IQS-402XSM-4PH

4x 2.5G N-Base-TX + 2x 10G Base-X SFP+ with 4x PoE 120W, Compact Size

- EN50121-4, EN61000-6-2, EN61000-6-4, CE, FCC Certified
- 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 µ-Ring, ERPS, MSTP, RSTP, STP for redundant cabling

IQS-402XSM-4PH is an 1G/2.5G/10G managed Layer 2 Ethernet switch that supports power over Ethernet functions. It provides 4 ports of electrical 10M/100M/1G/2.5GBase-T via RJ-45s and with IEEE802.3at 30 watts per port, 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°C (14 to 160°F), and incorporates redundant 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 10/100/1G/2.5GBase-T RJ-45+ 2x 1G/2.5G/10GBase-X SFP with 4x PoE, total 120W power budget
- 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
	IEEE802.3ae	10G bit/s Ethernet over Fiber
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring 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)
	IEEE 802.3af	PoE (Power over Ethernet)
	IEEE 802.3at	PoE+ (Enhance Power over Ethernet)
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	
	RJ-45 UTP port supports auto-negotiation	
	Auto MDI/MDI-X function	
	SFP port supports 1G/2.5G/10G speed with DDMI	
PoE standard & RJ-45 pin assignment	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)	

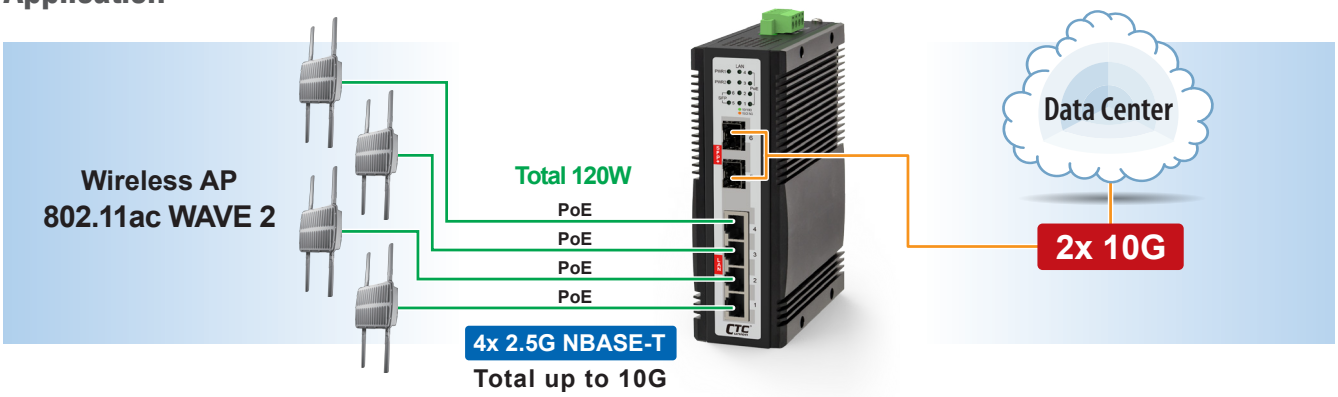
Network Cable	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
Protocols	CSMA/CD
Overload Current Protection	Supported
CPU Watch Dog	Supported
Power Supply	Redundant dual power input 48VDC (44~57VDC) (Removable terminal block) (50~57VDC input is recommended for IEEE 802.3at PoE+ in 30W applications)
Power Consumption	Input Voltage: 50VDC; Total Power Consumption: 132W; Device Power Consumption: 12W; PoE Budget: 120W
PoE Power Budget	Maximum PoE Output power budget 30W / Per Port Total 120W
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) PoE Port LED 1 LED /per Port : • PoE Output Power On : ON (Green) • PoE Output Power Off : Off
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	1,535g
Installation Mounting	DIN Rail mounting, or wall mounting (Optional)
MTBF	531,055 Hours (MIL-HDBK-217)
Warranty	5 Years
Certification	
EMC	CE (EN55032, EN55035)
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A,CE
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
Safety	EN62368-1 (Pending)
Shock	IEC 60068-2-27
Freefall	IEC 60068-2-31
Vibration	IEC 60068-2-6

Software Specifications

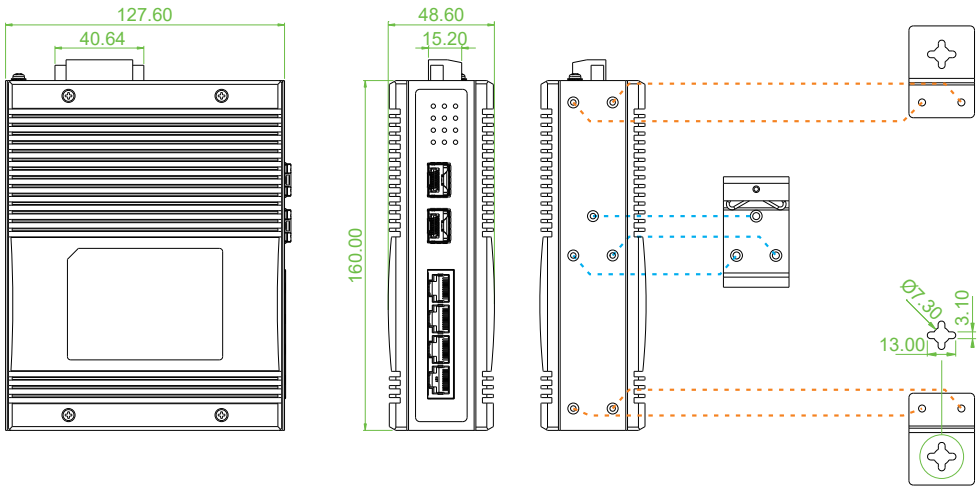
Topology	
VLAN	IEEE 802.1q VLAN,up to 4094 802.1Q VLAN VID IEEE 802.1q VLAN,up to 4094 Groups IEEE 802.1ad Q-in-Q MAC-based VLAN,up to 256 entries IP Subnet-based VLAN, up to 128 entries Protocol-based VLAN(Ethernt, SNAP, LLC), up to 128 entries VLAN Translation, up to 256 entries Private VLAN for port isolation GVRP (GARP VLAN Registration Protocal) MVR (Multicast VLAN Registration)
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 5 instances that each supports µ-Ring, µ-Chain or Sub-Ring type for flexible uses, and maximum up to 5 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
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
Modbus/TCP	Support for management and monitoring

SW & Configuration Upgrade	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
Advanced PoE	
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 budge limitation (maximum 120W Power feeding priority

Application



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	PoE Port		Redundant Power Input	Certification		
		10/100/1G/2.5G Base-T	1G/2.5G/10G	IEEE802.3af/at	Power Budget		RailWay EN50121-4	EN61000-6-2 EN61000-6-4	CE, FCC
IQS-402XSM-4PH	6	4	2 SFP	4	120W	48VDC	V	V	V

Package List

- IQS-402XSM-4PH device
- Protective caps for SFP ports

Optional Accessories

Industrial SFP Transceiver

The ISFP series of industrial grade SFP modules have been fully tested with the series product for guaranteed compatibility and performance. The best performance can be guaranteed even in mission-critical applications. (Please see CTC Union's Industrial SFP datasheet for more details and more items.)

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.)