

# HIRSCHMANN IT

A **BELDEN** BRAND

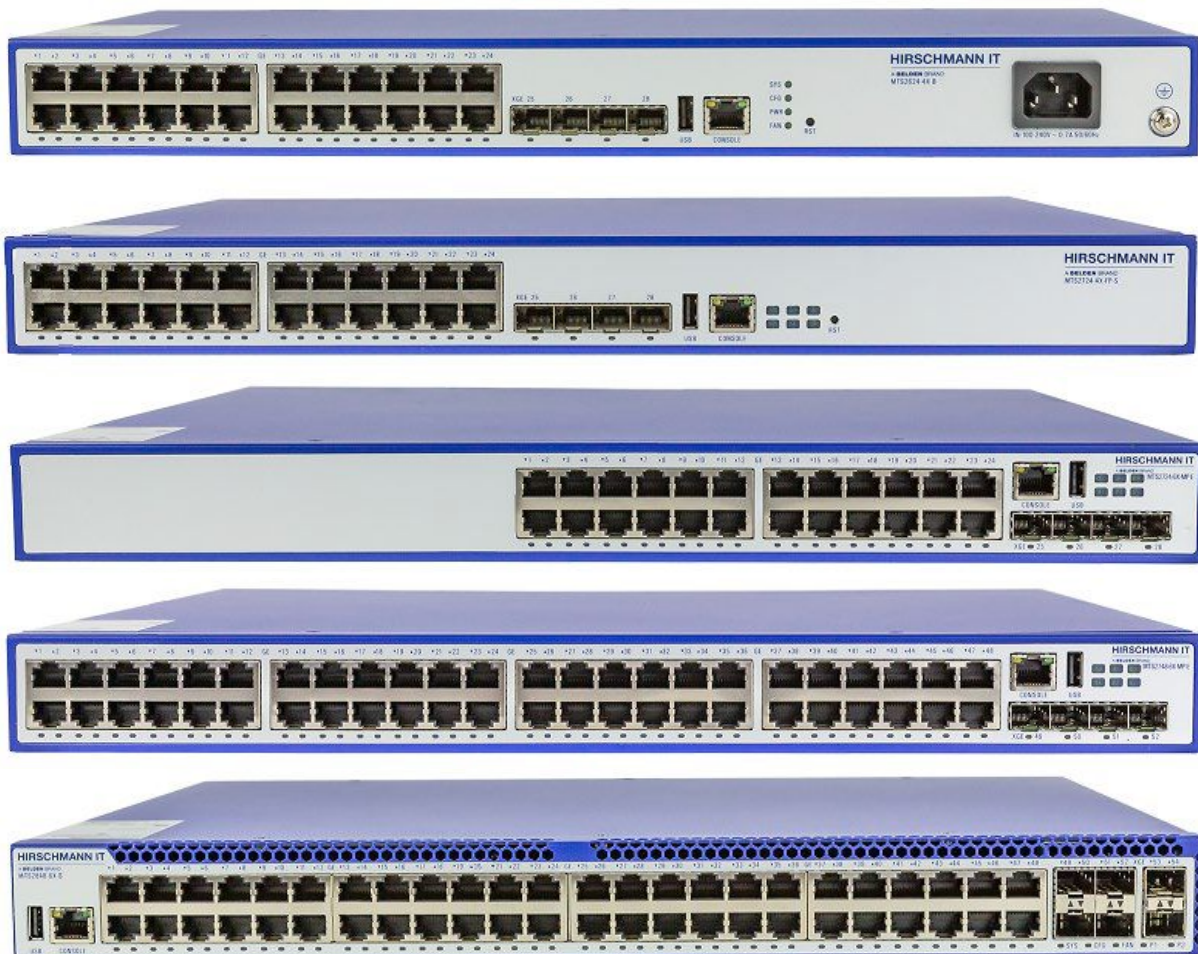
## User manual

### Installation

### **MAMMUTHUS ACCESS LAYER & DISTRIBUTION LAYER SWITCH – MTS2600/2700/2800**

### **MAMMUTHUS POWER MODULE – MTM2700-PSU500/PSU120**

### **MAMMUTHUS MEDIA MODULE – MTM2700-2X**



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# Safety guidelines



## Warning

### Uncontrolled machine action

To avoid uncontrolled machine action due to data loss, configure all data transfer devices separately.

Before starting any machine controlled by data transfer, be sure to complete the configuration of all data transfer devices.

**Failure to comply with these guidelines may result in death, serious injury or equipment damage.**

### ☐ General safety guidelines

Hot-line work is required for the equipment. Improper use of the equipment may result in personal injury or great destruction of property. The proper and safe operation of the equipment depends on proper handling during transportation, reasonable storage and installation, as well as careful establishment and strict adherence to the operation and maintenance procedures.

- ☐ Please read this manual as well as safety guidelines and warnings before connecting any cable.
- ☐ Only operate the equipment without any damaged components.
- ☐ Make sure there is no component to be repaired in the equipment. In case of any damage or failure to the equipment, switch off the power and return the equipment to Belden for inspection.

### ☐ Qualification requirements for operators

- ☐ Only qualified personnel are allowed to operate the equipment.

Qualified personnel have the following characteristics:

- ☐ They shall receive appropriate training. Training and required practical knowledge and experience are prerequisites to be qualified for product operation. Only when these prerequisites are met can operators perform grounding and labeling operations on circuits, equipment and systems in accordance with current safety technical standards.
- ☐ Qualified personnel shall be aware that there is danger in their work.
- ☐ Qualified personnel shall know well how to deal with these hazards to reduce risks posed to themselves and others.
- ☐ Qualified personnel shall receive training on a regular basis.

☐ **Correct use**

Use the equipment only for the purposes specified in the catalog and technical instructions. Only external devices and components recommended and permitted by the manufacturer can be used to operate the equipment.

The correct and safe operation of this product depends on the correct operation, storage, assembly and installation during transport, as well as careful operation and maintenance procedures.

☐ **National and international safety regulations**

Carry out validation to ensure that electrical installations comply with applicable local or national safety regulations.

☐ **Wire connection requirements**

Always make sure that all requirements listed are met before connecting the wires.

**The requirements below shall apply without limitation:**

- ☐ The wires are voltage free.
- ☐ The cables used meet the temperature range required for a particular purpose.
- ☐ First, connect the ground screw on the back of the equipment to the protective conductor before setting up other connections. When to remove connections, the protective conductor shall be the last to be removed.
- ☐ Do not power up the equipment during installation.
- ☐ Requirements for North America:  
Use 60 / 75 ° C (140 / 167 ° F) or 75 ° C (167 ° F) copper (Cu) wires only.

Table 1: Wire connection requirements

☐ **Power voltage connection requirements**

Device Model	The requirements below shall apply without limitation:
All models	Meet all of the following requirements <ul style="list-style-type: none"><li><input type="checkbox"/> The supply voltage shall be consistent with the specified value on the equipment nameplate.</li><li><input type="checkbox"/> The power supply shall conform to overvoltage category I or II.</li><li><input type="checkbox"/> The power supply shall be equipped with an easy-to-operate disconnecter (such as a switch or plug).</li><li><input type="checkbox"/> The disconnecter shall be clearly marked, so that in an emergency, the operator knows at a glance the correspondence between the disconnecter and the power cable.</li><li><input type="checkbox"/> When to connect a power supply voltage with a protective conductor: first connect the protective conductor, and then the power supply voltage. If the equipment contains such a second power supply voltage connection module: first connect the protective conductor, and then the power supply voltage.</li><li><input type="checkbox"/> Supply with DC voltage:</li><li><input type="checkbox"/> Power cord diameter at the power supply voltage input shall be at least 1mm<sup>2</sup> (North America: AWG16). Supply with AC voltage:</li></ul>

- Power cord diameter at the power supply voltage input shall be at least 0.75 mm<sup>2</sup> (North America: AWG18).
- The cross section of the grounding conductor shall be the same as or larger than that of the power cord.
- Power cables suitable for voltage, current and physical loads shall be used.
- The external fuse shall be installed in the conductor at the non-spot position.

---

*Table 2: Power voltage connection requirements*





### **Special conditions for safe use**

- ☐ Install the basic equipment and modules in a suitable enclosure based on specific environmental conditions to provide at least IP54 protection according to the requirements of EN 60529.
- ☐ Take measures to prevent instantaneous interference from exceeding 140% of the rated voltage at the voltage input.

#### ☐ **Shield grounding**

The shield grounding module of the twisted-pair cable shall be connected to the front panel as a conductor.

When connecting a cable segment with a conductive shield braid, pay attention to the possible short circuit.

#### ☐ **ESD guide**

These modules are equipped with electrostatic sensitive components.

If the connection is touched, these sensitive components may be damaged or their service life shortened by electric field or charge balance effects.

You may find information about electrostatic hazard components in DIN EN 61340-5-1 (2007-08) and DIN EN 61340-5-2 (2007-08).

## ☐ **Equipment enclosure**

Only technicians authorized by the manufacturer are allowed to open the enclosure.

- ☐ Keep vents open to ensure good air circulation.
- ☐ Ensure a minimum of 3.94 inches (10 cm) of space in front of the enclosure vent.
- ☐ Do not touch the enclosure during operation or shortly after shutting down the equipment. Hot surfaces may cause injury.
- ☐ Install the equipment horizontally in the cabinet or vertically on a flat surface.

Do not place the equipment on the desktop for operation. **See Page 40 for details of “Install equipment and ground”.**

- ☐ Operate the equipment at the maximum ambient air temperature and in stacking: when to install the equipment, make sure that there is at least one available rack space (approx. 5 cm) above the equipment to allow heat to escape through the enclosure of the equipment.
- ☐ If you operate the equipment in 19” switch cabinet: install the slide / rails to support the weight of the equipment.

## ☐ **Installation site requirements**

The equipment can only be operated at the specified ambient temperature - the ambient air temperature at a distance of 2 inches (5 cm) from the equipment - with relative humidity.

- ☐ When selecting the installation position, be sure to comply with the climate thresholds set forth in the technical data.
- ☐ Please use the equipment in the environment where the maximum pollution level conforms to the technical data.

☐ **CE mark**

Marked equipment shall comply with the European directives below:

Device Model	Instruction
All models	2011/65/EU and 2015/863/EU(RoHS) Directive of the European Parliament and of the Council on the restriction of the use of certain hazardous substances in electrical and electron.
All models	2014/30/EU (EMC) Directive of the European Parliament and of the Council on electromagnetic compatibility among standardization members.

Please submit the EU compliance statement to the authorities at the following address in accordance with the above EU directives:

Hirschmann Automation and Control GmbH  
Stuttgarter Str. 45-51  
72654 Neckartenzlingen  
Germany  
[www.belden.com](http://www.belden.com)

**Warning!** As Class A equipment, it may cause interference to the living area. In such case, the operator may need to take appropriate actions.

**Warning!** When Ethernet cables are used in industrial environments, they must be shielded.

**Note:** It is required to strictly comply with the assembly guidelines provided in these guidelines to observe EMC thresholds.

☐ **LED or Laser Component**

LED or Laser Component conforming to IEC 60825-1 (2014):

Class 1 laser products

Class 1 LED products

☐ **FCC description:**

The equipment complies with Section 15 of FCC. The equipment shall be operated in line with the following two requirements: (1) the equipment causes no harmful interference; (2) the equipment must accept any interference it receives, including interference that may result in accidental operation. Appropriate testing has confirmed that the equipment meets the requirements for Class A digital equipment in Section 15 of FCC.

These requirements are intended to provide adequate protection against interference with the equipment when used in commercial environments. The equipment creates and uses high frequencies and may also radiate them. Failure to observe this user manual in installation or use of the equipment may cause interference with radio transmission. Use of the equipment in residential areas may also cause interference, in which case the user is obliged to pay to eliminate such interference.

☐ **Recovery instructions**

At the end of use, you must properly dispose of the equipment as e-waste in accordance with the current disposal regulations of your county, state and country.

## About the manual

This user manual about “Installation” contains equipment instructions, safety instructions, display instructions, and other information required for equipment installation.

# Legend

The symbols used in this manual have the following meanings:

□□	Item list
□□	Work step
□	Subtitle

# 1 Description

## 1.1 General equipment description

MTS2600 switch provides an economic choice for port expansion and LAN extension, which enables customers to choose products with good performance, function and flexibility under the condition of tight budget. Users can extend the Gigabit line speed switching performance from the core to access equipment.

MTS2700 is a PoE switch with comprehensive functions, which can provide up to 30W power for PoE PD equipment; rich L2/L3 and security functions can support complex network applications. Modular power supplies can provide fast field maintenance (FRU), and the equipment can ensure normal operation under the environment of 55°C.

MTS2800 switch provides a complete set of access and convergence solutions, and all models have redundant power configuration. The model is compact, low noise, and can be compatible with 600\*600 compact cabinet. The switch has a complete L2/L3 feature set, which can provide flexibility, reliability and security for network planning.

### ☐ Basic device









☐ **Power module**



You may choose 1 or 2 power modules with the same input voltage:

☐ LV / Ethernet power supply (+)

Power modules are provided as accessories. Please refer to “Order number” on Page 68 .

## ☐ Media module



You can select 1 media module.

Media modules are provided as accessories. Please refer to “Order number” on Page 68.

## 1.2 Equipment name and product code

The equipment name corresponds to the product code.

### 1.2.1 Basic device

Order number	Product code	Description
942999847	MTS2624-4X-B	24 × FE/GE TX, 4 × 1/10G SFP+ slot, single fixed power supply, basic software.
942999835	MTS2724-4X-FP-S	24 × FE/GE POE/POE+, 4 × 1/10G SFP+ slot, fixed redundant power supply, POE output 380W, basic software.
942999832	MTS2724-6X-MP-E	24 × FE/GE POE/POE+, 4 × 1/10G SFP+ slot, 1 × extend media module slot, 2 × modular power supply unit slot, advanced software.
942999831	MTS2748-6X-MP-E	48 × FE/GE POE/POE+, 4 × 1/10G SFP+ slot, 1 × extend media module slot, 2 × modular power supply unit slot, advanced software.
942999846	MTS2832TF-4X-E	24 × 100/1000M SFP slot, 8 × FE/GE TX, 4 × 1/10G SFP + slot, fixed redundant power supply, advanced software.
942999845	MTS2824F-4X-S	24 × 100/1000M SFP slot, 4 × 1/10G SFP + slot, fixed redundant power supply, basic software.
942999844	MTS2824-4X-S	24 × FE/GE TX, 4 × 1/10G SFP + slot, fixed redundant power supply, basic software.
942999843	MTS2848-6X-S	48 × FE/GE TX, 6 × 1/10G SFP + slot, fixed redundant power supply, basic software.
942999842	MTS2824-6X-E	24 × FE/GE TX, 6 × 1/10G SFP + slot, fixed redundant power supply, advanced software.
942999841	MTS2848-6X-E	48 × FE/GE TX, 6 × 1/10G SFP + slot, fixed redundant power supply, advanced software.

### 1.2.2 Power module

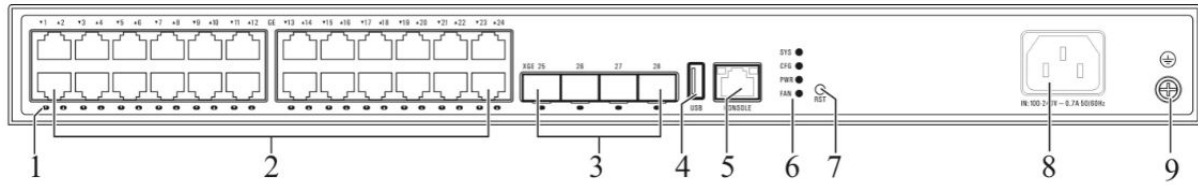
Order number	Product code	Description
942999834	MTM2700-PSU120	AC/DC 120W power supply unit; input 100-240V/2.0A; output 12V/10A; No PoE support.
942999833	MTM2700-PSU500	AC/DC 500W power supply unit; input 100-240V/7.0A; output 12VDC/10A, 53.5VDC/7A; PoE support.

### 1.2.3 Media module

Order number	Product code	Description
942999836	MTM2700-2X	MTS 2700 media module, 2 × 1/10G SFP+ slot.

## 1.3 Equipment view

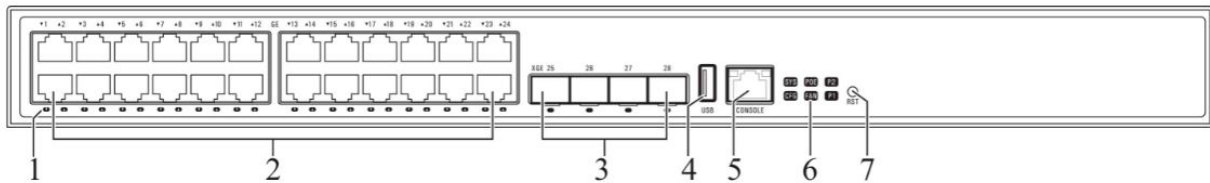
### 1.3.1 MTS2624-4X-B



#### Front view

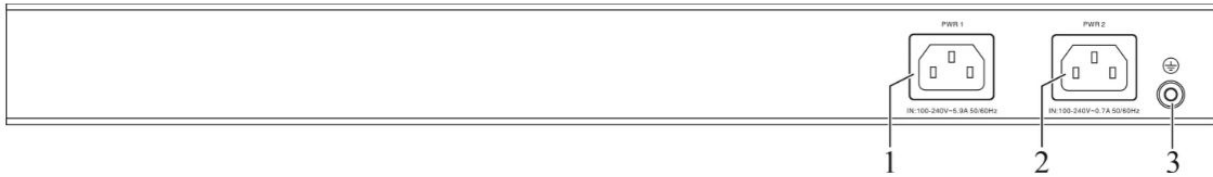
- |   |  |
|---|--|
| 1 | Gigabit Electrical Interface status LED                            |
| 2 | Gigabit Electrical Interface                                       |
| 3 | 10 Gigabit Optical Interface                                       |
| 4 | USB interface  |
| 5 | CONSOLE port   |
| 6 | Equipment status LED   |
| 7 | Reset button (press and hold for 5 seconds to restart the machine) |
| 8 | AC power socket  |
| 9 | Ground terminal  |

### 1.3.2 MTS2724-4X-FP-S



#### Front view

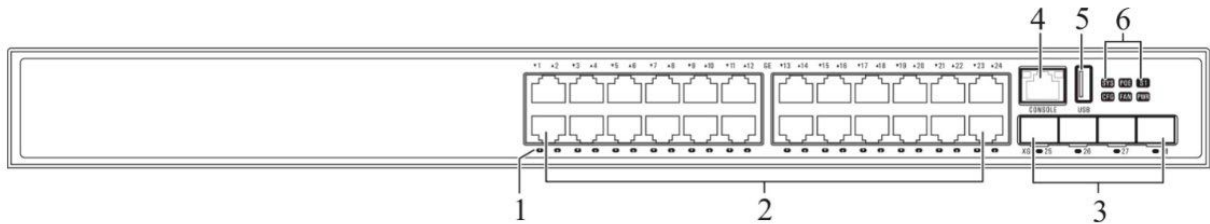
- |   |  |
|---|--|
| 1 | Gigabit Electrical Interface status LED                            |
| 2 | Gigabit Electrical Interface (with POE function)                   |
| 3 | 10 Gigabit Optical Interface                                       |
| 4 | USB interface  |
| 5 | CONSOLE port   |
| 6 | Equipment status LED   |
| 7 | Reset button (press and hold for 5 seconds to restart the machine) |



#### Rear view

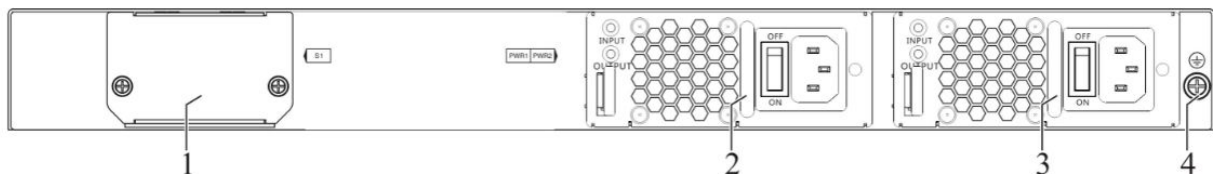
- 1 AC power socket
- 2 AC power socket
- 3 Ground terminal

### 1.3.3 MTS2724-6X-MP-E



#### Front view

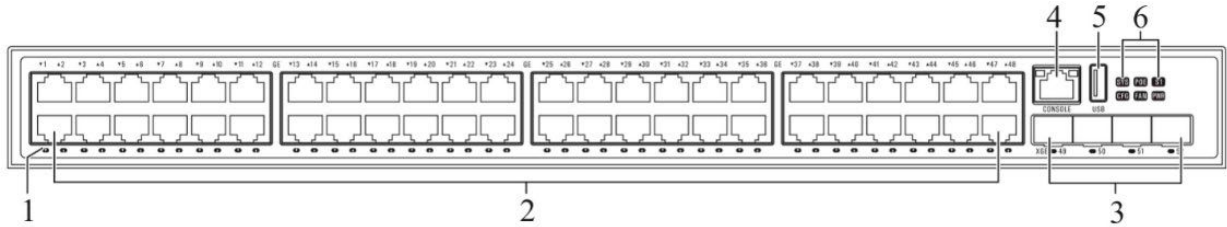
- 1 Gigabit Electrical Interface status LED
- 2 Gigabit Electrical Interface (with POE function)
- 3 10 Gigabit Optical Interface
- 4 USB interface
- 5 CONSOLE port
- 6 Equipment status LED



#### Rear view

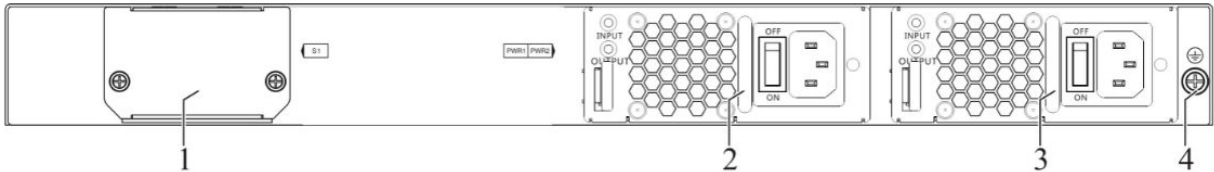
- 1 Interface card slot
- 2 Modular power supply 1
- 3 Modular power supply 2
- 4 Ground terminal

### 1.3.4 MTS2748-6X-MP-E



**Front view**

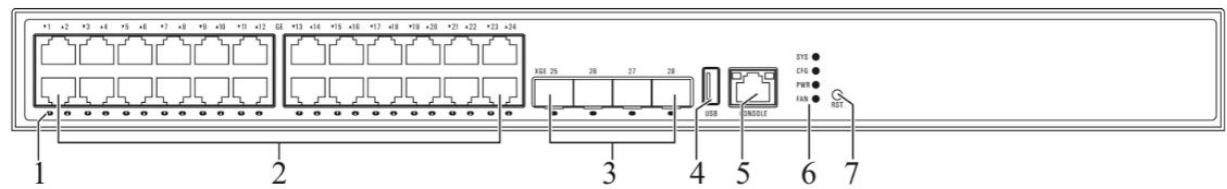
- |   |  |
|---|--|
| 1 | Gigabit Electrical Interface status LED          |
| 2 | Gigabit Electrical Interface (with POE function) |
| 3 | 10 Gigabit Optical Interface                     |
| 4 | USB interface                                    |
| 5 | CONSOLE port                                     |
| 6 | Equipment status LED                             |



**Rear view**

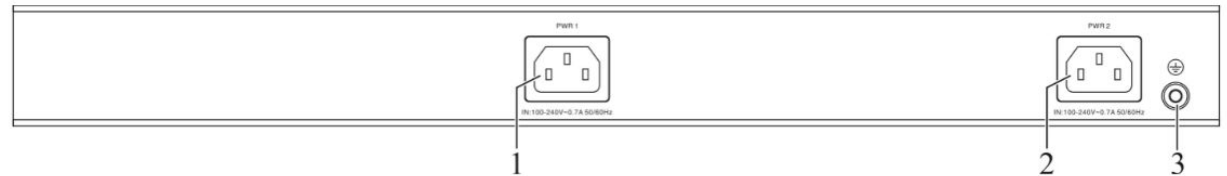
- |   |                        |
|---|------------------------|
| 1 | Interface card slot    |
| 2 | Modular power supply 1 |
| 3 | Modular power supply 2 |
| 4 | Ground terminal        |

### 1.3.5 MTS2824-4X-S



#### Front view

- |   |  |
|---|--|
| 1 | Gigabit Electrical Interface status LED                            |
| 2 | Gigabit Electrical Interface                                       |
| 3 | 10 Gigabit Optical Interface                                       |
| 4 | USB interface  |
| 5 | CONSOLE port   |
| 6 | Equipment status LED   |
| 7 | Reset button (press and hold for 5 seconds to restart the machine) |

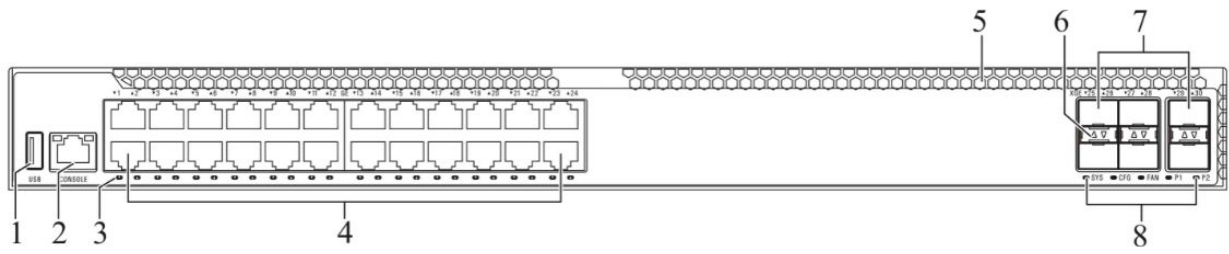


#### Rear view

- |   |                 |
|---|-----------------|
| 1 | AC power socket |
| 2 | AC power socket |
| 3 | Ground terminal |

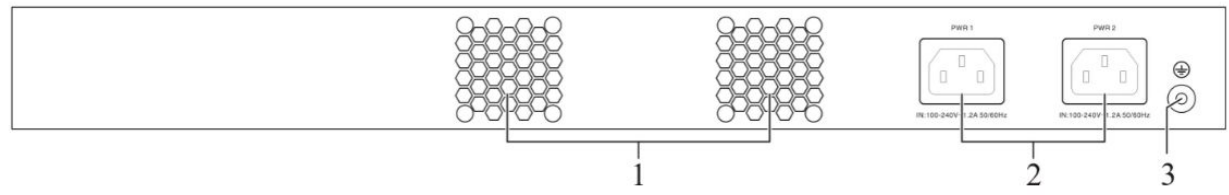


1.3.6 MTS2824-6X-E



Front view

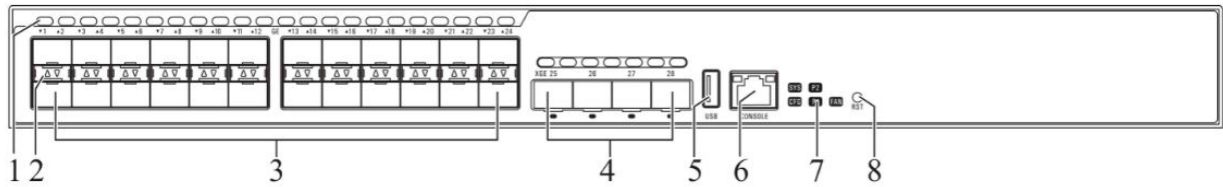
1	USB interface
2	CONSOLE port
3	Gigabit Electrical Interface status LED
4	Gigabit Electrical Interface
5	Air inlet of equipment
6	10 Gigabit Optical Interface status LED
7	10 Gigabit Optical Interface
8	Equipment status LED



Rear view

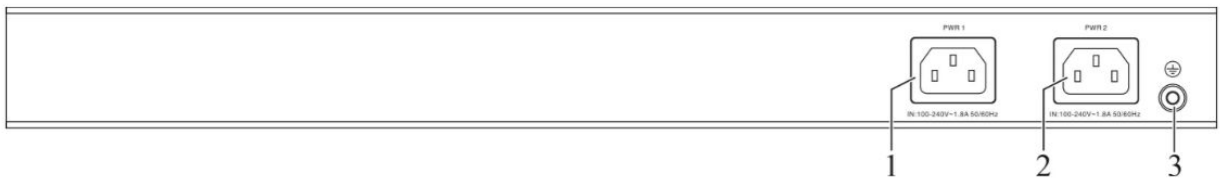
1	Air outlet of equipment
2	AC power socket
3	Ground terminal

### 1.3.7 MTS2824F-4X-S



#### Front view

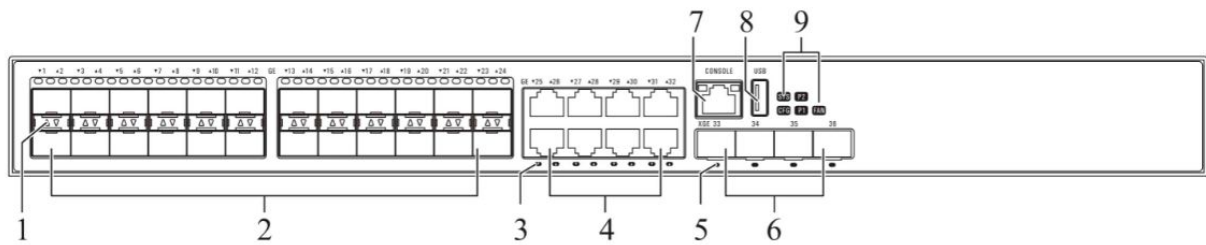
- |   |  |
|---|--|
| 1 | Air inlet of equipment   |
| 2 | Gigabit Optical Interface status LED                               |
| 3 | Gigabit Optical Interface  |
| 4 | 10 Gigabit Optical Interface                                       |
| 5 | USB interface  |
| 6 | CONSOLE port   |
| 7 | Equipment status LED   |
| 8 | Reset button (press and hold for 5 seconds to restart the machine) |



#### Rear view

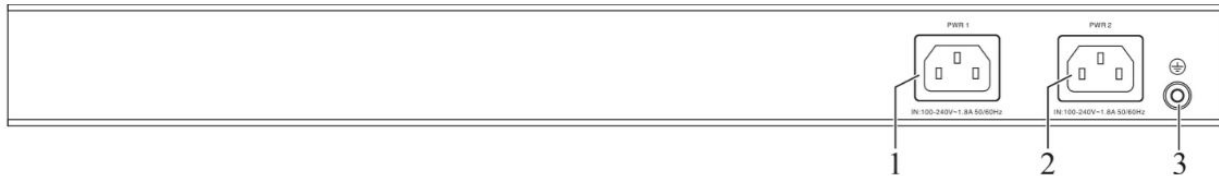
- |   |                 |
|---|-----------------|
| 1 | AC power socket |
| 2 | AC power socket |
| 3 | Ground terminal |

### 1.3.8 MTS2832TF-4X-E



**Front view**

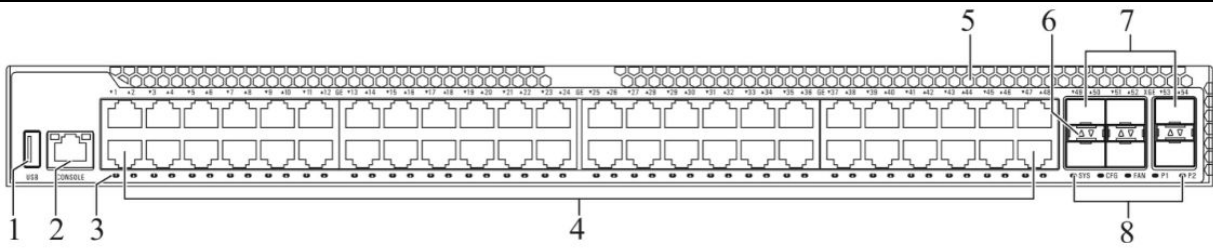
- |   |   |
|---|---|
| 1 | Gigabit Optical Interface status LED    |
| 2 | Gigabit Optical Interface               |
| 3 | Gigabit Electrical Interface status LED |
| 4 | Gigabit Electrical Interface            |
| 5 | 10 Gigabit Optical Interface status LED |
| 6 | 10 Gigabit Optical Interface            |
| 7 | CONSOLE port                            |
| 8 | USB interface                           |
| 9 | Equipment status LED                    |



**Rear view**

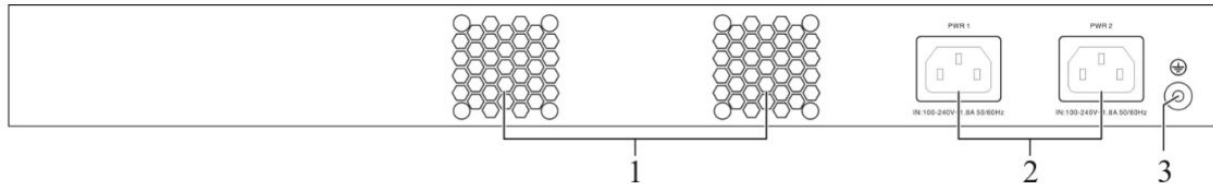
- |   |                 |
|---|-----------------|
| 1 | AC power socket |
| 2 | AC power socket |
| 3 | Ground terminal |

1.3.9 MTS2848-6X-E



Front view

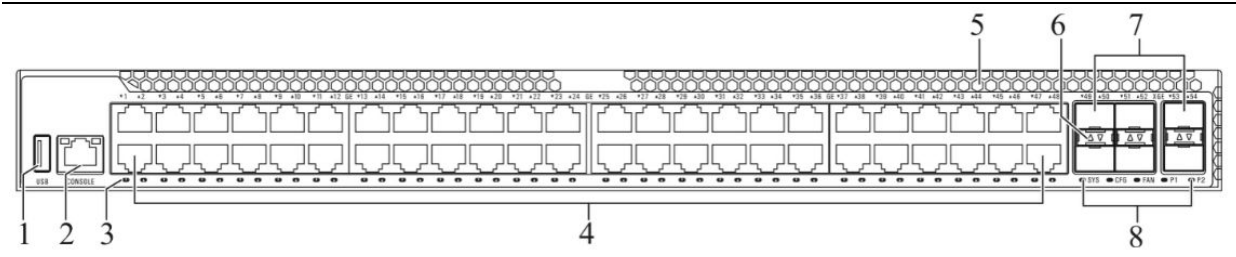
1	USB interface
2	CONSOLE port
3	Gigabit Electrical Interface status LED
4	Gigabit Electrical Interface
5	Air inlet of equipment
6	10 Gigabit Optical Interface status LED
7	10 Gigabit Optical Interface
8	Equipment status LED



Rear view

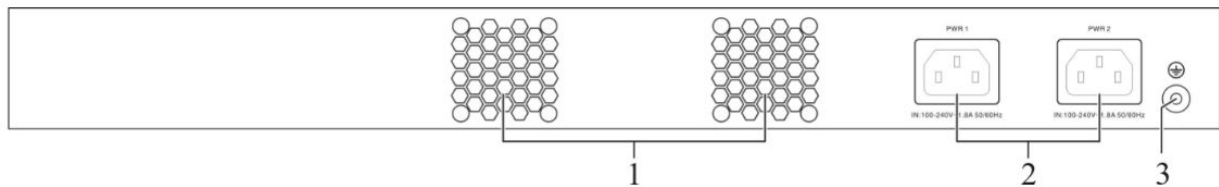
1	Air outlet of equipment
2	AC power socket
3	Ground terminal

### 1.3.10 MTS2848-6X-S



#### Front view

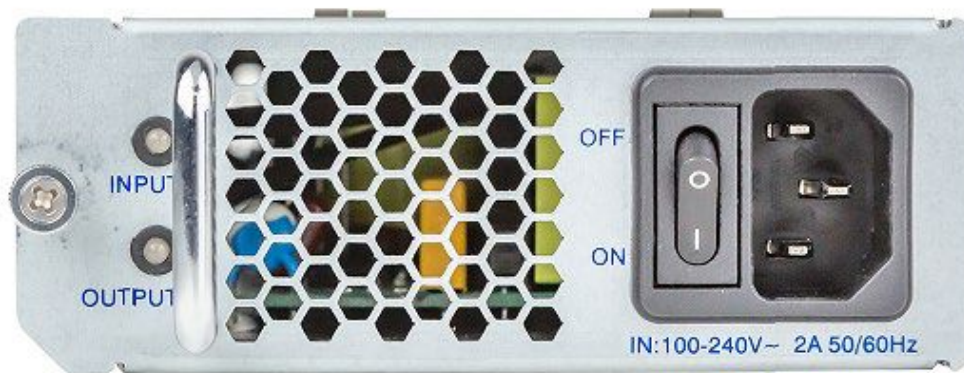
- |   |   |
|---|---|
| 1 | USB interface                           |
| 2 | CONSOLE port                            |
| 3 | Gigabit Electrical Interface status LED |
| 4 | Gigabit Electrical Interface            |
| 5 | Air inlet of equipment                  |
| 6 | 10 Gigabit Optical Interface status LED |
| 7 | 10 Gigabit Optical Interface            |
| 8 | Equipment status LED                    |



#### Rear view

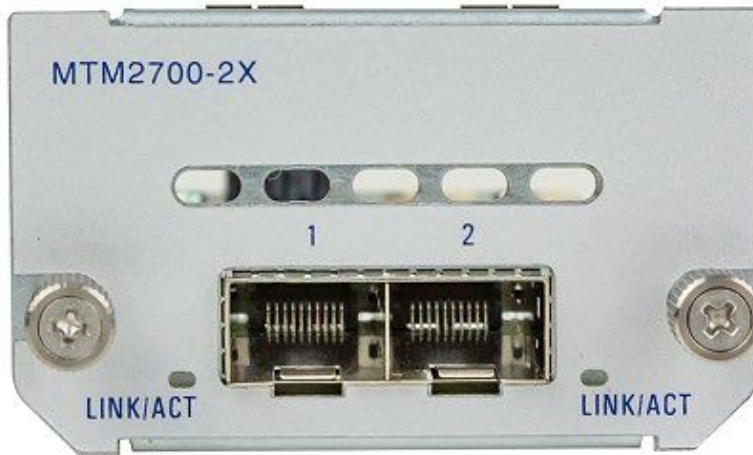
- |   |                         |
|---|-------------------------|
| 1 | Air outlet of equipment |
| 2 | AC power socket         |
| 3 | Ground terminal         |

### 1.3.11 Power module





### 1.3.12 Media module





## 1.4 Power supply

You may use the power module to supply voltage to the equipment:

See the “Power module” on page 17 for information about connecting supply voltage.

## 1.5 Ethernet port

You may use twisted pair or fiber optic (F/O) cables to connect terminal devices and other network segments to the equipment and the media module ports.

### 1.5.1 1000 Mbit/s F/O port

The port is an SFP slot.

The port allows you to connect network components according to IEEE 802.3 1000BASE-SX/1000BASE-LX.

The port supports:

Full duplex

Delivery status

1 Gbit / s full duplex when Gbit Ethernet SFP transceiver is used.

### 1.5.2 10 Gbit/s F/O port

The port is an SFP + slot.

The port allows you to connect network components according to IEEE 802.3.

The port supports:

Full duplex

Delivery status

10 Gbit / s full duplex when 10 Gbit Ethernet SFP + transceiver is used.

1 Gbit / s full duplex when Gbit Ethernet SFP transceiver is used.

### 1.5.3 10/100/1000 Mbit/s twisted pair port

The port is an RJ45 socket.

The 10/100/1000 Mbit/s twisted pair port allows you to connect network components according to IEEE 802.3 10BASE-T/100BASE-TX/1000BASE-T.

The port supports:

☐ Auto-negotiation

☐ Auto polarity

☐ Auto crossover (if auto negotiation is enabled)

☐ 1000 Mbit/s full duplex

☐ 100 Mbit/s half-duplex, 100 Mbit/s full duplex

☐ 10 Mbit/s half-duplex, 10 Mbit/s full duplex

Delivery status: auto negotiation enabled

### 1.5.4 PoE(+) support

The 10/100/1000 Mbit/s twisted pair port allows you to connect network components according to standards IEEE 802.3 10BASE-T/100BASE-TX/1000BASE-T and IEEE 802.3af/at.

PoE power is supplied by cable pair (virtual voltage) of transmission signals.

Maximum available PoE power consumption of MTS2724-4X-FP-S is 380 W. Maximum available PoE power consumption of MTS2724-6X-MP-E/MTS2748-6X-MP-E is 720W, related to power supplies selected.

### **1.5.5 Out-of-band management port**

The port is an RJ45 socket.

The port allows you to connect network components according to IEEE 802.3 10BASE-T/100BASE-TX.

The port supports:

- ☐ Auto-negotiation
- ☐ 100 Mbit/s half-duplex, 100 Mbit/s full duplex, 10 Mbit/s half-duplex, 10 Mbit/s full duplex

The port allows you to manage the equipment and upload configuration through the following protocols:

- ☐ SNMP
- ☐ SSH
- ☐ Telnet
- ☐ FTP

See the “Command line interface user manual” for more information. You may download the manual on the product page of Hirschmann IT at <https://hirschmann-it.support.belden.com>.

## 1.6 Display unit

After the power supply voltage is set, the software will start automatically and complete initialization. And then the equipment performs self-test. All LED indicators will come on in this process.

### 1.6.1 Equipment status

These LEDs provide information about the conditions that affect the operation of the equipment.

Indicator type	Indicator name	Indicator color	Status
System status LED	SYS	Green	Quick flashing (at frequency of 5Hz): indicating hardware starts to work after power on Slow flashing (at frequency of 0.5Hz): indicating the system is working normally On / off: indicating an exception to the system running
Power light	PWR	Green	ON: indicating all in-place power modules are working normally OFF: indicating an exception to the in-place power modules
Fan indicator	FAN	Green	ON: indicating all fan modules on the equipment are working normally OFF: indicating an exception to at least one fan module on the equipment
STACK indicator	STACK	Green	Flashing: indicating stacking function is enabled, and the equipment is the main unit of the stacking system ON: indicating stacking function is enabled, and the equipment is not the main unit of the stacking system OFF: indicating stacking function is not enabled
ID indicator	ID	Blue	Quick flashing (at frequency of 5Hz): used for site positioning, and for the operation and maintenance personnel to remotely control the ID light on and off OFF: indicating ID light is not enabled by default

## 1.6.2 Port Status

These LEDs provide port information.

Indicator type	Indicator name	Indicator color	Status
Serial port indicator	TXD	RJ45 self-contained yellow LED	Flashing: indicating data sending on serial port OFF: indicating no data sending on serial port
	RXD	RJ45 Build-in green LED	Flashing: indicating data receiving on serial port OFF: indicating no data receiving on serial port
DC0 interface indicator	1000M	RJ45 self-contained yellow LED	OFF: indicating DC0 works at 10 / 100M or is unlinked ON: indicating DC0 works at 1000M
	ACT	RJ45 Build-in green LED	OFF: indicating DC0 interface is unlinked ON: indicating DC0 interface is linked with no data sending and receiving Flashing: indicating DC0 interface is linked with data sending and receiving
Port status LED	LINK/ACT	Green	ON: indicating successful connection establishment on Ethernet port Flashing: indicating data sending and receiving on Ethernet port OFF: indicating no connection establishment on Ethernet port

## **1.7 Management interface**

### **1.7.1 DC0 interface (external management)**

The serial interface is provided on RJ45 socket (V.24 interface), which can realize the local connection of external management station (VT100 terminal or PC with corresponding terminal simulation), and thus you are allowed to establish the connection to the command line interface CLI and the system monitor.

### **1.7.2 USB interface**

The switch provides two serial ports (EIA/TIA-232 and Micro USB 2.0), by which users can configure the switch using the PC (or laptop) equipped with RS-232 serial port (or USB interface).

## 2 Installation

These devices are developed for use in commercial environments. At the time of delivery, the equipment is ready for operation.

Follow the following steps to install and configure the equipment:

- ☐ [Unpack the box for inspection](#)
- ☐ [Install cover plate and power module \(optional\)](#)
- ☐ [Install equipment and ground](#)
- ☐ [Operate equipment](#)
- ☐ [Install SFP transceiver \(optional\)](#)
- ☐ [Connect data cable](#)
- ☐ [Fill in the Device Label](#)

### 2.1 Unpack the box for inspection

- ☐ Check whether the box contains all the items specified in "Delivery items" on page 73.
- ☐ Check the parts one by one for damages incurred in shipment.

### 2.2 Install power module (optional)

#### 2.2.1 Install power module

Hirschmann IT provides ready-to-run power modules. You can choose to install the power module while the equipment is running.

Follow the steps below:

- ☐ Remove the cover plate (if installed) from the power module slot of the equipment.
- ☐ Plug the power module directly into the slot.
- ☐ Tighten 2 screws to secure the power unit to the equipment.  
You can refer to the specified tightening torque in the "General technical data" on page 49.

## 2.3 Install equipment and ground

You can install the equipment by the following options:

- ☐ Install the equipment in the switch cabinet
- ☐ Install the equipment on a vertical flat surface



### Warning

#### Electric shock

Such equipment can only be installed in switch cabinet or restricted operation place, and the equipment is accessible to maintenance personnel only.

**Failure to comply with these guidelines may result in death, serious injury or equipment damage.**



### Caution

#### Overheat

When installing equipment, make sure that the ventilating slots are not covered.

**Failure to comply with these guidelines may result in minor injury or equipment damage.**

- ☐ Install the equipment in the switch cabinet

**NOTE:** When the equipment is operated in an environment with continuous vibration load greater than 0.7g, it must be additionally fixed to the switch cabinet with 2 fixed mounting brackets on the front and back of the equipment.

Additional mounting brackets are provided as accessories. Please refer to “Accessories” on Page 68.

Precondition:

- ☐ Install the equipment in 19" switch cabinet by means of slide or mounting rails.  
It can improve the stability of the equipment in an environment affected by vibrations.  
For more information about slide/mounting rails and how to install them, please contact the switch cabinet manufacturer.
- ☐ The equipment is designed to be installed in a 19" switch cabinet.  
At the time of delivery, 2 preinstalled fixed mounting brackets come with the equipment on the side.
- ☐ Make sure it's well ventilated. If necessary, install a fan to prevent overheating.
- ☐ Measure the depth of the 19" cabinet so that all connections can be easily plugged in.



Follow the steps below:

- ☐ Install sliding or mounting rails in a 19 "switch cabinet as specified by the manufacturer.
- ☐ Place the equipment on the rail in the switch cabinet.
- ☐ Screw the mounting bracket to the switch cabinet to secure the equipment.
- ☐ **Install the equipment on a vertical flat surface**



## Warning

### Fire risk

In case of vertical installation, please install the equipment in the fireproof enclosure.

**Failure to comply with these guidelines may result in death, serious injury or equipment damage.**

Follow the steps below:

- ☐ Use preinstalled mounting brackets, as shown below.
- ☐ And attach 2 mounting brackets to the back of the equipment.  
Additional mounting brackets are provided as accessories. Please refer to "Accessories" on Page 68.
- ☐ Screw the mounting bracket to the wall to secure the equipment.
- ☐ **Equipment ground**  
The equipment has the connection of protective grounding wire.

The equipment is grounded by grounding screw and power socket.

Follow the steps below:

- ☐ Ground the equipment with grounding screws  
**You can refer to the specified tightening torque in the "General technical data" on page 49.**

## 2.4 Install SFP transceiver (optional)

Precondition:

Only Hirschmann IT SFP transceiver can be used. Please refer to "Accessories" on Page 68.

Follow the steps below:

- ☐ Remove the protective cover from the SFP transceiver.
- ☐ Push the SFP transceiver into the slot until it is locked.

## 2.5 Operate equipment

Follow the steps below:

- ☐ Use screws to secure the connector to the equipment.  
You can refer to the specified tightening torque in the “General technical data” on page 49.
- ☐ Enable the supply voltage.

## 2.6 Connect data cable

In environments with high electrical interference, note the following general recommendations for data cable connections:

- ☐ Minimize the length of the data cable.
- ☐ Use fiber-optic data cables for data transmission between buildings.
- ☐ Try to separate the power cable from the data cable sufficiently if there are copper cables used. It is best to install it in a separate channel.
- ☐ Make sure the power cable and data cable are not laid out in parallel over a long distance, preferably in separate cable channels. To reduce inductive coupling, make sure the power and data cables intersect at 90°.
- ☐ Use SF/UTP cable conforming to ISO/IEC 11801:2002.
- ☐ Connect the data cable according to your requirements.

Note: Only shielded twisted pair cables are allowed in DNV GL EMC Class B area.

For more information:

Refer to “Equipment name and product code” on page 19.

## 2.7 Fill in the Device Label

MAC address on the front helps you identify the equipment.

### 3      **Make basic settings**

**Note:** Configuring two or more devices with the same IP address may lead to the network's failure to function as expected.

Install and maintain a program, to assign a unique IP address to each device in the network.

IP parameters must be entered when the equipment is installed for the first time.

## 4 Monitor ambient air temperature

Please operate the equipment only below the specified maximum ambient air temperature.

Please refer to “General technical data” on Page 49.

The ambient air temperature is the air temperature at a distance of 2 inches (5 cm) from the equipment, specifically depending on the installation conditions of the equipment, for example, the distance of the equipment from other devices or other objects, and the output of adjacent equipment.

## 5 Maintenance and repair

- ☐ Hirschmann IT has done its best to avoid the use of highly worn parts in the equipment design. Under normal operating conditions, wear-prone parts have a longer life than the product itself. Be sure to operate the equipment according to the product description.
- ☐ Relays are susceptible to natural wear. Such wear is decided by the switching frequency. Please check the resistance and switch function of the closed relay contacts according to the switching frequency.
- ☐ The internal fuse will be triggered only when the equipment detects an error. In case of any damage or failure to the equipment, switch off the power and return the equipment to the plant for inspection.
- ☐ Hirschmann IT has always been committed to improving and developing software. You are required to visit our website regularly to see if the updated software version that provides additional benefits is available. You may view the information and download software on the product page of Hirschmann IT at <https://hirschmann-it.support.belden.com>
- ☐ Depending on the pollution level in the operating environment, regularly check whether the ventilation slot in the equipment is blocked.

You may visit <http://www.beldensolutions.com/en/Service/Repairs/index.phtml> to view the handling of complaints.

## 6 Remove

### 6.1 Remove power module

Follow the steps below:

- ☐ Remove screws on the front panel of the power module.
- ☐ Pull the power module out of the slot.
- ☐ Seal the power module slot on the basic device with a cover plate.
- ☐ Secure the cover plate with 2 screws on the basic device.

You can refer to the tightening torque in the “General technical data” on page 49.

### 6.2 Remove media module

Follow the steps below:

- ☐ Remove screws on the front panel of the media module.
- ☐ Press the locking lever outward to unlock the media module (steps 1 and 2).
- ☐ Pull the media module out of the slot (step 3).
- ☐ Seal the media module slot on the basic device with a cover plate.
- ☐ Secure the cover plate with 2 screws on the basic device.

You can refer to the tightening torque in the “General technical data” on page 49.

## 6.3 Remove SFP transceiver

Follow the steps below:

- ☐ Unlock and pull the SFP transceiver out of the slot.
- ☐ Seal the SFP transceiver with a protective cover.

## 6.4 Remove device



### Warning

#### Electric shock

Please disconnect all other cables before disconnecting the ground wire.

**Failure to comply with these guidelines may result in death, serious injury or equipment damage.**

Follow the steps below:

- ☐ Disconnect the data cable.
- ☐ Disable the supply voltage.
- ☐ Disconnect the power cord.
- ☐ Disconnect the ground connection.
- ☐ To remove the equipment from the switch cabinet or wall, unscrew the equipment mounting bracket.



## 7 Technical data

### 7.1 General technical data

#### ☐ Basic device

Size	Please refer to "Size diagram" on Page 40.		
Weight	MTS2624-4X-B	< 2.8kg	
	MTS2724-4X-FP-S	< 5.5kg	
	MTS2724-6X-MP-E	< 6.0kg	
	MTS2748-6X-MP-E	< 6.0kg	
	MTS2832TF-4X-E	< 4.0kg	
	MTS2824F-4X-S	< 5.0kg	
	MTS2824-4X-S	< 3.0kg	
	MTS2848-6X-S	< 5.0kg	
	MTS2824-6X-E	< 6.0kg	
	MTS2848-6X-E	< 5.0kg	
Power supply	Rated voltage range	100 VAC...240 VAC	,50 Hz...60 Hz
		Maximum conductor diameter	AWG12 (2.5 mm2)
Equipment ground	Tighten torque Protective grounding	3.5~6.1 lb-in (0.4~0.7 Nm)	
Climatic conditions during operation	Ambient air temperature	-5°C~55°C (2000m) Note: The altitude is 2000m ~ 4000m, and the maximum working temperature decreases by 1°C every 200m above sea level.	
	Humidity	10%~90%/RH, no condensation	
Climatic conditions during storage	Altitude	< 5000m	
Pollution level		2	
Protection Level	Laser protection	<b>Class 1 conforming to IEC 60825-1</b>	
	Degree of protection	IP20	

## □ Power module

Size	Please refer to “Size diagram” on Page 40.		
Weight	MTM2700-PSU120	0.9 kg	
	MTM2700-PSU500	1.2 kg	
Installation of power module	Tighten torque	3.5~5.2 lb-in (0.4~0.6 Nm)	
Installation of cover plate	Tighten torque	3.5~5.2 lb-in (0.4~0.6 Nm)	
Power module	Rated voltage range	100 VAC...240 VAC, 50 Hz.	.. 60 Hz

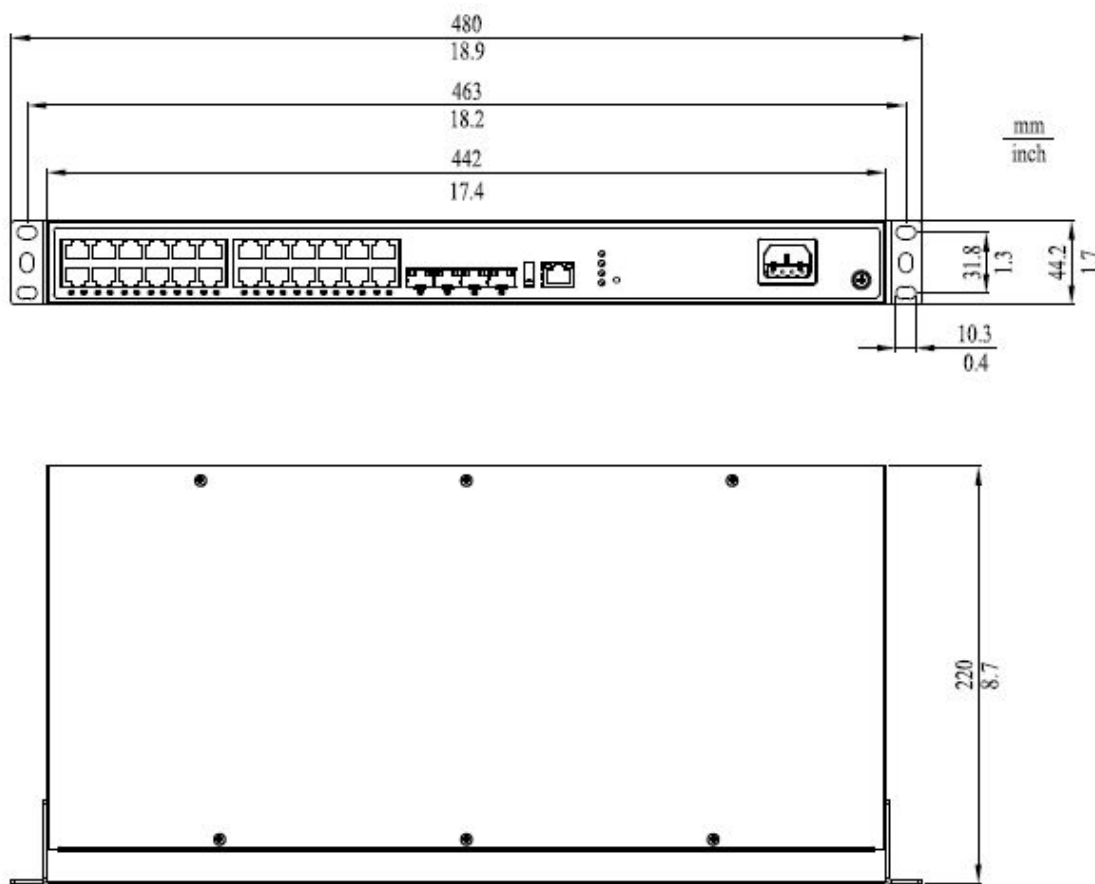
## □ Media module

Size	Please refer to “Size diagram” on Page 40.		
Weight	MTM2700-2X	0.16 kg	
Install media module	Tighten torque	2.0~3.1 lb-in (0.2~0.3 Nm)	
Mount cover plate	Tighten torque	2.0~3.1 lb-in (0.2~0.3 Nm)	

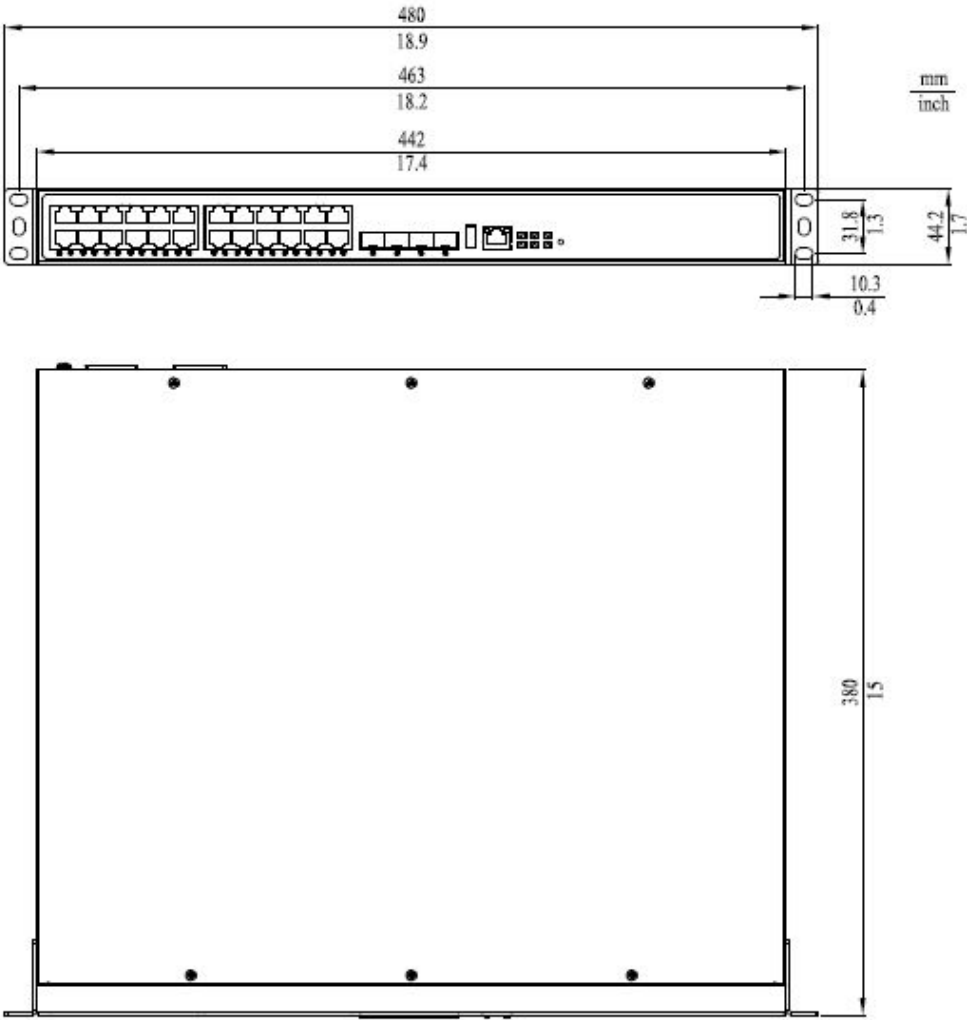
## 7.2 Dimension drawing

### □ Basic device

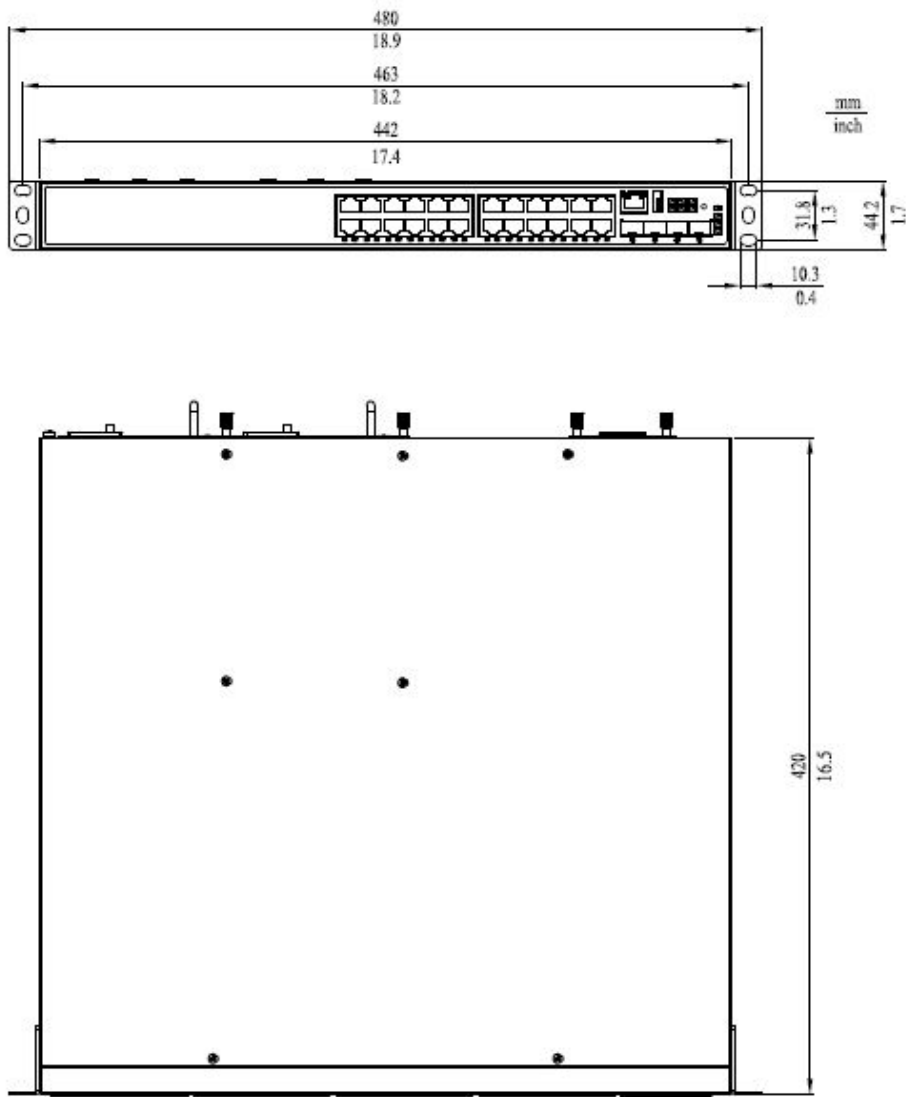
#### MTS2624-4X-B



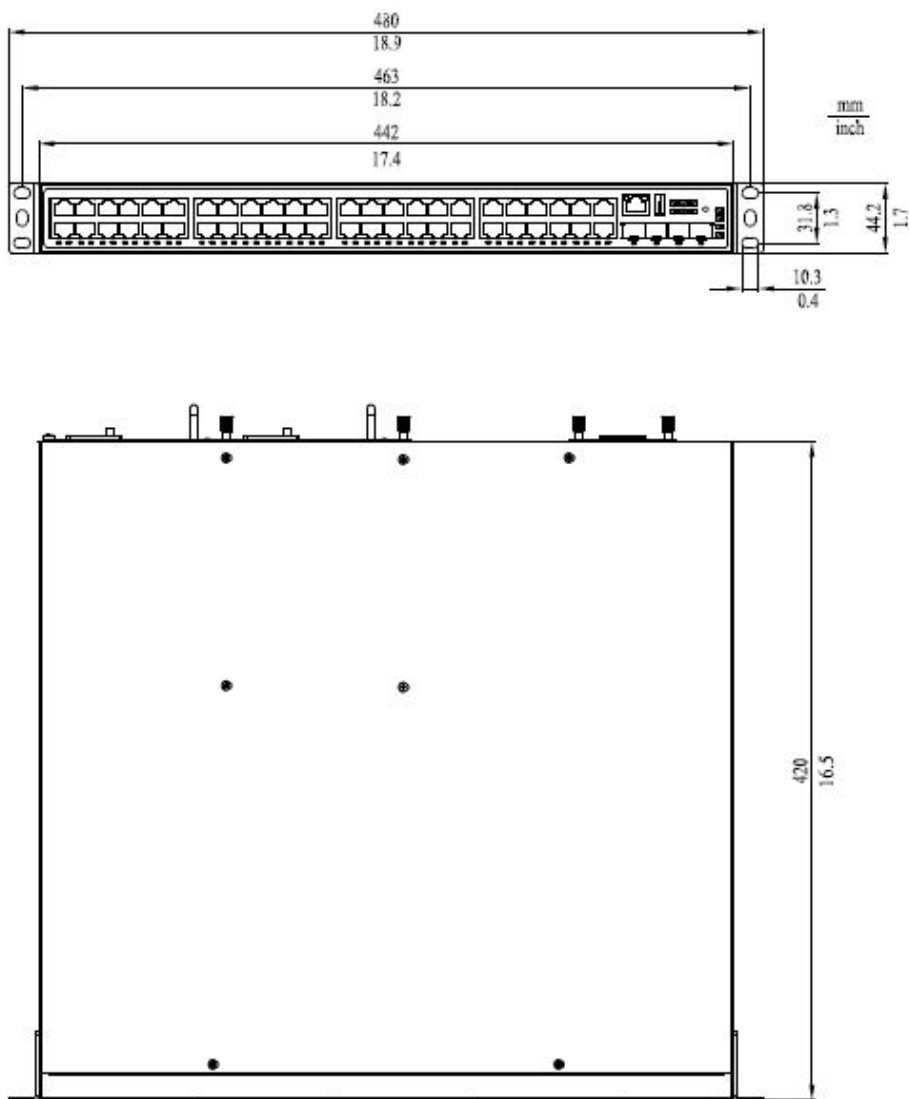
MTS2724-4X-FP-S



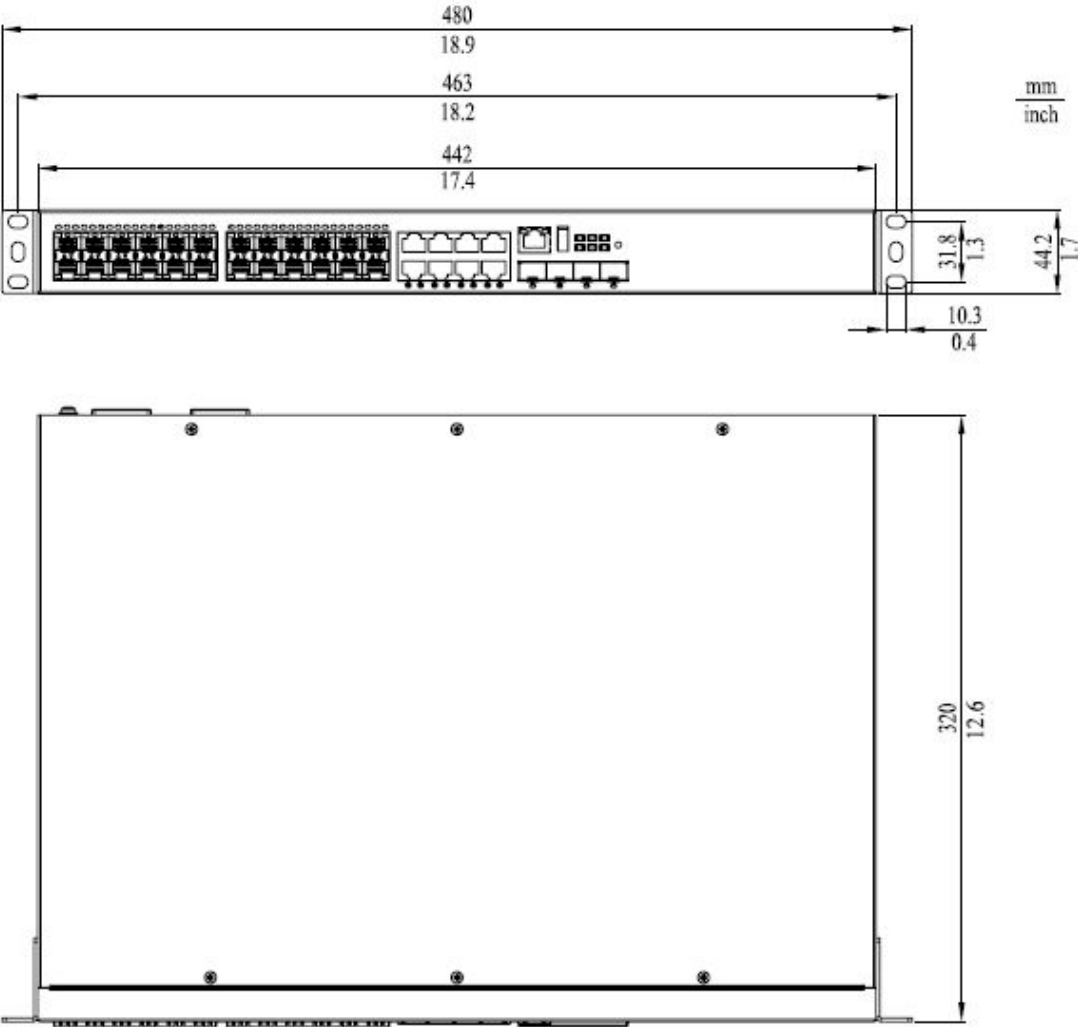
MTS2724-6X-MP-E



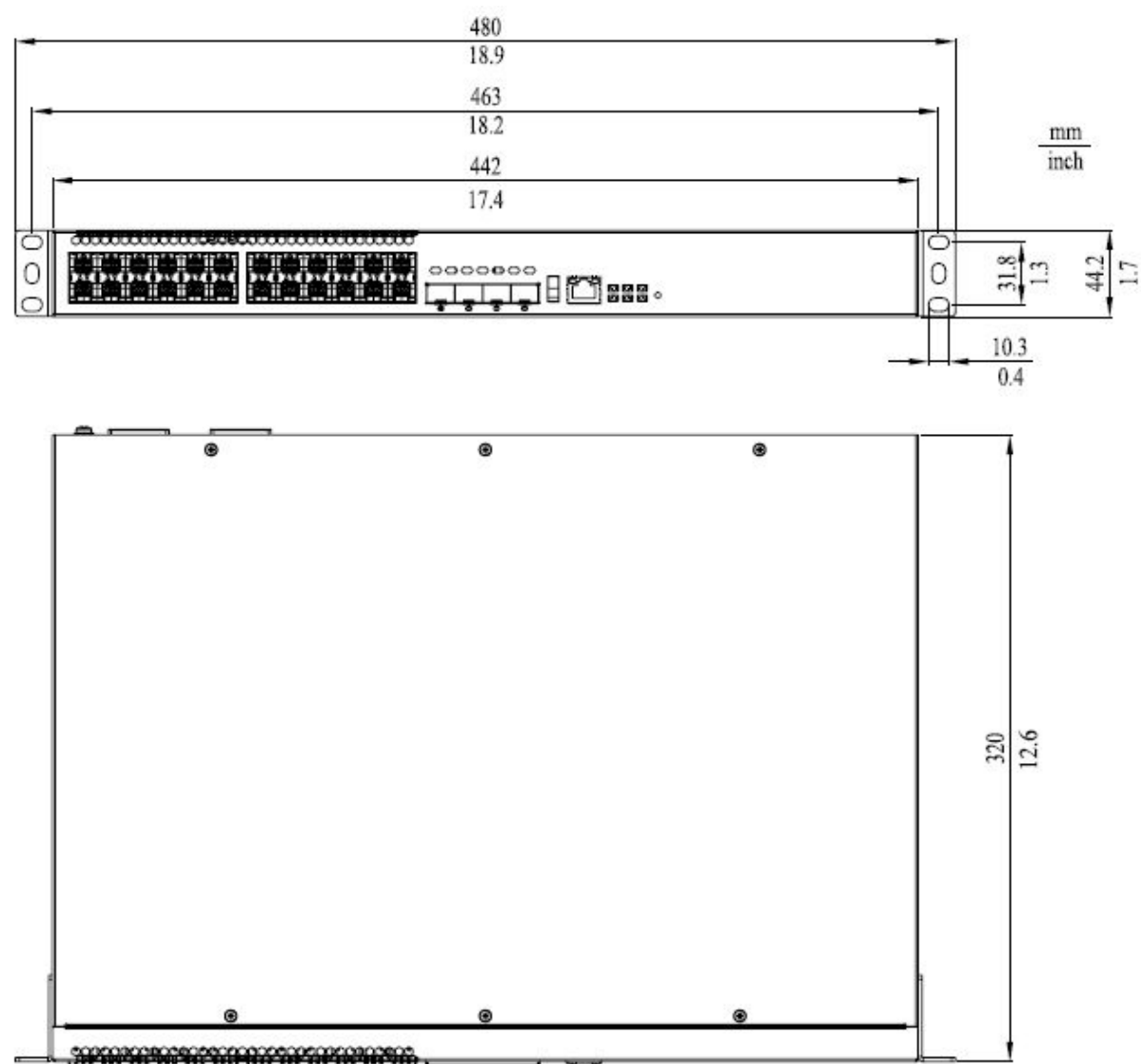
MTS2748-6X-MP-E



MTS2832TF-4X-E

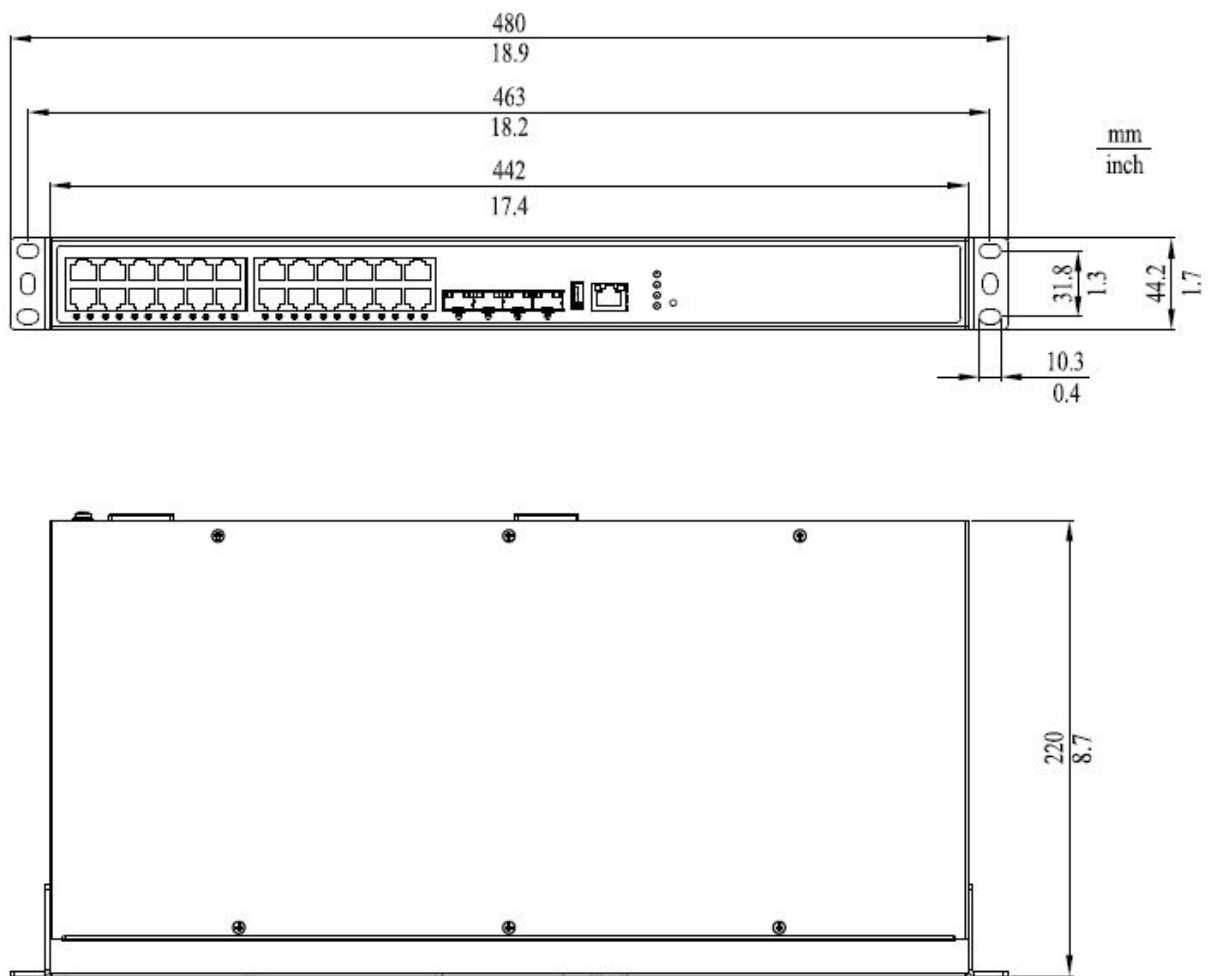


MTS2824F-4X-S

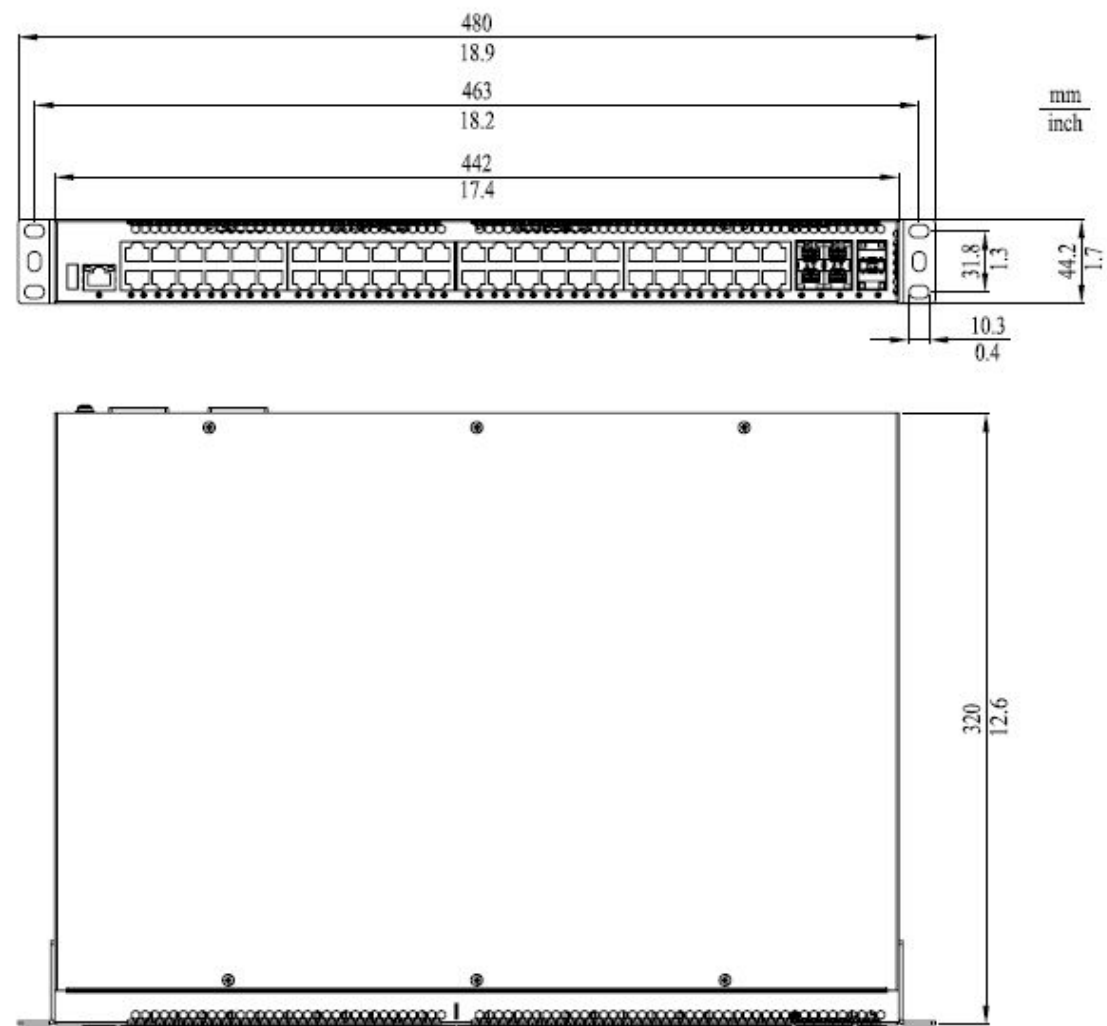




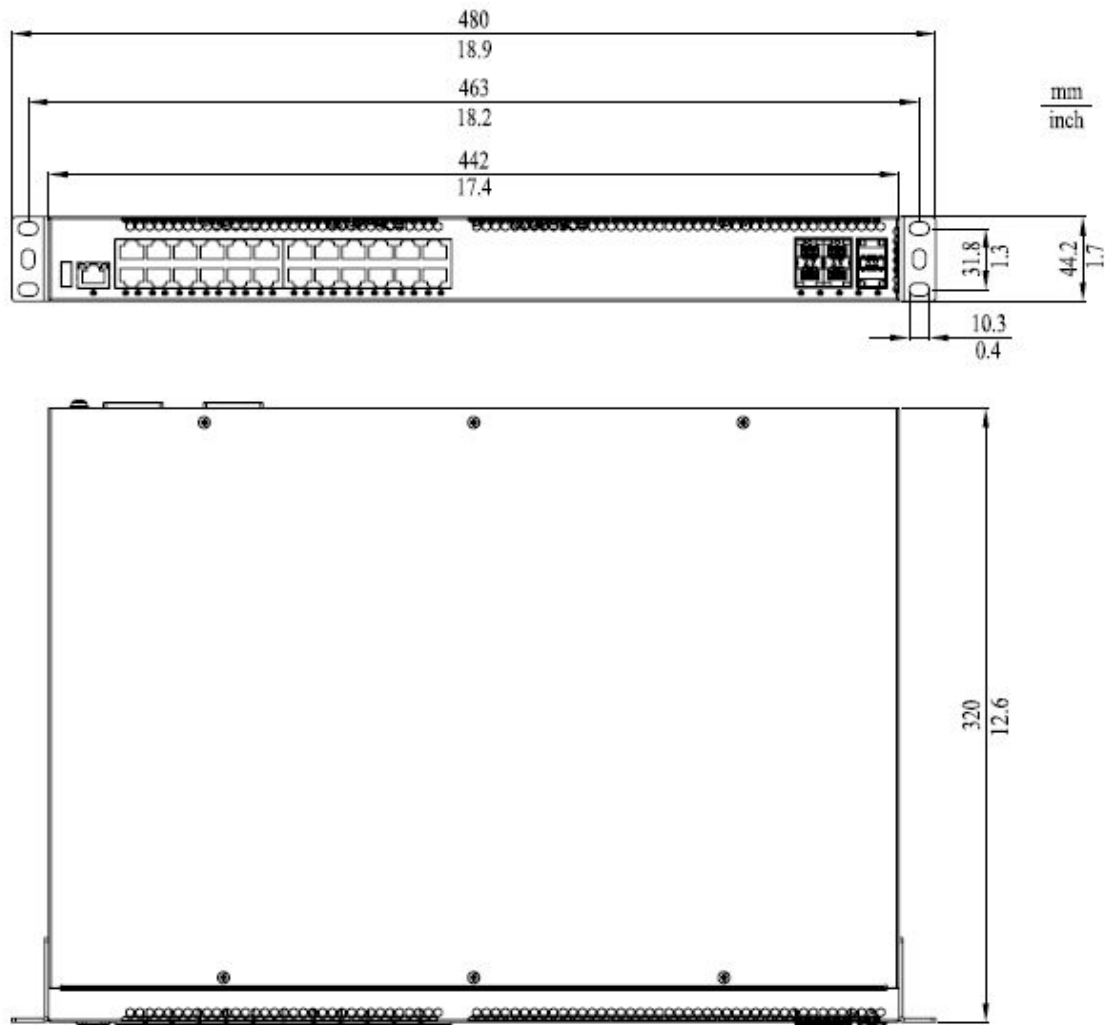
MTS2824-4X-S



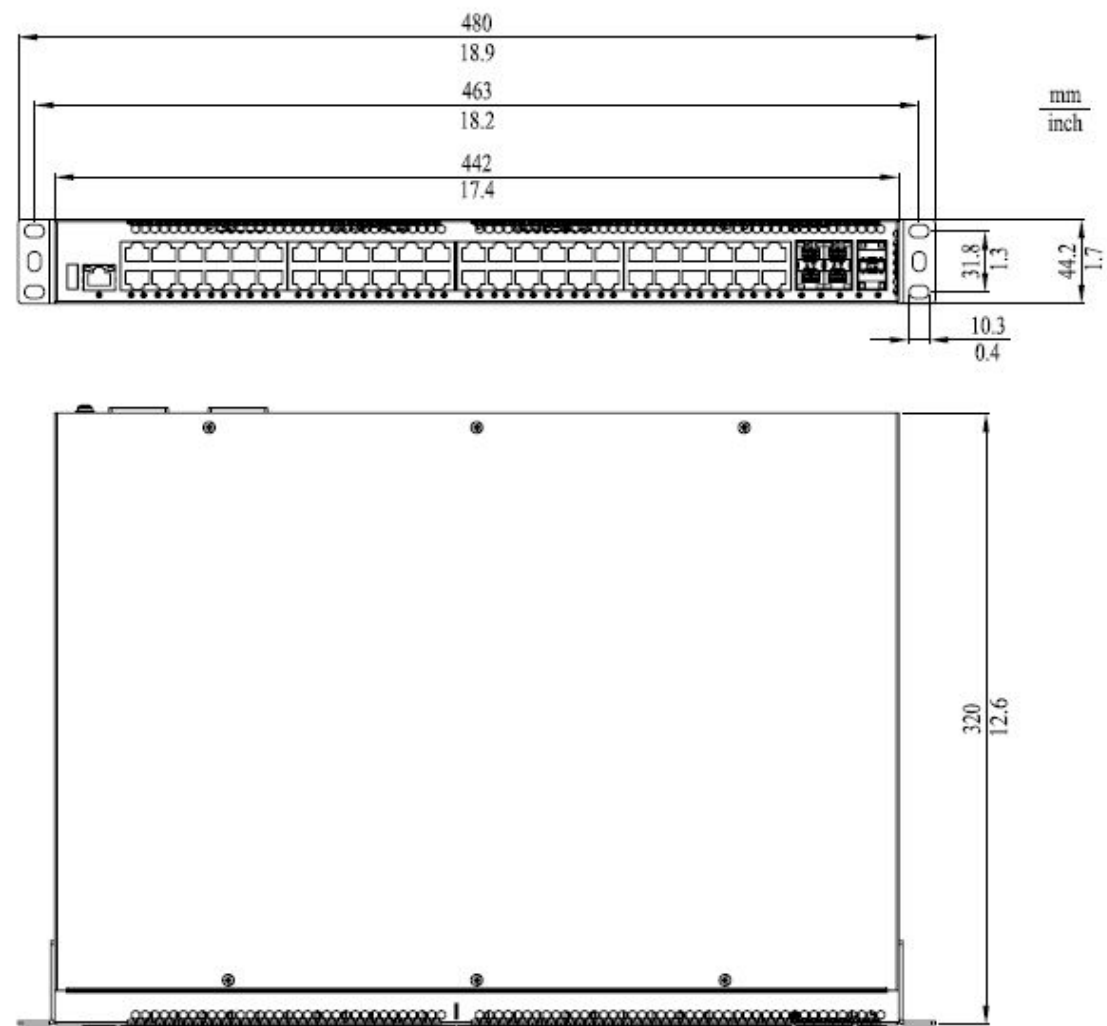
MTS2848-6X-S



MTS2824-6X-E

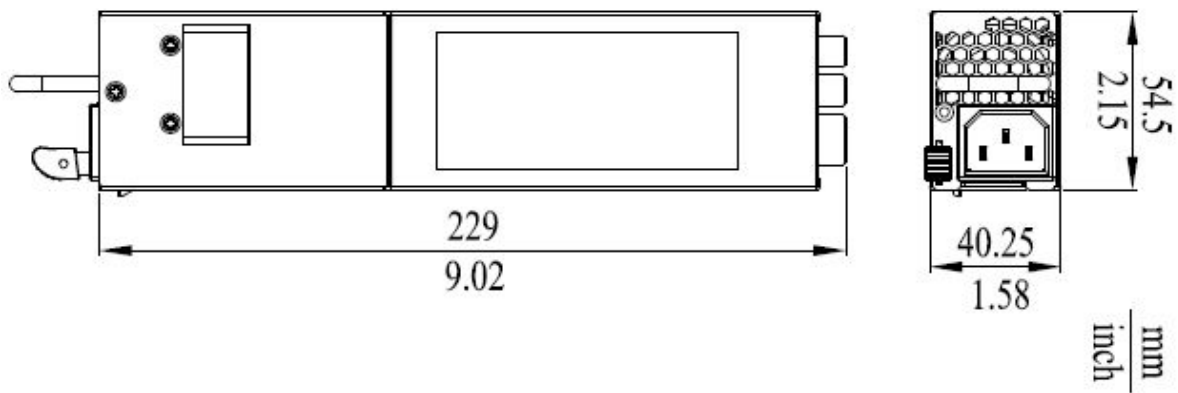


MTS2848-6X-E

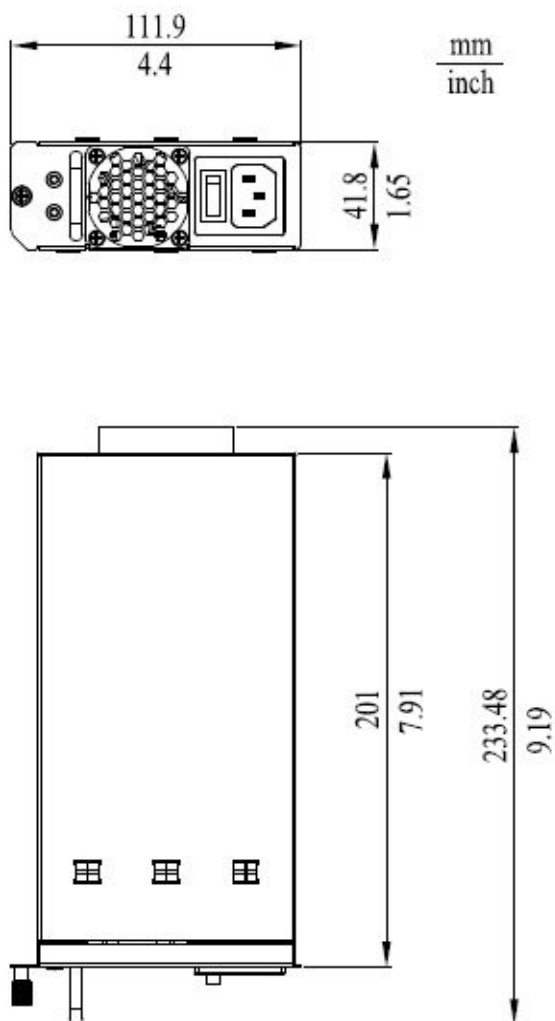


□ **Power module**

MTM2700-PSU120

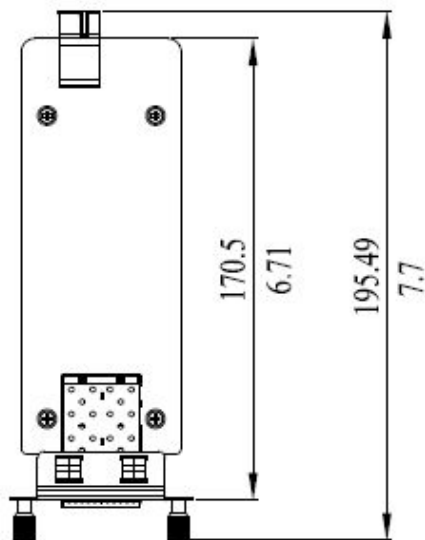
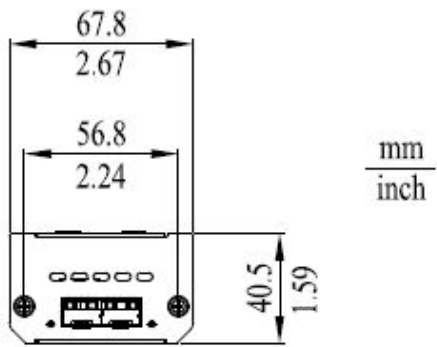


MTM2700-PSU500



□ **Media module**

MTM2700-2X



## 7.3 EMC and immunity

EMC interference emission		Standard application
EN 55032		Class A
DNV GL Guide		—
FCC 47 CFR Part 15		Class A
EN 61000-6-4		Conforming
EN 55032	AC/DC Power Line	Class A
DNV GL Guide	AC/DC Power Line	—
FCC 47 CFR Part 15	AC/DC Power Line	Class A
EN 61000-6-4	AC/DC Power Line	Conforming
EN 55032	Signal Line	Class A
EN 61000-6-4	Signal Line	Conforming
<b>Harmonic current</b>		
EN 61000-3-2		Class A
<b>Voltage flicker</b>		
EN 61000-3-3		

EMC immunity		Standard application
Electrostatic discharge		
EN 61000-4-2	Contact discharge	±4 kV
IEEE C37.90.3		
EN 61000-4-2	Air discharge	±8 kV
IEEE C37.90.3		

EMC immunity		Standard application
Electromagnetic field		
EN 61000-4-3	80 MHz...1000 MHz 1000 MHz...6000 MHz	10 V/m 3 V/m
IEEE 1613	80 MHz...1000 MHz	—
Fast transient (burst)		
EN 61000-4-4 IEEE C37.90.1	AC/DC Power Line	±2 kV
EN 61000-4-4 IEEE C37.90.1	Data cable	±1 kV
EN 61000-4-5	Cable / ground	±2 kV
Voltage surge - power cable		
IEEE 1613	Cable / ground	—
EN 61000-4-5	Cable / cable	±1 kV
Voltage surge - data cable		
EN 61000-4-5	Cable / ground	±1 kV
Conducted immunity		
EN 61000-4-6	150 kHz...80 MHz	10 V



EMC immunity		Standard application
Damped vibration - AC/DC Power Line		
EN 61000-4-12 IEEE C37.90.1	Cable / ground	—
EN 61000-4-12 IEEE C37.90.1	Cable / cable	—
Damped oscillation - data cable		
EN 61000-4-12 IEEE C37.90.1	Cable / ground	—
EN 61000-4-12	Cable / cable	—
Pulsed magnet field		
EN 61000-4-9		—
Power frequency magnetic field		
EN 61000-4-8		30A/m
Voltage dips, short interruptions		
EN 61000-4-11	AC/DC Power Line	20 ms $\Delta U$ 100 % 200ms $\Delta U$ 60 % 500ms $\Delta U$ 30 % 5s $\Delta U$ 100 %

Stability		Standard application
IEC 60068-2-6, Test Fc	Vibration	5 Hz...8.4 Hz, amplitude 0.14 in.(3.5 mm) 8.4 Hz...150 Hz / 1g
IEC 60068-2-27, Test Ea	Vibration	15 g / 11 ms

## 7.4 Network range

Note: The line length specified for the transceiver applies to the corresponding fiber data (fiber attenuation and BLPc/dispersion).

Product code MTS-SFP-1G-...	Mode <sup>a</sup>	Wave length	F/O cable length example <sup>b</sup>	Optical attenuation	BLPc/dispersion
-TX/RJ45...	TX/RJ 45	Full Duplex Negotiation	100 m	-	-
-SX/LC...	MM	850 nm	550 m (> 8 dB link budget at 850nm)	3.0 dB/km	-
-LX/LC...	SM	1310 nm	20 km (> 15 dB link budget at 1310nm)	0.32 dB/km	-
-LX+/LC...	SM	1310 nm	40 km (> 22 dB link budget at 1310nm)	0.32 dB/km	-
-LH/LC...	SM	1550 nm	80 km (> 22 dB link budget at 1550nm)	0.18 dB/km	18 ps/(nmxkm)
-LH+/LC	SM	1550 nm	120 km (> 32 dB link budget at 1550nm)	0.18 dB/km	18 ps/(nmxkm)
-BIDI-TypeA-LX/LC...	SM	TX1310 nm RX1550 nm	10 km (>14 dB link budget at 1310/1550 nm)	0.18 dB/km	18 ps/(nmxkm)
-BIDI-TypeB-LX/LC...	SM	TX1550 nm RX1310 nm	10 km (<14 dB link budget at 1550/1310 nm)	0.32 dB/km	-
-LX+/LC-1550...	SM	1550 nm	40 km (> 19 dB link budget at 1550nm)	0.18 dB/km	-

*Table 3: Fiber port 1G SFP module*

a. MM =multi-module, SM =simple module, LH =single mode long haul

b. When optical fiber data is observed, it includes 3dB system reserve

Product code MTS-SFP-10G-...	Mode <sup>a</sup>	Wave length	F/O cable length example <sup>b</sup>	Optical attenuation	BLPc/dispersion
-SR/LC...	MM	850 nm	300 m (> 5.1 dB link budget at 850nm )	3.0 dB/km	-
-LR/LC...	SM	1310 nm	10 km (> 6.6 dB link budget at 1310 nm)	0.32 dB/km	-
-ER/LC...	SM	1550 nm	40 km (> 15 dB link budget at 1550 nm)	0.18 dB/km	18 ps/(nmxkm)
-TX/RJ45...	TX/RJ4 5	Full Duplex Negotiation	30 m	-	-

*Table 4: Fiber port 10G SFP module*

a. MM =multi-module, SM =simple module

b. When optical fiber data is observed, it includes 3dB system reserve

## 7.5 Power consumption / power output

Name	Maximum power consumption
<b>Basic device + 1 PSU</b>	
MTS2624-4X-B	26 W
MTS2724-4X-FP-S	29 W
MTS2724-6X-MP-E	34 W
MTS2748-6X-MP-E	46 W
MTS2832TF-4X-E	60 W
MTS2824F-4X-S	38 W
MTS2824-4X-S	26 W
MTS2848-6X-S	55 W
MTS2824-6X-E	37 W
MTS2848-6X-E	55 W

## 8 Delivery item, order number and accessories

### ☐ Delivery item

Quantity	Articles
1	Equipment
1	General safety guidelines
2	Bracket

### ☐ Order number

MTS2624-4X-B	942 999 847
MTS2748-6X-MP-E	942 999 831
MTS2724-6X-MP-E	942 999 832
MTM2700-PSU500	942 999 833
MTM2700-PSU120	942 999 834
MTS2724-4X-FP-S	942 999 835
MTM2700-2X	942 999 836
MTS2848-6X-E	942 999 841
MTS2824-6X-E	942 999 842
MTS2848-6X-S	942 999 843
MTS2824-4X-S	942 999 844
MTS2824F-4X-S	942 999 845
MTS2832TF-4X-E	942 999 846

### ☐ Accessories

Note that the fact that the products used as accessories may have different characteristics from the equipment itself limits the influence sphere of the whole system. For example, if you apply IP20 accessory to IP 65 equipment, the entire system will be reduced to IP20.

1G SFP module	Order number
MTS-SFP-1G-TX/RJ45	942 999 854
MTS-SFP-1G-SX/LC	942 999 855
MTS-SFP-1G-LX/LC	942 999 856
MTS-SFP-1G-LX+/LC	942 999 857
MTS-SFP-1G-LH/LC	942 999 858
MTS-SFP-1G-LH+/LC	942 999 859
MTS-SFP-1G-BIDI-TypeA-LX/LC	942 999 860
MTS-SFP-1G-BIDI-TypeB-LX/LC	942 999 861
MTS-SFP-1G-LX+/LC-1550	942 999 862

10G SFP module	Order number
MTS-SFP-10G-SR/LC	942 999 851
MTS-SFP-10G-LR/LC	942 999 852
MTS-SFP-10G-ER/LC	942 999 853
MTS-SFP-10G-TX/RJ45	942 999 867

a. You may access more information about certificates on the product page of Hirschmann IT (<https://hirschmann-it.support.belden.com>).

## 9 Basic technical standards

Name	
FCC 47CFR Part 15	Code of Federal Regulations
IEC 60825-1	Safety of Laser Products
IEC/EN 61850-3	Communication networks and systems for power utility automation - Part 3: General requirements
IEEE 1613	IEEE Environmental and Testing Requirements for Communications Networking Devices Installed in Electrical Power Substations
IEEE 802.3	Ethernet
EN 55032	Electromagnetic compatibility of multimedia equipment. Emission Requirements
EN 55032	Electromagnetic compatibility of multimedia equipment. Emission Requirements
EN 60950-1	Information technology equipment - Safety - Part 1: General requirements
EN 61000-3-2	Electromagnetic compatibility (EMC) - Part 3-2: Threshold - Threshold for harmonic current (equipment input current $\geq 16$ A per phase)
EN 61000-3-3	Electromagnetic compatibility (EMC) - Part 3-3: Threshold - Limitation of voltage changes, voltage fluctuations and flicker in public low-voltage supply systems, for equipment with rated current $\geq 16$ A per phase and not subject to conditional connection
EN 61000-6-2	Electromagnetic compatibility (EMC)- Part 6-2: Generic standards - Immunity for industrial environments
EN 61000-6-4	Electromagnetic compatibility (EMC) - Part 6-4: Generic standards - Emission standard for industrial environments
EN 61131-2	Programmable controllers - Part 2: Equipment requirements and tests

*Table 5: List of technical standards*

The equipment usually meets the technical standards set forth in the latest version.

Only when the equipment shell has the certification mark, it means that the equipment is certified to a specific standard.

# A More support

## Technical issues

If you have any technical question, please contact your local Hirschmann IT dealer or Belden directly.

You may search our partners' addresses online at <https://hirschmann-it.support.belden.com>.

For the list of local telephone numbers and email addresses for you to get direct technical support from Hirschmann IT, please visit: <https://hirschmann-it.support.belden.com>. The website also contains free knowledge base and software download section.

