SIEMENS

RUGGEDCOM RSG2488

Advanced utility grade, high density Gigabit Ethernet switch

Brochure

Edition 12/2014

RUGGEDCOM RSG2488 features

The RUGGEDCOM RSG2488 is the first utility grade, field upgradable, non blocking 28 Gigabit port layer 2 switch, designed to reduce rack space needs, cut sparing costs and minimize time-to-repair while eliminating routine maintenance and separate timing cabling, delivering increased network availability and lowest total cost of ownership.

Siemens RUGGEDCOM RSG2488 is the latest addition to Siemens' extensive portfolio of products for industrial communication in every environment. With an operating temperature range of -40° C to +85° C, a 1U form factor, extruded all-aluminum enclosure and optional conformal coating, the RUGGEDCOM RSG2488 can be placed in almost any location.

The RUGGEDCOM RSG2488 provides up to 28 non-blocking ports that can be configured as 10/100/1000TX copper, 100FX, 1000SX or 1000LX fiber. With its 1U form factor and vertical loading design, the RUGGEDCOM RSG2488 provides users with the flexibility and field maintenance simplicity needed to efficiently implement, maintain and evolve a broadband local area network.

The RUGGEDCOM RSG2488's Rugged Rated hardware design and proven Rugged Operating System (ROS®) offer improved system reliability, advanced cyber security and advanced networking features which make it ideal for creating secure Ethernet networks for mission-critical, real-time control applications.

Precision timing
RUGGEDCOM RSG2488 can operate as an IEEE 1588 transparent clock, ordinary clock, master clock and supports both 1-step and 2-step operations. The available PTP module also allows the RUGGEDCOM RSG2488 to get timing information from GPS and serve as a grandmaster clock for downstream time recipients.

Timing conversion
The RUGGEDCOM RSG2488 supports IEEE 1588 (PTP), SNTP, IRIG-B and GPS. It can convert time between all of these formats.

Rugged Rated for reliability in harsh environments

- Immunity to EMI and heavy electrical surges
- Zero-Packet-Loss Technology
  - Meets IEEE 1613 Class 2 (electric utility substations)
  - Exceeds IEC 61850-3 (electric utility substations)
  - Exceeds IEC 61000-6-2 (generic industrial)
- -40° C to +85° C operating temperature (fanless)
- Conformal coated printed circuit boards (optional)

Extreme flexibility

- Support for up to a total of 28 non-blocking ports (six 4-port modules plus two 2-port modules)
- Up to 28 Ethernet ports: full 10/100/1000TX, full 1000SX/LX, full 100FX or any mixture therein with different connector options and a minimum of two ports
- -40° C to +85° C operating temperature (fanless)
- All-aluminum construction
- Supports Siemens FastConnect™ RJ45 cabling system

Dual redundant smart power supplies

- Hot-swappable, cable-free
- HI voltage AC/DC: 88 – 300 VDC or 85 – 264 VAC
- Low voltage range: 24 (13 – 36 VDC), 48 (37 – 72 VDC)
- Smart power supplies able to detect loss of input voltage

Rugged Operating System (ROS®) features

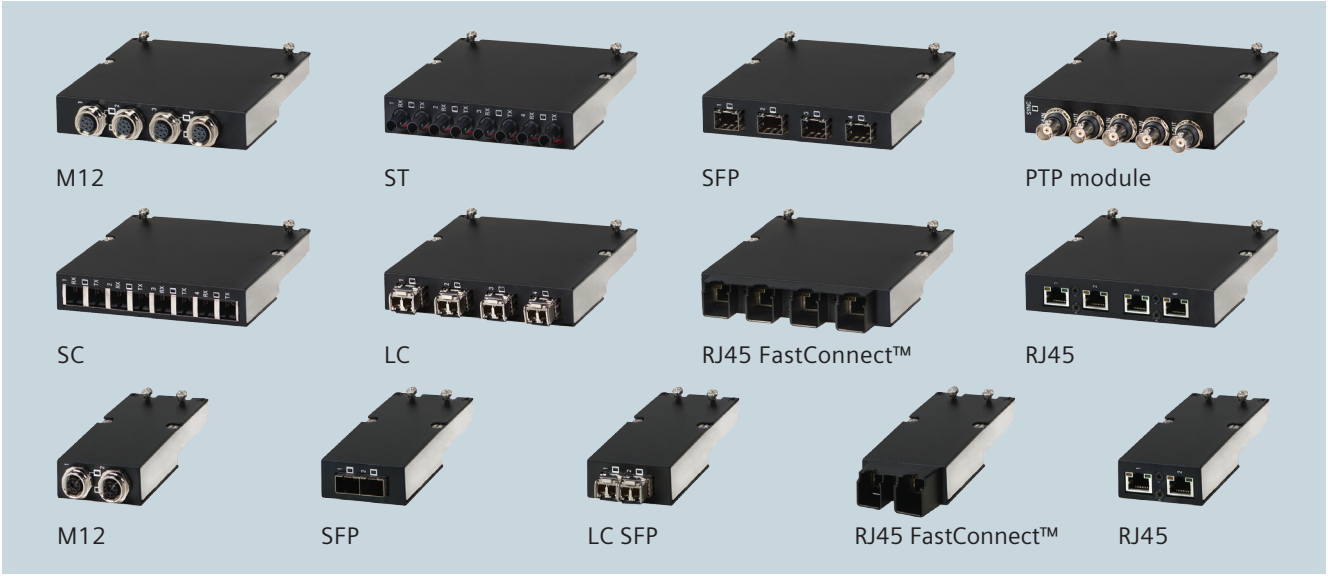
- Simple plug-and-play operation – automatic learning, negotiation, and crossover detection
- MSTP 802.1Q-2005 (formerly 802.1s)
- RSTP (802.1w) and Enhanced Rapid Spanning Tree
- eRSTP network fault recovery
- Quality of service (802.1p) for real-time traffic
- Port rate limiting
- Port configuration, status, statistics, mirroring, security
- SNTP time synchronization (client and server)
- Web-based, Telnet, CLI management interfaces
- SNMP v1/v2/v3
- Remote monitoring (RMON)
- Rich set of diagnostics with logging and alarms

Cyber security

- Multilevel user passwords
- Secure File Transfer Protocol (SFTP) using SSH
- Web-based management using SSL
- RADIUS-Authentication service for device management
- 1024-bit RSA encryption for key management and key exchange

Modules

The RUGGEDCOM RSG2488 is a modular and field replaceable platform that allows you to select amongst Ethernet options, making it ideally suited for electric power utilities, the industrial plant floor, rail and traffic control systems.



Precision Time Protocol (PTP) support

The RUGGEDCOM RSG2488 offers various IEEE 1588 (PTP) synchronization capabilities and can operate and provide time synchronization in several IEEE 1588 modes.

IEEE 1588 / PTP synchronization capabilities		
1588 mode	**1 and 2 Step mode ports**	**1 Step only mode ports**
1-Step peer-to-peer TC	•	•
2-Step peer-to-peer TC	•	•
End-to-end TC	•	•
End-to-end SC	•	
Peer-to-peer SC	•	
Peer-to-peer MC	•	•
Boundary clock	•	
End-to-end MC	•	
Peer-to-peer OC/TC hybrid	•	

There are four 1-step only mode ports located at slot 2/port 4, slot 4/port 4, slot 6/port 4 and slot 7/port 2. The remaining 24 ports are 1-step and 2-step mode ports.

TC: Transparent Clock
OC: Ordinary Clock
MC: Master Clock
SC: Slave Clock

The optional PTP card offers IRIG-B and PPS output to allow legacy devices to receive time sync information at the edge of a 1588 timing network.

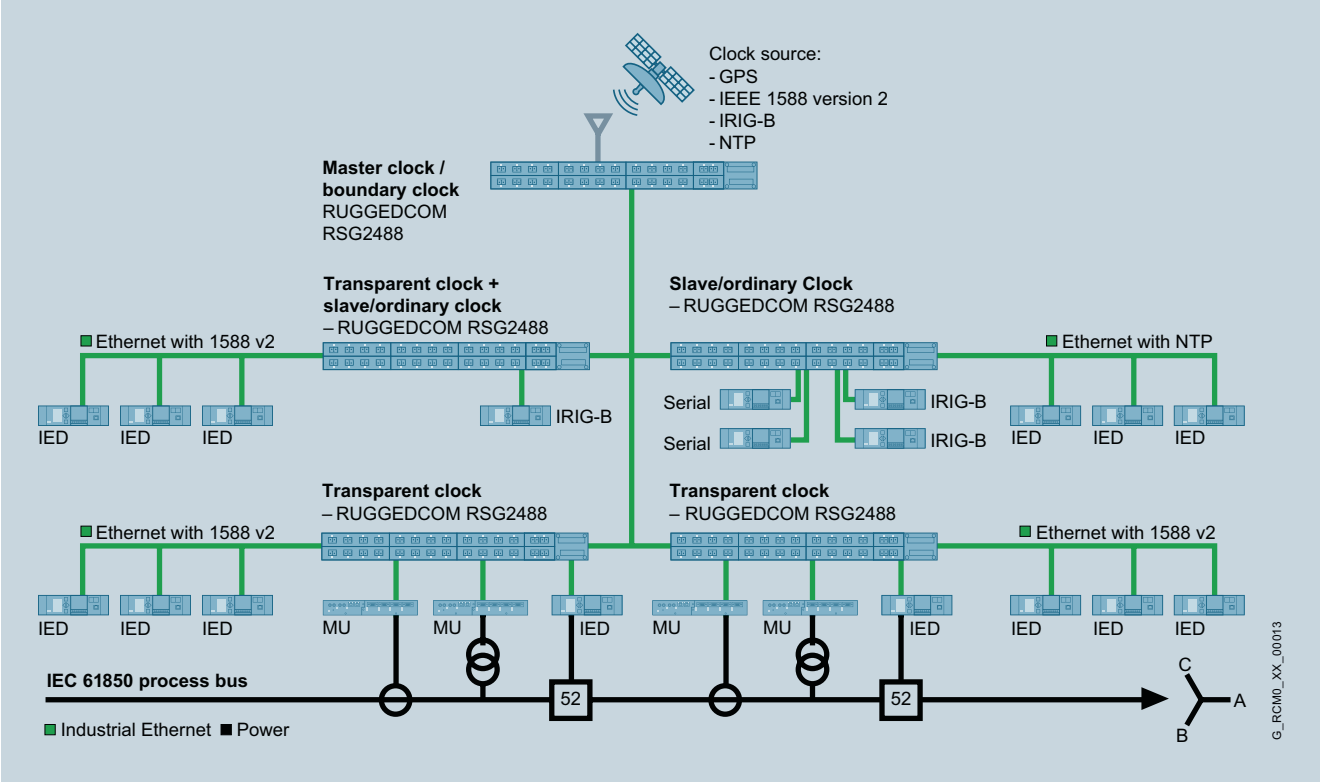
Parameter	PWM/ PPS out	AM out	PWM/ PPS in	AM in
Input impedance			>200 KΩ	>40 KΩ
Input voltage			TTL compatible	6 V_{p-p}, ratio 3:1
Output current	100 mA	24 mA		
Output voltage	TTL compatible	6 V_{p-p}, ratio 3:1		
Output impedance	50 Ω	50 Ω		
BNC connector	Yes	Yes	Yes	Yes
Supported formats	B004, B007	B004, B007	B124, B127	B124, B127

GPS Inputs

- NMEA 0183 protocol compatible
- Frequency stability: 0.5 ppm
- GPS PPS accuracy: 15 ns RMS
- Support active antenna with +5 VDC power feed

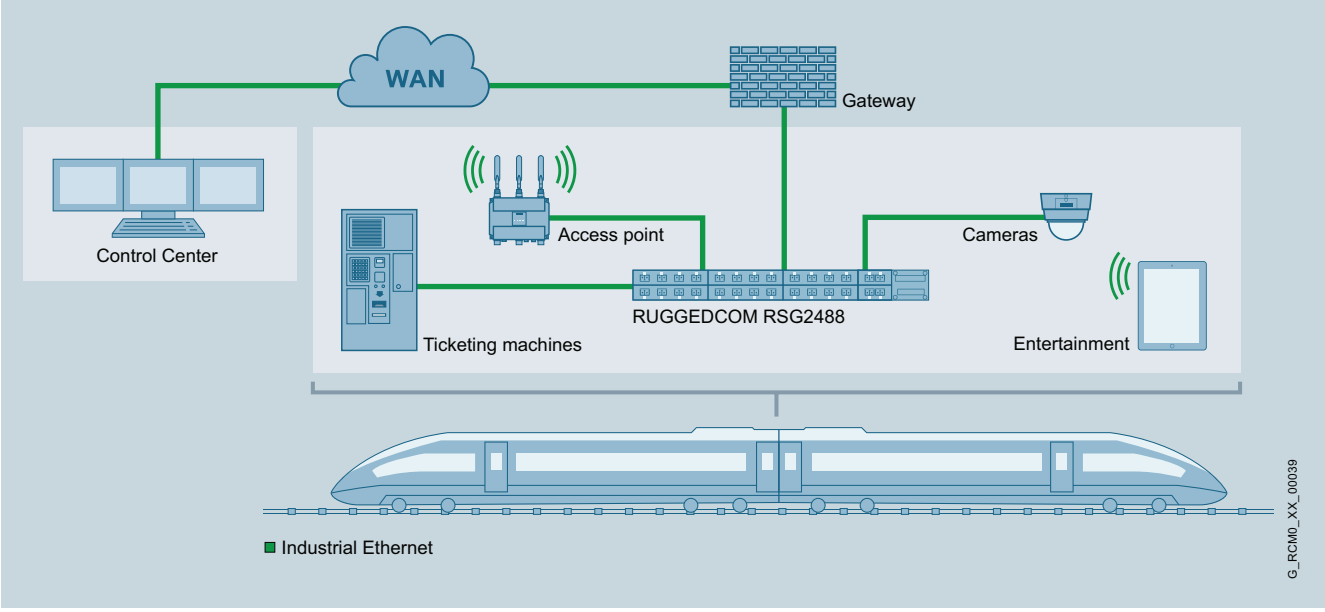
Use cases

IEEE 1588



The RUGGEDCOM RSG2488 provides all IEEE 1588 clock modes required to support a complete precision timing protocol solution for IEC 61850 based substation automation.

Onboard communication



Onboard communication with high density, full Gigabit Ethernet, using the RUGGEDCOM RSG2488 with M12 Gigabit modules.

Order options

RUGGEDCOM RSG2488	Order number								
Advanced utility grade, high density Ethernet switch (export controlled)	6GK6024-8GS2	.	–	.	.	A	.	–	Z
Advanced utility grade, high density Ethernet switch (non-export controlled)	6GK6024-8GS1	.	–	.	.	A	.	–	Z
Power supply 1									
24 VDC (13 – 36 VDC), screw terminal block		1							
48 VDC (37 – 72 VDC), screw terminal block		2							
88 – 300 VDC or 85 – 264 VAC, screw terminal block		3							
24 VDC (13 –36 VDC), pluggable terminal block		4							
48 VDC (37 – 72 VDC), pluggable terminal block		5							
88 – 300 VDC or 85 – 264 VAC, pluggable terminal block		6							
Power supply 2									
No power supply (only PS2)				0					
24 VDC (13 – 36 VDC)				1					
48 VDC (37 – 72 VDC)				2					
88 – 300 VDC or 85 – 264 VAC				3					
Mounting options									
No mounting option					A				
19" rack mount kit					D				
DIN and panel mount kit					E				
19" rack, DIN and panel mount kit					F				
Manufacturing modification									
Standard						0			
Conformal coating						1			
Z-options									
Slots 1 to 8	See table on page 7								

RUGGEDCOM-Selector configuration tool

Use the new RUGGEDCOM-Selector for the selection and configuration of RUGGEDCOM products.

With the RUGGEDCOM-Selector you can then transfer the order number to the Siemens Industry Mall and order your products.

RUGGEDCOM-Selector:
http://www.siemens.com/ruggedcom-selector

RUGGEDCOM RSG2488 Z-options slots 1 to 8								
Slot 1	Slot 2	Slot 3	Slot 4	Slot 5	Slot 6	Slot 7	Slot 8	
A00	B00	C00	D00	E00	F00			4-port wide blank assembly module
A01	B01	C01	D01	E01	F01			4 x 10/100/1000TX RJ45
A02	B02	C02	D02	E02	F02			4 x 10/100/1000TX FastConnect™
A03	B03	C03	D03	E03	F03			4 x 10/100/1000TX M12 (A-Coded)
A04	B04	C04	D04	E04	F04			4 x 10/100/1000TX M12 (X-Coded)
A05	B05	C05	D05	E05	F05			4 x 1000SX – multimode, 850 nm, LC, 500 m
A06	B06	C06	D06	E06	F06			4 x 1000LX – singlemode, 1310 nm, SC, 10 km
A07	B07	C07	D07	E07	F07			4 x 1000LX – singlemode, 1310 nm, LC, 10 km
A08	B08	C08	D08	E08	F08			4 x Blank SFP (no optical transceiver)
A09	B09	C09	D09	E09	F09			4 x 1000SX SFP – multimode, 850 nm, LC, 500 m
A10	B10	C10	D10	E10	F10			4 x 1000SX SFP – singlemode, 1310 nm, LC, 10 km
A11	B11	C11	D11	E11	F11			4 x 1000LX SFP – singlemode, 1300 nm, LC, 25 km
A12	B12	C12	D12	E12	F12			4 x 1000LX SFP – singlemode, 1550 nm, LC, 70 km
A13	B13	C13	D13	E13	F13			4 x 100FX – multimode, 1300 nm, ST, 2 km
A14	B14	C14	D14	E14	F14			4 x 100FX – multimode, 1300 nm, SC, 2 km
A15	B15	C15	D15	E15	F15			4 x 100FX – singlemode, 1310 nm, ST, 20 km
A16	B16	C16	D16	E16	F16			4 x 100FX – singlemode, 1310 nm, SC, 20 km
A17	B17	C17	D17	E17	F17			4 x 100FX – singlemode, 1310 nm, LC, 20 km
A18	B18	C18	D18	E18	F18			4 x 100FX – singlemode, 1310 nm, SC, 50 km
A19	B19	C19	D19	E19	F19			4 x 100FX – multimode, 1300 nm, LC, 2 km
A20	B20	C20	D20	E20	F20			4 x 100FX – singlemode, 1310 nm, LC, 50 km
A21	B21	C21	D21	E21	F21			4 x 100FX – singlemode, 1310 nm, SC, 90 km
A22	B22	C22	D22	E22	F22			4 x 100FX – singlemode, 1310 nm, LC, 90 km
A23	B23	C23	D23	E23	F23			4 x 1000LX – singlemode, 1310 nm, SC, 25 km
A24	B24	C24	D24	E24	F24			4 x 1000LX – singlemode, 1310 nm, LC, 25 km
A59								Precision Time Protocol (PTP) module: GPS in, IRIG-B AM/TTL in/out
						G60	H60	2-port wide blank assembly module
						G61	H61	2 x 10/100/1000TX RJ45
						G62	H62	2 x 10/100/1000TX FastConnect™
						G63	H63	2 x 10/100/1000TX M12 (A-Coded)
						G64	H64	2 x 10/100/1000TX M12 (X-Coded)
						G65	H65	2 x blank SFP (no optical transceiver)
						G67	H67	2 x 1000SX SFP – multimode, 850 nm, LC, 500 m
						G68	H68	2 x 1000LX – singlemode, 1310 nm, LC, 10 km
						G69	H69	2 x 1000LX – singlemode, 1310 nm, LC, 25 km
						G70	H70	2 x 1000 LX – singlemode, 1310 nm, LC, 70 km
						G71	H71	2 x 100FX – multimode, 1310 nm, LC, 2 km

Examples	Order code
RUGGEDCOM RSG2488 with 19' rack mount, 2 x 88 – 300 VDC or 85 – 264 VAC, screw terminal block power supplies, 6 x 4-port 1000SX Multimode LC, 2 x 2-port 1000TX RJ45 and no conformal coating.	6GK6024-8GS23-3DA0-Z A05+B05+ C05+D05+E05+F05+G61+H61
RUGGEDCOM RSG2488NC with 19' rack, DIN, and panel mount kit, 1 x 48 VDC (37 – 72 VDC), 1 x 24 VDC (13 – 36 VDC) screw terminal block power supplies, 1 x Precision Time Protocol (PTP) module, 5 x 4-port 1000LX SFP – singlemode, 1550 nm, LC, 70 km, 2 x 2-port 10/100/1000TX FastConnect™ and conformal coating.	6GK6024-8GS12-1FA1-Z A59+B12+ C12+D12+E12+F12+G62+H62