IQS-402XSM

4x 2.5G RJ45 + 2x 1G/2.5G/10G SFP+ Compact Size

- Redundant 12/24/48VDC power input
- Supports µ-Ring, ERPS, EPS, MSTP, RSTP, STP for redundant cabling
- EN50121-4, EN61000-6-2, EN61000-6-4, CE and FCC certified

The industrial 2.5G managed Ethernet switch IQS-402XSM features 4 ports 2.5Gbps UTP and equipped with 2 SFP plus slots of maximum 10Gbps to meet high-bandwidth transmission requirements, fanless design, high MTBF, supports wide operating temperature, and redundant 12/24/48VDC power input, it is suitable for heavy-duty applications in harsh environments such as industrial factory automation and data centers, intelligent transportation systems, military and utility market applications where environmental conditions exceed commercial product specifications.

Features

- 4x 10M/100M/1G/2.5GBase-T RJ-45+ 2x 1G/2.5G/10GBase-X SFP+
- 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)
- DHCP Server/Client/Relay/Snooping/Snooping option 82/Relay option 82
- QoS, Traffic classification QoS, CoS, bandwidth control for Ingress and Egress, Storm Control, DiffServ
- IEEE802.1q VLAN, MAC based VLAN, IP subnet based VLAN, Protocol based VLAN, VLAN translation, GVRP, MVR
- Dynamic IEEE 802.3ad LACP Link Aggregation, Static Link Aggregation
- IGMP snooping V1/V2/V3, IGMP Filtering/ Throttling, IGMP query, IGMP proxy reporting, MLD snooping V1/V2
- Flexibility security: Port based and MAC based IEEE802.1X, RADIUS, ACL, TACACS+, HTTP/HTTPS, SSL/SSH v2
- Software upgrade via TFTP and HTTP, redundant firmware to avoid upgrade failure
- RMON, MIB II, Port mirroring, Event syslog, DNS, NTP, SNTP, IEEE802.1ab LLDP
- Supports IPv6 Telnet server /ICMP v6
- CLI, Web based management, SNMP v1/v2c/v3, Telnet server for 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 802.3bz	2.5GBase-T
	IEEE 802.3z	1000Base-X Gbit/s Ethernet over Fiber-Optic
	IEEE 802.3ae	10G bit/s Ethernet over Fiber
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
	ITU-T G.8031 / Y.1342	EPS (Ethernet Protection Switching)
	IEEE 802.1d	STP (Spanning Tree Protocol)
	IEEE 802.1w	RSTP (Rapid Spanning Tree Protocol)
	IEEE 802.1s	MSTP (Multiple Spanning Tree Protocol)
	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)

Standard	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)
Switch Architecture	Back-Plane (Switching Fabric): 60Gbps (Full Wire-Speed)	
Data Processing	Store and Forward	
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode	
Network Connector	4x 10M/100M/1G/2.5GBase-T RJ-45 + 2x 1G/2.5G/10GBase-X SFP	
	RJ45 port supports Auto negotiation, Auto MDI/MDI-X function	
	SFP port supports 1G/2.5G/10G speed with DDMI	
Network Cable	UTP/STP Cat. 5e cable or above	
	EIA/TIA-568 100-ohm (100meter)	
Protocols	CSMA/CD	
Overload Current Protection	Supported	
CPU Watch Dog	Supported	
Power Supply	Redundant dual power input 12/24/48VDC(9.6~60VDC) (Removable terminal block)	

Power Consumption

Input Voltage	Total Power Consumption
12VDC	11.7W
24VDC	12.3W
48VDC	14W

LED	System: Power 1 (Green), Power 2 (Green)
	UTP: 10/100 Link/Active (Green), 1G/2.5G Link/Active (Amber)
	SFP Slot: Link/Active (Green)
Jumbo Frame	9.6K Byte
IEEE802.3ac	Max frame size extended to 1522Bytes (allow Q-tag in packet)
MAC Address Table	8K
Memory Buffer	512K Bytes for packet buffer
Device Memory	128M Bytes Flash ROM, 256M Bytes RAM
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	Provides redundant power PWR1, PWR2 and Alarm Relay, 6 pin
Operating Temperature	-10 ~ 60°C
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP30 Protection, Fanless
Dimensions	127.6x 48.6x 160mm (Dx W x H)
Weight	1,530g
Installation Mounting	DIN Rail mounting, or wall mounting (Optional)
MTBF	588,603 Hours (MIL-HDBK-217)
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	EN61000-4-2 (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
	EN61000-4-6 (CS) Level 3, Criteria A
	EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-31
Vibration	IEC 60068-2-6

Software Specifications

Topology

VLAN	IEEE 802.1q VLAN,up to 4094 802.1Q VLAN VID
	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 (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
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 <10ms
	The maximum number of devices in the ring supports 250 nodes
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 EPS (Ethernet Protection Switching)	Supported
Loop Protection	Supported

QoS Features

Class of Service	IEEE802.1p 8 active priorities queues for per port
Traffic Classification QoS	IEEE802.1p based CoS
	IP Precedence based CoS
	IP DSCP based CoS
	QCL(QoS Control List): Frame Type, Source/Destination MAC, VLAN ID, PCP, DEI
	QCE(QoS Control Entry): 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 / Per port shaper
DiffServ (RF 2474) Remarking	
Storm Control	for Unicast, Broadcast, 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, 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

Management Features

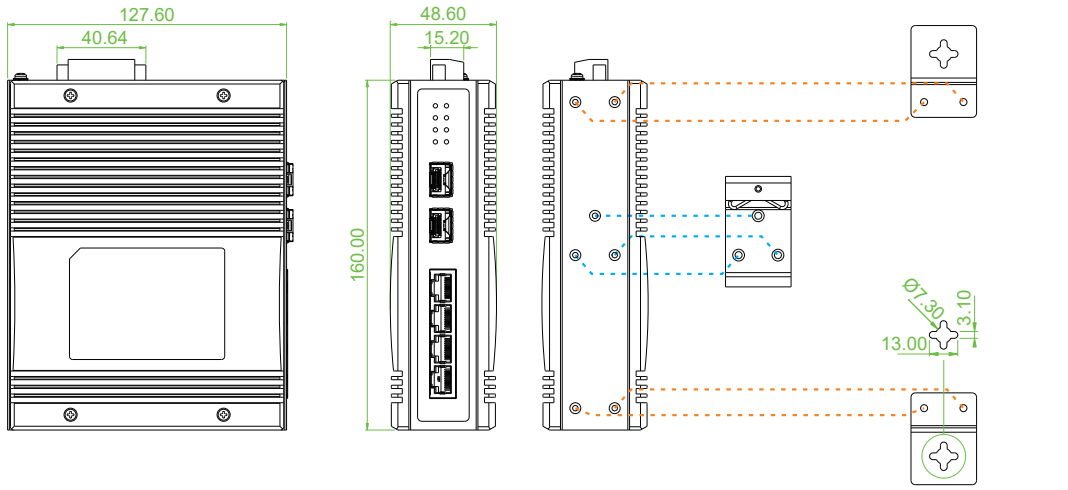
CLI	Cisco® like CLI
WeB UI	Supported
Telnet	Server
SNMP	V1, V2c, V3
sFlow	Supported
Modbus/TCP	Support for management and monitoring
SW & Configuration Upgrade	SFTP, TFTP, HTTP
	Redundant firmware in case of upgrade failure
RMON	RMON I (1, 2, 3, 9 group), RMON II
MIB	RFC1213 MIB II, Private MIB
UPnP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

Dimensions



Side View | Front View | Rear View | DIN-Rail Kit View | Wall-Mount Kit View (Optional Accessory)

Ordering Information

Model Name	Total Ports	UTP (RJ45)	Fiber	Redundant Power Input	Certification		
		10/100/1G/2.5G Base-T	1G/2.5G/10G		EN50121-4	EN61000-6-2 EN61000-6-4	CE, FCC
IQS-402XSM	6	4	2 SFP	12/24/48VDC	V	V	V

Optional Accessories

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)

Industrial Power Supply

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