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Rugged Communication

RUGGEDCOM RST2228

19" Layer 2 rack switch
with 10 Gbit/s uplinks

Brochure

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Field-modular high port density rack switch with IEEE 1588 support suitable for high bandwidth multi-service Layer 2 networks in the digital substation.

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Product overview and benefits

The RUGGEDCOM RST2228 is a field modular 19" Layer 2 rack switch with 10 Gbit/s uplinks, support for IEEE 1588 and optional Power-over-Ethernet - an ideal solution for multiple applications and verticals.

The RUGGEDCOM RST2228 provides a high level of immunity to electromagnetic interference, heavy electrical surges, extreme temperature and humidity for reliable operation in mission critical applications. It can be found in electric utility substations, traffic control cabinets, railways, oil & gas and other harsh environments.

High bandwidth uplinks

The 10 Gbit/s uplinks enable throughput for large networks with large amounts of bandwidth consuming applications.

Field-replaceable modular design

The field modular design allows for on-site modifications which reduce costs and network downtime in case of necessary replacements.

IEEE 1588 support

The RUGGEDCOM RST2228 is future proof device with support for modern IEEE 1588 based networking.

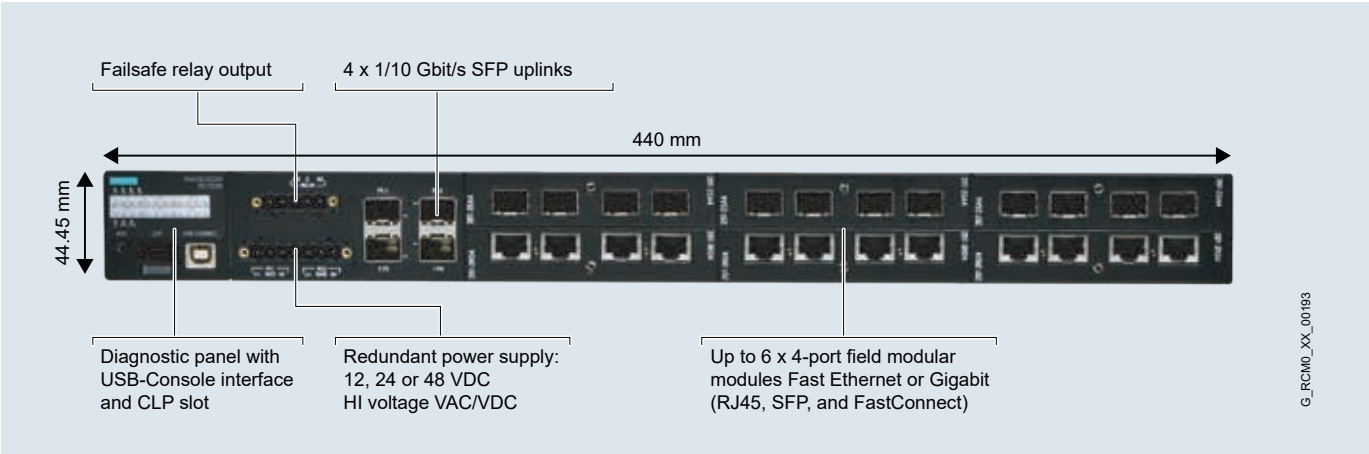
Removable storage media

The RUGGEDCOM CLP reduces the setup time in the field and allows for easier and faster component exchange in case of product failure.

Certifications and approvals

Most complete offering of certifications and approvals for electric power, transportation and oil & gas verticals.

Technical data



| Specifications | |
|-----------------------------|-----------------------------|
| Network interfaces | |
| Total number of ports | 28 |
| Number of ports 10/100/1000 | 24 |
| Number of ports 1/10 Gbit/s | 4 |
| Port types | RJ45, SFP and FastConnect |
| Power supply | |
| Range | 88 – 300 VDC / 85 – 264 VAC |
| Design | Fixed |
| Mechanical design | |
| Design | Field modular media modules |
| Dimensions (w x h x d) | 440 x 44.45 x 345 mm |
| Operating temperature | -40° C to + 85° C |
| Degree of protection | IP30 |
| Other features | |
| IEEE 1588 | Transparent clock |

Media modules



The RUGGEDCOM RST2228 is a field modular Ethernet switch equipped with 6 slots for various media modules. Media modules are available with different interface options.

Features

Software

The RUGGEDCOM RST2228 runs Rugged Operating System (ROS®) and delivers high performance switching.

ROS® supports the standard network technologies, such as Rapid Spanning Tree Protocol (RSTP), Multiple Spanning Tree Protocol (MSTP), Remote Monitoring (RMON), Simple Network Management Protocol (SNMP) and others, including proprietary protocol enhancements such as Siemens eRSTP (enhanced Rapid Spanning Tree Protocol) and Fast Root Failover (FRF).

Software features

- Quality of service (802.1p) for traffic prioritization
- NTP time synchronization (client and server)
- Smart power management for PoE interfaces
- Port rate and Broadcast Storm Limiting
- Port configuration, status, statistics, mirroring
- Simple Management interface through WebUI and console interface
- Single file configuration ensures easy installation and configuration control

Cyber security

Cyber security is an important issue in many industries where advanced automation and communications networks play a crucial role in mission critical applications and where high reliability is of paramount importance.

Key RUGGEDCOM RST2228 features that address security issues at the local area network level include:

- Passwords – support for multiple access levels with separate credentials for each level
- SSH / SSL – extends capability of password protection to add encryption of passwords and data as they cross the network
- Enable / disable ports – capability to disable ports so unauthorized devices can't connect to unused ports
- SNMPv3 – encrypted authentication and access security
- HTTPS – for secure access to the web interface
- 802.1x – to ensure only permitted devices can connect to the device
- MAC address authentication – control access to devices that do not support RADIUS

Hardware

The RUGGEDCOM RST2228 has been specifically designed and certified for industrial applications such as electric power, transportation systems and oil & gas applications.

Power supply

- Integrated power supply
- Universal high-voltage range: 88-300 VDC / 85-264 VAC

Configuration interfaces

The RUGGEDCOM RST2228 is equipped with a USB interface which enables easy in field configuration and upgrading. Storing application data, firmware and device configuration for commissioning and field maintenance is simple with the CLP slot.

Harsh environments

As with all RUGGEDCOM products, Highly Accelerated Life Testing (HALT) has been used in the early stages of product development – to detect any design or performance issues.

- Temperature: -40° C to +85° C (fanless)
- Safety: CSA/UL 60950
- Vibration: IEC 60255-21-1, Class 2
- Shock: IEC 60255-21-2, Class 2
- Humidity: IEC 60068-2-30, up to 95% relative humidity

Certifications

- IEC 61850-3 (electric substations)
- IEEE 1613 (electric substations)
- IEC 61000-6-2 (industrial environments)

Certifications in progress

- NEMA TS-2 (traffic control equipment)
- EN 50121-4 (railway applications)



Order options

| Z-options | | | | | | |
|-------------------------|--------|--------|--------|--------|--------|--------|
| LED Panel | | | | | | |
| Front (interface side) | A00 | | | | | |
| Rear | A01 | | | | | |
| Media modules | Slot 1 | Slot 2 | Slot 3 | Slot 4 | Slot 5 | Slot 6 |
| RUGGEDCOM RMM2931-4 | B00 | C00 | D00 | E00 | F00 | G00 |
| RUGGEDCOM RMM2973-4RJ45 | B01 | C01 | D01 | E01 | F01 | G01 |
| RUGGEDCOM RMM2973-4FC | B02 | C02 | D02 | E02 | F02 | G02 |
| RUGGEDCOM RMM2972-4SFP | B06 | C06 | D06 | E06 | F06 | G06 |

| Media modules | Article number | |
|-------------------------|--------------------|--------------------|
| Product | Standard | Conformal coating |
| RUGGEDCOM RMM2931-4 | 6GK6293-1BA00-4AA0 | |
| RUGGEDCOM RMM2973-4RJ45 | 6GK6297-3RD00-4AB0 | 6GK6297-3RD00-4AB1 |
| RUGGEDCOM RMM2973-4FC | 6GK6297-3FD00-4AB0 | 6GK6297-3FD00-4AB1 |
| RUGGEDCOM RMM2972-4SFP | 6GK6297-2SA00-4AA0 | 6GK6297-2SA00-4AA1 |

| Storage media | Article number | |
|----------------------|--------------------|--|
| Product | | |
| RUGGEDCOM CLP 2GB | 6GK6000-8RA00-1HA0 | |
| RUGGEDCOM CLP 2GB CC | 6GK6000-8RA00-1HA1 | |

| Miscellaneous | Article number | |
|--|--------------------|--|
| Product | | |
| USB Console cable, 10 ft. | 6GK6000-8DT01-0AA0 | |
| 19" Rack & panel mounting kit | 6GK6000-8MA01-0AA0 | |
| Connector Kit RST2228 Pluggable terminal blocks (5 sets) | 6GK6000-8HC05-0AA0 | |
| Connector Kit RST2228 Screw terminal blocks (5 sets) | 6GK6000-8HC06-0AA0 | |
| Power cable with NEMA 5-15P plug with lugs for screw terminal blocks, 6 ft. | 6GK6000-8BA00-0AA0 | |
| Power cable with NEMA 5-15P plug without lugs for pluggable terminal blocks, 6 ft. | 6GK6000-8BB00-0AA0 | |
| RJ45 dust covers for RUGGEDCOM products, 8 pieces | 6GK6000-8HT01-0CA0 | |
| SFP Slot dust covers for RUGGEDCOM products, 8 pieces | 6GK6000-8HT02-0CA0 | |

| Available pluggable transceivers | Medium, interface | Range | Operating temperature | Article number |
|----------------------------------|---------------------------------|-----------|-----------------------|--------------------|
| Fast Ethernet SFPs | | | | |
| SFP1112-1 | Copper, RJ45 | 0 - 100 m | -40 - 85 °C | 6GK6000-8CG01-0AA0 |
| SFP1121-1FX2 | Multi-mode, LC | 2 km | -40 - 85 °C | 6GK6000-8FE51-0AA0 |
| SFP1121-1FX2A | Multi-mode, LC, active | 2 km | -40 - 85 °C | 6GK6000-8FE50-0AA0 |
| SFP1131-1FX20 | Single-mode, LC | 20 km | -40 - 85 °C | 6GK6000-8FE52-0AA0 |
| SFP1131-1FX50 | Single-mode, LC | 50 km | -40 - 85 °C | 6GK6000-8FE53-0AA0 |
| SFP1131-1FX90 | Single-mode, LC | 90 km | -40 - 85 °C | 6GK6000-8FE54-0AA0 |
| Gigabit SFPs | | | | |
| SFP1132-1BX10R | Single-mode, LC, bi-directional | 10 km | -40 - 85 °C | 6GK6000-8FB51-0AA0 |
| SFP1132-1BX10T | Single-mode, LC, bi-directional | 10 km | -40 - 85 °C | 6GK6000-8FB52-0AA0 |
| SFP1132-1BX40R | Single-mode, LC, bi-directional | 40 km | -40 - 85 °C | 6GK6000-8FB53-0AA0 |
| SFP1132-1BX40T | Single-mode, LC, bi-directional | 40 km | -40 - 85 °C | 6GK6000-8FB54-0AA0 |
| SFP1122-1SX | Multi-mode, LC | 0.5 km | -40 - 85 °C | 6GK6000-8FG51-0AA0 |
| SFP1122-1SX2 | Multi-mode, LC | 2 km | -40 - 85 °C | 6GK6000-8FE58-0AA0 |
| SFP1132-1LX10 | Single-mode, LC | 10 km | -40 - 85 °C | 6GK6000-8FG52-0AA0 |
| SFP1132-1LX25 | Single-mode, LC | 25 km | -40 - 85 °C | 6GK6000-8FG53-0AA0 |
| SFP1132-1LX40 | Single-mode, LC | 40 km | -40 - 85 °C | 6GK6000-8FG57-0AA0 |
| SFP1132-1LX70 | Single-mode, LC | 70 km | -40 - 85 °C | 6GK6000-8FG54-0AA0 |
| SFP1132-1LX100 | Single-mode, LC | 100 km | 0 - 70 °C | 6GK6000-8FG55-0AA0 |
| SFP1132-1LX150 | Single-mode, LC | 115 km | -40 - 85 °C | 6GK6000-8FE56-0AA0 |
| 10 Gigabit SFPs | | | | |
| SFP2133-1LR10 | Single-mode, LC | 10 km | -40 - 85 °C | 6GK6000-8FT51-0AA0 |
| SFP2133-1ER40 | Single-mode, LC | 40 km | -40 - 85 °C | 6GK6000-8FT53-0AA0 |
| SFP2133-1ZR80 | Multi-mode, LC | 80 km | -40 - 85 °C | 6GK6000-8FT52-0AA0 |

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FastConnect™ Cabling System

Stringent demands are placed on the installation of cables in an industrial environment. Siemens offers FastConnect™, a system that fulfills all these requirements: on-site assembly – quick, easy and error-free. For more information, visit: siemens.com/fastconnect

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