



EN50155 Industrial Ethernet Switches

CTC Union's ITP series has obtained EN50155 certification that meets EMC (Electromagnetic compatibility standard) requirements and EMS (Electromagnetic Susceptibility Protection) for surge, EFT, ESD, PFMF, DIP and other requirements. It is worth mentioning that the input voltage specification contains a requirement to deal with power interruptions. Conforming to EN61000-4-11 Voltage DIPs & Interrupts requirements, ITP's power supply can provide steady power without functional failures at interruptions of up to 10 ms. Additionally, ITP series can withstand environmental disturbances including vibration and shock variations (IEC-61373). Equipped with these features, ITP series is ideal for deployments in railways, buses, subways, high speed rails and other industrial environments.

Employing Rugged M12 Connectors

ITP series adopts compact and rugged M12 industry standard connectors for connectivity to ensure reliable operation for industrial applications especially exposing in environments with higher levels of vibration and shock. ITP series' M12 connectors are vibration, shock (IEC-61373) resistant and able to withstand extreme temperature and humidity. Therefore, they are popular for applications such as railways, buses or subways. The installation of M12 connectors is relatively easy and simple, just requiring direct M12 connection to vehicle systems. This quick and simple installation reduces installation and learning efforts to minimum.



Anti-vibration



Using IP67-Rated Housing to Protect against Dust, Oil and Water

CTC Union's EN50155 compliant Products are designed to be used in industrial and the harshest environments. With higher protection level - IP67 rating, they are able to protect against dust, oil and submission in water and to meet the most rigorous standards for extreme temperature, vibration, shock or humidity. EN50155 compliant products with M12 connectors and IP67 rating are purpose-built for automotive, manufacturing, oil, gas, mining and other industrial environments, requiring no extra housing protection.

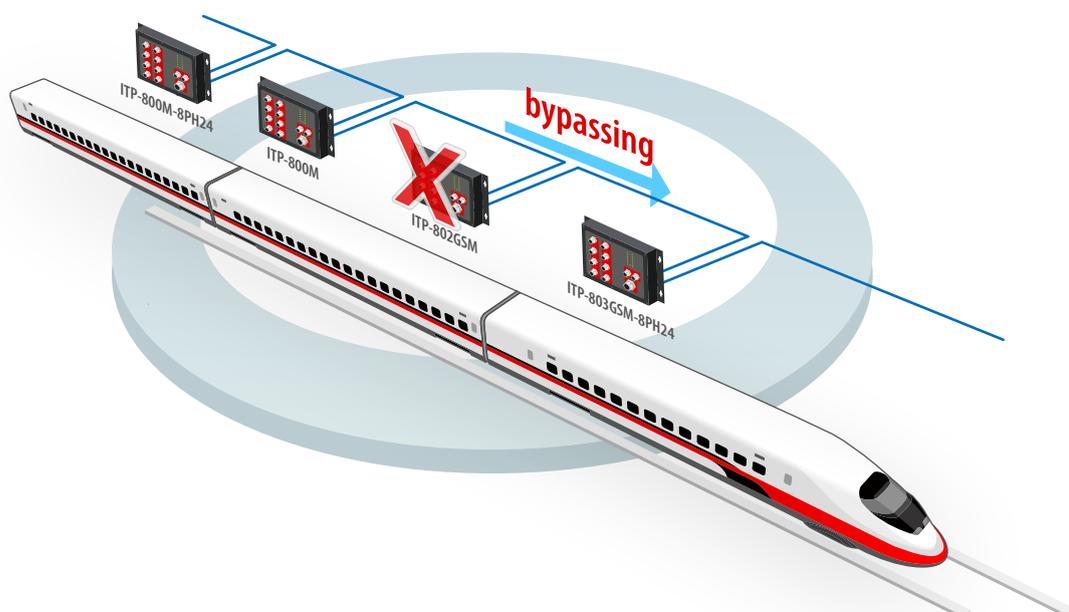


Supporting Power over Ethernet (PoE)

PoE capability enables PD devices such as surveillance cameras or wireless access points to be powered over standard twisted-pair Ethernet cable, eliminating the needs for requiring external power for PD devices. ITP products with PoE function are all fanless and designed in robust IP67 housing that make them suitable for din rail installation or wall mounting. Moreover, PoE models support IEEE 802.3af/802.3at standards which are able to provide up to 30W (use 50VDC or above) power supply per port. With power boost and regulation technology, PoE devices can offer 24~48V to 55V power supply for applications that need more power inputs.

Copper Interface Bypass Relay Function in Daisy Chain Topology

EN50155 compliant products offer two copper interfaces with auto bypass relay function in the event of sudden power loss particularly in daisy chain or linear topology structure. When power failure occurs in one of the switches on a train, bypass relay function can activate bypassing mechanism by interconnecting internal circuits automatically to ensure that links between carriages operate uninterruptedly and continuously. With this function, secure data transmission from terminals to backbone and higher network availability can be guaranteed.



NEW



ITP-500

EN50155 IP67 5x10/100Base-TX Ethernet Switch

ITP-800

EN50155 IP67 8x10/100Base-TX Ethernet Switch

The ITP-500 (ITP-800) Series non-managed Fast Ethernet switches provide 5(8)x 10/100Base-TX Fast Ethernet ports. This series of unmanaged Ethernet switches is designed for industrial applications in harsh environments. The ITP-500 (ITP-800) series switches Ethernet ports utilize M12 connectors to ensure tight, robust connections and guarantee reliable operation against environmental disturbances such as vibration and shock. The ITP-500 (ITP-800) series Ethernet switches are compliant with EN 50155, covering operating temperature, power input voltage, surge, ESD, vibration, and shock, thus making these switches suitable for industrial applications in vehicle, rolling stock and railways.

Features

- 8-Port 10/100Base-TX Ethernet Switch (ITP-800)
- 5-Port 10/100Base-TX Ethernet Switch (ITP-500)
- Use M12 connector anti vibration and shock for vehicle, rolling stock, and railway applications
- Supports flow control
- DIN rail or wall mounting installation
- Supports broadcast storm protection
- Supports auto-negotiation and auto-MDI/MDI-X
- Built in 2 bypass port (ITP-800)
- Redundant dual DC input power 12/24/48VDC (8.4~60VDC) (ITP-800)
- DC input power 12/24/48VDC (8.4~60VDC) (ITP-500)
- IP67 grade rugged housing for against water, dust, and oil
- Wide operating temperature -40~75°C (ITP-500-E, ITP-800-E)
- CE, FCC, EN50155 and EN50121-4 for railway certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified

Specifications

IEEE Standard	IEEE 802.3 10Base-T Ethernet IEEE 802.3u 100Base-TX Fast Ethernet IEEE802.3x Flow Control and Back Pressure		
Switch Architecture	Back-plane (Switching Fabric): 1Gbps (ITP-500) Back-plane (Switching Fabric): 1.6Gbps (ITP-800)		
Data Processing	Store and Forward		
Flow Control	IEEE 802.3x flow control, back pressure flow control		
Provides Broadcast Storm Protection	Present		
MAC Address Table	1 K		
Packet Buffer Size	448Kbits		
Network Connector	5x M12 D-code Female (ITP-500) 8x M12 D-code Female (ITP-800) 10/100Base-TX auto negotiation speed Auto MDI/MDI-X function Full/Half duplex Built in 2 bypass port (ITP-800)		
Network Cable	10Base-T: 2-pair UTP/STP Cat. 5e cable EIA/TIA-568 100-ohm (100m) 100Base-TX: 2-pair UTP/STP Cat. 5e cable EIA/TIA-568 100-ohm (100m)		
Protocols	CSMA/CD		
LED	Per unit: Power 1 (Green), Power 2 (Green) (ITP-800) Per unit: Power (Green) (ITP-500) Per port: Link/Active (Green)		
Reverse Polarity Protection	Present for power input		
Overload Current Protection	Present		
Power Supply	Redundant Dual DC 12/24/48V (8.4~60VDC) Input power (ITP-800) DC 12/24/48V (8.4~60VDC) Input power (ITP-500)		
Power	5 Pin Male A-Code M12		
Power Consumption	Input Voltage	ITP-500	ITP-800
	12VDC	0.8W	1.8W
	24VDC	1.0W	2.2W
	48VDC	1.9W	3.4W

Operating Temperature	-10°C~60°C (ITP-500, ITP-800) -40°C~75°C (ITP-500-E, ITP-800-E)	
Operating Humidity	5% to 95% (Non-condensing)	
Storage Temperature	-40°C~85°C	
Housing	IP67 water-proof grade rugged housing, and fanless	
Dimensions	43 x 30 x 206.5 mm (D x W x H) (ITP-500) 39 x 65.1 x 191.5 mm (D x W x H) (ITP-800)	
Weight	260g (ITP-500) 410g (ITP-800)	
Installation Mounting	DIN rail or wall mounting	
MTBF	309,668 Hours (ITP-500) 303,728 Hours (ITP-800) (MIL-HDBK-217)	
Warranty	5 years	
Certification		
EMC	CE	
EMI	FCC, FCC Part 15 Subpart B Class A CE EN 55022 Class A	
Railway Traffic	EN50155, 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 B 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 EN 61000-4-11 Voltage Dips EN 61000-4-12	
Safety	UL60950-1 (Pending)	
Shock	IEC 61373	
Freefall	IEC 60068-2-32	
Vibration	IEC 61373	

Application

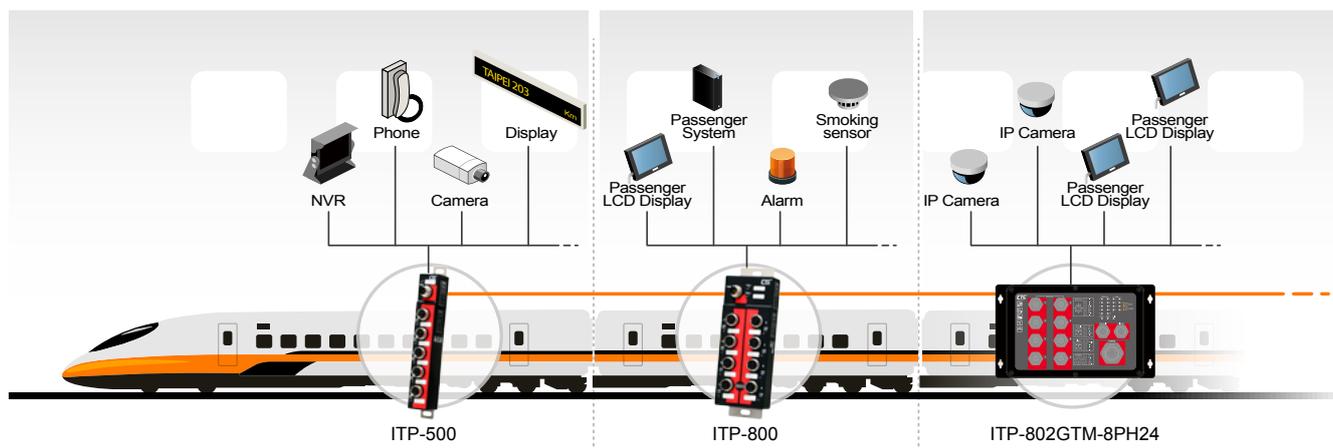


Figure 1 : ITP Series in Railway Application

5 EN50155 Unmanaged FE Switches



Figure 2 : IP67 Protection



Figure 3 : Wide Range Temperature



Figure 4 : ITP Series for Industrial Automation

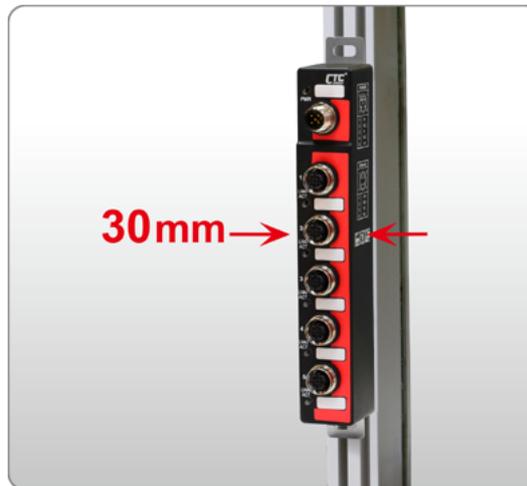
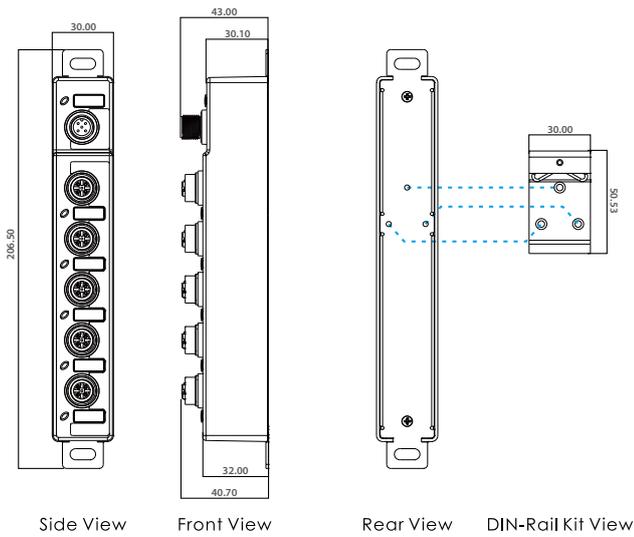


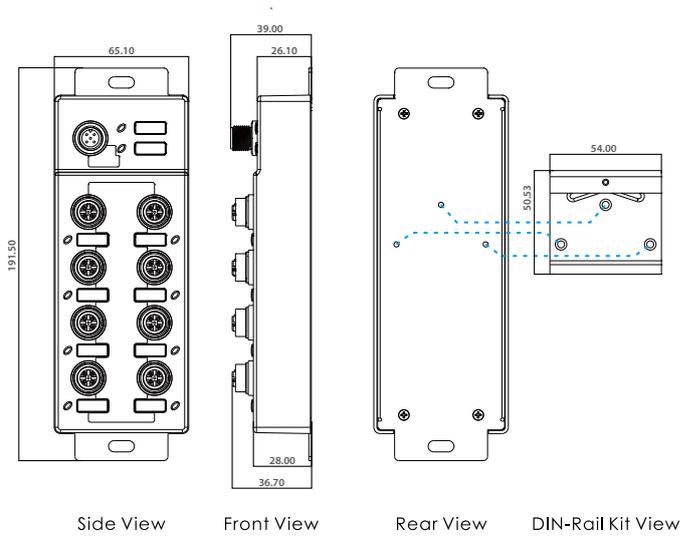
Figure 5 : Slim and Compact Size

Dimensions

ITP-500



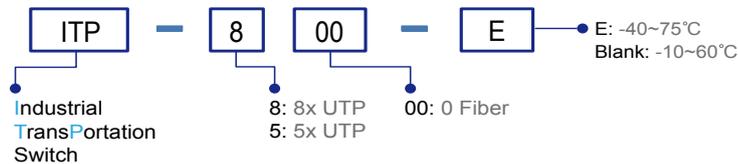
ITP-800



Ordering Information

Model Name	IP67	Total Port	UTP Port M12	Power Supply	Certification				Shock Vibration	Operating Temperature
					10/100 Base-TX	12/24/48VDC (8.4~60VDC)	EN50155	EN50121-4		
ITP-500	V	5	5	1	V	V	V	V	V	-10~60°C
ITP-500-E	V	5	5	1	V	V	V	V	V	-40~75°C
ITP-800	V	8	8	2	V	V	V	V	V	-10~60°C
ITP-800-E	V	8	8	2	V	V	V	V	V	-40~75°C

Model Naming Rule



Accessories

Power Supply

DR-4524 Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 48W, -10 ~ +50°C

MDR-40-24 Industrial Power, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70°C

M12 Cable

IND-M12DM4-Cable

M12 D-code Male (4-Pin) to RJ-45 socket, 300cm cable, IP67



IND-M12AF5-Cable

M12 A-code Female (5-Pin) +100cm cable, IP67



M12 Connector

IND-M12DM4-Connector

M12 D-code Male (4-Pin) connector, IP67



IND-M12AF5-Connector

M12 A-code Female (5-Pin) connector, IP67



Preliminary



ITP-G802SM

EN50155 IP67 Managed 8x10/100/1000Base-T + 2x100/1000Base-X SFP Ethernet Switch

ITP-G800M

EN50155 IP67 Managed 8x10/100/1000Base-T Ethernet Switch

ITP-G802SM series are managed industrial grade Gigabit switches and/or 2 SFP Gigabit/Fast Ethernet ports that provide stable and reliable Ethernet transmission. The ITP-G802SM series provide L2 management functions supported include STP/RSTP/MSTP/ ITU-T G.8032 Ring and multiple u-Ring for redundant cabling, layer 2 Ethernet IGMP, VLAN, QoS, Security, IPv6, bandwidth control, port mirroring, cable diagnostic and Green Ethernet.

Housed in rugged DIN rail or wall mountable enclosures, these switches are designed for the harshest environments. Especially, ITP-G802SM series switches use M12 connectors to ensure tight, robust connections and to guarantee reliable and anti environmental disturbances operation, such as vibration and shock. ITP-G802SM series are compliant with EN 50155, covering power input voltage, surge, EFT, ESD, vibration, shock, thus making the switches suitable for industrial applications, such as vehicle, rolling stock, ship, vessel.

ITP-G802SM series are IP67 rated to protect against dust and water submersion. They are particularly used in environments with extreme temperature, high humidity, oil, dust and in outdoor environments requiring water-proof applications such as automation, city security. ITP-G802SM series can also work with CTC Management platform SmartView to provide convenient, real-time and centralized network management.

Features

- 8x 10/100/1000Base-T M12 and 2x100/1000Base-X SFP Fiber (Total 10 Por) (ITP-G802SM)
- 8x 10/100/1000Base-T M12 (ITP-G800M)
- M12 and M23 connector against vibration and shock
- IP67 water proof design against dust and water
- Redundant and wide input range voltage, Low voltage (12/24/48VDC) and High Voltage (110/220VDC or 110/220VAC)
- UL60950-1, CE, FCC, Rail Traffic EN50155, EN50121-4 certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostic, Measuring cable OK or broken point distance
- Supports Green Ethernet IEEE802.3az EEE (Energy Efficient Ethernet) management to optimize the power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Protection Ring (EPR) for redundant cabling
- Provide up to 5 instances that each supports u-Ring, u-Chain or Sub-Ring type for flexible uses
- u-Ring for Redundant Cabling, recovery time < 10ms in 250 maximum devices
- DHCP 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
- 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 in case of upgrade failure
- Support IEEE1588 PTP V2 for precise time synchronization to operate in Master, Boundary, Slave mode by each port
- 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
- Provides SmartConfig for quick and easy mass configuration
- Supports SmartView for Centralized 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 802.3z	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)
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
	IEEE 802.1Q	Virtual LANs (VLAN)
	IEEE 802.1X	Port based and MAC based Network Access Control, Authentication
	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 802.3az	EEE (Energy Efficient Ethernet)	
VLAN ID	4094	IEEE802.1Q VLAN VID

Switch Architecture	Back-plane (Switching Fabric): 20Gbps (ITP-G802SM) 16Gbps (ITP-G800M)
Data Processing	Store and Forward
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode
Network Connector	8xM12 (8-Pin, Female, A-Code) 10/100/1000Base-T auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex Water proof Fiber Cable Gland support for 2 X 100/1000 Base-X dual speed mode SFP slot, with DDMI (for ITP-G802SM)
Console	RS-232 (5-pin A-Code M12 male)
Network Cable	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
Protocols	CSMA/CD
Reverse Polarity Protection	Present
Overload Current Protection	Present
CPU Watch Dog	Present
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Yellow) Per UTP port: 10/100 Link/Active (Green) 1000 Link/Active (Amber) SFP Fiber Per port: Link/Active (Green)
Jumbo Frame	9.6KB
MAC Address Table	8K
Memory Buffer	256K Bytes for packet buffer

Power Supply	Provide 1x M23 (5-Pin, male) for redundant dual input, optional Low or High voltage. Low voltage 12/24/48V (8.4~60VDC) , High voltage 110/220VDC (88~300VDC) , or 110/220VAC (88~265VAC)
Power Consumption	TBD
Warning Message	System Syslog, SMTP/ e-mail event message, alarm relay
Alarm Relay Contact	5-pin A-code M12 male Relay outputs with current carrying capacity of 1 A @24VDC
Operating Temperature	-10 ~ 60°C (ITP-G802SM, ITP-G800M) -40 ~ 75°C (ITP-G802SM-E, ITP-G800M-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP67 water proof protection, Fanless
Dimensions	70x240x168mm (D x W x H)
Weight	TBD
Installation Mounting	DIN Rail mounting or wall mounting
MTBF	TBD (MIL-HDBK-217)
Warranty	5 years

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 (Ethernet, SNAP, LLC), up to 128 entries VLAN Translation, up to 256 entries GVRP (GARP VLAN Registration Protocol) 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 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 The maximum number of devices allowed in a Ring supported ring is 250.
Loop Protection	Present
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
QoS Feature	
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	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 / Per port shaper
DiffServ (RF 2474) Remarking	
Storm Control	for Unicast, Broadcast, Multicast
IP Multicasting Feature	
IGMP / MLD Snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2 Port Filtering Profile, Throttling
IGMP / MLD Snooping	Fast Leave Maximum Multicast Group : up to 1022 entries Query / Static Router Port
Security Features	
IEEE 802.1X	Port-Based MAC-Based

Certification	
EMC	CE
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A, CE EN55022 Class A
Railway Traffic	EN50155, 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
Safety	UL60950-1 (Pending)
Shock	IEC-61373
Freefall	IEC 60068-2-32
Vibration	IEC-61373

ACL	Number of rules : up to 256 entries for L2 / L3 / L4
RADIUS authentication & accounting	
TACACS+ authentication & accounting, TACACS+ 3.0	
HTTPS, HTTP	
SSL / SSH v2	
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 CL
Web Based Management	
Telnet	Server
SNMP	V1, V2c, V3
SW & Configuration Upgrade	TFTP, HTTP Redundant firmware in case of upgrade failure
RMON	RMON I (1, 2, 3, 9 group), RMON II
MIB II	RFC 1213
DHCP	Client, Relay, Snooping, Snooping option 82, Relay option 82
IP Source Guard	
Port Mirroring	
Event Syslog	Syslog server (RFC3164) (Support 1 server)
Warning Message	System syslog, e-mail, alarm relay
DNS	Client, Proxy
IEEE1588 PTP V2	Master, Boundary, Slave Operating mode Operating in each port of these switch
NTP / SNTP	
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol LLDP-MED
IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
SNMP over IPv6	
HTTP over IPv6	
SSH over IPv6	
IPv6 Telnet Support	
IPv6 NTP / SNTP Support	
IPv6 TFTP Support	
IPv6 QoS	
IPv6 ACL	Number of rules: up to 256 entries L2 / L3 / L4
Others Features	
Green Ethernet	Supports IEEE802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption Determine the cable length and lowering the power for ports with short cables
Green Ethernet	Lower the power for a port when there is no link LED Power Management :Adjustment LEDs intensity
Cable Diagnostic	Measuring cable OK or broken point distance

Application

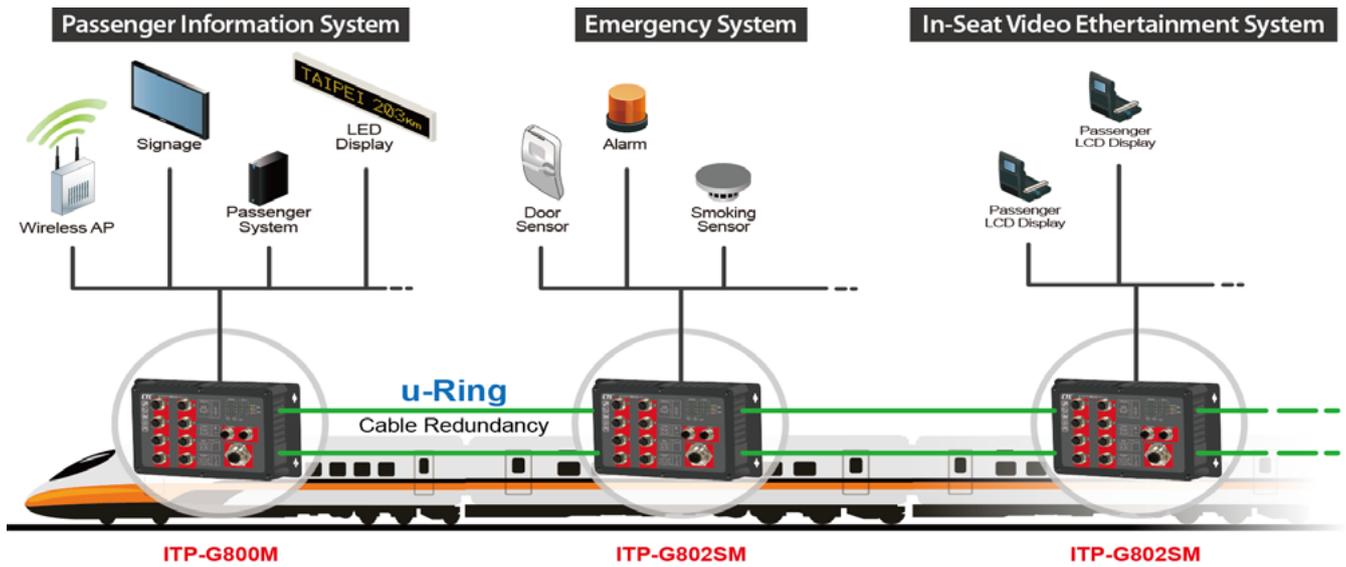


Figure 1 : ITP Series in Onboard Train Application

5 EN50155 Managed GbE Switches



Figure 2 : ITP Series for Industrial Automation

u-Ring Configuration Auto-refresh Refresh

Delete	Instance	Type	Master	East		West	
				Port	Edge	Port	Edge
Delete	1	u-Ring	<input type="checkbox"/>	1		2	
Delete	2	u-Ring	<input type="checkbox"/>	4		3	
Delete	3	u-Ring	<input type="checkbox"/>	10 (Fiber2)		11 (Fiber3)	
Delete	4	Sub-Ring	<input type="checkbox"/>	6			
Delete	5	u-Chain	<input type="checkbox"/>	5	<input type="checkbox"/>	9 (Fiber1)	<input type="checkbox"/>

Add New Instance

Save Reset

Figure 3 : An illustration of u-Ring instances configured in Web interface

Figure 4 : u-Ring Type

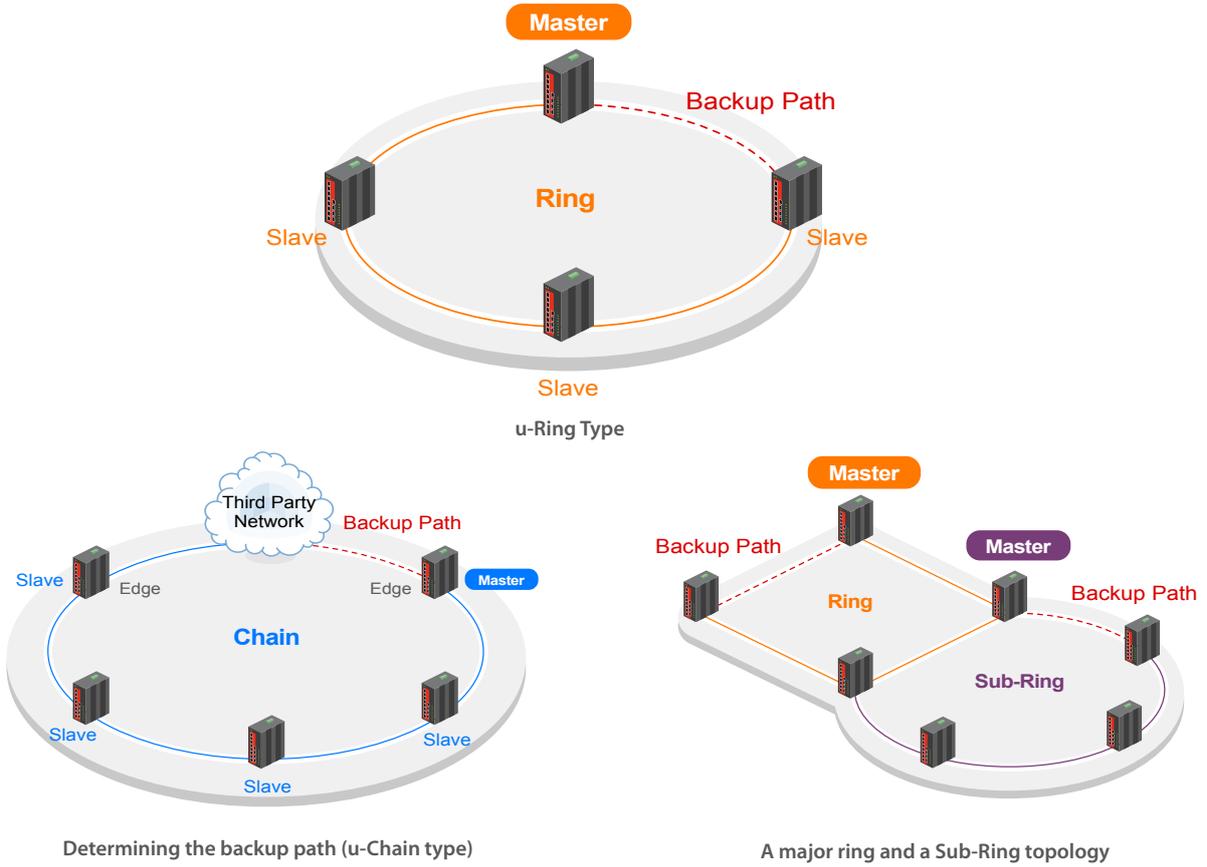
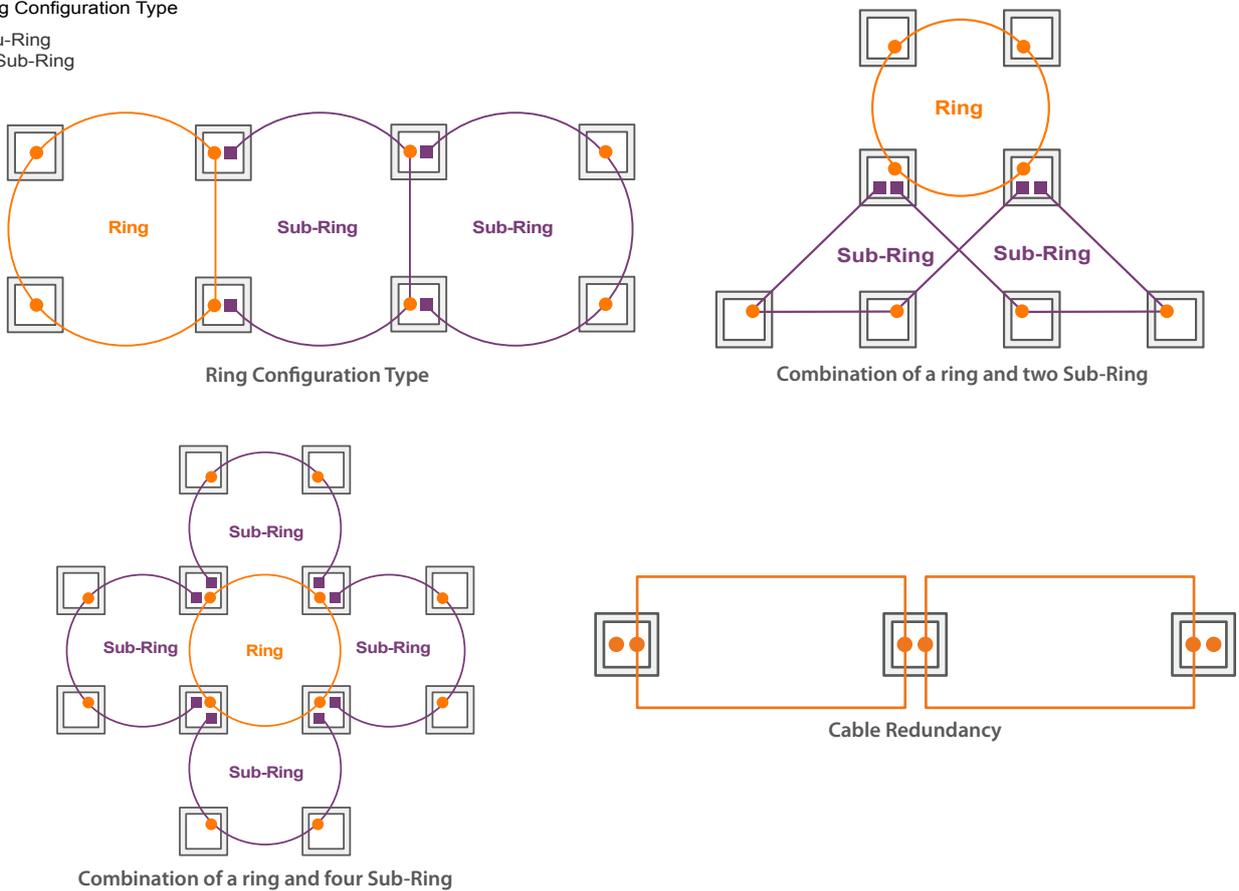


Figure 5 : Ring Configuration Example

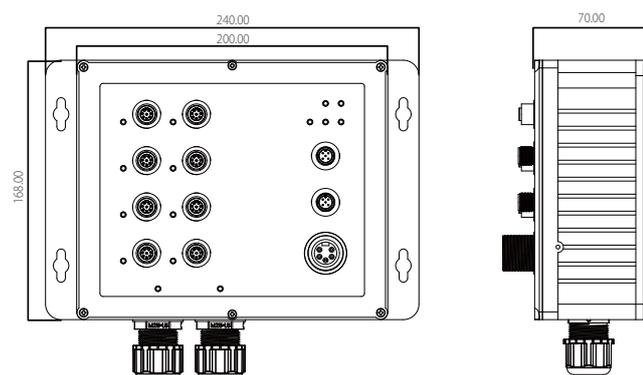
Ring Configuration Type

- u-Ring
- Sub-Ring

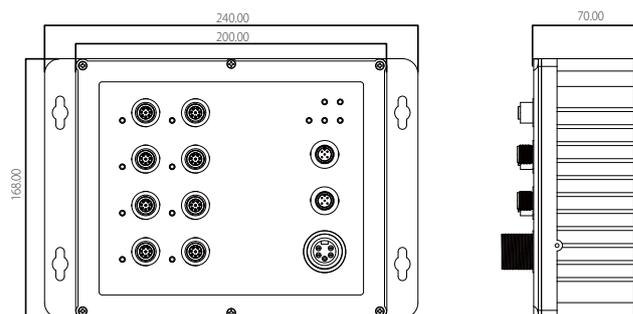


Dimensions

ITP-G802SM



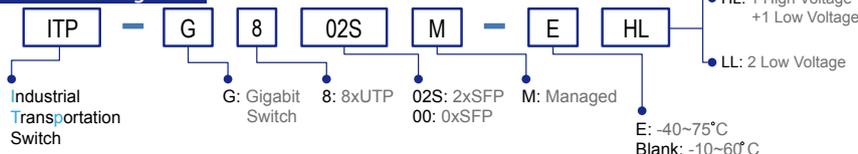
ITP-G800M



Ordering Information

Model Name	Managed	IP67	Total Port	UTP Port		Power Supply		Certification			Shock Vibration	Operating Temperature	
				10/100/1000 Base-T	100/1000 Base-X	Low Volt 12/24/48VDC (8.4~60VDC)	High Volt 110/220 VDC 110/220 VAC	EN50155 EN50121-4	UL60950-1	EN61000-6-2 EN61000-6-4			CE FCC
ITP-G802SM-LL	V	V	10	8	2 SFP	2	—	V	Plan	V	V	V	-10~60 C
ITP-G802SM-HL	V	V	10	8	2 SFP	1	1	V	Plan	V	V	V	-10~60 C
ITP-G802SM-ELL	V	V	10	8	2 SFP	2	—	V	Plan	V	V	V	-40~75 C
ITP-G802SM-EHL	V	V	10	8	2 SFP	1	1	V	Plan	V	V	V	-40~75 C
ITP-G800M-LL	V	V	8	8	—	2	—	V	Plan	V	V	V	-10~60 C
ITP-G800M-HL	V	V	8	8	—	1	1	V	Plan	V	V	V	-10~60 C
ITP-G800M-ELL	V	V	8	8	—	2	—	V	Plan	V	V	V	-40~75 C
ITP-G800M-EHL	V	V	8	8	—	1	1	V	Plan	V	V	V	-40~75 C

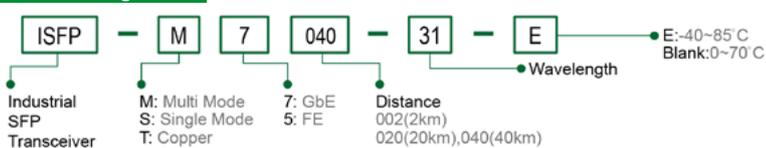
Model Naming Rule



Accessories

DRP-240-48	Industrial Power, Input 85 ~ 264VAC, Output 48VDC, 240W, -10 ~ +70°C
SFP Transceiver	Compatible, Reliable, 5-year Warranty

SFP Naming Rule



Preliminary



ITP-802GSM

EN50155 IP67 Managed 8x 10/100Base-TX + 2x100/1000Base-X SFP Ethernet Switch

ITP-802GTM

EN50155 IP67 Managed 8x 10/100Base-TX + 2x100/1000Base-X Ethernet Switch

ITP-800M

EN50155 IP67 Managed 8x 10/100Base-TX Eth, Switch

The ITP-802GSM series are managed industrial grade Gigabit switches and/or 2 SFP Gigabit/Fast Ethernet ports that provide stable and reliable Ethernet transmission. The ITP-802GSM series provide L2 management functions supported include STP/RSTP/MSTP/ ITU-T G.8032 Ring and multiple u-Ring for redundant cabling, layer 2 Ethernet IGMP, VLAN, QoS, Security, IPv6, bandwidth control, port mirroring, cable diagnostic and Green Ethernet.

Housed in rugged DIN rail or wall mountable enclosures, these switches are designed for the harshest environments. Especially, ITP-802GSM series switches use M12 connectors to ensure tight, robust connections and to guarantee reliable and anti environmental disturbances operation, such as vibration and shock. ITP-802GSM series are compliant with EN 50155, covering power input voltage, surge, EFT, ESD, vibration, shock, thus making the switches suitable for industrial applications, such as vehicle, rolling stock, ship, vessel. ITP-802GSM series are IP67 rated to protect against dust and water submersion. They are particularly used in environments with extreme temperature, high humidity, oil, dust and in outdoor environments requiring water-proof applications such as automation, city security. ITP-802GSM series can also work with CTC Management platform SmartView to provide convenient, real-time and centralized network management.

Features

- 8x 10/100Base-TX M12 and 2x 100/1000Base-X SFP Fiber (Total 10 Port) (ITP-802GSM)
- 8x 10/100Base-TX M12 and 2x 100/1000Base-X UTP (Total 10 Port) (ITP-802GTM)
- 8x 10/100Base-TX M12 (Total 8 Port) (ITP-800M)
- M12 and M23 connector against vibration and shock
- IP67 water proof design against dust and water
- Redundant and wide input range voltage, Low voltage (12/24/48VDC) and High Voltage (110/220VDC or 110/220VAC)
- UL60950-1, CE, FCC, Rail Traffic EN50155, EN50121-4 certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostic, Measuring cable OK or broken point distance
- Supports Green Ethernet IEEE802.3az EEE (Energy Efficient Ethernet) management to optimize the power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Protection Ring (EPR) for redundant cabling
- Provide up to 5 instances that each supports u-Ring, u-Chain or Sub-Ring type for flexible uses
- u-Ring for Redundant Cabling, recovery time < 10ms in 250 maximum devices
- DHCP 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
- 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 in case of upgrade failure
- Support IEEE1588 PTP V2 for precise time synchronization to operate in Master, Boundary, Slave mode by each port
- 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
- Provides SmartConfig for quick and easy mass configuration
- Supports SmartView for Centralized 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 802.3z	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)
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
	IEEE 802.1Q	Virtual LANs (VLAN)
	IEEE 802.1X	Port based and MAC based Network Access Control, Authentication
	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 802.3az	EEE (Energy Efficient Ethernet)	
VLAN ID	4094 IEEE802.1Q VLAN VID	
Switch Architecture	Back-plane (Switching Fabric): 5.6Gbps (ITP-802GSM, ITP-802GTM) 1.6Gbps (ITP-800M)	
Data Processing	Store and Forward	

Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode
Network Connector	8xM12 (4-Pin, Female,D-Code) 10/100Base-TX UTP , Auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex. 2x M12 (8-Pin, Female,A-Code) 10/100/1000Base-T UTP (ITP-802GTM) Water proof Fiber Cable Gland support for 2 X 100/1000 Base-X dual speed mode SFP slot, with DDMI (ITP-802GSM) Build-in 2 bypass port (ITP-802GTM)
Console	RS-232 (5-pin A-Code M12 male)
Network Cable	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
Protocols	CSMA/CD
Reverse Polarity Protection	Present
Overload Current Protection	Present
CPU Watch Dog	Present
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Yellow) Per UTP port: 10/100 Link/Active (Green) 1000 Link/Active (Amber) SFP Fiber Per port: Link/Active (Green)
Jumbo Frame	9,6KB
MAC Address Table	8K
Memory Buffer	256K Bytes for packet buffer

Power Supply	Provide 1x M23 (5-Pin, male) for redundant dual input, optional Low or High voltage. Low voltage 12/24/48V (8.4~60VDC) , High voltage 110/220VDC (88~300VDC) , or 110/220VAC (88~265VAC)
Power Consumption	TBD
Warning Message	System Syslog, SMTP/ e-mail event message, alarm relay
Alarm Relay Contact	5-pin A-code M12 male Relay outputs with current carrying capacity of 1 A @24VDC
Operating Temperature	-10 ~ 60°C (ITP-802GSM, ITP-802GTM, ITP-800M) -40 ~ 75°C (ITP-802GSM-E, ITP-802GTM-E, ITP-800M-E)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP67 water proof protection, Fanless
Dimensions	70x240x168mm (D x W x H)
Weight	TBD
Installation Mounting	DIN Rail mounting or wall mounting
MTBF	TBD (MIL-HDBK-217)
Warranty	5 years

Software Specifications

Topology	
VLAN	IEEE 802.1q VLAN, up to 4094 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 GVRP (GARP VLAN Registration Protocol) 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 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 The maximum number of devices allowed in a Ring supported ring is 250.
Loop Protection	Present
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
QoS Feature	
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	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 / Per port shaper
DiffServ (RF 2474) Remarkng	
Storm Control	for Unicast, Broadcast, Multicast
IP Multicasting Feature	
IGMP / MLD Snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2 Port Filtering Profile, Throttling
IGMP / MLD Snooping	Fast Leave Maximum Multicast Group : up to 1022 entries Query / Static Router Port
Security Features	
IEEE 802.1X	Port-Based MAC-Based

Certification	
EMC	CE
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A, CE EN55022 Class A
Railway Traffic	EN50155, 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
Safety	UL60950-1 (Pending)
Shock	IEC-61373
Freefall	IEC 60068-2-32
Vibration	IEC-61373

ACL	Number of rules : up to 256 entries for L2 / L3 / L4
RADIUS authentication & accounting	
TACACS+ authentication & accounting, TACACS+ 3.0	
HTTPS, HTTP	
SSL / SSH v2	
User Name Password Authentication	Local Authentication
Authentication	Remote Authentication (via RADIUS / TACACS+)
Management Interface Access Filtering	
Management Features	
CLI	Cisco® like CLI
Web Based Management	
Telnet	Server
SNMP	V1, V2c, V3
SW & Configuration Upgrade	TFTP, HTTP Redundant firmware in case of upgrade failure
RMON	RMON I (1, 2, 3, 9 group), RMON II
MIB II	RFC 1213
DHCP	Client, Relay, Snooping Snooping option 82, Relay option 82
IP Source Guard	
Port Mirroring	
Event Syslog	Syslog server (RFC3164) (Support 1 server)
Warning Message	System syslog, e-mail, alarm relay
DNS	Client, Proxy
IEEE1588 PTP V2	Master ,Boundary, Slave Operating mode Operating in each port of these switch
NTP / SNTP	
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol LLDP-MED
IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
SNMP over IPv6	
HTTP over IPv6	
SSH over IPv6	
IPv6 Telnet Support	
IPv6 NTP / SNTP Support	
IPv6 TFTP Support	
IPv6 QoS	
IPv6 ACL	Number of rules: up to 256 entries L2 / L3 / L4
Others Features	
Green Ethernet	Supports IEEE802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption Determine the cable length and lowering the power for ports with short cables
Green Ethernet	Lower the power for a port when there is no link LED Power Management :Adjustment LEDs intensity
Cable Diagnostic	Measuring cable OK or broken point distance

Application

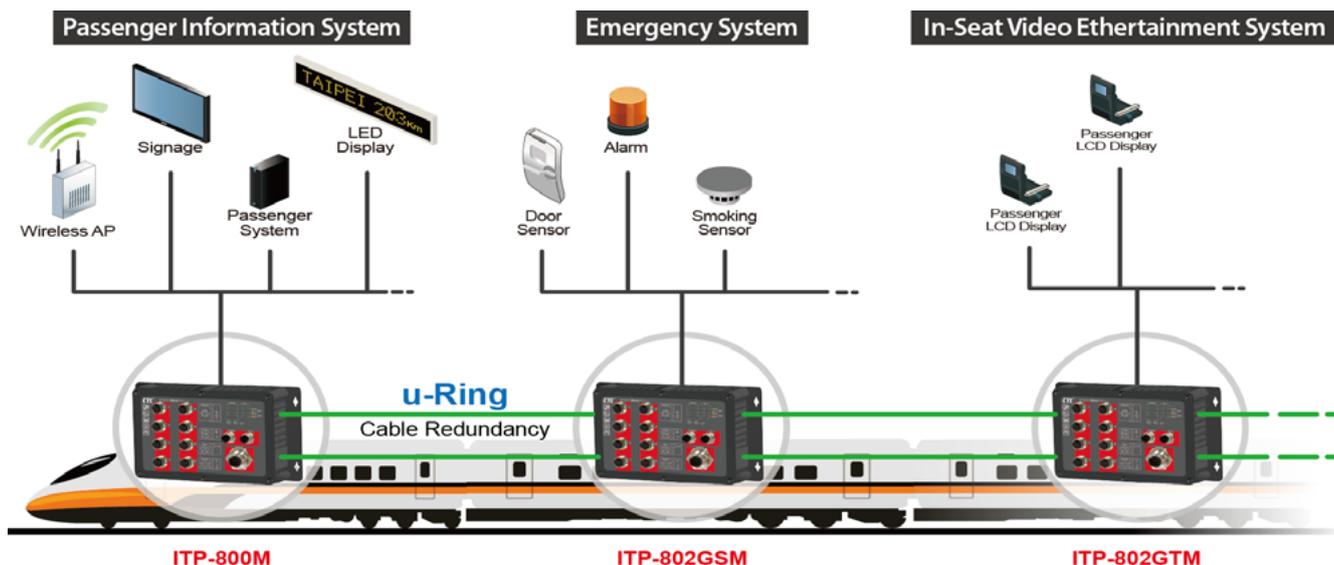


Figure 1 : ITP Series in Onboard Train Application



Figure 2 : ITP Series for Industrial Automation

u-Ring Configuration Auto-refresh Refresh

Delete	Instance	Type	Master	East		West	
				Port	Edge	Port	Edge
Delete	1	u-Ring	<input type="checkbox"/>	1		2	
Delete	2	u-Ring	<input type="checkbox"/>	4		3	
Delete	3	u-Ring	<input type="checkbox"/>	10 (Fiber2)		11 (Fiber3)	
Delete	4	Sub-Ring	<input type="checkbox"/>	6			
Delete	5	u-Chain	<input type="checkbox"/>	5	<input type="checkbox"/>	9 (Fiber1)	<input type="checkbox"/>

Add New Instance

Save Reset

Figure 3 : An illustration of u-Ring instances configured in Web interface

Figure 4 : u-Ring Type

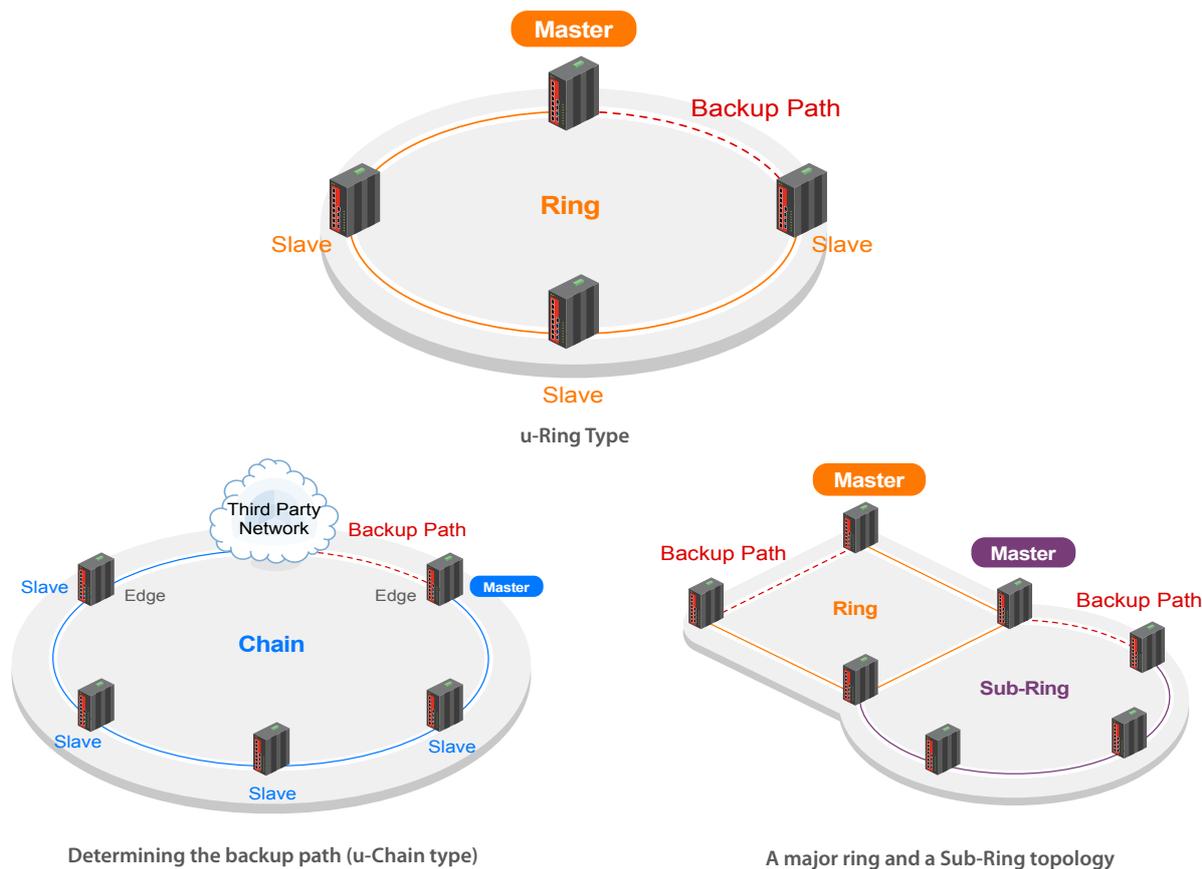
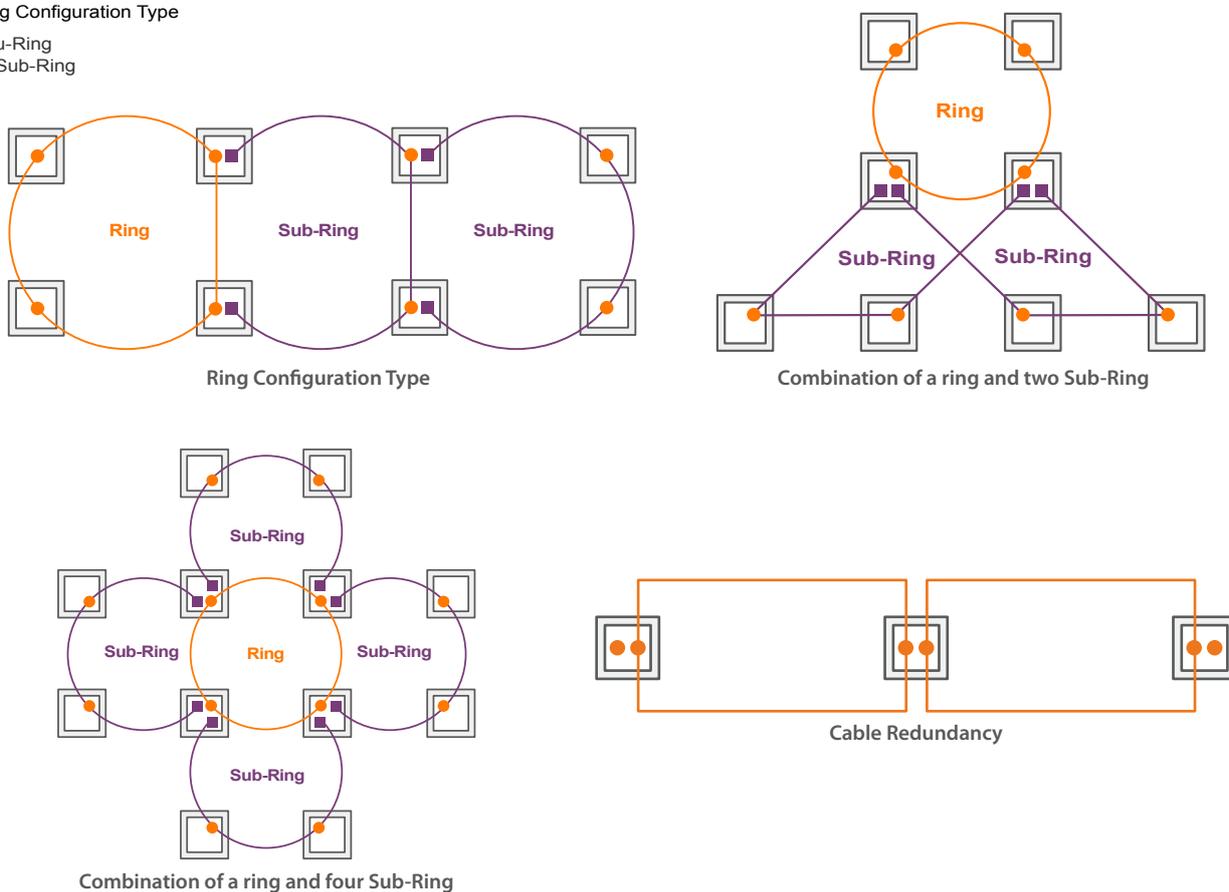


Figure 5 : Ring Configuration Example

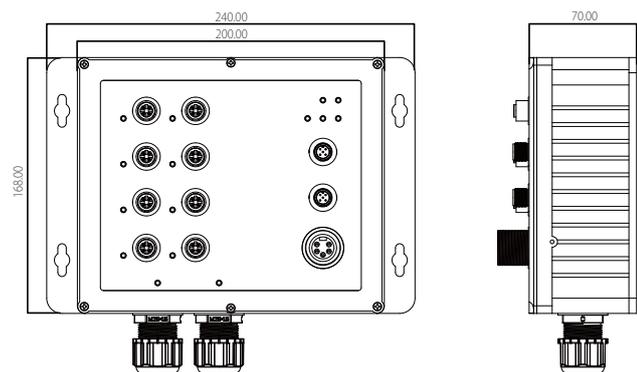
Ring Configuration Type

- u-Ring
- Sub-Ring

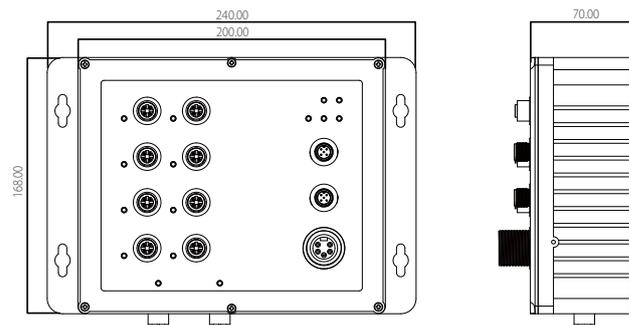


Dimensions

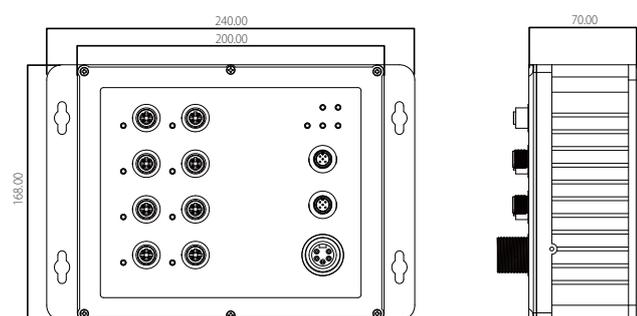
ITP-802GSM



ITP-802GTM



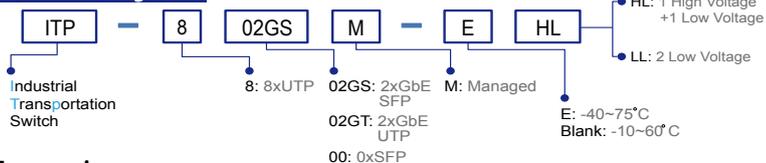
ITP-800M



Ordering Information

Model Name	Managed	IP67	Total Port	UTP Port M12 10/100 Base-TX	Gigabit Port	Power Supply		Certification			Shock Vibration IEC61373	Operating Temperature	
						Low Volt 12/24/48VDC (8.4~60VDC)	High Volt 110/220 VDC 110/220 VAC	EN50155 EN50121-4	UL60950-1	EN61000-6-2 EN61000-6-4			CE FCC
ITP-802GSM-LL	V	V	10	8	2 SFP	2	—	V	Plan	V	V	V	-10~60 C
ITP-802GSM-HL	V	V	10	8	2 SFP	1	1	V	Plan	V	V	V	-10~60 C
ITP-802GSM-ELL	V	V	10	8	2 SFP	2	—	V	Plan	V	V	V	-40~75 C
ITP-802GSM-EHL	V	V	10	8	2 SFP	1	1	V	Plan	V	V	V	-40~75 C
ITP-802GTM-LL	V	V	10	8	2 UTP	2	—	V	Plan	V	V	V	-10~60 C
ITP-802GTM-HL	V	V	10	8	2 UTP	1	1	V	Plan	V	V	V	-10~60 C
ITP-802GTM-ELL	V	V	10	8	2 UTP	2	—	V	Plan	V	V	V	-40~75 C
ITP-802GTM-EHL	V	V	10	8	2 UTP	1	1	V	Plan	V	V	V	-40~75 C
ITP-800M-LL	V	V	10	8	—	2	—	V	Plan	V	V	V	-10~60 C
ITP-800M-HL	V	V	10	8	—	1	1	V	Plan	V	V	V	-10~60 C
ITP-800M-ELL	V	V	10	8	—	2	—	V	Plan	V	V	V	-40~75 C
ITP-800M-EHL	V	V	10	8	—	1	1	V	Plan	V	V	V	-40~75 C

Model Naming Rule

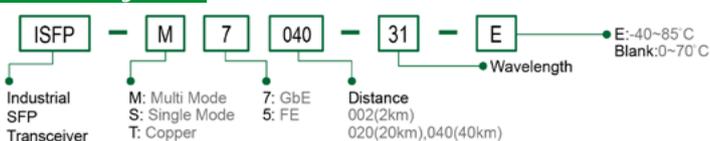


Accessories

DRP-240-48 Industrial Power, Input 85 ~ 264VAC, Output 48VDC, 240W, -10 ~ +70°C

SFP Transceiver Compatible, Reliable, 5-year Warranty

SFP Naming Rule



Preliminary



180 Watts,
24V Booster

ITP-G802SM-8PH24

EN50155 IP67 Managed 8x10/100/1000Base-T + 2x100/1000Base-X SFP with 8x PoE+ Ethernet Switch

ITP-G800M-8PH24

EN50155 IP67 Managed 8x10/100/1000Base-T with 8x PoE+ Ethernet Switch



ITP-G802SM-8PH24 series are managed industrial grade Gigabit PoE (Power over Ethernet) switches with 8x 10/100/1000Base-T PoE ports and/or 2 SFP Gigabit/Fast Ethernet ports that provide stable and reliable Ethernet transmission. ITP-G802SM-8PH24 series equipped with PoE feature enable power and data to be transferred via a single cable, hereby considerably reducing cabling expense. ITP-G802SM-8PH24 series also provide a variety of functions to manage PoE operation including PoE device auto-checking, auto reset, PoE power weekly scheduling. Other L2 management functions supported include STP/RSTP/MSTP/ ITU-T G.8032 Ring and multiple u-Ring for redundant cabling, layer 2 Ethernet IGMP, VLAN, QoS, Security, IPv6, bandwidth control, port mirroring, cable diagnostic and Green Ethernet.

Housed in rugged DIN rail or wall mountable enclosures, these switches are designed for the harshest environments. Especially, ITP-G802SM-8PH24 series switches use M12 connectors to ensure tight, robust connections and to guarantee reliable and anti environmental disturbances operation, such as vibration and shock. ITP-G802SM-8PH24 series are compliant with EN 50155, covering power input voltage, surge, EFT, ESD, vibration, shock, thus making the switches suitable for industrial applications, such as vehicle, rolling stock, ship, vessel.

ITP-G802SM-8PH24 series are IP67 rated to protect against dust and water submersion. They are particularly used in environments with extreme temperature, high humidity, oil, dust and in outdoor environments requiring water-proof applications such as IP surveillance, city security. ITP-G802SM-8PH24 series can also work with CTC Management platform SmartView to provide convenient, real-time and centralized network management.

Features

- 8x 10/100/1000Base-T M12 and 2x 100/1000Base-X SFP Fiber (Total 10 Port) (ITP-G802SM-8PH24)
- 8x 10/100/1000Base-T M12 (ITP-G800M-8PH24)
- M12 and M23 connector against vibration and shock
- IP67 water proof design against dust and water
- 24/48VDC redundant dual input power, and built-in power booster design upto 55 VDC for PoE output
- Constant and regulated PoE output voltage at 55VDC
- Provides 8-port IEEE802.3af / 802.3at PoE output (30W per Port)
- Maximum PoE output power budget 180W
- Advanced PoE Management, PoE PD Failure Auto Checking and auto reset, PoE configuration for power planning, weekly scheduling
- UL60950-1, CE, FCC, Rail Traffic EN50155, EN50121-4 certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostic, Measuring cable OK or broken point distance
- Supports Green Ethernet IEEE802.3az EEE (Energy Efficient Ethernet) management to optimize the power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Protection Ring (EPR) for redundant cabling
- Provide up to 5 instances that each supports u-Ring, u-Chain or Sub-Ring type for flexible uses
- u-Ring for Redundant Cabling, recovery time < 10ms in 250 maximum devices
- DHCP 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
- 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 in case of upgrade failure
- Support IEEE1588 PTP V2 for precise time synchronization to operate in Master, Boundary, Slave mode by each port
- 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
- Provides SmartConfig for quick and easy mass configuration
- Supports SmartView for Centralized 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 802.3z	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)
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
	IEEE 802.1Q	Virtual LANs (VLAN)
	IEEE 802.1X	Port based and MAC based Network Access Control, Authentication
	IEEE 802.3ad	Link aggregation for parallel links with LACP(Link Aggregation Control Protocol)
	IEEE 802.3x	Flow control for Full Duplex
	IEEE 802.3af	PoE (Power over Ethernet)
	IEEE 802.3at	PoE+ (Power over Ethernet enhancements)
	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)

VLAN ID	4094 IEEE802.1Q VLAN VID
Switch Architecture	Back-plane (Switching Fabric): 20Gbps (ITP-G802SM-8PH24) 16Gbps (ITP-G800M-8PH24)
Data Processing	Store and Forward
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode
PoE RJ-45 Pin Assignment	8x M12 (8-Pin A-code Female) ports support IEEE 802.3af / IEEE 802.3at End-Span, Alternative A mode. Positive (V+) : M12 pin 4,6 Negative (V-) : M12 pin 5,7. Data (1,2,3,4,5,6,7,8)
Network Connector	8xM12 (8-Pin, Female,A-Code) 10/100/1000Base-T auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex Water proof Fiber Cable Gland support for 2 X 100/1000 Base-X dual speed mode SFP slot, with DDMI (for ITP-G802SM-8PH24)
Console	RS-232 (5-pin A-Code M12 male)
Network Cable	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
Protocols	CSMA/CD
Reverse Polarity Protection	Present

Overload Current Protection	Present
CPU Watch Dog	Present
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Yellow) Per UTP port: 10/100 Link/Active (Green) 1000 Link/Active (Amber) SFP Fiber Per port: Link/Active (Green) PoE Port LED 1 LED /per Port : <ul style="list-style-type: none"> • PoE Output Power On : ON (Green) • PoE Fault (Over Load, Short Circuit, Port failed at Startup) : Flash 1times /sec (Green) • PoE Output Power Off : Off (Green)
Jumbo Frame	9.6KB
MAC Address Table	8K
Memory Buffer	256K Bytes for packet buffer
PoE Standard	IEEE802.3af, IEEE802.3at
PoE Power Output	Maximum PoE output power budget 180W (30W/per port) Regulated PoE output voltage at 55VDC
Power Supply	Provide 1x M23 (5-Pin, male) for redundant dual DC 24/48V (20~57VDC) input power Built-in power booster design up to 55 VDC for PoE output
Power Consumption	TBD
Warning Message	System Syslog, SMTP/ e-mail event message, alarm relay
Alarm Relay Contact	5-pin A-code M12 male Relay outputs with current carrying capacity of 1 A @24VDC
Operating Temperature	-10 ~ 60°C (ITP-G802SM-8PH24 , ITP-G800M-8PH24) -40 ~ 75°C (ITP-G802SM-8PHE24 , ITP-G800M-8PHE24)
Operating Humidity	5% to 95% (Non-condensing)
Storage Temperature	-40 ~ 85°C

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(Ethernet, SNAP, LLC), up to 128 entries VLAN Translation, up to 256 entries GVRP (GARP VLAN Registration Protocol) 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 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 The maximum number of devices allowed in a Ring supported ring is 250.
Loop Protection	Present
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
QoS Feature	
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	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 / Per port shaper
DiffServ (RF 2474) Remarkings	
Storm Control	for Unicast, Broadcast, Multicast
IP Multicasting Feature	
IGMP / MLD Snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2 Port Filtering Profile, Throttling

Housing	Rugged Metal, IP67 water proof protection, Fanless
Dimensions	70x240x168mm (D x W x H)
Weight	TBD
Installation Mounting	DIN Rail mounting or wall mounting
MTBF	TBD (MIL-HDBK-217)
Warranty	5 years
Certification	
EMC	CE
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A, CE EN55022 Class A
Railway Traffic	EN50155, 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
Safety Shock	UL60950-1 (Pending) IEC-61373
Freefall	IEC 60068-2-32
Vibration	IEC-61373

IGMP / MLD Snooping	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

RADIUS authentication & accounting	
TACACS+ authentication & accounting, TACACS+ 3.0	
HTTPS, HTTP	
SSL / SSH v2	
User Name	Local Authentication
Password Authentication	Remote Authentication (via RADIUS / TACACS+)
Management Interface Access Filtering	Web, Telnet / SSH , CLI RS-232 console

Management Features	
CLI	Cisco® like CLI
Web Based Management	
Telnet	Server
SNMP	V1, V2c, V3
SW & Configuration Upgrade	TFTP, HTTP Redundant firmware in case of upgrade failure
RMON	RMON I (1, 2, 3, 9 group), RMON II
MIB II	RFC 1213
DHCP	Client, Relay, Snooping Snooping option 82, Relay option 82

IP Source Guard	
Port Mirroring	
Event Syslog	Syslog server (RFC3164) (Support 1 server)
Warning Message	System syslog, e-mail, alarm relay
DNS	Client, Proxy
IEEE1588 PTP V2	Master, Boundary, Slave Operating mode Operating in each port of these switch

NTP / SNTP	Link Layer Discovery Protocol
LLDP (IEEE 802.1ab)	LLDP-MED

IPv6 Features	
IPv6 Management	Telnet Server/ICMP v6
SNMP over IPv6	
HTTP over IPv6	
SSH over IPv6	

IPv6 Telnet Support	
IPv6 NTP / SNTP Support	
IPv6 TFTP Support	
IPv6 QoS	
IPv6 ACL	Number of rules: up to 256 entries L2 / L3 / L4
Others Features	
Green Ethernet	Supports IEEE802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption Determine the cable length and lowering the power for ports with short cables

Green Ethernet	Lower the power for a port when there is no link LED Power Management :Adjustment LEDs intensity
Cable Diagnostic	Measuring cable OK or broken point distance
Advanced PoE Management	PoE PD Failure Auto Checking, and Auto reset when PD fail PoE Scheduling (On/Off schedule weekly) PoE Configuration PoE Enable/Disable Power limit by classification Power limit by management Total PoE Power budget (maximum 180W) limitation Power feeding priority

Application

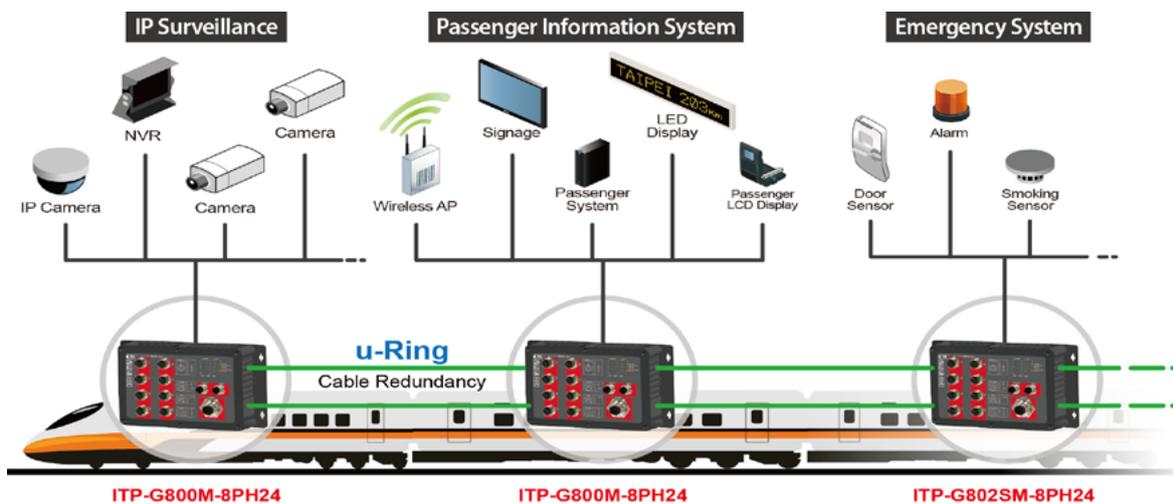


Figure 1 : ITP Series in Onboard Train Application

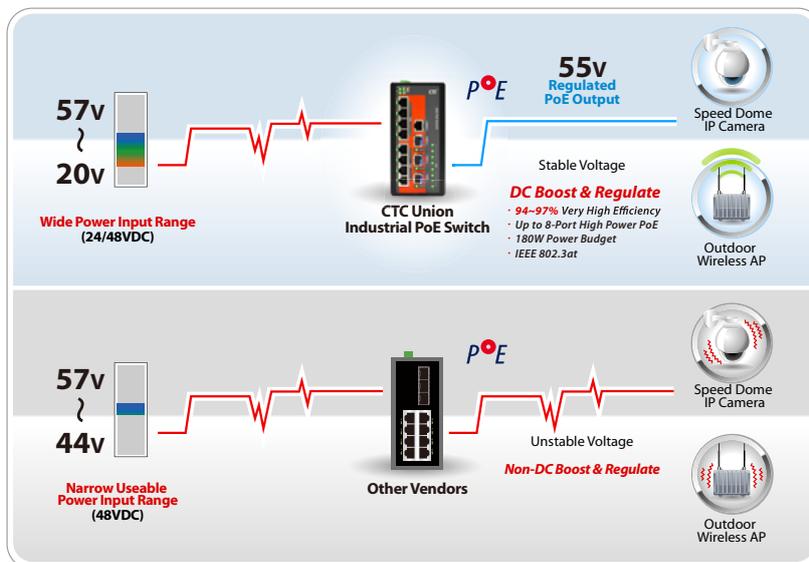


Figure 2 : PoE Core Technology



Figure 3 : ITP Series for Industrial Automation

u-Ring Configuration Auto-refresh Refresh

Delete	Instance	Type	Master	East		West	
				Port	Edge	Port	Edge
Delete	1	u-Ring	<input type="checkbox"/>	1		2	
Delete	2	u-Ring	<input type="checkbox"/>	4		3	
Delete	3	u-Ring	<input type="checkbox"/>	10 (Fiber2)		11 (Fiber3)	
Delete	4	Sub-Ring	<input type="checkbox"/>	6			
Delete	5	u-Chain	<input type="checkbox"/>	5	<input type="checkbox"/>	9 (Fiber1)	<input type="checkbox"/>

Add New Instance

Save Reset

Figure 4 : An illustration of u-Ring instances configured in Web interface

Figure 5 : u-Ring Type

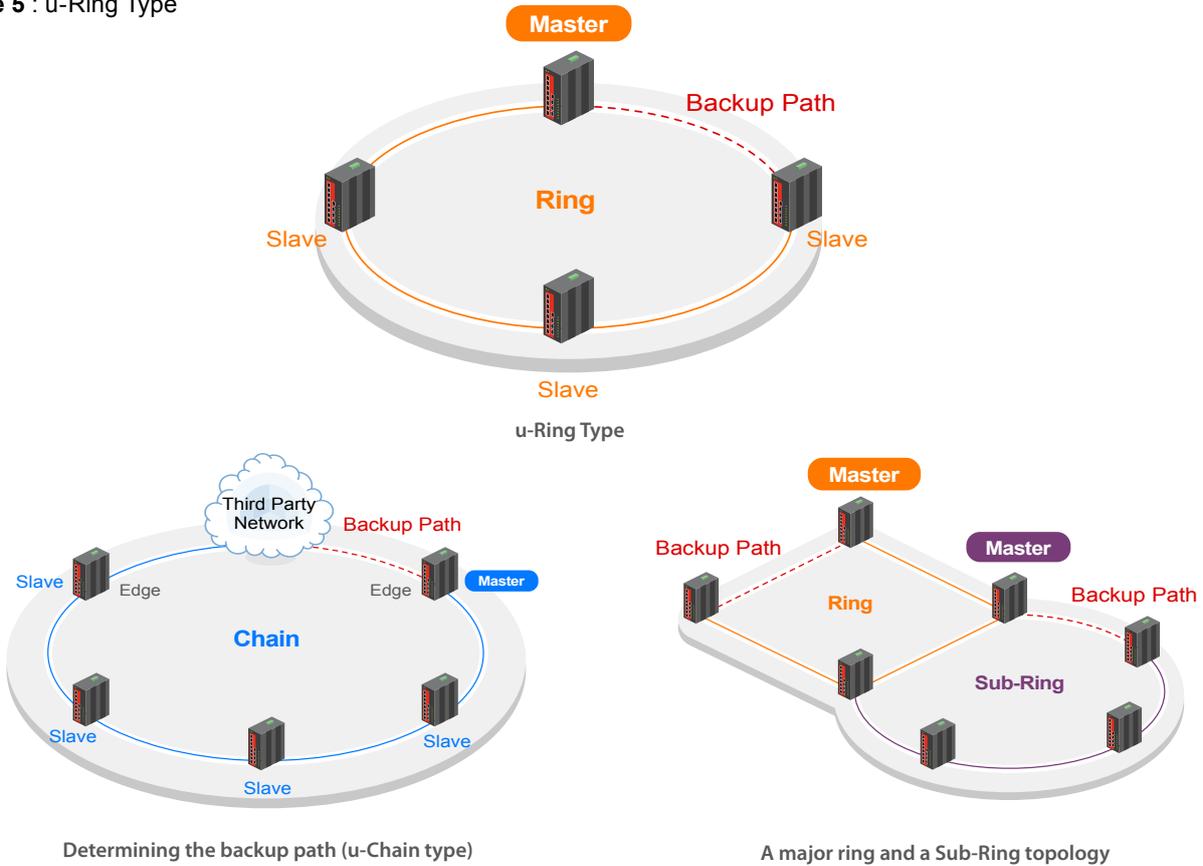
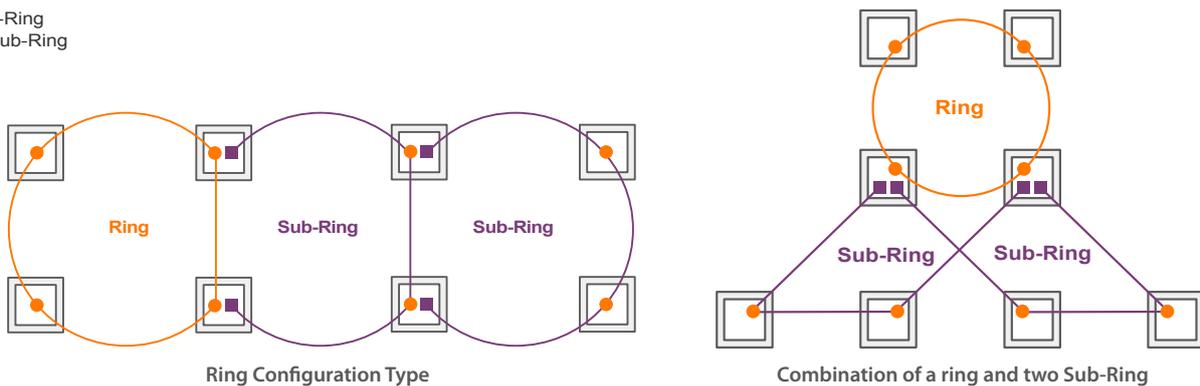
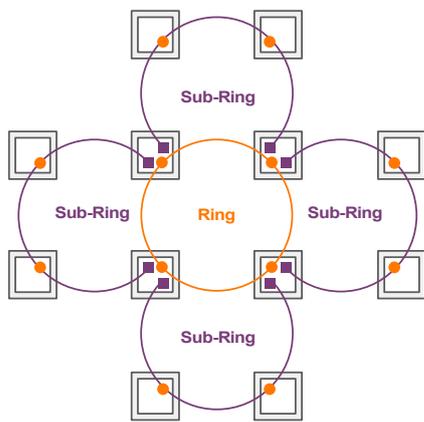


Figure 6 : Ring Configuration Example

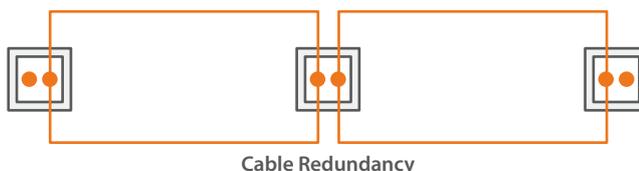
Ring Configuration Type

- u-Ring
- Sub-Ring





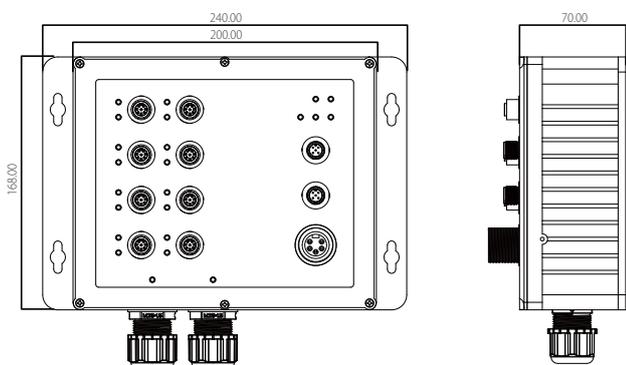
Combination of a ring and four Sub-Ring



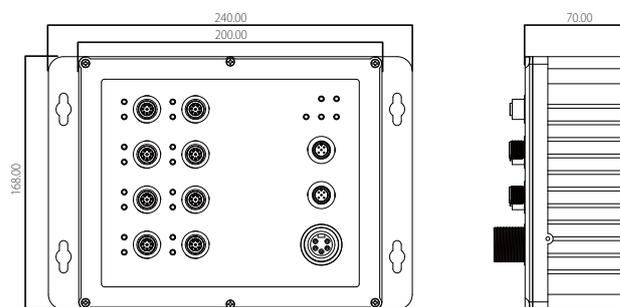
Cable Redundancy

Dimensions

ITP-G802SM-8PH24



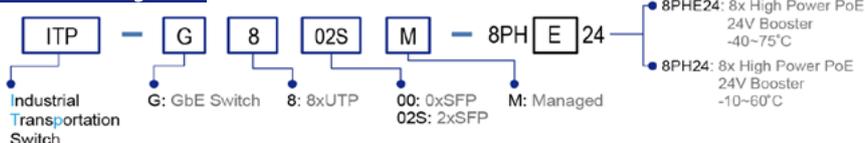
ITP-G800M-8PH24



Ordering Information

Model Name	Managed	IP67	Total Port	UTP Port M12 10/100/1000 Base-T	Fiber Port 100/1000 Base-X	PoE Port IEEE 802.3at	PoE Total Power Budget	Input Voltage 24/48 VDC (20~57 VDC)	Certification				Shock Vibration IEC61373	Operating Temperature
									EN50155 EN50121-4	UL60950-1	EN61000-6-2 EN61000-6-4	CE FCC		
ITP-G802SM-8PH24	V	V	10	8	2 SFP	8	180W	V	V	Plan	V	V	V	-10~60 °C
ITP-G802SM-8PHE24	V	V	10	8	2 SFP	8	180W	V	V	Plan	V	V	V	-40~75 °C
ITP-G800M-8PH24	V	V	8	8	—	8	180W	V	V	Plan	V	V	V	-10~60 °C
ITP-G800M-8PHE24	V	V	8	8	—	8	180W	V	V	Plan	V	V	V	-40~75 °C

Model Naming Rule

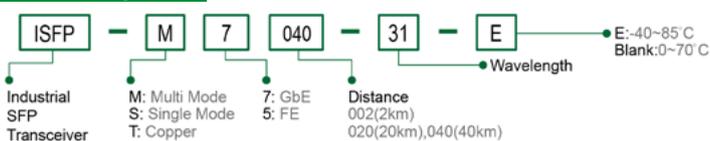


Accessories

DRP-240-48 Industrial Power, Input 85 ~ 264VAC, Output 48VDC, 240W, -10 ~ +70°C

SFP Transceiver Compatible, Reliable, 5-year Warranty

SFP Naming Rule



Preliminary



180 Watts,
24V Booster



ITP-802GSM-8PH24

EN50155 IP67 Managed 8x10/100Base-T + 2x100/1000Base-X SFP with 8xPoE+ Ethernet Switch

ITP-802GTM-8PH24

EN50155 IP67 Managed 8x10/100Base-T + 2x10/100/1000Base-X Switch with 8xPoE+ Ethernet Switch

ITP-800M-8PH24

EN50155 IP67 Managed 8x10/100Base-T with 8xPoE+ Ethernet Switch

ITP-802GSM-8PH24 series are managed industrial grade Ethernet PoE (Power over Ethernet) switches with 8x 10/100Base-TX PoE ports and/or 2 SFP Gigabit/Fast Ethernet ports that provide stable and reliable Ethernet transmission. ITP-802GSM-8PH24 series equipped with PoE feature enable power and data to be transferred via a single cable, hereby considerably reducing cabling expense. ITP-802GSM-8PH24 series also provide a variety of functions to manage PoE operation including PoE device auto-checking, auto reset, PoE power weekly scheduling. Other L2 management functions supported include STP/RSTP/MSTP/ ITU-T G.8032 Ring and multiple u-Ring for redundant cabling, layer 2 Ethernet IGMP, VLAN, QoS, Security, IPv6, bandwidth control, port mirroring, cable diagnostic and Green Ethernet.

Housed in rugged DIN rail or wall mountable enclosures, these switches are designed for the harshest environments. Especially, ITP-802GSM-8PH24 series switches use M12 connectors to ensure tight, robust connections and to guarantee reliable and anti environmental disturbances operation, such as vibration and shock. ITP-802GSM-8PH24 series are compliant with EN 50155, covering power input voltage, surge, EFT, ESD, vibration, shock, thus making the switches suitable for industrial applications, such as vehicle, rolling stock, ship, vessel.

ITP-802GSM-8PH24 series are IP67 rated to protect against dust and water submersion. They are particularly used in environments with extreme temperature, high humidity, oil, dust and in outdoor environments requiring water-proof applications such as IP surveillance, city security. ITP-802GSM-8PH24 series can also work with CTC Management platform SmartView to provide convenient, real-time and centralized network management.

Features

- 8x 10/100Base-TX M12 and 2x 100/1000Base-X SFP Fiber (Total 10 Port) (ITP-802GSM-8PH24)
- 8x 10/100Base-TX M12 and 2x 10/100/1000Base-X (Total 10 Port) (ITP-802GTM-8PH24)
- 8x 10/100Base-TX M12 (ITP-800M-8PH24)
- M12 and M23 connector against vibration and shock
- IP67 water proof design against dust and water
- Build-in 2 bypass port (ITP-802GTM-8PH24)
- 24/48VDC redundant dual input power, and built-in power booster design upto 55 VDC for PoE output
- Constant and regulated PoE output voltage at 55VDC
- Provides 8-port IEEE802.3af / 802.3at PoE output (30W per Port)
- Maximum PoE output power budget 180W
- Advanced PoE Management, PoE PD Failure Auto Checking and auto reset, PoE configuration for power planning, weekly scheduling
- UL60950-1, CE, FCC, Rail Traffic EN50155, EN50121-4 certified
- Industrial Grade EMS, EMI, EN61000-6-2, EN61000-6-4 certified
- Cable diagnostic, Measuring cable OK or broken point distance
- Supports Green Ethernet IEEE802.3az EEE (Energy Efficient Ethernet) management to optimize the power consumption
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Protection Ring (EPR) for redundant cabling
- Provide up to 5 instances that each supports u-Ring, u-Chain or

Sub-Ring type for flexible uses

- u-Ring for Redundant Cabling, recovery time < 10ms in 250 maximum devices
- DHCP 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
- 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 in case of upgrade failure
- Support IEEE1588 PTP V2 for precise time synchronization to operate in Master, Boundary, Slave mode by each port
- 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
- Provides SmartConfig for quick and easy mass configuration
- Supports SmartView for Centralized 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 802.3z	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)
	ITU-T G.8032 / Y.1344	ERPS (Ethernet Ring Protection Switching)
	IEEE 802.1Q	Virtual LANs (VLAN)
	IEEE 802.1X	Port based and MAC based Network Access Control, Authentication
	IEEE 802.3ad	Link aggregation for parallel links with LACP(Link Aggregation Control Protocol)
	IEEE 802.3x	Flow control for Full Duplex
	IEEE 802.3af	PoE (Power over Ethernet)
	IEEE 802.3at	PoE+ (Power over Ethernet enhancements)
	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)

VLAN ID	4094 IEEE802.1Q VLAN VID
Switch Architecture	Back-plane (Switching Fabric): 5.6 Gbps (ITP-802GSM-8PH24, ITP-802GTM-8PH24) 1.6 Gbps (ITP-800M-8PH24)
Data Processing	Store and Forward
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode
PoE RJ-45 Pin Assignment	8x M12 (4-Pin D-code Female) ports support IEEE 802.3af / IEEE 802.3at End-Span, Alternative A mode. Positive (V+) : M12 pin 2,4 Negative (V-) : M12 pin 1,3. Data (1,2,3,4)
Network Connector	8xM12 (4-Pin, Female,D-Code) 10/100Base-TX , Auto negotiation speed, Auto MDI/MDI-X function, Full/Half duplex 2x M12 (8-Pin, female,A-Code) 10/100/1000Base-T (ITP-802GTM-8PH24) Water proof Fiber Cable Gland support for 2 X 100/1000 Base-X dual speed mode SFP slot, with DDMI (for ITP-802GSM-8PH24) Build-in 2 bypass port (ITP-802GTM-8PH24)
Console	RS-232 (5-pin A-Code M12 male)
Network Cable	UTP/STP above Cat. 5e cable, EIA/TIA-568 100-ohm (100m)
Protocols	CSMA/CD
Reverse Polarity Protection	Present

Specifications & design are subject to change without prior notice. Please visit CTC Union website for more details.

Overload Current Protection	Present
CPU Watch Dog	Present
LED	Per unit: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Yellow) Per UTP port: 10/100 Link/Active (Green) SFP Fiber Per port: Link/Active (Green) PoE Port LED 1 LED /per Port : • PoE Output Power On : ON (Green) • PoE Fault (Over Load, Short Circuit, Port failed at Startup) : Flash 1times /sec (Green) • PoE Output Power Off : Off (Green)
Jumbo Frame	9.6KB
MAC Address Table	8K
Memory Buffer	256K Bytes for packet buffer
PoE Standard	IEEE802.3af, IEEE802.3at
PoE Power Output	Maximum PoE output power budget 180W (30W/per port) Regulated PoE output voltage at 55VDC
Power Supply	Provide 1x M23 (5-Pin, male) for redundant dual DC 24/48V (20~57VDC) input power Built-in power booster design up to 55 VDC for PoE output
Power Consumption	TBD
Warning Message	System Syslog, SMTP/ e-mail event message, alarm relay
Alarm Relay Contact	5-pin A-code M12 male Relay outputs with current carrying capacity of 1 A@24VDC
Operating Temperature	-10 ~ 60°C (ITP-802GSM-8PH24, ITP-802GTM-8PH24, ITP-800M-8PH24) -40 ~ 75°C (ITP-802GSM-8PHE24, ITP-802GTM-8PHE24, ITP-800M-8PHE24)
Operating Humidity	5% to 95% (Non-condensing)

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 (Ethernet, SNAP, LLC), up to 128 entries VLAN Translation, up to 256 entries GVRP (GARP VLAN Registration Protocol) 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 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 The maximum number of devices allowed in a Ring supported ring is 250.
Loop Protection	Present
ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
QoS Feature	
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	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 / Per port shaper
DiffServ (RF 2474) Remarking	
Storm Control	for Unicast, Broadcast, Multicast
IP Multicasting Feature	
IGMP / MLD Snooping	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2 Port Filtering Profile, Throttling

Storage Temperature	-40 ~ 85°C
Housing	Rugged Metal, IP67 water proof protection, Fanless
Dimensions	70x240x168mm (D x W x H)
Weight	TBD
Installation Mounting	DIN Rail mounting or wall mounting
MTBF	TBD (MIL-HDBK-217)
Warranty	5 years
Certification	
EMC	CE
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A, CE EN55022 Class A
Railway Traffic	EN50155, 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
Safety	UL60950-1 (Pending)
Shock	IEC-61373
Freefall	IEC 60068-2-32
Vibration	IEC-61373

IGMP / MLD Snooping	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
------------	---

RADIUS authentication & accounting	
TACACS+ authentication & accounting, TACACS+ 3.0	

HTTPS, HTTP	
SSL / SSH v2	

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 Based Management	
-----------------------------	--

Telnet	Server
SNMP	V1, V2c, V3
SW & Configuration Upgrade	TFTP, HTTP

RMON	RMON I (1, 2, 3, 9 group), RMON II
-------------	------------------------------------

MIB II	RFC 1213
---------------	----------

DHCP	Client, Relay, Snooping Snooping option 82, Relay option 82
-------------	--

IP Source Guard	
------------------------	--

Port Mirroring	
-----------------------	--

Event Syslog	Syslog server (RFC3164) (Support 1 server)
---------------------	---

Warning Message	System syslog, e-mail, alarm relay
------------------------	------------------------------------

DNS	Client, Proxy
------------	---------------

IEEE1588 PTP V2	Master, Boundary, Slave Operating mode Operating in each port of these switch
------------------------	--

NTP / SNTP	
-------------------	--

LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol LLDP-MED
----------------------------	---

IPv6 Features	
----------------------	--

IPv6 Management	Telnet Server/ICMP v6
------------------------	-----------------------

SNMP over IPv6	
-----------------------	--

HTTP over IPv6	
-----------------------	--

SSH over IPv6	
----------------------	--

IPv6 Telnet Support	
IPv6 NTP / SNTP Support	
IPv6 TFTP Support	
IPv6 QoS	
IPv6 ACL	Number of rules: up to 256 entries L2 / L3 / L4
Others Features	
Green Ethernet	Supports IEEE802.3az EEE (Energy Efficient Ethernet) Management to optimize the power consumption Determine the cable length and lowering the power for ports with short cables

Green Ethernet	Lower the power for a port when there is no link LED Power Management :Adjustment LEDs intensity
Cable Diagnostic	Measuring cable OK or broken point distance
Advanced PoE Management	PoE PD Failure Auto Checking, and Auto reset when PD fail PoE Scheduling (On/Off schedule weekly) PoE Configuration PoE Enable/Disable Power limit by classification Power limit by management Total PoE Power budget (maximum 180W) limitation Power feeding priority

Application

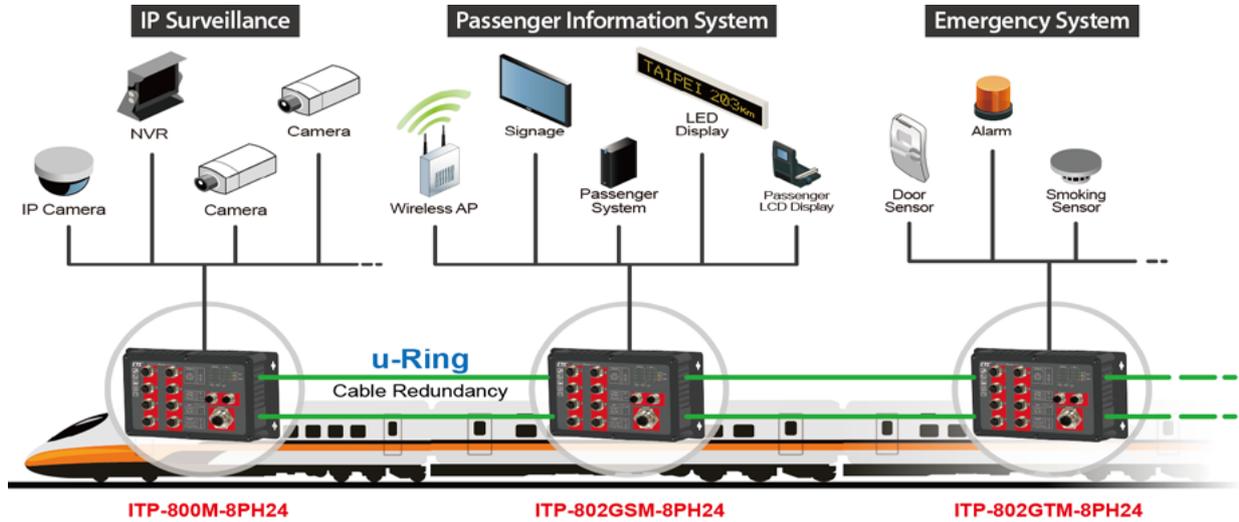


Figure 1 : ITP Series in Onboard Train Application

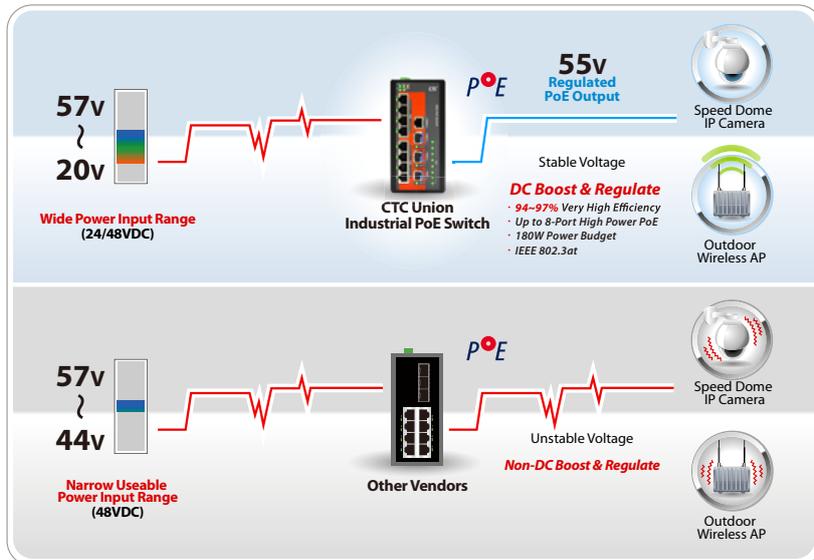


Figure 2 : PoE Core Technology



Figure 3 : ITP Series for Industrial Automation

u-Ring Configuration Auto-refresh Refresh

Delete	Instance	Type	Master	East		West	
				Port	Edge	Port	Edge
Delete	1	u-Ring	<input type="checkbox"/>	1		2	
Delete	2	u-Ring	<input type="checkbox"/>	4		3	
Delete	3	u-Ring	<input type="checkbox"/>	10 (Fiber2)		11 (Fiber3)	
Delete	4	Sub-Ring	<input type="checkbox"/>	6			
Delete	5	u-Chain	<input type="checkbox"/>	5	<input type="checkbox"/>	9 (Fiber1)	<input type="checkbox"/>

Add New Instance

Save Reset

Figure 4 : An illustration of u-Ring instances configured in Web interface

Figure 5 : u-Ring Type

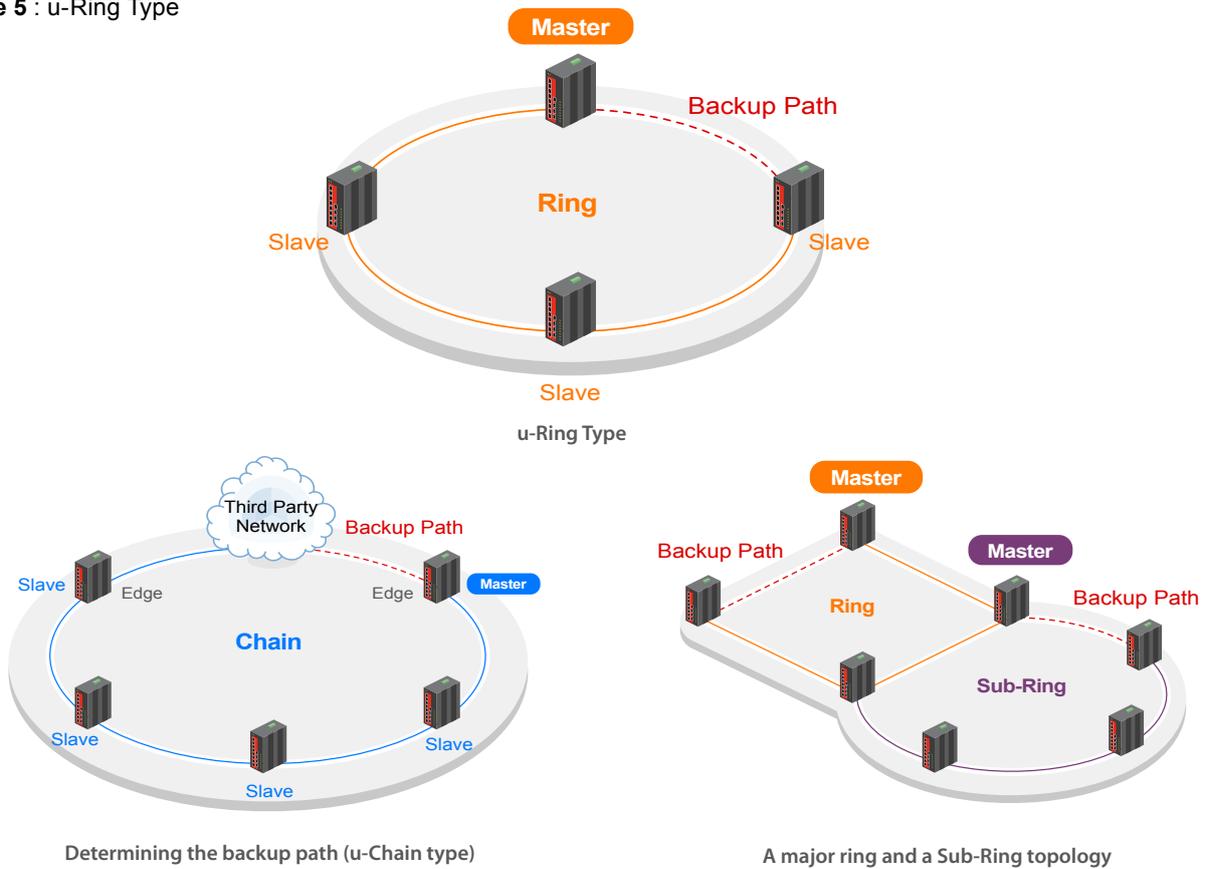
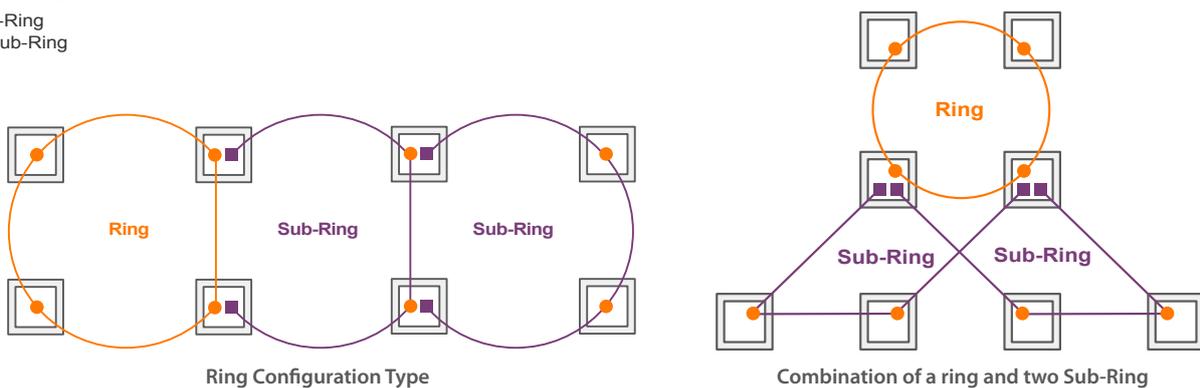
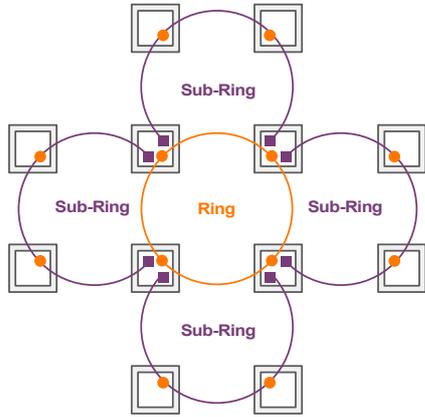


Figure 6 : Ring Configuration Example

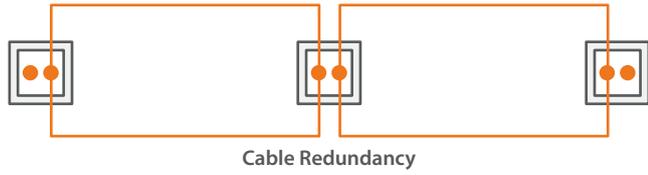
Ring Configuration Type

- u-Ring
- Sub-Ring



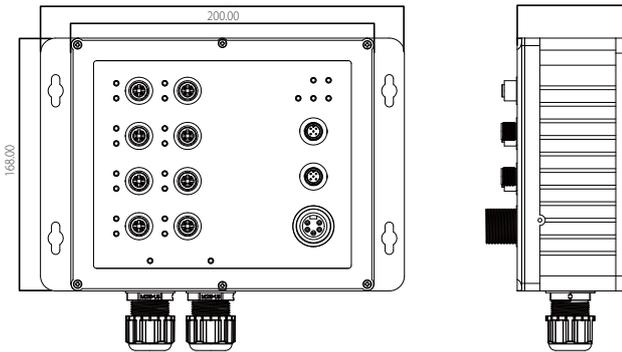


Combination of a ring and four Sub-Ring

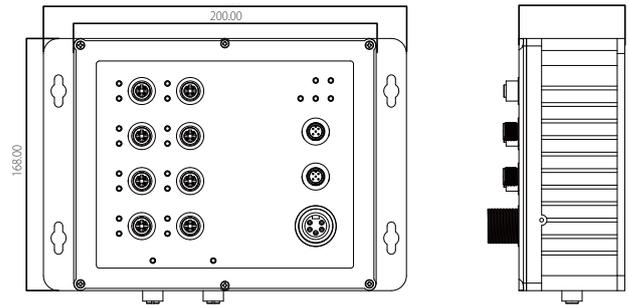


Dimensions

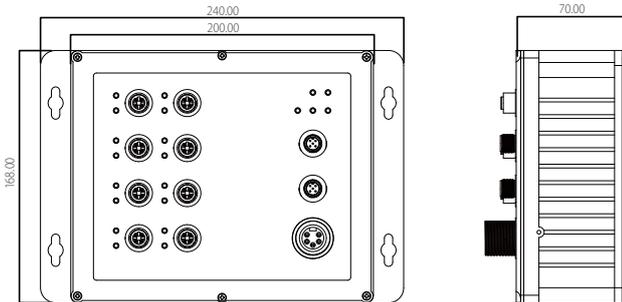
ITP-802GSM-8PH24



ITP-802GTM-8PH24



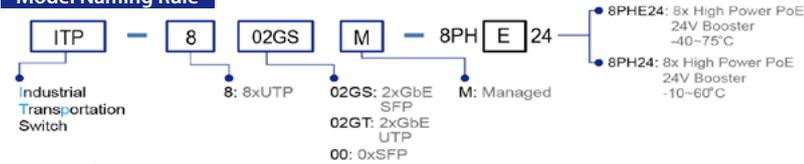
ITP-800M-8PH24



Ordering Information

Model Name	Managed	IP67	Total Port	UTP Port M12		Gigabit Port	PoE Port IEEE802.3at	PoE Total Power Budget	Input Voltage		Certification			Shock Vibration IEC61373	Operating Temperature
				10/100 Base-TX	2xSFP				24/48 VDC (20~57 VDC)	EN50155 EN50121-4	UL60950-1	EN61000-6-2 EN61000-6-4	CE FCC		
ITP-802GSM-8PH24	V	V	10	8	2 SFP	8	180W	V	V	Plan	V	V	V	-10~60 C	
ITP-802GSM-8PHE24	V	V	10	8	2 SFP	8	180W	V	V	Plan	V	V	V	-40~75 C	
ITP-802GTM-8PH24	V	V	10	8	2 UTP	8	180W	V	V	Plan	V	V	V	-10~60 C	
ITP-802GTM-8PHE24	V	V	10	8	2 UTP	8	180W	V	V	Plan	V	V	V	-40~75 C	
ITP-800M-8PH24	V	V	8	8	—	8	180W	V	V	Plan	V	V	V	-10~60 C	
ITP-800M-8PHE24	V	V	8	8	—	8	180W	V	V	Plan	V	V	V	-40~75 C	

Model Naming Rule



Accessories

- DRP-240-48 Industrial Power, Input 85 ~ 264VAC, Output 48VDC, 240W, -10 ~ +70°C
- SFP Transceiver Compatible, Reliable, 5-year Warranty

SFP Naming Rule

