

# ITP-802GTM

## EN50155 Managed Switch

**IP67, 8x FE M12 + 2x GbE M12**

» EN50155, EN50121-4, EN45545-2, EN61000-6-2, EN61000-6-4, CE and FCC Certified

» 12/24/48VDC or 110/220VDC Redundant Dual Power Input

» Supports TTDP for Train Application

» Build-in 2 Bypass GbE UTP Ports

» Cable Diagnostics, Identifies Opens/Shorts Distance



The ITP series models are managed, industrial grade, L2 Fast Ethernet switches that provide 8x Fast Ethernet UTP plus 2x GbE UTP Ports. Housed in rugged wall mountable enclosures, these switches are designed for the harshest environments. All ITP series switches use M12 connectors to ensure water-tight, robust connections and guarantee reliable connections against vibration and shock. These models are also compliant with EN50155, covering power input voltage, surge, EFT, ESD, vibration and shock, making these switches suitable for industrial applications, such as vehicle, rolling stock, or vessel. With an IP67 rating, to protect against dust and water submersion, they are particularly useful in environments with extreme temperature, high humidity, oil, dust and in outdoor environments requiring water-proof applications, such as IP surveillance or city security.

### Features

- M12 and M23 connector against vibration and shock, A-code M12 for Gigabit port
- STP, RSTP, MSTP, ITU-T G.8032 Ethernet Protection Ring (ERPS) for redundant cabling
- Provides up to 5 instances that each supports µ-Ring, µ-Chain or Sub-Ring type for flexible uses.  
(Please see CTC Union's µ-Ring white paper for more details)
- Build-in 2 bypass GbE UTP ports to avoid one or more nodes power fail in a ring or bus structure to collapse the network
- Supports 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
- Supports EMS 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)
ITU-T G.8031 / Y.1342	EPS (Ethernet Protection Switching)
IEEE 802.1Q	Virtual LANs (VLAN)
IEEE 802.1X	Port based and MAC based Network Access Control, Authentication
IEEE 802.3ac	Max frame size extended to 1522Bytes
IEEE 802.3ad	Link aggregation for parallel links with LACP (Link Aggregation Control Protocol)
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 ID									
Switch Architecture	Back-plane (Switching Fabric): 5.6Gbps (Full wire-speed)									
Data Processing	Store and Forward									
Flow Control	IEEE 802.3x for full duplex mode Back pressure for half duplex mode									
Network Connector	8x M12 (4-Pin, Female,D-Code) 10/100Base-TX UTP + 2x M12 (8-Pin, female,A-code) 10/100/1000Base-T UTP UTP port provides Auto negotiation speed, Auto MDI/MDI-X, Full/Half duplex function Build-in 2x bypass GbE UTP ports									
Console	RS-232 (5-pin A-Code M12 male )									
Network Cable	UTP/STP Cat. 5e cable or above EIA/TIA-568 100-ohm (100 meter)									
Protocols	CSMA/CD									
Reverse Polarity Protection	Supported									
Overload Current Protection	Supported									
CPU Watch Dog	Supported									
LED	System: Power 1 (Green), Power 2 (Green), Fault (Amber), CPU Act (Green), Ring Master (Amber) UTP: 10/100 Link/Active (Green), 1000 Link/Active (Amber)									
Jumbo Frame	9.6KB									
MAC Address Table	8K									
Memory Buffer	512K Bytes for packet buffer									
Device Memory	16M Bytes Flash ROM, 128M Bytes RAM									
Power Supply	Provides 1x M23 (5-Pin, male) for redundant dual input, optional Low (L) Low voltage (L) : 12/24/48V (8.4~60VDC)									
Power Consumption	<table><tr><th>Input Voltage</th><th>ITP-802GTM-LL</th></tr><tr><td>12VDC</td><td>8.8W</td></tr><tr><td>24VDC</td><td>9.2W</td></tr><tr><td>48VDC</td><td>10.6W</td></tr></table>		Input Voltage	ITP-802GTM-LL	12VDC	8.8W	24VDC	9.2W	48VDC	10.6W
Input Voltage	ITP-802GTM-LL									
12VDC	8.8W									
24VDC	9.2W									
48VDC	10.6W									
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 1A @24VDC									
Operating Temperature	-40 ~ 75℃									
Operating Humidity	5% to 95% (Non-condensing)									
Storage Temperature	-40 ~ 85℃									
Housing	Rugged Metal, Fanless, IP67 grade housing for against water, dust, and oil									
Dimensions	69 x 240 x 168mm (D x W x H)									
Weight	2.625kg									
Installation Mounting	Wall mounting or DIN Rail mounting (Optional)									
MTBF	335,823 Hours (MIL-HDBK-217)									
Certification										
EMC	CE									
EMI (Electromagnetic Interference)	FCC Part 15 Subpart B Class A, CE									
Railway Traffic	EN50155, EN50121-4									
Fire protection of railway vehicles	EN45545-2									
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									
Shock	IEC-61373									
Freefall	IEC 60068-2-32									
Vibration	IEC-61373									

## Software Specifications

### Topology

<b>VLAN</b>	IEEE 802.1q VLAN, up to 4094 802.1Q VLAN ID IEEE 802.1q VLAN, up to 4094 Groups IEEE 802.1ad Q-in-Q MAC-based VLAN, up to 256 entries IP Subnet-based VLAN, up to 128 entries Protocol-based VLAN (Ethernet, SNAP, LLC), up to 128 entries VLAN Translation, up to 256 entries Private VLAN for port isolation GVRP (GARP VLAN Registration Protocol) MVR (Multicast VLAN Registration) Voice VLAN
<b>Link Aggregation (Port Trunk)</b>	Static (Hash with SA, DA, IP, TCP/UDP port), up to 5 trunk group Dynamic (IEEE 802.3ad LACP), up to 5 trunk group
<b>Spanning Tree</b>	IEEE802.1d STP, IEEE802.1w RSTP, IEEE802.1s MSTP
<b>Multiple 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 device is allowed 250 nodes in a Ring.
<b>Loop Protection</b>	Supported
<b>ITU-T G.8032 / Y.1344 ERPS (Ethernet Ring Protection)</b>	Recovery time <50ms Single Ring, Sub-Ring, Multiple ring topology network
<b>ITU-T G.8031 / Y.1342 EPS (Ethernet Protection Switching)</b>	Supported

### QoS Feature

<b>Class of Service</b>	IEEE 802.1p 8 active priorities queues per port
<b>Traffic Classification QoS</b>	IEEE 802.1p based CoS IP Precedence based CoS IP DSCP based CoS QCL (QoS Control List): Frame Type, Source/Destination MAC, VLAN ID, PCP, DEI, Protocol, Source IP, IP Fragment, DSCP, TCP/UDP port number
<b>Bandwidth Control for Ingress</b>	100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps"
<b>Bandwidth Control for Egress</b>	100~1,000,000 when the "Unit" is "kbps", and 1~1,000 when the "Unit" is "Mbps" Rate Unit : bit Per queue / Port shaper
<b>DiffServ (RF 2474) Remarking</b>	
<b>Storm Control</b>	For Unicast, Broadcast and Multicast

### IP Multicasting Feature

<b>IGMP / MLD Snooping</b>	IGMP Snooping v1, v2, v3 / MLD Snooping v1, v2 Port Filtering Profile, Throttling Fast Leave Maximum Multicast Group : up to 1022 entries Query / Static Router Port
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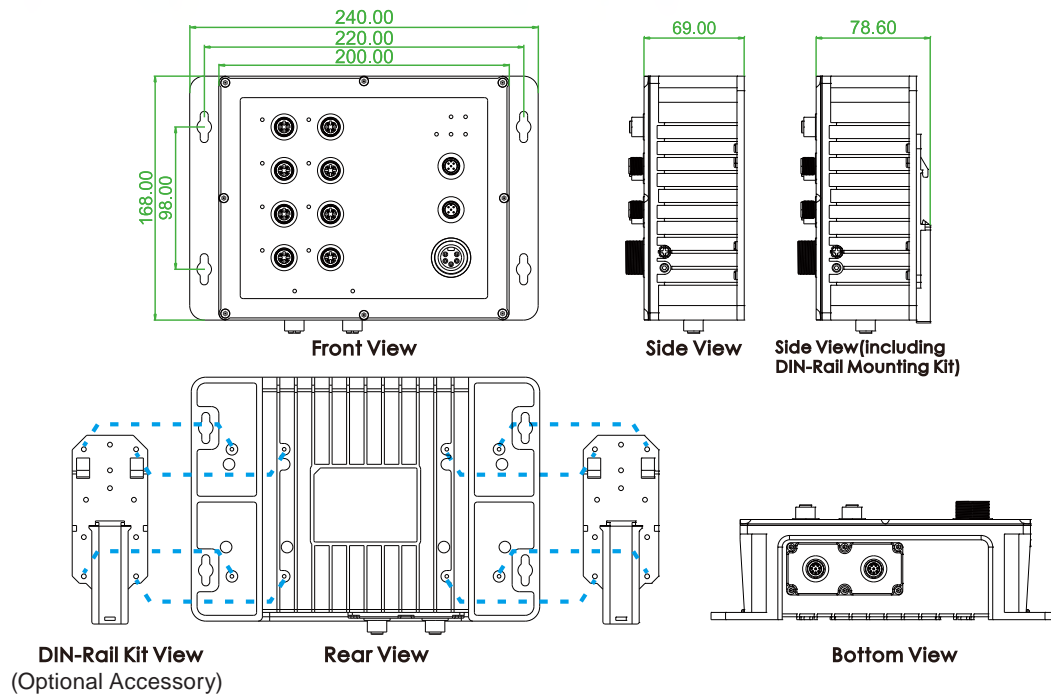
### Security Features

<b>IEEE 802.1X</b>	Port-Based, MAC-Based
<b>ACL</b>	Number of rules : up to 256 entries for L2 / L3 / L4 L2: Mac address SA/DA/VLAN L3: IP address SA/DA, Subnet L4: TCP/UDP
<b>RADIUS</b>	Authentication & Accounting
<b>TACACS+</b>	Authentication
<b>HTTPS, HTTP</b>	Supported
<b>SSL / SSH v2</b>	Supported

<b>User Name Password Authentication</b>	Local Authentication
	Remote Authentication (via RADIUS / TACACS+)
<b>Management Interface Access Filtering</b>	Web, Telnet / SSH, CLI RS-232 console
<b>Management Features</b>	
<b>CLI</b>	Cisco® like CLI
<b>Web UI</b>	Supported
<b>Telnet</b>	Server
<b>SNMP</b>	TFTP, HTTP
<b>sFlow</b>	Supported
<b>Modbus/TCP</b>	Supports for management and monitoring
<b>SW &amp; Configuration Upgrade</b>	TFTP, HTTP
	Redundant firmware in case of upgrade failure
<b>FTP client</b>	Supports for upload/download configuration
<b>RMON</b>	RMON I (1, 2, 3, 9 group), RMON II
<b>MIB II</b>	RFC 1213
<b>UPnP</b>	Supported
<b>BOOTP</b>	Supported
<b>DHCP</b>	Server, Client, Relay, Relay option 82, Snooping
<b>RARP</b>	Supported
<b>TTDP</b>	Supported (Train Topology Discovery Protocol)
<b>IP Source Guard</b>	Supported
<b>Port Mirroring</b>	Supported
<b>Event Syslog</b>	Syslog server (RFC3164)
<b>Warning Message</b>	System syslog, e-mail, alarm relay
<b>DNS</b>	Client, Proxy
<b>IEEE1588 PTP V2</b>	Supports 5 operating mode in each port : Ordinary-Boundary, Peer to Peer Transparent Clock, End to End Transparent Clock, Master and Slave
<b>NTP, SNTP</b>	Client
<b>LLDP (IEEE 802.1ab)</b>	Link Layer Discovery Protocol
	LLDP-MED
<b>IPv6 Features</b>	
<b>IPv6 Management</b>	Telnet Server/ICMP v6
<b>SNMP over IPv6</b>	Supported
<b>HTTP over IPv6</b>	Supported
<b>SSH over IPv6</b>	Supported
<b>IPv6 Telnet</b>	Supported
<b>IPv6 NTP, SNTP</b>	Client
<b>IPv6 TFTP</b>	Supported
<b>IPv6 QoS</b>	Supported
<b>IPv6 ACL</b>	Number of rules: up to 256 entries
	for L2 / L3 / L4
	L2: Mac address SA/DA/VLAN
	L3: IP address SIP, Subnet (32bit)
<b>Others Features</b>	L4: TCP/UDP
<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
	Lower the power for a port when there is no link
	LED Power Management: Adjustment LEDs intensity
<b>Cable Diagnostic</b>	Measuring UTP Cable OK or broken point distance



## Dimensions



## Ordering Information

Model Name	Managed	IP67	Total Port	UTP M12	UTP	Redundant Power Supply	Certification				Operating Temperature
				10/100M Base-TX	100/1000M Base-X		EN50155 EN50121-4	EN45545-2	EN61000-6-2 EN61000-6-4	CE FCC	
ITP-802GTM-ELL	V	V	10	8	2 (A-code)	2	V	V	V	V	-40~75°C

## Optional Accessories

### ■ Optional Cable/Connector & Din-Rail Kit

#### P/N: CAB-M12AM8-RJ45

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



For GbE UTP (A-code model)

#### P/N: CAB-M12DM4-RJ45

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



For FE UTP

#### P/N: CAB-M12AF5-OPEN

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



For Alarm

#### P/N: CAB-M23F5-OPEN

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



For Power

#### P/N: M12A-M8

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



For GbE UTP (A-code model)

#### P/N: M12D-M4

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



For FE UTP

#### P/N: M12A-F5

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



For Alarm

#### P/N: IND-DNK04

Din Rail Kit



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