



## ITP-802GSM

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

## ITP-802GTM

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

## ITP-800M

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

ITP-802GSM series are managed industrial grade switches with 8x 10/100Base-TX ports 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 IP surveillance, 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 10/100/1000Base-T (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 (Figure 3)
- 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 (Figure 5)
- u-Ring for Redundant Cabling, recovery time < 10ms in 250 maximum devices
- 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
- 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 Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave mode by each port
- RMON , MIB II, Port mirroring, Event syslog, DNS, NTP IEEE802.1ab LLDP
- Support 5 operating mode in each port: Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave
- 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

<b>Standard</b>	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	
<b>Standard</b>	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)
<b>VLAN ID</b>	4094	IEEE802.1Q VLAN VID

<b>Switch Architecture</b>	Back-plane (Switching Fabric): 5.6Gbps (ITP-802GSM) 5.6Gbps (ITP-802GTM) 1.6Gbps (ITP-800M) (Full wire-speed)
<b>Data Processing</b>	Store and Forward
<b>Flow Control</b>	IEEE 802.3x for full duplex mode Back pressure for half duplex mode
<b>Network Connector</b>	8x M12 (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) Build-in 2 bypass GbE UTP port (ITP-802GTM) Water proof Fiber Cable Gland support for 2 X 100/1000 Base-X SFP slot, with DDMI (ITP-802GSM)
<b>Console</b>	RS-232 (5-pin A-Code M12 male )
<b>Network Cable</b>	UTP/STP above Cat. 5e cable EIA/TIA-568 100-ohm (100m)
<b>Protocols</b>	CSMA/CD
<b>Reverse Polarity Protection</b>	Present
<b>Overload Current Protection</b>	Present
<b>CPU Watch Dog</b>	Present

<b>LED</b>	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) (For ITP-802GTM GbE port) SFP Fiber Per port: Link/Active (Green)																																										
<b>Jumbo Frame</b>	9.6KB																																										
<b>MAC Address Table</b>	8K																																										
<b>Memory Buffer</b>	256K Bytes for packet buffer																																										
<b>Power Supply</b>	Provide 1x M23 (5-Pin, male) for redundant dual input, optional Low (L) or High (H) voltage. Low voltage (L) : 12/24/48V (8.4~60VDC) High voltage (H): 110/220VDC (88~300VDC), or 110/220VAC (88~264VAC)																																										
<b>Power Consumption</b>	<table border="1"> <thead> <tr> <th></th> <th>ITP-802GSM-LL</th> <th>ITP-802GSM-HL</th> <th>ITP-802GTM-LL</th> <th>ITP-802GTM-HL</th> <th>ITP-800M-LL</th> <th>ITP-800M-HL</th> </tr> </thead> <tbody> <tr> <td>12VDC</td> <td>6.9</td> <td>9.1</td> <td>8.8</td> <td>8.8</td> <td>5.8</td> <td>8.3</td> </tr> <tr> <td>24VDC</td> <td>8.3</td> <td>9.3</td> <td>9.2</td> <td>9.2</td> <td>7.2</td> <td>8.4</td> </tr> <tr> <td>48VDC</td> <td>9.8</td> <td>10.5</td> <td>10.6</td> <td>10.6</td> <td>8.7</td> <td>9.6</td> </tr> <tr> <td>110VAC/VDC</td> <td></td> <td>9.7</td> <td></td> <td>9.4</td> <td></td> <td>8.6</td> </tr> <tr> <td>220VAC/VDC</td> <td></td> <td>9.7</td> <td></td> <td>C</td> <td></td> <td>8.6</td> </tr> </tbody> </table>		ITP-802GSM-LL	ITP-802GSM-HL	ITP-802GTM-LL	ITP-802GTM-HL	ITP-800M-LL	ITP-800M-HL	12VDC	6.9	9.1	8.8	8.8	5.8	8.3	24VDC	8.3	9.3	9.2	9.2	7.2	8.4	48VDC	9.8	10.5	10.6	10.6	8.7	9.6	110VAC/VDC		9.7		9.4		8.6	220VAC/VDC		9.7		C		8.6
	ITP-802GSM-LL	ITP-802GSM-HL	ITP-802GTM-LL	ITP-802GTM-HL	ITP-800M-LL	ITP-800M-HL																																					
12VDC	6.9	9.1	8.8	8.8	5.8	8.3																																					
24VDC	8.3	9.3	9.2	9.2	7.2	8.4																																					
48VDC	9.8	10.5	10.6	10.6	8.7	9.6																																					
110VAC/VDC		9.7		9.4		8.6																																					
220VAC/VDC		9.7		C		8.6																																					
<b>Warning Message</b>	System Syslog, SMTP/ e-mail event message, alarm relay																																										
<b>Alarm Relay Contact</b>	5-pin A-code M12 male Relay outputs with current carrying capacity of 1 A @24VDC																																										
<b>Operating Temperature</b>	-10 ~ 60°C (ITP-802GSM, ITP-802GTM, ITP-800M) -40 ~ 75°C (ITP-802GSM-E, ITP-802GTM-E, ITP-800M-E)																																										
<b>Operating Humidity</b>	5% to 95% (Non-condensing)																																										
<b>Storage Temperature</b>	-40 ~ 85°C																																										
<b>Housing</b>	Rugged Metal, Fanless, IP67 water proof protection (Figure 3)																																										
<b>Dimensions</b>	70x240x168mm (D x W x H)																																										
<b>Weight</b>	2.645kg (ITP-802GSM-LL)    2.82kg (ITP-802GSM-HL) 2.625kg (ITP-802GTM-LL)    2.80 kg (ITP-802GTM-HL) 2.53kg (ITP-800M-LL)        2.705g (ITP-800M-HL)																																										

<b>Installation Mounting</b>	Wall mounting, or DIN Rail mounting (Optional)
<b>MTBF</b>	215,292 Hours (ITP-802GSM-LL) 188,971 Hours (ITP-802GSM-HL) 167,841 Hours (ITP-802GTM-LL) 151,536 Hours (ITP-802GTM-HL) 262,540 Hours (ITP-800M-LL) 202,943 Hours (ITP-800M-HL) (MIL-HDBK-217)
<b>Warranty</b>	5 years
<b>Certification</b>	
<b>EMC</b>	CE
<b>EMI (Electromagnetic Interference)</b>	FCC Part 15 Subpart B Class A, CE EN55022 Class A
<b>Railway Traffic</b>	EN50155, EN50121-4
<b>Immunity for Heavy Industrial Environment</b>	EN61000-6-2
<b>Emission for Heavy Industrial Environment</b>	EN61000-6-4
<b>EMS (Electromagnetic Susceptibility) Protection Level</b>	EN61000-4-2 (ESD) Level 3, Criteria B EN61000-4-3 (RS) Level 3, Criteria A EN61000-4-4 (Burst) Level 3, Criteria A EN61000-4-5 (Surge) Level 3, Criteria B EN61000-4-6 (CS) Level 3, Criteria A EN61000-4-8 (PFMF, Magnetic Field) Field Strength: 300A/m, Criteria A
<b>Safety</b>	UL60950-1
<b>Shock</b>	IEC-61373
<b>Freefall</b>	IEC 60068-2-32
<b>Vibration</b>	IEC-61373

## Software Specifications

<b>Topology</b>	
<b>VLAN</b>	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 )
<b>Link Aggregation (Port Trunk)</b>	Static (Hash with SA, DA, IP, TCP/UDP port), up to 5 trunk group Dynamic (IEEE 802.3ad LACP), up to 5 trunk group
<b>Spanning Tree</b>	IEEE802.1d STP, IEEE802.1w RSTP, IEEE802.1s MSTP
<b>Multiple u-Ring</b>	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.
<b>Loop Protection</b>	Present
<b>ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection )</b>	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
<b>QoS Feature</b>	
<b>Class of Service</b>	IEEE802.1p 8 active priorities queues for per port
<b>Traffic Classification QoS</b>	IEEE802.1p based CoS IP Precedence based CoS IP DSCP based CoS QCL(QoS Control List): Frame Type, Source/Destination MAC, VLAN ID, PCP, DEI QCE(QoS Control Entry): Protocol, Source IP, IP Fragment, DSCP, TCP/UDP port number
<b>Bandwidth Control for Ingress</b>	Rate in steps :1 kbps / Mbps / fps / kfps Range : 100 kbps to 1Gbps / 1fps to 3300kfps Rate Unit : bit or frame
<b>Bandwidth Control for Egress</b>	Rate in steps : 1 kbps / Mbps Range : 100 kbps to 1Gbps Rate Unit : bit Per queue / Per port shaper
<b>DiffServ (RF 2474) Remarkings</b>	
<b>Storm Control</b>	for Unicast, Broadcast, Multicast

<b>IP Multicasting Feature</b>	
<b>IGMP / MLD Snooping</b>	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2 Port Filtering Profile, Throttling
<b>IGMP / MLD Snooping</b>	Fast Leave Maximum Multicast Group : up to 1022 entries Query / Static Router Port
<b>Security Features</b>	
<b>IEEE 802.1X</b>	Port-Based, MAC-Based
<b>ACL</b>	Number of rules : up to 256 entries for L2 / L3 / L4
<b>RADIUS authentication &amp; accounting</b>	
<b>TACACS+ authentication &amp; accounting, TACACS+ 3.0</b>	
<b>HTTPS, HTTP</b>	
<b>SSL / SSH v2</b>	
<b>User Name Password Authentication</b>	Local Authentication Remote Authentication (via RADIUS / TACACS+)
<b>Management Interface Access Filtering</b>	Web, Telnet / SSH , CLI RS-232 console
<b>Management Features</b>	
<b>CLI</b>	Cisco® like CLI
<b>Web Based Management</b>	
<b>Telnet</b>	Server
<b>SNMP</b>	V1, V2c, V3
<b>SW &amp; Configuration Upgrade</b>	TFTP, HTTP Redundant firmware in case of upgrade failure
<b>RMON</b>	RMON I (1, 2, 3, 9 group), RMON II
<b>MIB II</b>	RFC 1213
<b>UPnP</b>	
<b>DHCP</b>	Server, Client, Relay, Snooping Snooping option 82, Relay option 82
<b>IP Source Guard</b>	
<b>Port Mirroring</b>	
<b>Event Syslog</b>	Syslog server (RFC3164) (Support 1 server)
<b>Warning Message</b>	System syslog, e-mail, alarm relay
<b>DNS</b>	Client, Proxy
<b>IEEE1588 PTP V2</b>	Support 5 operating mode in each port : Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master, Slave

<b>NTP</b>	
LLDP (IEEE 802.1ab)	Link Layer Discovery Protocol LLDP-MED
<b>IPv6 Features</b>	
IPv6 Management	Telnet Server/ICMP v6
SNMP over IPv6	
HTTP over IPv6	
SSH over IPv6	
IPv6 Telnet Support	
IPv6 NTP Support	
IPv6 TFTP Support	
IPv6 QoS	
IPv6 ACL	Number of rules: up to 256 entries L2 / L3 / L4

<b>Others Features</b>	
<b>Green Ethernet</b>	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
<b>Green Ethernet</b>	Lower the power for a port when there is no link LED Power Management :Adjustment LEDs intensity
<b>Cable Diagnostic</b>	Measuring cable OK or broken point distance

## Application

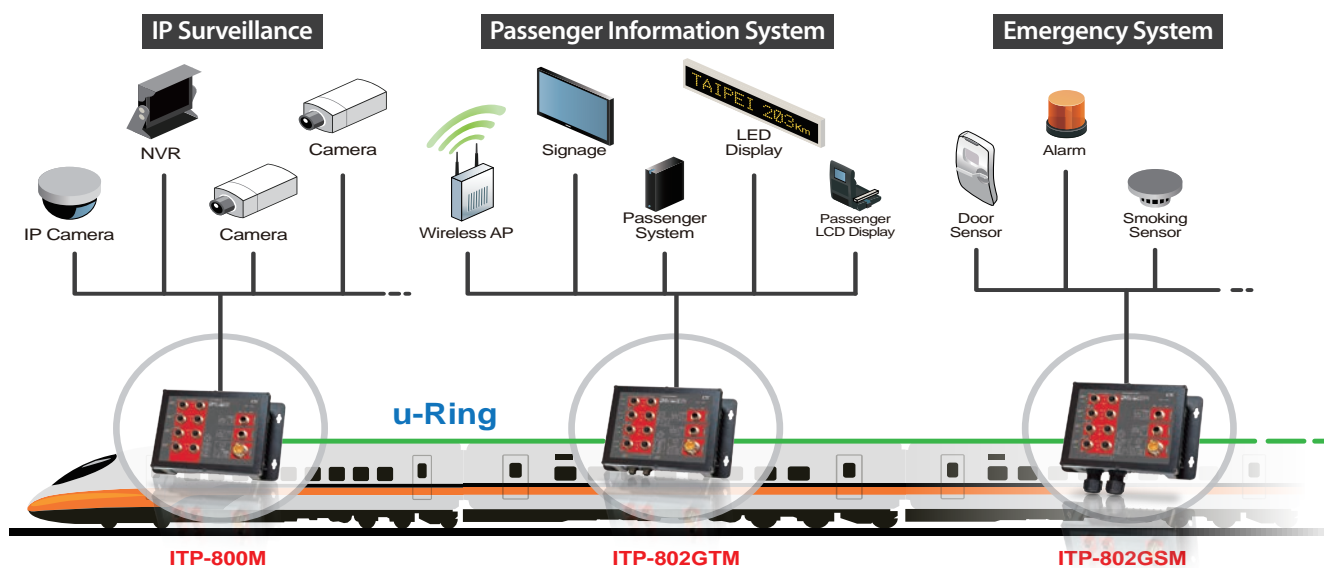


Figure 1 : ITP Series in Onboard Train Application



Figure 2 : ITP Series for Industrial Automation



Figure 3 : IP67 Waterproof

**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

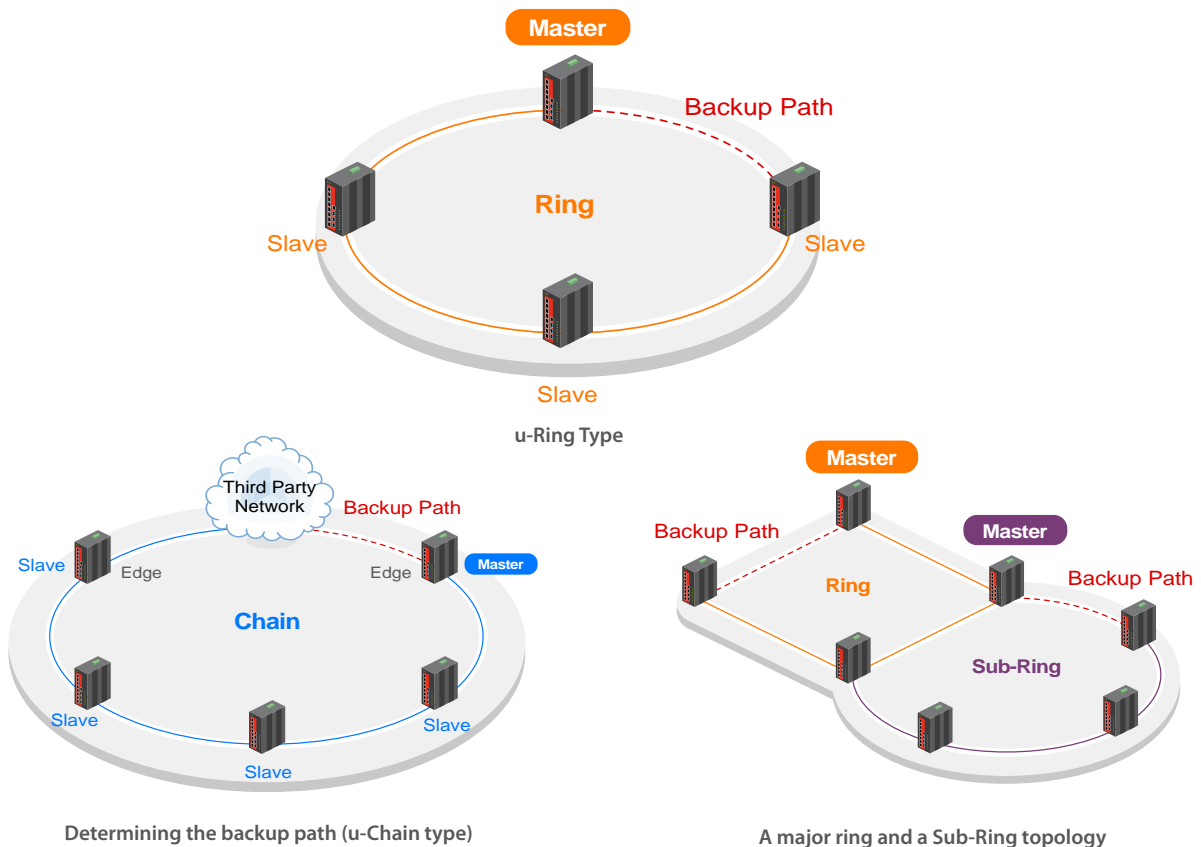
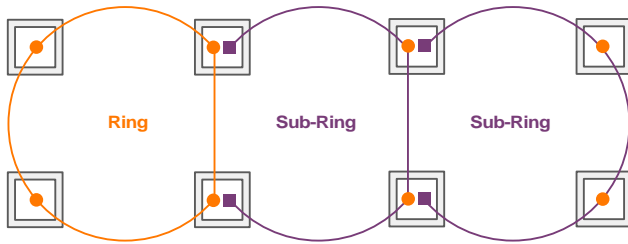


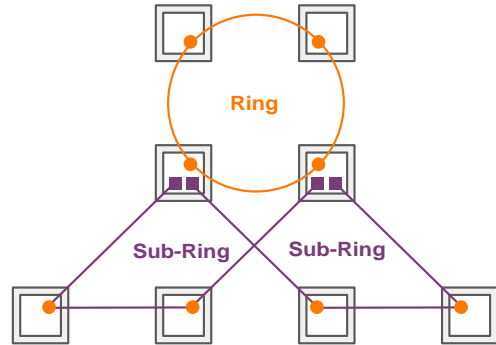
Figure 6 : Ring Configuration Example

Ring Configuration Type

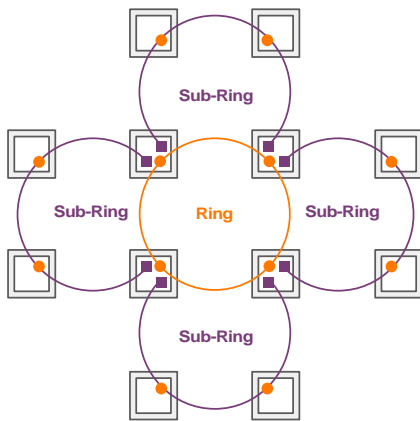
- u-Ring
- Sub-Ring



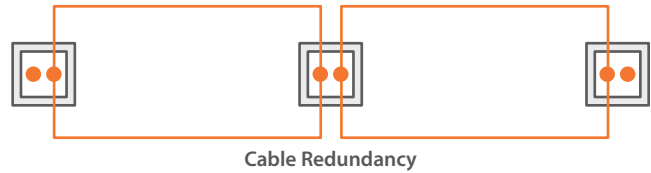
Ring Configuration Type



Combination of a ring and two Sub-Ring



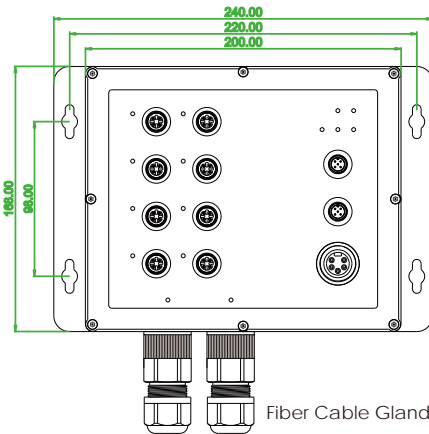
Combination of a ring and four Sub-Ring



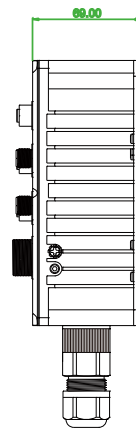
Cable Redundancy

## Dimensions

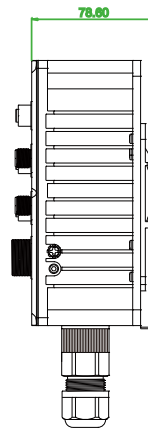
ITP-802GSM-HL/LL



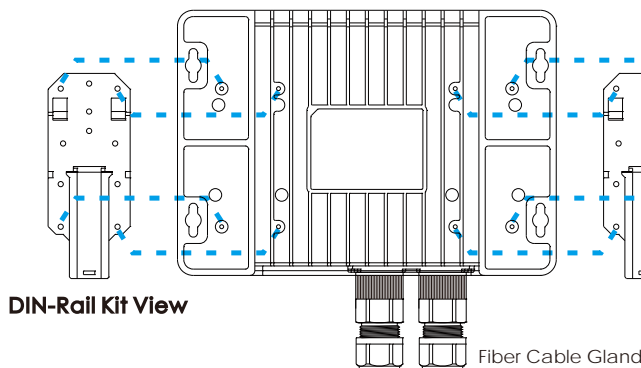
Front View



Side View

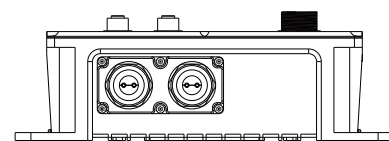


Side View(Including  
DIN-Rail Mounting Kit)



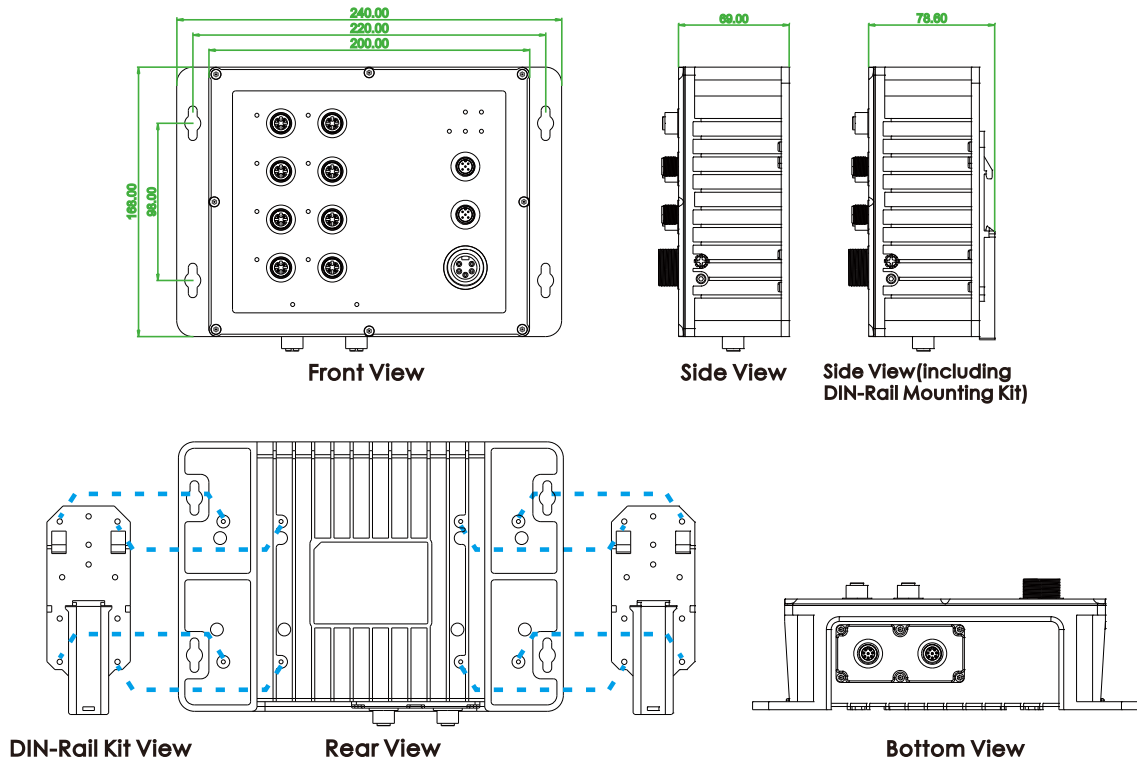
DIN-Rail Kit View

Rear View

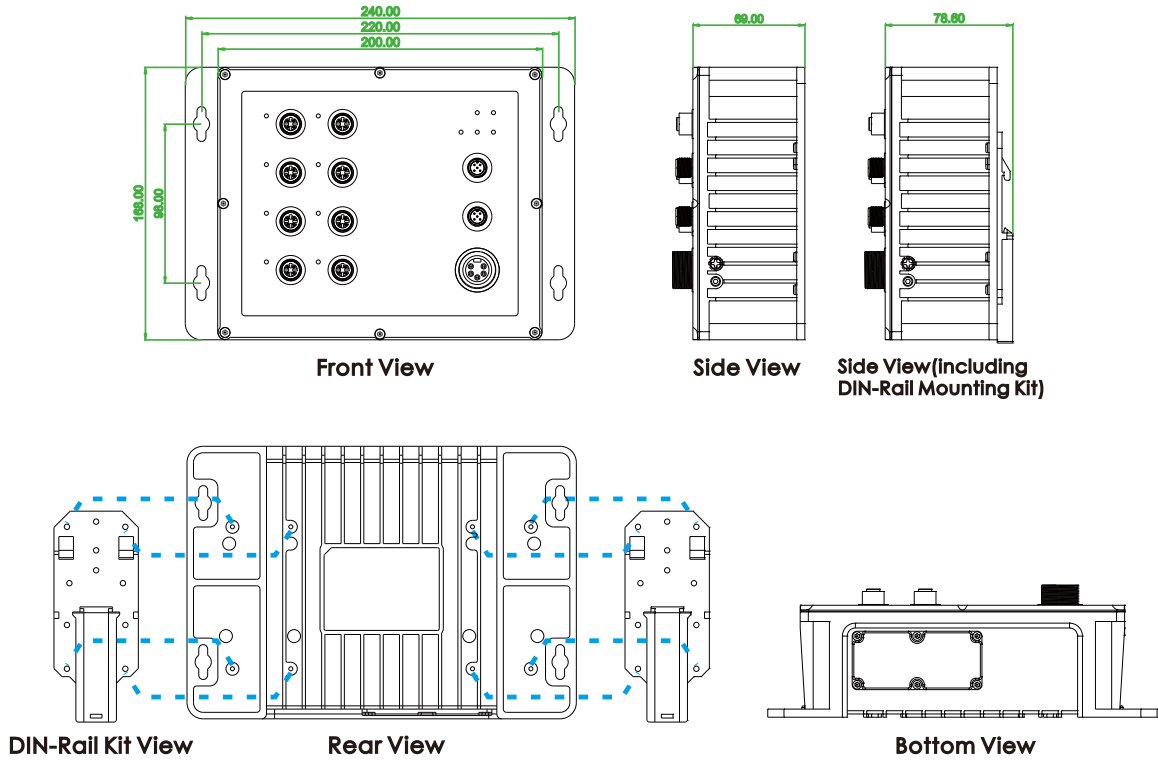


Bottom View

ITP-802GTM-HL/LL



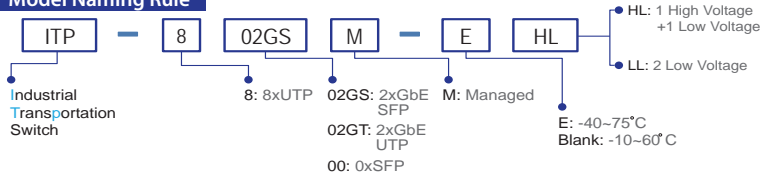
ITP-800M-HL/LL



## 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	8	8	—	2	—	V	Plan	V	V	V	-10~60 C
ITP-800M-HL	V	V	8	8	—	1	1	V	Plan	V	V	V	-10~60 C
ITP-800M-ELL	V	V	8	8	—	2	—	V	Plan	V	V	V	-40~75 C
ITP-800M-EHL	V	V	8	8	—	1	1	V	Plan	V	V	V	-40~75 C

### Model Naming Rule



### Optional Accessories

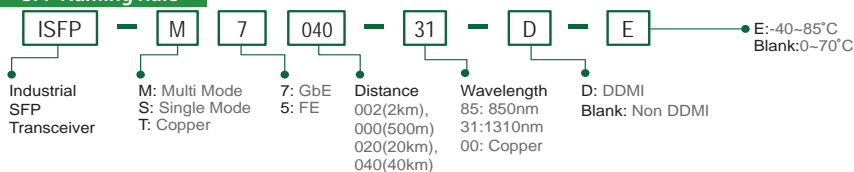
DR-4524	Industrial Power supply, Input 85 ~ 264VAC, Output 24VDC, 48W, -10 ~ +50°C
MDR-40-24	Industrial Power supply, Input 85 ~ 264VAC, Output 24VDC, 40W, -20 ~ +70°C
IND-DNK04	Din Rail Kit for Industrial, Wide : 52mm (130 X52mm / 4 Screws) (2pcs/set)
SmartView™	Network management platform with 50/100/200/500 device agents

### Optional Accessories (SFP)

(The SFP series have been tested with the best operating performance on the series product.)  
 (Please see CTC Industrial SFP for more detail and more item.)

ISFP-M7000-85-D(E)	Industrial SFP GbE, M/M, 500 meter, wave length 850nm, DDMI, -10~70°C (-40~85°C)
ISFP-S7020-31-D(E)	Industrial SFP GbE, S/M, 20km, wave length 1310nm, DDMI, -10~70°C (-40~85°C)
ISFP-T7100-00-D(E)	Industrial SFP GbE, UTP 100meter, DDMI, -10~70°C (-40~85°C)

### SFP Naming Rule



### Optional M12 Cable

#### CAB-M12AM8-RJ45

M12 A-code Male (8-Pin) to RJ-45, AWG 24 ,IP67, 1 meter length



GbE port  
(For ITP-802GTM)

#### CAB-M12DM4-RJ45

M12 D-code Male (4-Pin) to RJ-45, AWG 24 ,IP67, 1 meter length



For FE UTP

#### CAB-M12AF5-OPEN

M12 A-code Female (5-Pin) to open wire, AWG 22 ,IP67, 1 meter length



For Alarm

#### CAB-M23F5-OPEN

M23 Female (5-Pin) to open wire, (AWG 16) ,IP67, 1 meter length



For Power

### Optional M12 Connector

#### M12A-M8

M12 A-code Male (8-Pin) connector, IP67



GbE port  
(For ITP-802GTM)

#### M12D-M4

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



For FE UTP

#### M12A-F5

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



For Alarm

### Optional Din-Rail Kit

#### IND-DNK04

Din Rail Kit for Industrial, Wide: 52mm



(130 X52mm / 4 Screws) (2pcs/set)

### Package List

- ITP-802GSM, ITP-802GTM or ITP-800M device
- Protective caps for UTP port and Console, Alarm port
- Fiber Cable Gland for SFP port x2 set (For ITP-802GSM)
- Console cable (M12 to DB9)
- CD (SmartConfig, Manual)
- Quickly installation guide