



# Industrial IP67-rated 4-Port 10/100/1000T 802.3at PoE + 2-Port 10/100/1000T Managed Ethernet Switch (-40~75 degrees C)



### Suitable for Industrial Environment

Matlog MTL-604I6P-RJ, an Industrial Managed Ethernet Switch, comes with an IP67-rated industrial case, 4-port 10/100/1000T 802.3at PoE, 2-port 10/100/1000T, and **static Layer 3 routing**, providing a high level of immunity against electromagnetic interference and heavy electrical surges which are usually found on plant floors or in curb-side traffic control cabinets. The MTL-604I6P-RJ can be easily mounted on a DIN rail or wall taking up less space. Each of the four Gigabit PoE+ ports provides 36-watt of power, which means a total power budget of up to **144 watts** can be utilized simultaneously without considering the different types of PoE applications being employed. It also provides a quick, safe and cost-effective Power over Ethernet network solution to IP security surveillance for small businesses and enterprises.



### Physical Port

- **6-port 10/100/1000BASE-T waterproof and dustproof** RJ45 copper with 4-port **IEEE 802.3at/af Power over Ethernet** Injector function

### Hardware Conformance

- Complies with IEEE 802.3at High Power over Ethernet end-span PSE
- Complies with IEEE 802.3af Power over Ethernet end-span PSE
- Up to 4 ports of IEEE 802.3af/802.3at devices powered
- Supports PoE Power up to 36 watts for each PoE port
- Auto detects powered device (PD)
- Circuit protection prevents power interference between ports
- Remote power feeding up to 100 meters
- PoE Management
  - Total PoE power budget control
  - Per port PoE function enable/disable
  - PoE Port Power feeding priority
  - Per PoE port power limitation
  - PD classification detection
  - PD alive check
  - PoE schedule
  - PD scheduled power recycling

### Hardware Conformance

- IP67-rated aluminum case
- Redundant power design
  - 48 to 56V DC, redundant power with polarity reverse protect function
  - Active-active redundant power failure protection
  - Backup of catastrophic power failure on one supply
  - Fault tolerance and resilience
- DIN-rail and wall-mount design
- Supports EFT protection for 6000V DC power and 6000V DC Ethernet ESD protection
- -40 to 75 degrees C operating temperature

### Layer 3 IP Routing Features

- Supports maximum 32 static routes and route summarization

### Layer 2 Features

- Prevents packet loss with back pressure (half-duplex) and IEEE 802.3x pause frame flow control (full-duplex)



### Waterproof and Dustproof RJ45 Ethernet Connector and Shielded Plug

The MTL-604I6P-RJ is equipped with a 6-port 10/100/1000BASE-T auto-negotiation waterproof and dustproof RJ45 connector with 4-port IEEE 802.3at PoE+ (Port 3 to port 6); each PoE port provides 36-watt PoE output. These shielded RJ45 plugs can make the general UTP cable waterproof and dustproof. When connected to the waterproof and dustproof RJ45 connector, it provides tight and strong connection, and ensures it comes with the industrial protection rating of IP67 capable of withstanding humidity, dirt, dust, shock, vibrations, heat and cold.



### Environmentally Hardened Design

The MTL-604I6P-RJ is able to protect itself from dust and water ingress, and to operate under the temperature range from **-40 to 75 degrees C**. All these features ensure the highest level of reliability for mission-critical applications in any difficult environment.



### Dual Power Input for High Availability Network System

The MTL-604I6P-RJ features a strong dual power input system (**Dual 48V~56V DC**) incorporated into customer's automation network to enhance system reliability and uptime. For example, when DC Power 1 fails to work, the hardware failover function will be activated automatically to keep powering the MTL-604I6P-RJ via DC Power 2 alternatively without any loss of operation.

### Centralized Power Management for Gigabit Ethernet PoE Networking

To fulfill the needs of higher power required PoE network applications with Gigabit speed transmission, the MTL-604I6P-RJ features high-performance Gigabit IEEE 802.3af PoE (up to 15.4 watts) and IEEE 802.3at PoE+ (up to 36 watts) on all ports. It perfectly meets the power requirements of PoE VoIP phone, PoE Wireless AP and all kinds of PoE IP cameras such as IR, PTZ, speed dome cameras and even box type IP cameras with a built-in fan and heater for high power consumption.

The MTL-604I6P-RJ's PoE capabilities also help to reduce deployment costs for network devices as a result of freeing from restrictions of power outlet locations. Power and data switching are integrated into one unit, delivered over a single cable and managed centrally. It thus eliminates cost for additional AC wiring and reduces installation time.

- High performance of Store-and-Forward architecture, and runt/CRC filtering that eliminates erroneous packets to optimize the network bandwidth
- Storm control support
  - Broadcast/Multicast/Unicast
- Supports **VLAN**
  - IEEE 802.1Q tagged VLAN
  - Up to 255 VLANs groups, out of 4095 VLAN IDs
  - Provides Bridging (VLAN Q-in-Q) support (IEEE 802.1ad)
  - Private VLAN Edge (PVE)
  - Protocol-based VLAN
  - MAC-based VLAN
  - IP subnet-based VLAN
  - Voice VLAN
- Supports **Spanning Tree Protocol**
  - STP, IEEE 802.1D Spanning Tree Protocol
  - RSTP, IEEE 802.1w Rapid Spanning Tree Protocol
  - MSTP, IEEE 802.1s Multiple Spanning Tree Protocol, spanning tree by VLAN
  - BPDU Guard
- Supports **Link Aggregation**
  - 802.3ad Link Aggregation Control Protocol (LACP)
  - Cisco ether-channel (static trunk)
  - Maximum 3 trunk groups, with 2 ports for each trunk
  - Up to 4Gbps bandwidth (full duplex mode)
- Provides port mirror (many-to-1)
- Port mirroring monitors the incoming or outgoing traffic on a particular port
- Loop protection to avoid broadcast loops
- Supports E.R.P.S. (Ethernet Ring Protection Switching)
- IEEE 1588 and Synchronous Ethernet network timing

### Quality of Service

- Ingress shaper and egress rate limit per port bandwidth control
- 8 priority queues on all switch ports
- Traffic classification
  - IEEE 802.1p CoS
  - ToS/DSCP/IP precedence of IPv4/IPv6 packets
  - IP TCP/UDP port number
  - Typical network application
- Strict priority and Weighted Round Robin (WRR) CoS policies
- Traffic-policing policies on the switch port
- DSCP remarking

### Multicast

- Supports IGMP snooping v1, v2 and v3
- Supports MLD snooping v1 and v2
- Querier mode support
- IGMP snooping port filtering



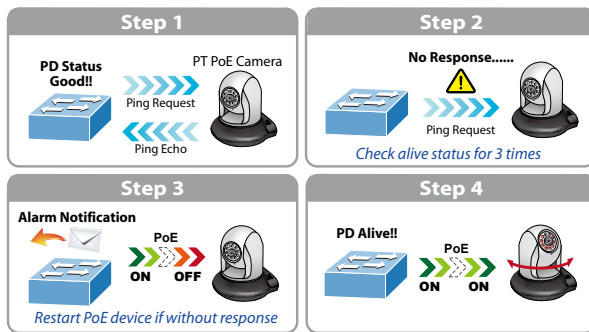
**Built-in Unique PoE Functions for Surveillance Management**

As a managed PoE Switch for surveillance network, the MTL-604I6P-RJ features intelligent PoE management functions:

- PD Alive Check
- Scheduled Power Recycling
- SMTP/SNMP Trap Event Alert
- PoE Schedule

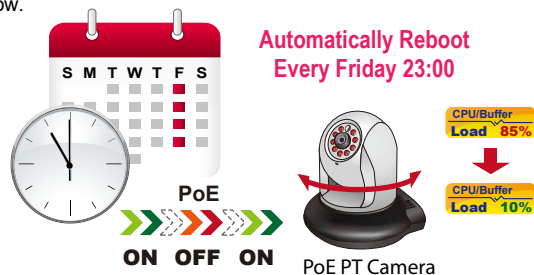
**Intelligent Powered Device Alive Check**

The MTL-604I6P-RJ can be configured to monitor a connected PD (Powered Device) status in real time via ping action. Once the PD stops working and it is without response, the MTL-604I6P-RJ will resume the PoE port power and bring the PD back to work. It will greatly enhance the network reliability through the PoE port resetting the PD's power source, thus reducing administrator management burden.



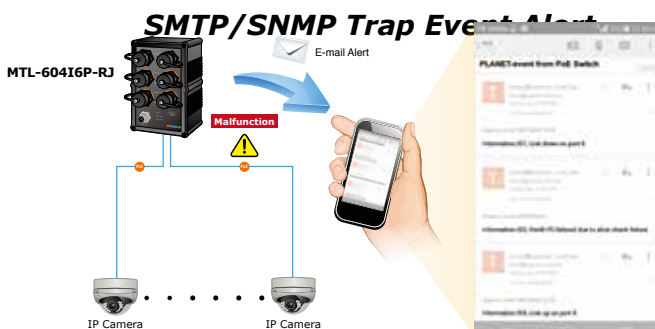
**Scheduled Power Recycling**

The MTL-604I6P-RJ allows each of the connected PDs to reboot at a specified time each week. Therefore, it will reduce the chance of PD crash resulting from buffer overflow.



**SMTP/SNMP Trap Event Alert**

Though most NVR or camera management software offers SMTP email alert function, the MTL-604I6P-RJ further provides event alert function to help to diagnose the abnormal device owing to whether or not there is a break of the network connection, loss of PoE power or the rebooting response by the PD Alive Check process.



- MLD snooping port filtering
- MVR (Multicast VLAN Registration)

**Security**

- Authentication
  - IEEE 802.1x port-based/MAC-based network access authentication
  - IEEE 802.1x authentication with guest VLAN
  - Built-in RADIUS client to cooperate with the RADIUS servers
  - RADIUS/TACACS+ users access authentication
- Access Control List
  - IP-based Access Control List (ACL)
  - MAC-based Access Control List (ACL)
- Source MAC/IP address binding
- 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
- IP address access management to prevent unauthorized intruder

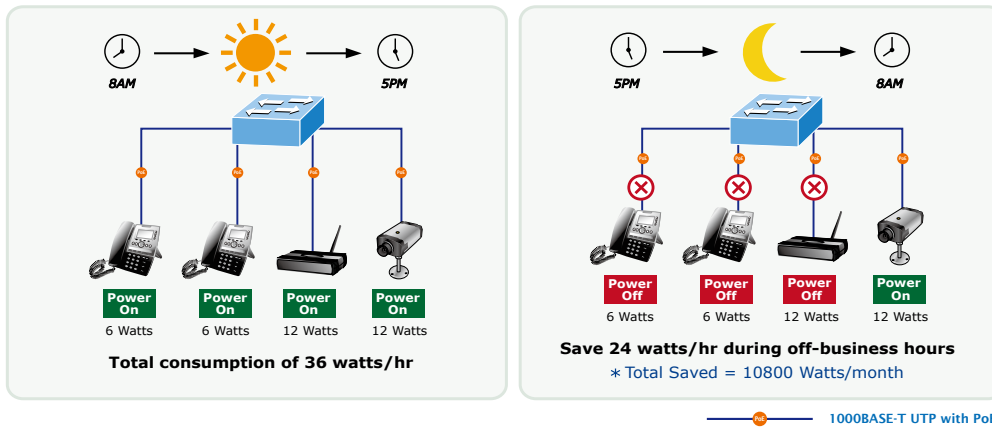
**Management**

- IPv4 and IPv6 dual stack management
- Switch Management Interfaces
  - Telnet command line interface
  - Web switch management
  - SNMP v1, v2c, and v3 switch management
  - SSH/SSL secure access
- IPv6 address/NTP management
- Built-in Trivial File Transfer Protocol (TFTP) client
- BOOTP and DHCP for IP address assignment
- System Maintenance
  - Firmware upload/download via HTTP/TFTP
  - Reset button for system reboot or reset to factory default
  - Dual images
- DHCP relay and option 82
- User privilege levels control
- NTP (Network Time Protocol)
- Link Layer Discovery Protocol (LLDP) and LLDP-MED
- Network diagnostic
  - Cable diagnostic technology provides the mechanism to detect and report potential cabling issues
  - ICMPv6/ICMPv4 remote ping
- SMTP/Syslog remote alarm
- Four RMON groups (history, statistics, alarms and events)
- SNMP trap for interface link up and link down notification
- System Log



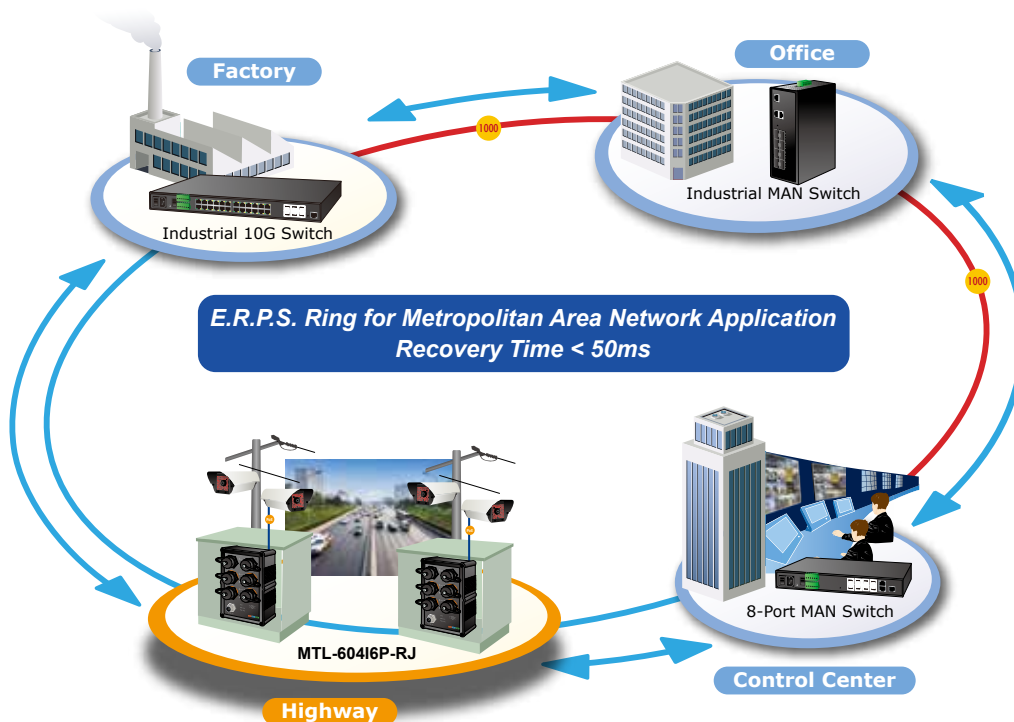
**PoE Schedule for Energy Saving**

Besides being used for IP surveillance, the MTL-60416P-RJ is certainly applicable to build any PoE network including VoIP and wireless LAN. Under the trend of energy saving worldwide and contributing to the environmental protection on the Earth, the MTL-60416P-RJ can effectively control the power supply besides its capability of giving high watts power. The "PoE schedule" function helps you to enable or disable PoE power feeding for each PoE port during specified time intervals and it is a powerful function to help SMBs and enterprises save energy and budget.



**Redundant Ring, Fast Recovery for Critical Network Applications**

The MTL-60416P-RJ supports redundant ring technology and features strong, rapid self-recovery capability to prevent interruptions and external intrusions. It incorporates advanced ITU-T G.8032 ERPS (Ethernet Ring Protection Switching) technology, Spanning Tree Protocol (802.1s MSTP), and redundant power input system into customer's industrial automation network to enhance system reliability and uptime in harsh factory environments. In a certain, simple Ring network, the recovery time of data link can be as fast as 20ms.



**IPv6/IPv4 Dual Stack**

Supporting both IPv6 and IPv4 protocols, the MTL-60416P-RJ helps data centers, campuses, telecoms, and more to experience the IPv6 era with the lowest investment as its network facilities need not be replaced or overhauled if the IPv6 FTTx edge network is set up.

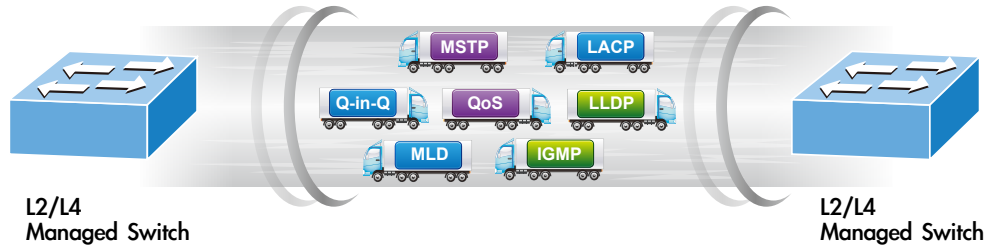
**Layer 3 IPv4 and IPv6 VLAN Routing for Secure and Flexible Management**

The MTL-60416P-RJ not only provides ultra high transmission performance, and excellent layer 2 and layer 4 technologies, but also layer 3 IPv4/IPv6 VLAN routing feature which allows to crossover different VLANs and different IP addresses for the purpose of having a highly-secure, flexibly-managed and simple networking application.



**Robust Layer 2 Features**

The MTL-604I6P-RJ can be programmed for advanced switch management functions such as dynamic port link aggregation, **Q-in-Q VLAN**, private VLAN, **Multiple Spanning Tree Protocol (MSTP)**, Layer 2 to Layer 4 QoS, bandwidth control and **IGMP/MLD Snooping**. Via the link aggregation of supporting ports, the MTL-604I6P-RJ allows the operation of a high-speed trunk to combine with multiple fiber ports and supports fail-over as well.



**Powerful Security**

The MTL-604I6P-RJ offers a comprehensive **layer 2 to layer 4 Access Control List (ACL)** for enforcing security to the edge. It can be used to restrict network access by denying packets based on source and destination IP address, TCP/UDP ports or defined typical network applications. Its protection mechanism also comprises **802.1X Port-based** and **MAC-based** user, and device authentication. With the **private VLAN** function, communication between edge ports can be prevented to ensure user privacy. The MTL-604I6P-RJ also provides **DHCP Snooping**, **IP Source Guard** and **Dynamic ARP Inspection** functions to prevent IP snooping from attack and discard ARP packets with invalid MAC address. The network administrators can now construct highly-secure corporate networks with considerably less time and effort than before.

**Excellent Traffic Control**

The MTL-604I6P-RJ is loaded with powerful traffic management and QoS features to enhance connection services by telecoms and ISPs. The QoS features include wire-speed Layer 4 traffic classifiers and bandwidth limit that are particularly useful for multi-tenant units, multi-business units, Telco and network service providers' applications. It also empowers the industrial environment to take full advantage of the limited network resources and guarantees the best performance in VoIP and video conferencing transmission.

**Efficient and Secure Management**

With built-in Web-based management interface, the MTL-604I6P-RJ L2+ Managed Switch offers an easy-to-use, platform-independent management and configuration facility which includes Web and SNMP management interfaces. The SNMP can be managed via any management software based on the standard of SNMP Protocol. For reducing product learning time, it offers Cisco-like command via Telnet and customer does not need to learn new console command. Moreover, it also offers secure remote management by supporting **SSH**, **SSL** and **SNMP v3** connections which encrypt the packet content at each session.

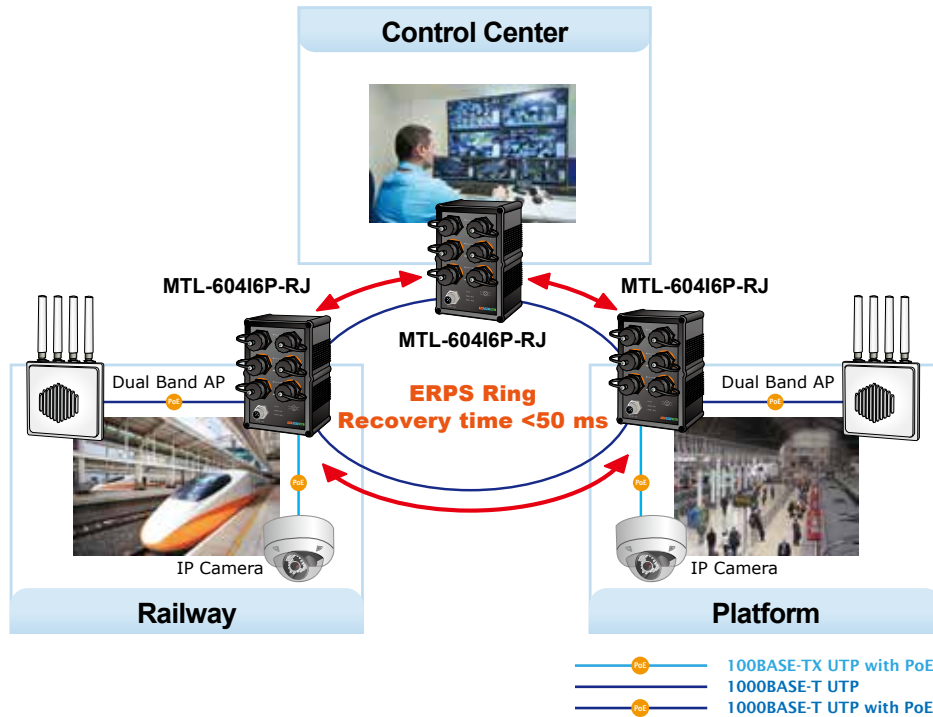




## Applications

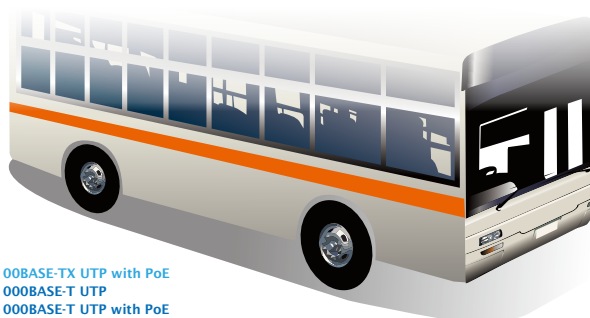
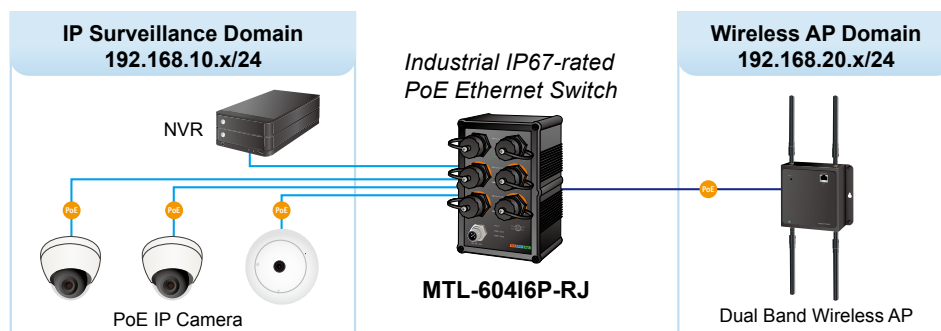
### High Availability Networking Solution for Surveillance System

The MTL-60416P-RJ features strong, rapid, self-recovery capability to prevent interruptions and external intrusions. It incorporates **ITU-T G.8032 ERPS (Ethernet Ring Protection Switching)** into customer's automation network to enhance system reliability and uptime. The MTL-60416P-RJ is the ideal solution for surveillance system to build redundant connection and establish high bandwidth for public transmission system and railway transmission.



### Layer 3 VLAN Routing and PoE Application

With the built-in, robust Layer 3 routing protocols, the MTL-60416P-RJ ensures reliable routing between VLANs and network segments. The routing protocols can be applied by VLAN interface with up to 32 routing entries. The MTL-60416P-RJ, certainly an ideal solution for industries, offers greater security, control and bandwidth conservation, and high-speed uplink.



100BASE-TX UTP with PoE  
1000BASE-T UTP  
1000BASE-T UTP with PoE



## Specifications

Product	MTL-604I6P-RJ	
<b>Hardware Specifications</b>		
Copper Ports	6 10/100/1000BASE-T waterproof and dustproof RJ45 auto-MDI/MDI-X ports	
PoE Injector Port	4 ports with 802.3af/af PoE injector function (Port-3 to Port-6)	
Switch Architecture	Store-and-Forward	
Switch Fabric	12Gbps/non-blocking	
Throughput	8.9Mpps@64bytes	
Address Table	8K entries, automatic source address learning and aging	
Shared Data Buffer	4M bits	
Flow Control	IEEE 802.3x pause frame for full-duplex Back pressure for half-duplex	
Jumbo Frame	9K bytes	
Reset Button	< 5 sec: System reboot > 5 sec: Factory default	
Dimensions (W x D x H)	103 x 68.3 x 163 mm	
Weight	1069g	
LED	System: DC1 (Green), DC2 (Green), Fault (Red) Ring (Green), R.O. (Green) 10/100/1000T RJ45 Interfaces (Port 1 to Port 2): LNK/ACT (Green) 10/100/1000T RJ45 Interfaces (Port 3 to Port 6): LNK/ACT (Green) PoE-in-Use (Orange)	
Power Consumption	Max. 160 watts/545.9 BTU	
Power Requirements	Dual 48~56V DC (>53V DC for PoE+ output recommended)	
EFT Protection	6KV DC	
ESD Protection	6KV DC	
PoE Standard	IEEE 802.3af/802.3at PoE/PSE	
PoE Power Supply Type	End-span	
PoE Power Output	IEEE 802.3af Standard - Per port 48V~53V DC (depending on the power supply), max. 15.4 watts IEEE 802.3at Standard - Per port 53V~56V DC (depending on the power supply), max. 36 watts	
Power Pin Assignment	1/2(+), 3/6(-)	
PoE Power Budget	144 watts max. (depending on power input)	
PoE Ability	PD @ 7 watts	4 units
	PD @ 15.4 watts	4 units
	PD @ 30.8 watts	4 units
<b>Layer 2 Management Functions</b>		
Port Configuration	Port disable/enable Auto-negotiation 10/100/1000Mbps full and half duplex mode selection Flow control disable/enable	
Port Status	Display each port's speed duplex mode, link status, flow control status, auto-negotiation status, trunk status	
Port Mirroring	TX/RX/Both Many-to-1 monitor	
VLAN	802.1Q tagged based VLAN Q-in-Q tunneling Private VLAN Edge (PVE) MAC-based VLAN Protocol-based VLAN Voice VLAN IP Subnet-based VLAN MVR (Multicast VLAN registration) Up to 255 VLAN groups, out of 4095 VLAN IDs	
Link Aggregation	IEEE 802.3ad LACP/static trunk 3 groups with 2 port per trunk	
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)	

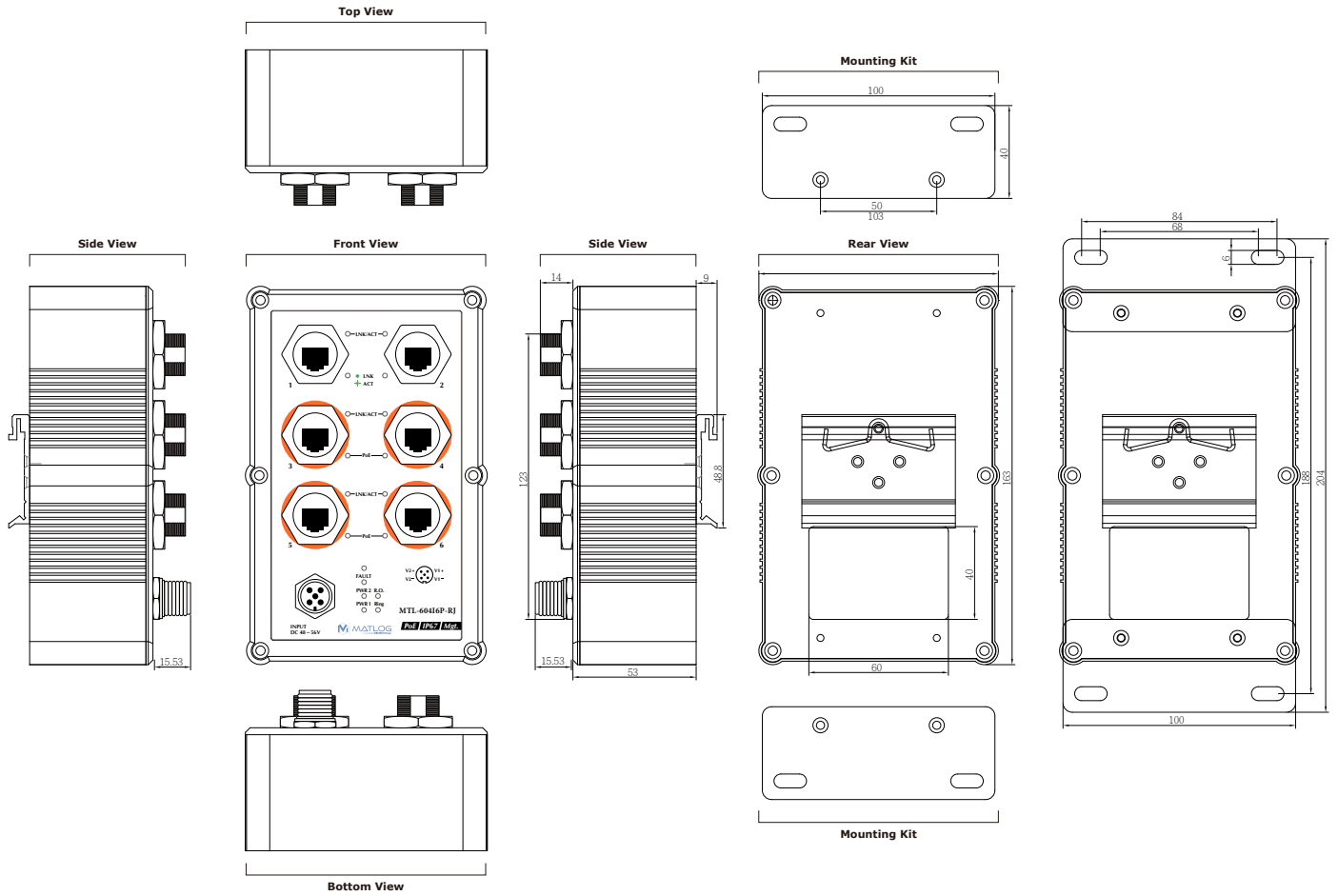


QoS	Traffic classification based, Strict priority and WRR 8-level priority for switching: - Port number - 802.1p priority - 802.1Q VLAN tag - DSCP/ToS field in IP packet	
IGMP Snooping	IGMP (v1/v2/v3) snooping, up to 255 multicast groups IGMP querier mode support	
MLD Snooping	MLD (v1/v2) snooping, up to 255 multicast groups MLD querier mode support	
Access Control List	IP-based ACL/MAC-based ACL Up to 256 entries	
Bandwidth Control	Per port bandwidth control Ingress: 100Kbps~1000Mbps Egress: 100Kbps~1000Mbps	
<b>Layer 3 Functions</b>		
IP Interfaces	Max. 8 VLAN interfaces	
Routing Table	Max. 32 routing entries	
Routing Protocols	IPv4 software static routing IPv6 software static routing	
<b>Management</b>		
Basic Management Interfaces	Telnet/Web browser/SNMP v1, v2c	
Secure Management Interfaces	SSH, SSL, SNMP v3	
SNMP MIBs	RFC 1213 MIB-II RFC 1493 Bridge MIB RFC 1643 Ethernet MIB RFC 2863 Interface MIB RFC 2665 Ether-Like MIB RFC 2819 RMON MIB (Group 1, 2, 3 and 9) RFC 2737 Entity MIB RFC 2618 RADIUS Client MIB	RFC 2863 IF-MIB RFC 2933 IGMP-STD-MIB RFC 3411 SNMP-Frameworks-MIB RFC 4292 IP Forward MIB RFC 4293 IP MIB RFC 4836 MAU-MIB IEEE 802.1X PAE LLDP Power over Ethernet MIB
<b>Standards Conformance</b>		
Regulatory Compliance	FCC Part 15 Class A, CE	
Standards Compliance	IEEE 802.3 10BASE-T IEEE 802.3u 100BASE-TX IEEE 802.3ab Gigabit 1000T IEEE 802.3x flow control and back pressure IEEE 802.3ad port trunk with LACP IEEE 802.1D Spanning Tree Protocol IEEE 802.1w Rapid Spanning Tree Protocol IEEE 802.1s Multiple Spanning Tree Protocol IEEE 802.1p Class of Service IEEE 802.1Q VLAN tagging IEEE 802.1X Port Authentication Network Control	IEEE 802.1ab LLDP IEEE 802.3af Power over Ethernet IEEE 802.3at Power over Ethernet Plus RFC 768 UDP RFC 793 TFTP RFC 791 IP RFC 792 ICMP RFC 2068 HTTP RFC 1112 IGMP v1 RFC 2236 IGMP v2 RFC 3376 IGMP v3 RFC 2710 MLD v1 RFC 3810 MLD v2
<b>Environment</b>		
Operating	Temperature: -40 ~ 75 degrees C Relative Humidity: 5 ~ 95% (non-condensing)	
Storage	Temperature: -40 ~ 80 degrees C Relative Humidity: 5 ~ 95% (non-condensing)	





## Dimensions



Dimensions ( unit = mm )

## Ordering Information

MTL-604I6P-RJ

Industrial IP67-rated 4-Port 10/100/1000T 802.3at PoE + 2-Port 10/100/1000T Managed Ethernet Switch (-40~75 degrees C)