

IPS-AG2404XSM-8C

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

- ◆ 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 IPS-AG2404XSM-8C Series are IEC 61850-3 compliant 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 copper 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 IPS-AG2404XSM-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)
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
	ITU-T G.8031 / Y.1342	APS (Automatic Protection Switching)

IEC 61850-3 10G Ethernet Switch



Standard	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 DDM1 RJ45: 16x 100/1000Base-T, supports Auto negotiation speed, Auto MDI/MDI-X function 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 DDM1	
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 UTP: 10/100 Link/Active (Green), 1000 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**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 (Ethernet, 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

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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
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

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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		
			10/100/1000 Base-T(X) RJ45	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
IPS-AG2404XSM-8C-HH	V	28	16	8	4	2		V	V	V
IPS-AG2404XSM-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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