IQS-402XSM

4x 2.5G N-Base-TX + 2x 10G Base-X SFP+ Compact Size

- Redundant 12/24/48VDC power input
- Supports μ-Ring, ERPS, EPS, MSTP, RSTP, STP for redundant cabling

IQS-402XSM is an 1G/2.5G/10G managed Layer 2 Ethernet switch. It provides 4 port of electrical 10M/100M/1G/2.5GBase-T via RJ-45s plus 2 ports SFP slots of 100M/1G/2.5G/10GBase-X which provide stable and reliable long-distance Ethernet transmission over optical fiber. Built to Industrial grade standards, the FANLESS design provides high MTBF in indoor environments of operating temperature from -10 to 60℃ (14 to 160°F), and incorporates redundant 12/24/48VDC power input. With Din-Rail or wall mounting metal housings, these switches are perfect choices for heavy duty use in harsh environments, such as Industrial Factory Automation, Data Center Networking, Intelligent Transportation Systems (ITS) and are also suitable for many military and utility market applications where environmental conditions exceed commercial product specifications.

These managed switches also support a wide variety of Ethernet Layer 2 functions, including CTC Union proprietary μ-Ring, ERPS, MSTP, RSTP and STP. They also support Layer 2 IGMP, VLAN, QoS, ACL, Security, IPv6, bandwidth control, and port mirroring. Additionally, these switches can also be managed by CTC Union's SmartView™ Element Management System, which offers a user-friendly and centralized device management platform and provides administrators the ability to monitor and configure these connected switches remotely.

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
	IEEE802.3ac	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 port	
	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	Power Consumption
	12VDC	11.7W
	24VDC	12.3W
	48VDC	14W

LED	Per unit: PWR 1, PWR 2 (Green)
	Per RJ-45 port: 10/100 Link/Active (Green) 1G/2.5G Link/Active (Amber)
	SFP Fiber Per port: 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℃
Operating Humidity	5% to 95% (Non-condensing)

Storage Temperature	-40 ~ 85℃
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
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

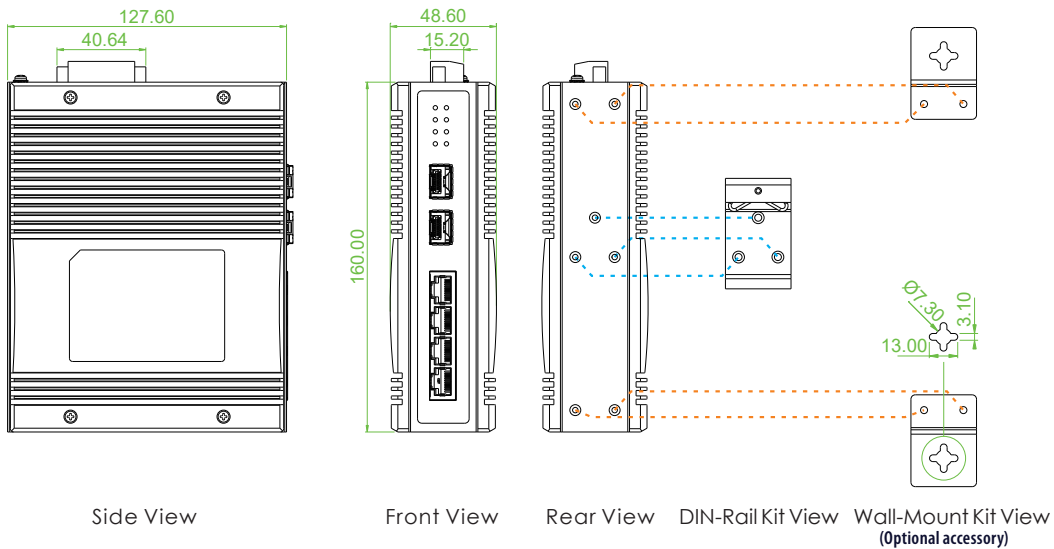## Software Specifications

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 Protocal)
	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 allowed in a Ring supported ring is 250 (Please see CTC Union μ-Ring white paper for more details and more topology application)
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
Traffic Classification QoS	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 & accounting, TACACS+ 3.0	
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 Based Management	
Telnet	Server
SNMP	V1, V2c, V3
sFlow	Supported
Modbus/TCP	Support for management and monitoring
SW & Configuration Upgrade	TFTP, HTTP
	Redundant firmware in case of upgrade failure

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Industrial Managed 2.5G/10G Switch IQS-402XSM

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Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.   www.ctcu.com / sales@ctcu.com

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		CE	FCC
IQS-402XSM	6	4	2 SFP	12/24/48VDC	V	V

■ Package List
- IQS-402XSM device
- Protective caps for SFP ports

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℃ (-40~85℃)
ISFP-S9010-31-D(E)	Industrial SFP 10GBase-LR SM, 10km, 1310nm, 6.4dB, LC, DDMI, -10~70℃ (-40~85℃)
ISFP-M7000-85-D(E)	Industrial SFP GbE 1000Base-SX, M/M, 500 meter,wave length 850nm, 7.5dB, LC, DDMI, -10~70℃ (-40~85℃)
ISFP-S7020-31-D(E)	Industrial SFP 1000Base-LX, S/M, 20km, wave length 1310nm, 15dB, LC, DDMI, -10~70℃(-40~85℃)

■ Industrial Power Supply

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