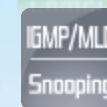


Industrial **IP67-rated** 6-Port 10/100/1000T
Managed Ethernet Switch
(-40~75 degrees C, **A-coded M12 / RJ45**)
IGS-5227-6MT / IGS-5227-6T



Outlines

- ◆ Product Overview
- ◆ Hardware Introduction
- ◆ Product Features
- ◆ Applications
- ◆ Appendix



Introduction



IP67 Quick Review

◆ What does **IPx7** mean?

- ✓ **IP (Ingress Protection or International Protection)** rating is a classification system showing the degrees of protection from solid objects and liquids.
- ✓ The first number mostly refers to the protection against solid objects. When **the first number is 6**, it means a **total protection against dust**. The following table gives the protection descriptions.

First Number

0	- No protection (Sometimes X)
1	- Protected against solid objects up to 50mm
2	- Protected against solid objects up to 12mm
3	- Protected against solid objects up to 2.5mm
4	- Protected against solid objects up to 1mm
5	- Protected against dust and limited ingress (no harmful deposit)
6	- Totally protected against dust

IP67 Quick Review

◆ What does **IP6x** mean?

- ✓ **IP (Ingress Protection or International Protection)** rating is a classification system showing the degrees of protection from solid objects and liquids.
- ✓ The second number of the IP rating system refers to protection against liquids. **In the case of 7, it refers to protection against immersion between 15 centimeters and 1 meter.** The following table give the protection descriptions.

Second Number

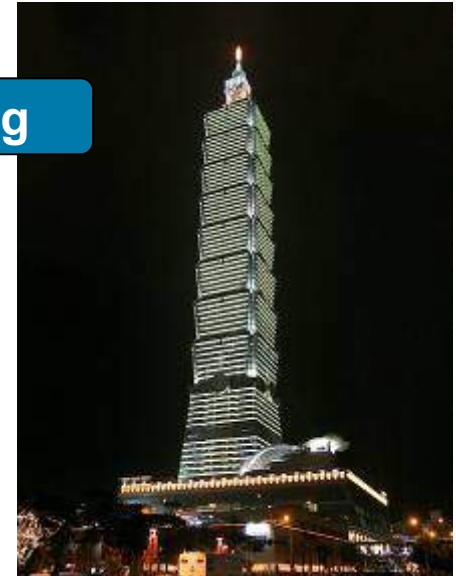
0	- No protection (Sometimes X)
1	- Protected against vertically falling drops of water (e.g. condensation)
2	- Protected against direct sprays of water up to 15 degrees from vertical
3	- Protected against direct sprays of water up to 60 degrees from vertical
4	- Protected against water sprayed from all directions -- limited ingress permitted
5	- Protected against low pressure jets of water from all directions -- limited ingress permitted
6	- Protected against low pressure jets of water and limited ingress permitted (e.g., ship deck)
7	- Protected against the effect of immersion between 15cm and 1m
8	- Protected against long periods of immersion under pressure

Modes of Application Overview

Factory



Building



Transportation



Product Overview



Overview

The One & Only Solution for All Vibration-proof Applications!

- **EN50155** Railway Traffic
- **M12 10/100/1000 BASE-T**
- **M12 Connector, 9~48V DC Power Input**
- **IP67-rated Case**



PLANET Industrial IP67-rated Switches

Managed
Gigabit

24V
M12-A



IGS-5227-4MP2MT

- 6 x Gigabit M12 A-coded
- 4 x PoE+
- 24~48V DC/M23

M12-X



IGS-5227-6MT-X

- 6 x Gigabit M12 X-Coded
- 9~48V DC/M12

M12-A



IGS-604HPT-M12

- 6 x Gigabit M12 A-coded
- 4 x PoE+
- 48~56V DC/M12

M12-A



IGS-5227-6MT

- 6 x Gigabit M12 A-Coded
- 9~48V DC/M12



RJ45



IGS-604HPT-RJ

- 6 x Gigabit RJ45
- 4 x PoE+
- 48~56V DC/M12

RJ45



IGS-5227-6T

- 6 x Gigabit RJ454
- 9~48V DC/M12

Unmanaged
Fast Ethernet



ISW-804PT-M12

- 8 x 10/100BASE-TX
- M12 A-coded
- 4 x PoE
- 48V DC/M12
- -40~75 degrees C



ISW-800T-M12

- 8 x 10/100BASE-TX
- M12 A-coded
- 12~48V DC/M12
- -40~75 degrees C

-  Planning
-  Developing
-  New Phase-in
-  Available

With PoE

Without PoE

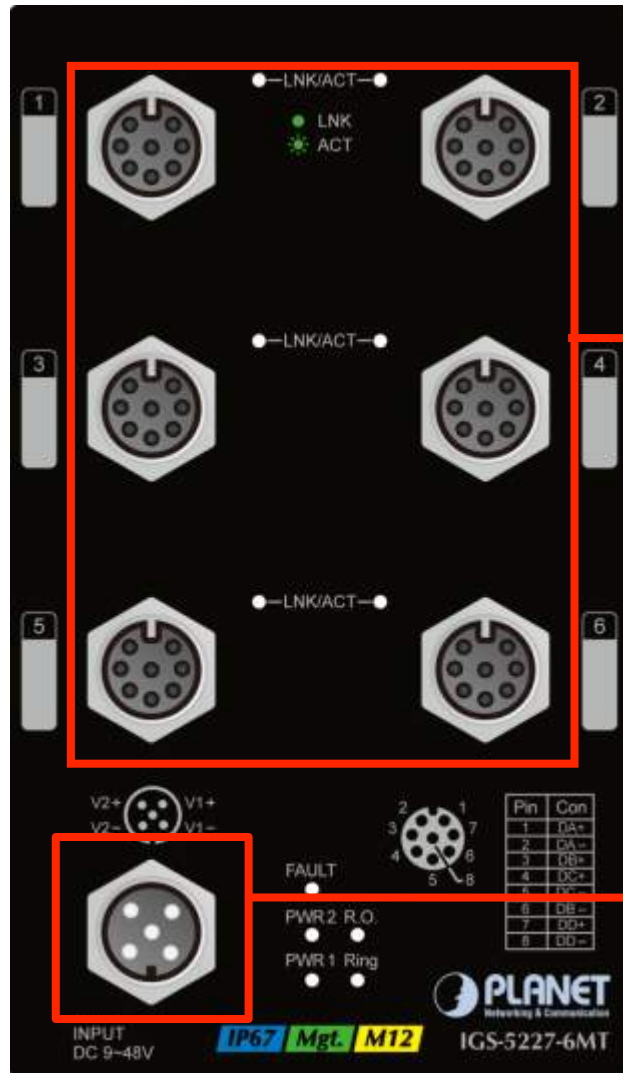
Industrial EN50155 IGS-5227 Series

Model	IGS-5227-6MT	IGS-5227-6T	IGS-5227-6MT-X	IGS-5227-4MP2MT
				

Hardware Introduction



Product Overview



✓ IP67-rated aluminium case

- DIN-rail and wall-mount design

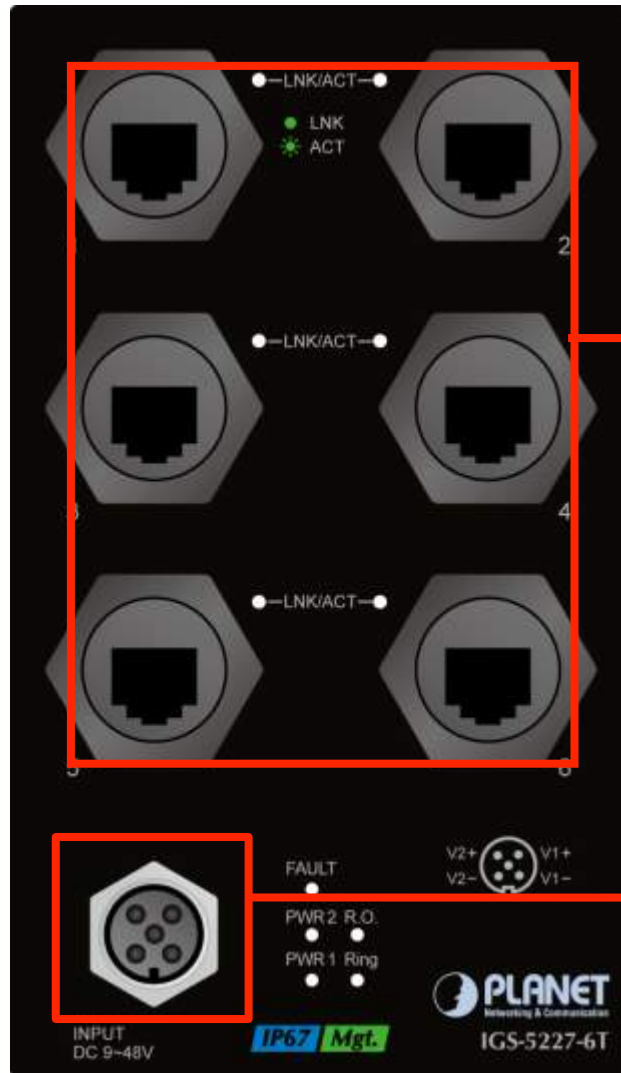
✓ 6 10/100/1000BASE-T M12 ports

- Auto-MDI/MDI-X, auto negotiation
- 8-pin A-coded M12 female connector
- **Waterproof and dustproof design**

✓ 9~48V redundant power design

- 5-pin A-coded M12 male connector

Product Overview



✓ **IP67-rated aluminium case**

- DIN-rail and wall-mount design

✓ **6 10/100/1000BASE-T RJ45 ports**

- Auto-MDI/MDI-X, auto negotiation
- **Waterproof and dustproof design**

✓ **9~48V redundant power design**

- 5-pin A-coded M12 male connector

Diagram of IGS-5227-6MT

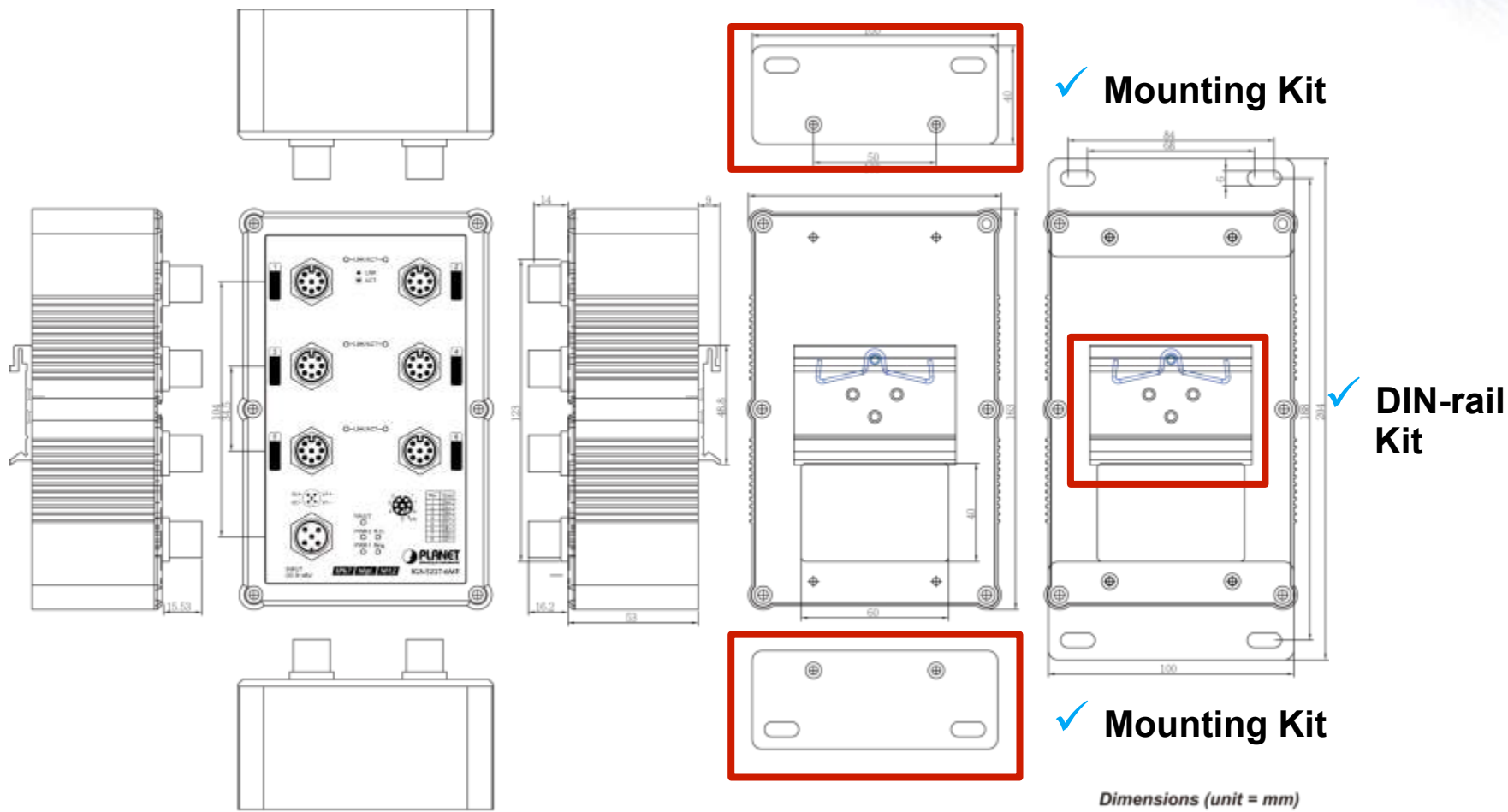
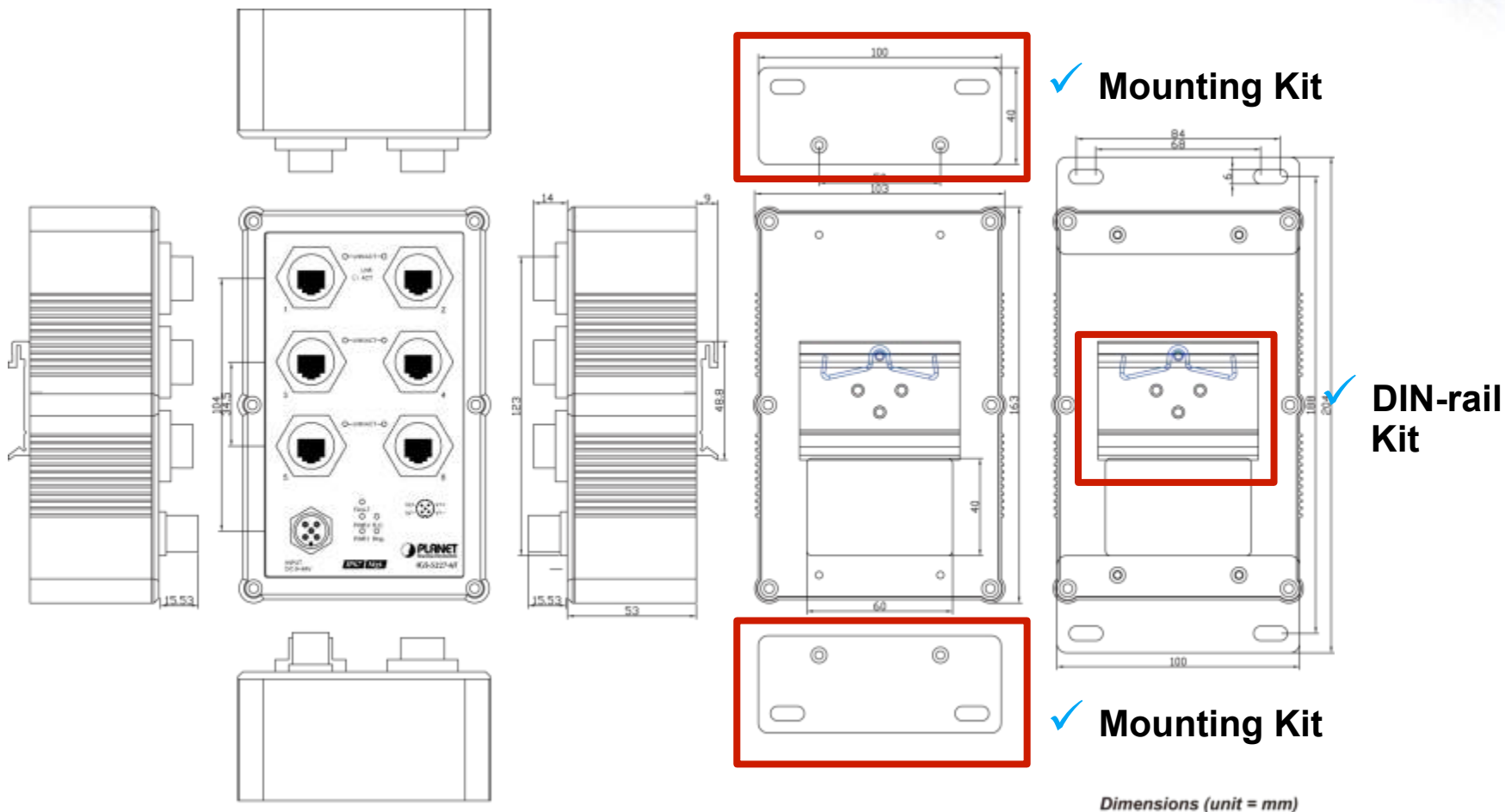


Diagram of IGS-5227-6T



Product Benefits

- Perfect Design -



Product Features

◆ Perfect Design

✓ Outdoor Installation

- **IP67-rated** housing
- **Waterproof** and **dustproof** M12 Ethernet interface and power input interface
- Operating temperature: **-40 ~ 75 degrees C**

✓ Transportation Application

- **EN50155** compatible
- **Waterproof and dustproof M12 Ethernet connectors** provide tight and strong connection, and come with the industrial protection rating of IP67 capable of withstanding **humidity**, **dirt**, **dust**, **shock**, **vibrations**, **heat** and **cold**.

✓ Fast Recovery Function

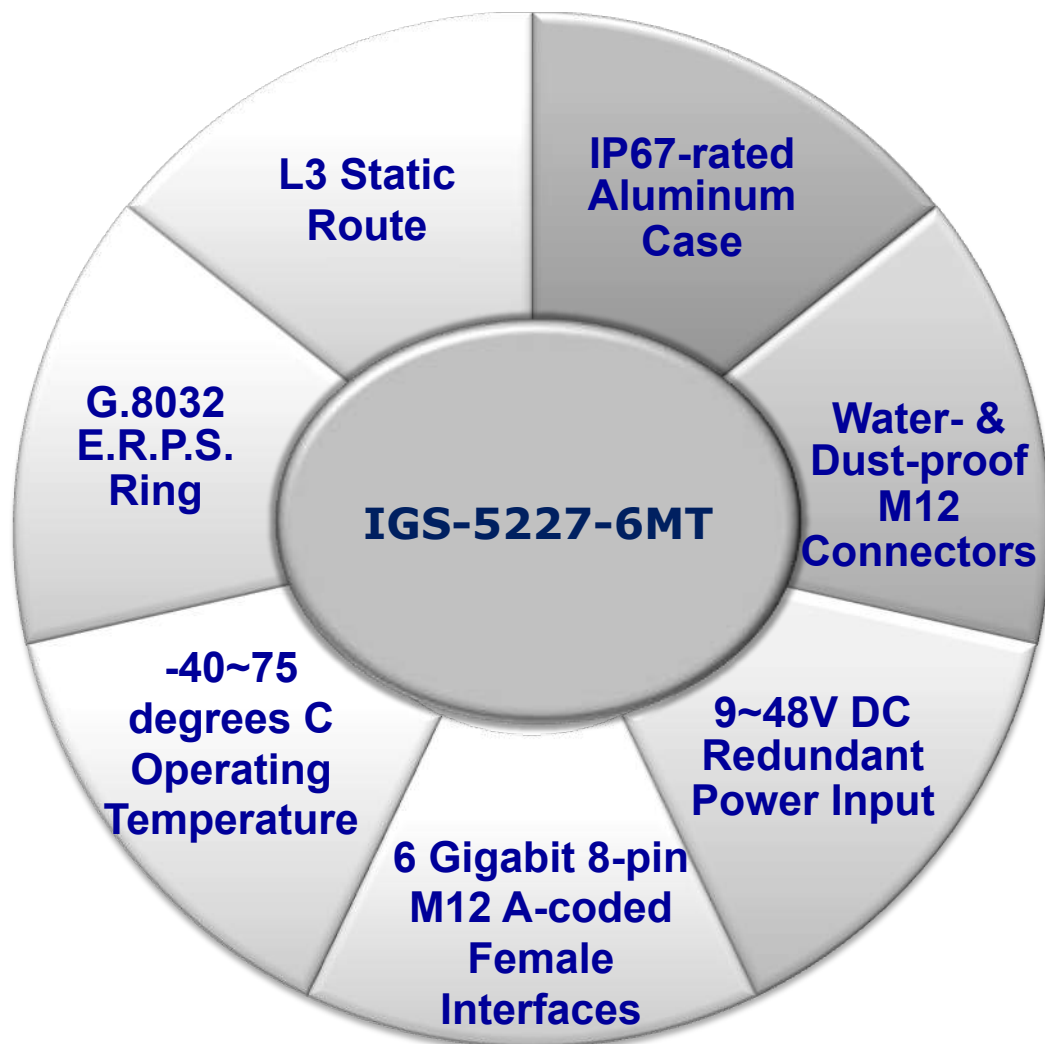
- Supports **ITU-T G.8032 ERPS (Ethernet Ring Protection Switching)**
- The recovery time of data link can be as fast as **50ms**.

Product Features

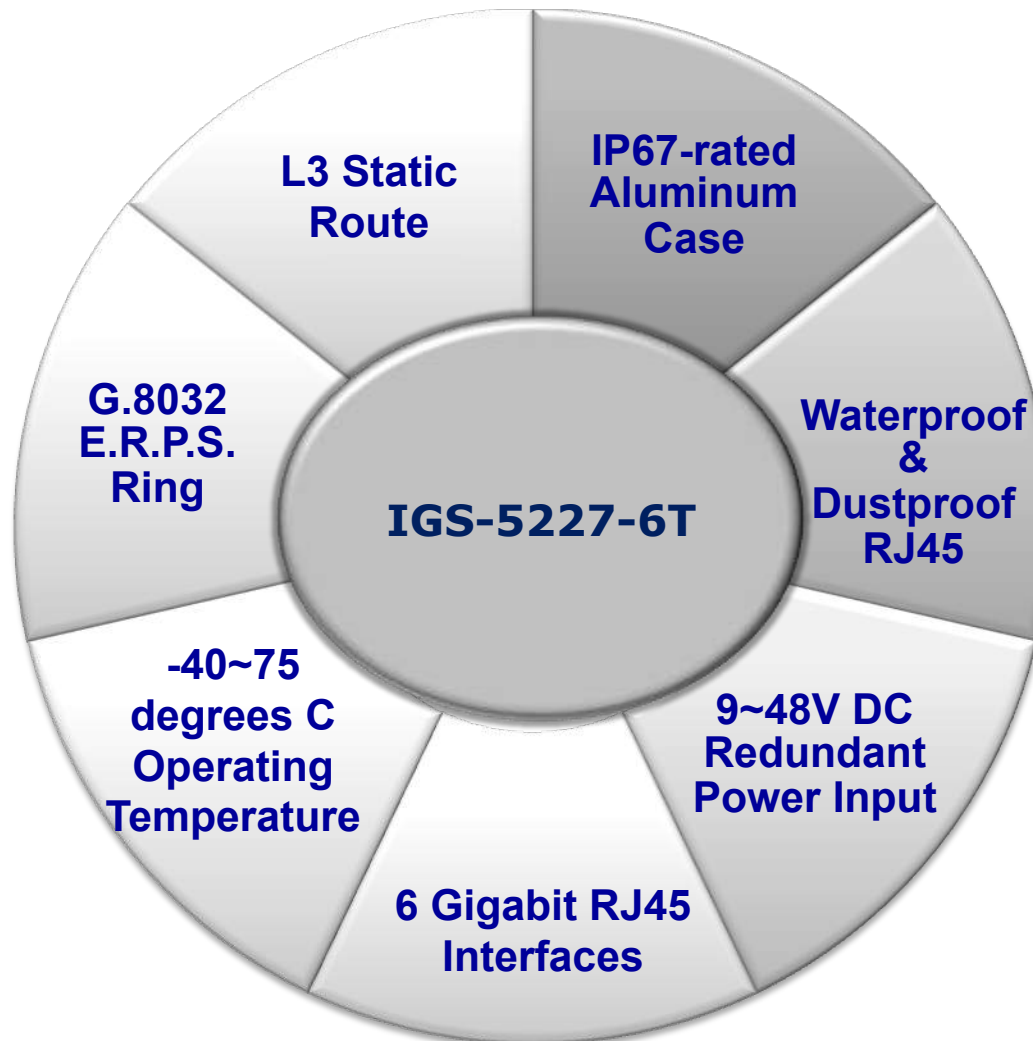
- Hardware -



Key Features



Key Features



Product Specifications

◆ Hardware of IGS-5227-6MT

- ✓ **6 x 10/100/1000BASE-T waterproof** and **dustproof** M12 Ethernet ports
- ✓ 8-pin M12 A-coded female interface
- ✓ **12Gbps/non-blocking** switch fabric
- ✓ **9~48V DC redundant power**
- ✓ **IP67** aluminum case
- ✓ **-40 to 75 degrees C** operating temperature
- ✓ **9K** bytes jumbo frame
- ✓ **8K** MAC address entries
- ✓ DIN-rail and wall-mount design

Product Specifications

◆ Hardware of IGS-5227-6T

- ✓ **6 x 10/100/1000BASE-T waterproof and dustproof** RJ45 Ethernet ports
- ✓ **12Gbps/non-blocking** switch fabric
- ✓ **9~48V DC redundant power**
- ✓ **IP67** aluminum case
- ✓ **-40 to 75 degrees C** operating temperature
- ✓ **9K** bytes jumbo frame
- ✓ **8K** MAC address entries
- ✓ DIN-rail and wall-mount design

Waterproof & Dustproof **M12** Connector

- ◆ When connected to the waterproof and dustproof M12 connector, it provides **tight** and **strong connection**, and comes with the industrial protection rating of IP67 capable of withstanding **humidity, dirt, dust, shock, vibrations, heat** and **cold**.

Waterproof & Dustproof **RJ45** Connector

- ◆ When connected to the waterproof and dustproof RJ45 connector, it provides **tight** and **strong connection**, and comes with the industrial protection rating of IP67 capable of withstanding **humidity, dirt, dust, shock, vibrations, heat** and **cold**.

Redundant Power Design

- ◆ **Waterproof** and **dustproof M12** connector
- ◆ **9 to 48V DC**, redundant power with reverse polarity protection
- ◆ Fault tolerance and resilience



Product Features

Layer 2+/4 Switching and Security Management



Layer 2 Features

◆ VLAN

- ✓ IEEE 802.1Q tagged VLAN
- ✓ Up to 255 VLAN groups, out of 4095 VLAN IDs
- ✓ Provider Bridging (VLAN **Q-in-Q**) support (IEEE 802.1ad)
- ✓ **Private VLAN** Edge (PVE)
- ✓ **MAC-based/Protocol-based VLAN/Voice VLAN**

◆ Spanning Tree Protocol

- ✓ IEEE 802.1D Spanning Tree Protocol (**STP**)
- ✓ IEEE 802.1w Rapid Spanning Tree Protocol (**RSTP**)
- ✓ IEEE 802.1s Multiple Spanning Tree Protocol (**MSTP**)
- ✓ **BPDU Guard** and **BPDU Filtering** enhance switch network reliability, manageability and security

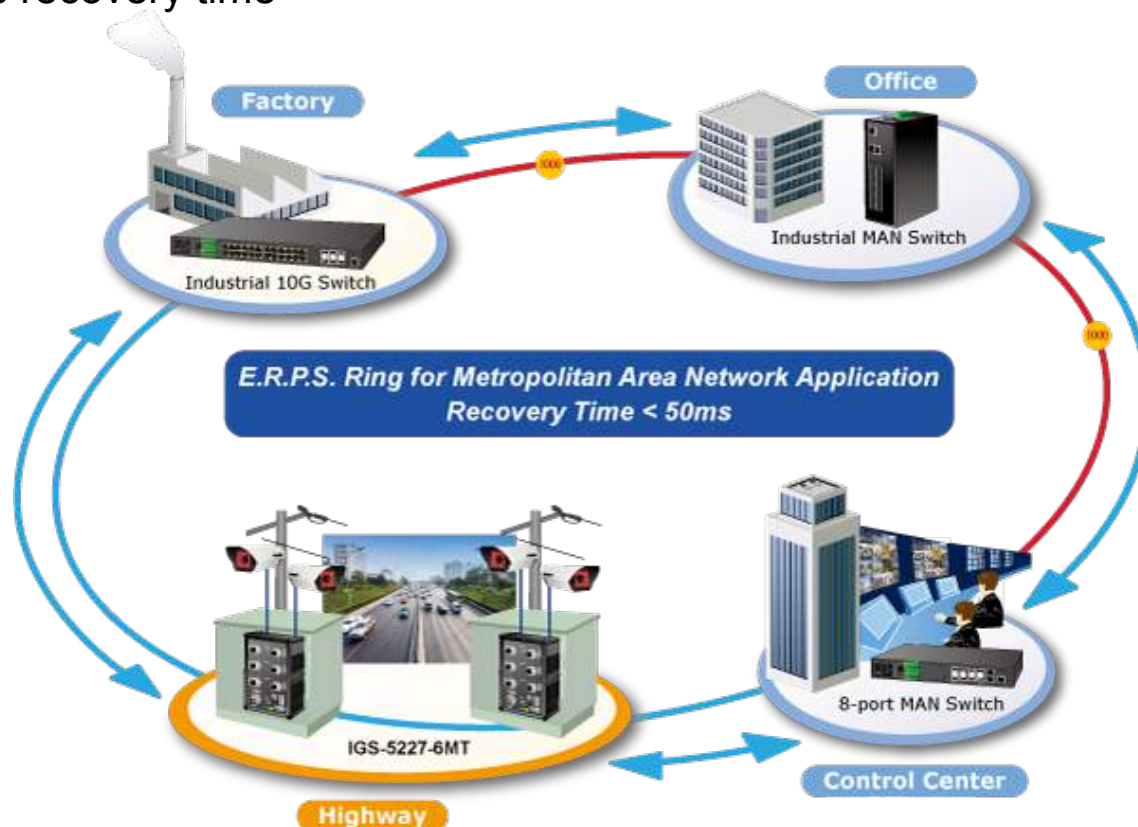
◆ E.R.P.S (Ethernet Ring Protection Switching)

- ✓ Complies with **ITU-T G.8032** standard
- ✓ Recovery time < **50ms**

ITU-T G.8032 E.R.P.S.

◆ Redundant Ring, Fast Recovery for Critical Network Applications

- ✓ Complies with ITU-T G.8032 standard
- ✓ 50ms recovery time



Layer 2 Features

◆ Quality of Service

- ✓ 8 priority queues on all switch ports
- ✓ Traffic Classification by:
 - 802.1p CoS
 - IP TOS/**DSCP**/Precedence of IPv4/IPv6 packets
 - **IP TCP/UDP** port number
 - Typical network applications
- ✓ **Ingress Shaper** and **Egress Rate Limit** per port bandwidth control
- ✓ **Strict Priority** and **Weighted Round Robin (WRR)** CoS policies
- ✓ Traffic policing on the switch port
- ✓ **DSCP Remarking**

Layer 2 Features



◆ Multicast

- ✓ Supports IGMP snooping v1, v2 and **v3**
- ✓ Supports MLD snooping v1 and **v2**
- ✓ Querier mode support
- ✓ IGMP snooping filtering
- ✓ MLD snooping filtering
- ✓ MVR (Multicast VLAN Registration)

◆ Supports Link Aggregation

- ✓ IEEE 802.3ad Link Aggregation Control Protocol (LACP)
- ✓ Cisco ether-channel (static trunk)
- ✓ 3 trunk groups, up to 6 ports per trunk group
- ✓ Up to 12Gbps bandwidth (full duplex mode)

Security Features

◆ Security

✓ Network Access Authentication Mechanism

- IEEE 802.1x port-based authentication for user identity control
- **MAC-based** authentication for easy deployment
- RADIUS/**TACACS+**/Local profile

✓ Access Control List (ACL)

- IP-based filtering to permit or deny traffic
- MAC-based filtering to permit or deny traffic

✓ Management **Source MAC/IP address binding** to prevent unauthorized intruder

✓ DHCP Snooping to filter distrusted DHCP messages

✓ Dynamic ARP Inspection discards ARP packets with invalid MAC address to IP address binding

✓ IP Source Guard prevents IP spoofing attacks

Fault Alarm

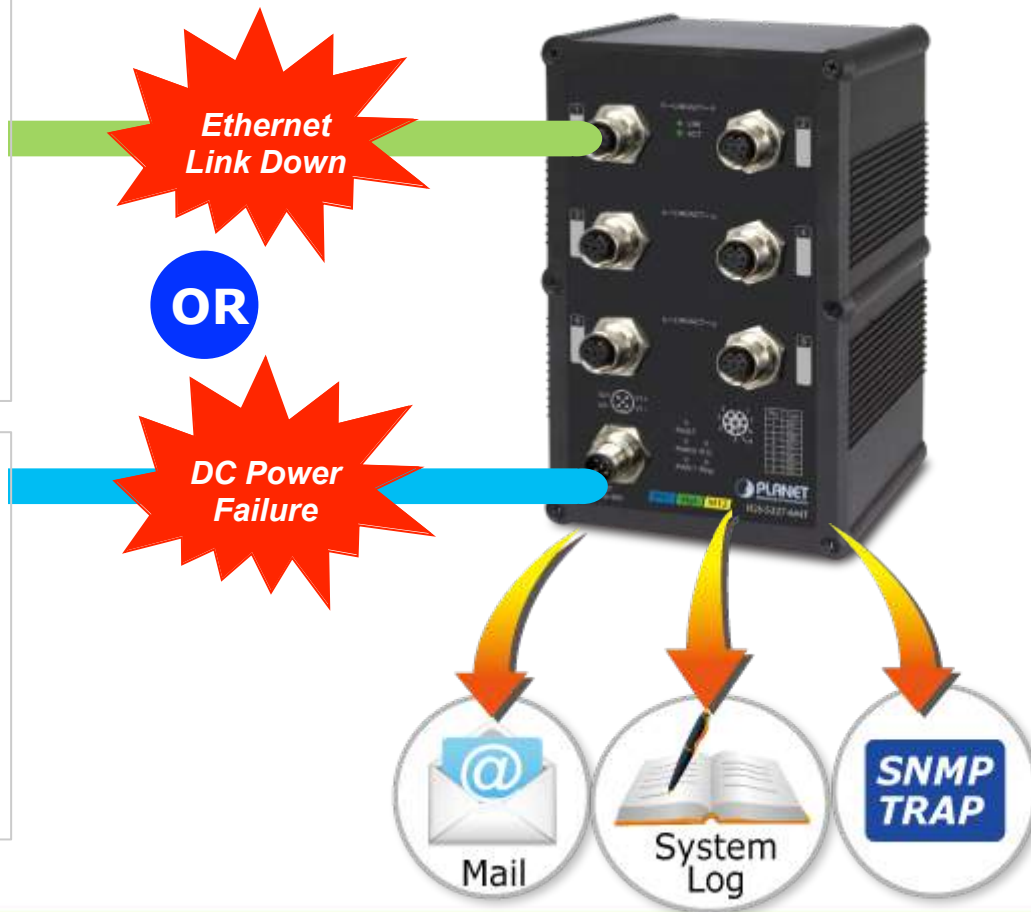
- The IGS-5227-6MT supports a **Fault Alarm** feature which can alert the users when there is something wrong with the switches. With this ideal feature, the users would not have to waste time to find where the problem is. It will help to save time and human resource.

Fault Alarm Control Configuration

Fault Alarm Output	
Enable	☒ Enable
Record	☒ System Log ☒ SNMP Trap
Action	☒ Port Fail ☐ Power Fail
Power Alarm	☐ DC 1 ☐ DC 2
Port Alarm	1 2 3 4 5 6 ☒ ☒ ☒ ☒ ☒ ☒

Fault Alarm Control Configuration

Fault Alarm Output	
Enable	☒ Enable
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Action	☐ Port Fail ☒ Power Fail
Power Alarm	☒ DC 1 ☒ DC 2
Port Alarm	1 2 3 4 5 6 ☐ ☐ ☐ ☐ ☐ ☐



Product Features

- IPv6/IPv4 Management -



Layer 3 Routing

- ◆ **IPv4/IPv6 Layer 3 Static Routing**
 - ✓ Supports maximum **8 VLAN interfaces**
 - ✓ Supports maximum **32 routing entries**
 - ✓ **IPv6** and **IPv4** static routing

Management Features

◆ Full Management

- ✓ **IPv4/IPv6** dual stack
- ✓ **IPv6** IP address/NTP/DNS management
- ✓ Standard-based management

- Web-based
- Telnet
- SNMP v1 and v2c

- ✓ **Security Authentication** for Secure Management

- **SSH**
- **SSL**
- **SNMPv3**

- ✓ SNMP RMON 1 and 2 for network traffic (in/out) and event monitoring
- ✓ SNMP trap for device Link Up/Link Down status monitoring
- ✓ **User Privilege** levels control



Management Tool Features

◆ Management Tools

- ✓ Four RMON groups (history, statistics, alarms and events)
- ✓ IPv6 IP address/NTP/DNS management
- ✓ Built-in Trivial File Transfer Protocol (TFTP) client
- ✓ Firmware upload/download via HTTP/TFTP
- ✓ DHCP Relay
- ✓ DHCP Option82
- ✓ NTP (Network Time Protocol)
- ✓ Link Layer Discovery Protocol (LLDP)
- ✓ **Cable Diagnostic** technology provides the mechanism to detect and report potential cabling issues
- ✓ PLANET **Smart Discovery** Utility for deployment management

CLI Benefits

- ◆ Telnet/SSH command is Cisco-like, which allows users to make it work more easily.

```
Telnet 192.168.0.100

Username: admin
Password:
Switch# configure terminal
Switch(config)# vlan 2
Switch(config-vlan)# exit
Switch(config)# interface GigabitEthernet 1/3-6
Switch(config-if)# switchport access vlan 2
Switch(config-if)#
```

```
Telnet 192.168.0.100

Username: admin
Password:
Switch# configure terminal
Switch(config)# vlan 2
Switch(config-vlan)# exit
Switch(config)# int vlan 2
Switch(config-if-vlan)# ip address 192.168.2.100 255.255.255.0
Switch(config-if-vlan)# exit
Switch(config)# exit
Switch# show ip interface brief
Vlan Address                Method   Status
-----
  1 192.168.0.100/24        Manual   UP
  2 192.168.2.100/24        Manual   DOWN
Switch#
```

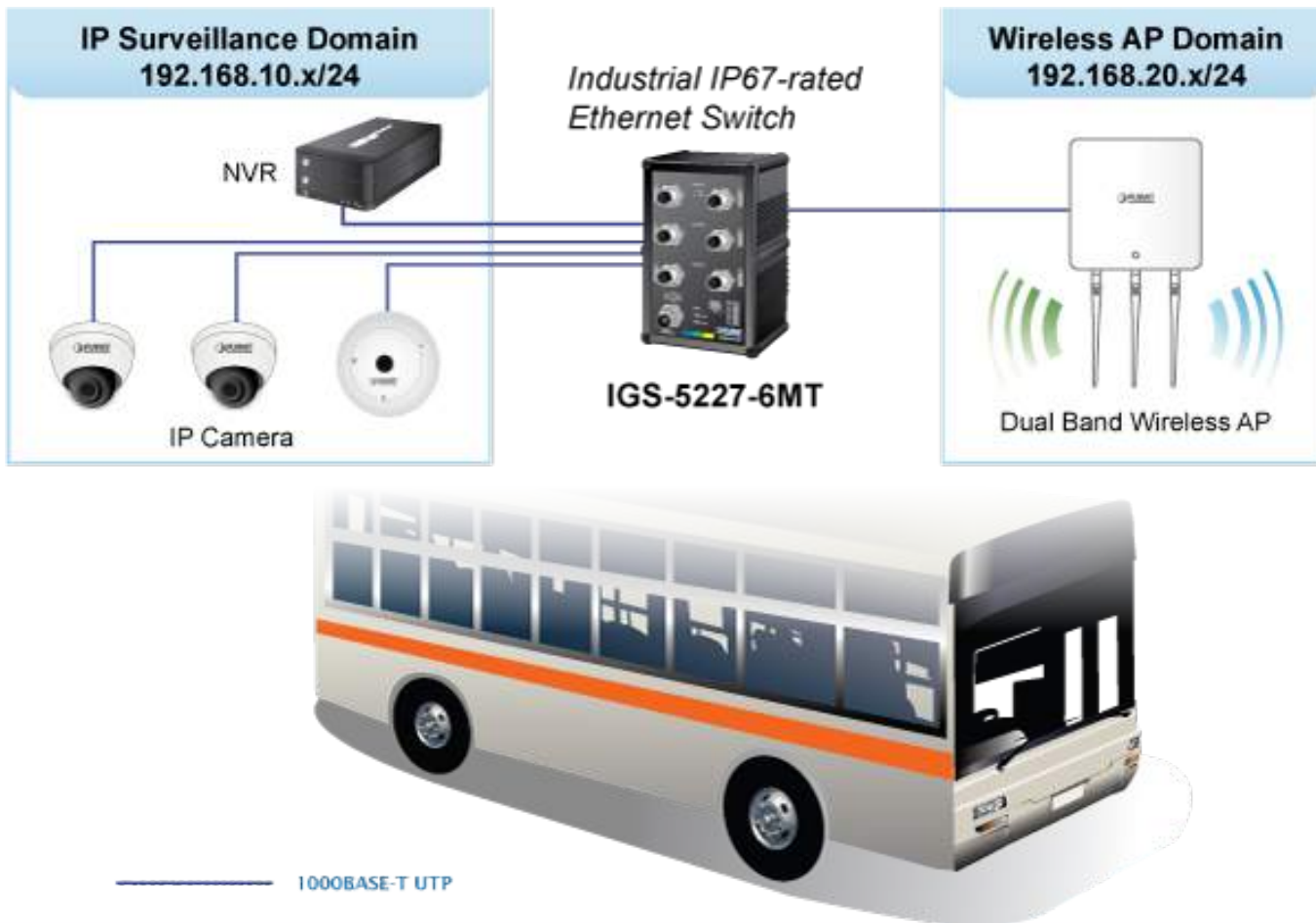


Applications



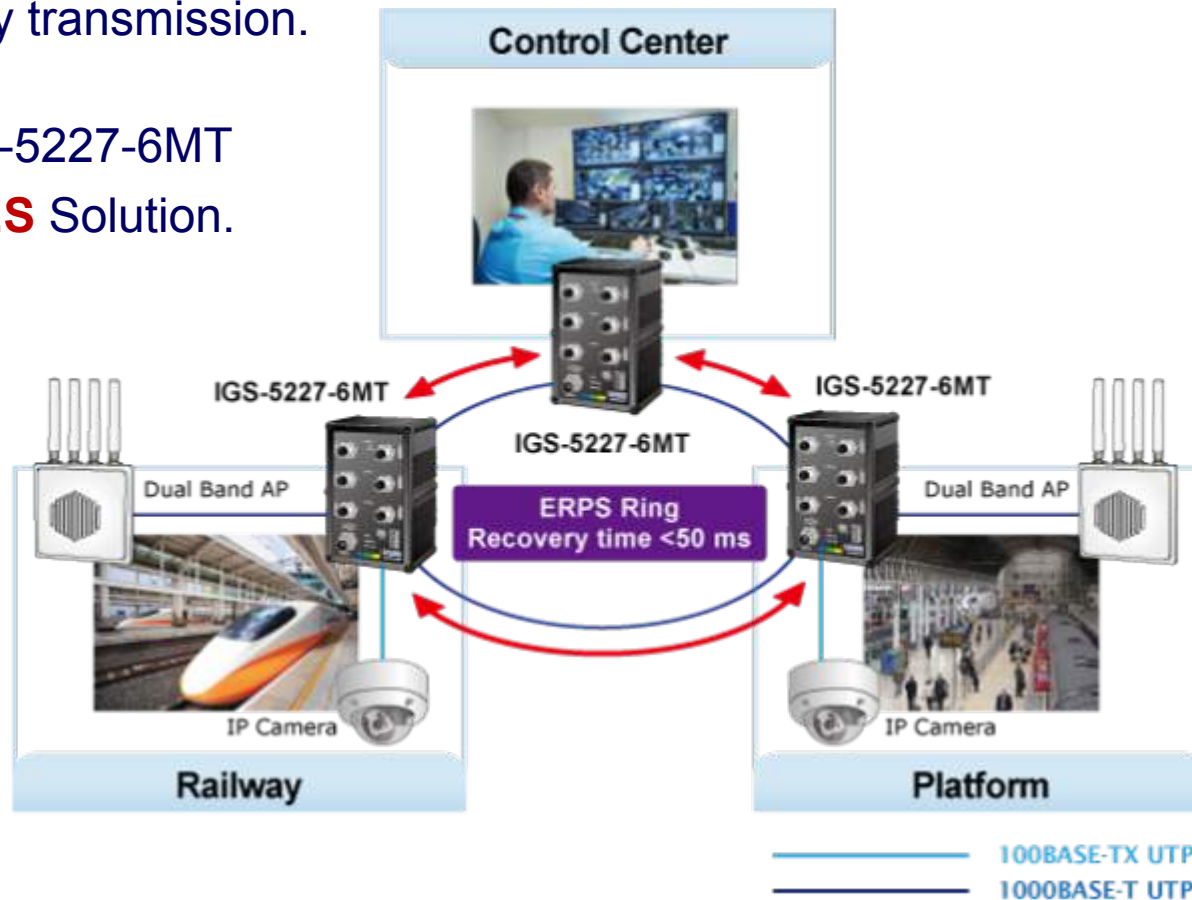
Applications

- ◆ To separate different applications with static routing function



Applications

- ◆ High availability networking solution for surveillance, public transmission system and railway transmission.
- ◆ Connect each IGS-5227-6MT together for **E.R.P.S** Solution.



Appendix



Sales Target

◆ Target Markets

- ✓ Public Construction
- ✓ Transportation
- ✓ System Integrator
- ✓ IE Distributor
- ✓ Manufacturer



◆ Related Profitable Solutions

- ✓ Strong and stable Gigabit Ethernet performing under difficult Industrial environments
- ✓ Robust waterproof and dustproof M12 connector and IP67-rated aluminum case for deploying in harsh environments
- ✓ The following are Industrial Switches:
 - **ISW-804PT-M12, ISW-800T-M12**
 - **IGS-604HPT-RJ, IGS-604HPT-M12, IGS-5227-4MP2MT, IGS-5227-6MT-X**

Appendix



◆ Related Outdoor Ethernet Products:

Model Name		Description
IGS-604HPT-M12		Industrial IP67-rated 4-Port 10/100/1000T 802.3at PoE + 2-Port 10/100/1000T Managed Ethernet Switch
IGS-604HPT-RJ		Industrial IP67-rated 4-Port 10/100/1000T 802.3at PoE + 2-Port 10/100/1000T Managed Ethernet Switch
IGS-5226-4P2T		Industrial EN50155 4-Port 10/100/1000T 802.3at PoE + 2-Port 10/100/1000T Managed Ethernet Switch
ISW-800T-M12		Industrial IP67-rated 8-Port 10/100Mbps M12 Fast Ethernet Switch
ISW-804PT-M12		Industrial IP67-rated 8-Port 10/100Mbps M12 Fast Ethernet PoE Switch

Appendix

- ◆ Available 8-pin A-coded M12 male to RJ45 Ethernet Cable (2 meters)
 - ✓ CB-M12A8MRJ-200



Appendix

◆ Available DIN-rail Power Supplies:

- ✓ **PWR-40-24** **40W** 24V DC Industrial DIN-rail Power Supply (Voltage Adj. Range: 24~30V)
- ✓ **PWR-60-24** **60W** 24V DC Industrial DIN-rail Power Supply (Voltage Adj. Range: 24~30V)
- ✓ **PWR-75-24** **75W** 24V DC Industrial DIN-rail Power Supply (Voltage Adj. Range: 24~30V)



Appendix

◆ Available DIN-rail Power Supplies:

- ✓ **PWR-75-48** **75W** 48V DC Industrial DIN-rail Power Supply (Voltage Adj. Range: 48~56V)
- ✓ **PWR-120-48** **120W** 48V DC Industrial DIN-rail Power Supply (Voltage Adj. Range: 48~56V)
- ✓ **PWR-240-48** **240W** 48V DC Industrial DIN-rail Power Supply (Voltage Adj. Range: 48~56V)
- ✓ **PWR-480-48** **480W** 48V DC Industrial DIN-rail Power Supply (Voltage Adj. Range: 48~56V)





ACTIVATING IP POWER