HIRSCHMANN IT

A BELDEN BRAND

User Manual

Installation

MAMMUTHUS CORE LAYER SWITCH – **MTS8003-Chassis**
MAMMUTHUS CORE LAYER SWITCH – **MTS8006-Chassis**
MAMMUTHUS CORE LAYER SWITCH – **MTS8010-Chassis**
MAMMUTHUS POWER MODULE – **MTM8000-PSU800**
MAMMUTHUS ENGINE MODULE – **MTM8000-Engine**
MAMMUTHUS FAN MODULE – **MTM8003-FAN**
MAMMUTHUS FAN MODULE – **MTM8006-FAN**
MAMMUTHUS FAN MODULE – **MTM8010-FAN**
MAMMUTHUS MEDIUM MODULE – **MTM8000 Series**
MAMMUTHUS BLANK COVER – **MTM8000 Series**

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You may access the latest version of this manual at the product website of Hirschmann IT: https://catalog.belden.com

Contents

Important information

Note: Read these instructions carefully, and familiarize yourself with the device before trying to install, operate, or maintain it. The following notes may appear throughout this documentation or on the device. These notes warn of potential hazards or call attention to information that clarifies or simplifies a procedure.

Symbol explanation

This is a general warning symbol. This symbol alerts you to potential personal injury hazards. Observe all safety notes that follow this symbol to avoid possible injury or death.

If this symbol is displayed in addition to a safety instruction of the type “Danger” or “Warning”, it means that there is a danger of electric shock and failure to observe the instructions will inevitably result in injury.

This symbol indicates the danger of hot surfaces on the device. In connection with safety instructions, non-observance of the instructions will inevitably result in injuries.

DANGER

DANGER draws attention to an immediately dangerous situation, which will **inevitably** result in a serious or fatal accident if not observed.

WARNING

WARNING indicates a potentially hazardous situation which, if not avoided, **could** result in death or serious injury.

⚠ CAUTION

CAUTION indicates a possible danger which, if not avoided, **may** result in minor injuries.

NOTICE

NOTICE provides information about procedures that do not involve the risk of injury.

Safety instructions

⚠ WARNING

UNCONTROLLED MACHINE ACTIONS

To avoid uncontrolled machine actions caused by data loss, configure all the data transmission devices individually.
Before you start any machine which is controlled via data transmission, be sure to complete the configuration of all data transmission devices.

Failure to follow this instruction can result in death, serious injury, or device damage.

General safety instructions

You operate this device with electricity. Improper usage of the device entails the risk of physical injury or significant property damage. The proper and safe operation of this device depends on proper handling during transportation, proper storage and installation, and careful operation and maintenance procedures.

- ☐ Before connecting any cable, read this document, and the safety instructions and warnings.
- ☐ Operate the device with undamaged components exclusively.
- ☐ The device is free of any service components. In case of a damaged or malfunctioning device, turn off the supply voltage and return the device to Hirschmann IT for inspection.

Qualification requirements for personnel

☐ Only allow qualified personnel to work on the device.
Qualified personnel have the following characteristics:

- ▶ Qualified personnel are properly trained. Training as well as practical knowledge and experience make up their qualifications. This is the prerequisite for grounding and labeling circuits, devices, and systems in accordance with current standards in safety technology.
- ▶ Qualified personnel are aware of the dangers that exist in their work.
- ▶ Qualified personnel are familiar with appropriate measures against these hazards in order to reduce the risk for themselves and others.

- Qualified personnel receive training on a regular basis.

Correct usage

Only use the device for those purposes specified in the catalog and in the technical description. Only operate the device with external devices and components that are recommended and permitted by the manufacturer. The proper and safe operation of this product depends on proper handling during transport, proper storage, assembly and installation, and conscientious operation and maintenance procedures.

National and international safety regulations

Verify that the electrical installation meets local or nationally applicable safety regulations.

Ensure the integrity and consistency

☐ Check the bond on the packaging to assure it is sealed and not tampered by unauthorized party.

☐ Verify serial number of delivered products to make sure it is unified with a hardcopy serial number list provided by manufacturer. If it is necessary, please contact Belden representative to obtain a softcopy serial number list from manufacturer for double check.

Requirements for the connecting the electrical wires

Before connecting the electric wire, make sure to **always** confirm compliance with all listed requirements.

The following requirements apply without restrictions:
▶ The electrical wires are voltage-free.
▶ The cables used are permitted for the temperature range of the application case.
▶ Connect the ground screw on the back of the device to the protective conductor before setting up other connections. When to remove connections, the protective conductor is the last to be removed.
▶ Exclusively switch on the device when it is installed.
▶ Relevant for North America: Use 60 °C / 75 °C (140 °F / 167 °F) or 75 °C (167 °F) copper (Cu) wires only.

Table 1: Requirements for connecting electrical wires

Requirements for connecting the supply voltage

Prerequisite:	
All Variants	**All** of the following requirements are complied with: ▶ The supply voltage corresponds to the voltage specified on the type plate of the device. ▶ The power supply conforms to overvoltage category I or II. ▶ The power supply has an easily accessible disconnecting device (for example a switch or a plug). This disconnecting device is clearly identified. So in the case of an emergency, it is clear which disconnecting device belongs to which power supply cable. ▶ When to connect a power supply voltage with a protective conductor: first connect the protective conductor, and then the power supply voltage. If the device contains such a second power supply voltage connection module: first connect the protective conductor, and then the power supply voltage. ▶ Supply with DC voltage: The wire diameter of the power supply cable is at least 1 mm² (North America: AWG16) on the supply voltage input. ▶ Supply with AC voltage: The wire diameter of the power supply cable is at least 0.75 mm² (North America: AWG18) on the supply voltage input. ▶ The cross-section of the ground conductor is the same size as or bigger than the cross-section of the power supply cables. ▶ The power supply cable is suitable for the voltage, the current and the physical load.

Table 2: Requirements for connection of supply voltage

Shield grounding

The shielded earthing module of the twisted-pair cables is used as the conductor for connection to the front panel.
Beware of possible short circuits when connecting a cable section with conductive shielding braiding.

ESD guide

The modules are equipped with electrostatic sensitive components.
If the connection is touched, these sensitive components can be damaged or their service life shortened due to 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).

Device casing

Only technicians authorized by the manufacturer are permitted to open the casing.

- ☐ Keep the cooling fins free to ensure good air circulation.
- ☐ Verify that there is at least 10 cm (3.94 in) of space around the cooling fins of the casing.
- ☐ Install the device horizontally in the cabinet or vertically on a flat surface. Operating the device as a table unit is inadmissible.
  See “Installing and grounding the device” on page 52.
- ☐ Operate the device at the maximum ambient air temperature and in stacking: when to install the device, confirm that there is at least one available rack space (approximately 5 cm) above the device to allow heat to escape through the enclosure of the device.
- ☐ If you operate the device in 19” switch cabinet: install the slide / rails to support the weight of the device.

Installation site requirements

Operate the device at the specified ambient temperature (temperature of the ambient air at a distance of 5 cm (2 in) from the device) and at the specified relative humidity exclusively.

- ☐ When you are selecting the installation location, confirm that you observe the climatic threshold values specified in the technical data.
- ☐ Use the device in an environment with a maximum pollution degree that complies with the specifications in the technical data.

CE marking

The labeled devices comply with the regulations contained in the following European directive(s):

- 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 electronic device.
- 2014/30/EU (EMC)
  Directive of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to electromagnetic compatibility.
- 2014/35/EU
  Directive of the European Parliament and of the Council on the harmonisation of the laws of the Member States relating to the making available on the market of electrical equipment designed for use within certain voltage limits.

In accordance with the above-named EU directive(s), the EU conformity declaration will be at the disposal of the relevant authorities at the following address:

Hirschmann Automation and Control GmbH
Stuttgarter Str. 45-51
72654 Neckartenzlingen
Germany

You find the EU conformity declaration as PDF file for downloading on the Internet at: https://catalog.belden.com

Warning! This is a class A device. This device can cause interference in living areas, and in this case the operator may be required to take appropriate measures.

Warning! When Ethernet cables are used in industrial environments, confirm that they are shielded.

Note: The assembly guidelines provided in these instructions must be strictly adhered to in order to observe the EMC threshold values.

LED or laser components

LED or LASER components according to IEC 60825-1 (2014):
CLASS 1 LASER PRODUCTS
CLASS 1 LED PRODUCTS

FCC note

Supplier's Declaration of Conformity
47 CFR § 2.1077 Compliance Information

MTS8003/8006/8010

U.S. Contact Information

Belden – St. Louis
1 N. Brentwood Blvd. 15th Floor
St. Louis, Missouri 63105, United States
Phone: 314.854.8000

This device complies with part 15 of the FCC rules.
Operation is subject to the following two conditions:

- This device may not cause harmful interference, and
- This device must accept any interference received, including interference that may cause undesired operation.

This device has been tested and found to comply with the limits for a class A digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against interference with the device when used in commercial environments. This device generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. Use of the device in residential areas can also cause interference, in this case the user is obliged to pay to eliminate such interference.

Recycling note

After usage, this device must be disposed of properly as electronic waste, in accordance with the current disposal regulations of your county, state, and country.

About this manual

The “Installation” user manual contains a device description, safety instructions, a description of the display, and the other information that you need to install the device.
Documentation mentioned in the “User Manual Installation” that is not supplied with your device as a printout can be found as PDF files for downloading on the Internet at: https://catalog.belden.com

Key

The symbols used in this manual have the following meanings:

▶	Listing
☐	Work step
■	Subheading

1. Description

1.1 General device description

MTS8000 series switch uses the main control and exchange separation technology leading in the industry. The device provides the deployment capability of at most 448 × 10 Gbit/s interfaces or 128 × 40 Gbit/s high-density ports. Provide multiple physical resource virtualization technologies, such as 1:N, N:1, raise the SDN compatible machine concept for the first time, and realize the integration of SDN deployment with the functions of common switch.

MTS8000 series switch meets the demand for the deployment scenario with high throughput, and high-density and high-speed interface in the building of new-generation data center. In combination with MTS2900 series switches, can provide a comprehensive reliable solution and integrated new-generation data centers in series for the building of the data center in the financial sector, government, operator and energy industries.

Basic devices

Figure 1: MTS8003- Chassis

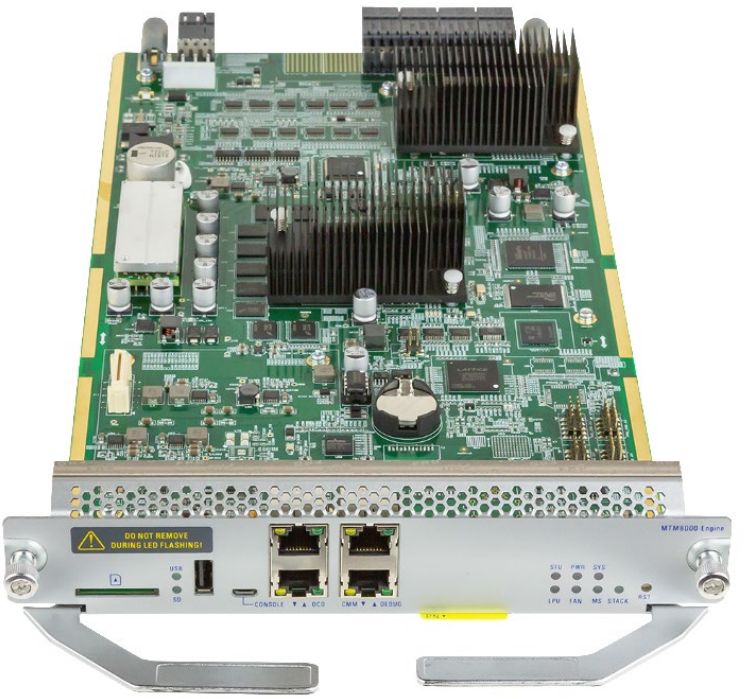
Figure 2: MTS8006- Chassis

Figure 3: MTS8010- Chassis

Power module

You can choose 1 to 4 power modules with the same input voltage: Power modules are provided as accessories. See "Order Number" on Page 80.

Engine module



Engine module is the most important and necessary board card in MTS8000 series switch, and serves as the control center of the device. Every machine frame uses 1 engine module, and 2 modules can be supported at the same time, thus realizing the working mode of 1:1 backup. Engine modules are provided as accessories. See "Order Number" on Page 80.

Note: Engine module is inserted into MPU (Main Processing Unit) card slot.

Fan module

Figure 4: MTM8003- FAN

The rear panel of the switch provides 4 fan slots and confirm that minimum 2 fan modules are installed for normal operation of the system. Fan modules are provided as accessories. See "Order Number" on Page 80.

Figure 5: MTM8006- FAN

The rear panel of the switch provides 2 fan slots and confirm that minimum 2 fan modules are installed for normal operation of the system. Fan modules are provided as accessories. See "Order Number" on Page 80.

Figure 6: MTM8010- FAN

The rear panel of the switch provides 2 fan slots and confirm that minimum 2 fan modules are installed for normal operation of the system. Fan modules are provided as accessories. See "Order Number" on Page 80.

Medium module

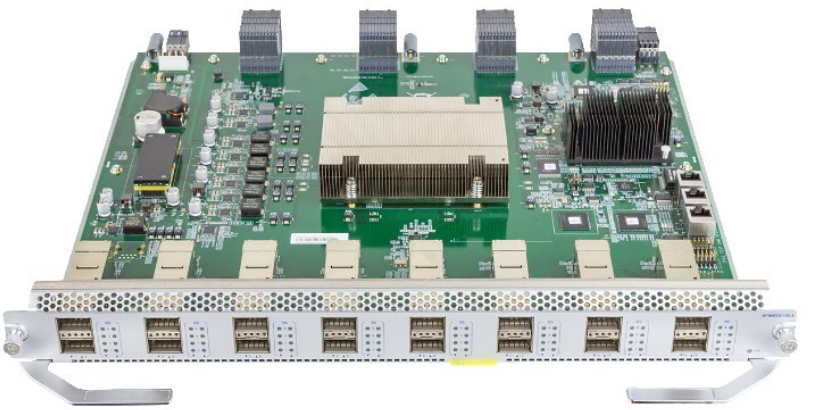


Figure 7: MTM8000-16Q-A

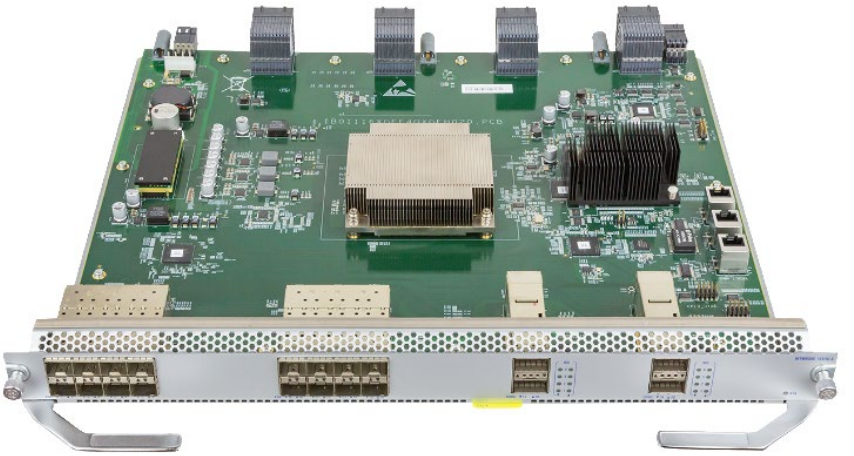


Figure 8: MTM8000-16X4Q-S

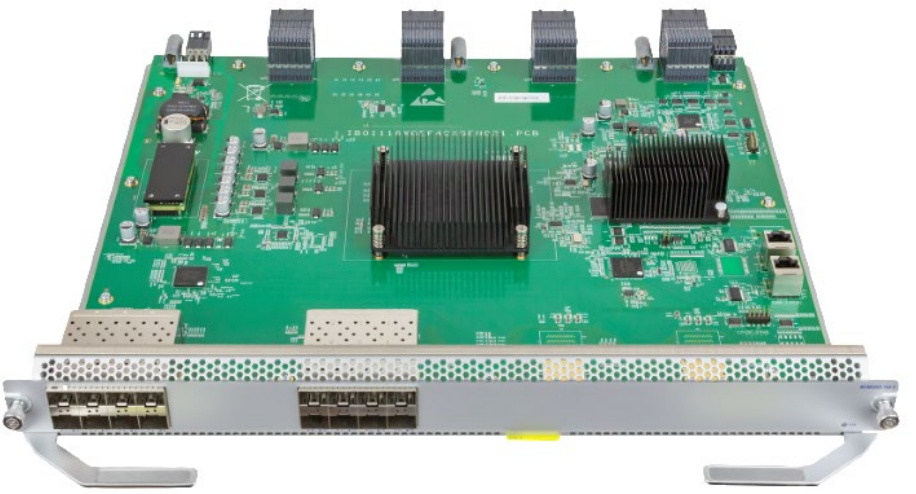


Figure 9: MTM8000-16X-S

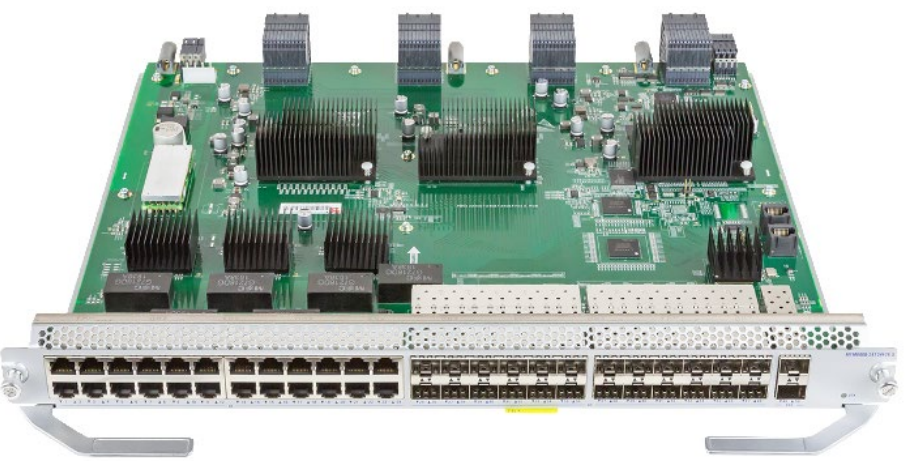


Figure 10: MTM8000-24T24F2X-S

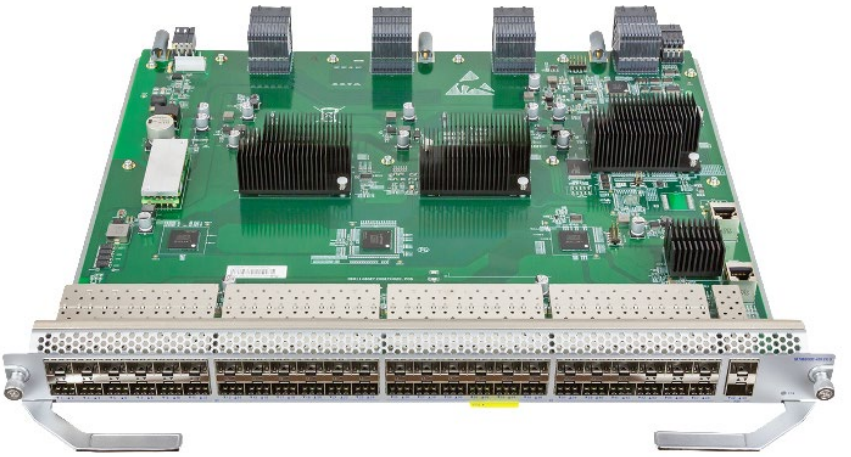


Figure 11: MTM8000-48F2X-S

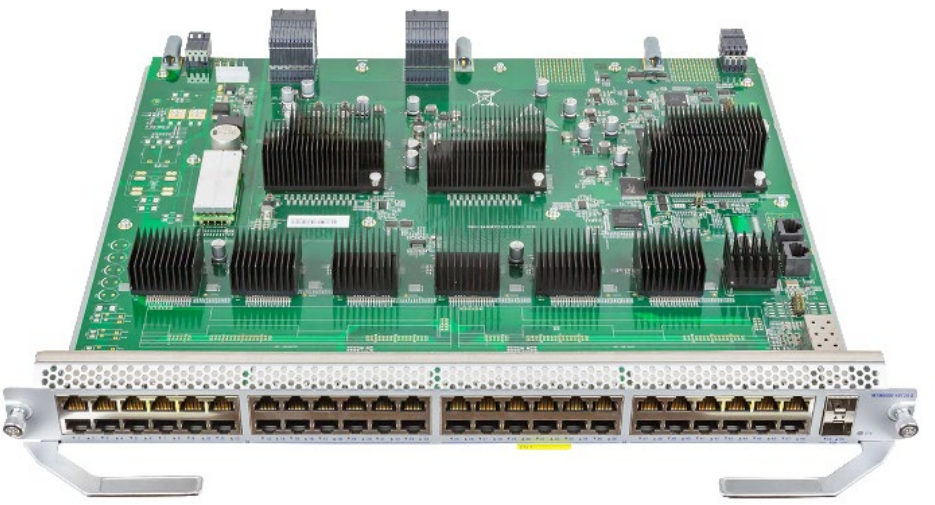


Figure 12: MTM8000-48T2X-S

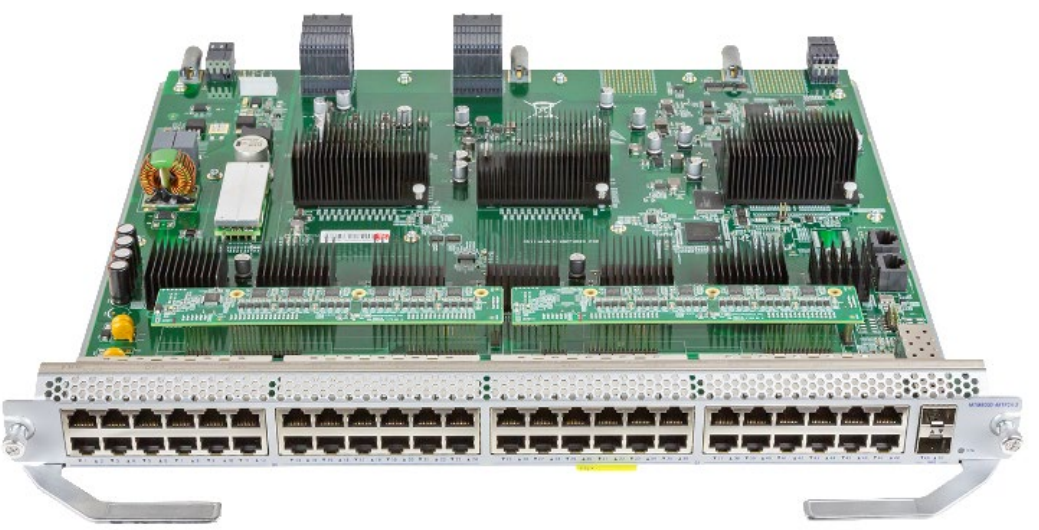


Figure 13: MTM8000-48TP2X-S

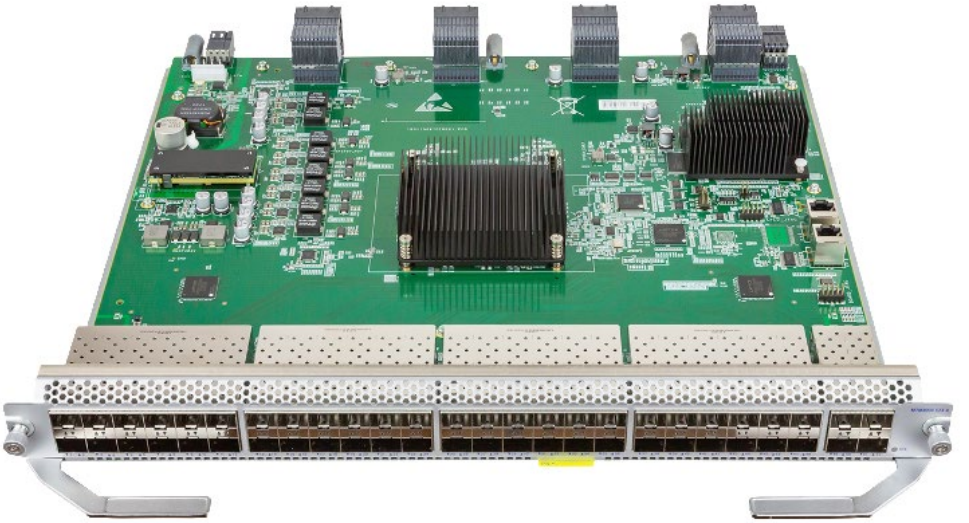


Figure 14: MTM8000-52X-A

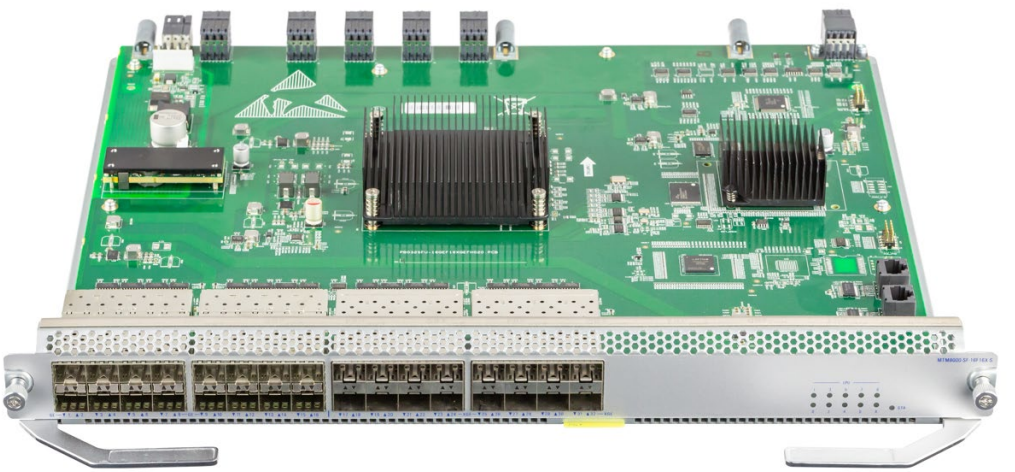


Figure 15: MTM8000-SF-16F16X-S

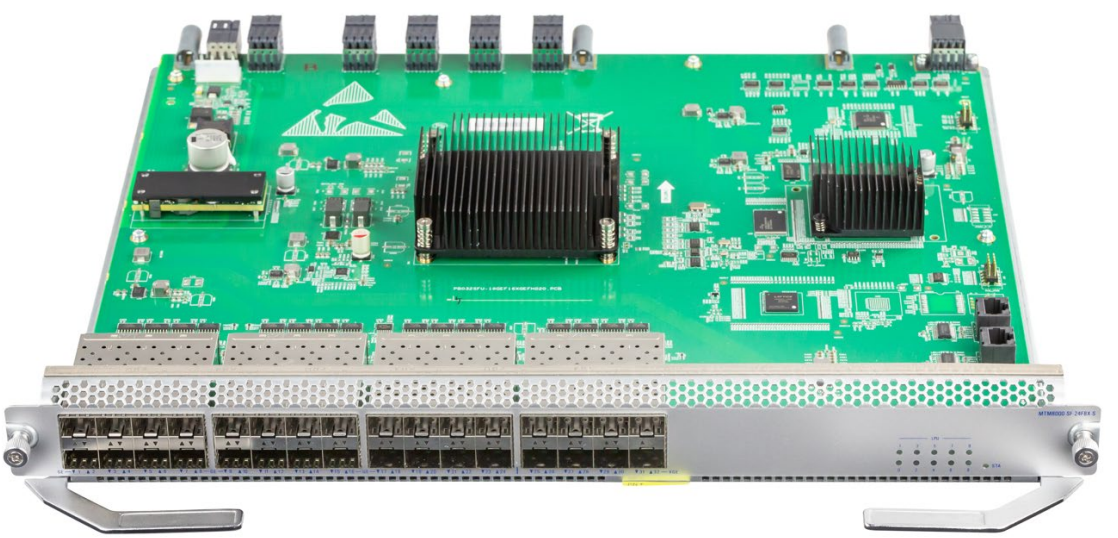


Figure 16: MTM8000-SF-24F8X-S

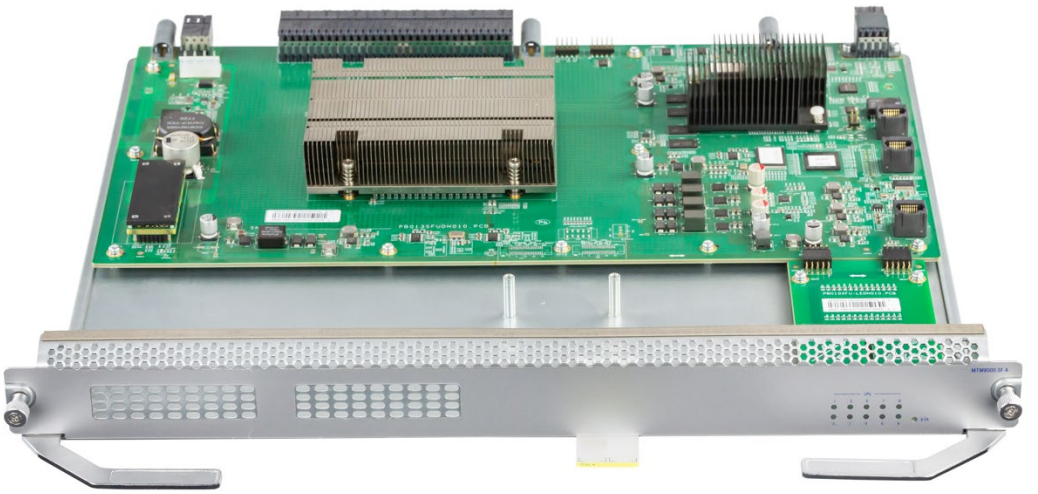


Figure 17: MTM8000-SF-A

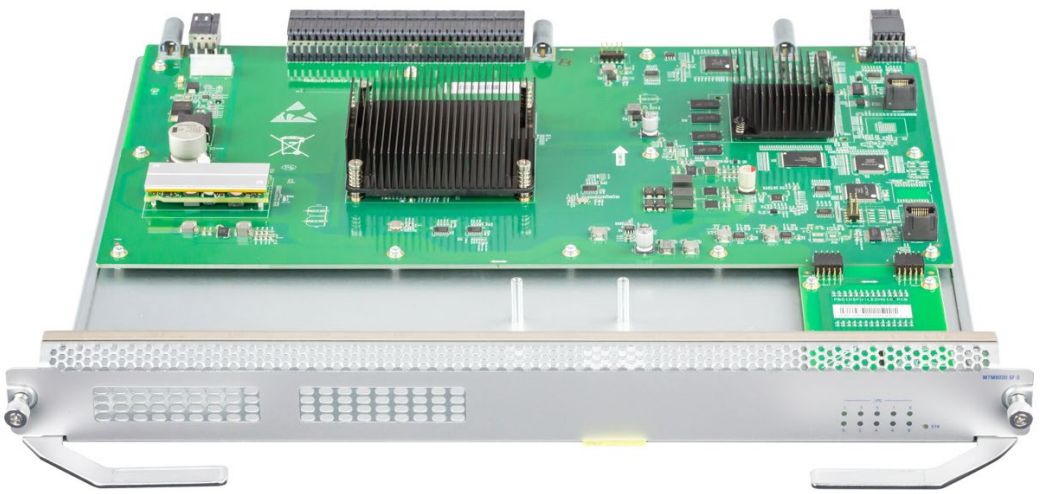


Figure 18: MTM8000-SF-S

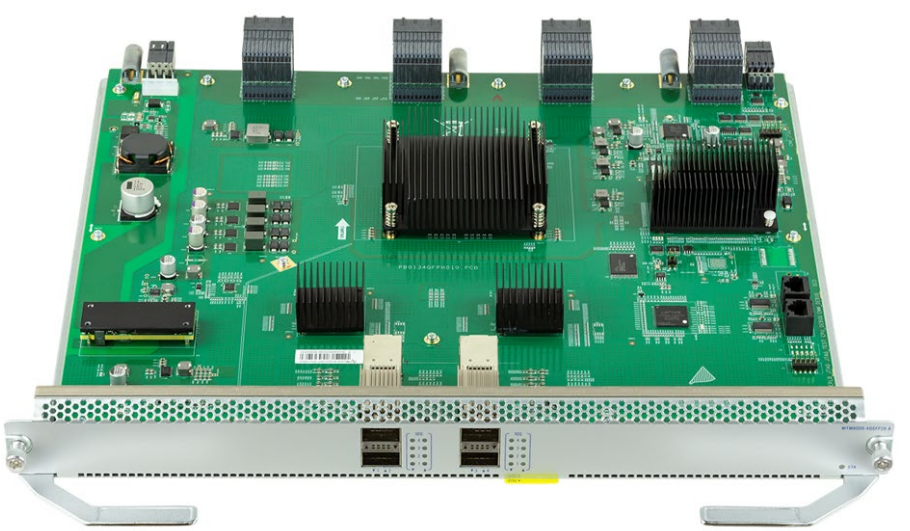


Figure 19: MTM8000-4QSFP28-A

The front panel of the switch provides multiple types of different interface patterns available for the user choice, to meet the demands in various application scenarios. Medium module is supplied as accessory. See "Order Number" on Page 80.

Note: MTM8000-SF series media module can only used in MTS8006 and MTS8010 chassis. It is inserted into SFU (Switching Fabric Unit) slot only. MTM8000-4QSFP28-A media module can only used in MTS8006 and MTS8010 chassis.

1.2 Device name and product code

The device name corresponds to the product code.

1.2.1 Basic device

Order number	Product code	Description
942999801	MTS 8003-Chassis	The rack-type 40 Gbit/s core-layer switch, 4 × power module slots, 2 × engine module slots, 3 × medium module slots, 4 × fan slots, and upgraded software.
942999792	MTS8006-Chassis	The rack-type 40 Gbit/s core-layer switch, 4 × power module slots, 2 × engine module slots, 6 × medium module slots, 2 × fan slots, and upgraded software.
942999791	MTS8010-Chassis	The rack-type 40 Gbit/s core-layer switch, 4 × power module slots, 2 × engine module slots, 10 × medium module slots, 2 × fan slots, and upgraded software.

1.2.2 Power module

Order number	Product code	Description
942999803	MTM8000-PSU800	AC/DC 800 W power module; rated input voltage range 100-240 V AC 50/60 Hz, maximum input voltage range 90-264 V AC 47~63 Hz; output voltage 54 V/12 V DC; supporting hot plugging.

1.2.3 Engine module

Order number	Product code	Description
942999802	MTM8000-Engine	Engine module is the most important and necessary board card in MTS8003 switch, and serves as the control center of the device. Every machine frame uses 1 engine module, and 2 modules can be supported at the same time, thus realizing the working mode of 1:1 backup.

1.2.4 Fan module

Order number	Product code	Description
942999804	MTM8003-FAN	Fan module is mandatory for MTS8003 switch and supports hot plugging. Each MTS8003 switch has 4 fan slots and confirm that minimum 2 fan modules are installed for normal operation of the system.
942999798	MTM8006-FAN	Fan module is mandatory for MTS8006 switch and supports hot plugging. Each MTS8006 switch has 2 fan slots and confirm that minimum 2 fan modules are installed for normal operation of the system.
942999797	MTM8010-FAN	Fan module is mandatory for MTS8010 switch, and supports hot plugging. Each MTS8010 switch has 2 fan slots and confirm that minimum 2 fan modules are installed for normal operation of the system.

1.2.5 Medium module

Order number	Product code	Description
942999806	MTM8000-48F2X-S	MTS8003 medium module; 48 × 100 Mbit/s or 1000 Mbit/s SFP slots, 2 × 1/10 Gbit/s SFP+ slots
942999807	MTM8000-48T2X-S	MTS8003 medium module; 48 × FE/GE TX ports, 2 × 1/10 Gbit/s SFP+ slots
942999808	MTM8000-48TP2X-S	MTS8003 medium module; 48 × FE/GE TX PoE ports, 2 × 1/10 Gbit/s SFP+ slots
942999809	MTM8000-24T24F2X-S	MTS8003 medium module; 24 × FE/GE TX ports, 24 × 100 Mbit/s or 1000 Mbit/s SFP slots, 2 × 1/10 Gbit/s SFP+ slots
942999810	MTM8000-16X-S	MTS8003 medium module; 16 × 1/10 Gbit/s SFP+ slots
942999811	MTM8000-16X4Q-S	MTS8003 medium module; 16 × 1/10 Gbit/s SFP+ slots, 4 × 40 Gbit/s QSFP+ slots
942999812	MTM8000-16Q-A	MTS8003 medium module; 16 × 40 Gbit/s QSFP+ slots with high performance
942999814	MTM8000-52X-A	MTS8003 medium module; 52 × 1/10 Gbit/s SFP+ slots with high performance
942999800	MTM8000-4QSFP28-A	4 × 100 Gbit/s QSFP28 slots with high performance
942999793	MTM8000-SF-A	High performance switch fabric for MTS8000
942999794	MTM8000-SF-S	Standard performance switch fabric for MTS8000
942999795	MTM8000-SF-24F8X-S	Hybrid card, standard switch fabric with: 24 × 100 Mbit/s or 1000 Mbit/s SFP slots, 8 × 1/10 Gbit/s SFP+ slots
942999796	MTM8000-SF-16F16X-S	Hybrid card, standard switch fabric with:

Order number	Product code	Description
		16 × 100 Mbit/s or 1000 Mbit/s SFP slots, 16 × 1/10 Gbit/s SFP+ slots
942999800	MTM8000-4QSFP28-A	4 × 100 Gbit/s QSFP28 slots **Note**: It does not supports MTS8003.

1.2.6 Blank cover

Order number	Product code	Description
942999815	MTM8000-ModuleCover	Blank cover of the medium module of the switch.
942999816	MTM8000-EngineCover	Blank cover of the engine module of the switch.
942999817	MTM8000-PSUCover	Blank cover of the power module of the switch.

1.3 Device view

1.3.1 MTS8000 series chassis

MTS8003 Chassis

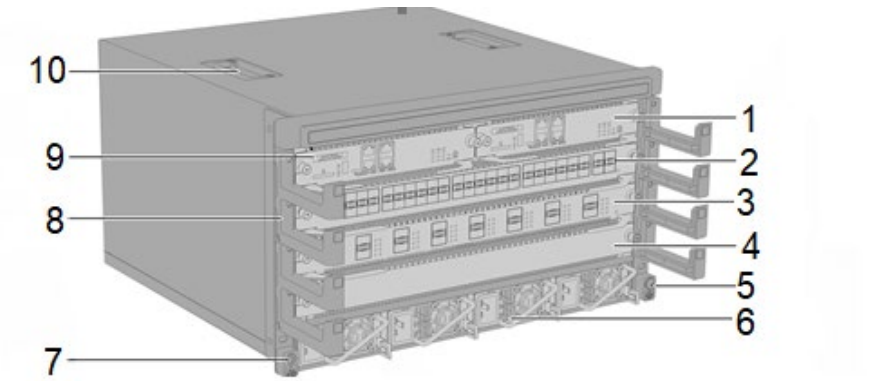


Figure 20: Front view of the MTS8003 chassis

1	Slot 1 of engine module (MPU card slot)
2	Slot 0 of medium module (line processing unit card slot)
3	Slot 1 of medium module (LPU card slot)
4	Slot 2 of medium module (LPU card slot)
5	Earthing screw
6	Slots of power modules
7	Anti-static bracelet socket
8	Wire rack
9	Slot 0 of engine module (MPU card slot)
10	Handle of the machine case

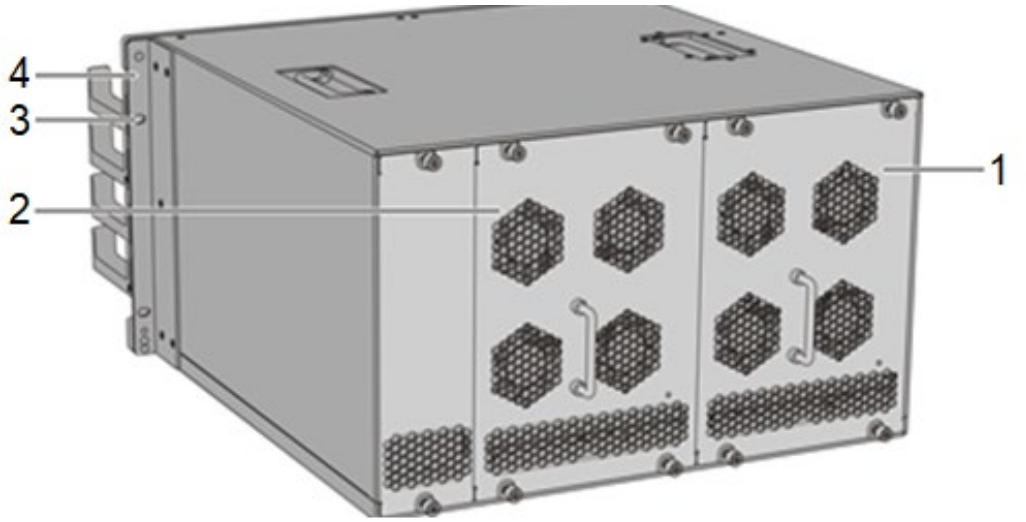


Figure 21: Rear view of the MTS8003 chassis

1	Slot 1 of fan module
2	Slot 0 of fan module
3	Upper cabinet screw hole
4	Machine case hanger

MTS8006 Chassis

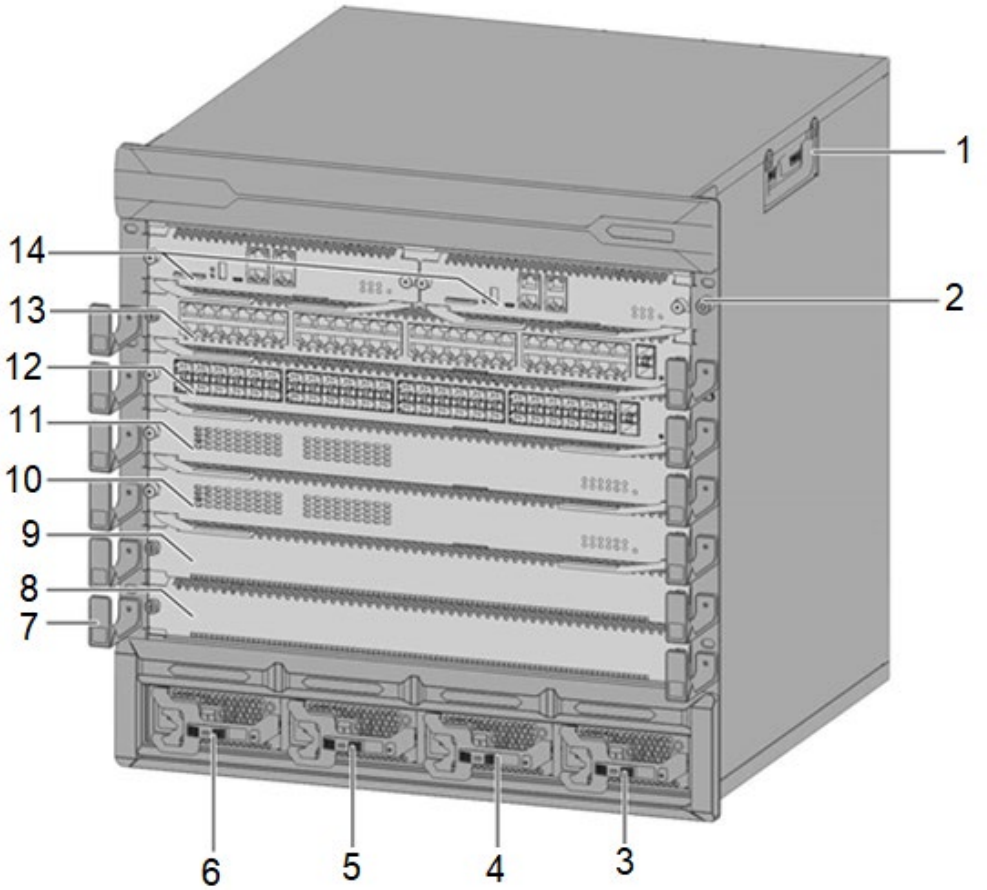


Figure 22: Front view of the MTS8006 chassis

1	Handle of the machine case
2	Anti-static bracelet socket
3	Slot 3 of power module
4	Slot 2 of power module
5	Slot 1 of power module
6	Slot 0 of power module
7	Wire rack
8	Slot 5 of medium module (LPU card slot)
9	Slot 4 of medium module (LPU card slot)
10	Slot 3 of medium module (LPU and SFU card slot)
11	Slot 2 of medium module (LPU and SFU card slot)

12	Slot 1 of medium module (LPU card slot)
13	Slot 0 of medium module (LPU card slot)
14	Slot 0 and 1 of engine module (MPU card slot)

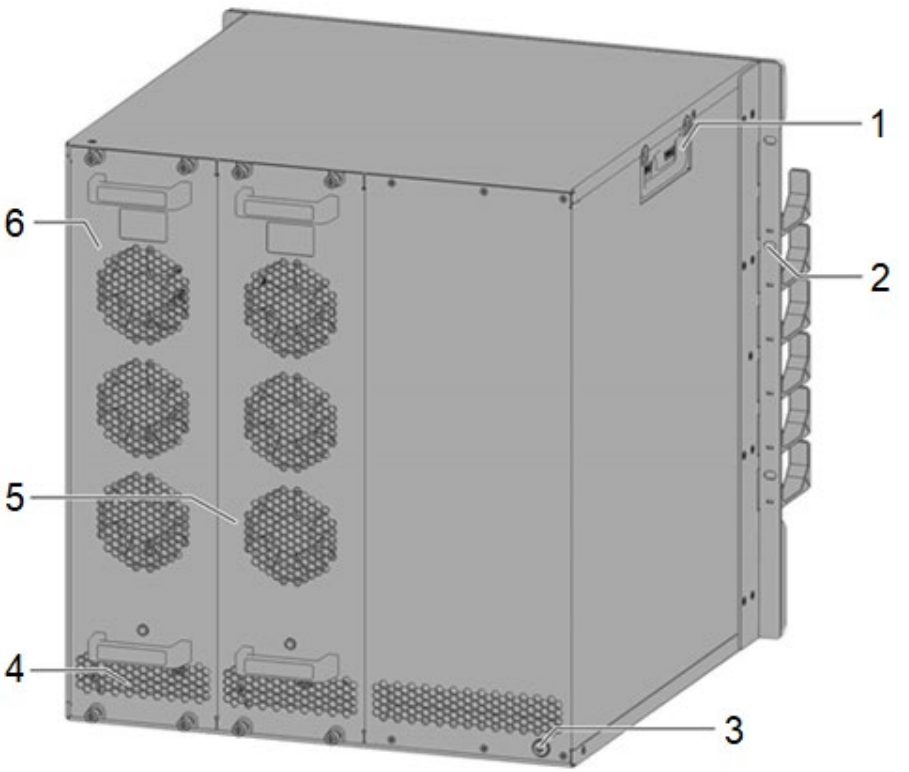


Figure 23: Rear view of the MTS80006 chassis

1	Machine case hanger
2	Upper cabinet screw hole
3	Grounding stud
4	Air outlet
5	Slot 1 of fan module
6	Slot 0 of fan module

MTS8010 Chassis

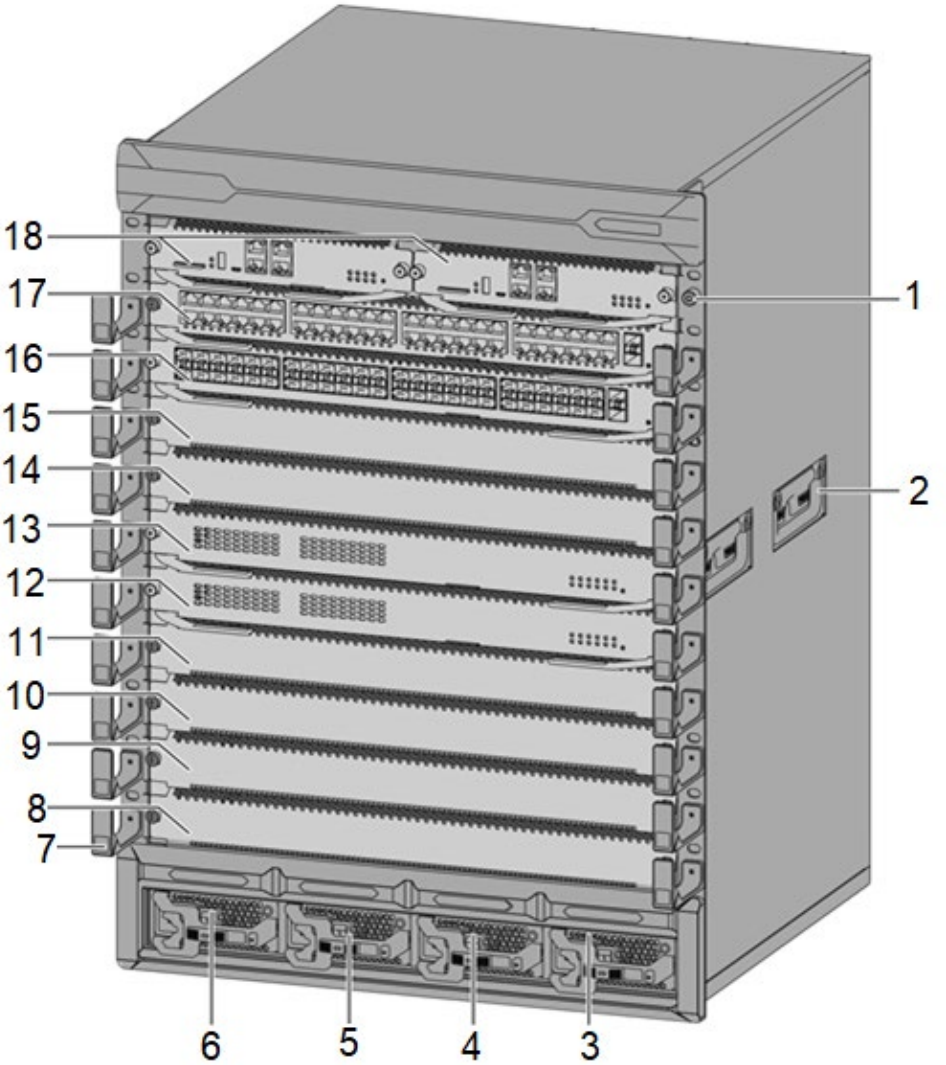


Figure 24: Front view of the MTS8010 chassis

1	Anti-static bracelet socket
2	Handle of the machine case
3	Slot 3 of power module
4	Slot 2 of power module
5	Slot 1 of power module
6	Slot 0 of power module
7	Wire rack
8	Slot 9 of medium module (LPU card slot)
9	Slot 8 of medium module (LPU card slot)

10	Slot 7 of medium module (LPU card slot)
11	Slot 6 of medium module (LPU card slot)
12	Slot 5 of medium module (LPU and SFU card slot)
13	Slot 4 of medium module (LPU and SFU card slot)
14	Slot 3 of medium module (LPU card slot)
15	Slot 2 of medium module (LPU card slot)
16	Slot 1 of medium module (LPU card slot)
17	Slot 0 of medium module (LPU card slot)
18	Slot 0 and 1 of engine module (MPU card slot)

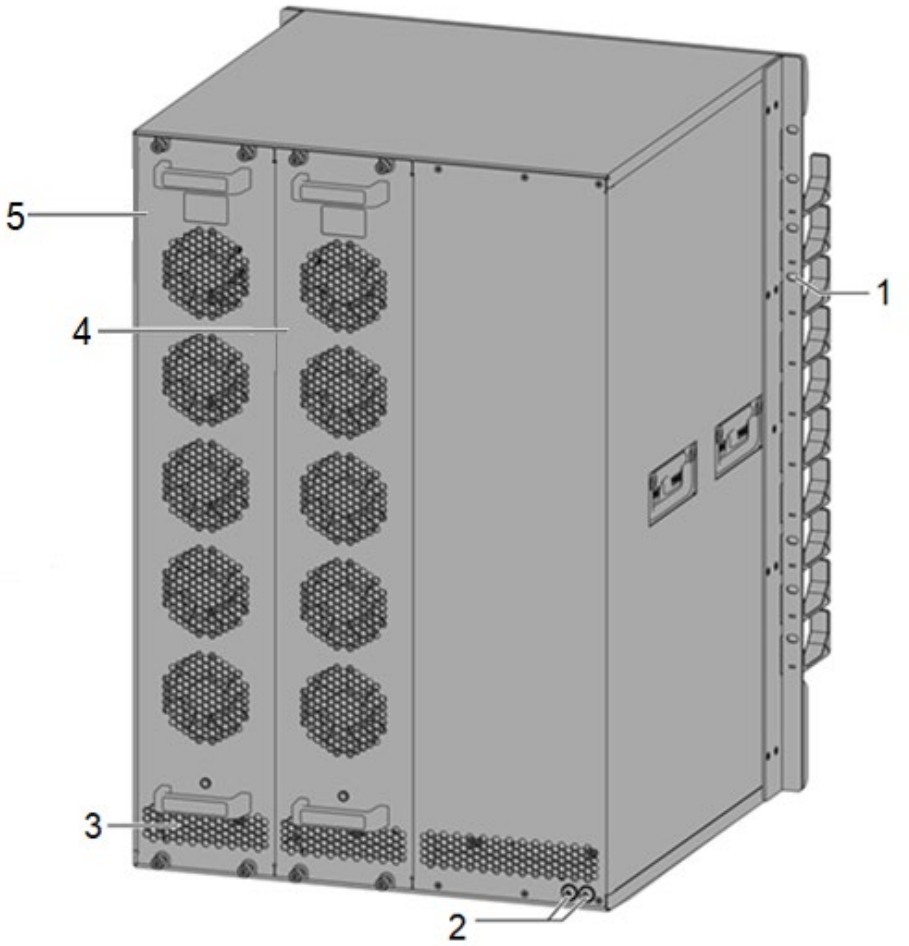


Figure 25: Rear view of the MTS8010 chassis

1	Upper cabinet screw hole
2	Grounding stud
3	Air outlet
4	Slot 1 of fan module
5	Slot 0 of fan module

1.3.2 Power module

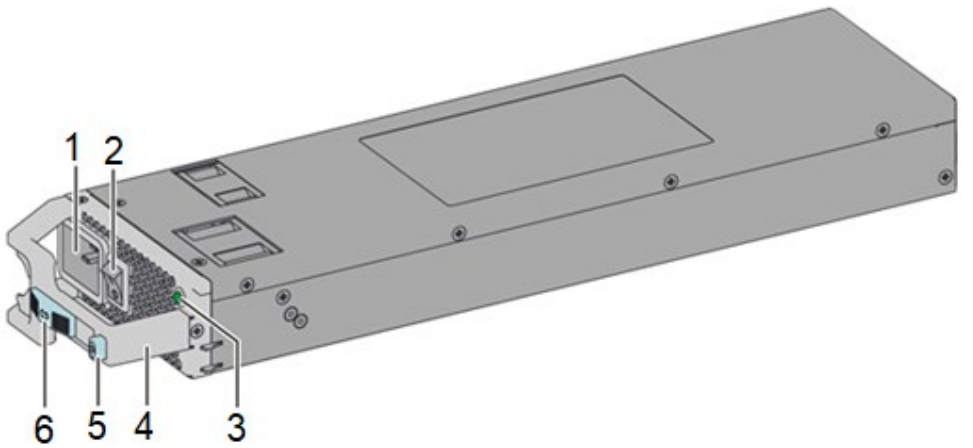


Figure 26: Power module

1	AC power socket
2	Power switch
3	Power status indicator
4	Power handle
5	Power module unlocking button
6	Anti-stripping slider for power line

1.3.3 Engine module

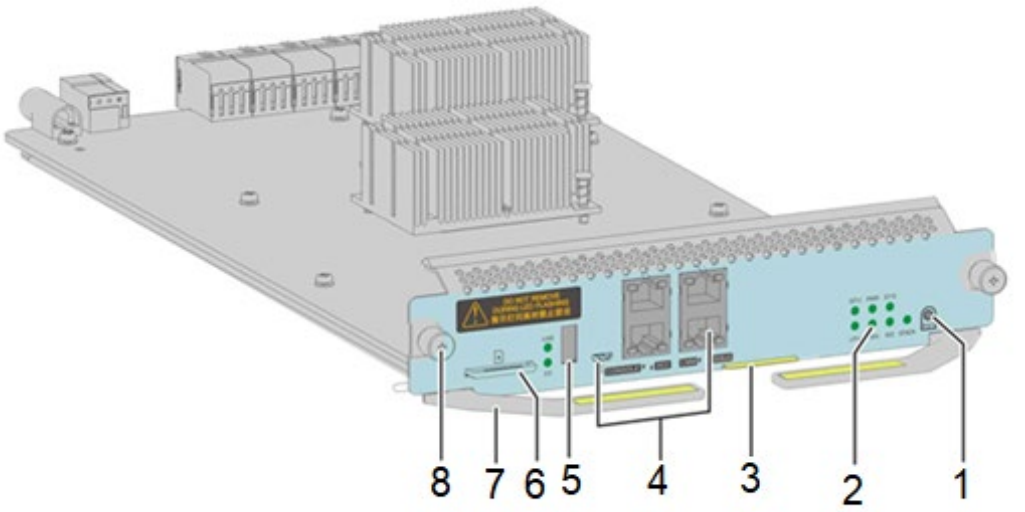


Figure 27: Engine module

1	Reset button
2	Function status indicator
3	Board card label slot
4	Function port
5	USB interface
6	SD card slot
7	Board card puller
8	Anti-loosening screw

1.3.4 Fan module

MTM8003- FAN

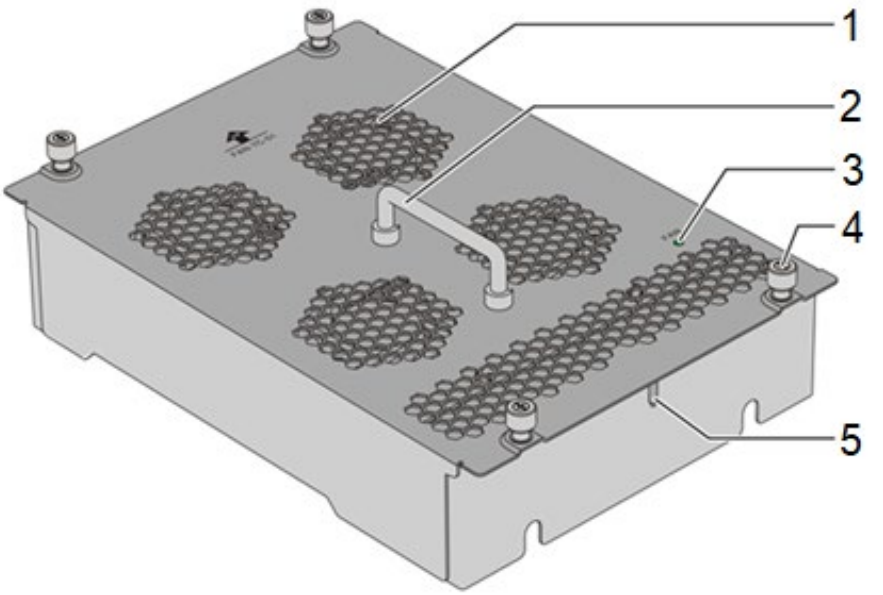


Figure 28: MTM8003- Fan

1	Air outlet of the fan
2	Handle
3	Fan status indicator
4	Anti-loosening screw
5	Install the locating post

MTM8006- FAN

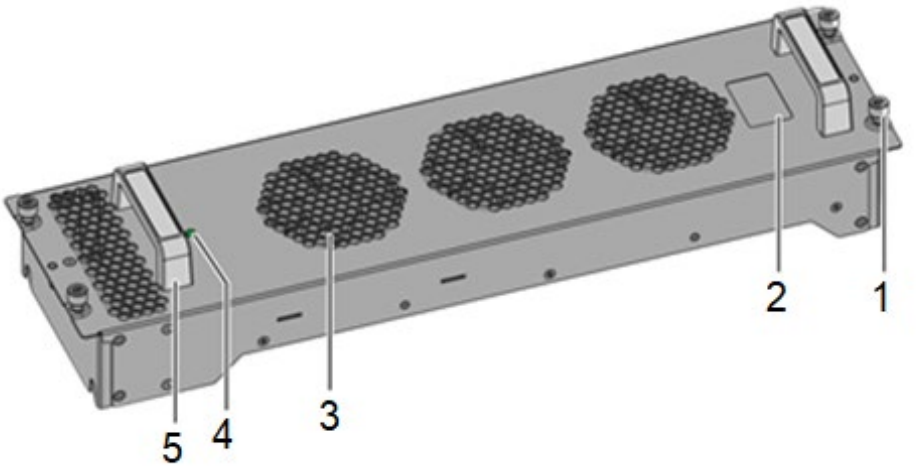


Figure 29: MTM8006- Fan

1	Anti-loosening screw
2	Fan label
3	Air outlet of the fan
4	Fan status indicator
5	Handle

MTM8010- FAN

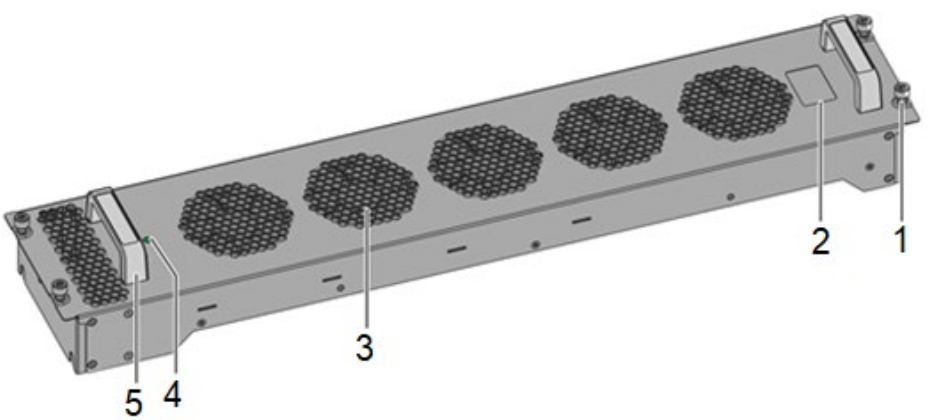


Figure 30: MTM8010- Fan

1	Anti-loosening screw
2	Fan label
3	Air outlet of the fan

4	Fan status indicator
5	Handle

1.3.5 Medium module

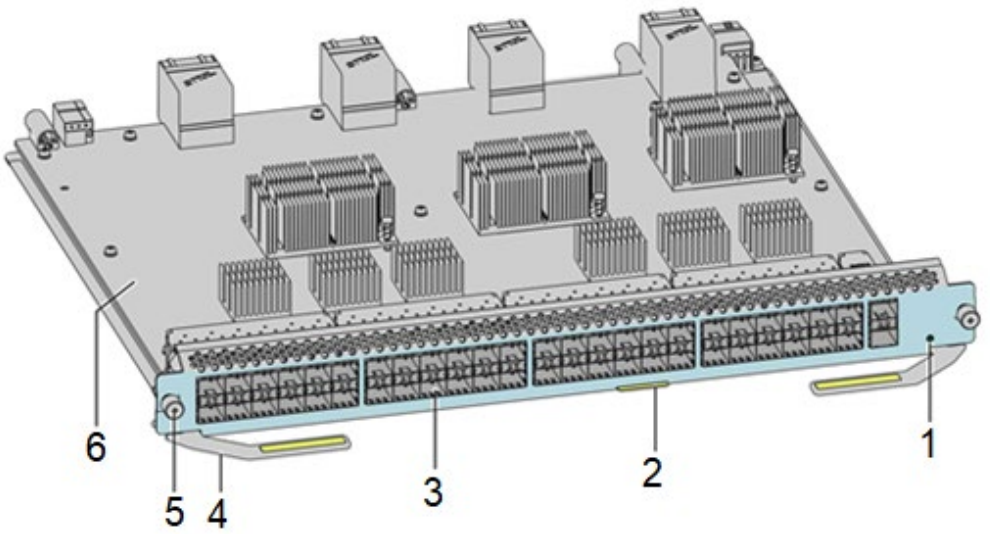


Figure 31: Medium module

1	Status indicator
2	Board card label slot
3	Function port
4	Board card puller
5	Anti-loosening screw
6	Printed circuit board

1.3.6 Blank cover

Figure 32: Schematics of blank cover of the engine module

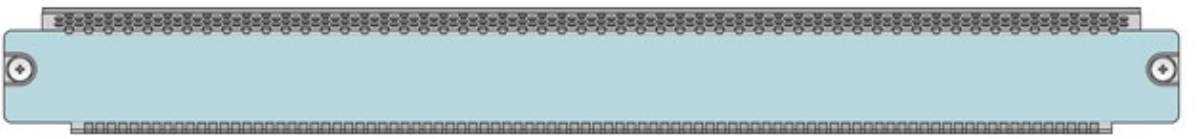


Figure 33: Schematics of the blank cover of the medium module

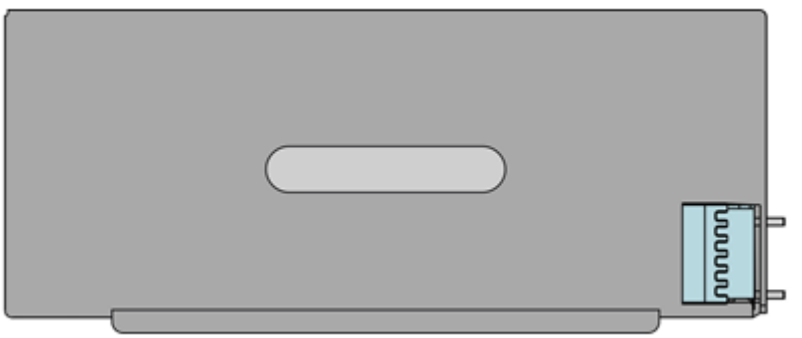


Figure 34: Schematics of blank cover of the power module

1.4 Power supply

You may use the power module to supply voltage for the device.
For information about connecting supply voltage:
See “Power Module” on page 26.

1.5 Device port attribute

You can use twisted-pair cable or fiber optics (F/O) to connect the end devices and other network segments to the device and medium module port.

1.5.1 Console port attribute

Attribute	Description
Interface standard	Asynchronous EIA/TIA-232
Connector type	RJ45
Baud rate	9600 bit/s to 115200 bit/s (default as 9600 bit/s)
Supported service	Connect with the serial port of local terminal (such as PC), and run the terminal simulation program on the terminal

1.5.2 USB Console port attribute

Attribute	Description
Interface standard	USB 2.0
Connector type	Micro USB
Interface rate	12 Mbit/s
Supported service	Connect with the USB of local terminal (such as PC), and run the terminal simulation program on the terminal. Baud rate setting range is 9600 bit/s to 115200 bit/s (default as 9600 bit/s)

1.5.3 10BASE-T/100BASE-TX/1000BASE-T RJ45 electric interface attribute

Attribute	Description
Interface standard	IEEE 802.3, IEEE 802.3u, IEEE 802.3ab, and IEEE 802.3az
Connector type	RJ45
Working mode	10/100/1000 Mbit/s

Attribute	Description
	Half duplex/full duplex/auto-negotiation
Maximum transmission distance	100 m
Connected cable	Cat5 and Cat5e twisted pairs

1.5.4 10GBASE-T RJ45 electric interface attribute

Attribute	Description
Interface standard	IEEE 802.3an, IEEE 802.3ab, and IEEE 802.3u
Connector type	RJ45
Working mode	10 Gbit/s (full duplex) 1000 Mbit/s (half duplex/full duplex) Auto-negotiation
Maximum transmission distance	100 m
Connected cable	Cat6e and above shielded twisted pairs (S/FTP)

1.5.5 1000BASE-X SFP optical interface attribute

Attribute	Description
Interface standard	IEEE 802.3z
Connector type	SFP
Working mode	1000 Mbit/s full duplex/1000 Mbit/s auto-negotiation
Support SFP interface	Support 1000BASE-X
Connected cable	Single mode optical fiber of multimode optical fiber

1.5.6 10GBASE-SR/LR/ER SFP+ optical interface attribute

Attribute	Description
Interface standard	Conform to the standard IEEE 802.3ae
Connector type	SFP+
Working mode	10 Gbit/s, 1000 Mbit/s full duplex
Support SFP+ interface	Support 10GBASE-SR Support 10GBASE-LR Support 10GBASE-ER
Connected cable	Single mode optical fiber of multimode optical fiber

1.5.7 40GBASE-SR4/LR4 QSFP+ optical interface attribute

Attribute	Description
Interface standard	Conform to the standard IEEE 802.3ba
Connector type	QSFP+
Working mode	40 Gbit/s full duplex
Support QSFP+ interface	Support 40GBASE-SR4/LR4
Connected cable	Single mode optical fiber of multimode optical fiber

1.5.8 100GBASE-SR4/LR4 QSFP+

Attribute	Description
Interface standard	Conform to the standard IEEE 802.3ba
Connector type	QSFP28
Working mode	100 Gbit/s full duplex
Support QSFP+ interface	Support 100GBASE-SR4/LR4
Connected cable	Single mode optical fiber of multimode optical fiber

1.5.9 USB interface attribute

Attribute	Description
Interface standard	USB 2.0
Interface type	USB Type A
Working mode	1.5 Mbit/s, 12 Mbit/s, and 480 Mbit/s Host, supporting hot plugging and controlled (command mode) hot plugging. **Note**: Hot plugging operation is not allowed in the data transmission. It could result in data loss.
Cable	No

1.5.10 SD interface attribute

Attribute	Description
Interface standard	SD Host Controller Standard Specification, Version 2.0
Interface type	SD
Working mode	Support hot plugging and controlled (command mode) hot plugging. **Note**: Hot plugging operation is not allowed in the data transmission. It could result in data loss.
Cable	No

1.5.11 PoE interface attribute

Attribute	Description
Interface standard	IEEE 802.3af IEEE 802.3at
Interface type	RJ45
Working mode	Alternative A: 1, 2 being negative, and 3, 6 being positive for MDIX. Support 1000BASE-T.
Cable	No

See “Command line interface user manual” for more information. The manual is available for download on the Internet: https://catalog.belden.com

1.6 Display elements

After the supply voltage is set up, the Software starts and initializes the device. Afterwards, the device performs a self-test. During this process, various LEDs light up.

1.6.1 Device state

These LEDs provide information about the conditions which affect the operation of the whole device.

Indicator type	Indicator name	Indicator color	Status
System status indicator	SYS	Green	Fast flashing (flashing 5 times per second): Indicates that the hardware starts to work after power on. Slow flashing (flashing 1 time per 2 seconds): Indicates the normal operation of the system. OFF: Indicates an exception to the system running.
Power indicator	PWR	Green	ON: Indicates that all power modules in place are in normal operation. OFF: Indicates an exception to the in-place power modules.
Fan indicator	FAN	Green	ON: Indicates that all fan modules on the device are in normal operation. OFF: Indicates an exception to at least 1 fan module on the device.
STACK indicator	STACK	Green	Flash: Indicates that the stacking function is enabled, and this is the main device for the stacking system. ON: Indicates that the stacking function is enabled, and this is not the main device for the stacking system. OFF: Indicates that the stacking function is not enabled.
ID indicator	ID	Blue	Fast flashing (flashing 5 times per second): For the field operation, and remote control of the ON and OFF status of ID LED by the operation and maintenance personnel. OFF: ID LED is not enabled, default status.

1.6.2 Port status

These LEDs provide the related information of the ports.

Indicator type	Indicator name	Indicator color	Status
Serial port indicator	TXD	RJ45 self-supplied with yellow	Flash: Indicates that there is data sent out of the serial port. OFF: Indicates that there is no data sent out of the

Indicator type	Indicator name	Indicator color	Status
		LED	serial port.
	RXD	RJ45 self-supplied with green LED	Flash: Indicates that there is data received in the serial port. OFF: Indicates that there is no data received in the serial port.
DC0 interface indicator	1000 Mbit/s	RJ45 self-supplied with yellow LED	OFF: DC0 interface works in 10/100 Mbit/s or stays in the un-linked status. ON: DC0 interface works in 1000 Mbit/s.
	ACT	RJ45 self-supplied with green LED	OFF: DC0 interface is not Linked. ON: DC0 interface is Linked, but without data transmission and receiving. Flash: DC0 interface is Linked, and with data transmission and receiving.
Port status indicator	LINK/ACT	Green	ON: Ethernet interface is linked. Flash: There is data transmission and receiving in the Ethernet interface. OFF: Ethernet interface is not linked.
40 Gbit/s port BREAK OUT indicator	40 Gbit/s BREAKOUT	Green	ON: At least one 40 Gbit/s interface works in 10 Gbit/s mode and is split into four 10 Gbit/s interfaces. If the port LED indicator 1 is ON, then every interface indicator indicates that the status of the first 10 Gbit/s interface in this interface. If the port LED indicator 2 is ON, then every interface indicator indicates that the status of the second 10 Gbit/s interface in this interface. If the port LED indicator 3 is ON, then every interface indicator indicates that the status of the third 10 Gbit/s interface in this interface. If the port LED indicator 4 is ON, then every interface indicator indicates that the status of the fourth 10 Gbit/s interface in this interface. OFF: The 40 Gbit/s interface works in 40 Gbit/s mode, and is not split into four 10 Gbit/s interfaces.

Indicator type	Indicator name	Indicator color	Status
			Note: When one or more 40 Gbit/s interfaces works in 40 Gbit/s mode then BREAKOUT LED becomes invalid and 40 Gbit/s interface indicators LED lights up.
100/40 Gbit/s port BREAK OUT indicator	100/40 Gbit/s BREAKOUT		ON: At least one 100/40 Gbit/s interface works in 10 Gbit/s mode and is split into four 10 Gbit/s interfaces. If the port LED indicator 1 is ON, then every interface indicator indicates that the status of the first 10 Gbit/s interface in this interface. If the port LED indicator 2 is ON, then every interface indicator indicates that the status of the second 10 Gbit/s interface in this interface. If the port LED indicator 3 is ON, then every interface indicator indicates that the status of the third 10 Gbit/s interface in this interface. If the port LED indicator 4 is ON, then every interface indicator indicates that the status of the fourth 10 Gbit/s interface in this interface. OFF: The 100/40 Gbit/s interface works in 100/40 Gbit/s mode, and is not split into four 10 Gbit/s interfaces. **Note**: When one or more 100/40 Gbit/s interfaces works in 100/40 Gbit/s mode then BREAKOUT LED becomes invalid and 100/40 Gbit/s interface indicators LED lights up.

1.7 Management interface

1.7.1 DC0 interface (external management)

The serial interface is provided on RJ45 socket (DC0 interface), to realize the local connection of external management station (VT100 terminal or PC with corresponding terminal simulation), thus allowing you to build the connection with the CLI (Command Line Interface) and system monitor.

1.7.2 USB interface

The switch provides 2 serial interfaces (EIA/TIA-232 and Micro USB 2.0). With these 2 interfaces, the user can configure the switch by using the PC computer (or laptop computer) with RS-232 serial interface (or USB interface).

2 Installation

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

Perform the following work steps to install and configure the device:

- Checking the package contents
- Installing the power module (optional)
- Installing and grounding the device
- Installing the SFP transceiver (optional)
- Operating the device
- Connecting the data cables
- Filling out the inscription label

2.1 Checking the package contents

Perform the following work steps:

- ☐ Check whether the box contains all the items specified in the section “Delivery items” on page 80.
- ☐ Check the individual parts for transport damage.

2.2 Installing the power module (optional)

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

Perform the following work steps:

- ☐ Remove the cover plate from the power module slot of the device.
- ☐ Put the power module into the power module slot of the device.

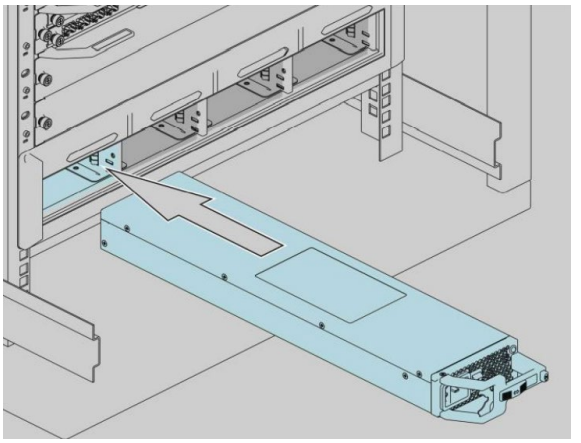


Figure 35: Installing the power module

2.3 Installing and grounding the device

Perform the following work steps:

- Installing the device in the switch cabinet
- Installing the cable tray
- Grounding the device

2.3.1 Installing the device in the switch cabinet

⚠ WARNING

ELECTRIC SHOCK

Install this device solely in a switch cabinet or in an operating site with restricted access, to which maintenance staff have exclusive access.

Failure to follow this instruction can result in death, serious injury, or device damage.

⚠ CAUTION

OVERHEATING OF THE DEVICE

When installing the device, ensure that the ventilation slots are not covered.

Failure to follow these instructions can result in injury or equipment damage.

⚠ CAUTION

BURNING HAZARD

The surfaces of the device housing may become hot. Avoid touching the device while it is operating.

Failure to follow this instruction can result in injury.

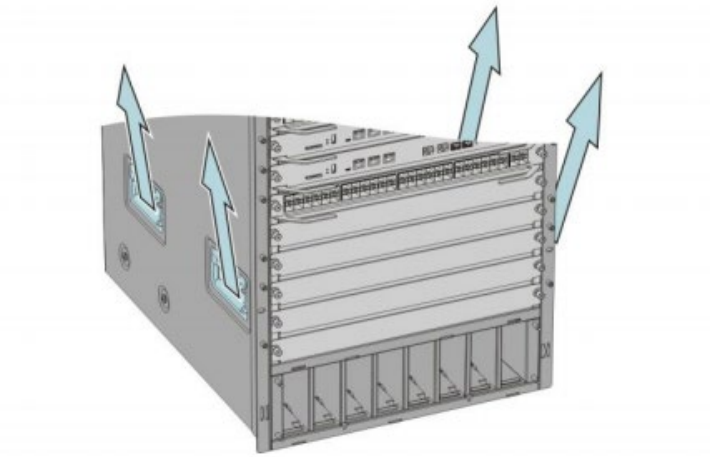
Note: When the device is operated in an environment with continuous vibration load greater than 0.7g, it must be fixed to the switch cabinet with the 2 fixed mounting brackets at the front and rear of the device.
Additional mounting brackets are provided as accessories.
See “Accessories” on the page 80.

Prerequisite:

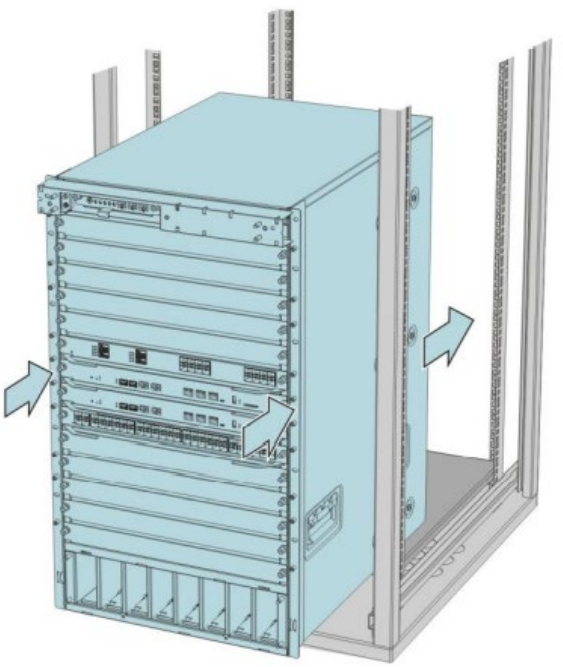
- ☐ Install the device in a 19" standard cabinet with a depth of at least 150 mm greater than the device depth. Varify that the front and rear air channels of the cabinet is smooth. Do not place anything near the front and rear doors to block the air channels.
- ☐ Before installing an MTS8000 switch, check the maximum load-bearing capacity of the cabinet, pallet, and equipment room floor. For details about the weight of each MTS8000 switch component, see technical data. To ensure heavy load, heat dissipation, and cabling, you are advised to install only one MTS8000 switch in a standard cabinet.
- ☐ Check the grounding and smoothness of the cabinet. Confirm that there are no obstacles in or around the cabinet that affect device installation.

Perform the following work steps:

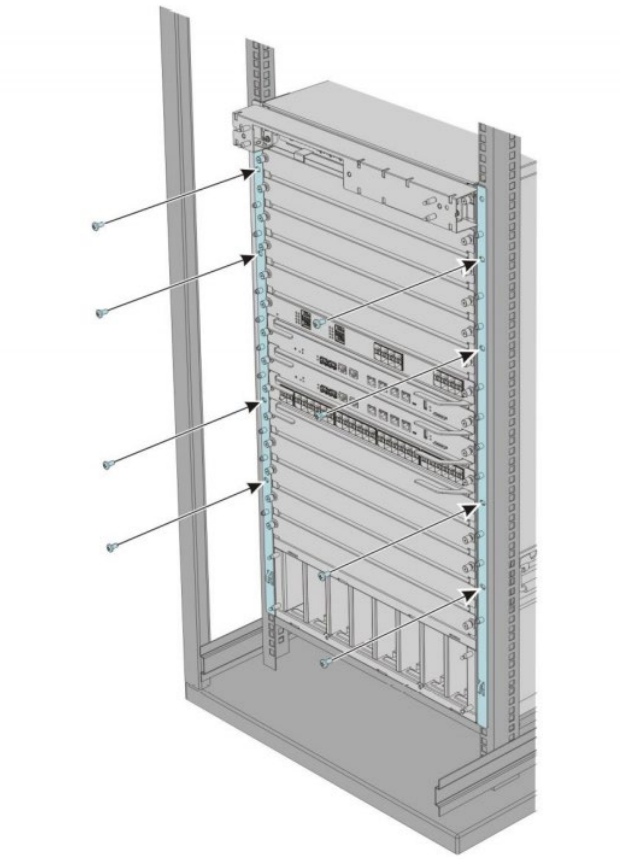
- ☐ Remove the chassis from the packing tray. Four people are required to hold the handles on the left and right sides of the box and lift it out smoothly.



- ☐ Lift the host onto a load-bearing tray, and push the main box into the cabinet until it slides smoothly into the cabinet.



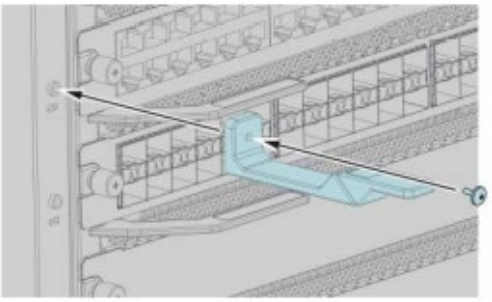
☐ Attach the mounting brackets to the floating nuts on the mounting bar of the cabinet column using M6 panel screws to prevent the devices from sliding back and forth.

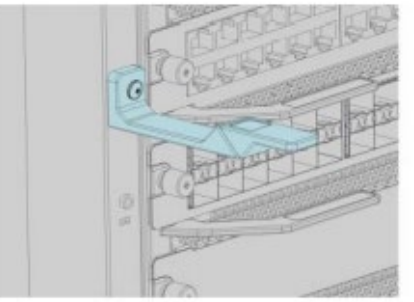


2.3.2 Installing the cable tray

Perform the following work steps:

☐ Align the installation hole of the cable tray with the stud on the mounting bracket of the chassis.
☐ Install the screw.





2.3.3 Grounding the device

⚠ WARNING

ELECTRIC SHOCK

Ground the device before connecting any other cables.

Failure to follow this instruction can result in death, serious injury, or device damage.

The device has the connection with the protective earthing wire.
The device is grounded by the grounding screw and the power socket.

Perform the following work steps:

- ☐ Install the grounding screw at the rear of the device to the protective conductor (See figure 36).
- ☐ Tighten the grounding screw with the tightening torque specified in chapter “General technical data” on page 65.

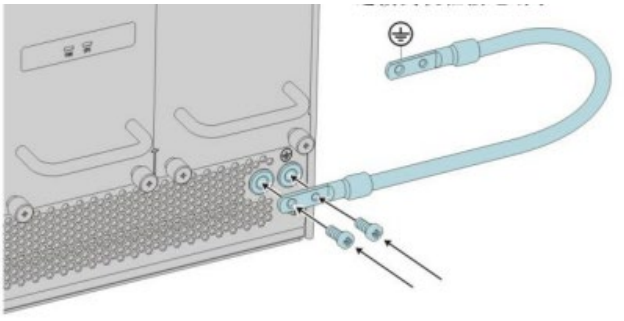


Figure 36: Grounding the device

2.4 Installing the SFP transceiver (optional)

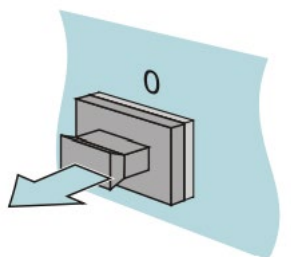
Prerequisite:

Exclusively use Hirschmann IT SFP transceivers.
See “Accessories” on the page 80.

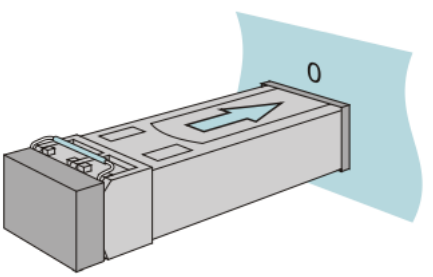
Perform the following work steps:

☐ Take the SFP transceiver out of the transport packaging.

☐ Remove the protection cap from the SFP transceiver.



☐ Push the SFP transceiver with the lock closed into the slot until it is locked.



2.5 Operating the device

Perform the following work steps:

- ☐ Connect the power supply cable.
- ☐ Enable the power supply.

2.6 Connecting the data cables

Note the following general recommendations for data cable connections in an environments with high electrical interference levels:

- ☐ Keep the length of the data cables as short as possible.
- ☐ Use optical fiber data cable for data transmission between the buildings.
- ☐ When using copper cables, provide a sufficient separation between the power supply cables and the data cables. Ideally, install the cables in separate cable channels.
- ☐ Verify that power supply cables and data cables do not run parallel over longer distances. To reduce inductive coupling, verify that the power supply cables and data cables cross at a 90° angle. Use SF/UTP cables according to ISO/IEC 11801:2002.
- ☐ Connect the data cable according to your need.
- ☐ Connect the data cable according to your requirements.

See “Device name and product code” on the page 26.

2.7 Filling out the inscription label

The information field for the MAC address helps you identify your device.

3 Making basic settings

Note: Configuring 2 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.

Enter the IP parameters when you install the device for the first time.

4 Monitoring the ambient air temperature

Operate the device below the specified maximum ambient air temperature exclusively.
See “General technical data” on page 65.

The ambient air temperature is the temperature of the air at a distance of 5 cm (2 in) from the device. It depends on the installation conditions of the device, e.g. the distance from other devices or other objects, and the output of neighboring devices.

5 Maintenance and service

- When designing this device, Hirschmann largely avoided using high-wear parts. The parts subject to wear and tear are dimensioned to last longer than the lifetime of the product when it is operated normally. Operate this device according to the specifications.
- Relays are subject to natural wear. This wear depends on the frequency of the switching operations. Check the resistance of the closed relay contacts and the switching function depending on the frequency of the switching operations.
- Only when detecting the error, then the device trigger the internal fuse. In case of the device damage or fault, it is required to cut off the power supply and return the device to the factory for inspection.
- Hirschmann is continually working on improving and developing their software. Check regularly whether there is an updated version of the software that provides you with additional benefits. You find information and software downloads on the Hirschmann IT product pages on the Internet (https://catalog.belden.com/).
- Depending on the degree of pollution in the operating environment, check at regular intervals that the ventilation slots in the device are not obstructed.

Note: You find information on settling complaints on the Internet at http://www.beldensolutions.com/en/Service/Repairs/index.phtml

6 Disassembly

6.1 Removing the power module

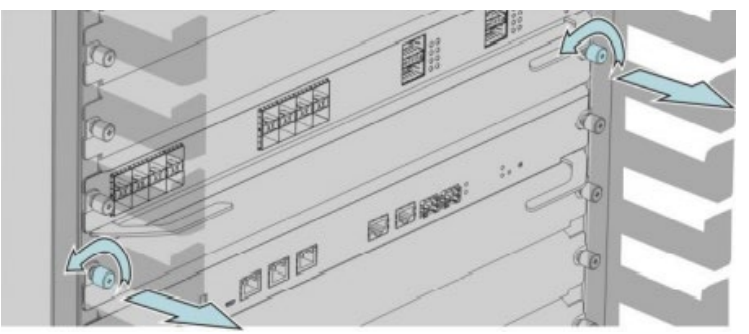
Perform the following work steps:

- ☐ Wear the anti-static bracelet, and confirm that the anti-static bracelet can be reliably earthed.
- ☐ Turn off the power switch.
- ☐ Unlock the power cable, and unplug the power line.
- ☐ Unlock the power module, and pull it out.
- ☐ Use the cover plate to block the slot of the medium module on the basic device.

6.2 Removing the engine or medium module

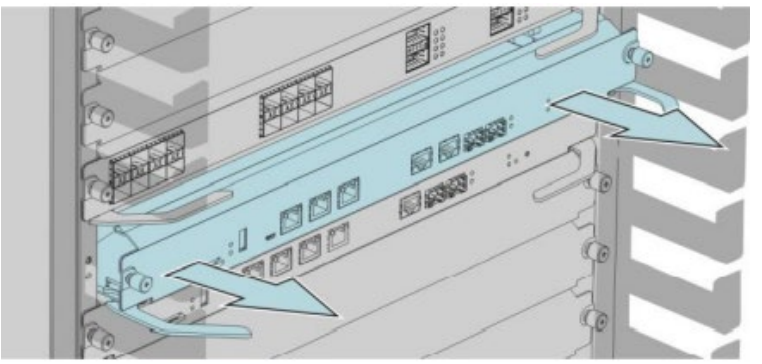
Perform the following work steps:

- ☐ Wear the anti-static bracelet, loosen the 2 anti-loosening screws on the lower and upper parts of the fan module with Phillips screwdriver.



- ☐ Hold the extractor on the board with both hands and turn the extractor outward to separate the board from the backplane of the chassis.

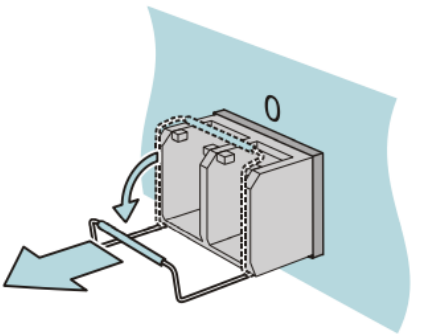
☐ Slide the board smoothly along the guide rails of the slot, pull out the board, and place the unloaded board on the ESD mat or the initial packing box.



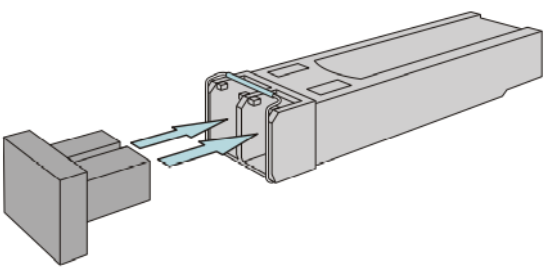
6.3 Removing the SFP transceiver

Perform the following work steps:

☐ Release the lock and pull the SFP transceiver out of the device slot.



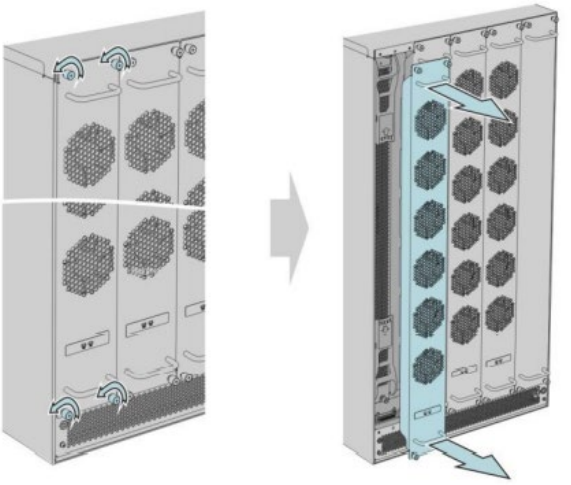
☐ Use a protective cover to blank the SFP transceiver.



6.4 Removing the FAN module

Perform the following work steps:

- ☐ Wear the anti-static bracelet, loosen the 2 anti-loosening screws on the lower and upper parts of the fan module with Phillips screwdriver.
- ☐ Hold the handle of the fan module with one hand and the frame of the fan module with the other hand. Pull out the fan module smoothly along the guide rails of the slot, and place the removed fan module on the ESD mat or the initial packing box.



6.5 Removing the device

⚠ WARNING

ELECTRIC SHOCK

Disconnect all other cables and then disconnect the ground cable.

Failure to follow this instruction can result in death, serious injury, or device damage.

Perform the following work steps:

- ☐ Disconnect the data cable.
- ☐ Disable the suppply voltage.
- ☐ Disconnect the power supply cable.
- ☐ Disconnect the grounding.
- ☐ To remove the device from the switch cabinet, loosen the screws on the bracket of the device.

7 Technical data

7.1 General technical data

Basic devices

Dimensions W × H × D		See "Dimension Drawings" on Page 67.
Weight	MTS8003 MTS8006 MTS8010	16.2 kg (35.7 lb) 26.8 kg (59 lb) 32.48 kg (71.60 lb)
Power supply	Rated voltage range	100 V AC … 240 V AC, 50 Hz ... 60 Hz
		Maximum conductor diameter AWG12 (2.5 mm^2)
Device grounding	Tightening torque protective grounding	0.4 Nm … 0.7 Nm (3.5 lb-in … 6.1 lb-in)
Climatic conditions during operation	Ambient air temperature	-5 ℃ … +55 ℃ (23 ℉ … 131 ℉) at 2000 m (6561.6 ft) -5 ℃ … +40 ℃ (23 ℉ … 104 ℉) at 5000 m (13123.3 ft) Note: The altitude is 2000 m … 5000 m (6561.6 ft … 13123.3 ft), and the maximum working temperature decreases by 1 ℃ (33.8 ℉) every 200 m (656.1 ft) above sea level.
	Humidity	10 %~90 % (non-condensing)
Climatic conditions during storage	Altitude	<5000 m (16404.2 ft)
Pollution degree		2
Protection classes	Laser protection	Class 1 according to IEC 60825-1
	Degree of protection	IP20

Power module

Size		See "Dimension Drawings" on Page 67.
Weight	MTM8000-PSU800	1.98 kg (4.36 lb)
Power module	Rated voltage range	100 V AC ... 240 V AC , 50 Hz ... 60 Hz

Engine module

Size		See "Dimension Drawings" on Page 67.
Weight	MTM8000- Engine	1.48 kg (3.26 lb)
Installation of power module	Tightening torque	0.4 Nm … 0.6 Nm (3.5 lb-in … 5.2 lb-in)
Installation of the cover plate	Tightening torque	0.4 Nm … 0.6 Nm (3.5 lb-in … 5.2 lb-in)

Fan module

Size		See "Dimension Drawings" on Page 67.
Weight	MTM8003-FAN	1.48 kg (3.26 lb)
Install the fan module	Tightening torque	0.4 Nm … 0.6 Nm (3.5 lb-in … 5.2 lb-in)
Install the cover plate	Tightening torque	0.4 Nm … 0.6 Nm (3.5 lb-in … 5.2 lb-in)

Weight	MTM8006-FAN	1.84 kg (4.05 lb)
Install the fan module	Tightening torque	0.4 Nm … 0.6 Nm (3.5 lb-in … 5.2 lb-in)
Install the cover plate	Tightening torque	0.4 Nm … 0.6 Nm (3.5 lb-in … 5.2 lb-in)

Weight	MTM8010-FAN	2.60 kg (5.73 lb)
Install the fan module	Tightening torque	0.4 Nm … 0.6 Nm (3.5 lb-in … 5.2 lb-in)
Install the cover plate	Tightening torque	0.4 Nm … 0.6 Nm (3.5 lb-in … 5.2 lb-in)

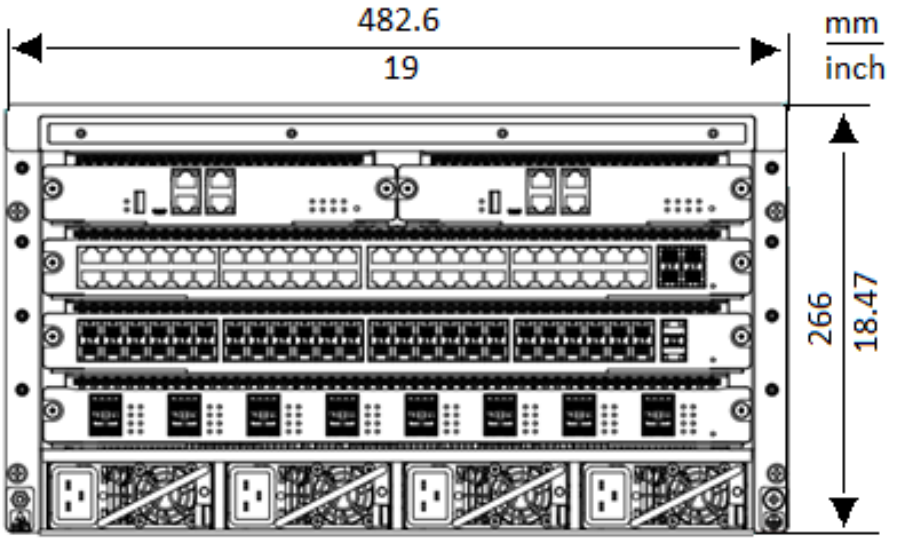
Medium module

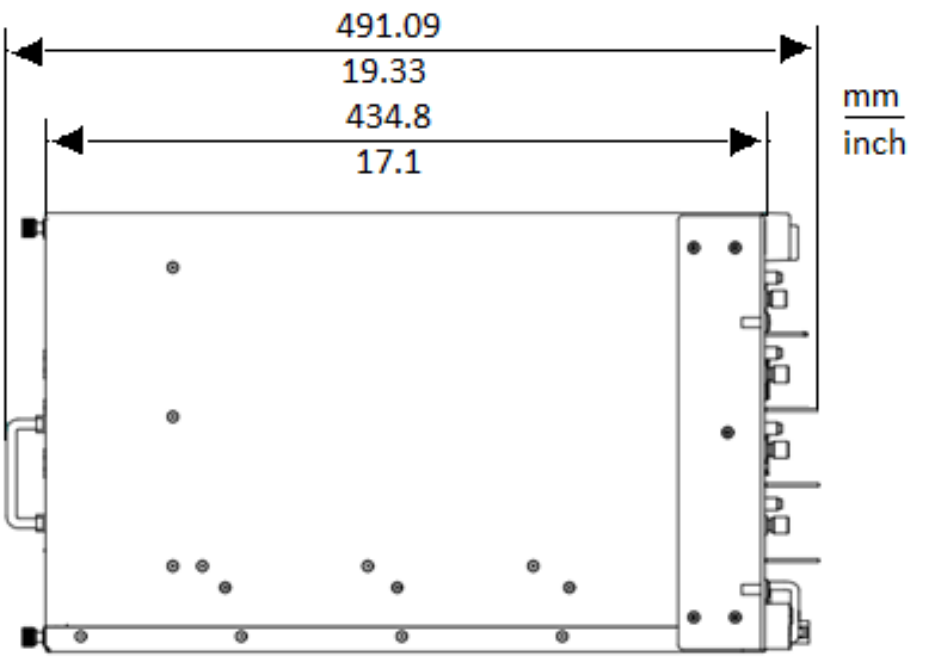
Size		See "Dimension Drawings" on Page 67.
Weight	MTM8000-48F2X-S	3.44 kg (7.58 lb)
	MTM8000-48T2X-S	3.32 kg (7.31 lb)
	MTM8000-48TP2X-S	3.48 kg (7.67 lb)
	MTM8000-24T24F2X-S	3.62 kg (7.98 lb)
	MTM8000-16X-S	3.36 kg (7.40 lb)
	MTM8000-16X4Q-S	3.32 kg (7.31 lb)
	MTM8000-16Q-A	3.78 kg (8.33 lb)
	MTM8000-52X-A	3.88 kg (8.55 lb)
	MTM8000-SF-A	3.08 kg (6.79 lb)
	MTM8000-SF-S	2.80 kg (6.17 lb)
	MTM8000-SF-24F8X-S	3.34 kg (7.36 lb)
	MTM8000-SF-16F16X-S	3.34 kg (7.36 lb)
	MTM8000-4QSFP28-A	3.84 kg (8.46 lb)
Install the medium module	Tightening torque	0.4 Nm … 0.6 Nm (3.5 lb-in … 5.2 lb-in)
Install the cover plate	Tightening torque	0.4 Nm … 0.6 Nm (3.5 lb-in … 5.2 lb-in)

7.2 Dimension Drawings

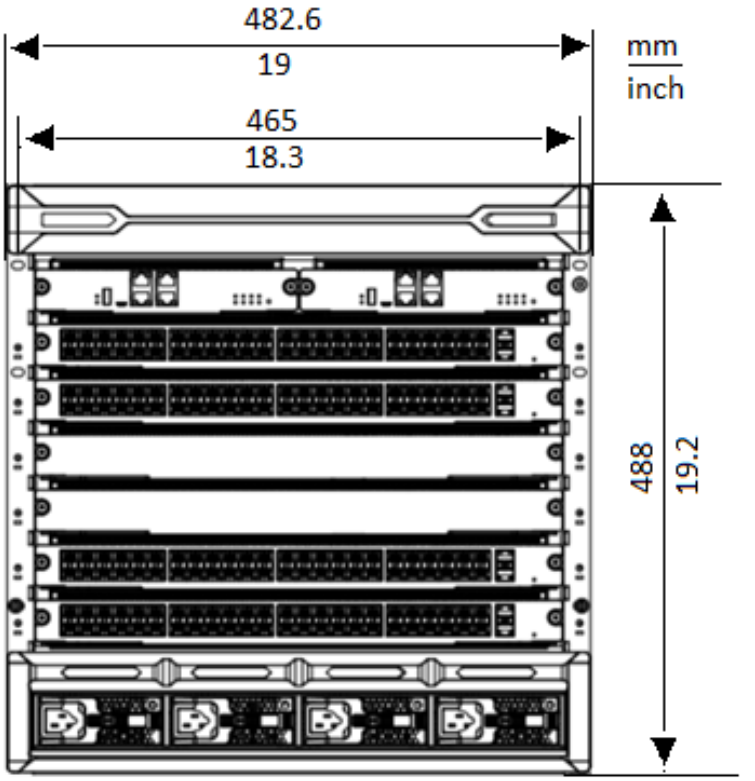
Basic devices

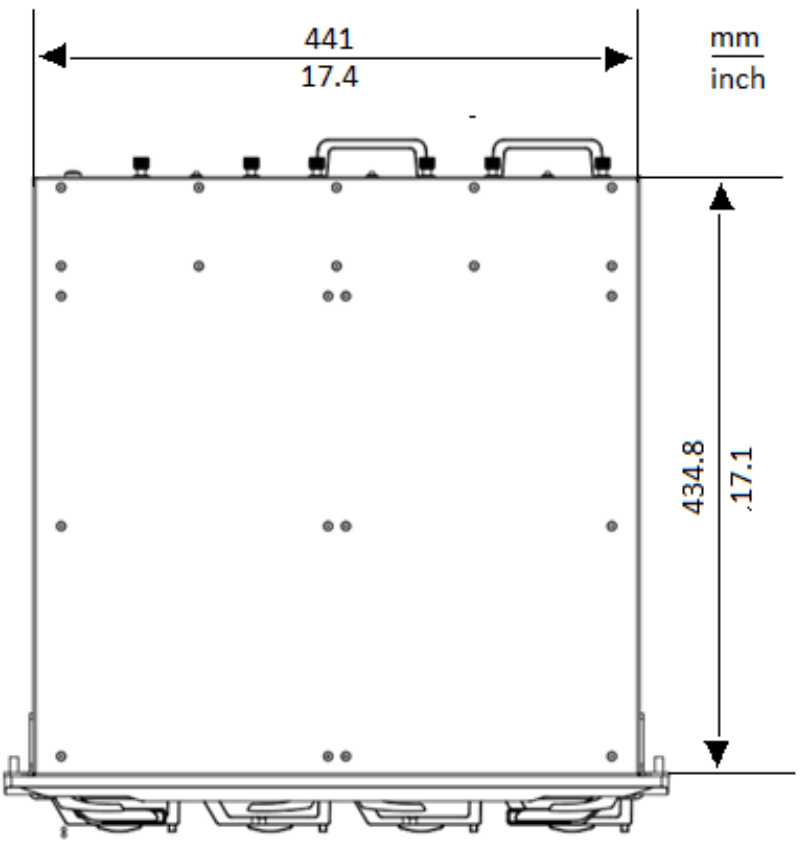
MTS8003- Chassis



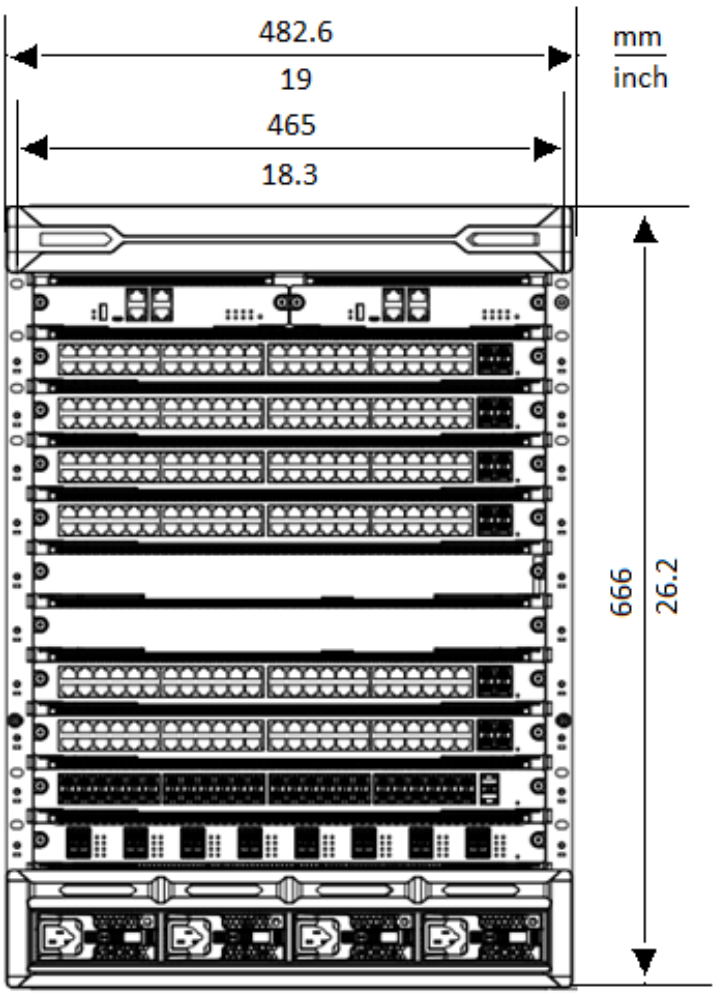


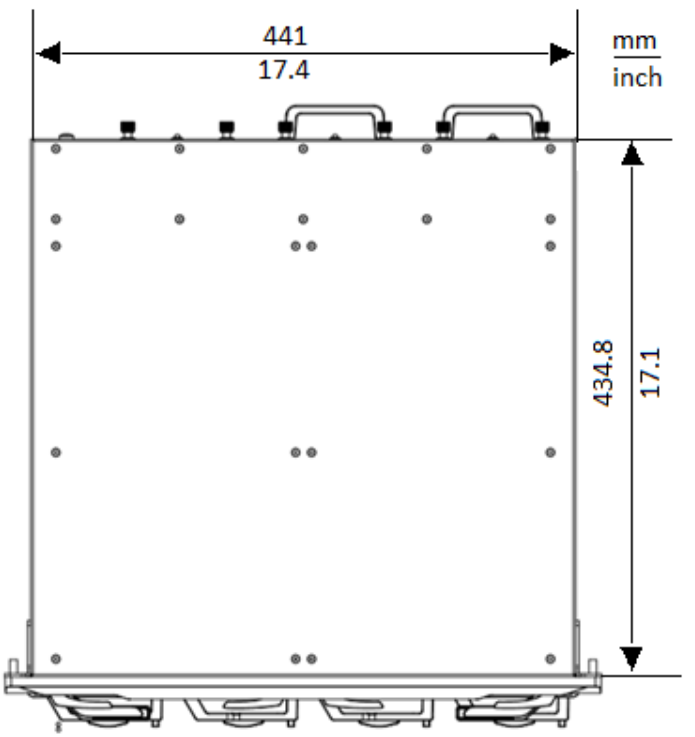
MTS8006- Chassis



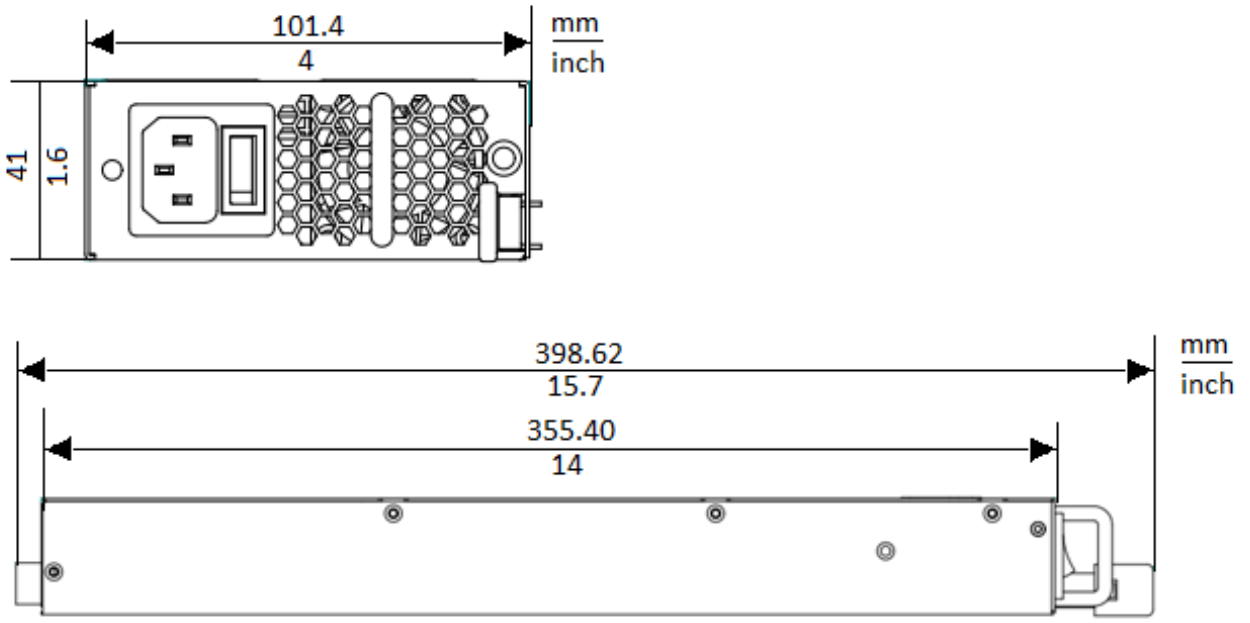


MTS8010- Chassis

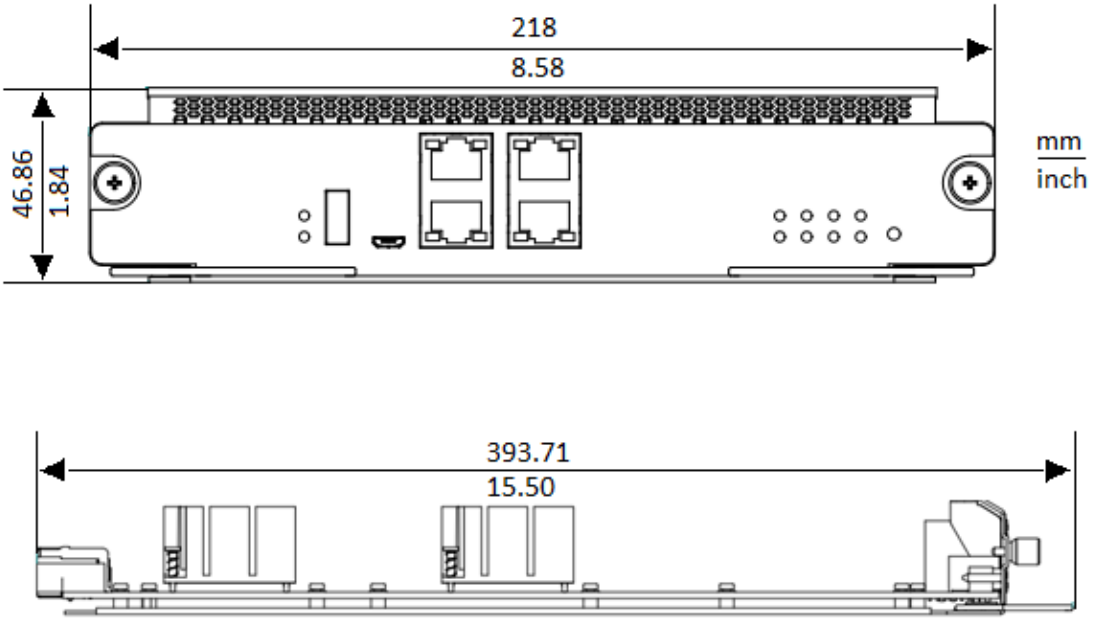




Power module

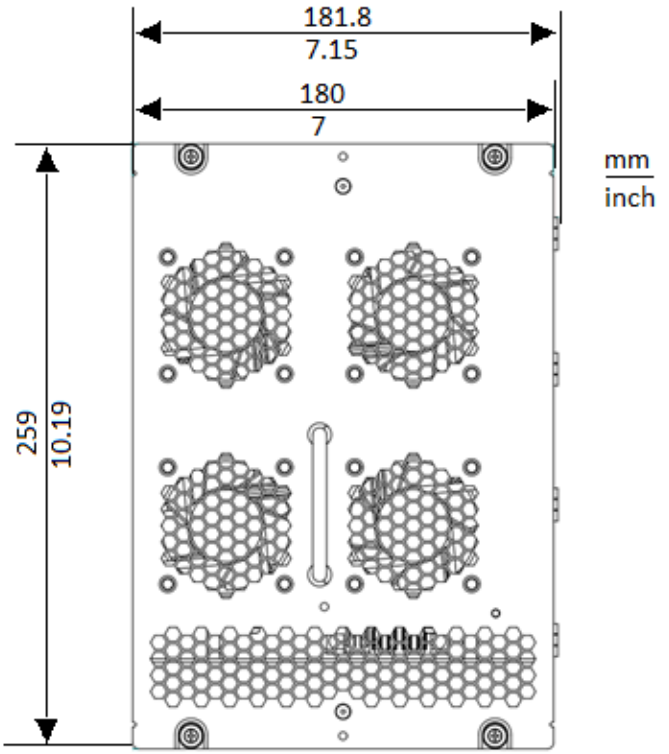


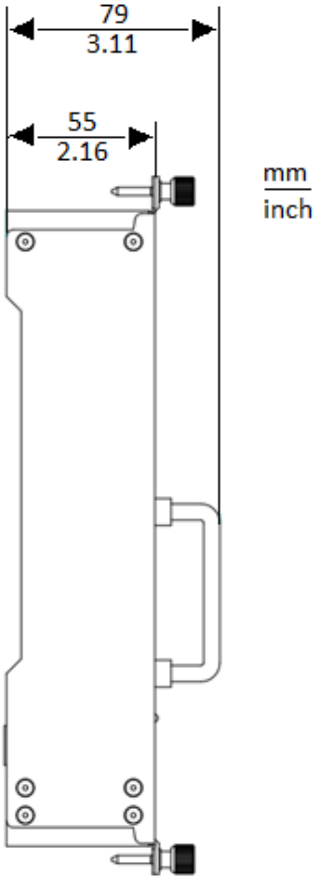
Engine module



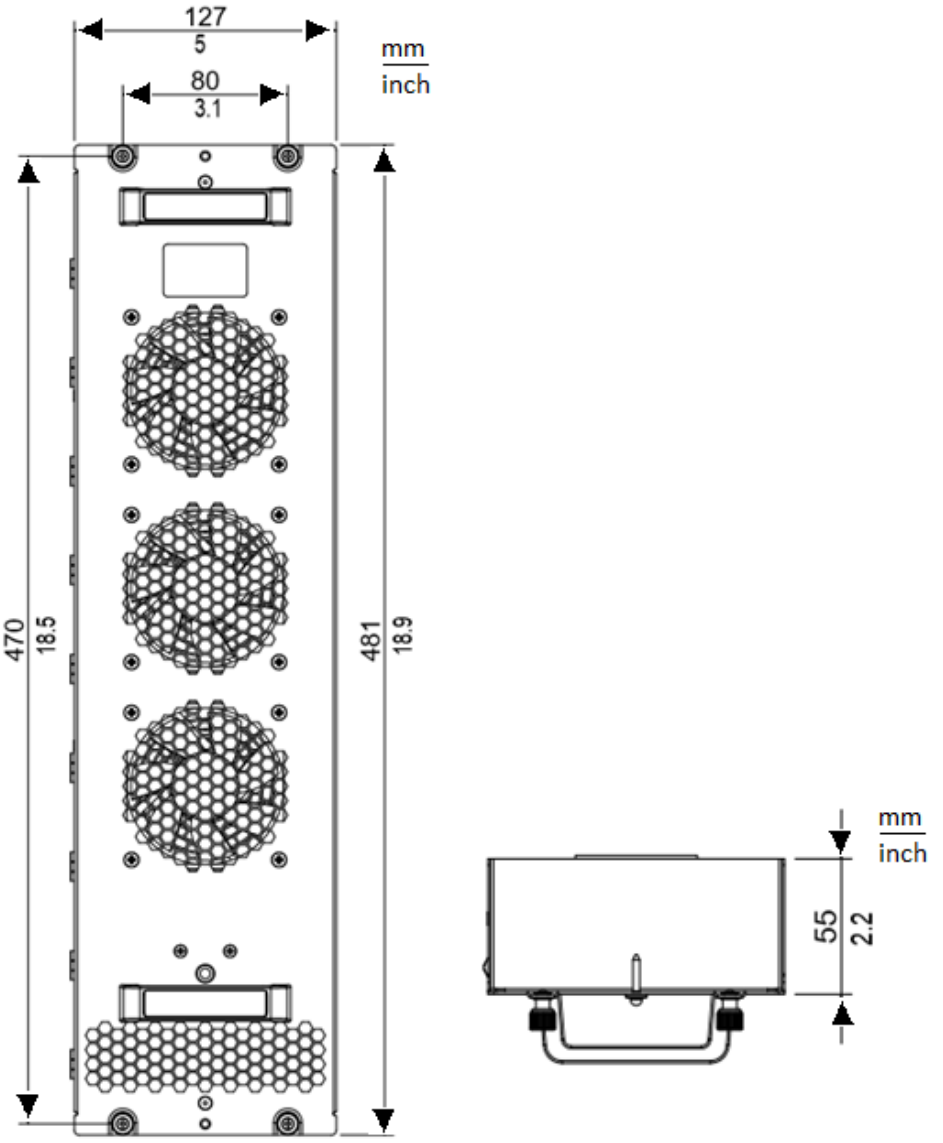
Fan module

MTS8003-FAN

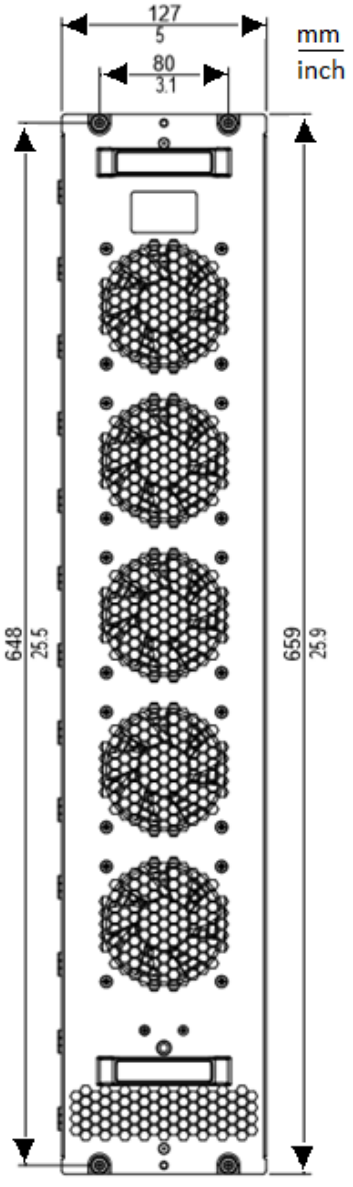


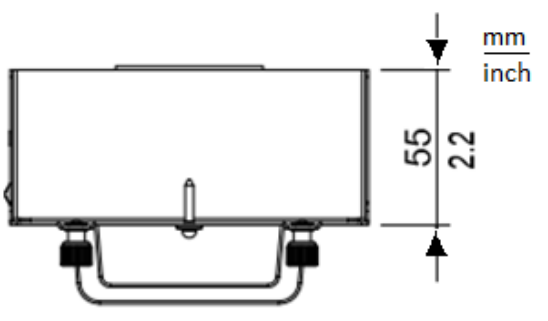


MTS8006-FAN

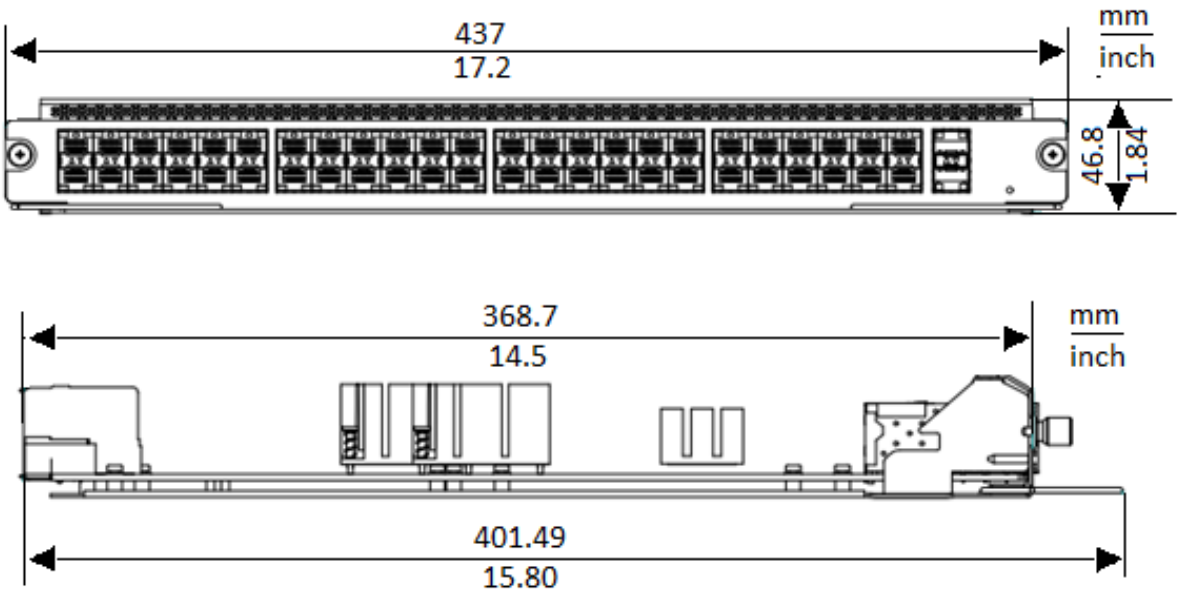


MTS8010- FAN





Medium module



7.3 EMC and immunity

EMC interference emission		Standard application
EN 55032		Class A
DNV GL guideline		—
FCC 47 CFR Part 15		Class A
EN 61000-6-4		Compliance
EN 55032	AC/DC power line	Class A
DNV GL guideline	AC/DC power line	—
FCC 47 CFR Part 15	AC/DC power line	Class A
EN 61000-6-4	AC/DC power line	Compliance
EN 55032	Signal wire	Class A
EN 61000-6-4	Signal wire	Compliance
Harmonic current		
EN 61000-3-2		Class A
Voltage flicker		
EN 61000-3-3		

EMC interference 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 line	±1 kV
Voltage surge – Power line		
EN 61000-4-5	Line/Earth	±2 kV
EN 61000-4-5	Line/Line	±1 kV
Voltage surge – data line		
EN 61000-4-5	Line/Earth	±1 kV
Conductive immunity		
EN 61000-4-6	150 kHz ... 80 MHz	10 V

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

EMC interference immunity		Standard application
Damped vibration – AC/DC power line		
EN 61000-4-12 IEEE C37.90.1	Line/Earth	—
EN 61000-4-12 IEEE C37.90.1	Line/Line	—
Damped vibration - Data line		
EN 61000-4-12 IEEE C37.90.1	Line/Earth	—
EN 61000-4-12	Line/Line	—
Pulsed magnetic field		
EN 61000-4-9		—
Power-frequency magnetic field		
EN 61000-4-8		30 A/m
Voltage dip and short interruption		
EN 61000-4-11	AC/DC power line	20 ms ΔU 100 % 200 ms ΔU 60 % 500 ms ΔU 30 % 5 s ΔU 100 %

Stability		Standard application
IEC 60068-2-6, test Fc	Vibration	5 Hz ... 8.4 Hz, vibrating amplitude 3.5 mm (0.14 in)
		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 BLP/dispersion).

Product code MTS-SFP-1G-...	Mode [a]	Wave length	F/O cable length example[b]	Optical attenuation	BLPc/dispersion
-TX/RJ45...	TX/RJ45	Full Duplex Negotiation	100 m	-	-
-SX/LC...	MM	850 nm	550 m (> 8 dB link budget at 850 nm)	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 1310 nm)	0.32 dB/km	-
-LH/LC...	SM	1550 nm	80 km (> 22 dB link budget at 1550 nm)	0.18 dB/km	18 ps/(nm×km)
-LH+/LC	SM	1550 nm	120 km (> 32 dB link budget at 1550 nm)	0.18 dB/km	18 ps/(nm×km)
-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/(nm×km)
-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 1550 nm)	0.18 dB/km	-

Table 3: Fiber port 1 Gbit/s SFP module

a. MM =multi-module, SM =simple module, LH =single mode long haul
b. When optical fiber data is observed, it includes 3 dB system reserve is included.

Product code MTS-SFP-10G-...	Mode [a]	Wave length	F/O cable length example[b]	Optical attenuation	BLPc/ dispersion
-SR/LC...	MM	850 nm	300 m (> 5.1 dB link budget at 850 nm)	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/RJ45	Full Duplex Negotiation	30 m	-	-

Table 4: Fiber port 10 Gbit/s SFP module

a. MM =multi-module, SM =simple module
b. When optical fiber data is observed, it includes 3 dB system reserve is included.

Product code MTS-SFP-40G-...	Mode [a]	Wavelength	F/O cable length example [b]	Optical fiber attenuation	BLP/ dispersion
-SR/LC...	MM	850 nm	100 m (OM3) > 3.5 dB link budget at 850 nm	3.0 dB/km	-
-LR/LC...	SM	1310 nm	10 km < 7.5 dB link budget at 1310 nm	0.32 dB/km	-

Table 5: 40 Gbit/s SFP module of optical fiber port

a. MM = multimode, SM = single mode
b. When observing the optical fiber data, 3 dB system reserve is included.

Product code MTS-SFP-100G-...	Mode [a]	Wavelength	F/O cable length example [b]	Optical fiber attenuation	BLP/ dispersion
-SR/LC...	MM	850 nm	70 m (OM3), 100 m (OM4) > 3.5 dB link budget at 850 nm	3.0 dB/km	-
-LR/LC...	SM	1310 nm	10 km < 7.5 dB link budget at 1310 nm	0.32 dB/km	-

Table 6: 100 Gbit/s SFP module of optical fiber port

a. MM = multimode, SM = single mode
b. When observing the optical fiber data, 3 dB system reserve is included.

7.5 Power consumption/power output

Device	Power consumption	Power output
MTM8003-FAN	63 W	220.5 Btu (IT)/h
MTM8006-FAN	47 W	164.6 Btu (IT)/h
MTM8010-FAN	75 W	262.5 Btu (IT)/h
MTM8000-Engine	30 W	105 Btu (IT)/h
MTM8000-48F2X-S	77 W	269.5 Btu (IT)/h
MTM8000-48T2X-S	77 W	269.5 Btu (IT)/h
MTM8000-48TP2X-S	77 W	269.5 Btu (IT)/h
MTM8000-24T24F2X-S	92 W	322 Btu (IT)/h
MTM8000-16X-S	82 W	287Btu (IT)/h
MTM8000-16X4Q-S	115 W	402.5 Btu (IT)/h
MTM8000-16Q-A	151 W	528.5 Btu (IT)/h
MTM8000-52X-A	166 W	581 Btu (IT)/h
MTM8000-SF-A	155 W	542.5 Btu (IT)/h
MTM8000-SF-S	52 W	182 Btu (IT)/h
MTM8000-SF-24F8X-S	112 W	392 Btu (IT)/h
MTM8000-SF-16F16X-S	112 W	392Btu (IT)/h
MTM8000-4QSFP28-A	133W	465 Btu (IT)/h

8 Scope of delivery, order number, and accessories

Delivery items

Quantity	Articles
1×	Device
1×	Safety and general information sheet
2×	Bracket
1×	Grounding cable (10 mm^2)

Order number

MAMMUTHUS switch	MTS 8003-Chassis	942 999-801
	MTS 8006-Chassis	942 999-792
	MTS 8010-Chassis	942 999-791
MAMMUTHUS power module	MTM8000-PSU800	942 999-803
MAMMUTHUS fan module	MTM8003-FAN	942 999-804
	MTM8006-FAN	942 999-798
	MTM8010-FAN	942 999-797
MAMMUTHUS engine module	MTM8000-Engine	942 999-802
MAMMUTHUS medium module	MTM8000-48F2X-S	942 999-806
	MTM8000-48T2X-S	942 999-807
	MTM8000-48TP2X-S	942 999-808
	MTM8000-24T24F2X-S	942 999-809
	MTM8000-16X-S	942 999-810
	MTM8000-16X4Q-S	942 999-811
	MTM8000-16Q-A	942 999-812
	MTM8000-52X-A	942 999-814
	MTM8000-SF-A	942 999-793
	MTM8000-SF-S	942 999-794
	MTM8000-SF-24F8X-S	942 999-795
	MTM8000-SF-16F16X-S	942 999-796
	MTM8000-4QSFP28-A	942 999-800
MAMMUTHUS Blank cover	MTM8000-ModuleCover	942 999-815
	MTM8000-EngineCover	942 999-816
	MTM8000-PSUCover	942 999-817

Accessories

Note the fact that the products used as accessories may have different characteristics from the device itself limits the influence sphere of the whole system. For example, if you apply IP20 accessory to IP65 equipment, the entire system will be reduced to IP20.

1 Gbit/s 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

10 Gbit/s 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

40 Gbit/s SFP module	**Order number**
MTS-SFP-40G-SR/LC	942 999-863
MTS-SFP-40G-LR/LC	942 999-864

100 Gbit/s SFP module	**Order number**
MTS-SFP-100G-SR	942 999-876
MTS-SFP-100G-LR/LC	942 999-877
MTS-Cable-100G-3M	942 999-878

You may access more information about certificates here:
https://catalog.belden.com/

9 Underlying technical standards

Name	
FCC 47CFR Part 15	Code of Federal Regulations
IEC 60825-1	Safety of Laser Products
EN 55032	Electromagnetic compatibility of multimedia equipment. Emission Requirements
EN 55035	Electromagnetic compatibility of multimedia equipment. Immunity Requirements
EN 62368-1	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 ≥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 ≥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 7: Technical standard list

The device generally fulfills the technical standards named in their current versions.
Only when the device shell has the certification mark, it means that the device is certified to a specific standard.

A Further support

Technical questions

For technical questions, please contact any Hirschmann IT dealer in your area or Hirschmann IT directly

You find the addresses of our partners on the Internet at
https://catalog.belden.com/

A list of local telephone numbers and email addresses for technical support directly from Hirschmann IT is available at
https://catalog.belden.com/

This site also includes a free of charge knowledge base and a software download section.

HIRSCHMANN IT

A BELDEN BRAND