

NEW



IGS-1604SM

16x 10/100/1000Base-T+ 4x 100/1000Base-X SFP Slot Ethernet Managed Switch

IGS-1604SM models are managed industrial grade Gigabit switches with 16x 10/100/1000Base-T ports and 4 SFP Gigabit/Fast Ethernet ports that provide stable and reliable Ethernet transmission. The Ethernet switches support a variety of management functions, including STP/RSTP/MSTP and ITU-T G.8032 Ring <50ms recovery time, layer 2 Ethernet IGMP, VLAN, QoS, Security, IPv6, bandwidth control, port mirroring, cable diagnostic and Green Ethernet. Housed in rugged DIN rail or wall mountable enclosures, these switches are designed for harsh environments, such as industrial networking, security automation applications, intelligent transportation systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications. Standard operating temperature range models (-10 to 60°C) and wide operating temperature range models (-40 to 75°C) fulfill the special needs of industrial automation applications.

Features

- 16x 10/100/1000Base-T RJ-45 with 4x 100/1000Base-X SFP Fiber
- UL60950-1, CE, FCC, Rail Traffic EN50121-4 Certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 Certified
- Cable diagnostic, Measuring cable OK or broken point distance
- Supports IEEE802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Protection Ring(EPR) for cabling redundant
- **μ-Ring** for Redundant Ethernet Ring, recovery time<20ms in 250 units
- QoS, Traffic classification QoS, CoS, bandwidth control for Ingress and Egress, Storm Control, DiffServ
- IEEE802.1Q VLAN, port based VLAN, MAC based VLAN, IP subnet based VLAN, Protocol based VLAN, VLAN translation, MVR
- Dynamic IEEE 802.3ad LACP Link Aggregation, Static Link Aggregation
- IGMP/MLD snooping V1/V2/V3, IGMP Filtering / Throttling, IGMP query, IGMP proxy reporting, MLD snooping
- Security : Port based and MAC based IEEE802.1X, RADIUS, ACL, TACACS+, HTTP/HTTPS, SSL/SSH v2
- Software upgrade via TFTP and HTTP, redundant firmware in case of upgrade failure
- DHCP client/Relay/Snooping/Snooping option 82/Relay option 82
- RMON, MIB II, Port mirroring, Event syslog, DNS, NTP/SNTP, IEEE802.1ab LLDP
- Supports IPv6 Telnet server /ICMP v6, SNMP, HTTP, SSH/SSL, NTP/SNTP, TFTP, QoS, ACL
- CLI, Web based management, **SNMP** v1/v2c/v3, Telnet server for management
- **SmartView** Management System

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 802.1d 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 EPR (Ethernet Protection Ring)
	IEEE 802.1Q Virtual LANs (VLAN)
	IEEE 802.1X Port based Network Access Control, Authentication
	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)
	IEEE 802.3az EEE (Energy Efficient Ethernet)
VLAN ID	4096
Switch Architecture	Back-plane (Switching Fabric):40Gbps
Data Processing	Store and Forward
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode
Jumbo Frame	9.6KB
MAC Address Table	8K

Network Connector	16x RJ-45 10/100/1000Base-T auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex 4x 100/1000Base-X dual speed mode SFP slot, with DDMI
Console	RS-232 (RJ-45)
Network Cable	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
Protocols	CSMA/CD
Reverse Polarity Protection	Present
Overload Current Protection	Present
CPU Watch Dog	Present
Power Supply	Redundant Dual DC12/24/48VDC (9.6~60VDC) Input power (Removable Terminal Block)
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Yellow) Per RJ-45 port: 10/100 Link/Active (Green) 1000 Link/Active (Amber) SFP Fiber Per port: Link/Active (Green)
Warning Message	System Syslog, SMTP/ e-Mail event message, alarm relay
Alarm Relay Contact	Relay outputs with current carrying capacity of 1 A @24VDC
Removable Terminal Block	Provide 2 redundant power, alarm relay contact, 6 Pin
Operating Temperature	-10 ~ 60°C (IGS-1604SM) -40 ~ 75°C (IGS-1604SM-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection
Dimensions	106 x 72 x 152mm (D x W x H)
Installation Mounting	DIN Rail mounting or wall mounting

Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.

Specifications

EMC/EMS	CE, FCC
EMI	FCC Part 15 Subpart B Class A, CE EN 55022 Class A EN61000-6-4 – Emission for industrial environment
EMS	EN61000-6-2 – Immunity for Industrial environment EN61000-4-2 (ESD) Level 3, Criteria B EN61000-4-3 (RS) Level 3, Criteria A EN61000-4-4 (EFT) Level 3, Criteria A EN61000-4-5 (Surge) Level 3, Criteria B EN61000-4-6 (CS) Level 3, Criteria A EN61000-4-8 (Magnetic Field) Level 3, Criteria A

Safety	UL60950-1 (Pending)
Rail Traffic	EN 50121-4
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
MTBF	TBD (Above 30 years)
Warranty	5 years

Software Specifications

Topology	
VLAN	IEEE 802.1q VLAN, up to 4095 ID IEEE 802.1q VLAN, up to 4095 Groups IEEE 802.1ad Q-in-Q Port Based VLAN 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 MVR (Multiple VLAN Registration)
Link Aggregation (Port Trunk)	Static (Hash with SA, DA, IP, TCP/UDP port), up to 5 trunk group Dynamic (IEEE 802.3ad LACP), up to 5 trunk group
Spanning Tree	IEEE802.1d STP IEEE802.1w RSTP IEEE802.1s MSTP
Loop Protection	Present
µ-Ring	Easy set for Ethernet protection Ring, Recovery Time <20ms, Maximum 250 Node
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Convergence time <50ms Single Ring, Sub-Ring, Multiple ring topology network
QoS Feature	
Class of Service	IEEE802.1p 8 active priorities queues for per port
Traffic Classification	IEEE802.1p based CoS
QoS	IP Precedence based CoS IP DSCP based CoS QCL(QoS Control List): MAC Access control list (Source/Destination MAC, Ether type, Priority ID/ VLAN ID) QCL: IP extended access control list (Source/Destination IP, Protocol, TCP/UDP port number)
Bandwidth Control for Ingress	Rate in steps : 100 kbps / 1fps / 100fps Range : 100 kbps to 1Gbps / 1fps to 3300kfps Rate Unit : bit or frame
Bandwidth Control for Egress	Rate in steps : 100 kbps / 1fps / 100fps Range : 100 kbps to 1Gbps / 1fps to 3300kfps Rate Unit : bit or frame Per queue shaper
DiffServ (RF 2474) Remarkings	
Storm Control	for Unicast, Broadcast, Multicast
IP Multicasting Feature	
IGMP / MLD snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2 Port Filtering Profile Throttling Fast Leave Query

Security Features	
IEEE 802.1X	Port-Based MAC-Based
ACL	Number of rules : up to 256 entries for L2 / L3 / L4
RADIUS authentication & accounting	
TACACS+ authentication & accounting, TACACS+ 3.0	
HTTPS, HTTP	
SSL / SSH v2	
User name password authentication	Local Authentication
Remote Authentication	Remote Authentication (via RADIUS / TACACS+)
Management Interface Access	Web, Telnet / SSH
Filtering	
Management Features	
CLI	
Web Based Management	
Telnet	Server
SNMP	V1, V2c, V3
SW & Configuration Upgrade	TFTP, HTTP Redundant firmware in case of upgrade failure
RMON	RMON I (1, 2, 3, 9 group), RMON II
MIB II	RFC 1213
DHCP	Client Relay Snooping Snooping option 82 Relay option 82
IP Source Guard	
Port Mirroring	
Event Syslog	Syslog server (RFC3164) (Support 1 server)
Warning Message	System syslog, e-mail, alarm relay
DNS	Client, Proxy
NTP /SNTP	
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol LLDP-MED
IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
Stateless Auto-Configuration	
SNMP over IPv6	
HTTP over IPv6	
SSH over IPv6	
IPv6 Telnet Support	
IPv6 NTP / SNTP Support	
IPv6 TFTP Support	
IPv6 QoS	
IPv6 ACL	Number of rules: up to 256 entries L2 / L3 / L4
Others Features	
Green Ethernet	Supports IEEE802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption Determine the cable length and lowering the power for ports with short cables Lower the power for a port when there is no link LED Power Management : Adjustment LEDs intensity
Cable Diagnostic	Measuring cable OK or broken point distance

Application

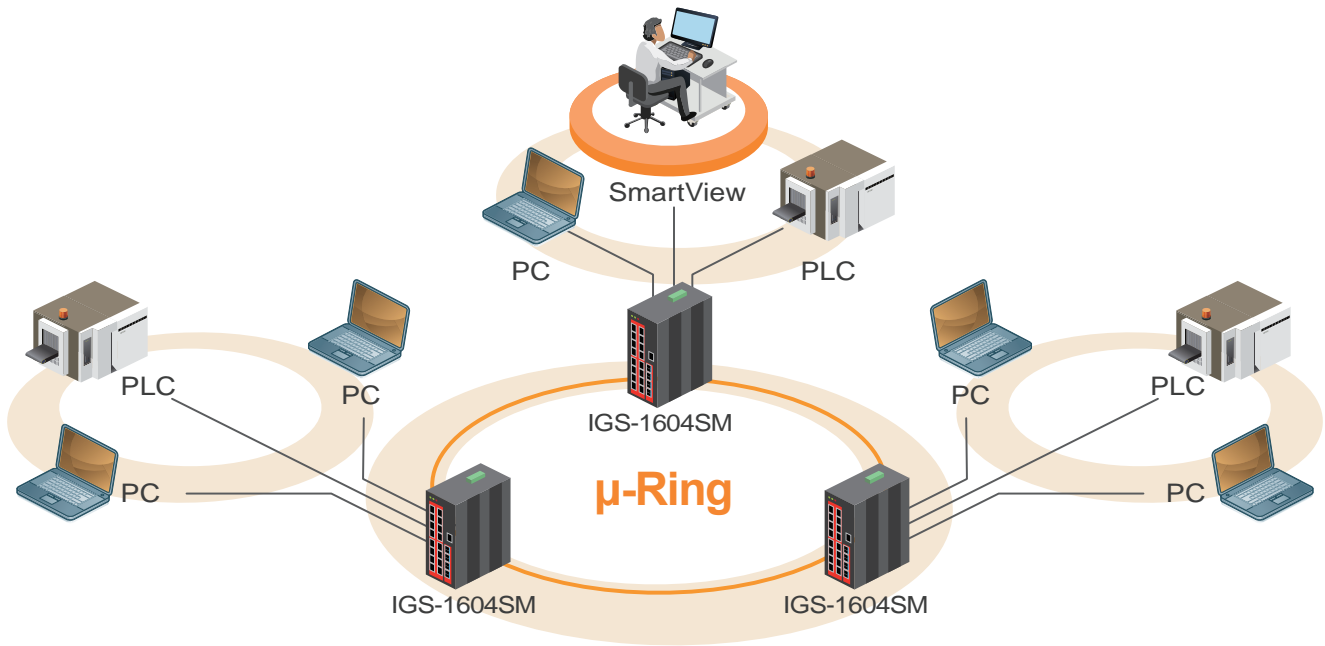
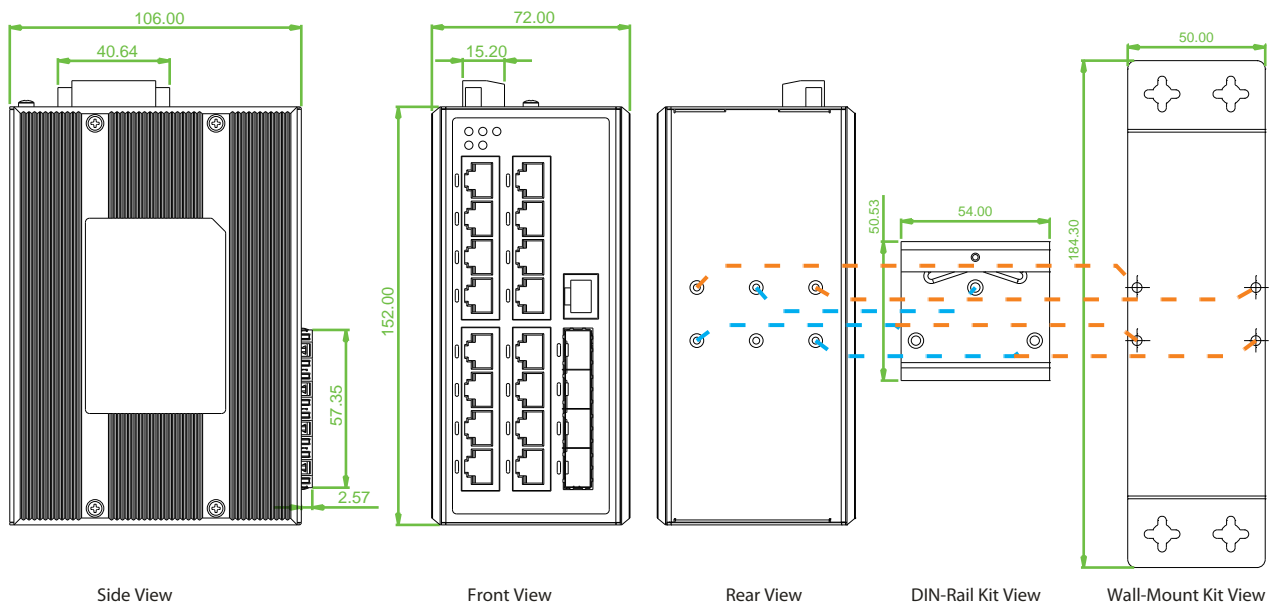


Figure : Topology

Dimensions

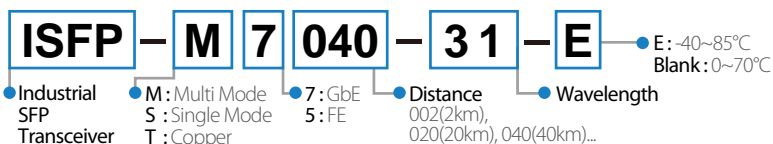


Ordering Information

Model Name	Description
IGS-1604SM	16x 10/100/1000Base-T + 4x 100/1000Base-X SFP Slot Managed Switch (-10~60°C)
IGS-1604SM-E	16x 10/100/1000Base-T + 4x 100/1000Base-X SFP Slot Managed Switch (-40~75°C)

Accessories

DR-4524	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 48W, -10 ~ +50°C
MDR-40-24	Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70°C
SFP Transceiver	Compatible, Reliable, 5-year Warranty



Temperature
IGS-1604SM -
Example: IGS-1604SM - E