

## IQS-402XSM-4PH



**4x 2.5G RJ45 + 2x 1G/2.5G/10G SFP+ with 4x PoE 120W, Compact Size**

- » Advanced PoE Management, PoE PD Failure Auto Checking and Auto Reset When PD Fail, PoE Port On/Off Weekly Scheduling
- » Redundant 48VDC Power Input
- » Supports  $\mu$ -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 PoE Ethernet switch IQS-402XSM-4PH features 4 2.5G UTP ports, each supporting 30W PoE+. Equipped with 2 10G SFP+ slots to meet high-bandwidth transmission requirements, fanless design, high MTBF, supports wide operating temperature, and redundant 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 10/100/1G/2.5G Base-T RJ-45 + 2x 1G/2.5G/10G Base-X SFP+ with 4x PoE, total 120W power budget
- Provides 3 ring instances that each can support  $\mu$ -Ring,  $\mu$ -Chain or Sub-Ring type for flexible uses.
- Supports up to 3 rings in one device (Please see CTC  $\mu$ -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

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<b>Standard</b>	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)		
	IEEE 802.3af	PoE (Power over Ethernet)		
	IEEE 802.3at	PoE+ (Enhance Power over Ethernet)		
<b>Switch Architecture</b>	Back-Plane (Switching Fabric): 60Gbps (Full Wire-Speed)			
<b>Data Processing</b>	Store and Forward			
<b>Flow Control</b>	IEEE 802.3x for full duplex mode Back pressure for half duplex mode			
<b>Network Connector</b>	4x 10M/100M/1G/2.5GBase-T RJ-45 + 2x 1G/2.5G/10GBase-X SFP			
	RJ-45 UTP port supports Auto negotiation			
	Auto MDI/MDI-X function			
	SFP port supports 1G/2.5G/10G speed with DDMI			
<b>PoE Standard &amp; RJ-45 Pin Assignment</b>	4x IEEE 802.3af/at PoE+ End-Span, Alternative A mode.			
	Positive (V+) : RJ-45 pin 1, 2. Negative (V-) : RJ-45 pin 3, 6. Data (1, 2, 3, 6, 4, 5, 7, 8)			
<b>Network Cable</b>	UTP/STP Cat. 5e cable or above			
	EIA/TIA-568 100-ohm (100meter)			
<b>Protocols</b>	CSMA/CD			
<b>Overload Current Protection</b>	Supported			
<b>CPU Watch Dog</b>	Supported			
<b>Power Supply</b>	Redundant dual power input 48VDC (44~57VDC) (Removable terminal block)			
	(50~57VDC input is recommended for IEEE 802.3at PoE+ in 30W applications)			
<b>Power Consumption</b>	<b>Input Voltage</b>	<b>Total Power Consumption</b>	<b>Device Power Consumption</b>	<b>PoE Budget</b>
	50VDC	139.4W	14W	120W
<b>PoE Power Budget</b>	Maximum PoE Output power budget 30W/port, Total 120W			
<b>LED</b>	System: Power 1 (Green), Power 2 (Green)			
	UTP: 10/100 Link/Active (Green), 1G/2.5G Link/Active (Amber)			
	SFP Slot: Link/Active (Green)			
	PoE: ON (Green)			
<b>Jumbo Frame</b>	9.6K Byte			
<b>IEEE802.3ac</b>	Max frame size extended to 1522Bytes (allow Q-tag in packet)			
<b>MAC Address Table</b>	8K			
<b>Memory Buffer</b>	512K Bytes for packet buffer			
<b>Device Memory</b>	128M Bytes Flash ROM, 256M Bytes RAM			
<b>Warning Message</b>	System Syslog, SMTP/ e-mail event message, alarm relay			
<b>Alarm Relay Contact</b>	Relay outputs with current carrying capacity of 1A @24VDC			
<b>Removable Terminal Block</b>	Provides redundant power PWR1, PWR2 and Alarm Relay, 6 pin			
<b>Operating Temperature</b>	-10 ~ 60°C			
<b>Operating Humidity</b>	5% to 95% (Non-condensing)			
<b>Storage Temperature</b>	-40 ~ 85°C			
<b>Housing</b>	Rugged Metal, IP30 Protection, Fanless			
<b>Dimensions</b>	127.6 x 48.6 x 160mm (D x W x H)			
<b>Weight</b>	1,535g			
<b>Installation Mounting</b>	DIN Rail mounting or wall mounting (Optional)			
<b>MTBF</b>	531,055 Hours (MIL-HDBK-217)			
<b>Warranty</b>	5 Years			

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## Certification

<b>EMC</b>	CE (EN55032, EN55035)
<b>EMI (Electromagnetic Interference)</b>	FCC Part 15 Subpart B Class A,CE
<b>Railway Traffic</b>	EN50121-4
<b>Immunity for Heavy Industrial Environment</b>	EN61000-6-2
<b>Emission for Heavy Industrial Environment</b>	EN61000-6-4
<b>EMS (Electromagnetic Susceptibility) Protection Level</b>	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
<b>Shock</b>	IEC 60068-2-27
<b>Freefall</b>	IEC 60068-2-31
<b>Vibration</b>	IEC 60068-2-6

## Software Specifications

### Topology

<b>VLAN</b>	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
<b>Link Aggregation (Port Trunk)</b>	Static (Hash with SA, DA, IP, TCP/UDP port), up to 5 trunk group Dynamic (IEEE 802.3ad LACP), up to 5 trunk group
<b>Spanning Tree</b>	IEEE802.1d STP IEEE802.1w RSTP IEEE802.1s MSTP
<b>Multiple <math>\mu</math>-Ring</b>	Up to 5 instances that each supports $\mu$ -Ring, $\mu$ -Chain or Sub-Ring type for flexible uses, and maximum up to 5 Rings Recovery time <10ms The maximum number of device is allowed 250 nodes in a Ring.
<b>ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)</b>	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
<b>ITU-T G.8031 / Y.1342 EPS (Ethernet Protection Switching)</b>	Supported
<b>Loop Protection</b>	Supported
<b>QoS Features</b>	
<b>Class of Service</b>	IEEE802.1p 8 active priorities queues for per port
<b>Traffic Classification QoS</b>	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, Protocol, Source IP, IP Fragment, DSCP, TCP/UDP port number
<b>Bandwidth Control for Ingress</b>	100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps"
<b>Bandwidth Control for Egress</b>	100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps" Per queue / Port shaper

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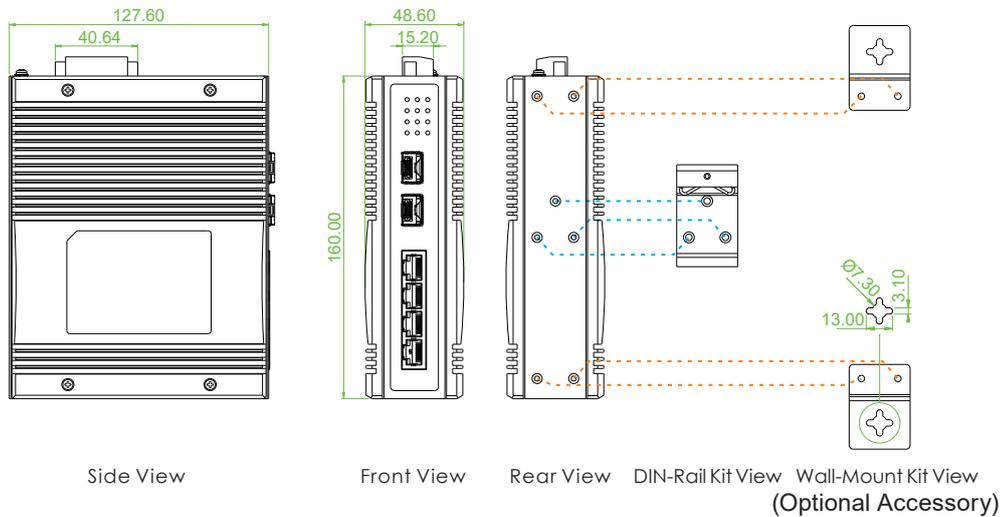
<b>DiffServ (RF 2474) Remarking</b>	
<b>Storm Control</b>	For Unicast, Broadcast and Multicast
<b>IP Multicasting Features</b>	
<b>IGMP / MLD Snooping</b>	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2 Port Filtering Profile Throttling, Fast Leave Maximum Multicast Group : up to 1022 entries Query / Static Router Port
<b>Security Features</b>	
<b>IEEE 802.1X</b>	Port-Based MAC-Based
<b>ACL</b>	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
<b>RADIUS</b>	Authentication & Accounting
<b>TACACS+</b>	Authentication, Authorization and Accounting
<b>HTTPS, HTTP</b>	Supported
<b>SSL / SSH v2</b>	Supported
<b>User Name Password Authentication</b>	Local Authentication Remote Authentication (via RADIUS / TACACS+)
<b>Management Interface Access Filtering</b>	Web, Telnet / SSH, CLI
<b>Management Features</b>	
<b>CLI</b>	Cisco® like CLI
<b>Web UI</b>	Supported
<b>Telnet</b>	Server
<b>SNMP</b>	V1, V2c, V3
<b>sFlow</b>	Supported
<b>Modbus/TCP</b>	Support for management and monitoring
<b>SW &amp; Configuration Upgrade</b>	SFTP, TFTP, HTTP Redundant firmware in case of upgrade failure
<b>RMON</b>	RMON I (1, 2, 3, 9 group), RMON II
<b>MIB</b>	RFC1213 MIB II, Private MIB
<b>UPnP</b>	Supported
<b>DHCP</b>	Server, Client, Relay, Relay option 82, Snooping
<b>IP Source Guard</b>	Supported
<b>Port Mirroring</b>	Supported
<b>Event Syslog</b>	Syslog server (RFC3164) (Supports 4 servers)
<b>Warning Message</b>	System syslog, SMTP/e-mail event message, alarm relay
<b>DNS</b>	Client, Proxy
<b>NTP, SNTP</b>	Client
<b>LLDP (IEEE 802.1ab)</b>	Link Layer Discovery Protocol LLDP-MED
<b>IPv6 Features</b>	
<b>IPv6 Management</b>	Telnet Server/ICMP v6
<b>SNMP over IPv6</b>	Supported
<b>HTTP over IPv6</b>	Supported
<b>SSH over IPv6</b>	Supported
<b>IPv6 Telnet</b>	Supported
<b>IPv6 NTP, SNTP</b>	Client
<b>IPv6 TFTP</b>	Supported
<b>IPv6 QoS</b>	Supported

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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
<b>Advanced PoE</b>	
Advanced PoE Management	PoE PD failure auto checking ,and auto reset when PD fail PoE port on/off weekly scheduling PoE Configuration PoE Enable/Disable Power limit by classification Power limit by management Total PoE power budget limitation: maximum 120W Power feeding priority

## Dimensions



## Ordering Information

Model Name	Total Ports	RJ45	SFP	PoE		Redundant Power Input	Certification		
		10/100/1G/2.5G Base-T(X)	1G/2.5G/10G	IEEE802.3af/at	Power Budget		EN50121-4	EN61000-6-2 EN61000-6-4	CE FCC
IQS-402XSM-4PH	6	4	2	4	120W	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

NDR-120-48	Industrial Power, Input 90 ~ 264VAC/127 ~ 370VDC, Output 48VDC, 120W, -20 ~ 70°C (IQS-402XSM-4PH)
NDR-240-48	Industrial Power, Input 90 ~ 264VAC/127 ~ 370VDC, Output 48VDC, 240W, -20 ~ 70°C (For more ref.)