

Edition

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Installation Manual

SIMATIC NET

Rugged Ethernet Switches

RUGGEDCOM RSG920P

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

SIEMENS

SIMATIC NET

Rugged Ethernet Switches RUGGEDCOM RSG920P

Installation Manual

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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.
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Trademarks

All names identified by ® are registered trademarks of Siemens Canada Ltd.. 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 guide describes the RUGGEDCOM RSG920P. It describes the major features of the device, installation, commissioning and important technical specifications.

It is intended for use by network technical support personnel who are responsible for the installation, commissioning and maintenance of the device. 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 ROS Configuration Manual	https://support.industry.siemens.com/cs/ww/en/view/109737233
RUGGEDCOM RPS1300 Operating Instructions	https://support.industry.siemens.com/cs/ww/en/view/109478699
RUGGEDCOM SFP Transceivers Catalog	https://support.industry.siemens.com/cs/ww/en/view/109482309

SIMATIC NET Glossary

The SIMATIC NET Glossary describes special terms that may be used in this document.

The glossary is available online via Siemens Industry Online Support (SIOS) at:

<https://support.industry.siemens.com/cs/ww/en/view/50305045>

Accessing Documentation

The latest user documentation for RUGGEDCOM RSG920P is available online at <https://support.industry.siemens.com>. To request or inquire about a user document, contact Siemens Customer Support.

Registered Trademarks

RUGGEDCOM™ and ROS™ are 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

Siemens warrants this product for a period of five (5) years from the date of purchase, conditional upon the return to factory for maintenance during the warranty term. This product contains no user-serviceable parts. Attempted service by unauthorized personnel shall render all warranties null and void. The warranties set forth in this article are exclusive and are in lieu of all other warranties, performance guarantees and conditions whether written or oral, statutory, express or implied (including all warranties and conditions of merchantability and fitness for a particular purpose, and all warranties and conditions arising from course of dealing or usage or trade). Correction of nonconformities in the manner and for the period of time provided above shall constitute the Seller's sole liability and the Customer's exclusive remedy for defective or nonconforming goods or services whether claims of the Customer are based in contract (including fundamental breach), in tort (including negligence and strict liability) or otherwise.

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.

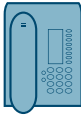
Customer Support

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 Canada Ltd. Digital Industries Process Automation 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

Introduction

The RUGGEDCOM RSG920P is a rugged, high density, Ethernet switch designed to operate in harsh environments with widely varying climatic and environmental conditions. Tested and certified to withstand extreme temperatures, vibrations and shocks, the RUGGEDCOM RSG920P offers exceptional reliability for industrial applications, such as transportation systems and oil/gas applications.

Offering 20 Gigabit Ethernet ports, including four SFP slots and four Power-over-Ethernet (PoE) ports, the RUGGEDCOM RSG920P is suitable for applications that require high bandwidths and is ready to accommodate future network expansions.

- The four SFP slots provide ultimate flexibility in up-link distances and bandwidth, with support for Gigabit and Fast Ethernet.
- The four PoE ports supply up to 120 W (30 W per port) of power, allowing the RUGGEDCOM RSG920P to accommodate various PoE devices, such as cameras, intercom devices, Wireless LAN Access points and Bluetooth sensors. Smart Power Management options provide higher reliability for the most important devices on the network when power demands exceed the available supply.

The small form factor of the RUGGEDCOM RSG920P allows for installation in space-limited cabinets and on DIN rails.

RUGGEDCOM ROS provides advanced layer 2 networking functions, and advanced cyber security features. Coupled with the ruggedized hardware design, RUGGEDCOM RSG920P is ideal for creating mission-critical, real-time, control applications where high reliability and availability is of paramount importance.

1.1 Feature Highlights

Ethernet Ports and Inputs

- 16 x 10/100/1000Base-TX RJ-45 Ports
- 4 x 100/1000Base-TX/FX/SX/LX SFP Ports

Note

A separate power supply is required for PoE Ports

- 4 x IEEE 802.3at PoE (Power over Ethernet) Ports (30 W per port max, 120 W aggregate total)
- Two isolated digital inputs

Rated for Reliability in Harsh Environments

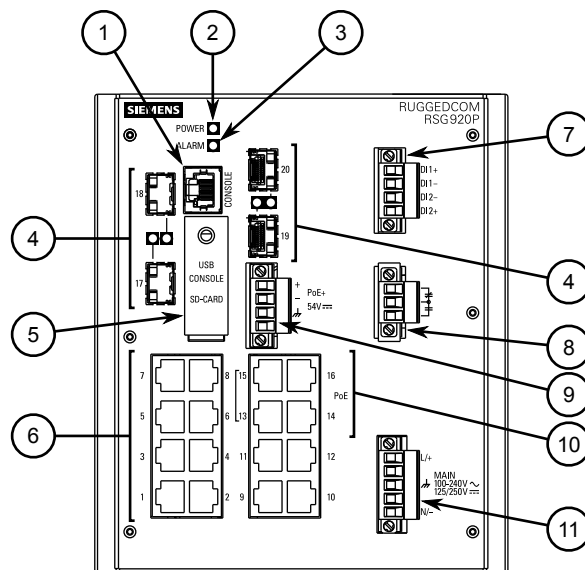
- Immunity to EMI and heavy electrical surges
- -40 to 85 °C (-40 to 185 °F) operating temperature (no fans)
- Conformal coated printed circuit boards (optional)

Universal Power Supply Options

- Fully integrated power supply
- Universal high-voltage range: 98-300 VDC or 88-264 VAC
- Low-voltage DC input: 9-60 VDC
- Terminal blocks for reliable maintenance free connections
- CSA/UL 62368-1 safety approved to 85 °C (185 °F)

1.2 Description

The RUGGEDCOM RSG920P features various ports, controls and indicator LEDs on the front panel for connecting, configuring and troubleshooting the device.



- ① RS-232 Console Port (RJ45)
- ② POWER LED
- ③ ALARM LED
- ④ SFP Ethernet Ports
- ⑤ Access Plate
- ⑥ 10/100/1000 Mbps Copper Ethernet Ports
- ⑦ Digital Inputs
- ⑧ Failsafe Alarm Relay
- ⑨ PoE+ Power Input
- ⑩ PoE+ Ports

⑪ Main Power Supply Terminal Block

Figure 1.1 RUGGEDCOM RSG920P

RS-232 Console Port	The serial console port is for interfacing directly with the device and accessing initial management functions. For information about connecting to the device via the serial console port, refer to "Connecting to the Device" (Page 21) .								
POWER LED	<p>Illuminates when power is being supplied to the device.</p> <table border="1"> <thead> <tr> <th>Color</th> <th>Description</th> </tr> </thead> <tbody> <tr> <td>Green</td> <td>Device ready</td> </tr> <tr> <td>Red</td> <td>Device booting up</td> </tr> <tr> <td>Off</td> <td>No power</td> </tr> </tbody> </table>	Color	Description	Green	Device ready	Red	Device booting up	Off	No power
Color	Description								
Green	Device ready								
Red	Device booting up								
Off	No power								
ALARM LED	Illuminates when an alarm condition exists.								
Port Status LEDs	Indicate the status of each port. For more information, refer to "Communication Ports" (Page 25) .								
Access Plate	<p>The removable access plate provides access to the USB Type-B console port and microSD slot.</p> <ul style="list-style-type: none"> Use the USB console port to connect directly to the USB port on a workstation. For more information about the USB console port, refer to "Connecting to the Device" (Page 21). Use a microSD card to load/store the firmware and configuration for the device. For information about using a microSD card, refer to "Inserting/Removing the microSD Card" (Page 23). 								
Digital Inputs	Two isolated independent digital inputs to monitor external equipment, such as a passive switch or voltage provided by external equipment. For more information, refer to "Connecting the Digital Inputs" (Page 14) .								
Failsafe Alarm Relay	<p>Latches to default state when a power disruption or other alarm condition occurs. For more information, refer to:</p> <ul style="list-style-type: none"> "Connecting the Failsafe Alarm Relay" (Page 13) "Failsafe Alarm Relay Specifications" (Page 31) 								
Power Supply Terminal Block	<p>A pluggable terminal block. For more information, refer to:</p> <ul style="list-style-type: none"> "Connecting Power" (Page 15) "Power Supply Specifications" (Page 31) 								

1.3 Required Tools and Materials

The following tools and materials are required to install the RUGGEDCOM RSG920P:

Tools/Materials	Purpose
RUGGEDCOM RPS1300 or equivalent 54 VDC output power supply	For supplying PoE power to the device.
AC or DC power cord (16 AWG)	For connecting power to the device.
CAT-5 Ethernet cables	For connecting the device to the network.
Flathead screwdriver	For mounting the device to a DIN rail.
Phillips screwdriver	For mounting the device to a panel.

Tools/Materials	Purpose
4 x #8-32 screws	For mounting the device to a panel.

1.4 Decommissioning and Disposal

Proper decommissioning and disposal of this device is important to prevent malicious users from obtaining proprietary information and to protect the environment.

Decommissioning

This device may include sensitive, proprietary data. Before taking the device out of service, either permanently or for maintenance by a third-party, make sure it has been fully decommissioned.

For more information, refer to the associated "Configuration Manual".

Recycling and Disposal

For environmentally friendly recycling and disposal of this device and related accessories, contact a facility certified to dispose of waste electrical and electronic equipment. Recycling and disposal must be done in accordance with local regulations.

1.5 Cabling Recommendations

The IEEE 802.3ab Gigabit Ethernet standard defines 1000 Mbps Ethernet communications over distances of up to 100 m (328 ft) using all 4 pairs in category 5 (or higher) balanced, unshielded twisted-pair cabling. For wiring guidelines, system designers and integrators should refer to the Telecommunications Industry Association (TIA) TIA/EIA-568-A wiring standard that characterizes minimum cabling performance specifications required for proper Gigabit Ethernet operation. For reliable, error-free data communication, new and pre-existing communication paths should be verified for TIA/EIA-568-A compliance.

The following table summarizes the relevant cabling standards:

Cabling Category	1000Base-TX Compliant	Required Action
< 5	No	New wiring infrastructure required.
5	Yes	Verify TIA/EIA-568-A compliance.
5e	Yes	No action required. New installations should be designed with Category 5e or higher.
6	Yes	No action required.
> 6	Yes	Connector and wiring standards to be determined.

Follow these recommendations for copper data cabling in high electrical noise environments:

- Data cable lengths should be as short as possible, preferably 3 m (10 ft) in length. Copper data cables should not be used for inter-building communications.
- Power and data cables should not be run in parallel for long distances, and should be installed in separate conduits. Power and data cables should intersect at 90° angles when necessary to reduce inductive coupling.
- Shielded/screened cabling can be used when required. Care should be taken to avoid the creation of ground loops with shielded cabling.

Installing the Device

This chapter describes how to install the device, including mounting the device, connecting power, and connecting the device to the network.



⚠ DANGER

Electrocution hazard – risk of serious personal injury and/or damage to equipment

Before performing any maintenance tasks, make sure all power to the device has been disconnected and wait approximately two minutes for any remaining energy to dissipate.



⚠ WARNING

Radiation hazard – risk of serious personal injury

This product contains a laser system and is classified as a *CLASS 1 LASER PRODUCT*. Use of controls or adjustments or performance of procedures other than those specified herein may result in hazardous radiation exposure.

⚠ WARNING

Fire/electrical/burn hazard – risk of serious personal injury and/or damage to the device

Do not use any parts that show evidence of damage. If damaged parts are used, the device may not function according to the specification. Damaged parts can lead to:

- Injury to personnel
- Loss of certification/approvals
- Violation of EMC regulations
- Damage to the device or other components



⚠ NOTICE

Burn hazard – risk of personal injury

The surface of the device may be hot during operation, or as a result of the ambient air temperature.

Wear appropriate personal protective equipment and use caution when working with or around the device.

Note

This product contains no user-serviceable parts. Attempted service by unauthorized personnel shall render all warranties null and void.

Changes or modifications not expressly approved by Siemens Canada Ltd. could invalidate specifications, test results, and agency approvals, and void the user's authority to operate the equipment.

Note

This product should be installed in a *restricted access location* where access can only be gained by authorized personnel who have been informed of the restrictions and any precautions that must be taken. Access must only be possible through the use of a tool, lock and key, or other means of security, and controlled by the authority responsible for the location.

Note

The RUGGEDCOM RSG920P 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/approved by Siemens. Proper transport, storage, installation, assembly, commissioning, operation and maintenance are required to make sure the RUGGEDCOM RSG920P operates properly and safely. The permissible ambient conditions must be complied with. The information in the relevant document must be observed.

Note

Do not install the RUGGEDCOM RSG920P in a nuclear power plant or other nuclear-related facilities.

Note

The RUGGEDCOM RSG920P must be located in an area accessible only by qualified service personnel or other authorized users. Operation of the device is permitted only when this requirement is met.

2.1 General Procedure

The general procedure for installing the device is as follows:

 NOTICE

The user is responsible for the operating environment of the device, including maintaining the integrity of all protective conductor connections and checking equipment ratings. Make sure to review all operating and installation instructions before commissioning or performing maintenance on the device.
--

1. Review the relevant certification information for any regulatory requirements. For more information, refer to ["Approvals" \(Page 35\)](#).
2. Mount the device.
3. Connect the failsafe alarm relay.
4. Connect the digital inputs.
5. Connect power to the device and ground the device to safety Earth.
6. Connect the device to the network.
7. Configure the device.

2.2 Unpacking the Device

When unpacking the device, do the following:

1. Inspect the package for damage before opening it.
2. Visually inspect each item in the package for any physical damage.
3. Verify all items are included.

Note

If any item is missing or damaged, contact Siemens for assistance.

2.3 Mounting the Device

The RUGGEDCOM RSG920P is designed for maximum mounting and display flexibility. It can be equipped with connectors that allow it to be installed in a 35 mm (1.4 in) DIN rail or directly on a panel.

 NOTICE

Heat generated by the device is channeled outwards from the enclosure. As such, it is recommended that 2.5 cm (1 in) of space be maintained on all open sides of the device to allow for some convective airflow.

Forced airflow is not required. However, any increase in airflow will result in a reduction of ambient temperature and improve the long-term reliability of all equipment mounted in the rack space.
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Note

For detailed dimensions of the device with either DIN rail or panel hardware installed, refer to ["Dimension Drawings" \(Page 33\)](#).

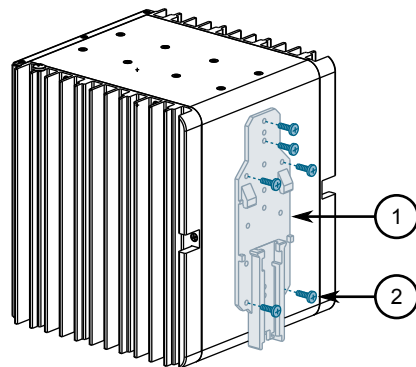
2.3.1 Mounting the Device on a DIN Rail

The RUGGEDCOM RSG920P can be ordered with a DIN rail adapter preinstalled on the back of the chassis. Use the adapter to mount the device to a standard 35 mm (1.4 in) IEC/EN 60715 or TS35 DIN rail.

Mounting the Device

To mount the device to a DIN rail, do the following:

1. Secure the DIN rail bracket to back of the device chassis.



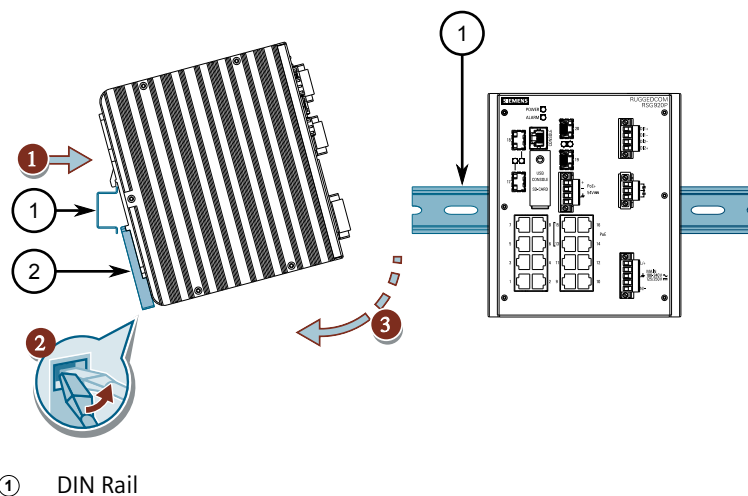
- ① DIN Rail Bracket
- ② Screw

Figure 2.1 DIN Rail Bracket Assembly

2. Hook the top teeth of the adapter onto the DIN rail.

Note

The adapter features a sliding release with a slot at the bottom for a flathead screwdriver.



- ① DIN Rail

② Panel/DIN Rail Adaptor

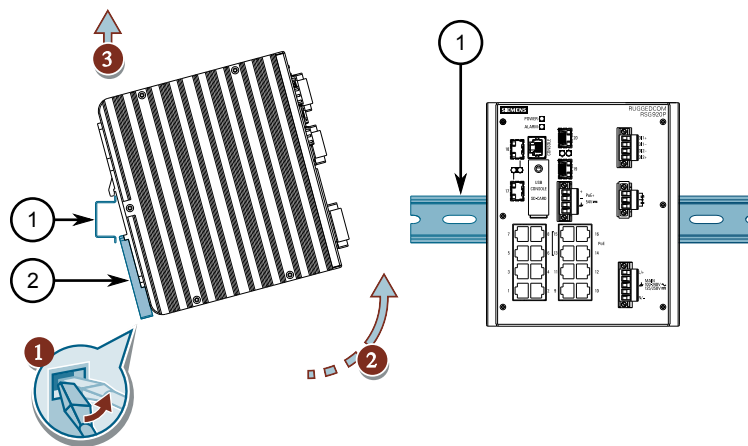
Figure 2.2 Mounting the Device to a DIN Rail

3. Insert a flathead screwdriver into the slot of the sliding release and move it down.
4. Push the device against the bottom of the DIN rail, then let go of the sliding release to latch the device.

Removing the Device

To remove the device from a DIN rail, do the following:

1. Insert a flathead screwdriver into the slot of the sliding release and move it down.



- ① DIN Rail
- ② DIN Rail Adaptor

Figure 2.3 Removing the Device from a DIN Rail

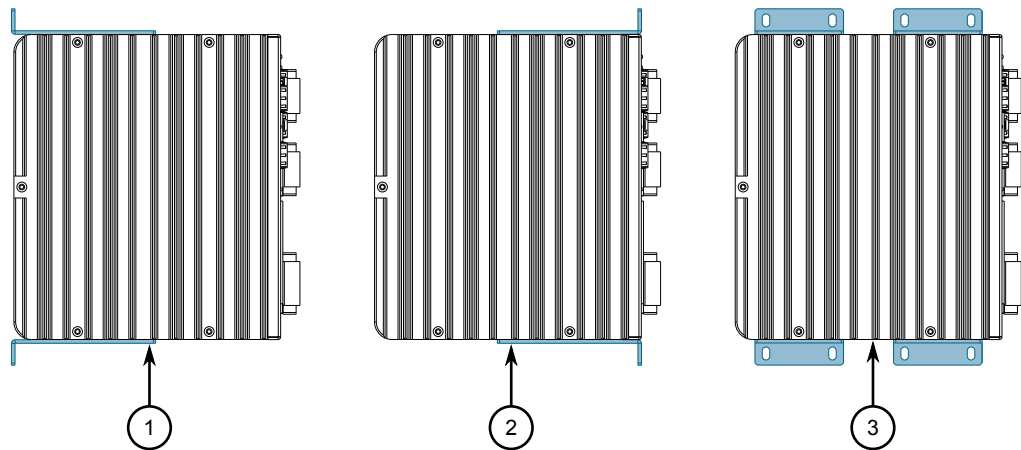
2. Swing the bottom of the device away from the DIN rail.
3. Lift the device off the DIN rail.

2.3.2 Mounting the Device to a Panel

For panel installations, the RUGGEDCOM RSG920P can be equipped with panel adapters that allow the device to be attached to a panel in multiple orientations.

Note

A side mount orientation requires additional adapters.

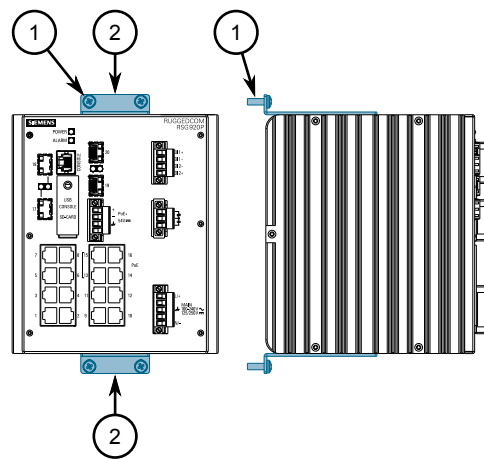


- ① Rear Mount Orientation
- ② Front Mount Orientation
- ③ Side Mount Orientation

Figure 2.4 Panel Mount Options

To mount the device to a panel, do the following:

1. Secure the adapters to the device in the desired orientation.
2. Place the device against (side or rear mount orientation) or insert it into (front mount orientation) the panel and align the adapters with the mounting holes.



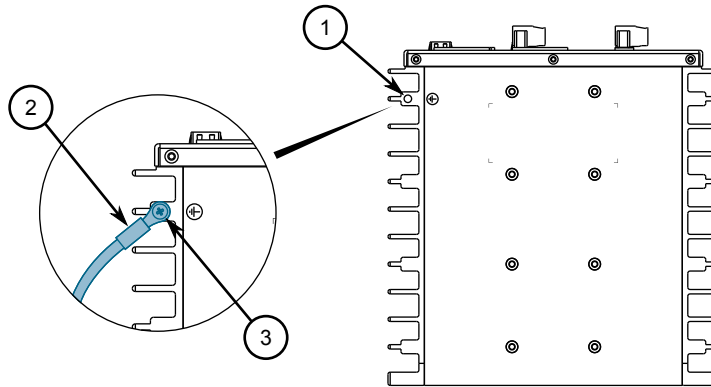
- ① Screw
- ② Panel Adapter

Figure 2.5 Panel Mounting (Rear Mount Orientation Shown)

3. Install #8 screws (not supplied) to secure the adapters to the panel.

2.4 Grounding the Device

The RUGGEDCOM RSG920P chassis features a threaded hole for connecting the device to ground (Protective Earth). It is recommended to terminate the ground connection with an #8 ring tongue or spade lug, and then torque to 1.2 N·m (11 lbf-in).



- ① Chassis Ground Connection
- ② #8 Ring Tongue
- ③ #8-32 Screw

Figure 2.6 Chassis Ground Connection

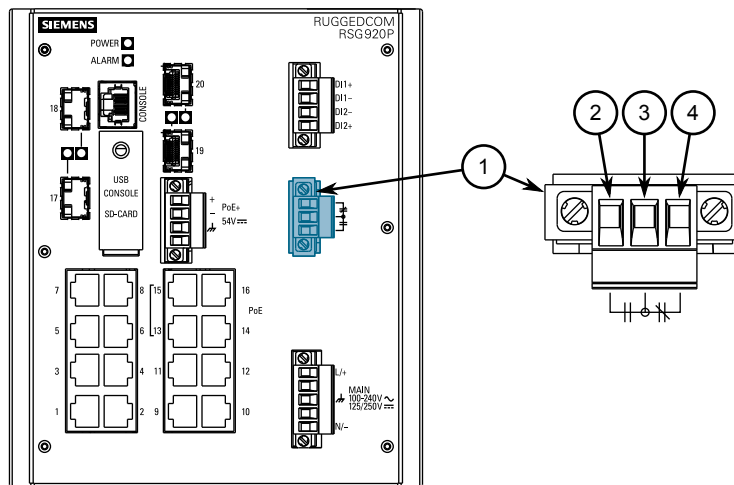
2.5 Connecting the Failsafe Alarm Relay

The failsafe alarm relay can be configured to latch based on alarm conditions. The NO (Normally Open) contact is closed when the unit is powered and there are no active alarms. If the device is not powered or if an active alarm is configured, the relay opens the NO contact and closes the NC (Normally Closed) contact.

Note

Control of the failsafe alarm relay output is configurable through RUGGEDCOM RSG920P. One common application for this relay is to signal an alarm if a power failure occurs. For more information, refer to the "RUGGEDCOM ROS Configuration Manual" for the RUGGEDCOM RSG920P.

The following shows the proper relay connections.



- ① Failsafe Alarm Relay Terminal
- ② Normally Open Terminal
- ③ Common Terminal
- ④ Normally Closed Terminal

Figure 2.7 Failsafe Alarm Relay Wiring

2.6 Connecting the Digital Inputs

The RUGGEDCOM RSG920P offers two independent digital inputs for monitoring external equipment. Each digital input is associated with an alarm that is configured in RUGGEDCOM RSG920P. Depending on the configuration, the associated alarm may be triggered if the digital input is in either the HIGH or LOW state.

Each input operates in one of two modes:

- **Passive Mode**
Supports the use of passive switches, such as a cabinet door switch, relay or a leak detector, where each digital input detects if it is open or closed.
- **Direct Mode**
Supports direct inputs from external equipment. A voltage between 10 and 30 V indicates state 1, while a voltage between -30 and 8 V indicates state 0. In the undetermined range between 8 and 10 V, the input may be determined to be in either state.

The nominal input voltage is 24 VDC.

Note

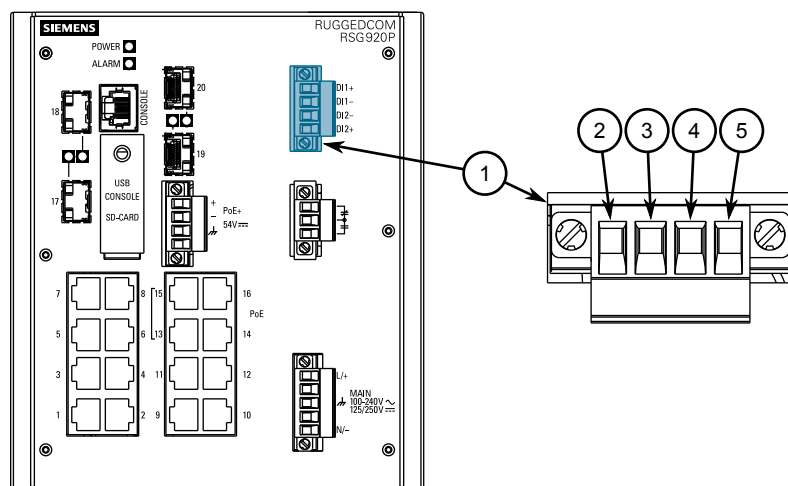
For information about configuring the digital input alarms, refer to the "RUGGEDCOM ROS Configuration Manual" for the RUGGEDCOM RSG920P.

Note

For technical specifications related to the digital input ports, refer to ["Digital Input Specifications"](#) (Page 32).

To connect a digital input, do the following:

1. Secure a European-style terminal block (or Euroblock) to the terminal.
2. Connect the positive cable to the **DI1/2+** terminal.



- ① Digital Input Terminal Block
- ② DI2+ Terminal
- ③ DI2- Terminal
- ④ DI1- Terminal
- ⑤ DI1+ Terminal

Figure 2.8 Terminal Block Wiring

3. Connect the negative cable to the **DI1/2-** terminal.

2.7 Connecting Power

The RUGGEDCOM RSG920P supports a single integrated high AC/DC or low DC power supply, as well as an external power supply for the Power-over-Ethernet (PoE) ports.

⚠ NOTICE

- For 110/230 VAC rated equipment, an appropriately rated AC circuit breaker must be installed
- For 125/250 VDC rated equipment, an appropriately rated DC circuit breaker must be installed
- Equipment must be installed according to applicable local wiring codes and standards

- Use minimum #16 gage copper wiring when connecting terminal blocks

2.7.1 Connecting High AC/DC Power

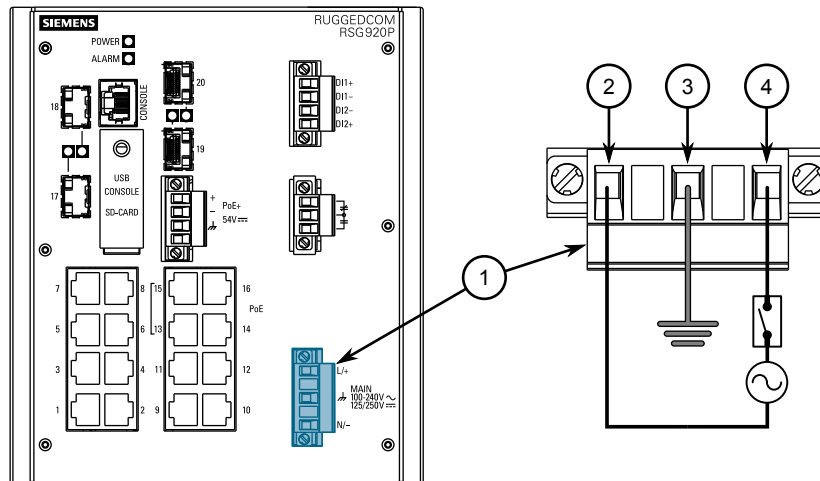
To connect a high AC/DC power supply to the device, do the following:

⚠ NOTICE

Electrical hazard – risk of damage to equipment

Do not connect AC power cables to terminals for DC power. Damage to the power supply may occur.

1. Secure a European-style terminal block (or Euroblock) to the terminal.
2. Connect the live/positive wire from the power source to the live/positive (L/+) terminal on the terminal block.



- ① Main Power Terminal Block
- ② Neutral/Negative (N/-) Terminal
- ③ Chassis Ground Terminal
- ④ Live/Positive (L/+) Terminal

Figure 2.9 Terminal Block Wiring

3. Connect the neutral/negative wire from the power source to the neutral/negative (N/-) terminal on the terminal block.
4. Connect the ground wire to the chassis ground terminal on the device.

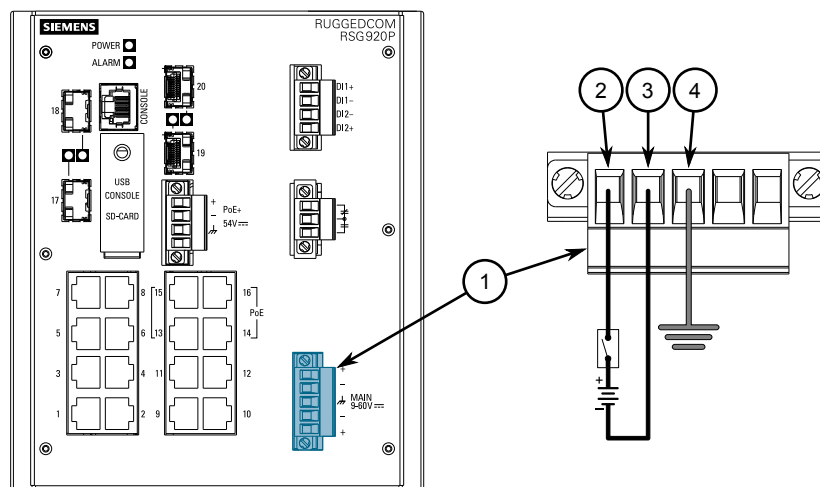
2.7.2 Connecting Low DC Power

To connect a single or dual power sources to the low DC power supply, do the following:

⚠ NOTICE

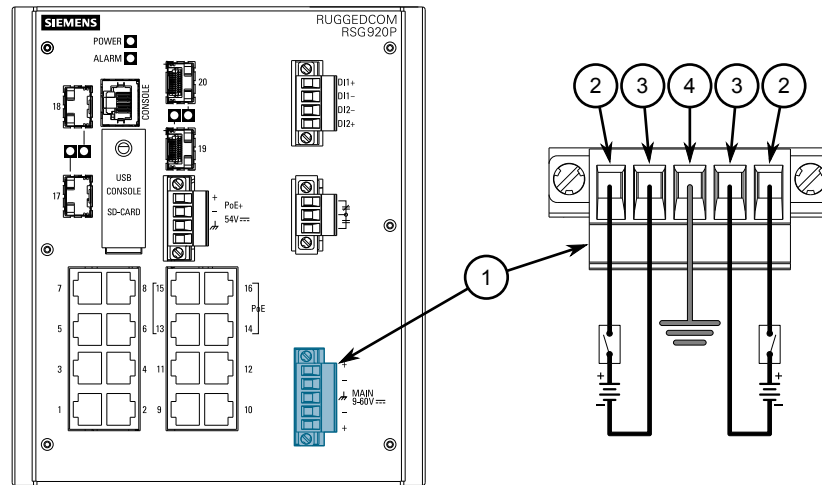
When connecting two external power sources, if the first external power source has a voltage lower than 33 VDC, the second power source must have a voltage lower than 33 VDC as well. Similarly, if the first power source has a voltage higher than 36 VDC, the second power source must have a voltage higher than 36 VDC.

1. Connect the positive wire from the power source to the positive terminal on the terminal block.



- ① Main Power Terminal Block
- ② Positive Terminal
- ③ Negative Terminal
- ④ Chassis Ground Terminal

Figure 2.10 Terminal Block Wiring - Connecting a Single DC Power Supply Input



- ① Main Power Terminal Block
- ② Positive Terminal
- ③ Negative Terminal
- ④ Chassis Ground Terminal

Figure 2.11 Terminal Block Wiring - Connecting Dual DC Power Supply Inputs

2. Connect the negative wire from the power source to the negative terminal on the terminal block.
3. Connect the ground wire to the chassis ground terminal on the device.

2.7.3 Connecting External PoE Power

The RUGGEDCOM RSG920P supports four 10/100/1000 Mbps Power-over-Ethernet (POE) Ports that require external power.

Note

For IEC 61850 compliance, use an IEC 61850 compliant PoE power supply with power cabling no longer than 3 m (118 in).

Otherwise, Siemens recommends using the RUGGEDCOM RPS1300 switch-mode AC power supply. For more information about this power supply, refer to <https://support.industry.siemens.com/cs/ww/en/view/109478699>.

To support the **IEEE 802.3at** specification (30 W/port output), the external power supply must meet the following requirements:

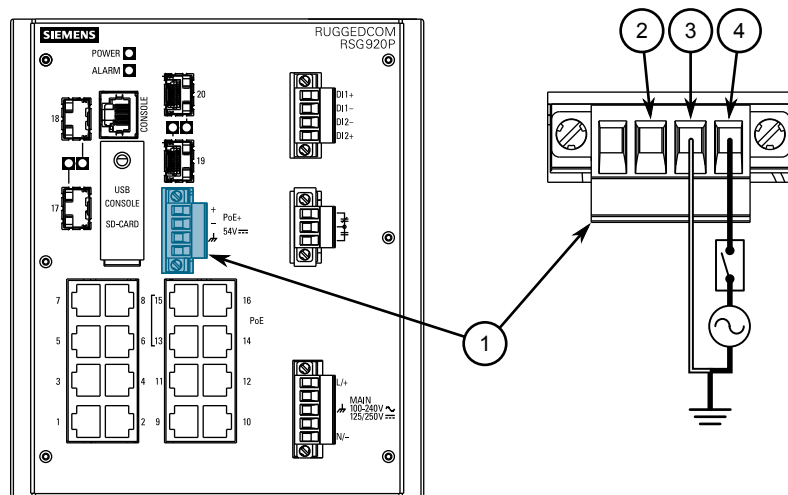
Power Supply Type	Input Range		Isolation	Minimum Power Required
	Minimum	Maximum		
DC	51 VDC	57 VDC	1.5 kVAC/2.2 kVDC	135 W

To support the **IEEE 802.3af** specification (15 W/port output), the external power supply must meet the following requirements:

Power Supply Type	Input Range		Isolation	Minimum Power Required
	Minimum	Maximum		
DC	45 VDC	57 VDC	1.5 kVAC/2.2 kVDC	75 W

To connect an external power supply for the PoE ports, do the following:

1. Secure a European-style terminal block (or Euroblock) to the terminal.



- ① PoE Terminal Block
- ② Chassis Ground
- ③ Negative Terminal
- ④ Positive Terminal

Figure 2.12 Terminal Block Wiring

2. Connect the positive wire from the RUGGEDCOM RPS1300 (or another external power supply) to the positive (+) terminal on the terminal block.
3. Connect the negative wire from the RUGGEDCOM RPS1300 (or another external power supply) to the negative (-) terminal on the terminal block.
4. If using an external power supply other than the RUGGEDCOM RPS1300 that has a chassis ground connection, connect the ground terminal on the power supply to the chassis ground terminal on the device.

Device Management

This section describes how to connect to and manage the device.

3.1 Connecting to the Device

The following describes the various methods for accessing the RUGGEDCOM RSG920P console and Web interfaces on the device. For more detailed instructions, refer to the "RUGGEDCOM ROS Configuration Manual" for the RUGGEDCOM RSG920P.

RS-232 Console Port

Connect a workstation directly to either the RJ45 or USB Type-B console port to access the boot-time control and RUGGEDCOM RSG920P interfaces. Both console ports provide access to RUGGEDCOM RSG920P's console and Web interfaces.

 NOTICE

Console ports are intended to be used only as a temporary connection during initial configuration or troubleshooting.

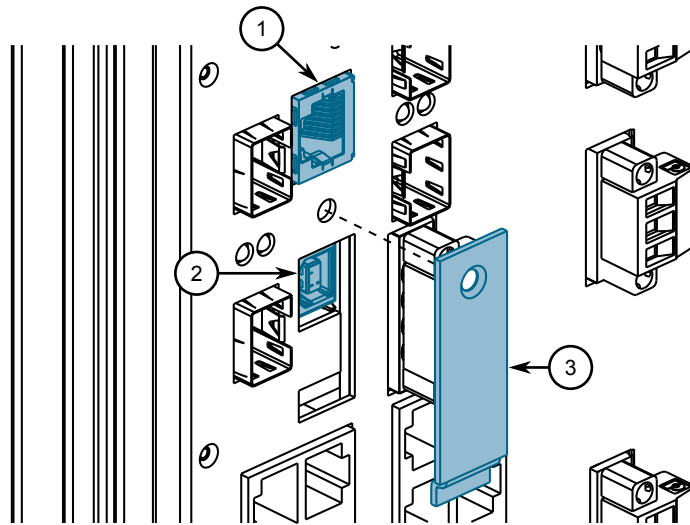
Note

When the USB Type-B console port is in use, the RJ45 console port will echo the console output but not accept any user input.

Note

For Microsoft Windows users, the RUGGEDCOM USB Serial Console driver must be installed on the users workstation before connecting via the USB Type-B console port. For more information, refer to the "RUGGEDCOM ROS Configuration Manual" for the RUGGEDCOM RSG920P.

3.1 Connecting to the Device



- ① RJ45 Console Port
- ② USB Type-B Console Port
- ③ Access Plate

Figure 3.1 Console Ports

Connection to the RJ45 console port is made using an RJ45-to-DB9 console cable. The following is the pin-out for the RJ45 console port:

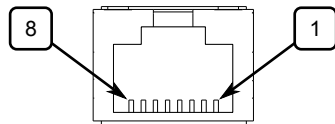


Figure 3.2 RJ45 Console Port Pin Configuration

Pin		Name	Description
RJ45 Male	DB9 Female		
1	6	DSR ^a	Data Set Ready
2 ^b	1	DCD ^a	Carrier Detect
3	4	DTR ^a	Data Terminal Ready
4	5	GND	Signal Ground
5	2	RxD	Receive Data (to DTE)
6	3	TxD	Transmit Data (from DTE)
7	8	CTS ^c	Clear to Send
8	7	RTS ^c	Read to Send
	9	RI ^d	Ring Indicator

^a The DSR, DCD and DTR pins are connected together internally.

^b Reserved (do not connect)

^c The CTS and RTS pins are connected together internally.

^d RI is not connected.

Communication Ports

Connect any of the available Ethernet ports on the device to a management switch and access the RUGGEDCOM RSG920P console and Web interfaces via the device's IP address. For more information about available ports, refer to "[Communication Ports](#)" (Page 25).

3.2 Configuring the Device

Once the device is installed and connected to the network, it must be configured. All configuration management is done via the RUGGEDCOM RSG920P interface. For more information about configuring the device, refer to the "RUGGEDCOM ROS Configuration Manual" associated with the installed software release.

3.3 Inserting/Removing the microSD Card

The RUGGEDCOM RSG920P accepts a microSD card for storing configuration files and/or software updates.

NOTICE

Configuration hazard – risk of data loss

The microSD card must not be removed or replaced while the device is booting up or when configuration changes are being made. Information on the microSD card may be lost. Make sure the device is powered down before removing or inserting the card.

NOTICE

Mechanical/electrical hazard – risk of damage to the microSD card

- Do not expose the microSD card to extreme temperatures or humidity.
- Do not expose the microSD card to large magnetic or static electric fields.
- Do not bend or drop the microSD card.

NOTICE

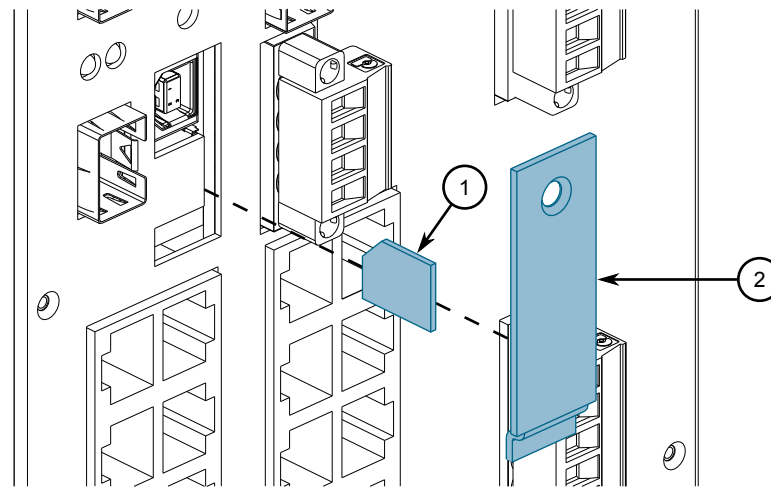
Security hazard – risk of unauthorized access and/or exploitation

Make sure to remove the microSD card before decommissioning the device or sending the device to a third-party.

To insert or remove a microSD card, do the following:

1. Unscrew the retention screw and remove the access plate.

3.3 Inserting/Removing the MicroSD Card



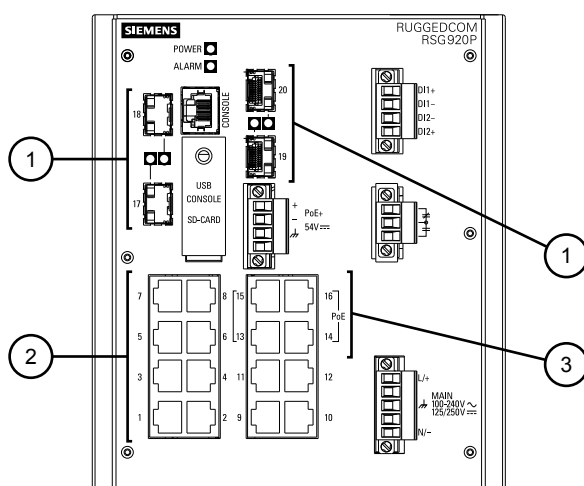
- ① MicroSD Card
- ② Access Plate

Figure 3.3 Inserting/Removing a MicroSD Card

2. When removing the card, first press the card in until it springs back.
3. Without touching the contacts on the card, insert or remove the microSD card.
4. When installing the card, push the card in until it clicks in place.
5. Install the access plate and tighten the retention screw.
6. Power up the device.

Communication Ports

The RUGGEDCOM RSG920P can be equipped with various types of communication ports to enhance its abilities and performance.




- ① SFP Transceiver Sockets
- ② Copper Ethernet Ports
- ③ PoE+ Ports

Figure 4.1 Port Assignment

Port	Type
1 to 16	10/100/1000 Mbps Copper Ethernet Ports
13 to 16	10/100/1000 Mbps Power-over-Ethernet (POE) Ports
17 to 20	SFP up-link ports supporting Fast Ethernet or Gigabit Ethernet optics (used interchangeably)

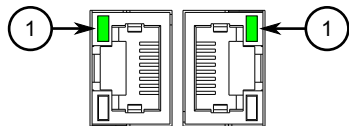
4.1 Copper Ethernet Ports

The RUGGEDCOM RSG920P supports several 10/100/1000Base-TX Ethernet ports that allow connection to standard Category 5 (CAT-5) unshielded twisted-pair (UTP) cables with RJ45 male connectors. The RJ45 connectors are directly connected to the chassis ground on the device and can accept CAT-5 shielded twisted-pair (STP) cables.

 WARNING
<p>Electric shock hazard – risk of serious personal injury and/or equipment interference</p> <p>If shielded cables are used, make sure the shielded cables do not form a ground loop via the shield wire and the RJ45 receptacles at either end. Ground loops can cause excessive noise and interference, but more importantly, create a potential shock hazard that can result in serious injury.</p>

LEDs

Each port features an LED that indicates the link/activity state of the port.



① Link/Activity LED

Figure 4.2 RJ45 Port LEDs

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

Pin-Out

The following is the pin-out for the RJ45 male connectors:

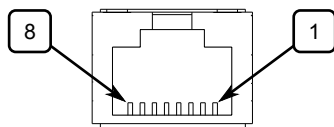


Figure 4.3 RJ45 Ethernet Port Pin Configuration

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

Pin	Name		Description
	10/100Base-TX	1000Base-TX	
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

Specifications

For specifications on the available copper Ethernet ports, refer to "[Copper Ethernet Port Specifications](#)" (Page 31).

4.2 SFP Transceivers

The RUGGEDCOM RSG920P features four Small Form-Factor Pluggable (SFP) transceiver sockets, which are compatible with a wide array of SFP transceivers available from Siemens.

LEDs

Each socket features an LED that indicates its link state.

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

Compatible SFP Transceivers

For more information about which SFP transceivers are compatible with the RUGGEDCOM RSG920P, as well as instructions for ordering and installation/removal, refer to the "[RUGGEDCOM SFP Transceiver Catalog \[https://support.industry.siemens.com/cs/ca/en/view/109482309\]](https://support.industry.siemens.com/cs/ca/en/view/109482309)".

Note

Only use SFP transceivers approved by Siemens for RUGGEDCOM products. Siemens accepts no liability as a result of performance issues related in whole or in part to third-party components.

4.3 PoE Ports

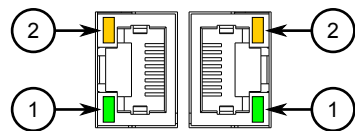
The RUGGEDCOM RSG920P supports four Power over Ethernet (POE) ports (ports 13 to 16) powered by an external power supply. Each port complies with the IEEE 802.3at standard.

The total allowable power budget for all ports is 120 W. If the external power supply is less than 120 W, to prevent exceeding the power budget, port priorities can be set via the RUGGEDCOM ROS operating system to disable low priority ports when demand is too high. Ports can also be enabled/disabled and placed on a power schedule to conserve power. For more information, refer to the "RUGGEDCOM ROS Configuration Manual" for the RUGGEDCOM RSG920P.

For information about connecting the external power supply, refer to "[Connecting External PoE Power](#)" (Page 18).

LEDs

Each PoE port features an LED that indicates the power state of the port and link status.



- ① Link/Activity LED
- ② Power State LED

Figure 4.4 RJ45 Port LEDs

LED	State	Description
Link/Activity	Green (Solid)	Link established
	Green (Blinking)	Link activity
	Off	No link detected
Power State	Yellow (Solid)	Power provided
	Yellow (Blinking)	Searching for load
	Off	No power or port disabled

Pin-Out

The pin-out for the PoE ports is as follows:

Note

Ports 13 and 15 are wired per IEEE 802.3at Alternative-A, while ports 14 and 16 are wired per IEEE 802.3at Alternative-B.

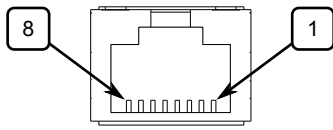


Figure 4.5 PoE Port Pin Configuration

Pin	Name		PoE Voltage 54 V Nominal		Description
	10/100Base-TX	1000Base-TX	Ports 13 and 15	Ports 14 and 16	
1	RX+	BI_DB+	V+		Receive Data+ or Bi-Directional
2	RX-	BI_DB-	V+		Receive Data- or Bi-Directional
3	TX+	BI_DA+	V-		Transmit Data+ or Bi-Directional
4	Reserved (Do Not Connect)	BI_DD+		V+	Bi-Directional
5	Reserved (Do Not Connect)	BI_DD-		V+	Bi-Directional
6	TX-	BI_DA-	V-		Transmit Data- or Bi-Directional
7	Reserved (Do Not Connect)	BI_DC+		V-	Bi-Directional
8	Reserved (Do Not Connect)	BI_DC-		V-	Bi-Directional

Specifications

For specifications on the available PoE ports, refer to ["PoE Power Supply Specifications" \(Page 31\)](#).

Technical Specifications

This section details the specifications and operating conditions of the device.

5.1 Power Supply Specifications

Power Supply Type	Input Range		Internal Fuse Rating ^a	Isolation	Maximum Power Consumption ^b
	Minimum	Maximum			
HI	88 VDC	300 VDC	3.15 A(T)	2.8 kVAC	27 W
	88 VAC	264 VAC			
LO	9 VDC	60 VDC	5 A	1.5 kVDC	

^a (T) denotes time-delay fuse.

^b Power consumption varies based on configuration.

5.2 PoE Power Supply Specifications

The RUGGEDCOM RSG920P adheres to the following power output and IEEE specifications depending on the input voltage supplied to the device.

Power In		Power Out
Voltage Range	Internal Fuse Rating	
51-57 VDC	3.15 A Maximum	50-57 VDC, 30 W per Port Maximum (IEEE 302.at)
45-57 VDC		44-57 VDC, 15 W per Port Maximum (IEEE 302.af)

5.3 Failsafe Alarm Relay Specifications

Maximum Switching Voltage	Rated Switching Current	Isolation
30 VDC	2.0 A	2.0 kVAC (1 min)
250 VAC		

5.4 Copper Ethernet Port Specifications

The following details the specifications for copper Ethernet ports that can be ordered with the RUGGEDCOM RSG920P.

5.5 Digital Input Specifications

Speed (Mbps) ^a	Interface	Connector	Duplex ^a	Cable Type ^b	Wiring Standard ^c	Maximum Distance ^d	Isolation ^e
10/100/1000	TX	RJ45	FDX/HDX	> CAT-5	TIA/EIA T568A/B	100 m (328 ft)	1.5 kVAC

^a Auto-negotiating.

^b Shielded or unshielded.

^c Auto-crossover and auto-polarity.

^d Typical distance. Dependent on the number of connectors and splices.

^e RMS 1 minute.

5.5 Digital Input Specifications

Isolation to System	1.5 kVAC
Input 1 to Input 2 Isolation	1 kVDC
Input Voltage	+/- 30 V Maximum
Logic High	+10 ~ + 30 V
Logic Low	-30 ~ + 8 V
Wetting Voltage	+9.5 V
Input/Output Current	5-10 mA

5.6 Operating Environment

The RUGGEDCOM RSG920P is rated to operate under the following environmental conditions.

Ambient Operating Temperature ^{ab}	-40 to 85 °C (-40 to 185 °F)
Ambient Storage Temperature	-40 to 85 °C (-40 to 185 °F)
Ambient Relative Humidity ^c	5% to 95%
Maximum Altitude	2000 m (6562 ft)

^a Measured from a 30 cm (12 in) radius surrounding the center of the enclosure.

^b Operating temperature may vary based on the limitations of installed SFPs. Refer to the "RUGGEDCOM SFP Transceivers Catalog" for SFP temperature ratings.

^c Non-condensing.

5.7 Mechanical Specifications

Weight	4.7 kg (10.5 lbs)
Ingress Protection	IP40 (1 mm or 0.04 in objects)
Enclosure	Aluminum

5.8 Dimension Drawings

Note

All dimensions are in millimeters, unless otherwise stated.

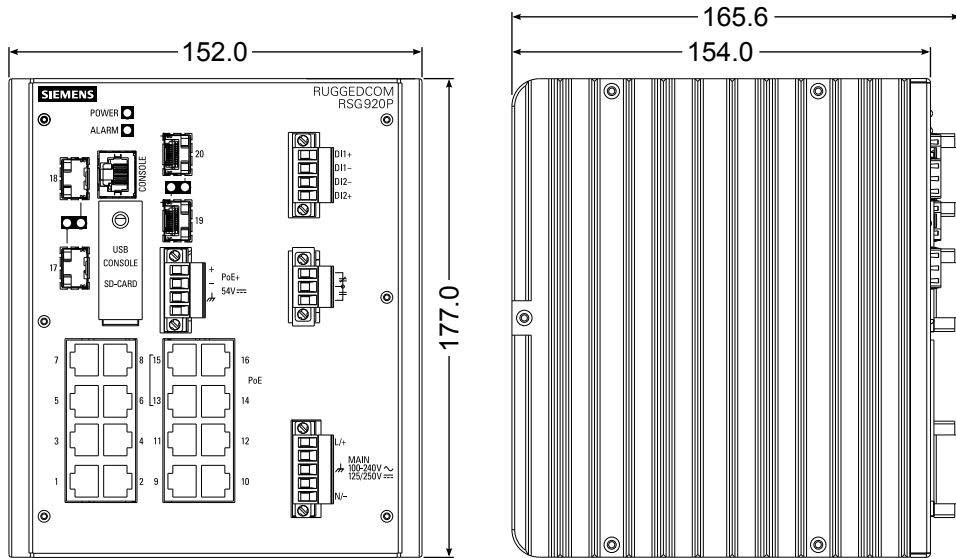


Figure 5.1 Overall Dimensions

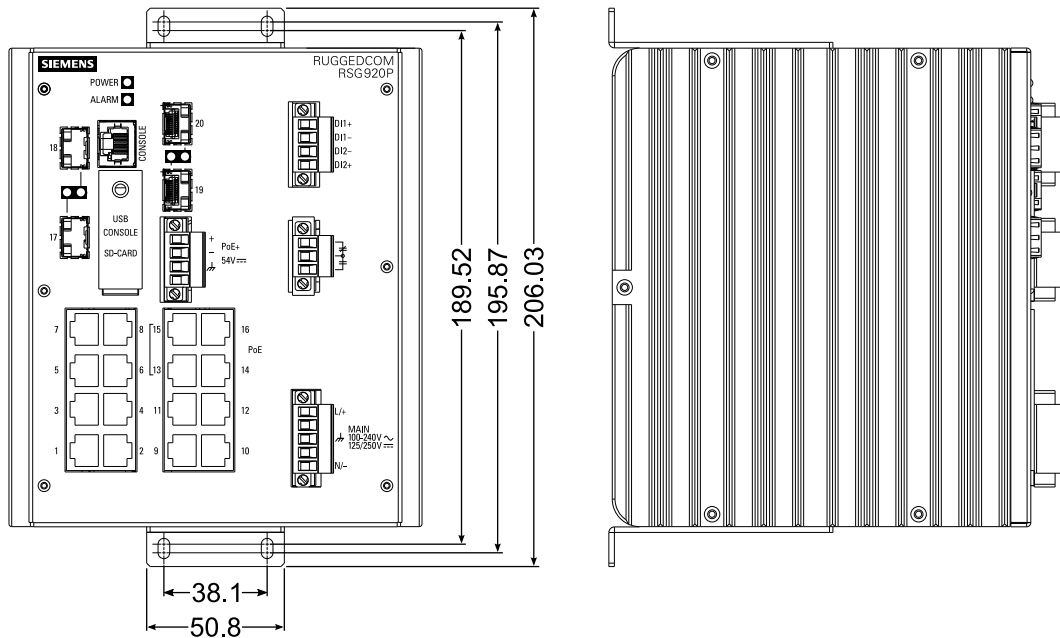


Figure 5.2 Panel Mount Dimensions (Rear Mount Shown)

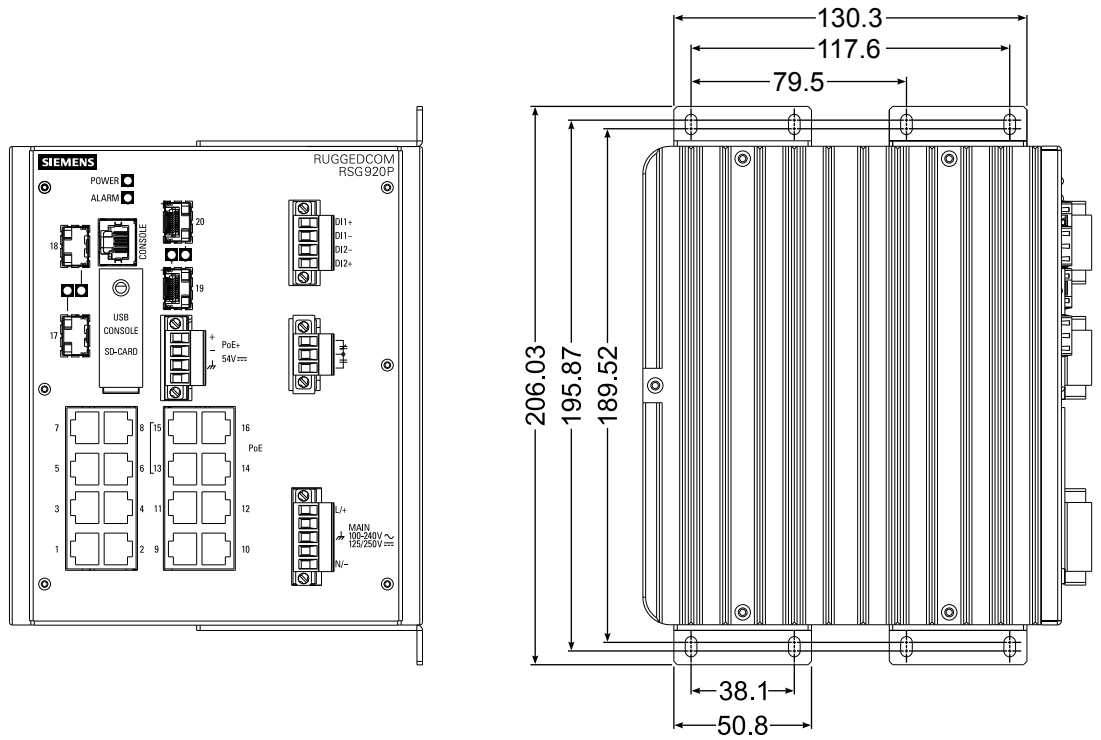


Figure 5.3 Panel Mount Dimensions (Side Mount Shown)

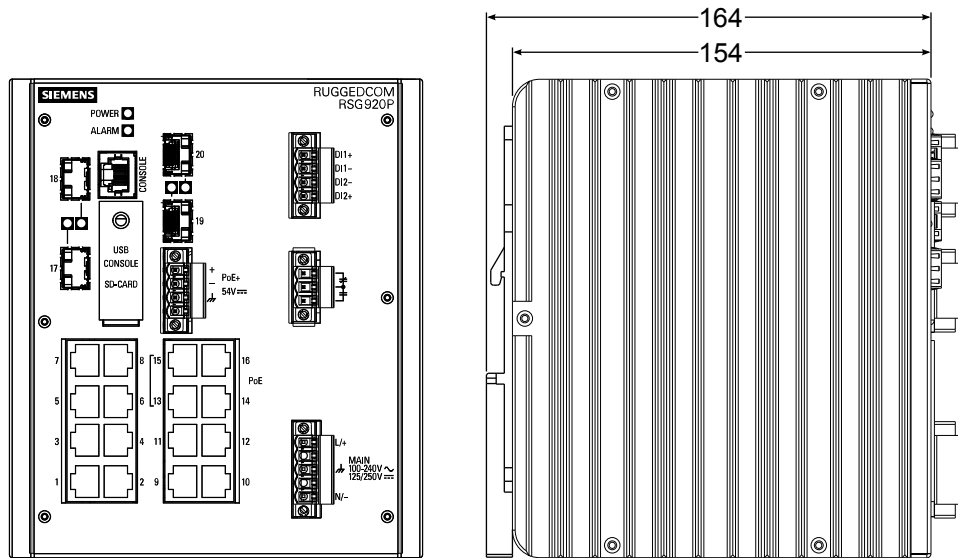


Figure 5.4 DIN Rail Mount Dimensions

Certification

The RUGGEDCOM RSG920P device has been thoroughly tested to guarantee its conformance with recognized standards and has received approval from recognized regulatory agencies.

6.1 Approvals

This section details the standards to which the RUGGEDCOM RSG920P complies.

Note

All relevant certificates and test reports are available on [Siemens Industry Online Support \[https://support.industry.siemens.com\]](https://support.industry.siemens.com).

6.1.1 UKCA

This device is certified for use in Great Britain and bears the United Kingdom Certified Assessed (UKCA) marking. The marking is printed on the body of the device, along with the identification number of the notified body.



6.1.2 TÜV SÜD

This device is certified by TÜV SÜD to meet the requirements of the following standards:


- **CAN/CSA-C22.2 NO. 62368-1**
Information Technology Equipment – Safety – Part 1: General Requirements (Bi-National standard, with UL 62368-1)
- **UL 62368-1**
Information Technology Equipment – Safety – Part 1: General Requirements)

6.1.3 European Union (EU)

This device is declared by Siemens Canada Ltd. to comply with essential requirements and other relevant provisions of the following EU directives:

- **EN 62368-1**
Information Technology Equipment – Safety – Part 1: General Requirements
- **EN 61000-6-2**
Electromagnetic Compatibility (EMC) – Part 6-2: Generic Standards – Immunity for Industrial Environments
- **EN 60825-1**
Safety of Laser Products – Equipment Classification and Requirements
- **EN 63000**
Technical Documentation for the Assessment of Electrical and Electronic Products with Respect to the Restriction of Hazardous Substances
- **CISPR 32/EN 55032**
Electromagnetic Compatibility of Multimedia Equipment – Emission Requirements
- **EN 55011**
Industrial, Scientific and Medical Equipment – Radio-Frequency Disturbance Characteristics – Limits and Methods of Measurement
- **EN 50121-3-2**
Railway Applications – Electromagnetic Compatibility – Rolling Stock – Apparatus
- **EN 50121-4**
Railway Applications – Electromagnetic Compatibility – Emission and Immunity of the Signaling and Telecommunications Apparatus

Notices specific to the European Union

 WARNING
Communication hazard – risk of radio interference
This is a Class A product. In a domestic environment this product may cause radio interference, in which case the user may be required to take adequate measures.

CE Marking

The device is marked with a CE symbol and can be used throughout the European community.



6.1.4 FCC

This device has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment.

This device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference in which case users will be required to correct the interference at their own expense.

 **NOTICE**

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate this device.

6.1.5 FDA/CDRH

This device meets the requirements of the following U.S. Food and Drug Administration (FDA) standard:

- Title 21 Code of Federal Regulations (CFR) – Chapter I – Sub-chapter J – Radiological Health

6.1.6 ISED

This device is declared by Siemens Canada Ltd. to meet the requirements of the following ISED (Innovation Science and Economic Development Canada) standard:

- CAN ICES-3 (A)/NMB-3 (A)

6.1.7 ISO

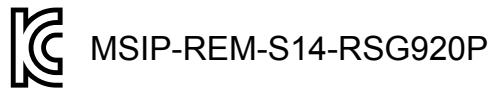
This device was designed and manufactured using a certified ISO (International Organization for Standardization) quality program that adheres to the following standard:

- **ISO 9001:2015**
Quality management systems – Requirements

6.1.8 RRA



This device has been registered by the Korean Radio Research Agency (RRA) under Clause 3, Article 58-2 of the Radio Waves Act. As such, the device is marked with a KC

symbol and can be used in the Republic of Korea (South Korea) as a Class A product in a commercial, industrial or business environment.



A copy of the KC Declaration of Conformity is available from Siemens Canada Ltd.. For contact information, refer to "[Contacting Siemens](#)" (Page vii).

Notices specific to the RRA:

 WARNING
Class A Equipment (Industrial Broadcasting and Communication Equipment) This device complies with the limits of a Class A electromagnetic wave device and is intended for use outside of a residential environment. The seller or user must be aware.
 경고
A급 기기 (업무용 방송통신기자재) 이 기기는 업무용(A급) 전자파적합기기로서 판매자 또는 사용자는 이 점을 주의하시기 바라며, 가정외의 지역에서 사용하는 것을 목적으로 합니다.

6.1.9 ACMA

This device meets the requirements of the following Australian Communications and Media Authority (ACMA) standards under certificate ABN 98 004 347 880:

- Radiocommunications (Compliance Labelling – Devices) Notice 2014 made under Section 182 of the Radiocommunications Act 1992
- Radiocommunications Labelling (Electromagnetic Compatibility) Notice 2008 made under Section 182 of the Radiocommunications Act 1992
- Radiocommunications (Compliance Labelling – Electromagnetic Radiation) Notice 2003 made under Section 182 of the Radiocommunications Act 1992
- Telecommunications Labelling (Customer Equipment and Customer Cabling) Notice 2001 made under Section 407 of the Telecommunication Act 1997

The device is marked with an RCM symbol to indicate compliance when sold in the Australian region.



A copy of the Declaration of Conformity is available via Siemens Industry Online Support at <https://support.industry.siemens.com/cs/ww/en/view/89855782>.

6.1.10 RoHS

This device is declared by Siemens Canada Ltd. 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:

- **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>.

6.1.11 Other Approvals

This device meets the requirements of the following additional standards:

- **IEEE 1613**
IEEE Standard Environmental and Testing Requirements for Communications Networking Devices in Electric Power Substations
- **IEC 61850-3**
General Requirements
- **IEC 61000-6-2**
Electromagnetic Compatibility (EMC) – Part 6-2: Generic Standards – Immunity for Industrial Environments
- **NEMA TS-2**
Traffic Controller Assemblies with NTCIP Requirements
- **EN 50121-4**
Railway Applications – Electromagnetic Compatibility – Emission and Immunity of the Signaling and Telecommunications Apparatus
- **EN 50121-3-2**
Railway Applications – Electromagnetic Compatibility – Rolling Stock – Apparatus
- **EN 45545-2**
Railway Applications – Fire Protection on Railway Vehicles – Requirements for fire Behavior of Materials and Components

6.2 EMC and Environmental Type Tests

The RUGGEDCOM RSG920P has passed the following Electromagnetic Compatibility (EMC) and environmental tests.

EMC Type Tests per IEC 61850-3

Test	Description	Test Levels	Severity Levels	
IEC 61000-4-2	Electrostatic Discharge (ESD)	Enclosure Contact	±8 kV	4
		Enclosure Air	±15 kV	4
IEC 61000-4-3	Radiated Radio Frequency Immunity (RFI)	Enclosure Ports	20 V/m	X
IEC 61000-4-4	Burst (Electrical Fast Transient)	Signal Ports	±4 kV at 2.5 kHz	Note ^a
		DC Power Ports	±4 kV	4
		AC Power Ports	±4 kV	4
		PoE Ports	±4 kV	4
		Earth Ground Ports	±4 kV	4
EC 61000-4-5	Surge Withstand Immunity	Signal Ports	±2 kV Line-to-Earth	Note ^b
		PoE Ports		Note ^c
		Low Voltage DC Power Ports	±2 kV Line-to-Earth	3
			±1 kV Line-to-Line	2
		High Voltage AC Power Ports	±4 kV Line-to-Earth	4
±2 kV Line-to-Line	3			
IEC 61000-4-6	Induced (Conducted) Radio Frequency Immunity (RFI)	Signal Ports	10 V	3
		DC Power Ports	10 V	3
		AC Power Ports	10 V	3
		Earth Ground Ports	10 V	3
IEC 61000-4-8	Power Frequency Magnetic Field	Enclosure Ports ^a	100 A/m Continuous for 1 min per IEEE 1613.1 1000 A/m for 1s	Note ^a
			1000 A/m for 1s	5
IEC 61000-4-11	AC Voltage Dips, Drop-Outs and Interrupts	AC Power Ports	Dips 30% (1 cycle at 50 Hz and 1 cycle at 60 Hz) Dips 60% (50 cycles at 50 Hz and 60 cycles at 60 Hz) Drop-Outs 100% (5 cycles at 50 Hz, 50 cycles at 50 Hz, and 60 cycles at 60 Hz) Interrupts 100% (6 cycles at 60 Hz)	
IEC 61000-4-16	Mains Frequency Voltage	Signal Ports	30 V Continuous	4
		DC Power Ports	300 V for 1 s	

Test	Description		Test Levels	Severity Levels
IEC 61000-4-17	Ripple on DC Power Supply	DC Power Ports	10%	3
IEC 61000-4-18	Damped Oscillatory Wave	Slow Damped	2.5 kV common 1 kHz or 1 MHz	3
		PoE Ports		
IEC 61000-4-29	DC Voltage Dips and Interrupts	DC Power Ports	30% for 0.1 s 60% for 0.1 s 100% for 0.05 s	
EC 60225-27	Dielectric Strength	Signal Ports	2 kV (Fail-Safe Relay Output)	
		DC Power Ports	2 kV	
		AC Power Ports	2 kV	
	HV Impulse	Signal Ports	5 kV (Fail-Safe Relay Output)	
		DC Power Ports	5 kV	
		AC Power Ports	5 kV	

^a Severity level set by Siemens.

^b Common mode tests performed on the signal port shield.

^c For IEC 61850-3 compliance when using Power-over-Ethernet (PoE), an IEC 61850-3 compliant PoE power supply must be installed in the vicinity of the device with power cabling no longer than 3 meters (118 in).

EMC Immunity Type Tests per IEEE 1613

Note

RUGGEDCOM products meet Class 1 requirements for copper Ethernet configurations and Class 2 for fiber Ethernet configurations. Class 1 allows for temporary communication loss, while Class 2 requires error-free and interrupted communications.

Description		Test Levels	Severity Levels
Electrostatic Discharge (ESD)	Enclosure Contact	±8 kV	
	Enclosure Contact	±15 kV	
Radiated Radio Frequency Immunity (RFI)	Enclosure Ports	35 V/m (80% Modulation)	
Burst (Electrical Fast Transient)	Signal Ports	±4 kV at 2.5 kHz	
	DC Power Ports	±4 kV	
	AC Power Ports	±4 kV	

6.2 EMC and Environmental Type Tests

Description		Test Levels	Severity Levels
	Earth Ground Ports	±4 kV	
Damped Oscillatory Wave	Signal Ports	2.5 kV Common Mode at 1 MHz	
	DC Power Port	2.5 kV Common and Differential Mode at 1 MHz	
	AC Power Port	2.5 kV Common and Differential Mode at 1 MHz	
Dielectric Strength	Signal Ports	2 kV	
	DC Power Port	2 kV	
	AC Power Port	2 kV	
Damped Oscillatory Magnetic Field	Enclosure Ports	100 A/m (Peak) at 100 kHz and 1 MHz	5

Environmental Type Tests

Test	Description		Test Levels	Severity Levels
IEC 60068-2-1	Cold Temperature	Test Ad	-40 °C (-40 °F), 16 Hours	
IEC 60068-2-2	Dry Heat	Test Bd	85 °C (185 °F), 16 Hours	
IEC 60068-2-30	Humidity (Damp Heat, Cyclic)	Test Db	95% Relative Humidity, 55 °C (131 °F), 6 Cycles	
IEC 60068-2-78	Damp Heat Steady State	Test Cab	93% Humidity, 10 Days	
IEC 60068-14	Change of Temperature	Test Nb	5 Cycles	
IEC 60255-21-1	Vibration		2 g at 10-150 Hz	Class 1
IEC 60255-21-2	Shock		30 g at 11 ms	Class 1
	Bump		10 g at 16 ms	Class 1
IEC 60255-21-3	Seismic		Method A, Class 2	Class 1

For more information

Siemens RUGGEDCOM

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

Industry Online Support (service and support)

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

Industry Mall

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

Siemens Canada Ltd.

Digital Industries

Process Automation

300 Applewood Crescent

Concord, Ontario, L4K 4E5

Canada

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Subject to change