Substation-Rated DIN-Rail Mountable All-Gigabit Managed Layer 2 Switch with 16 10/100/1000 BASE-TX Ports + 4 Gigabit SFP* Uplink Combo Ports

RLGE20FX4TX16MS

EXCLUSIVE | SUBSTATION | DIN RAIL | -40° TO 75° C | FLEXIBILITY | ALL GIGABIT | 4 + 16

ComNet product series RLGE20FX4TX16MS is a substation-rated and industrially-hardened DIN-rail mount all-gigabit managed layer 2 switch. Fully compliant with the requirements of IEC 61850-3, IEEE 1613 Class 2, EN50155, and NEMA TS-1/TS-2, the RLGE20FX4TX16MS is intended for deployment in environments where high levels of electromagnetic noise and interference (EMI) and severe voltage transients and surges are routinely encountered, such as electrical utility substations and switchyards, heavy manufacturing facilities, track-side electronic equipment, and other difficult out-of-plant installations.

The RLGE20FX4TX16MS provides 16 10/100/1000BASE-TX communications ports, with 4 10/100/1000BASE-TX or 100/1000BASE-FX SFP uplink ports. The use of SFPs for the four (4) gigabit uplink ports provides a truly future-proof platform where the uplink optics may be changed in the field at any time, to support changes in the user's networking or cable plant requirements as they arise.

The internal/self-contained 12 to 60 VDC or 85 to 264 VAC/88 to 373 VDC power supply features redundant power inputs, for the highest possible reliability in those installations where network availability is of the utmost importance.

The RLGE20FX4TX16MS supports multiple Ethernet redundancy protocols, including ComNet C-Ring (recovery time < 30ms, with >250 switches integrated within the ring), and MSTP with RSTP/STP compatibility. With its extremely fast recovery time, the most mission-critical applications are fully protected from network interruptions or temporary malfunctions due to possible short or long-term faults or outages within the network.

FEATURES

› Fully compliant with the requirements of IEC 61850-3 and IEEE 1613 Class 2, for use in electrical utility substations; NEMA TS-1/TS-2 for Traffic Signal Control Equipment; and EN50155 for railway applications

› 16 × 10/100/1000BASE-TX Mbps Ethernet RJ-45 communications ports

› 4 × 100/1000BASE-X gigabit SFP uplink combo ports provide flexibility and simplify network planning, & allows for future user field upgrades and system/cable plant changes without having to replace the switch

› Environmentally hardened for deployment in difficult unconditioned out-of-plant installations: Extended ambient operating temperature range of -40° C to +75° C, (functional to +85 degrees C) for use in virtually any environment. Conformal coating is optionally available for humidity with condensation or airborne particulate matter environments.

› Redundant power supply inputs significantly reduce the possibility of a single-point-of-failure, for the highest system and network reliability. Multiple AC and DC operating voltages available

› Supports IEEE 1588v2 Precision Timing Protocol, Transparent Clock Synchronization (TC), for protective relaying and control applications

› User-programmable alarm relay for local or remote indication of a fault condition

› C-Ring compatible: Network recovery time <30ms, with >250 switches within the ring, for Ethernet redundancy.

› Com-Ring open architecture supports other switch manufacturers' ring technologies, for seamless network integration

› C-Chain allows multiple redundant network ring capability

› MSTP (RSTP/STP compatible)

› ITU-T G.8032 Ethernet Ring Protection Switching (ERPS)

› IPV6 internet protocol (latest version)

› Support for Modbus TCP protocol

› VLAN Unaware: Supports priority-tagged frames to be received by specific IEDs (Intelligent Electronic Devices)

› Provides HTTPS/SSH protocol for enhanced network security

› IEEE 802.3az Energy-Efficient Ethernet technology, for substantially reduced power consumption during periods of low data activity.

› SMTP client, NTP server protocol, and IP-based bandwidth management

› Application-based QoS management

› Device Binding security function

› DOS/DDOS auto-prevention

› IGMP v2/v3 (IGMP snooping support) for filtering multicast traffic

› SNMP v1/v2c/v3 & RMON & 802.1Q VLAN Network Management

› Port mirror function to monitor port data

› ACL, TACACS+ and 802.1x User Authentication for network security

› 9.6K Bytes Jumbo Frame

› Multiple notifications for warning of unexpected events

› Web-based, Telnet, Console (CLI), and Windows utility (eConsole) configuration

› Supports LLDP Protocol eConsole support

› Ingress Protection Rating: IP-30, with rugged and robust DIN-rail mountable metal housing

› No fans or forced-air cooling; cooling via natural convection eliminates unreliable and troublesome fans/moving parts, with no periodic maintenance requirements

› Lifetime Warranty

** Small Form-Factor Pluggable Module. Sold separately.*

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APPLICATIONS

› Electrical substation SCADA and distribution automation networks; protective relaying systems; power transmission & distribution systems; remote/unattended wind farm, hydroelectric, and solar/photovoltaic power generation facilities; and other electrical utility-specific applications

› NERC-CIP-014 compliance for perimeter security, surveillance monitoring, and controlled access to electrical substations and power generating facilities, and other critical infrastructure/high value, mission-critical sites and assets

› Industrial/Factory Automation & Process Control SCADA Networks

› Chemical and petrochemical refining and processing facilities, oil and gas pipelines/transmission systems, and mining installations

› Food processing/pharmaceutical manufacturing facilities, Wastewater treatment plants, and suppliers of potable drinking water

› ITS/transportation closed-loop signalization and VMS/VDS/ surveillance/incident detection systems

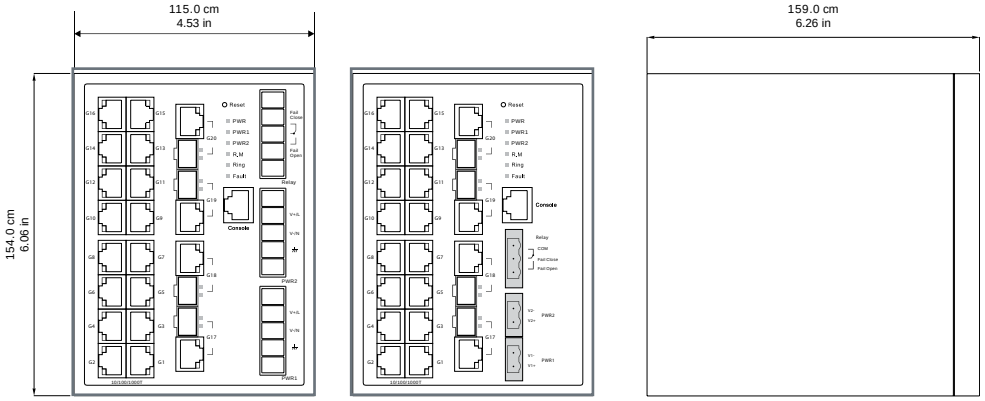
› Railway/trackside control and monitoring system

› Military, government, and defense communications networks

› Integrated IP-video, VOIP, and data transmission networks

› Cellular telephony and wireless backhaul networks

OUTLINE DRAWING



HV Model

LV Model

ORDERING INFORMATION

Part Number	Description
RLGE20FX4TX16MS/HV	Substation-Rated 20-Port All-Gigabit Managed Switch, Dual Redundant High Voltage PSU Inputs
RLGE20FX4TX16MS/LV	Substation-Rated 20-Port All-Gigabit Managed Switch, Dual Redundant Low Voltage PSU Inputs
Included Accessories	DIN-Rail Kit, Wall Mount Kit, Console cable
Options	User-selectable SFP Modules[1] (Extra charge, consult factory) [2] Add suffix '/C' for Conformally Coated Circuit Boards to extend to condensation conditions (Extra charge, consult factory)

[1] Multimode fiber needs to meet or exceed fiber standard ITU-T G.651. Single mode fiber needs to meet or exceed fiber standard ITU-T G.652.

This product requires a fiber installation with a minimum 30 dB connector return loss. The use of Super Polish Connectors is recommended. Complies with FDA Performance Standard for Laser Products, Title 21, Code of Federal Regulations, Subchapter J.

In a continuing effort to improve and advance technology, product specifications are subject to change without notice.

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SPECIFICATIONS

Connectors

Combo Ports	(4) 10/100/1000BASE-T(X) or 100/1000BASE-X SFP
RJ-45 Ports	(16) 10/100/1000BASE-T(X), with Auto MDI/MDIX
Power	Terminal Blocks
Serial Console	RJ-45 Port RS-232 @ 115,200 bps 8,N,1 w/ console cable (included)
Fault Relay	Terminal Block

Ethernet Standards Supported

IEEE 802.3 for 10Base-T
IEEE 802.3u for 100Base-TX and 100Base-FX
IEEE 802.3ab for 1000Base-T
IEEE 802.z for 1000Base-X
IEEE 802.3x for Flow control
IEEE 802.3ad for LACP (Link Aggregation Control Protocol)
IEEE 802.1D for STP (Spanning Tree Protocol)
IEEE 802.1p for COS (Class of Service)
IEEE 802.1Q for VLAN Tagging
IEEE 802.1w for RSTP (Rapid Spanning Tree Protocol)
IEEE 802.1s for MSTP (Multiple Spanning Tree Protocol)
IEEE 802.1x for Authentication
IEEE 802.1AB for LLDP (Link Layer Discovery Protocol)

Switch Properties

Switching Latency	7 µs
Switching Bandwidth	40 Gbps
Max. VLANs Available	4095
IGMP Multicast Groups	128 for each VLAN
Port Rate Limiting	User Defined
MAC Table	8000 MAC addresses available
Priority Queues	8
Processing	Store-and-Forward

Security Features

Device Binding Security Feature
Enable/Disable Ports, MAC based port security
Port-Based Network Access Control: 802.1x
VLAN (802.1Q): To segregate and secure network traffic
Radius Centralized Password Management
SNMPv3 Encrypted Authentication and Access Security
HTTPS/SSH enhanced network security
TACACS+

Security Features

STP/RSTP/MSTP (IEEE 802.1D/w/s)
C-Ring Redundant Ring: Recovery time < 30ms, with over 250 units
TOS/Diffserv Supported
Quality of Service (802.1p) for Real-Time Traffic
VLAN (802.1Q) with VLAN Tagging
IGMP Snooping for Multicast Filtering
IP-Based Bandwidth Management
Application-Based QoS Management
DOS/DDOS Auto-Prevention
Port Configuration, Status, Statistics, Monitoring & Security
DHCP Server/Client/Relay support
SMTP Client
Modbus TCP
NTP Server

Network Redundancy

C-Ring
Com-Ring
Legacy Ring
MRP
MSTP (RSTP/STP Compatible)

Alarms & Monitoring Systems

Relay Output For fault event alarming.
Relay contacts rated at 1 A @ 24VDC

Power

Input Power	LV Model: Dual power inputs 12~60 VDC HV Model: Dual power inputs 85~264 VAC / 88~373 VDC
Power Consumption	18 W, Typical
Current Protection	Overload Current Protected
Polarity Protection	Reverse Polarity Protected

Electrical & Mechanical

LED Status Indicators	Power × 3 R.M Ring Fault RJ-45 SFP
Size	4.53 × 6.3 × 6.06 in (11.5 × 15.9 × 15.4 cm)
Installation	DIN Rail (35 mm Track) or Wall Mount
Shipping Weight	4.83 lb / 2.19 kg

Environmental

MTBF	>250,000 hours
Operating Temperature	-40˚ C to +75˚ C, Functional to +85˚ C
Storage Temperature	-40˚ C to +85˚ C
Relative Humidity	5% to 95% (non-condensing)²

Regulatory Approvals

Power Automation	IEC 61850-3, IEEE 1613
EMI	FCC Part 15, CISPR (EN55022) Class A, EN50155 (EN50121-3-2, EN55011, EN50121-4)
ESD	EN61000-4-2
RS	EN61000-4-3
EFT	EN61000-4-4
Electrical Surge	EN61000-4-5
CS	EN61000-4-6, EN61000-4-8, EN61000-4-11
Mechanical Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1

AGENCY COMPLIANCE FC PART 15 COMPLIANT CE RoHS

Low Power Consumption

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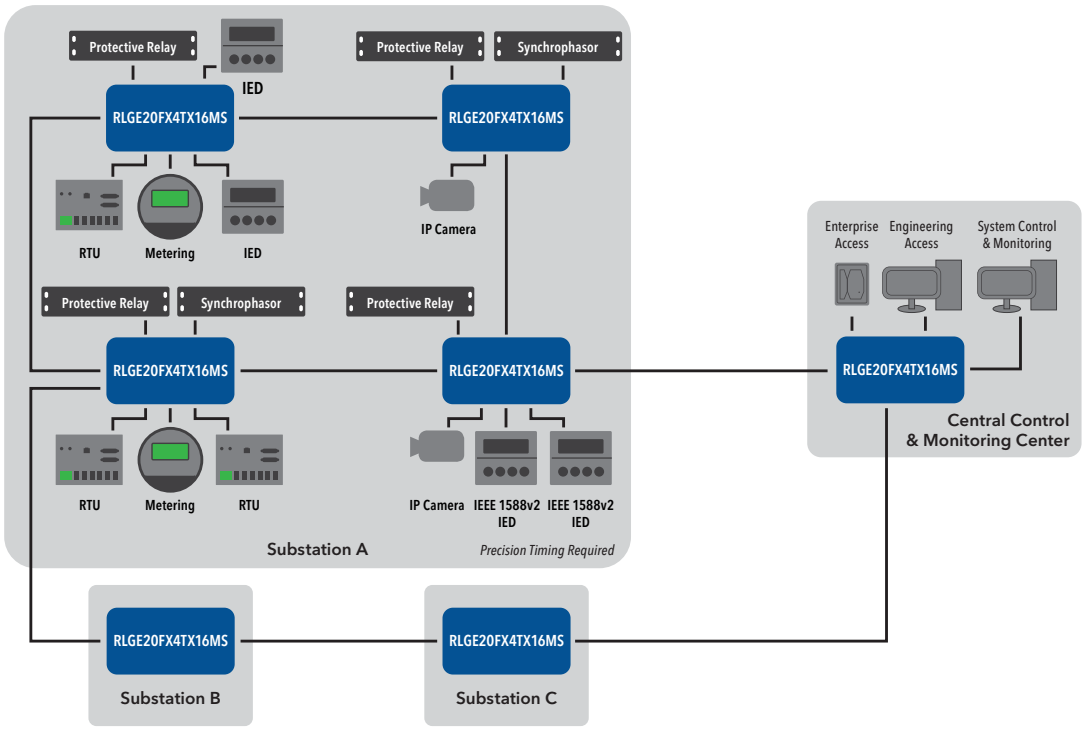
OUTLINE DRAWING

Electrical Substation SCADA Network using RLGE20FX4TX16MS



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