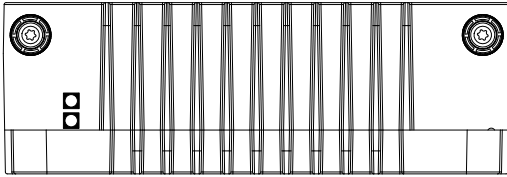
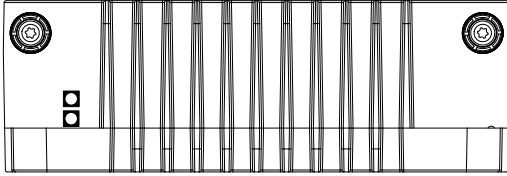
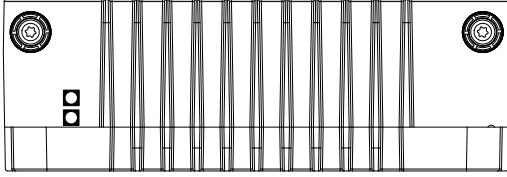
 **NOTICE**

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.

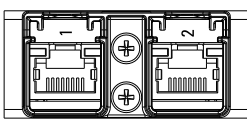
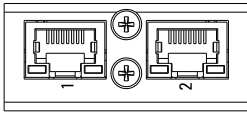
1.1 Available Modules

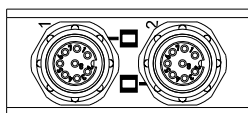
The following is a list of all power and line modules available for use in the RUGGEDCOM RSG2488.

Power Supply Modules

RUGGEDCOM RPM2410	Specifications	Article Numbers
	Input Range: 13 to 36 VDC	6GK6000-8PS11-1EA0 (Standard) 6GK6000-8PS11-1EA1 (Conformal Coated)
RUGGEDCOM RPM2420	Specifications	Article Numbers
	Input Range: 36 to 72 VDC	6GK6000-8PS12-1EA0 (Standard) 6GK6000-8PS12-1EA1 (Conformal Coated)
RUGGEDCOM RPM2430	Specifications	Article Numbers
	Input Range: 98 to 300 VDC or 88 to 264 VAC	6GK6000-8PS13-1EA0 (Standard) 6GK6000-8PS13-1EA1 (Conformal Coated)

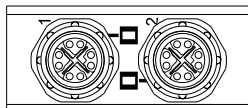
Copper Ethernet Modules

RUGGEDCOM RMM2473-2FC	Specifications	Article Numbers
	Ports: 2 Connector: FastConnect RJ45 Speed: 1000 Mbps Interface: TX Distance: 100 m (328 ft)	6GK6000-8CG02-2EA0 (Standard) 6GK6000-8CG02-2EA1 (Conformal Coated)
RUGGEDCOM RMM2473-2RJ45	Specifications	Article Numbers
	Ports: 2 Connector: RJ45 Speed: 1000 Mbps Interface: TX Distance: 100 m (328 ft)	6GK6000-8CG01-2EA0 (Standard) 6GK6000-8CG01-2EA1 (Conformal Coated)
RUGGEDCOM RMM2473-2M12A	Specifications	Article Numbers
	Ports: 2	



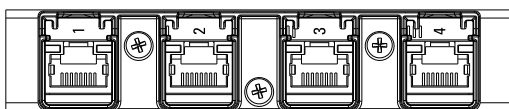
Connector: M12 (8-Pin, A-Coded) 6GK6000-8CG03-2EA0 (Standard)
 Speed: 1000 Mbps 6GK6000-8CG03-2EA1 (Conformal Coated)
 Interface: TX
 Distance: 100 m (328 ft)

RUGGEDCOM RMM2473-2M12X



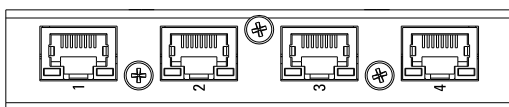
Specifications **Article Numbers**
 Ports: 2 6GK6000-8CG04-2EA0 (Standard)
 Connector: M12 (8-Pin, X-Coded) 6GK6000-8CG04-2EA1 (Conformal Coated)
 Speed: 1000 Mbps
 Interface: TX
 Distance: 100 m (328 ft)

RUGGEDCOM RMM2473-4FC



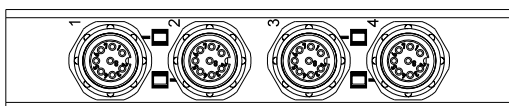
Specifications **Article Numbers**
 Ports: 4 6GK6000-8CG02-4EA0 (Standard)
 Connector: FastConnect RJ45 6GK6000-8CG02-4EA1 (Conformal Coated)
 Speed: 1000 Mbps
 Interface: TX
 Distance: 100 m (328 ft)

RUGGEDCOM RMM2473-4RJ45



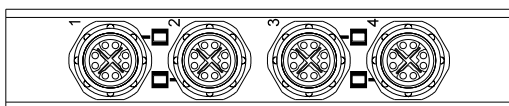
Specifications **Article Numbers**
 Ports: 4 6GK6000-8CG01-4EA0 (Standard)
 Connector: RJ45 6GK6000-8CG01-4EA1 (Conformal Coated)
 Speed: 1000 Mbps
 Interface: TX
 Distance: 100 m (328 ft)

RUGGEDCOM RMM2473-4M12A



Specifications **Article Numbers**
 Ports: 4 6GK6000-8CG03-4EA0 (Standard)
 Connector: M12 (8-Pin, A-Coded) 6GK6000-8CG03-4EA1 (Conformal Coated)
 Speed: 1000 Mbps
 Interface: TX
 Distance: 100 m (328 ft)

RUGGEDCOM RMM2473-4M12X

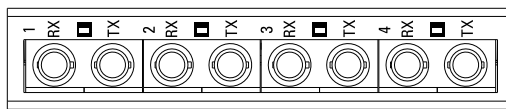


Specifications **Article Numbers**
 Ports: 4 6GK6000-8CG04-4EA0 (Standard)
 Connector: M12 (8-Pin, X-Coded) 6GK6000-8CG04-4EA1 (Conformal Coated)
 Speed: 1000 Mbps
 Interface: TX
 Distance: 100 m (328 ft)

Fiber Optic Ethernet Modules

RUGGEDCOM RMM2464-4ST2

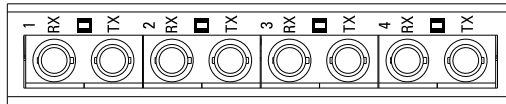
Specifications **Article Numbers**
 Ports: 4 6GK6000-8FX01-4EA0 (Standard)



Connector: ST
 Mode: MM (Multi-Mode)
 Speed: 100 Mbps
 Interface: FX
 Wavelength: 1310 nm
 Distance: 2 km (1.2 mi)

6GK6000-8FX01-4EA1
 (Conformal Coated)

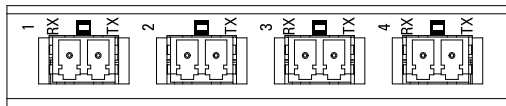
RUGGEDCOM RMM2465-4ST20



Specifications
 Ports: 4
 Connector: ST
 Mode: SM (Single-Mode)
 Speed: 100 Mbps
 Interface: FX
 Wavelength: 1310 nm
 Distance: 20 km (12.4 mi)

Article Numbers
 6GK6000-8FX04-4EA0
 (Standard)
 6GK6000-8FX04-4EA1
 (Conformal Coated)

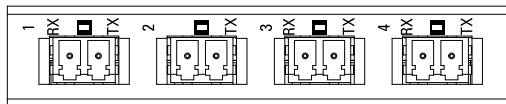
RUGGEDCOM RMM2474-4LC



Specifications
 Ports: 4
 Connector: LC
 Mode: MM (Multi-Mode)
 Speed: 100 Mbps
 Interface: FX
 Wavelength: 850 nm
 Distance: 500 m (1640 ft)

Article Numbers
 6GK6000-8FG01-4EA0
 (Standard)
 6GK6000-8FG01-4EA1
 (Conformal Coated)

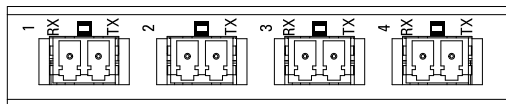
RUGGEDCOM RMM2464-4LC2



Specifications
 Ports: 4
 Connector: LC
 Mode: MM (Multi-Mode)
 Speed: 100 Mbps
 Interface: FX
 Wavelength: 1310 nm
 Distance: 2 km (1.2 mi)

Article Numbers
 6GK6000-8FX11-4EA0
 (Standard)
 6GK6000-8FX11-4EA1
 (Conformal Coated)

RUGGEDCOM RMM2475-4LC10

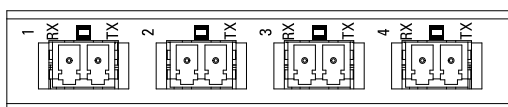


Specifications
 Ports: 4
 Connector: LC
 Mode: SM (Single-Mode)
 Speed: 100 Mbps
 Interface: LX
 Wavelength: 1310 nm

Article Numbers
 6GK6000-8FG03-4EA0
 (Standard)
 6GK6000-8FG03-4EA1
 (Conformal Coated)

Distance: 10 km (12.4 mi)

RUGGEDCOM RMM2465-4LC20



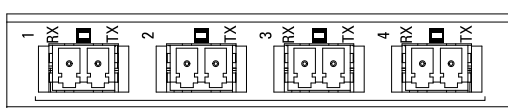
Specifications

Ports: 4
 Connector: LC
 Mode: SM (Single-Mode)
 Speed: 100 Mbps
 Interface: FX
 Wavelength: 1310 nm
 Distance: 20 km (12.4 mi)

Article Numbers

6GK6000-8FX06-4EA0 (Standard)
 6GK6000-8FX06-4EA1 (Conformal Coated)

RUGGEDCOM RMM2475-4LC25



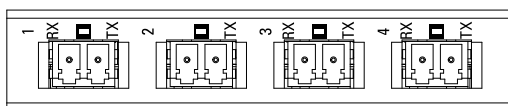
Specifications

Ports: 4
 Connector: LC
 Mode: SM (Single-Mode)
 Speed: 1000 Mbps
 Interface: LX
 Wavelength: 1310 nm
 Distance: 25 km (15.5 mi)

Article Numbers

6GK6000-8FG05-4EA0 (Standard)
 6GK6000-8FG05-4EA1 (Conformal Coated)

RUGGEDCOM RMM2465-4LC90



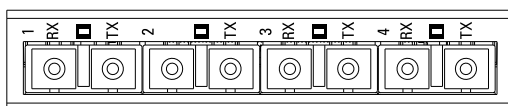
Specifications

Ports: 4
 Connector: LC
 Mode: SM (Single-Mode)
 Speed: 100 Mbps
 Interface: FX
 Wavelength: 1310 nm
 Distance: 90 km (55.9 mi)

Article Numbers

6GK6000-8FX10-4EA0 (Standard)
 6GK6000-8FX10-4EA1 (Conformal Coated)

RUGGEDCOM RMM2464-4SC2



Specifications

Ports: 4
 Connector: SC
 Mode: MM (Multi-Mode)
 Speed: 100 Mbps
 Interface: FX
 Wavelength: 1300 nm
 Distance: 2 km (1.2 mi)

Article Numbers

6GK6000-8FX02-4EA0 (Standard)
 6GK6000-8FX02-4EA1 (Conformal Coated)

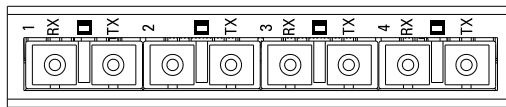
RUGGEDCOM RMM2475-4SC10

Specifications

Ports: 4
 Connector: SC

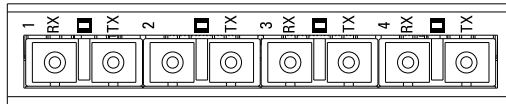
Article Numbers

6GK6000-8FG02-4EA0 (Standard)
 6GK6000-8FG02-4EA1 (Conformal Coated)



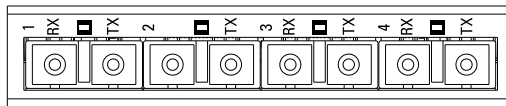
Mode: SM (Single-Mode)
 Speed: 1000 Mbps
 Interface: LX
 Wavelength: 1310 nm
 Distance: 10 km (6.2 mi)

RUGGEDCOM RMM2465-4SC20



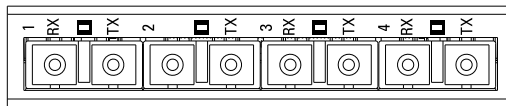
Specifications	Article Numbers
Ports: 4	6GK6000-8FX05-4EA0 (Standard)
Connector: SC	6GK6000-8FX05-4EA1 (Conformal Coated)
Mode: SM (Single-Mode)	
Speed: 100 Mbps	
Interface: FX	
Wavelength: 1310 nm	
Distance: 20 km (12.4 mi)	

RUGGEDCOM RMM2475-4SC50



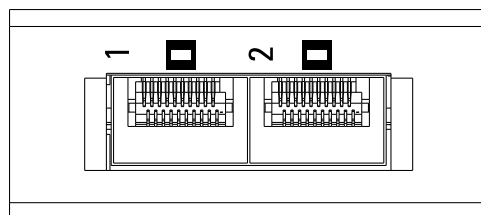
Specifications	Article Numbers
Ports: 4	6GK6000-8FG04-4EA0 (Standard)
Connector: SC	6GK6000-8FG04-4EA1 (Conformal Coated)
Mode: SM (Single-Mode)	
Speed: 1000 Mbps	
Interface: FX	
Wavelength: 1310 nm	
Distance: 50 km (31.1 mi)	

RUGGEDCOM RMM2465-4SC90

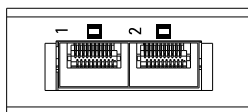


Specifications	Article Numbers
Ports: 4	6GK6000-8FX03-4EA0 (Standard)
Connector: SC	6GK6000-8FX03-4EA1 (Conformal Coated)
Mode: SM (Single-Mode)	
Speed: 100 Mbps	
Interface: FX	
Wavelength: 1310 nm	
Distance: 90 km (55.9 mi)	

RUGGEDCOM RMM2472-2SFP



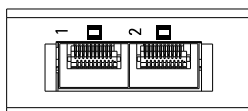
Specifications	Article Numbers
Sockets: 2	6GK6000-8FG50-2EA0 (Standard)
SFP Included: No ^a	6GK6000-8FG50-2EA1 (Conformal Coated)

RUGGEDCOM RMM2474-2SFP**Specifications**

Ports: 2
 Speed: 1000 Mbps
 Interface: SX
 SFP Included:
 RUGGEDCOM
 SFP1122-1SX

Article Numbers

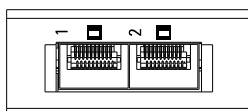
6GK6000-8FG51-2EA0
 (Standard)
 6GK6000-8FG51-2EA1
 (Conformal Coated)

RUGGEDCOM RMM2464-2SFP2**Specifications**

Ports: 2
 Speed: 100 Mbps
 Interface: FX
 SFP Included:
 RUGGEDCOM
 SFP1121-1FX2

Article Numbers

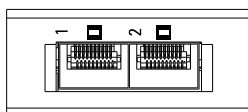
6GK6000-8FX51-2EA0
 (Standard)
 6GK6000-8FX51-2EA1
 (Conformal Coated)

RUGGEDCOM RMM2475-2SFP10**Specifications**

Ports: 2
 Speed: 1000 Mbps
 Interface: LX
 SFP Included:
 RUGGEDCOM
 SFP1132-1LX10

Article Numbers

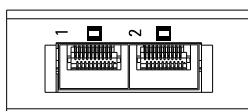
6GK6000-8FG52-2EA0
 (Standard)
 6GK6000-8FG52-2EA1
 (Conformal Coated)

RUGGEDCOM RMM2475-2SFP25**Specifications**

Ports: 2
 Speed: 1000 Mbps
 Interface: LX
 SFP Included:
 RUGGEDCOM
 SFP1132-1LX25

Article Numbers

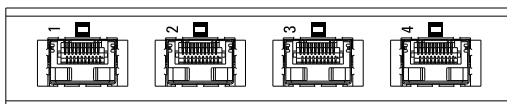
6GK6000-8FG53-2EA0
 (Standard)
 6GK6000-8FG53-2EA1
 (Conformal Coated)

RUGGEDCOM RMM2475-2SFP70**Specifications**

Ports: 2
 Speed: 1000 Mbps
 Interface: LX
 SFP Included:
 RUGGEDCOM
 SFP1132-1LX70

Article Numbers

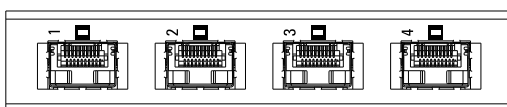
6GK6000-8FG54-2EA0
 (Standard)
 6GK6000-8FG54-2EA1
 (Conformal Coated)

RUGGEDCOM RMM2472-4SFP**Specifications**

Sockets: 4
 SFP Included: No^a

Article Numbers

6GK6000-8FG50-4EA0
 (Standard)
 6GK6000-8FG50-4EA1
 (Conformal Coated)

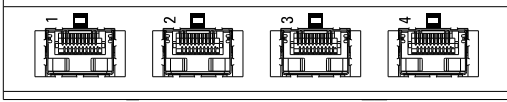
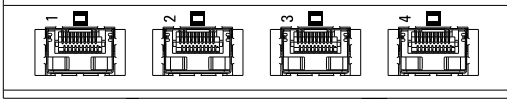
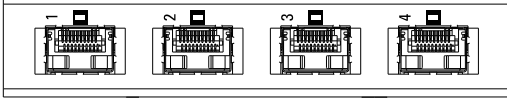
RUGGEDCOM RMM2474-4SFP**Specifications**

Ports: 4
 Speed: 1000 Mbps
 Interface: SX

Article Numbers

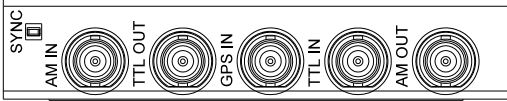
6GK6000-8FG51-4EA0
 (Standard)
 6GK6000-8FG51-4EA1
 (Conformal Coated)

1.1 Available Modules

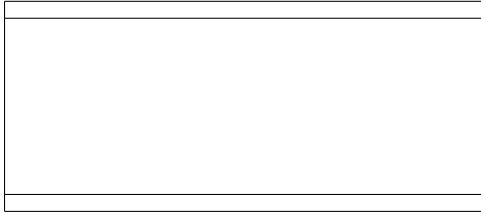
	SFP Included: RUGGEDCOM SFP1122-1SX	
RUGGEDCOM RMM2475-4SFP10	Specifications	Article Numbers
	Ports: 4 Speed: 1000 Mbps Interface: LX SFP Included: RUGGEDCOM SFP1132-1LX10	6GK6000-8FG52-4EA0 (Standard) 6GK6000-8FG52-4EA1 (Conformal Coated)
RUGGEDCOM RMM2475-4SFP25	Specifications	Article Numbers
	Ports: 4 Speed: 1000 Mbps Interface: LX SFP Included: RUGGEDCOM SFP1132-1LX25	6GK6000-8FG53-4EA0 (Standard) 6GK6000-8FG53-4EA1 (Conformal Coated)
RUGGEDCOM RMM2475-4SFP70	Specifications	Article Numbers
	Ports: 4 Speed: 1000 Mbps Interface: LX SFP Included: RUGGEDCOM SFP1132-1LX70	6GK6000-8FG54-4EA0 (Standard) 6GK6000-8FG54-4EA1 (Conformal Coated)

^a Refer to details for a list of compatible SFPs.

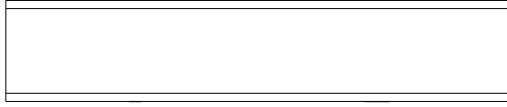
Precision Time Protocol (PTP) Modules

RUGGEDCOM RMM2431-5PTP	Specifications	Article Numbers
	Ports: 5 Protocols: PTP and NTP Synchronization Sources: NTP, IEEE 1588 v2, IRIG-B PWM, GPS Connector: BNC	6GK6000-8PT01-4EA0 (Standard) 6GK6000-8PT01-4EA1 (Conformal Coated)

Blank Modules

RUGGEDCOM RMM2431-2	Specifications	Article Numbers
	—	6GK6000-8AA00-2EA0 (Standard) 6GK6000-8AA00-2EA1 (Conformal Coated)

RUGGEDCOM RMM2431-4



Specifications

—

Article Numbers

6GK6000-8AA00-4EA0
(Standard)

6GK6000-8AA00-4EA1
(Conformal Coated)

1.2 Installing/Removing Modules

Always refer to the *Installation Manual* for the RUGGEDCOM RSG2488 for instructions on how to install or remove a power or media 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).

Power Supply Module Dimensions

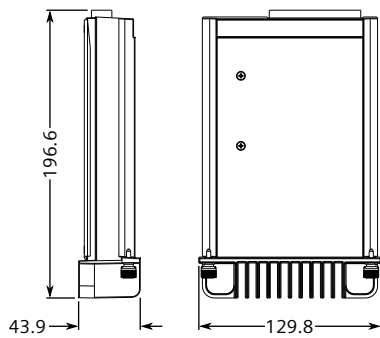


Figure 1.1 Power Supply Module Dimensions

Line Module Dimensions

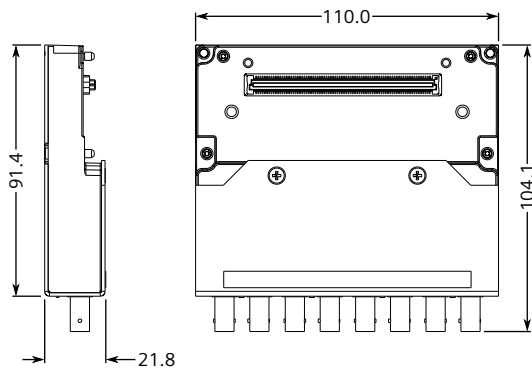


Figure 1.2 4-Port Line Module Dimensions

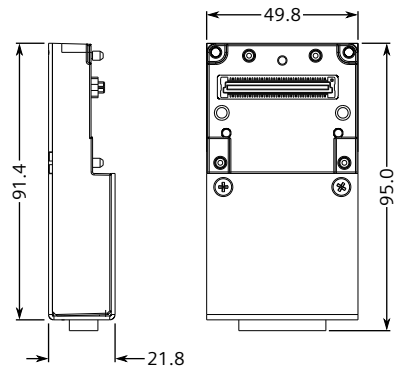


Figure 1.3 2-Port Line Module Dimensions

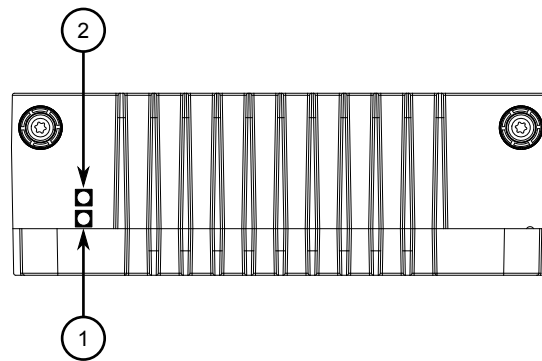
Power Supply Modules

The following power supply modules are available for the RUGGEDCOM RSG2488.

2.1 RUGGEDCOM RPM2410

The RUGGEDCOM RPM2410 power supply module provides 24 VDC power to the device. The module accepts DC power inputs from an external power source.

Description



- ① O LED
- ② I LED

Figure 2.1 RUGGEDCOM RPM2410

Power LEDs	LEDs indicate when the module is receiving and supplying power.		
	LED	State	Description
	O	Green	The module is supplying power.
	I	Green	The module is receiving power.

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

General	Input Range	13 to 36 VDC
	Internal Fuse Rating	10 A
	Cable Length ^a	9.4 m (30.8 ft)
	Power Consumption ^b	62 W
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)

^a Based on #16 AWG wiring.

^b Power consumption varies based on the device configuration.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none">• China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

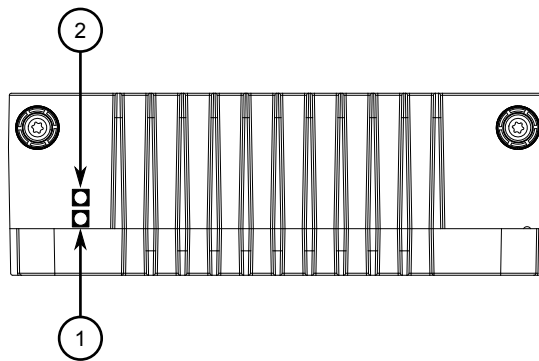
Ordering Information

Description	24VDC (13-36VDC)
Article Numbers	6GK6000-8PS11-1EA0 (Standard) 6GK6000-8PS11-1EA1 (Conformal Coated)

2.2 RUGGEDCOM RPM2420

The RUGGEDCOM RPM2420 power supply module provides 48 VDC power to the device. The module accepts DC power inputs from an external power source.

Description



- ① O LED
- ② I LED

Figure 2.2 RUGGEDCOM RPM2420

Power LEDs	LEDs indicate when the module is receiving and supplying power.		
	LED	State	Description
	O	Green	The module is supplying power.
	I	Green	The module is receiving power.

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

General	Input Range	36 to 72 VDC
	Internal Fuse Rating	5 A
	Cable Length ^a	44.9 m (167 ft)
	Power Consumption ^b	59 W
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)

^a Based on #16 AWG wiring.

^b Power consumption varies based on the device configuration.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

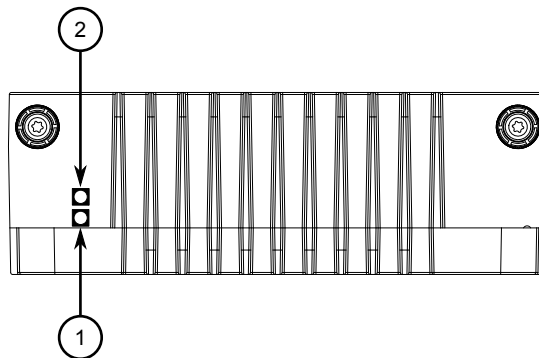
Ordering Information

Description	48VDC (36-72VDC)
Article Numbers	6GK6000-8PS12-1EA0 (Standard) 6GK6000-8PS12-1EA1 (Conformal Coated)

2.3 RUGGEDCOM RPM2430

The RUGGEDCOM RPM2430 power supply module provides high VDC or VAC power to the device. The module accepts either AC or DC power inputs from an external power source.

Description



- ① O LED
- ② I LED

Figure 2.3 RUGGEDCOM RPM2430

Power LEDs	LEDs indicate when the module is receiving and supplying power.		
	LED	State	Description
	O	Green	The module is supplying power.
	I	Green	The module is receiving power.

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

General	Input Range	88 to 300 VDC or 85 to 264 VAC
	Internal Fuse Rating	3.15 A
	Power Consumption ^a	66 W
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)

^a Power consumption varies based on the device configuration.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	88-300VDC or 85-264VAC
Article Numbers	6GK6000-8PS13-1EA0 (Standard) 6GK6000-8PS13-1EA1 (Conformal Coated)

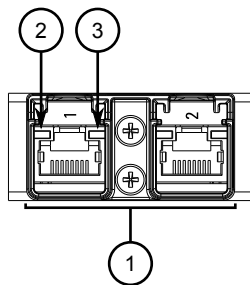
Copper Ethernet Modules

The following copper Ethernet modules are available for the RUGGEDCOM RSG2488.

3.1 RUGGEDCOM RMM2473-2FC

The RUGGEDCOM RMM2473-2FC module features two 10/100/1000Base-TX copper FastConnect RJ45 Ethernet ports.

Description



- ① Ethernet Ports
- ② Speed LED
- ③ Link/Activity LED

Figure 3.1 RUGGEDCOM RMM2473-2FC

Ethernet Ports	Fixed 10/100/1000Base-TX copper FastConnect RJ45 Ethernet ports.			
Port LEDs	Each port features LEDs that indicate its link/activity state.			
		LED	State	Description
	Speed		Yellow	The port is operating at 1000 Mbps
			Off	The port is operating at 10 or 100 Mbps
	Link/Activity		Green (Solid)	Link established
		Green (Blinking)	Activity	
		Off	No link detected	

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Pin-Out Description

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

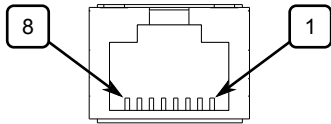


Figure 3.2 RJ45 Ethernet Port Pin Configuration

Pin	Name		Description
	10/100Base-TX	1000Base-TX	
1	RX+	BI_DB+	Receive Data+ or Bi-Directional
2	RX-	BI_DB-	Receive Data- or Bi-Directional
3	TX+	BI_DA+	Transmit Data+ or Bi-Directional
4	Reserved (Do Not Connect)	BI_DD+	Bi-Directional
5	Reserved (Do Not Connect)	BI_DD-	Bi-Directional
6	TX-	BI_DA-	Transmit Data- or Bi-Directional
7	Reserved (Do Not Connect)	BI_DC+	Bi-Directional
8	Reserved (Do Not Connect)	BI_DC-	Bi-Directional

Technical Specifications

Interface/Cable	Cable Type	> CAT-5
	Speed	1000 Mbps
	Connector	RJ45
	Duplex	FDX/HDX
	Wiring Standard	TIA/EIA T568A/B
	Maximum Distance	100 m (328 ft)
	Isolation	1.5 kV
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)

Certification

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

Certification	Details
RoHS	This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives

Certification	Details
	for the restricted use of certain hazardous substances in electrical and electronic equipment: <ul style="list-style-type: none"> <li data-bbox="754 353 1455 454"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831 .

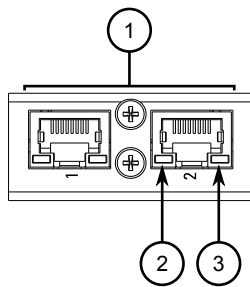
Ordering Information

Description	2 x 10/100/1000Tx RJ45
Article Numbers	6GK6000-8CG02-2EA0 (Standard) 6GK6000-8CG02-2EA1 (Conformal Coated)

3.2 RUGGEDCOM RMM2473-2RJ45

The RUGGEDCOM RMM2473-2RJ45 module features two 10/100/1000Base-TX copper RJ45 Ethernet ports.

Description



- ① Ethernet Ports
- ② Link/Activity LED
- ③ Speed LED

Figure 3.3 RUGGEDCOM RMM2473-2RJ45

Ethernet Ports	Fixed 10/100/1000Base-TX copper RJ45 Ethernet ports.		
Port LEDs	Each port features LEDs that indicate its link/activity state.		
	LED	State	Description
	Speed	Yellow	The port is operating at 1000 Mbps
		Off	The port is operating at 10 or 100 Mbps
	Link/Activity	Green (Solid)	Link established
Green (Blinking)		Activity	
Off		No link detected	

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Pin-Out Description

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

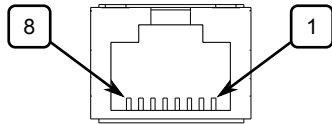


Figure 3.4 RJ45 Ethernet Port Pin Configuration

Pin	Name		Description
	10/100Base-TX	1000Base-TX	
1	RX+	BI_DB+	Receive Data+ or Bi-Directional
2	RX-	BI_DB-	Receive Data- or Bi-Directional
3	TX+	BI_DA+	Transmit Data+ or Bi-Directional
4	Reserved (Do Not Connect)	BI_DD+	Bi-Directional
5	Reserved (Do Not Connect)	BI_DD-	Bi-Directional
6	TX-	BI_DA-	Transmit Data- or Bi-Directional
7	Reserved (Do Not Connect)	BI_DC+	Bi-Directional
8	Reserved (Do Not Connect)	BI_DC-	Bi-Directional

Technical Specifications

Interface/Cable	Speed	1000 Mbps
	Connector	RJ45
	Duplex	FDX/HDX
	Cable Type	> CAT-5
	Wiring Standard	TIA/EIA T568A/B
	Maximum Distance	100 m (328 ft)
	Isolation	1.5 kV
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)

Certification

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

Certification	Details
RoHS	This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives

Certification	Details
	<p>for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

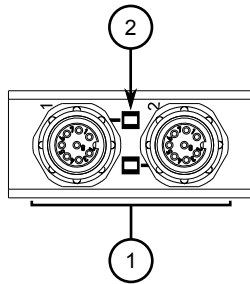
Ordering Information

Description	2 x 10/100/1000Tx RJ45
Article Numbers	6GK6000-8CG01-2EA0 (Standard) 6GK6000-8CG01-2EA1 (Conformal Coated)

3.3 RUGGEDCOM RMM2473-2M12A

The RUGGEDCOM RMM2473-2M12A module features two 10/100/1000Base-TX copper M12 (8-pin, A-Coded) Ethernet ports.

Description



- ① Ethernet Ports
- ② Port LED

Figure 3.5 RUGGEDCOM RMM2473-2M12A

Ethernet Ports	Fixed 10/100/1000Base-TX copper M12 Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Pin-Out Description

The following are the pin-out descriptions for the M12 ports:

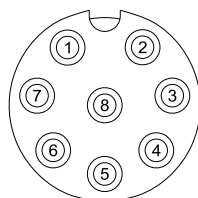


Figure 3.6 8-Pin M12 A-Coded Ethernet Port Pin Configuration

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

^a Terminated at GND (Ground)

Technical Specifications

Interface/Cable	Cable Type	> CAT-5
	Speed	1000 Mbps
	Connector	M12 (8-Pin, A-Coded)
	Duplex	FDX/HDX
	Wiring Standard	Local
	Maximum Distance	100 m (328 ft)
	Isolation	1.5 kV
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)

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

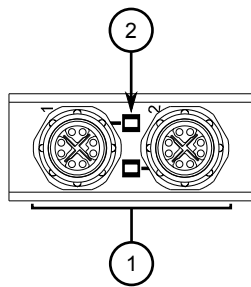
Description	2 x 10/100/1000Tx M12 A-Coded
Article Numbers	6GK6000-8CG03-2EA0 (Standard)

6GK6000-8CG03-2EA1 (Conformal Coated)

3.4 RUGGEDCOM RMM2473-2M12X

The RUGGEDCOM RMM2473-2M12X module features two 10/100/1000Base-TX copper M12 (8-pin, X-coded) Ethernet ports.

Description



- ① Ethernet Ports
- ② Port LED

Figure 3.7 RUGGEDCOM RMM2473-2M12X

Ethernet Ports	Fixed 10/100/1000Base-TX copper M12 Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Pin-Out Description

The following are the pin-out descriptions for the M12 ports:

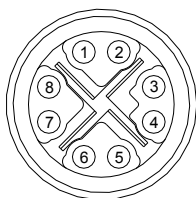


Figure 3.8 8-Pin M12 X-Coded Ethernet Port Pin Configuration

Pin	Name
1	A+
2	A-
3	B+
4	B-
5	D+
6	D-
7	C+
8	C-

Technical Specifications

Interface/Cable	Cable Type	> CAT-5
	Speed	1000 Mbps
	Connector	M12 (8-Pin, X-Coded)
	Duplex	FDX/HDX
	Wiring Standard	Local
	Maximum Distance	100 m (328 ft)
	Isolation	1.5 kV
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)

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

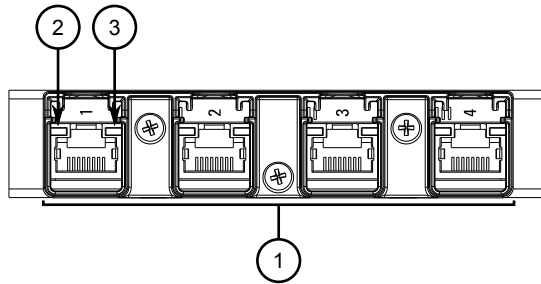
Ordering Information

Description	2 x 10/100/1000Tx M12 X-Coded
Article Numbers	6GK6000-8CG04-2EA0 (Standard) 6GK6000-8CG04-2EA1 (Conformal Coated)

3.5 RUGGEDCOM RMM2473-4FC

The RUGGEDCOM RMM2473-4FC module features four 10/100/1000Base-TX copper FastConnect RJ45 Ethernet ports.

Description



- ① Ethernet Ports
- ② Speed LED
- ③ Link/Activity LED

Figure 3.9 RUGGEDCOM RMM2473-4FC

Ethernet Ports	Fixed 10/100/1000Base-TX copper FastConnect RJ45 Ethernet ports.		
Port LEDs	Each port features LEDs that indicate its link/activity state.		
	LED	State	Description
	Speed	Yellow	The port is operating at 1000 Mbps
		Off	The port is operating at 10 or 100 Mbps
	Link/Activity	Green (Solid)	Link established
Green (Blinking)		Activity	
Off		No link detected	

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Pin-Out Description

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

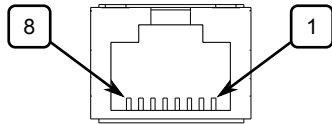


Figure 3.10 RJ45 Ethernet Port Pin Configuration

Pin	Name		Description
	10/100Base-TX	1000Base-TX	
1	RX+	BI_DB+	Receive Data+ or Bi-Directional
2	RX-	BI_DB-	Receive Data- or Bi-Directional
3	TX+	BI_DA+	Transmit Data+ or Bi-Directional
4	Reserved (Do Not Connect)	BI_DD+	Bi-Directional
5	Reserved (Do Not Connect)	BI_DD-	Bi-Directional
6	TX-	BI_DA-	Transmit Data- or Bi-Directional
7	Reserved (Do Not Connect)	BI_DC+	Bi-Directional
8	Reserved (Do Not Connect)	BI_DC-	Bi-Directional

Technical Specifications

Interface/Cable	Speed	1000 Mbps
	Connector	FastConnect RJ45
	Duplex	FDX/HDX
	Cable Type	> CAT-5
	Wiring Standard	TIA/EIA T568A/B
	Maximum Distance	100 m (328 ft)
	Isolation	1.5 kV
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)

Certification

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

Certification	Details
RoHS	This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives

Certification	Details
	for the restricted use of certain hazardous substances in electrical and electronic equipment: <ul style="list-style-type: none"><li data-bbox="719 360 1417 456">• China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831 .

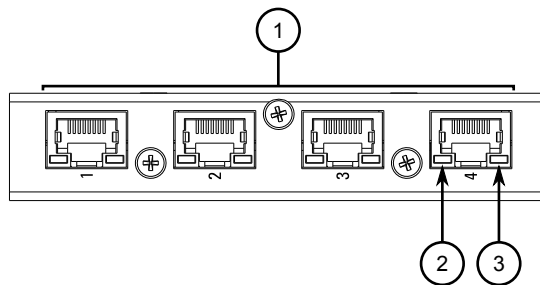
Ordering Information

Description	4 x 10/100/1000Tx FastConnect
Article Numbers	6GK6000-8CG02-4EA0 (Standard) 6GK6000-8CG02-4EA1 (Conformal Coated)

3.6 RUGGEDCOM RMM2473-4RJ45

The RUGGEDCOM RMM2473-4RJ45 module features four 10/100/1000Base-TX copper RJ45 Ethernet ports.

Description



- ① Ethernet Ports
- ② Link/Activity LED
- ③ Speed LED

Figure 3.11 RUGGEDCOM RMM2473-4RJ45

Ethernet Ports	Fixed 10/100/1000Base-TX copper RJ45 Ethernet ports.		
Port LEDs	Each port features LEDs that indicate its link/activity state.		
	LED	State	Description
	Speed	Yellow	The port is operating at 1000 Mbps
		Off	The port is operating at 10 or 100 Mbps
	Link/Activity	Green (Solid)	Link established
Green (Blinking)		Activity	
Off		No link detected	

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Pin-Out Description

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

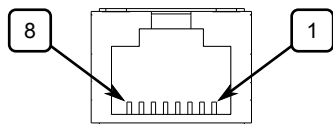


Figure 3.12 RJ45 Ethernet Port Pin Configuration

Pin	Name		Description
	100Base-TX	1000Base-TX	
1	RX+	BI_DB+	Receive Data+ or Bi-Directional
2	RX-	BI_DB-	Receive Data- or Bi-Directional
3	TX+	BI_DA+	Transmit Data+ or Bi-Directional
4	Reserved (Do Not Connect)	BI_DD+	Bi-Directional
5	Reserved (Do Not Connect)	BI_DD-	Bi-Directional
6	TX-	BI_DA-	Transmit Data- or Bi-Directional
7	Reserved (Do Not Connect)	BI_DC+	Bi-Directional
8	Reserved (Do Not Connect)	BI_DC-	Bi-Directional

Technical Specifications

Interface/Cable	Cable Type	> CAT-5
	Speed	1000 Mbps
	Connector	RJ45
	Duplex	FDX/HDX
	Wiring Standard	TIA/EIA T568A/B
	Maximum Distance	100 m (328 ft)
	Isolation	1.5 kV
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)

Certification

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

Certification	Details
RoHS	This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives

Certification	Details
	for the restricted use of certain hazardous substances in electrical and electronic equipment: <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831 .

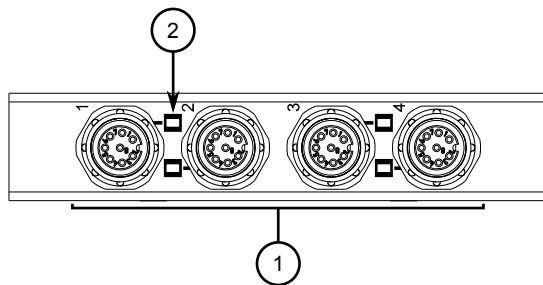
Ordering Information

Description	4 x 10/100/1000Tx RJ45
Article Numbers	6GK6000-8CG01-4EA0 (Standard) 6GK6000-8CG01-4EA1 (Conformal Coated)

3.7 RUGGEDCOM RMM2473-4M12A

The RUGGEDCOM RMM2473-4M12A module features four 10/100/1000Base-TX copper M12 (8-pin, A-Coded) Ethernet ports.

Description



- ① Ethernet Ports
- ② Port LED

Figure 3.13 RUGGEDCOM RMM2473-4M12A

Ethernet Ports	Fixed 10/100/1000Base-TX copper M12 Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Pin-Out Description

The following are the pin-out descriptions for the M12 ports:

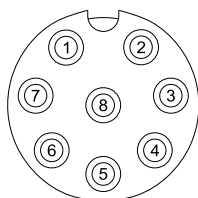


Figure 3.14 8-Pin M12 A-Coded Ethernet Port Pin Configuration

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

^a Terminated at GND (Ground)

Technical Specifications

Interface/Cable	Speed	1000 Mbps
	Connector	M12 (8-Pin, A-Coded)
	Duplex	FDX/HDX
	Cable Type	> CAT-5
	Wiring Standard	Local
	Maximum Distance	100 m (328 ft)
	Isolation	1.5 kV
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)

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

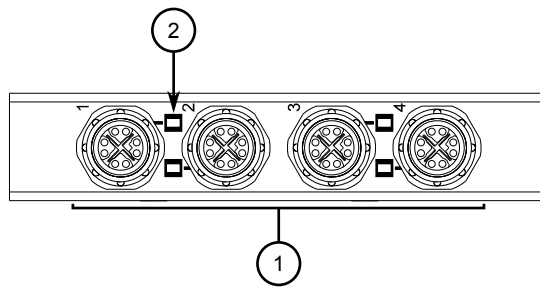
Description	4 x 10/100/1000Tx M12 A-Coded
Article Numbers	6GK6000-8CG03-4EA0 (Standard)

6GK6000-8CG03-4EA1 (Conformal Coated)

3.8 RUGGEDCOM RMM2473-4M12X

The RUGGEDCOM RMM2473-4M12X module features four 10/100/1000Base-TX copper M12 (8-pin, X-coded) Ethernet ports.

Description



- ① Ethernet Ports
- ② Port LED

Figure 3.15 RUGGEDCOM RMM2473-4M12X

Ethernet Ports	Fixed 10/100/1000Base-TX copper M12 Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Pin-Out Description

The following are the pin-out descriptions for the M12 ports:

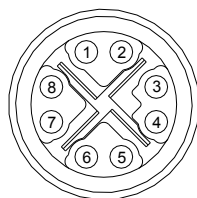


Figure 3.16 8-Pin M12 X-Coded Ethernet Port Pin Configuration

Pin	Name
1	A+
2	A-
3	B+
4	B-
5	D+
6	D-
7	C+
8	C-

Technical Specifications

Interface/Cable	Cable Type	> CAT-5
	Speed	1000 Mbps
	Connector	M12 (8-Pin, X-Coded)
	Duplex	FDX/HDX
	Wiring Standard	Local
	Maximum Distance	100 m (328 ft)
	Isolation	1.5 kV
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)

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 10/100/1000Tx M12 X-Coded
Article Numbers	6GK6000-8CG04-4EA0 (Standard) 6GK6000-8CG04-4EA1 (Conformal Coated)

Fiber Optic Ethernet Modules

The following fiber optic Ethernet modules are available for the RUGGEDCOM RSG2488.

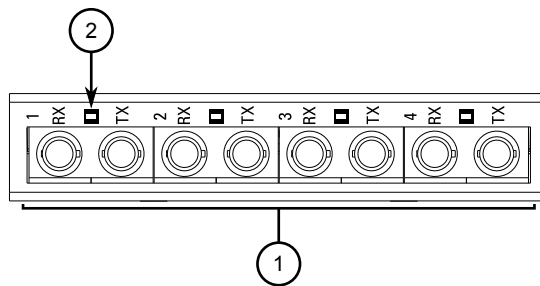
4.1 RUGGEDCOM RMM2464-4ST2

The RUGGEDCOM RMM2464-4ST2 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.

Description



- ① Ethernet Ports
- ② Port LED

Figure 4.1 RUGGEDCOM RMM2464-4ST2

Ethernet Ports	Fixed 100Base-FX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Interface/Cable	Cable Type	62.5/125 μ m
	Speed	100 Mbps
	Mode	MM (Multi-Mode)
	Interface	FX
	Connector	ST
	Wavelength ^a	1310 nm

	Nominal Distance ^a	2 km (1.2 mi)
Optical Characteristics	Transmit Power	-19 to -14 dBm
	Receiver Sensitivity	-32 dBm
	Receiver Saturation	-14 dBm
	Power Budget	12 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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 100FX - Multimode, 1310nm, ST, 2 km
Article Numbers	6GK6000-8FX01-4EA0 (Standard) 6GK6000-8FX01-4EA1 (Conformal Coated)

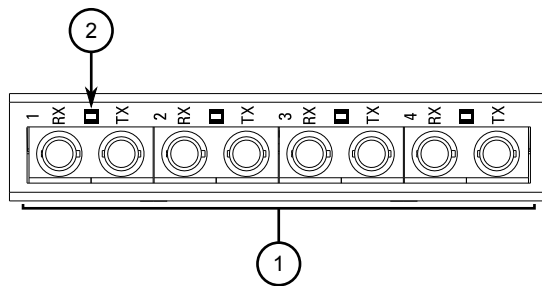
4.2 RUGGEDCOM RMM2465-4ST20

The RUGGEDCOM RMM2464-4ST20 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.

Description



- ① Ethernet Ports
- ② Port LED

Figure 4.2 RUGGEDCOM RMM2465-4ST20

Ethernet Ports	Fixed 100Base-FX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Interface/Cable	Speed	100 Mbps
	Mode	SM (Single-Mode)
	Interface	FX
	Connector	ST
	Cable Type	9/125 μm
	Wavelength ^a	1310 nm

	Nominal Distance ^a	20 km (12.4 mi)
Optical Characteristics	Transmit Power	-15 to -8 dBm
	Receiver Sensitivity	-34 dBm
	Receiver Saturation	-3 dBm
	Power Budget	17 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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 100FX - Singlemode, 1310nm, ST, 20km
Article Numbers	6GK6000-8FX04-4EA0 (Standard) 6GK6000-8FX04-4EA1 (Conformal Coated)

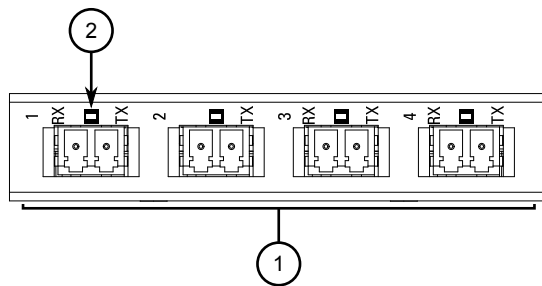
4.3 RUGGEDCOM RMM2474-4LC

The RUGGEDCOM RMM2474-4LC module features four 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.

Description



- ① Ethernet Ports
- ② Port LED

Figure 4.3 RUGGEDCOM RMM2474-4LC

Ethernet Ports	Fixed 1000Base-FX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Interface/Cable	Cable Type	62.5/125 μm
	Speed	1000 Mbps
	Mode	MM (Multi-Mode)
	Interface	SX
	Connector	LC
	Wavelength ^a	850 nm

	Nominal Distance ^a	500 m (1640 ft)
Optical Characteristics	Transmit Power	-19 to -14 dBm
	Receiver Sensitivity	-32 dBm
	Receiver Saturation	-14 dBm
	Power Budget	13 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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 1000SX - Multimode, 850nm, LC, 500m
Article Numbers	6GK6000-8FG01-4EA0 (Standard) 6GK6000-8FG01-4EA1 (Conformal Coated)

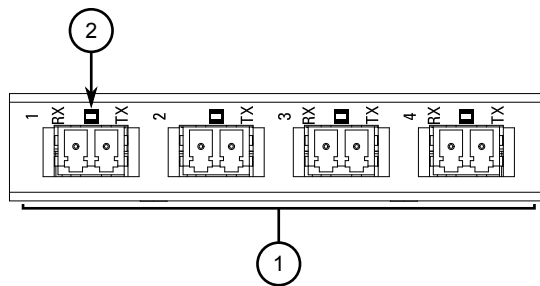
4.4 RUGGEDCOM RMM2464-4LC2

The RUGGEDCOM RMM2464-4LC2 module features two 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.

Description



① Ethernet Ports

② Port LED

Figure 4.4 RUGGEDCOM RMM2464-4LC2

Ethernet Ports	Fixed 100Base-FX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Interface/Cable	Cable Type	62.5/125 μ m
	Speed	100 Mbps
	Mode	MM (Multi-Mode)
	Interface	FX
	Connector	LC
	Wavelength ^a	1310 nm

	Nominal Distance ^a	2 km (1.2 mi)
Optical Characteristics	Transmit Power	-19 to -14 dBm
	Receiver Sensitivity	-32 dBm
	Receiver Saturation	-14 dBm
	Power Budget	13 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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 100FX - Multimode, 1310nm, LC, 2km
Article Numbers	6GK6000-8FX11-4EA0 (Standard) 6GK6000-8FX11-4EA1 (Conformal Coated)

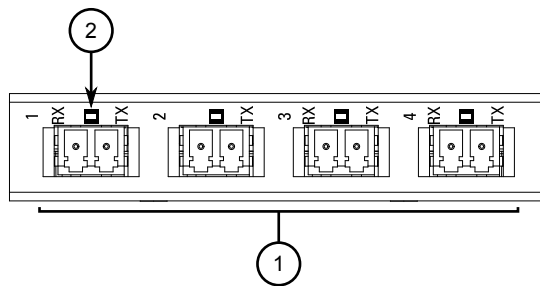
4.5 RUGGEDCOM RMM2475-4LC10

The RUGGEDCOM RMM2475-4LC10 module features four 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.

Description



- ① Ethernet Ports
- ② Port LED

Figure 4.5 RUGGEDCOM RMM2475-4LC10

Ethernet Ports	Fixed 1000Base-LX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Optical Characteristics	Transmit Power	-9.5 to -3 dBm
	Receiver Sensitivity	-21 dBm
	Receiver Saturation	-3 dBm
	Power Budget	11.5 dB
Interface/Cable	Cable Type	9/125 μm
	Speed	1000 Mbps

	Mode	SM (Single-Mode)
	Interface	LX
	Connector	LC
	Wavelength ^a	1310 nm
	Nominal Distance ^a	10 km (6.2 mi)
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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 100FX - Singlemode, 1310nm, LC, 10km
Article Numbers	6GK6000-8FG03-4EA0 (Standard) 6GK6000-8FG03-4EA1 (Conformal Coated)

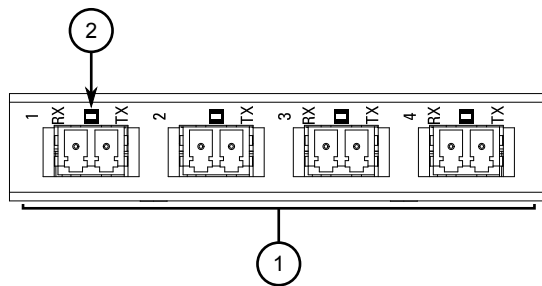
4.6 RUGGEDCOM RMM2465-4LC20

The RUGGEDCOM RMM2465-4LC20 module features four 100Base-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.

Description



- ① Ethernet Ports
- ② Port LED

Figure 4.6 RUGGEDCOM RMM2465-4LC20

Ethernet Ports	Fixed 100Base-FX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Interface/Cable	Cable Type	9/125 μm
	Speed	100 Mbps
	Mode	SM (Single-Mode)
	Interface	LX
	Connector	LC
	Wavelength ^a	1310 nm

	Nominal Distance ^a	20 km (12.4 mi)
Optical Characteristics	Transmit Power	-15 to -8 dBm
	Receiver Sensitivity	-34 dBm
	Receiver Saturation	-3 dBm
	Power Budget	19 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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 100FX - Singlemode, 1310nm, LC, 20km
Article Numbers	6GK6000-8FX06-4EA0 (Standard) 6GK6000-8FX06-4EA1 (Conformal Coated)

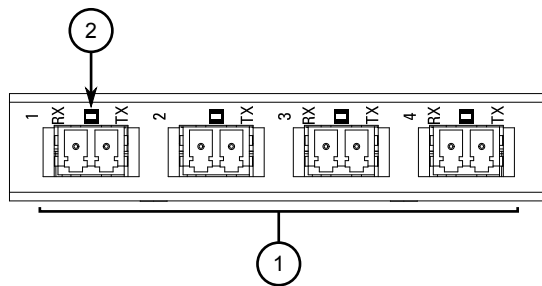
4.7 RUGGEDCOM RMM2475-4LC25

The RUGGEDCOM RMM2475-4LC25 module features four 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.

Description



- ① Ethernet Ports
- ② Port LED

Figure 4.7 RUGGEDCOM RMM2475-4LC25

Ethernet Ports	Fixed 1000Base-LX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Interface/Cable	Cable Type	9/125 μm
	Speed	1000 Mbps
	Mode	SM (Single-Mode)
	Interface	LX
	Connector	LC
	Wavelength ^a	1310 nm

	Nominal Distance ^a	25 km (15.5 mi)
Optical Characteristics	Transmit Power	-7 to -3 dBm
	Receiver Sensitivity	-24 dBm
	Receiver Saturation	-3 dBm
	Power Budget	17 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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 1000LX - Singlemode, 1310nm, LC, 25km
Article Numbers	6GK6000-8FG05-4EA0 (Standard) 6GK6000-8FG05-4EA1 (Conformal Coated)

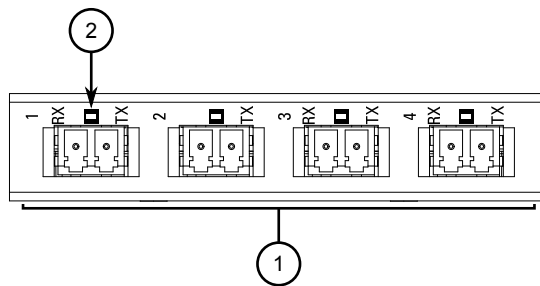
4.8 RUGGEDCOM RMM2465-4LC90

The RUGGEDCOM RMM2465-4LC90 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.

Description



- ① Ethernet Ports
- ② Port LED

Figure 4.8 RUGGEDCOM RMM2465-4LC90

Ethernet Ports	Fixed 100Base-FX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Interface/Cable	Cable Type	9/125 μm
	Speed	100 Mbps
	Mode	SM (Single-Mode)
	Interface	FX
	Connector	LC
	Wavelength ^a	1310 nm

	Nominal Distance ^a	90 km (55.9 mi)
Optical Characteristics	Transmit Power	0 to 5 dBm
	Receiver Sensitivity	-37 dBm
	Receiver Saturation	0 dBm
	Power Budget	37 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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 100FX - Singlemode, 1310nm, LC, 90km
Article Numbers	6GK6000-8FX10-4EA0 (Standard) 6GK6000-8FX10-4EA1 (Conformal Coated)

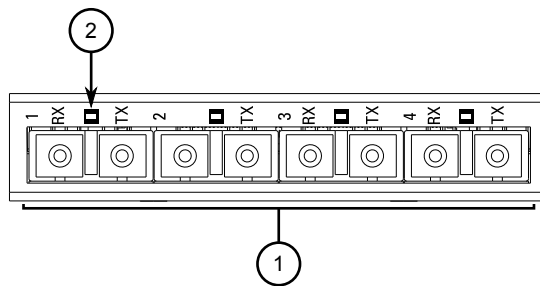
4.9 RUGGEDCOM RMM2464-4SC2

The RUGGEDCOM RMM2464-4SC2 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.

Description



- ① Ethernet Ports
- ② Port LED

Figure 4.9 RUGGEDCOM RMM2464-4SC2

Ethernet Ports	Fixed 100Base-FX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Interface/Cable	Cable Type	50/125 μm 62.5/125 μm
	Speed	100 Mbps
	Mode	MM (Multi-Mode)
	Interface	FX
	Connector	SC

	Wavelength ^a	1300 nm
	Nominal Distance ^a	2 km (1.2 mi)
Optical Characteristics	Transmit Power	-22.5 to -14 dBm (50/125 μm) -19 to -14 dBm (62.5/125 μm)
	Receiver Sensitivity	-31 dBm
	Receiver Saturation	-14 dBm
	Power Budget	8.5 dB (50/125 μm) 12 dB (62.5/125 μm)
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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 100FX - Multimode, 1300nm, SC, 2km
Article Numbers	6GK6000-8FX02-4EA0 (Standard) 6GK6000-8FX02-4EA1 (Conformal Coated)

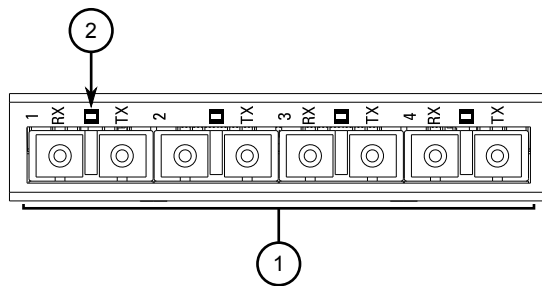
4.10 RUGGEDCOM RMM2475-4SC10

The RUGGEDCOM RMM2475-4SC10 module features four 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.

Description



- ① Ethernet Ports
- ② Port LED

Figure 4.10 RUGGEDCOM RMM2475-4SC10

Ethernet Ports	Fixed 1000Base-LX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Optical Characteristics	Transmit Power	-10 to -3 dBm
	Receiver Sensitivity	-20 dBm
	Receiver Saturation	-3 dBm
	Power Budget	10 dB
Interface/Cable	Cable Type	9/125 μ m
	Speed	1000 Mbps

	Mode	SM (Single-Mode)
	Interface	LX
	Connector	SC
	Wavelength ^a	1310 nm
	Nominal Distance ^a	10 km (6.2 mi)
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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 100FX - Singlemode, 1310nm, SC, 10km
Article Numbers	6GK6000-8FG02-4EA0 (Standard) 6GK6000-8FG02-4EA1 (Conformal Coated)

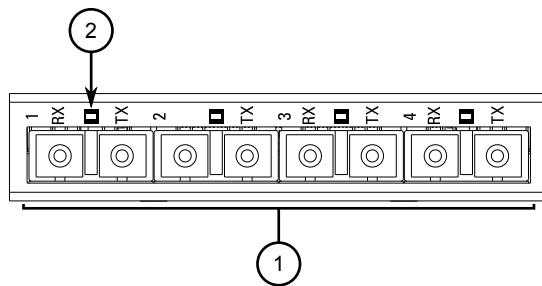
4.11 RUGGEDCOM RMM2465-4SC20

The RUGGEDCOM RMM2465-4SC20 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.

Description



- ① Ethernet Ports
- ② Port LED

Figure 4.11 RUGGEDCOM RMM2465-4SC20

Ethernet Ports	Fixed 100Base-FX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Optical Characteristics	Transmit Power	-15 to -8 dBm
	Receiver Sensitivity	-31 dBm
	Receiver Saturation	-7 dBm
	Power Budget	16 dB
Interface/Cable	Cable Type	9/125 μm
	Speed	100 Mbps

	Mode	SM (Single-Mode)
	Interface	FX
	Connector	SC
	Wavelength ^a	1310 nm
	Nominal Distance ^a	20 km (12.4 mi)
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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 100FX - Singlemode, 1310nm, SC, 20km
Article Numbers	6GK6000-8FX05-4EA0 (Standard) 6GK6000-8FX05-4EA1 (Conformal Coated)

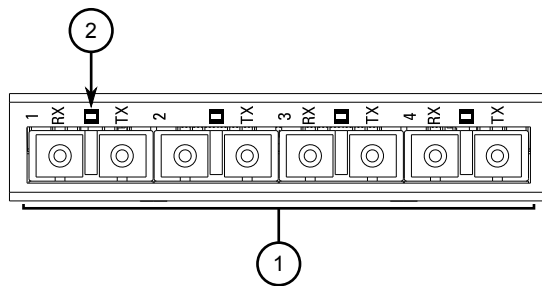
4.12 RUGGEDCOM RMM2475-4SC50

The RUGGEDCOM RMM2475-4SC50 module features four 1000Base-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.

Description



- ① Ethernet Ports
- ② Port LED

Figure 4.12 RUGGEDCOM RMM2475-4SC50

Ethernet Ports	Fixed 1000Base-FX fiber optic Ethernet ports.	
Port LEDs	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

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

Interface/Cable	Cable Type	9/125 μm
	Speed	1000 Mbps
	Mode	SM (Single-Mode)
	Interface	FX
	Connector	SC
	Wavelength ^a	1310 nm

	Nominal Distance ^a	50 km (31.1 mi)
Optical Characteristics	Transmit Power	-5 to 0 dBm
	Receiver Sensitivity	-34 dBm
	Receiver Saturation	-3 dBm
	Power Budget	29 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)

^a Typical.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

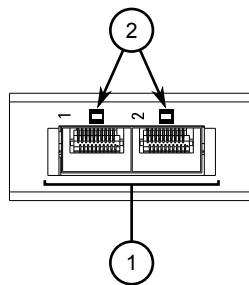
Ordering Information

Description	4 x 1000FX Singlemode, 1310nm, SC, 50km
Article Numbers	6GK6000-8FG04-4EA0 (Standard) 6GK6000-8FG04-4EA1 (Conformal Coated)

4.13 RUGGEDCOM RMM2472-2SFP

The RUGGEDCOM RMM2472-2SFP module features sockets for up to two Small Form-factor Pluggable (SFP) transceivers.

Description



- ① SFP Transceiver Sockets
- ② Port LED

Figure 4.13 RUGGEDCOM RMM2472-2SFP

SFP Transceiver Sockets	Sockets available for up to two 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] .	
Port LEDs	Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver.	
	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 Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

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

^a Temperature range may be reduced depending on the installed SFP transceiver.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none">• China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

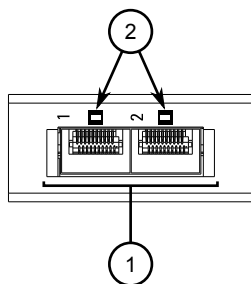
Ordering Information

Description	2 x Blank SFP (no optical transceiver)
Article Numbers	6GK6000-8FG50-2EA0 (Standard) 6GK6000-8FG50-2EA1 (Conformal Coated)

4.14 RUGGEDCOM RMM2474-2SFP

The RUGGEDCOM RMM2474-2SFP module features two 1000Base-SX SFP transceivers. These transceivers can be exchanged for any other transceiver supported by the RUGGEDCOM RSG2488.

Description



- ① SFP Transceiver Sockets
- ② Port LED

Figure 4.14 RUGGEDCOM RMM2474-2SFP

SFP Transceiver Sockets	Sockets available for up to two 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 <i>RUGGEDCOM SFP Transceiver Catalog</i> [https://support.industry.siemens.com/cs/ca/en/view/109482309].								
Port LEDs	Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver. <table border="1" style="width: 100%; margin-top: 5px;"> <thead> <tr> <th>State</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Green (Solid)</td> <td>Link established</td> </tr> <tr> <td>Green (Blinking)</td> <td>Activity</td> </tr> <tr> <td>Off</td> <td>No link detected</td> </tr> </tbody> </table>	State	Description	Green (Solid)	Link established	Green (Blinking)	Activity	Off	No link detected
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 Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

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

^a Temperature range may be reduced depending on the installed SFP transceiver.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none">• China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

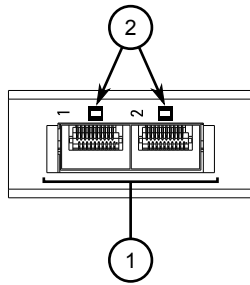
Ordering Information

Description	2 x 1000SX SFP - Multimode, 850nm, LC, 500m
Article Numbers	6GK6000-8FG51-2EA0 (Standard) 6GK6000-8FG51-2EA1 (Conformal Coated)

4.15 RUGGEDCOM RMM2464-2SFP2

The RUGGEDCOM RMM2464-2SFP2 module features two 100Base-FX SFP transceivers. These transceivers can be exchanged for any other transceiver supported by the RUGGEDCOM RSG2488.

Description



- ① SFP Transceiver Sockets
- ② Port LED

Figure 4.15 RUGGEDCOM RMM2464-2SFP2

SFP Transceiver Sockets	Sockets available for up to two 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/en/view/109482309] .	
Port LEDs	Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver.	
	State	Description
	Green (Solid)	Link established
	Green (Blinking)	Activity
	Off	No link detected

Pre-Installed SFP Transceivers

This module comes with two of the following SFP transceiver pre-installed:

SFP Transceiver	Connector Type	Speed (Mbps)	Mode ^a	Nominal Distance (km)
RUGGEDCOM SFP1121-1FX2	LC	100	MM	2

^a MM = Multi-Mode, SM = Single-Mode

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

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

^a Temperature range may be reduced depending on the installed SFP transceiver.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

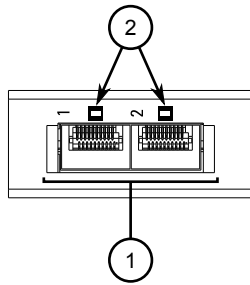
Ordering Information

Description	2 x 100FX SFP - Multimode, 1310nm, LC, 2km
Article Numbers	6GK6000-8FX51-2EA0 (Standard) 6GK6000-8FX51-2EA1 (Conformal Coated)

4.16 RUGGEDCOM RMM2475-2SFP10

The RUGGEDCOM RMM2475-2SFP10 module features two 1000Base-LX SFP transceivers. These transceivers can be exchanged for any other transceiver supported by the RUGGEDCOM RSG2488.

Description



- ① SFP Transceiver Sockets
- ② Port LED

Figure 4.16 RUGGEDCOM RMM2475-2SFP10

SFP Transceiver Sockets	Sockets available for up to two 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/en/view/109482309] .	
Port LEDs	Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver.	
	State	Description
	Green (Solid)	Link established
	Green (Blinking)	Activity
	Off	No link detected

Pre-Installed SFP Transceivers

This module comes with two of the following SFP transceiver pre-installed:

SFP Transceiver	Connector Type	Speed (Mbps)	Mode ^a	Nominal Distance (km)
RUGGEDCOM SFP1132-1LX10	LC	1000	SM	10

^a MM = Multi-Mode, SM = Single-Mode

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

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

^a Temperature range may be reduced depending on the installed SFP transceiver.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

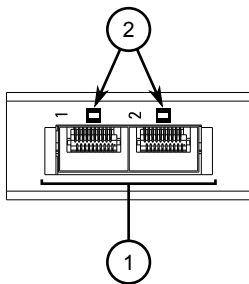
Ordering Information

Description	2 x 1000LX SFP - Singlemode, 1310nm, LC, 10km
Article Numbers	6GK6000-8FG52-2EA0 (Standard) 6GK6000-8FG52-2EA1 (Conformal Coated)

4.17 RUGGEDCOM RMM2475-2SFP25

The RUGGEDCOM RMM2475-2SFP25 module features two 1000Base-LX SFP transceivers. These transceivers can be exchanged for any other transceiver supported by the RUGGEDCOM RSG2488.

Description



- ① SFP Transceiver Sockets
- ② Port LED

Figure 4.17 RUGGEDCOM RMM2475-2SFP25

SFP Transceiver Sockets	Sockets available for up to two 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/en/view/109482309] .								
Port LEDs	Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver. <table border="1" style="width: 100%; margin-top: 5px;"> <thead> <tr> <th>State</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Green (Solid)</td> <td>Link established</td> </tr> <tr> <td>Green (Blinking)</td> <td>Activity</td> </tr> <tr> <td>Off</td> <td>No link detected</td> </tr> </tbody> </table>	State	Description	Green (Solid)	Link established	Green (Blinking)	Activity	Off	No link detected
State	Description								
Green (Solid)	Link established								
Green (Blinking)	Activity								
Off	No link detected								

Pre-Installed SFP Transceivers

This module comes with two of the following SFP transceiver pre-installed:

SFP Transceiver	Connector Type	Speed (Mbps)	Mode ^a	Nominal Distance (km)
RUGGEDCOM SFP1132-1LX25	LC	1000	SM	25

^a MM = Multi-Mode, SM = Single-Mode

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

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

^a Temperature range may be reduced depending on the installed SFP transceiver.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

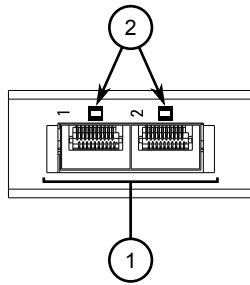
Ordering Information

Description	2 x 1000LX SFP - Singlemode, 1310nm, LC, 25km
Article Numbers	6GK6000-8FG53-2EA0 (Standard) 6GK6000-8FG53-2EA1 (Conformal Coated)

4.18 RUGGEDCOM RMM2475-2SFP70

The RUGGEDCOM RMM2475-2SFP70 module features two 1000Base-LX SFP transceivers. These transceivers can be exchanged for any other transceiver supported by the RUGGEDCOM RSG2488.

Description



- ① SFP Transceiver Sockets
- ② Port LED

Figure 4.18 RUGGEDCOM RMM2475-2SFP70

SFP Transceiver Sockets	Sockets available for up to two 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/en/view/109482309] .	
Port LEDs	Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver.	
	State	Description
	Green (Solid)	Link established
	Green (Blinking)	Activity
	Off	No link detected

Pre-Installed SFP Transceivers

This module comes with two of the following SFP transceiver pre-installed:

SFP Transceiver	Connector Type	Speed (Mbps)	Mode ^a	Nominal Distance (km)
RUGGEDCOM SFP1132-1LX70	LC	1000	SM	70

^a MM = Multi-Mode, SM = Single-Mode

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

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

^a Temperature range may be reduced depending on the installed SFP transceiver.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

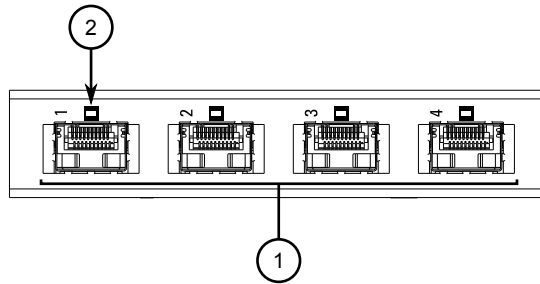
Ordering Information

Description	2 x 1000LX SFP - Singlemode, 1550nm, LC, 70km
Article Numbers	6GK6000-8FG54-2EA0 (Standard) 6GK6000-8FG54-2EA1 (Conformal Coated)

4.19 RUGGEDCOM RMM2472-4SFP

The RUGGEDCOM RMM2472-4SFP module features sockets for up to four Small Form-factor Pluggable (SFP) transceivers.

Description



- ① SFP Transceiver Sockets
- ② Port LED

Figure 4.19 RUGGEDCOM RMM2472-4SFP

SFP Transceiver Sockets	Sockets available for up to two 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] .	
Port LEDs	Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver.	
	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 Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

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

^a Temperature range may be reduced depending on the installed SFP transceiver.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none">• China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

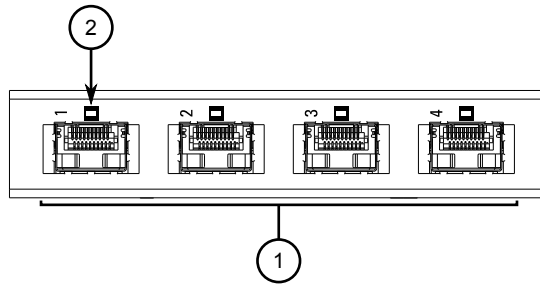
Ordering Information

Description	4 x Blank SFP (no optical transceiver)
Article Numbers	6GK6000-8FG50-4EA0 (Standard) 6GK6000-8FG50-4EA1 (Conformal Coated)

4.20 RUGGEDCOM RMM2474-4SFP

The RUGGEDCOM RMM2474-4SFP module features four 1000Base-SX SFP transceivers. These transceivers can be exchanged for any other transceiver supported by the RUGGEDCOM RSG2488.

Description



- ① SFP Transceiver Sockets
- ② Port LED

Figure 4.20 RUGGEDCOM RMM2474-4SFP

SFP Transceiver Sockets	Sockets available for up to two 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] .	
Port LEDs	Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver.	
	State	Description
	Green (Solid)	Link established
	Green (Blinking)	Activity
	Off	No link detected

Pre-Installed SFP Transceivers

This module comes with two of the following SFP transceiver pre-installed:

SFP Transceiver	Connector Type	Speed (Mbps)	Mode ^a	Nominal Distance (km)
RUGGEDCOM SFP1122-1SX	LC	1000	MM	0.5

^a MM = Multi-Mode, SM = Single-Mode

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

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

^a Temperature range may be reduced depending on the installed SFP transceiver.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

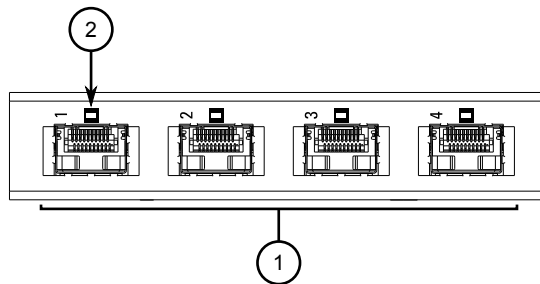
Ordering Information

Description	4 x 1000SX SFP - Multimode, 850nm, LC, 500m
Article Numbers	6GK6000-8FG51-4EA0 (Standard) 6GK6000-8FG51-4EA1 (Conformal Coated)

4.21 RUGGEDCOM RMM2475-4SFP10

The RUGGEDCOM RMM2475-4SFP10 module features four 1000Base-LX SFP transceivers. These transceivers can be exchanged for any other transceiver supported by the RUGGEDCOM RSG2488.

Description



- ① SFP Transceiver Sockets
- ② Port LED

Figure 4.21 RUGGEDCOM RMM2475-4SFP10

SFP Transceiver Sockets	Sockets available for up to four 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] .	
Port LEDs	Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver.	
	State	Description
	Green (Solid)	Link established
	Green (Blinking)	Activity
	Off	No link detected

Pre-Installed SFP Transceivers

This module comes with two of the following SFP transceiver pre-installed:

SFP Transceiver	Connector Type	Speed (Mbps)	Mode ^a	Nominal Distance (km)
RUGGEDCOM SFP1132-1LX10	LC	1000	SM	10

^a MM = Multi-Mode, SM = Single-Mode

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

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

^a Temperature range may be reduced depending on the installed SFP transceiver.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

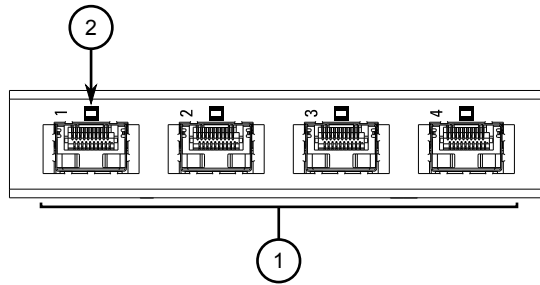
Ordering Information

Description	4 x 1000LX SFP - Singlemode, 1310nm, LC, 10km
Article Numbers	6GK6000-8FG52-4EA0 (Standard) 6GK6000-8FG52-4EA1 (Conformal Coated)

4.22 RUGGEDCOM RMM2475-4SFP25

The RUGGEDCOM RMM2475-4SFP25 module features four 1000Base-LX SFP transceivers. These transceivers can be exchanged for any other transceiver supported by the RUGGEDCOM RSG2488.

Description



- ① SFP Transceiver Sockets
- ② Port LED

Figure 4.22 RUGGEDCOM RMM2475-4SFP25

SFP Transceiver Sockets	Sockets available for up to four 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] .								
Port LEDs	Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver. <table border="1" style="width: 100%; border-collapse: collapse;"> <thead> <tr> <th style="text-align: center;">State</th> <th style="text-align: center;">Description</th> </tr> </thead> <tbody> <tr> <td>Green (Solid)</td> <td>Link established</td> </tr> <tr> <td>Green (Blinking)</td> <td>Activity</td> </tr> <tr> <td>Off</td> <td>No link detected</td> </tr> </tbody> </table>	State	Description	Green (Solid)	Link established	Green (Blinking)	Activity	Off	No link detected
State	Description								
Green (Solid)	Link established								
Green (Blinking)	Activity								
Off	No link detected								

Pre-Installed SFP Transceivers

This module comes with two of the following SFP transceiver pre-installed:

SFP Transceiver	Connector Type	Speed (Mbps)	Mode ^a	Nominal Distance (km)
RUGGEDCOM SFP1132-1LX25	LC	1000	SM	25

^a MM = Multi-Mode, SM = Single-Mode

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

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

^a Temperature range may be reduced depending on the installed SFP transceiver.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

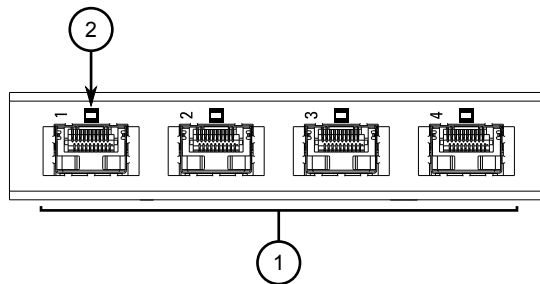
Ordering Information

Description	4 x 1000LX SFP - Singlemode, 1310nm, LC, 25km
Article Numbers	6GK6000-8FG53-4EA0 (Standard) 6GK6000-8FG53-4EA1 (Conformal Coated)

4.23 RUGGEDCOM RMM2475-4SFP70

The RUGGEDCOM RMM2475-4SFP70 module features four 1000Base-LX SFP transceivers. These transceivers can be exchanged for any other transceiver supported by the RUGGEDCOM RSG2488.

Description



- ① SFP Transceiver Sockets
- ② Port LED

Figure 4.23 RUGGEDCOM RMM2475-4SFP70

SFP Transceiver Sockets	Sockets available for up to four 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] .								
Port LEDs	Each transceiver socket features a dedicated LED that indicates the link/activity state of the associated SFP transceiver. <table border="1" style="width: 100%; margin-top: 5px;"> <thead> <tr> <th>State</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Green (Solid)</td> <td>Link established</td> </tr> <tr> <td>Green (Blinking)</td> <td>Activity</td> </tr> <tr> <td>Off</td> <td>No link detected</td> </tr> </tbody> </table>	State	Description	Green (Solid)	Link established	Green (Blinking)	Activity	Off	No link detected
State	Description								
Green (Solid)	Link established								
Green (Blinking)	Activity								
Off	No link detected								

Pre-Installed SFP Transceivers

This module comes with two of the following SFP transceiver pre-installed:

SFP Transceiver	Connector Type	Speed (Mbps)	Mode ^a	Nominal Distance (km)
RUGGEDCOM SFP1132-1LX70	LC	1000	SM	70

^a MM = Multi-Mode, SM = Single-Mode

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Technical Specifications

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

^a Temperature range may be reduced depending on the installed SFP transceiver.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	4 x 1000LX SFP - Singlemode, 1310nm, LC, 70km
Article Numbers	6GK6000-8FG54-4EA0 (Standard) 6GK6000-8FG54-4EA1 (Conformal Coated)

Precision Time Protocol (PTP) Modules

The following Precision Time Protocol (PTP) modules are available for the RUGGEDCOM RSG2488.

5.1 RUGGEDCOM RMM2431-5PTP

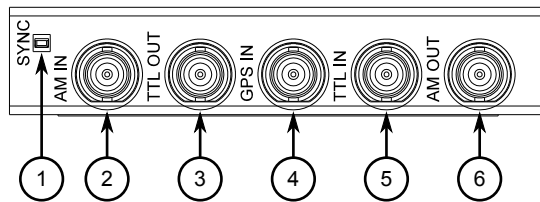
The RUGGEDCOM RMM2431-5PTP module adds the ability for the RUGGEDCOM RSG2488 to:

- Provide time synchronization via Ethernet using the Precision Time Protocol (PTP) and Network Time Protocol (NTP)
- Provide time synchronization via BNC using IRIG-B and PPx
- Synchronize with an external IRIG-B source or GPS network

Note

Only one RUGGEDCOM RMM2431-5PTP module is supported per device.

Description



- ① SYNC LED
- ② AM IN Port
- ③ TTL OUT Port
- ④ GPS IN Port
- ⑤ TTL IN Port
- ⑥ AM OUT Port

Figure 5.1 RUGGEDCOM RMM2431-5PTP

Time Synchronization Ports	Available time synchronization ports include: <ul style="list-style-type: none"> • AM IN IRIG-B AM signal input, software enabled • AM OUT IRIG-B AM signal output, software enabled • TTL OUT IRIG-B PWM or 1 PPx signal output, software selectable • TTL IN IRIG-B PWM signal input • GPS IN GPS antenna input 										
Port LEDs	The SYNC LED indicates the status of the incoming timing signal. <table border="1" data-bbox="667 1816 1471 1977"> <thead> <tr> <th>LED</th> <th>State</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td rowspan="3">SYNC</td> <td>Green</td> <td>Signal locked</td> </tr> <tr> <td>Amber/Yellow</td> <td>Holdover</td> </tr> <tr> <td>Red</td> <td>Error</td> </tr> </tbody> </table>	LED	State	Description	SYNC	Green	Signal locked	Amber/Yellow	Holdover	Red	Error
LED	State	Description									
SYNC	Green	Signal locked									
	Amber/Yellow	Holdover									
	Red	Error									

LED	State	Description
	Off	Not signal detected

Supported Time Synchronization Sources

The RUGGEDCOM RMM2431-5PTP module adds additional support for the following time synchronization sources:

- IRIG-B AM
- IRIG-B PWM
- GPS

For information on other sources supported by the RUGGEDCOM RSG2488, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Single Input

Inputs are controlled by RUGGEDCOM RSG2488 and only one can be active at any time. For information about activating an input, refer to the *RUGGEDCOM ROS Configuration Manual* for the RUGGEDCOM RSG2488.

Multiple Outputs

A single IRIG-B AM, IRIG-B PWM or 1 PPx output signal can be connected to multiple inputs.

AM and TTL OUT Ports

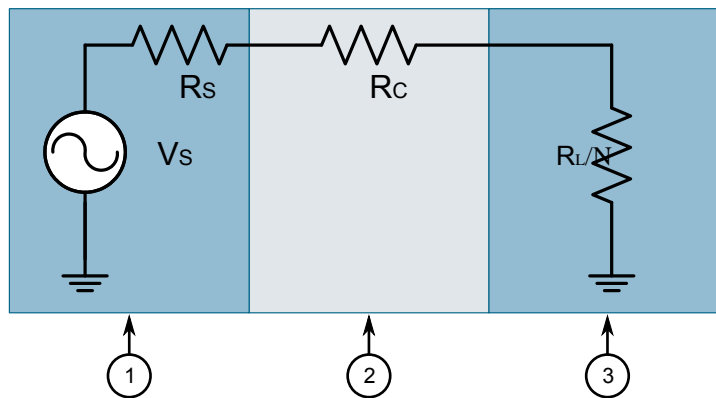
The RUGGEDCOM RMM2431-5PTP module provides AM (Amplitude Modulated) and TTL (Transistor-Transistor Logic) outputs.

The **AM OUT** port supports the IRIG-B AM signal format, while the **TTL OUT** port supports the IRIG-B PWM and PPS signal formats. Enabling/disabling the output ports and – in the case of **TTL OUT** – selecting the signal format is controlled through the RUGGEDCOM RSG2488 operating system.

Note

The input impedance of third-party AM inputs must be 100 Ω minimum.

The number of devices that can be connected to the **AM OUT** and **TTL OUT** ports is dependent on the cabling type and length, as well as the input impedances of the devices. The following simplified circuit schematic shows the interface between an IRIG-B source and connected devices.



- ① Source
- ② Cabling
- ③ Device

Figure 5.2 IRIG-B Simplified Circuit Schematic

The maximum number of devices (N) that can be connected to the source is determined by checking if the source current (I_S) required to drive the connected devices is less than the maximum drive current the source can provide, and verifying that the load voltage (V_L) the connected devices see is greater than the minimum required voltage.

Installing the Module

To install the module, do the following:

1. Insert the module into the RUGGEDCOM RSG2488 . For more information, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.
2. Connect a GPS antenna.
3. Configure the PTP module. For more information, refer to the *RUGGEDCOM ROS Configuration Manual* for the RUGGEDCOM RSG2488.

Connecting a GPS Antenna

A typical GPS system includes the following components:

Component	Required
An active GPS antenna	✓
Coaxial cables	✓
Lightning arrestor	
Line amplifier or bandpass filter	

Siemens offers an antenna kit (6GK6000-8NC00-0AA0) for the RUGGEDCOM RSG2488 that includes:

- GPS antenna

- mounting bracket (1) and screw ties (2)
- 15.2 m (50 ft) coaxial cable (terminated at both ends)

If another antenna is used, make sure it meets the following base requirements:

Note

Best results can be achieved with a total gain of 16 dB (includes antenna gain, cable loss, lightning arrestor loss, line amplifier gain and filter loss) at the antenna input.

Polarization	Right-Hand Circular Polarized
Receive Frequency	1.57542 GHz \pm 1.023 MHz
Power Supply	5 VDC
DC Current	< 10 mA at 3 VDC
Antenna Gain	Select antenna gain based on system configuration
Total Gain at GPS Input Port^a	\leq 18 dBi
Axial Ratio	< 3 dB
Output VSWR	< 2.5

^a Includes antenna gain, cable loss, lightning arrestor loss, line amplifier gain and bandpass filter loss

NOTICE

Electrocution hazard – risk of damage to the device

It is impossible to protect the antenna from a direct lightning strike. However, the antenna and connected components can be protected from secondary effects through site selection and by installing protection devices.

Install the antenna at least 15 m (49 ft) away from and lower than any structures that attract lightning. GPS antenna damage is usually not the result of a direct lightning strike, but due to high currents induced by the effects of a lightning strike on a nearby structure. Lightning arrestors should also be installed in the antenna line to protect the receiver and connected devices. If a lightning arrestor is installed, it is important to make sure it has a low impedance path to ground.

Note

Before connecting a GPS antenna, note the following:

- Antenna installation must be as per Article 810 of the NEC. Specifically, the grounding conductor must not be less than 10 AWG (Cu). The scheme should be either:
 - in accordance with UL 96 and 96A Lightning Protection Components and Installation Requirements for Lightning Protection Systems (LPS)
 - tested in accordance with UL 50 and UL 497
- For increased signal coverage and improved performance, the GPS antenna is intended to be installed in a remote location separate from the RUGGEDCOM RSG2488. The signals received from the GPS satellite network are at a frequency of 1575.42 MHz. The GPS antenna must therefore have a clear view of the sky to receive the low power signals and track the maximum number of satellites.

Structures, such as rooftops, that are clear of obstructions and have a clear view of the horizon are ideal.

- A site survey is recommended prior to any installation to help determine the best location for the GPS antenna.

For assistance, contact a Siemens Sales representative.

- Although an active antenna has gain, depending on the length of the coaxial cable used, it may not be enough. In such a case, a line amplifier will be required as well. Most active antennas include filters. However, if there is a high potential for electromagnetic interference – such as from the near field of a radio transmitter – through the antenna system, additional antenna line filtering may be necessary.
- To promote signal reception and avoid signal saturation at the receiver input, the overall GPS system requires a relative gain between 5 and 18 dBi.
- Use only low loss, 50 Ω coaxial cabling when connecting the GPS and any other optional components to the RUGGEDCOM RSG2488.

Note

Using any length of coaxial cable will add some time delay to the GPS signal, which degrades the accuracy of the calculated time and position. The time delay is dependent on the type of dielectric material in the cable and ranges from 1 to 2 ns/ft. The table below gives some examples of the delay that can be expected based on the dielectric type.

Dielectric Type	Time Delay (ns/ft)	Propagation Velocity (% of c)
Solid Polyethylene (PE)	1.54	65.9
Foam Polyethylene (FE)	1.27	80.0
Foam Polystyrene (FS)	1.12	91.0
Air Space Polyethylene (ASP)	1.15 to 1.21	84 to 88
Solid Teflon (ST)	1.46	69.4
Air Space Teflon (AST)	1.13 to 1.20	85 to 90

RUGGEDCOM ROS can compensate for the time delay if it is known.

For more information, refer to the *RUGGEDCOM ROS Configuration Manual* for the RUGGEDCOM RSG2488.

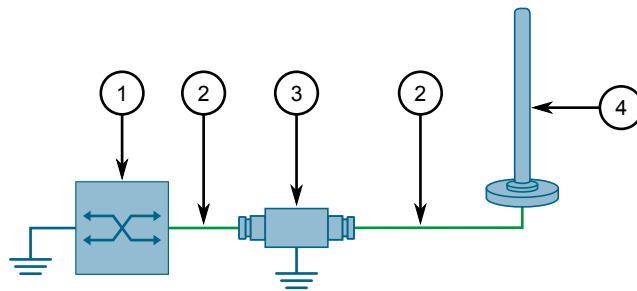
To connect a GPS antenna, do the following:

1. Secure a mounting bracket to a wall or pole. Make sure the bracket is in an area that provides good signal coverage and is away from any signal noise emanating from other communications equipment. At least 90° of the sky must be visible to the antenna.

A bracket is included in the antenna kit offered by Siemens, including screw ties.

2. Attach the antenna to the mounting bracket.

- If required, connect a lightning arrestor, line amplifier, or bandpass filter to the antenna.



- RUGGEDCOM RSG2488
- Shielded Coaxial Cable
- Lightning Protector, Line Amplifier or Bandpass Filter
- GPS Antenna

Figure 5.3 Antenna and Lightning Protector Assembly (Optional)

- Connect a shielded coaxial cable between the antenna assembly and the **GPS IN** port on the module.

Technical Specifications

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)

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	Precision Time Protocol (PTP) Module: GPS in, IRIG-B AM/TTL in/out
Article Numbers	6GK6000-8PT01-4EA0 (Standard)

6GK6000-8PT01-4EA1 (Conformal Coated)

Blank Modules

The following blank modules are available for the RUGGEDCOM RSG2488 .

 **NOTICE**

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

6.1 RUGGEDCOM RMM2431-2

The RUGGEDCOM RMM2431-2 is a blank module designed to occupy empty two-port line module slots in the RUGGEDCOM RSG2488 chassis.

Description

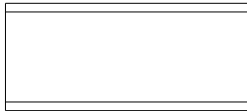


Figure 6.1 RUGGEDCOM RMM2431-2

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> • China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	RSG2488 2 Port Blank Assembly Module
Article Numbers	6GK6000-8AA00-2EA0 (Standard) 6GK6000-8AA00-2EA1 (Conformal Coated)

6.2 RUGGEDCOM RMM2431-4

The RUGGEDCOM RMM2431-4 is a blank module designed to occupy empty four-port line module slots in the RUGGEDCOM RSG2488 chassis.

Description

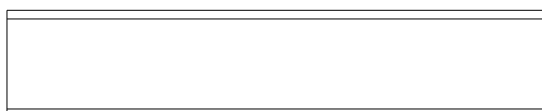


Figure 6.2 RUGGEDCOM RMM2431-4

Installing the Module

For information about installing this module, refer to the *Installation Manual* for the RUGGEDCOM RSG2488.

Certification

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

Certification	Details
RoHS	<p>This module is declared by Siemens AG to meet the requirements of the following RoHS (Restriction of Hazardous Substances) directives for the restricted use of certain hazardous substances in electrical and electronic equipment:</p> <ul style="list-style-type: none"> China RoHS 2 Administrative Measure on the Control of Pollution Caused by Electronic Information Products <p>A copy of the Material Declaration is available online at https://support.industry.siemens.com/cs/ww/en/view/109738831.</p>

Ordering Information

Description	RSG2488 4 Port Blank Assembly Module
Article Numbers	6GK6000-8AA00-4EA0 (Standard) 6GK6000-8AA00-4EA1 (Conformal Coated)

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>

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