

IPR-AGS2404XSM-8C

16x 100/1000Base-X SFP +8x Combo (GbE RJ45 + 100/1000Base-X SFP) + 4x 1G/2.5G/10G SFP+

- ◆ Static Routing, RIP v1, RIP v2, OSPF v2, VRRP v2/v3
- ◆ IEC62439-3 Clause 5 High-Avail-Seamless-Redundancy (HSR)
- ◆ IEC62439-3 Clause 4 Parallel-Redundancy-Protocol (PRP)
- ◆ Supports μ -Ring, ERPS, APS, MSTP, RSTP, STP for Redundant Cabling
- ◆ Supports Maximum up to 14 μ -Rings in One Device
- ◆ EN62368-1, EN50121-4, EN61000-6-2/4, CE and FCC Certified
- ◆ 4KV Surge Protection for RJ45 and SFP Ports

Preliminary



The IPR-AGS2404XSM-8C Series are IEC 61850-3 compliant Layer 3 industrial 10-Gigabit Ethernet switches, engineered with an enhanced hardened design to meet the strict reliability requirements of critical and centralized automation systems.

This series features a fixed configuration with 28 Gigabit Ethernet ports, consisting of 16 Gigabit fiber ports and 8 combo ports(RJ45 or SFP), along with 4 10G/1G SFP+ uplink ports for high-speed backbone connections or to establish PRP/HSR seamless redundant network topologies.

The IPR-AGS2404XSM-8C Series are ideal for smart grid, utility, and substation automation networks, providing a robust, time-synchronized, and cyber-secure backbone for mission-critical power infrastructure.

Features

- Redundant isolated high voltage 100/220/240VAC(85-264VAC), 100/110/125/135VDC (88-370VDC) or 24/48VDC (24-72VDC)
- 2.25K VDC Hi-pot isolation protection for Ethernet ports and power
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Ring Protection Switching (ERPS) for network redundancy
- Provides 14 instances each can support μ -Ring, u-Chain or Sub-Ring for flexible networking applications
- μ -Ring redundancy, recovery time <20ms in 250 devices
- IEC62439-3 Clause 4 (PRP) and Clause 5 (HSR) compliant
- Supports EMS Management

Specifications

Standard	IEEE 802.3	10Base-T 10Mbit/s Ethernet
	IEEE 802.3u	100Base-TX, 100Base-FX, Fast Ethernet
	IEEE 802.3ab	1000Base-T Gbit/s Ethernet over twisted pair
	IEEE 802.3z	1000Base-X Gbit/s Ethernet over Fiber-Optic
	IEEE 802.3ae	10 Gbit/s Ethernet over fiber
	IEEE 802.1D	STP (Spanning Tree Protocol)
	IEEE 802.1W	RSTP (Rapid Spanning Tree Protocol)
	IEEE 802.1S	MSTP (Multiple Spanning Tree Protocol)

IEC 61850-3 Layer 3 10G Ethernet Switch



Standard	ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection Switching) ITU-T G.8031 / Y.1342 APS (Automatic Protection Switching) IEC62439-2 Media Redundancy Protocol (MRP) IEC62439-3 Clause 4 (PRP) IEC62439-3 Clause 5 (HSR) IEEE 802.1Q Virtual LANs (VLAN) IEEE 802.1X Port based and MAC based Network Access Control, Authentication IEEE 802.3ac Max frame size extended to 1522Bytes IEEE 802.3ad Link aggregation for parallel links with LACP (Link Aggregation Control Protocol) IEEE 802.3X Flow control for full duplex IEEE 802.1ad Stacked VLANs, Q-in-Q IEEE 802.1p LAN Layer 2 QoS/CoS Protocol for Traffic Prioritization IEEE 802.1ab Link Layer Discovery Protocol (LLDP)
VLAN ID	4094 IEEE 802.1Q VLAN ID
Switch Architecture	Back-plane (Switching Fabric): 128Gbps (Full wire-speed)
Throughput	95.2Mpps
Data Processing	Store and Forward
Network Connector	10GbE SFP+: 4x 1G/2.5G/10G SFP+ socket, Supports DDMI GbE SFP: 16x 100/1000Base-X SFP socket, Supports DDMI GbE Combo Ports: 8x 10/100/1000Base-T RJ-45, Supports Auto negotiation speed, Auto MDI/MDI-X function or 100/1000Base-X SFP socket, Supports DDMI
Console	USB Type-C or RS-232(RJ45)
Reset	Recessed reset button
Network Cable	UTP/STP Cat.5e cable or above EIA/TIA-568 100-ohm (100meter)
Protocols	CSMA/CD
Reverse Polarity	Protection for input power
Overload Current	Protection Supported
Power Supply	Redundant 2x High AC/DC input power (-HH model) Redundant 2x DC input power (-DD model) High AC/DC input power(H) : Isolated 110/220 VAC (85~264VAC), 100/110/125/135VDC (88~370VDC), Terminal Block (Barrier Strip with Dust Cover) DC input power (D) : Isolated 24/48VDC (24~76VDC), Terminal Block (Barrier Strip with Dust Cover)
Power Consumption	TBD
LED	System: Power 1 (Green), Power 2 (Green), Act /Alarm (Green/Amber), Ring Master (Green) P17~P24 Combo: 10/100 Link/Active (Green), 1000 Link/Active (Amber) P1~P16 SFP Slot: Link/Active (Amber) P25~28 SFP Slot: 1G/2.5G/5G Link/Active (Amber), 10G Link/Active (Blue)
Jumbo Frame	9KB
MAC Address Table	16K
Memory Buffer	1.5M Bytes for packet buffer
Device Memory	4G Bytes eMMC, 2G Bytes RAM
Warning Message	System Syslog, SMTP / e-mail event message, alarm relay
Alarm Relay Contact	Relay outputs with current carrying capacity of 1A @24VDC, 2-Pin removable terminal block
Digital Input	1x isolated input : 13~30VDC for state 1, -30~3VDC for state 0
Operating Temperature	-40 ~ 85°C
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection and Fanless
Dimensions	331 x 440 x 44mm (D x W x H))
Weight	TBD
Installation Mounting	19" rack mount
MTBF	TBD
Warranty	5 years

Certification

EMC	CE (EN55032, EN55035)
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A, CE
Railway Traffic	EN50121-4
Immunity for Heavy Industrial Environment	EN61000-6-2
Emission for Heavy Industrial Environment	EN61000-6-4
EMS (Electromagnetic Susceptibility) Protection Level	EN61000-4-3 (RS) Level 3, Criteria A
	EN61000-4-4 (Burst) Level 3, Criteria A
	EN61000-4-5 (Surge) Level 3, Criteria B
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
Safety	EN62368-1
Hi Pot Protection	DC 2.25KV for power to chassis ground, Ethernet port to chassis ground
4KV Surge Protection	Supported for RJ45 and SFP ports
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6

Software Specifications

L3

IPv4/v6 Static Routing	Supported
RIP v1/v2 Dynamic Routing	Supported
OSPF v2, OSPF v3 Dynamic Routing	Supported
L3 Redundancy	VRRRP v2/v3

Topology

VLAN	IEEE 802.1q VLAN, up to 4094 802.1Q VLAN ID
	IEEE 802.1q VLAN, up to 4094 Groups
	IEEE 802.1ad Q-in-Q
	MAC-based VLAN, up to 256 entries
	IP Subnet-based VLAN, up to 128 entries
	Protocol-based VLAN (Ethernt, SNAP, LLC), up to 128 entries
	VLAN Translation, up to 256 entries
	Private VLAN for port isolation
	GVRP (GARP VLAN Registration Protocol)
	MVR (Multicast VLAN Registration)
Voice VLAN	
Link Aggregation (Port Trunk)	Static (IEEE 802.3ad LACP), Maximum trunk group : 14group
	Dynamic (IEEE 802.3ad LACP), Maximum trunk group : 14group
	Per group up-to 8 port
Spanning Tree	IEEE 802.1D STP, IEEE 802.1W RSTP, IEEE 802.1S MSTP
Multiple μ-Ring	Up to 14 instances each support μ -Ring, μ -Chain or Sub-Ring for flexible networking applications
	Recovery time <20ms
	The maximum number of device is allowed 250 nodes in a Ring.
Loop Protection	Supported
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Recovery time <50ms
	Single Ring, Sub-Ring, Multiple ring topology
ITU-T G.8031 / Y.1342 EPS (Ethernet Protection Switching)	Supported

QoS Features

Class of Service	IEEE 802.1p 8 active priorities queues per port
Traffic Classification QoS	IEEE 802.1p based CoS
	IP Precedence based CoS
	IP DSCP based CoS
	QCL (QoS Control List): Frame Type, Source/Destination MAC, VLAN ID, PCP, DEI, Protocol, Source IP, IP Fragment, DSCP, TCP/UDP port number
Bandwidth Control for Ingress	Per port based
Bandwidth Control for Egress	Per port based
	Per queue / Per port shaper
DiffServ (RF 2474) Remarking	
Storm Control	For Unicast, Broadcast and Multicast

IP Multicasting Features

IGMP / MLD Snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2
	Port Filtering Profile
	Throttling, Fast Leave
	Maximum Multicast Group : up to 1022 entries
	Query / Static Router Port

Security Features

IEEE 802.1X	Port-Based
	MAC-Based
ACL	Number of rules : up to 256 entries for L2 / L3 / L4 L2 : Mac address SA/DA/VLAN L3 : IP address SA/DA, Subnet L4 : TCP/UDP
RADIUS	Authentication & Accounting
TACACS+	Authentication, Authorization and Accounting
HTTPS, HTTP	Supported
SSL / SSH v2	Supported
User Name Password Authentication	Local Authentication
	Remote Authentication (via RADIUS / TACACS+)
Management Interface Access Filtering	Web, Telnet / SSH, CLI RS-232 console

Management Features

CLI	Cisco® like CLI
Web UI	Supported
Telnet	Server
SNMP	V1, V2c, V3
sFlow	Supported
Modbus/TCP	Supports management and monitoring
SW & Configuration Upgrade	SFTP, TFTP, HTTPS, HTTP, FTP
	Redundant firmware in case of upgrade failure
FTP Client	Supports for upload/download configuration
RMON	RMON I (1, 2, 3, 9 group), RMON II
MIB	RFC1213 MIB II, Private MIB
UPnP	Supported
DHCP v4	Server, Client, Relay, Relay option 82, Snooping
ARP Inspection	Supported
IP Source Guard	Supported
Port Mirroring	Supported
Event Syslog	Syslog server (RFC3164) (Support 4 server)
Warning Message	System syslog, e-mail
DNS	Client, Proxy

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IEEE 1588 PTP v2	Supports 5 operating mode in each port: Ordinary-boundary, peer to peer transparent clock ,end to end transparent clock, master and slave
NTP V4.0, SNTP	Client
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol LLDP-MED
IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
SNMP over IPv6	Supported
HTTP over IPv6	Supported
SSH over IPv6	Supported
IPv6 Telnet	Supported
IPv6 NTP, SNTP	Client
IPv6 TFTP	Supported
IPv6 QoS	Supported
IPv6 ACL	Number of rules: up to 256 entries for L2 / L3 / L4 L2 : Mac address SA/DA/VLAN L3 : IP address SIP, Subnet (32bit) L4 : TCP/UDP
Other Features	Determine the cable length and lowering the power for ports with short cables Lower the power for a port when there is no link

*Future release

Ordering Information

Model Name	Managed	Total Ports (Maximum)	GbE		10GbE	Input Power		Certification		
			100/1000 Base-X SFP	Combo Ports (RJ45 + SFP)	1G/2.5G/10G SFP+	100~240VAC / 100~135VDC	24/48 VDC	EN62368-1	CE FCC	EN50121-4 EN61000-6-2 EN61000-6-4
IPR-AGS2404XSM-8C-HH	V	28	16	8	4	2		V	V	V
IPR-AGS2404XSM-8C-DD	V	28	16	8	4		2	V	V	V

Optional Accessories

■ Auto Backup Kit

BUK1-USB	Backup kit for USB Type-C Console Managed Switch
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■ Industrial SFP Transceiver

The ISFP series of industrial grade SFP modules have been fully tested with all CTC Union industrial grade Ethernet switches for guaranteed compatibility and performance. Best performance can be guaranteed, even in mission-critical applications. (Please see CTC Union's Industrial SFP datasheets for more items and detailed information.)

ISFP-M9000-85-D(E)	Industrial SFP 10GBase-SR MM, 300meter, wave length 850nm LC, DDMI, -10~70°C (-40~85°C)
ISFP-S9010-31-D(E)	Industrial SFP 10GBase-LR SM, 10km, 1310nm, 6.4dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-M7000-85-D(E)	Industrial SFP GbE 1000Base-SX, M/M, 500 meter, wave length 850nm, 7.5dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-S7020-31-D(E)	Industrial SFP 1000Base-LX, S/M, 20km, wave length 1310nm, 15dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-T7T00-00-(E)	Industrial SFP 10/100/1000Base-T UTP 100meter, -10~70°C (-40~85°C)
ISFP-M5002-31-D(E)	Industrial SFP 155M 100Base-FX, MM, 2km, wave length 1310nm, 12dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-S5030-31-D(E)	Industrial SFP 155M 100Base-FX, SM, 30km, 1310nm, 19dB, LC, DDMI, -10~70°C (-40~85°C)

■ Industrial Power Supply

XDR-240E-48	Industrial Power, Input 85 ~ 264VAC/120 ~ 370VDC, Output 48VDC, 240W, -40 ~ 70°C (For DC type)
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