RKS-G4028 Series

28G-port (with 802.3bt PoE option) full Gigabit modular managed Ethernet switches



Features and Benefits

- Meets a wide range of demands from Fast Ethernet to full Gigabit industrial networks (up to 28 Gigabit ports)
- Modular interfaces for flexible connector type combinations
- Support for IEEE 802.3bt PoE for up to 90 W output per port
- High EMC immunity compliant with IEC 61850-3 and IEEE 1613
- Hardware-based IEEE 1588 PTP for high-precision time synchronization
- Turbo Ring and Turbo Chain (recovery time < 20 ms @ 250 switches)[1], and STP/RSTP/MSTP for network redundancy
- Supports MXstudio for easy, visualized industrial network management
- IEC 62443-4-2 Security Level 2 certified
- -40 to 75°C operating temperature range

Certifications

EN 50121-4 IEC 61850-3 IEEE 1613

Introduction

The RKS-G4028 Series is designed to meet the rigorous demands of mission-critical applications for industry and business, such as power substation automation systems (IEC 61850-3, IEEE 1613), railway applications (EN 50121-4), and factory automation systems. The RKS-G4028 Series' Gigabit and Fast Ethernet backbone, redundant ring, and 24 VDC, 48 VDC, or 110/220 VDC/VAC dual isolated redundant power supplies increase the reliability of your communications and save on wiring costs.

The modular design of the RKS-G4028 Series also makes network planning easy, and allows greater flexibility by letting you install up to 28 Gigabit ports with various connector types.

Additional Features and Benefits

- IEEE 1588v2 PTP (Precision Time Protocol) for network time synchronization
- Command line interface (CLI) for quickly configuring major managed functions
- IGMP snooping and GMRP for filtering multicast traffic
- Port-based VLAN, IEEE 802.1Q VLAN, and GVRP to ease network planning
- QoS (IEEE 802.1p/1Q and TOS/DiffServ) to increase determinism
- IEEE 802.3ad, LACP for optimum bandwidth utilization
- Line-swap fast recovery
- TACACS+, IEEE 802.1X, SNMPv3, HTTPS, and SSH to enhance network security
- SNMPv1/v2c/v3 for different levels of network management
- RMON for proactive and efficient network monitoring
- Bandwidth management prevents unpredictable network status with "Lock port" to restrict access to authorized MAC addresses
- Port mirroring for online debugging
- Automatic warning by exception through email and relay output
- Automatic recovery of connected device's IP addresses
- Configurable by web browser, Telnet/serial console, CLI, Windows utility, and ABC-02 or ABC-03 automatic backup configurator

IEC 62443-4-2 Security Level 2 Certified

RKS-G4028 Series models are IEC 62443-4-2 Security Level 2 certified, enhancing cybersecurity in industrial networks.

L3 models: https://certificates.iecee.org/#/deliverables/CERT/1530510/view

All other models: https://certificates.iecee.org/#/deliverables/CERT/1530507/view

1. If the port link speed is 1 Gigabit or higher, the recovery time is < 50 ms.

Specifications

Input/Output Interface

Alarm Contact Channels	1 relay output with current carrying capacity of 2 A @ 24 VDC
Buttons	Reset button

Ethernet Interface

10/100/1000BaseT(X) Ports (RJ45 connector)	RKS-G4028-4GT models: 4
100/1000BaseSFP Slots	RKS-G4028-4GS models: 4 RKS-G4028-PoE-4GS models: 4
Module	There are 3 module slots on the switch. Users can select different types of modules to insert into the switch. The modules that can be selected include 8-port/6-port modules with 10/100/1000BaseT(X), 10/100BaseT(X), 100/1000BaseSFP, or 100BaseFX (SC/ST connector) interfaces. Refer to Expansion Modules in the Accessories section for a full list of supported interface modules.
Standards	IEEE 802.1D-2004 for Spanning Tree Protocol IEEE 802.1p for Class of Service IEEE 802.1Q for VLAN Tagging IEEE 802.1s for Multiple Spanning Tree Protocol IEEE 802.1w for Rapid Spanning Tree Protocol IEEE 802.1X for authentication IEEE 802.3 for 10BaseT IEEE 802.3ab for 1000BaseT(X) IEEE 802.3ad for Port Trunk with LACP IEEE 802.3u for 100BaseT(X) and 100BaseFX IEEE 802.3x for flow control IEEE 802.3z for 1000BaseSX/LX/LHX/ZX

Ethernet Software Features

Management	ARP Back Pressure Flow Control DHCP Server/Client DHCP Relay Agent (Option 82) Fiber check Flow control HTTP HTTPS IPv4/IPv6 Linkup Delay LLDP Private MIB Port Mirroring (SPAN, RSPAN) RARP RMON SFTP SMTP SNMP Trap SNMP Inform SNMPv1/v2c/v3 Syslog Telnet TFTP
Filter	GMRP GVRP GARP 802.1Q IGMP Snooping v1/v2/v3 IGMP Querier
Redundancy Protocols	Link Aggregation MRP MRP Interconnection MSTP Multiple Dual Homing

	Multiple Network Coupling Network Loop Protection Ring Coupling RSTP STP Tracking Turbo Chain Turbo Ring v2
Security	Access control list Broadcast storm protection DHCP Snooping Dynamic ARP Inspection HTTPS/SSL IEEE 802.1AE MAC security IP Source Guard Login and password policy MAC authentication bypass RADIUS Rate Limit Secure boot SSH Static port lock Sticky MAC TACACS+ Trust access control
Time Management	IEEE 1588v2 PTP (hardware-based) NTP Authentication NTP Server/Client SNTP Supported power profiles: IEEE 1588 Default 2008, IEC 61850-9-3-2016, IEEE C37.238-2017
Protocols	802.1X ARP DHCP Client DHCP Server DNS HTTP HTTPS ICMP IPv4/IPv6 NTP Client QoS SMTP SNMPv1/v2c/v3 Syslog RARP RMON TCP/IP Telnet TFTP UDP VLAN Assignment
Industrial Protocols	EtherNet/IP Modbus TCP PROFINET

MIB	P-BRIDGE MIB Q-BRIDGE MIB IEEE8021-SPANNING-TREE-MIB IEEE8021-PAE-MIB IEEE8023-LAG-MIB LLDP-EXT-DOT1-MIB LLDP-EXT-DOT3-MIB SNMPv2-MIB RMON MIB Groups 1, 2, 3, 9
Power Substation	MMS 1588 PTP Power Profile IEC 61850-9-3 1588 PTP Power Profile C37.238-2017 GOOSE Check

Switch Properties

IGMP Groups	1024
Jumbo Frame Size	9.216 KB
MAC Table Size	16 K
Max. No. of VLANs	256
Packet Buffer Size	1.5 MB
Priority Queues	8
VLAN ID Range	VID 1 to 4094

USB Interface

Storage Port	USB Type A

MicroSD Interface

Storage Port	microSD card

LED Interface

LED Indicators	PWR1, PWR2, STATE, FAULT, MSTR/HEAD, CPLR/TAIL, SYNC, EPS

Serial Interface

Console Port	RS-232 (RJ45)

Power Parameters

Total PoE Power Budget	300 W
Max. PoE Power Output per Port	IEEE 802.3af: 15.4 W IEEE 802.3at: 30 W IEEE 802.3bt: 90 W
Input Voltage	RKS-G4028-LV models: 24/48 VDC RKS-G4028-2LV models: 24/48 VDC (redundant power supplies) RKS-G4028-HV models: 110/220 VAC, 110/220 VDC RKS-G4028-2HV models: 110/220 VAC, 110/220 VDC (redundant power supplies) PoE models: 48 VDC (for the PoE system)
Operating Voltage	RKS-G4028-LV/2LV models: 18 to 72 VDC RKS-G4028-HV/2HV models: 88 to 300 VDC, 85 to 264 VAC PoE models: 46 to 57 VDC (for the PoE system)
Overload Current Protection	Supported
Reverse Polarity Protection	Supported

Input Current	RKS-G4028-LV/2LV models: Max. 2.53 A @ 24 VDC Max. 1.25 A @ 48 VDC RKS-G4028-HV/2HV models: Max. 0.55 A @ 110 VDC Max. 0.29 A @ 220 VDC Max. 1.01 A @ 110 VAC Max. 0.62 A @ 220 VAC EPS (PoE models only): Max. 7.50 A @ 48 VDC
Power Consumption (Max.)	RKS-G4028-LV/2LV models: Max. 60.72 W @ 24 VDC Max. 60 W @ 48 VDC RKS-G4028-HV/2HV models: Max. 60.5 W @ 110 VDC Max. 63.8 W @ 220 VDC Max. 62.2 W @ 110 VAC Max. 64.1 W @ 220 VAC Note: These are the maximum power consumption ratings for the device with the maximum number of modules installed. Note: These are the maximum power consumption ratings for the device with the maximum number of modules installed.

Physical Characteristics

IP Rating	IP30
Dimensions	440 x 44 x 296 mm (17.32 x 1.37 x 11.65 in)
Weight	RKS-G4028-LV/HV models: 4900 g (10.80 lb) RKS-G4028-2LV/2HV models: 5200 g (11.46 lb) RKS-G4028-PoE-LV/HV models: 5000 g (11.02 lb) RKS-G4028-PoE-2LV/2HV models: 5300 g (11.68 lb)
Installation	Rack mounting

Environmental Limits

Operating Temperature	-40 to 75°C (-40 to 167°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

EMC	EN 55032/35 EN 61000-6-2/-6-4
EMI	CISPR 32, FCC Part 15B Class A
EMS	IEC 61000-4-2 ESD: Contact: 8 kV; Air: 15 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m IEC 61000-4-4 EFT: Power: 4 kV; Signal: 4 kV IEC 61000-4-5 Surge: Power: 4 kV; Signal: 4 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF IEC 61000-4-11 Voltage Dips & Interruptions
Industrial Cybersecurity	IEC 62443-4-2 Security Level 2
Safety	EN IEC 62368-1 IEC 60950-1 IEC 62368-1 UL 61010 UL 62368-1

Power Substation	IEC 61850-3 IEEE 1613
Railway	EN 50121-4
Traffic Control	NEMA TS2
Shock	IEC 60068-2-27
Vibration	IEC 60068-2-6
Freefall	IEC 60068-2-32

MTBF

Time	RKS-G4028-4GT-HV models: 572,888 hours RKS-G4028-4GT-2HV models: 518,894 hours RKS-G4028-4GS-HV models: 529,925 hours RKS-G4028-4GS-2HV models: 483,436 hours RKS-G4028-4GT-LV models: 548,589 hours RKS-G4028-4GT-2LV models: 479,574 hours RKS-G4028-4GS-LV models: 508,639 hours RKS-G4028-4GS-2LV models: 449,160 hours RKS-G4028-PoE-4GS-HV models: 508,190 hours RKS-G4028-PoE-4GS-2HV models: 465,282 hours RKS-G4028-PoE-4GS-LV models: 488,598 hours RKS-G4028-PoE-4GS-2LV models: 433,472 hours
Standards	Telcordia (Bellcore), GB

Warranty

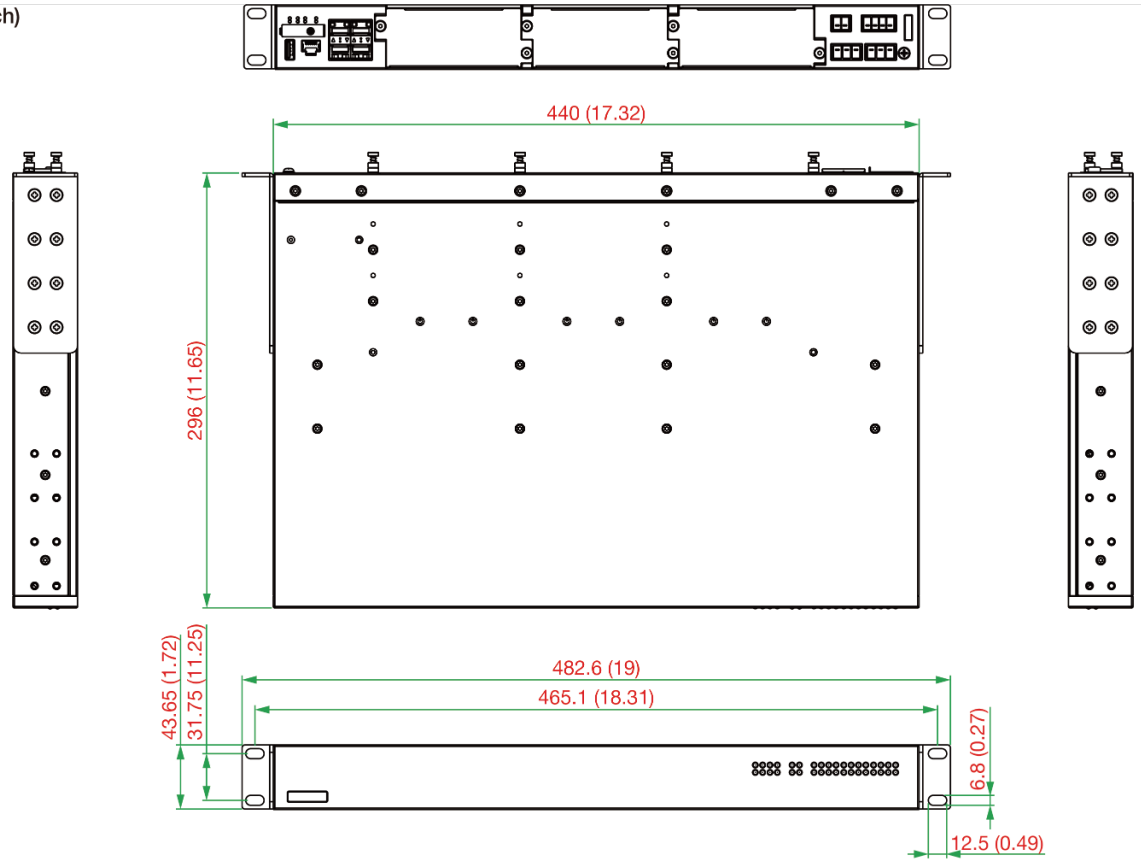
Warranty Period	5 years
Details	See www.moxa.com/warranty

Package Contents

Device	1 x RKS-G4028 Series switch
Installation Kit	2 x rack-mounting ear 4 x protective caps for unused SFP ports (for RKS-G4028-GS models only) 8 x round stickers for module screws
Documentation	1 x quick installation guide 1 x warranty card
Note	1. Only the RKS-G4028-PoE Series and RKS-G4028-L3-PoE models support PoE functionality with RM-G4000-8GPoE and/or RM-G4000-8PoE modules. 2. Power over Ethernet requires the 48 VDC external power supply (46 to 57 VDC). 3. The 48 VDC external power supply, SFP modules, and modules from the RM-G4000 Module Series need to be purchased separately for use with this product.

Dimensions

Unit: mm (inch)



Ordering Information

Model Name	Max. No. of Ports	PoE Support	L3 Functionality	Input Voltage	Redundant Power Supplies	External Power Supply	Operating Temp.
RKS-G4028-4GT-HV-T	28	–	–	110/220 VAC/ VDC	–	–	-40 to 75°C
RKS-G4028-4GT-2HV-T	28	–	–	110/220 VAC/ VDC	✓	–	-40 to 75°C
RKS-G4028-4GS-HV-T	28	–	–	110/220 VAC/ VDC	–	–	-40 to 75°C
RKS-G4028-4GS-2HV-T	28	–	–	110/220 VAC/ VDC	✓	–	-40 to 75°C
RKS-G4028-4GT-LV-T	28	–	–	24/48 VDC	–	–	-40 to 75°C
RKS-G4028-4GT-2LV-T	28	–	–	24/48 VDC	✓	–	-40 to 75°C
RKS-G4028-4GS-LV-T	28	–	–	24/48 VDC	–	–	-40 to 75°C
RKS-G4028-4GS-2LV-T	28	–	–	24/48 VDC	✓	–	-40 to 75°C
RKS-G4028-PoE-4GS-HV-T	28	✓	–	110/220 VAC/ VDC	–	✓	-40 to 75°C
RKS-G4028-PoE-4GS-2HV-T	28	✓	–	110/220 VAC/ VDC	✓	✓	-40 to 75°C
RKS-G4028-PoE-4GS-LV-T	28	✓	–	24/48 VDC	–	✓	-40 to 75°C
RKS-G4028-PoE-4GS-2LV-T	28	✓	–	24/48 VDC	✓	✓	-40 to 75°C

Accessories (sold separately)

Expansion Modules

RM-G4000-8TX	Fast Ethernet module with 8 10/100BaseT(X) ports
RM-G4000-8SFP	Fast Ethernet module with 8 100BaseSFP slots
RM-G4000-8PoE	Fast Ethernet module with 8 10/100BaseT(X) IEEE 802.3bt PoE ports
RM-G4000-8GTX	Gigabit Ethernet module with 8 10/100/1000BaseT(X) ports
RM-G4000-8GSFP	Gigabit Ethernet module with 8 100/1000BaseSFP slots
RM-G4000-8GPoE	Gigabit Ethernet module with 8 10/100/1000BaseT(X) IEEE 802.3bt PoE ports
RM-G4000-6MSC	Fast Ethernet module with 6 multi-mode 100BaseFX ports with SC connectors
RM-G4000-6MST	Fast Ethernet module with 6 multi-mode 100BaseFX ports with ST connectors
RM-G4000-6SSC	Fast Ethernet module with 6 single-mode 100BaseFX ports with SC connectors
RM-G4000-4MSC2TX	Fast Ethernet module with 4 multi-mode 100BaseFX ports with SC connectors, 2 10/100BaseT(X) ports
RM-G4000-4MST2TX	Fast Ethernet module with 4 multi-mode 100BaseFX ports with ST connectors, 2 10/100BaseT(X) ports
RM-G4000-4SSC2TX	Fast Ethernet module with 4 single-mode 100BaseFX ports with SC connectors, 2 10/100BaseT(X) ports
RM-G4000-2MSC4TX	Fast Ethernet module with 2 multi-mode 100BaseFX ports with SC connectors, 4 10/100BaseT(X) ports
RM-G4000-2MST4TX	Fast Ethernet module with 2 multi-mode 100BaseFX ports with ST connectors, 4 10/100BaseT(X) ports
RM-G4000-2SSC4TX	Fast Ethernet module with 2 single-mode 100BaseFX ports with SC connectors, 4 10/100BaseT(X) ports

Storage Kits

ABC-02-USB	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, 0 to 60°C operating temperature
ABC-02-USB-T	Configuration backup and restoration tool, firmware upgrade, and log file storage tool for managed Ethernet switches and routers, -40 to 75°C operating temperature
ABC-03-microSD-T	MicroSD-based configuration backup and restoration tool, firmware upgrades, and log file storage tool for managed Ethernet switches and WLAN products, -40 to 85°C operating temperature

SFP Modules

SFP-1FELLC-T	SFP module with 1 100Base single-mode with LC connector for 80 km transmission, -40 to 85°C operating temperature
SFP-1FEMLC-T	SFP module with 1 100Base multi-mode, LC connector for 2/4 km transmission, -40 to 85°C operating temperature
SFP-1FESLC-T	SFP module with 1 100Base single-mode with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1G10ALC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature
SFP-1G10BLC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature
SFP-1G20ALC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature
SFP-1G20BLC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature
SFP-1G40ALC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, 0 to 60°C operating temperature
SFP-1G40BLC	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, 0 to 60°C operating temperature
SFP-1G10ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G10BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 10 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature

SFP-1G20ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G20BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 20 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1G40ALC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1310 nm, RX 1550 nm, -40 to 85°C operating temperature
SFP-1G40BLC-T	WDM-type (BiDi) SFP module with 1 1000BaseSFP port with LC connector for 40 km transmission; TX 1550 nm, RX 1310 nm, -40 to 85°C operating temperature
SFP-1GEZXLC	SFP module with 1 1000BaseEZX port with LC connector for 110 km transmission, 0 to 60°C operating temperature
SFP-1GEZXLC-120	SFP module with 1 1000BaseEZX port with LC connector for 120 km transmission, 0 to 60°C operating temperature
SFP-1GLHLC	SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, 0 to 60°C operating temperature
SFP-1GLHXLC	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, 0 to 60°C operating temperature
SFP-1GLSXLC	SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, 0 to 60°C operating temperature
SFP-1GLXLC	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, 0 to 60°C operating temperature
SFP-1GSXLC	SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, 0 to 60°C operating temperature
SFP-1GZXLC	SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, 0 to 60°C operating temperature
SFP-1GLHLC-T	SFP module with 1 1000BaseLH port with LC connector for 30 km transmission, -40 to 85°C operating temperature
SFP-1GLHXLC-T	SFP module with 1 1000BaseLHX port with LC connector for 40 km transmission, -40 to 85°C operating temperature
SFP-1GLSXLC-T	SFP module with 1 1000BaseLSX port with LC connector for 1km/2km transmission, -40 to 85°C operating temperature
SFP-1GLXLC-T	SFP module with 1 1000BaseLX port with LC connector for 10 km transmission, -40 to 85°C operating temperature
SFP-1GSXLC-T	SFP module with 1 1000BaseSX port with LC connector for 300m/550m transmission, -40 to 85°C operating temperature
SFP-1GZXLC-T	SFP module with 1 1000BaseZX port with LC connector for 80 km transmission, -40 to 85°C operating temperature
SFP-1GTXRJ45-T	SFP module with 1 1000BaseT port with RJ45 connector for 100 m transmission, -40 to 75°C operating temperature

Cables

CN20070	10-pin RJ45 to DB9 female serial cable

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