IPS-803GSM

8x FE RJ45 + 3x 100/1000Base-X SFP, Managed Ethernet Switch

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- *IEC 61850-3, IEEE 1613 Certified for Power Substation*
- *Supports IEEE 1588 PTP V2*
- *Supports GOOSE Message that Complies with IEC61850 Standard to Achieve Zero Packet Loss*
- *Supports u-Ring, ERPS, MSTP, RSTP, STP for Redundant Cabling*
- *UL60950-1, EN60950-1, EN50121-4, EN61000-6-2, EN61000-6-4, CE and FCC Certified*

UL60950-1 | CE | FC | LVD EN60950-1 | IEC 61850-3 | IPv6 | µ-Ring | IEEE 1588v2 | GOOSE | EN50121-4 | EN61000-6-2 EN61000-6-4

The managed industrial-grade IEC61850 Gigabit Ethernet switch with 8x 10/100Mbps UTP ports and 3x 100/1000Mbps SFP slots,it is fully compliant with the requirement of IEC 61850-3 and IEEE 1613. The switch provides a variety of redundant functions to increase the reliability of your communications system, including redundant and isolated power supplies of 24/48 VDC and 110/220V AC/DC and link redundancy functions of STP/RSTP/MSTP/ERPS and a proprietary ring protocol, features of IGMP, VLAN, QoS, ACL, Security, IPv6, bandwidth control, and port mirroring. Supports wide temperature operation of -40~85°C, fanless and rugged enclosure specifically designed for harsh substation network environments.

Features

- Redundant isolated low voltage 24/48VDC, or/and isolated High voltage AC/DC (110/220 VAC/VDC) power inputs
- Wide Operating Temperature -40 ~ 85°C
- DIN Rail mounting or wall mounting
- IP30 rugged metal housing and Fanless
- Cable diagnostic, measuring cable normal or broken point distance
- Supports IEEE 1588 PTP V2 for precise time synchronization to operate in Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave mode by each port
- Provides 5 instances that each can support µ-Ring, µ-Chain or Sub-Ring type for flexible uses.
  (Please see CTC Union µ-Ring white paper for more details and more topology application)
- µ-Ring for Redundant Ethernet Ring, recovery time<10ms in 250 units
- Supports EMS Management

Specifications

Standard	IEEE 802.3	10Base-T 10Mbit/s Ethernet
	IEEE 802.3u	100Base-TX, 100Base-FX, Fast Ethernet
	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)
	IEEE 802.1Q	for VLAN Tagging
	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)

IEC 61850-3 Managed FE Switch

Standard	IEEE 802.3x	Flow Control and Back Pressure
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
	ITU-T G.8031 / Y.1342	EPS (Ethernet Protection Switching)
	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)
Switch Architecture	Back-plane (Switching Fabric): 7.6 Gbps (Full wire-speed)	
Data Processing	Store and Forward	
Flow Control:	IEEE 802.3x flow control, back pressure flow control	
Jumbo Frame	9.6KB	
IEEE 802.3ac	Max frame size extended to 1522Bytes (allow Q-tag in packet)	
MAC Address Table	8K	
Memory Buffer	512K Bytes for packet buffer	
Device Memory	16M Bytes Flash ROM, 128M Bytes RAM	
Network Connector	8x 10/100Base-TX RJ-45, Auto negotiation speed	
	Auto MDI/MDI-X function, Full/Half duplex	
	3x 100/1000Base-X dual speed mode SFP slot, support DDMI	
Console	RS-232 (RJ-45)	
Network Cable	UTP/STP Cat. 5e cable or above	
	EIA/TIA-568 100-ohm (100meter)	
Protocols	CSMA/CD	
LED	System: Power 1 (Green), Power 2 (Green), Fault (Amber) (-LL Model)	
	System: Power 1 (Green), Power 2 (Green), Power 3 (Green), Fault (Amber) (-HL Model)	
	UTP: 10/100 Link/Active: (Green)	
	SFP Slot: Link/Active (Green)	
Reverse Polarity Protection	Supported for Power Input	
Overload Current Protection	Supported	
CPU Watch Dog	Supported	
Power Input	Redundant 2x Isolated Low Voltage DC Input power (-LL Model)	
	Redundant 2x isolated Low Voltage DC and 1 High Voltage AC/DC input power (-HL Model)	
	Isolated Low Voltage DC : Isolated 24/48V (18~72VDC), Removable Terminal Block	
	High voltage AC/DC : Isolated 110/220VAC (85VAC~264VAC) or 110/220VDC (88~300VDC), Removable Terminal Block	
Power consumption		
Alarm Relay Contact	Relay outputs with current carrying capacity of 1A @24VDC	
Removable Terminal Block	Provides 2 redundant low volt power, alarm relay contact (6 Pin) (-LL Model)	
	Provides 2 redundant low volt power, alarm relay contact (6 Pin) , and High volt Power (2 Pin) (-HL Model)	
Operating Temperature	-40 ~ 85°C	
Operating Humidity	5% to 95% (Non-condensing)	
Storage Temperature	-40 ~ 85°C	
Housing	Rugged Metal, IP30 Protection and Fanless	
Dimension	106 x 82 x 152mm (D x W x H)	
Weight	0.885kg (IPS-803GSM-LL) 1.085kg (IPS-803GSM-HL)	
Installation mounting	DIN Rail mounting or wall mounting (Optional)	
MTBF	535,335 Hours (IPS-803GSM-LL) 411,311 Hours (IPS-803GSM-HL) (MIL-HDBK-217)	
Warranty	5 years	

Input Voltage	IPS-803GSM
110VAC	7.3 W
220VAC	7 W
24VDC	8W
48VDC	9.2 W

Certification	
EMC/EMS	CE (EN55024, EN55032)
EMI	FCC Part 15 Subpart B Class A
	EN55032 Class A
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 4, Criteria B
	EN61000-4-3 (RS) Level 4, Criteria A
	EN61000-4-4 (EFT) Level 4, Criteria A
	EN61000-4-5 (Surge) Level 4, Criteria B
	EN61000-4-6 (CS) Level 4, Criteria A
	EN61000-4-8 (Magnetic Field) Level 5, Criteria A
Safety	UL60950-1, EN60950-1
Power Substation	IEC 61850-3, IEEE 1613
Freefall	IEC 60068-2-32
Vibration	IEC 60068-2-6
Shock	IEC 60068-2-27

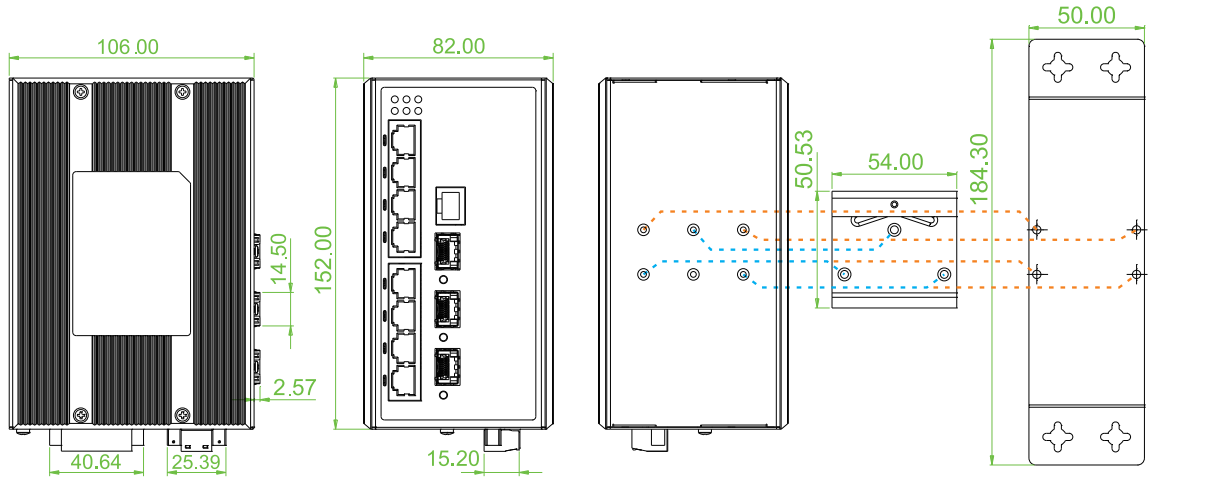
Software Specifications

Topology	
VLAN	IEEE 802.1q VLAN, up to 4094 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 (Ethernt, SNAP, LLC), up to 128 entries
	VLAN Translation, up to 256 entries
	MVR (Multiple VLAN Registration)
	GVRP (GARP VLAN Registration Protocol)
	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	IEEE 802.1D STP, IEEE 802.1w RSTP, IEEE 802.1s MSTP
Multiple u-Ring	Up to 5 instances that each supports u-Ring, u-Chain or Sub-Ring type for flexible uses, and maximum up to 5 Rings
	Recovery time <10ms
	Maximum 250 devices in a Ring
Loop Protection	Supported
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Convergence time <50ms
	Single Ring, Sub-Ring, Multiple ring topology network
ITU-T G.8031 / Y.1342 EPS (Ethernet Protection Switching)	Supported
QoS Feature	
Class of Service	IEEE 802.1p 8 active priorities queues for per port
GOOSE Message	Complies with IEC61850 standard to achieve zero packet loss
Traffic Classification QoS	IEEE 802.1p 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
Bandwidth Control for Ingress	Rate in steps : 1 kbps / Mbps / fps / kfps
	Range : 100 kbps to 1Gbps / 1fps to 3300kfps
	Rate Unit : bit or frame

Bandwidth Control for Egress	Rate in steps : 1 kbps / Mbps
	Range : 100 kbps to 1Gbps
	Rate Unit : bit
	Per queue / Port shaper
DiffServ (RF 2474) Remarking	
Storm Control	For Unicast, Broadcast and Multicast
IP Multicasting Feature	
IGMP / MLD Snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2 Supports 1022 IGMP groups, 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
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 RS-232 console
Management Features	
CLI	Cisco® like CLI
Web UI	Supported
Telnet	Server
SNMP	V1, V2c, V3
sFlow	Supported
Modbus/TCP	Supports 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	MIB II RFC1213, Private MIB
UPnP	Supported
DHCP	Server, Client, Relay, Relay option 82, Snooping
IP Source Guard	Supported
Port Mirroring	Supported
Event Syslog	Syslog server (RFC3164) (Support 1 server)
Warning Message	System Syslog, SMTP/ e-mail event message, alarm relay
DNS	Client, Proxy
IEEE 1588 PTP V2	Supports 5 operating mode in each port : Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master and Slave
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 SA/DA, Subnet L4: TCP/UDP
Others Features	
Green Ethernet	Supports IEEE 802.3az 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 UTP cable is normal or broken point distance

Dimensions



Ordering Information

Model Name	Managed	Total Port	RJ45	SFP	Redundant Input Power		Certification				
			10/100 Base-TX	100/1000 Base-X	Low Voltage 24/48VDC	High Voltage 110/220VDC/AC	IEC61850-3 IEEE 1613	UL60950-1 EN60950-1	EN50121-4	EN61000-6-2 EN61000-6-4	CE, FCC
IPS-803GSM-LL	V	11	8	3	2		V	V	V	V	V
IPS-803GSM-HL	V	11	8	3	2	1	V	V	V	V	V

Optional Accessories

■ Wall Mount Kit

IND-WMK02	Wall Mount kit for Industrial product (Wide) (184 x 50mm)

■ 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-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)
ISFP-T7T00-00-(E)	Industrial SFP 10/100/1000Base-T UTP 100meter, -10~70°C (-40~85°C)
ISFP-M5002-31-D(E)	Industrial SFP 155M 100Base-FX, MM, 2km, wave length 1310nm, 12dB, LC, DDMI, -10~70°C (-40~85°C)
ISFP-S5030-31-D(E)	Industrial SFP 155M 100Base-FX, SM, 30km, 1310nm, 19dB, LC, DDMI, -10~70°C (-40~85°C)