

IGS-A402SM

4x GbE RJ45 + 2x 100M/1G/2.5G SFP

NEW

- ◆ Compliant with the IEC 62443-4-2 industrial cybersecurity standards
- ◆ Supports μ -Ring, ERPS, APS, MRP, MSTP, RSTP, STP for Redundant Cabling
- ◆ 4KV Surge Protection for PoE, RJ45 and SFP Ports
- ◆ Supports Secure Boot



The industrial cyber-hardened managed switch IGS-A402SM is one of our new generation designs and comes with 4 gigabit UTP ports and equipped with 2 100M/1G/2.5G SFP slots for fiber optic connectivity meet the requirements for extended transmission distance, fanless design, high MTBF, 4KV surge protection and supports wide temperature operation, 12-48VDC redundant power input, and is designed to comply with cybersecurity regulations. Suitable for heavy-duty applications in harsh environments such as industrial factory automation, data centers, smart transportation systems, military and utility market applications beyond environmental conditions commercial product specifications.

Features

- 12/24/48VDC (9.6~60VDC) redundant dual power input
- Provides 3 ring instances that each can support μ -Ring, μ -Chain or Sub-Ring type for flexible uses. Supports up to 3 rings in one device (Please see CTC μ -Ring white paper for more details and more topology application)
- μ -Ring for redundant cabling, recovery time < 20ms in 250 devices
- 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 802.3cb	2.5GBase-X
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)
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

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Standard	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)
Switch Architecture	Back-Plane (Switching Fabric): 18Gbps (Full Wire-Speed)	
Forwarding Rate	13.39Mpps	
Data Processing	Store and Forward	
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode	
Network Connector	4x 10/100/1000Base-T RJ-45 + 2x 100M/1G/2.5G SFP	
	RJ-45 UTP port supports Auto negotiation speed, Auto MDI/MDI-X function	
	SFP port supports 100M/1G/2.5G speed with DDMI	
Storage Port	USB type A	
Console Port	USB type C	
Network Cable	UTP/STP Cat. 5e cable or above	
	EIA/TIA-568 100-ohm (100meter)	
Protocols	CSMA/CD	
Reverse Polarity Protection	Supported for power input	
Overload Current Protection	Supported	
CPU Watch Dog	Supported	
Power Supply	Redundant Dual 12/24/48VDC (9.6~60VDC) input power (Removable terminal block)	
Power Consumption		
	Input Voltage	Total Power Consumption
	12VDC	8W
	24VDC	9W
	48VDC	12W
LED	System: Power 1 (Green), Power 2 (Green), Alarm (Amber), CPU Act (Green), Ring Master (Yellow)	
	UTP: 10/100 Link/Active (Green), 1000 Link/Active (Amber)	
	SFP Slot: 2.5G Link/Active (Amber), 100M/1G Link/Active (Green)	
Jumbo Frame	10KB	
MAC Address Table	16K	
Memory Buffer	12Mb 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	
Removable Terminal Block	Provides 1 terminal block for Alarm relay, redundant power PWR1 and PWR2	
Operating Temperature	-10 ~ 60°C (IGS-A402SM)	
	-40 ~ 75°C (IGS-A402SM-E)	
Operating Humidity	5% to 95% (Non-condensing)	
Storage Temperature	-40 ~ 85°C	
Housing	Rugged Metal, IP30 Protection, Fanless	
Dimensions	135 x 48.6 x 169.5mm (D x W x H)	
Weight	1,320g	
Installation Mounting	DIN Rail mounting or wall mounting (Optional)	
MTBF (MIL-HDBK-217)	426,475hrs	
Warranty	5 years	
Certification		
Industrial Cybersecurity	IEC 62443-4-1, IEC 62443-4-2	
EMC	CE (EN55032, EN55035)	
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A, CE	
Railway Traffic	EN50121-4	
EMS (Electromagnetic Susceptibility) Protection Level	EN61000-4-2 (ESD) Level 3, Criteria B	
	EN61000-4-3 (RS) Level 3, Criteria A	
	EN61000-4-4 (Burst) Level 3, Criteria A	
	EN61000-4-5 (Surge) Level 3, Criteria B	

EMS (Electromagnetic Susceptibility) Protection Level	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
Surge Protection	4KV for UTP and Fiber ports
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-31
Vibration	IEC 60068-2-6

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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 (Hash with SA, DA, IP, TCP/UDP port), up to 6 trunk group
	Dynamic (IEEE 802.3ad LACP), up to 6 trunk group
Spanning Tree	IEEE 802.1D STP, IEEE 802.1W RSTP, IEEE 802.1S MSTP
MRP (IEC62439-2)	Supported
Multiple μ-Ring	Up to 3 instances that each supports μ -Ring, μ -Chain or Sub-Ring type for flexible uses, and maximum up to 3 Rings
	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 network
ITU-T G.8031 / Y.1342 APS (Automatic Protection Switching)	Supported

QoS Features

Class of Service	IEEE 802.1p 8 active priorities queues for 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	100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps"
Bandwidth Control for Egress	100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps"
	Per queue / 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

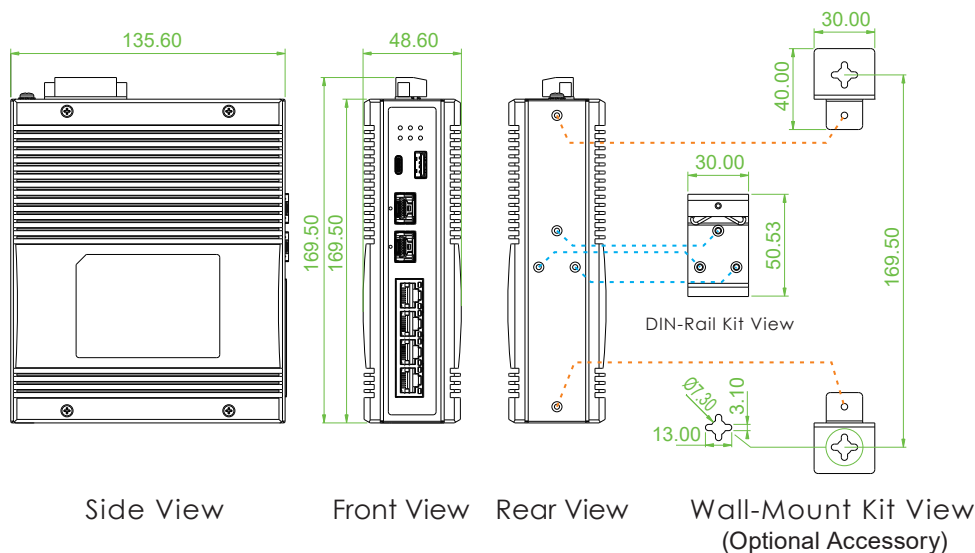
IEEE 802.1X	Port-Based
	MAC-Based

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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 USB console
Management Features	
CLI	Cisco® like CLI
Web UI	Supported
Telnet	Server
SNMP	V1, V2c, V3
sFlow	Supported
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, alarm relay
DNS	Client, Proxy
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
IPv6 Source Guard	Supported
DHCP v6	Relay, Snooping
Others Features	
Green Ethernet	Determine the cable length and lowering the power for ports with short cables Lower the power for a port when there is no link

Dimensions



Ordering Information

Model Name	Total Port	RJ45	SFP	Power Input	Certification			Operating Temperature
		10/100/1000 Base-T(X)	100M/1G/2.5G	Redundant	EN50121-4	EN 62368-1	CE FCC	
IGS-A402SM	6	4	2	12/24/48VDC	V	V	V	-10~60°C
IGS-A402SM-E	6	4	2	12/24/48VDC	V	V	V	-40~75°C

Optional Accessories

■ Auto Backup Kit

BUK1-USB	Backup kit for USB Type-C Console Managed Switch
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■ Wall Mount Kit

IND-WMK06	Wall Mount kit for Industrial product (Wide) (40x30mm, 2pcs/set)
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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-M8000-85-D(E)	Industrial SFP 2.5GbE, M/M, 300 meter, wavelength 850nm, 9dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-S8020-31-D(E)	Industrial SFP 2.5GbE, S/M, 20km, wavelength 1310nm, 13dB, 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

MDR-40-48	Industrial Power, Input 85 ~ 264VAC/120 ~ 370VDC, Output 48VDC, 40W, -20 ~ 70°C
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