

SMC[®] | **INSTALLATION**
Networks | **GUIDE**



TigerAccess™
Extended Ethernet Switch

SMC7824M/VSW

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1 Protective Measures

This section includes the following topics:

- [General Notes](#)
- [Protection against Excessive High Contact Voltage](#)
- [Protection against Escaping Laser Light](#)
- [Protection against Fire in Racks or Housings](#)
- [Components Subject to Electrostatic Discharge](#)
- [Handling Modules \(General\)](#)
- [Handling Optical Connectors and Fiber Optic Lines](#)
- [Rack Mount Instructions](#)
- [FCC Registration](#)
- [UL Safety Compliance](#)
- [Declaration of RoHS Conformity](#)

1.1 General Notes

This section contains a summary of the most important requirements with regard to protection of people and equipment. It lays no claim to completeness. The installation instructions listed are shown in detail in this document.

All assembly, installation, operation and repair work may only be undertaken by properly trained and qualified personnel. In the event of any injury (e.g. burns and acid burns) being sustained, seek medical help immediately.

This switch is designed for indoor operation only and must be installed in temperature-controlled locations (for example the exchange). A maximum operating temperature of this product is 55°C. The system is intended for operation according to EN 300 019-1-3 class 3.1E.

In order to prevent product damage or accidents, do not install or operate the product at the place of bad condition: such as too high or low temperature, well ventilation or airtight, high humidity, much dust, or much mechanical vibration.

The system is intended for installation locations with access authorization.



The system may be multiple power supplied:

For completely disconnection from the power supply, note to disconnect also the redundant power supply. Switch off all concerning disconnect devices!

The operating voltages are routed via the fuse panel which is located in the terminal panel of the rack. The fuse panel contains the circuit breakers.

Make sure that the circuit breakers are switched OFF throughout installation!



Pay attention also to the high leakage current:

Earth connection is essential before connecting the system with the telecommunication network.



There is a risk of explosion if battery is replaced by an incorrect type. Dispose of used batteries according to the instructions.

1.2 Protection against Excessive High Contact Voltage

When dealing with the power supply or working on it, observe the provisions of VDE 0105 (operation of high-voltage equipment) Part 1, Section 9.3 (safety measures to be carried out) and the specifications of the European Norm EN 50110, Part 1 and Part 2 (Operation of electrical systems) at all times. Be sure to follow local national provisions regarding the handling of high-voltage equipment.

The limit description for input voltage and load current is located near the power connector on the rear panel of the system. Check the description for the actual value.

1.3 Protection against Escaping Laser Light

In order to avoid health risks, take care to ensure that any laser light escaping is not directed towards the eyes. Plug-in units equipped with laser light units may carry the laser symbol, but it is not required, see [Fig. 1.1](#).



Fig. 1.1 Laser Symbol

To guard against any possible hazards, all optical transmitters are equipped with an automatic laser shutdown circuit. This trips if an input signal is missing at the relevant optical receiver, e.g. if the connection is interrupted.



Note that the laser safety shutdown must be always activated.

This preventive measure should also be followed to avoid any damage to health by making sure that escaping laser light is not directed towards the eye.

When breaking laser connections, the following procedure should be followed, despite the presence of the laser shutdown circuit:

1. Pull out the plug-in unit about 5 cm.
2. Disconnect the optical fiber.
3. Pull out the plug-in unit completely.

1.4 Protection against Fire in Racks or Housings

If the system is used in housing, the system must comply with the conditions for fire protection housing according to DIN EN 60950-1.

To comply with fire protection standards as defined in DIN EN 60950-1, a protective plate (C42165-A320-C684) must be fitted into the floor of ETSI and 19-inch standard racks. The rack must also meet the requirements of a fire-resistant housing as defined in DIN EN 60950-1.

1.5 Components Subject to Electrostatic Discharge



Plug-in units are equipped with components subject to electrostatic discharge. Adhere to the relevant safety provisions.

When packing, unpacking, touching, pulling out, or plugging in plug-in units, it is essential to wear a grounding bracelet. This ensures that the plug-in units are not subject to electrostatic discharge.

Under no circumstances should you touch the printed conductors or components of plug-in units. Take hold of plug-in units by the edge only.

Once removed, place the plug-in units in the conductive plastic sleeves intended for them. Keep or dispatch them in the special boxes or transport cases.

Treat defective plug-in units with the same degree of care as new ones in order to avoid further damage.

Plug-in units in a closed and intact housing are protected in any case.

European Norm EN 50082-1 provides information on the proper handling of components which are subject to electrostatic discharge.

1.6 Handling Modules (General)

When working with modules (plug-in units, subracks and shelters), the following points should be noted:

- Existing ventilation equipment must not be changed. The sufficient air circulation must not be obstructed.



Beware of rotating parts.

- All slide-in units can be removed or inserted with the power still applied. To remove and insert the units you should use the two levers fitted to the front of the unit. A type label is fixed to one of the two levers providing information on the hardware and software version of the unit.
- A label with the words "HOT AREA" is fixed to hot surfaces. This indicates a severe danger of injury.
- Shelters with a front door may only be operated when this door is closed. You should therefore remove the front door before doing the necessary work and replace it once you have finished your work.



There is a danger of injury if the door is left open.

- When inserting and removing shelves and when transporting them, take their weight into consideration.
- Cables may never be disconnected by pulling on the cable. Disconnection/connection may only be undertaken by pushing in/pulling out the connector involved.

1.7 Handling Optical Connectors and Fiber Optic Lines

Optical connectors are precision components, and must be handled accordingly. In order to guarantee that the optical connectors function without problem:

- Open optical connections must use a protective cap under all circumstances to protect against physical damage and dirt.
- Before making connections, use isopropyl alcohol and non-fibrous cellulose to clean the faces of the connectors.
- Avoid impact stresses when handling connectors.
Physical damage to the faces of optical connections impair transmission quality (higher attenuation).
- Avoid a bend radius in excess of 30 mm for fiber optic links.

1.8 Rack Mount Instructions

Rack-mount instructions are included with the installation instructions:

- Elevated Operating Ambient - If installed in a closed or multi-unit rack assembly, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T_{ma}) specified by the manufacturer.
- Reduced Air Flow - Installation of the equipment in a rack should be such that the amount of air flow required for safe operation of the equipment is not compromised.
- Mechanical Loading - Mounting of the equipment in the rack should be such that a hazardous condition is not achieved due to uneven mechanical loading.
- Circuit Overloading - Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.
- Reliable Earthing - Reliable earthing of rack-mounted equipment should be maintained. Particular attention should be given to supply connections other than direct connections to the branch circuit (e.g. use of power strips).

1.9 FCC Registration

The installation manual for an intentional or unintentional radiator shall caution the user that changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to Part 15/68 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instruction, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna
- Increase the separation between the equipment and receiver
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

1.10 UL Safety Compliance

This switch has been tested and found to comply with the requirements of UL. This equipment is intended to be powered from a limited power source output of a previously certified power supply.

1.11 Declaration of RoHS Conformity

SMC Networks considers the protection of the environment and the preservation of natural resources as a major duty and thus undertakes great efforts to design its products to be environmental friendly.

Therefore, as of July 1st, 2006, all contract products of SMC Networks

- to which the RoHS (the Restriction on the use of certain Hazardous Substances in electrical and electronic equipment) directive applies to
- and which are put on the market within the countries where the RoHS requirements are transposed into national law

are in compliance with the requirements of the RoHS.

SMC Networks reserves the right to apply the exemptions to the RoHS requirements as set out in the Annex to the RoHS directive, in particular lead in solders for network infrastructure equipment for switching, signaling, transmission as well as network management for telecommunication.

2 Overview

SMC7824M/VSW is a 1.25U height single-board IP-DSLAM. It has been designed as compact-sized customer premise equipment for VDSL2 networks.

The switch offers 24-Port VDSL2 service interface and fixed 2-Port 10/100/1000Base-T and 1-slot for option uplink module. The option module for uplink interface is also available. NOTE – Module is not used in the first release.

It means that this switch provides 24 subscriber interfaces for VDSL lines supporting the data rate of up to 100 Mbps both in upstream and downstream direction, and also provides up to 4 uplink interfaces (both optical and electrical type) for the connection to the IP network with consolidating the traffic from subscribers. The voice bandwidth can still be separated from the data traffic using the internal splitter for POTS.

The switch is designed to be used in indoor racks only and installed either in ETSI or 19" racks. This document basically describes installation with the switch in a 19" rack, but deploying the system in an ETSI rack is not so different. But this switch cannot be installed in an ETSI rack with 300mm depth. For more information about deploying the system in your rack, refer to your rack configuration plan.



Fig. 2.1 Product View

The interfaces of the switch are to find in Fig. 2.2 and Tab. 2.1.

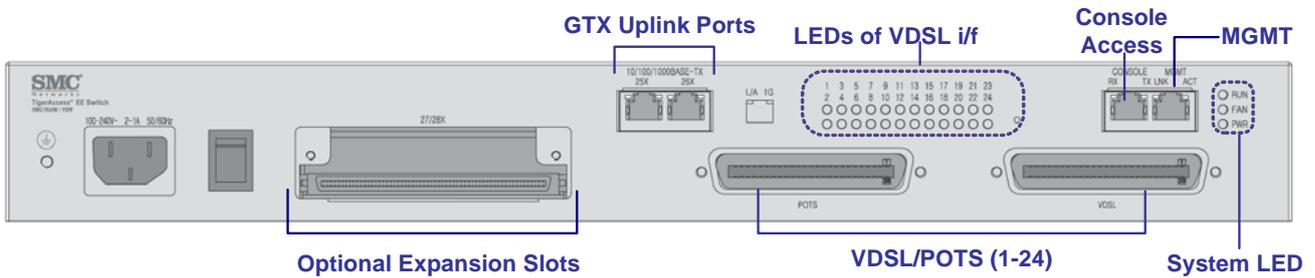


Fig. 2.2 Front Interfaces of the switch

| Name | Function | Connector Type |
|------------|--|--|
| Uplink i/f | GTX uplink fixed type: Connection to the IP network with electrical type interfaces | RJ45 |
| | Optional Expansion slot: Blank slot for optional uplink module <ul style="list-style-type: none"> 2-port 1000Base-X 1-port GE-PON + 1-port 1000Base-X | SFP (1000Base-X) SC, SFF package (GE-PON) |
| VDSL | Connection to the VDSL subscribers | RJ21 |
| POTS | Connection to the PBX or PSTN | RJ21 |
| CONSOLE | CLI access to configure the functions for system operation | RJ45 (RS232) |
| MGMT | Outband TMN-OS Interface | RJ45 |

Tab. 2.1 Front Access Interfaces of the switch

2.1 Product Specification

2.1.1 System

The switch supports the following system features:

- Non-blocking wire speed performance switching fabric (12.8 Gbps)
- 24-port VDSL2 interfaces
- Integrated splitters for narrowband services
- 2-port fixed 10/100/1000Base-T Gigabit Ethernet uplink interfaces
- 1-slot for uplink interface (modular type)
 - 2-port 1000Base-X SFP type module
 - 1-port GE-PON SFF (10km or 20km) + 1-port 1000Base-X SFP type module
- LED indicator
- Fixed fans for internal cooling

2.1.2 Functionalities

The switch provides the following functionalities:

Advanced VDSL2 Function

- Configuration of xDSL line rate
- Provision of different band plans and profiles for xDSL interfaces
- VDSL2 interface according to ITU-T G.993.2
- Band plans 997, 998 and profiles 8a, 8b, 12a, 12b and 17a configurable per port
- Support of 30a profile according VDSL2 standard
- Number of band-plans and PSD shape fully programmable
- Support of Impulse Noise Protection
- Voice and data communication can be shared on the existing telephone wire simultaneously

Layer 2

- Standard Ethernet Bridging
- 16K MAC entries
- 4K active VLANs for 802.1q tagged frame
- VLAN stacking/translation
- Spanning tree protocols
- Jumbo frame 9K
- Link Aggregation (LAG) on uplink I/F
- 802.1x port/MAC based authentication
- Port/protocol based VLAN association
- Private VLAN (port isolation)
- VLAN Stacking (QinQ)
- Service multiplexing based on VLANs
- Loop detection
- DHCP Server
- DHCP relay agent (incl. Option 82)
- Simplified DHCP relay agent

Multicast

- IGMPv1/v2/v3
- 256 L2 multicast groups
- IGMP snooping for IP multicasting

QoS

- Traffic scheduling (SP, DWRR)
- Port rate limit with the ingress/egress shaping
- Conditional rate limiting
- Queue mapping according to ingress/egress port, MAC, 802.1q, 802.1p, ToS/DSCP, IP SA/DA, TCP/UDP
- Access control lists based on port, MAC address, Ether type, IP SA/DA, IP multicast address, TCP/UDP

Security

- 802.1x MAC/port based authentication
- Storm control for broadcast, multicast and unknown unicast packets
- DoS protection
- Outband management
- IP source guard
- Secure Shell (SSH)

Management

- Serial/Telnet (CLI)
- SNMPv1/v2/v3
- Single IP management
- RMON
- sFlow Monitoring

2.1.3 Physical Specification

Mechanics

| | |
|------------------------|-----------------------------------|
| Dimensions (W x H x D) | 440 mm x 55 mm x 310 mm |
| Weight | 5.0 Kg |
| Heat transfer | |
| Air inlet | – on the right side of the system |
| Air outlet | – on the left side of the system |

Environmental Conditions

| | |
|-----------------------|----------------------------|
| Operating temperature | 0 to +50 °C |
| Storage temperature | -40 to +70 °C |
| Operating humidity | 0 to 95 % (non-condensing) |

Interface Parameter

| | |
|-----------------------------------|---|
| VDSL subscriber i/f | RJ21 |
| Splitter for narrowband services | RJ21 |
| Ethernet i/f (modular, optical) | 2-Port 100/1000Base-X (SFP type) 1-Port GE-PON + 1-Port 1000Base-X |
| Ethernet i/f (fixed, electrical) | 10/100/1000Base-T |
| Ethernet i/f for local management | 10/100Base-TX |
| Serial i/f, Console | RS232 |

Power Supply

AC power voltage 100-240VAC, 50/60Hz
 Maximum power consumption 85W (with 2-Port SFP option module)
 88W (with 1-Port GE-PON + 1-Port SFP option module)

Operating Indicators

System LEDs RUN / FAN / PWR
 VDSL i/f LEDs L/A
 Uplink i/f LEDs L/A, 1G (1000Base-X, SFP)
 LNK (GE-PON)
 Console RX / TX
 MGMT LNK / ACT

2.2 Operating Status LEDs

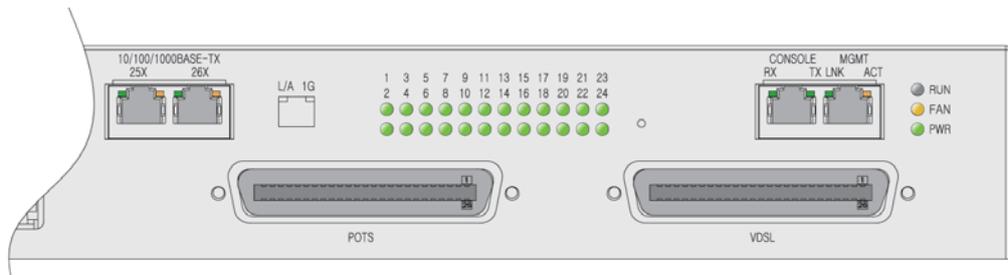


Fig. 2.3 LEDs of the Switch

You can easily find product condition through LEDs that indicate operating state of the equipment on the front panel. And you need to know how to operate this product. The LED indicators show an error or a normal operation of the system. Basically, the following table provides the description of all LEDs of the switch.

| Label | Color | Status | Description |
|-------|-------|----------|---|
| RUN | Green | On | The system is starting up or frozen. |
| | | Blinking | The system is running with no errors. |
| | | Off | The system detects an error. |
| FAN | Amber | Blinking | CPU load is high. |
| | | Off | The fan is working. |
| PWR | Green | Blinking | The fan is not working. |
| | | Off | Power voltage is currently fed to the system. |
| | | Off | Power voltage is not fed to the system. |

Tab. 2.2 Operating Status LEDs on the switch

Status LEDs for VDSL Interfaces

| Label | Color | Status | Description |
|-------|-------|----------|---|
| 1-24 | Green | On | The interface is connected to a CPE. |
| | | Blinking | The interface is starting to be connected to a CPE. |
| | | Off | The interface is not connected to a CPE. |

Tab. 2.3 Status LEDs for VDSL Interfaces

Status LEDs for Console Interface

| Label | Color | Status | Description |
|-------|-------|----------|---|
| TX | Green | Blinking | A transmit activity is present on the console. |
| | | Off | No transmit activity is present on the console. |
| RX | Green | Blinking | A receive activity is present on the console. |
| | | Off | No receive activity is present on the console. |

Tab. 2.4 Status LEDs on Console Interface

Status LEDs for MGMT Interface

| Label | Color | Status | Description |
|-------|-------|----------|---|
| LNK | Green | On | Link Up |
| | | Off | Link Down |
| ACT | Amber | Blinking | A transmit or receive activity is present on the MGMT interface. |
| | | Off | No transmit or receive activity is present on the MGMT interface. |

Tab. 2.5 Status LEDs on MGMT Interface

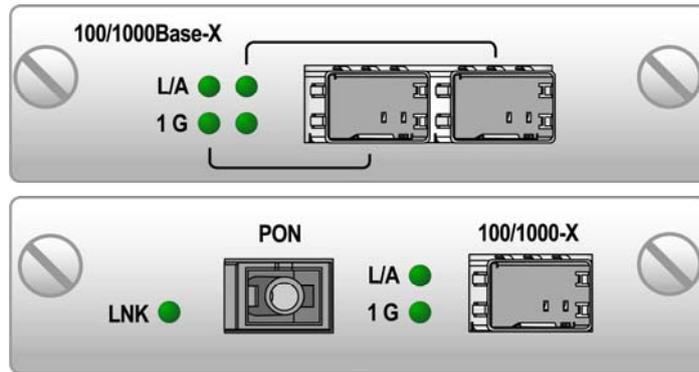


Fig. 2.4 LEDs of the Option Uplink Modules

Status LEDs for Uplink Interfaces

| Label | Color | Status | Description |
|-------|-------|-------------|--|
| L/A | Green | On/Blinking | The interface is connected to a network. |
| | | Off | The interface is not connected to a network. |
| 1G | Amber | On | The transmit rate is 1 Gbps. |
| | | Off | The transmit rate is not 1 Gbps. |

Tab. 2.6 Status LEDs for Uplink Interfaces

Status LEDs for GE-PON Uplink Interfaces

| Label | Color | Status | Description |
|-------|-------|--------|---|
| LNK | Green | On | The GE-PON interface is connected to OLT. |
| | | Off | The GE-PON interface is not connected to OLT. |

Tab. 2.7 Status LEDs for GE-PON Interfaces

2.3 Items Supplied

The items supplied comprise the system components. Please verify the delivered items with the following package contents. If any item is missing or damaged, contact your dealer immediately.

The following items indicate the package contents of the switch:

- TigerAccess EE Switch (SMC7824M/VSW)
- RJ45-to-DB9 console cable for console access (2 meters)
- Category 5 Ethernet UTP cable
- Power cord
- Rack brackets or Wall mounting bracket
- Installation Manual
- User Manual CD

3 Setting Up the Rack

When setting up the rack, you must first install the rack and then the system. Refer to the assembly documents.

3.1 Rack Installation

The switch is designed for indoor operation in the central office or collocation room with controlled environmental conditions. The network equipment is located in a central office. Each type of location is characterized by a typical technical infrastructure.

Doors and rear panels are not provided. Additional components are needed to adapt the network equipment on the existing infrastructure.

The technical infrastructure of a central office is characterized by:

- Power supply 100-240VAC, 50/60Hz
- Indoor conditions: (see environmental conditions in the system description)
- Short interconnections to other equipment

The dimensions of the racks are shown in [Tab. 3.1](#).

| Rack Type | Height | Width | Depth |
|--------------------|-------------------|------------------|------------------|
| 19" | 2200 mm (86.6 in) | 600 mm (23.6 in) | 400 mm (15.7 in) |
| ETSI ¹⁾ | 2200 mm | 600 mm | 300 or 600 mm |

1) ETSI rack mount kit is needed (See [Tab. 6.1](#)).

Tab. 3.1 Rack Type Measures

3.2 Constructing the Rack

To construct the rack:

1. Erect and secure the rack.
Use the assembly documents for installing the rack.



Be sure to consult your rack configuring documentation when positioning and securing the rack.

2. Ground the rack.
The rack and the system must always be grounded. In unmeshed buildings, the rack is grounded by attaching it to a secure grounding source where indicated with the symbol in [Fig. 3.1](#). Be sure that it is tightly fastened with the screws provided.



Fig. 3.1 Grounding Symbol

After the rack has been constructed, you can equip it.

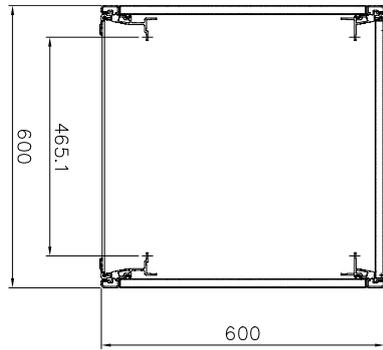


Fig. 3.2 19" Rack (Sectional View)

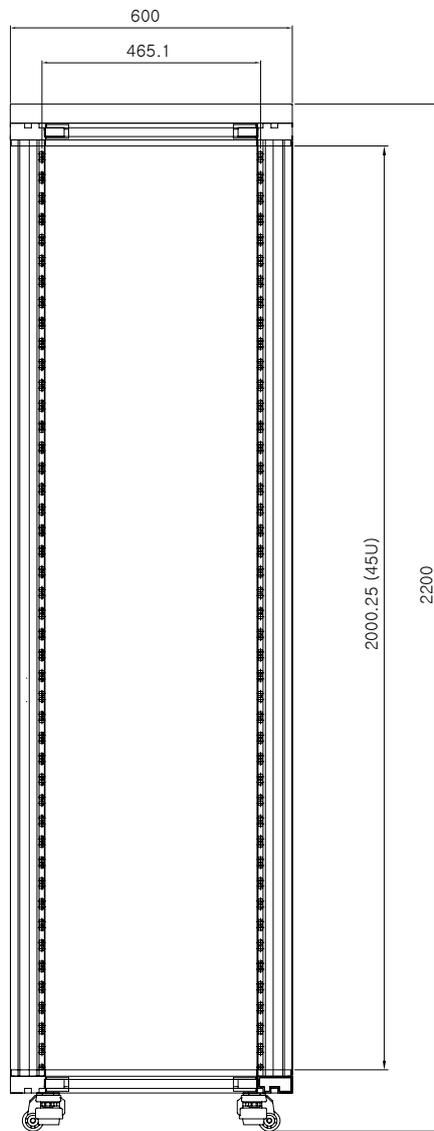


Fig. 3.3 19" Rack (Front View)

3.3 Installing the System

3.3.1 Equipping the Rack

1. Attach the rack brackets to the edge sides of the system as [Fig. 3.4](#).

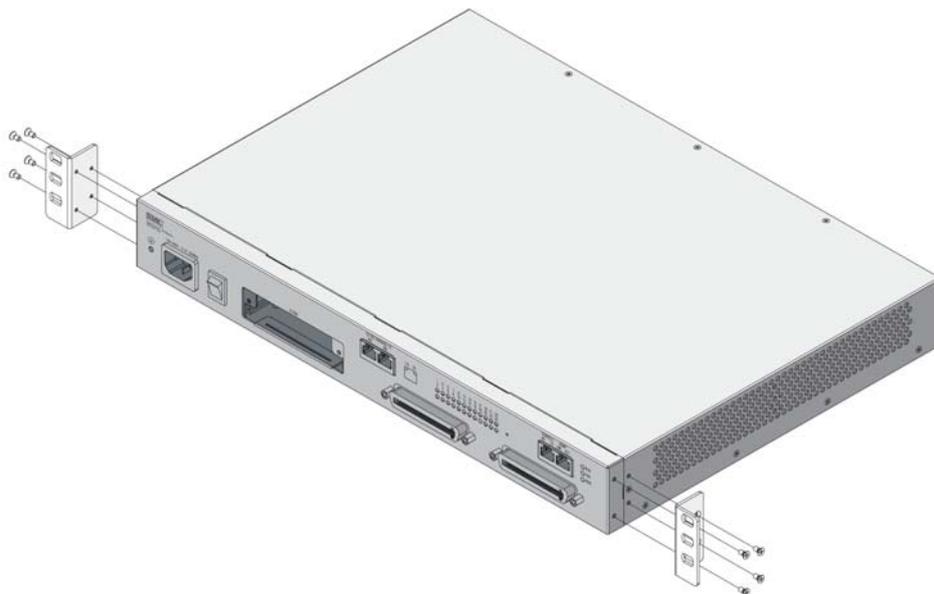


Fig. 3.4 Attaching the Rack Brackets

2. Attach the system by inserting the cage nuts in the rack uprights in accordance with your rack configuring plan.

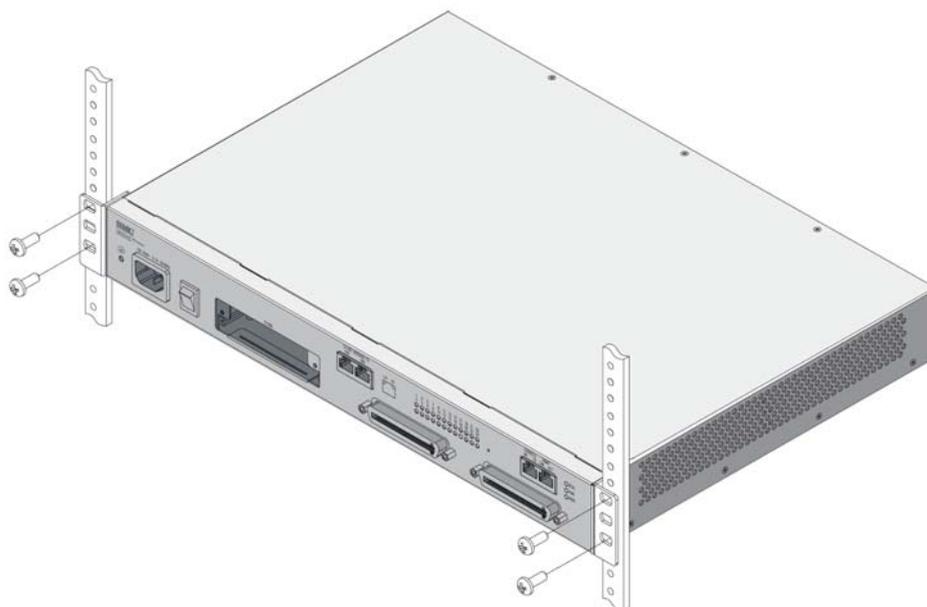


Fig. 3.5 Attaching the System to the Rack



For equipping the system in ETSI rack, use the ETSI rack mount kit.

3.3.2 Mounting on a Wall

You can use the wall mounting brackets for mounting the switch on a wall. To mount the switch on a wall, follow these steps:

1. Attach the wall mounting brackets to the edge sides of the system as Fig 3.6.
2. Ensure that no electrical wires, gas pipes or other utilities will be damaged by drilling.
3. Mark the holes at the wall where the switch is to be installed.
4. Attach the switch vertically to the wall and two holes of the wall mounting brackets should be laid over the marked holes at the wall.
5. Drill the marked locations and insert the mounting screws appropriate for the mounting surface and the weight of the switch.
6. Make sure that the switch is suspended firmly on the screws.

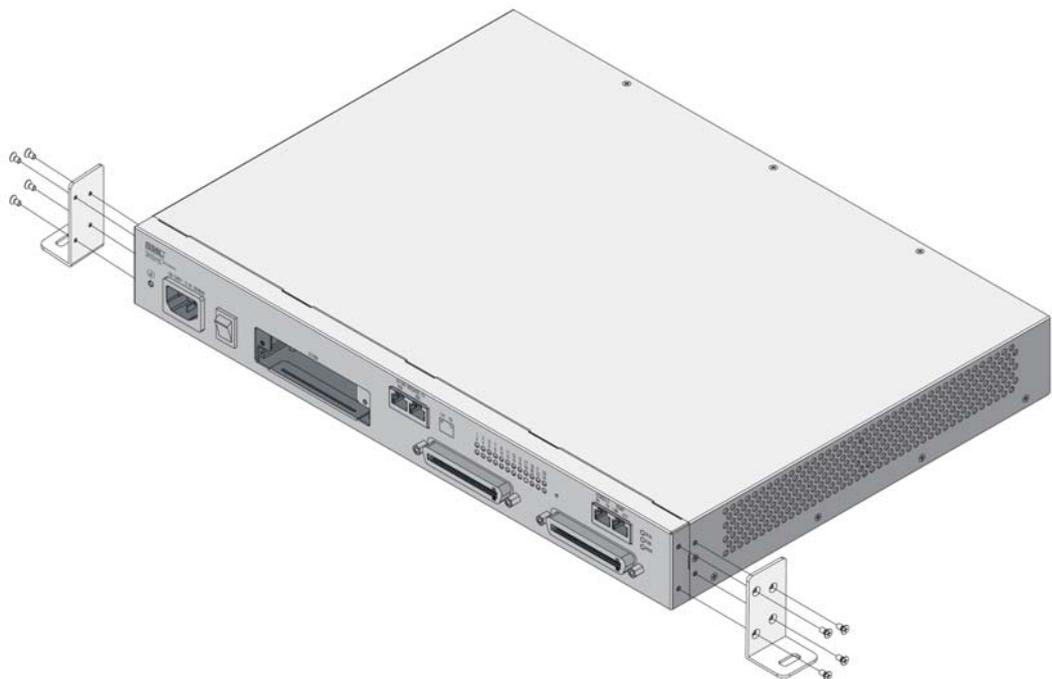


Fig. 3.6 Attaching the Wall Mounting Brackets

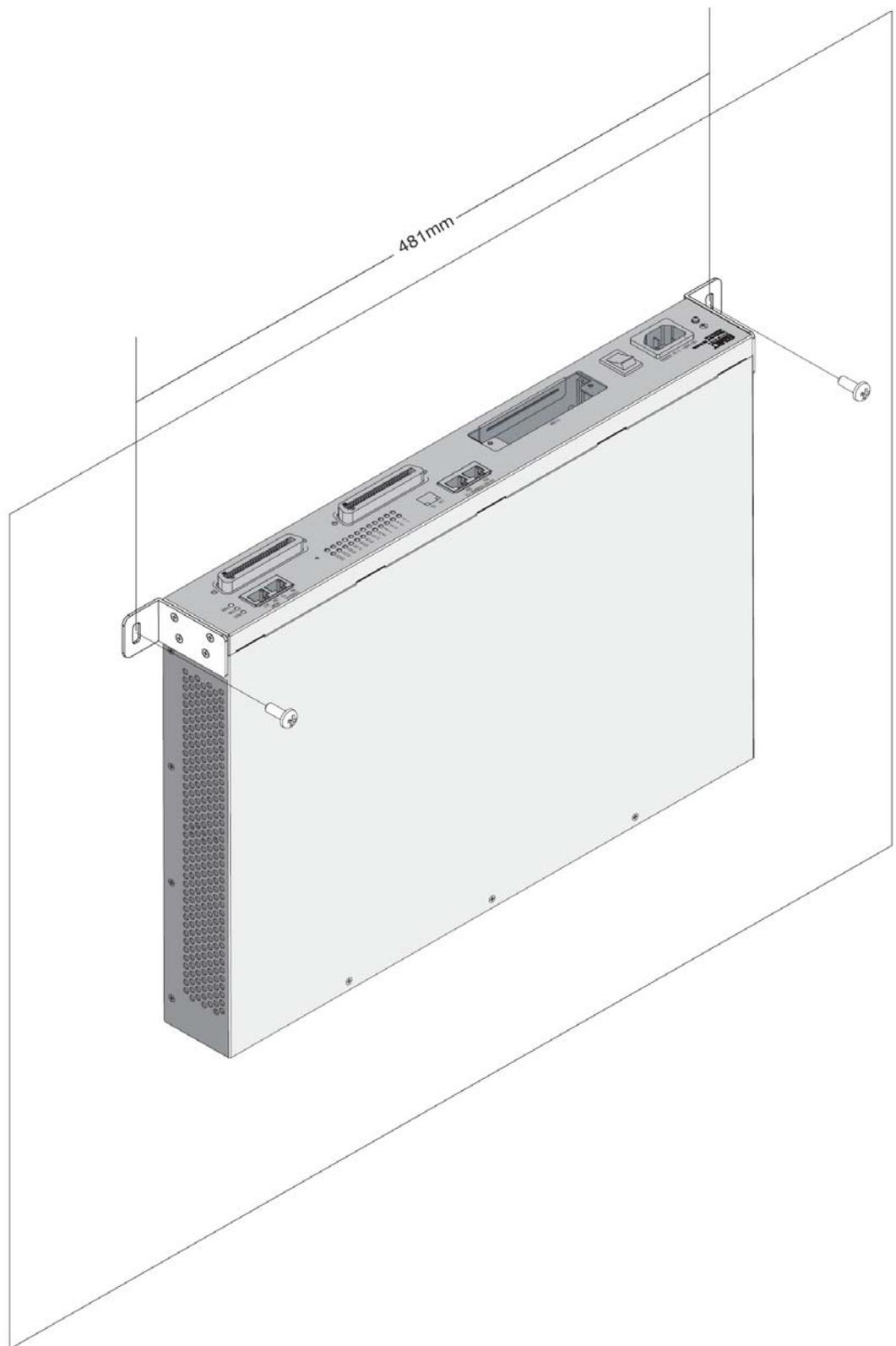


Fig. 3.7 The switch mounted on a wall

3.3.3 Grounding the System

The system must always be grounded. Following grounding method is used for the switch:

- In a rack, as the only installation variant, the switch is grounded by screw connection with the grounded rack. Pay attention to strong screw connections.



The system should be grounded with permanent connection to the protective earthing terminal.

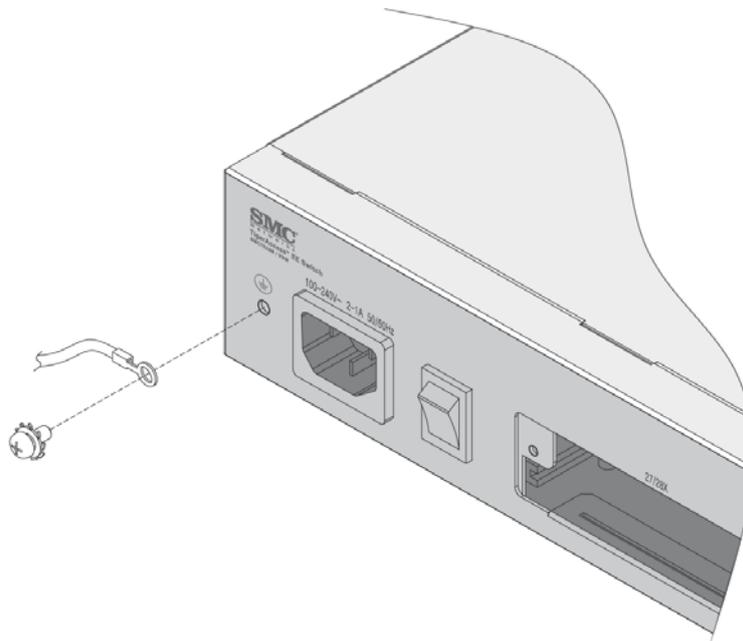


Fig. 3.8 Grounding the System

4 Equipping the System

4.1 Installing Uplink Module

The switch provides the reserved slot for the uplink option module. The system will be delivered without the option module.

When installing the uplink option module, note the followings:

- When inserting the option module, observe the ESD requirements for protecting the units (see [1.5 Components Subject to Electrostatic Discharge](#)).
- When inserting the option module into the slot, be sure to insert it inside the slot guides.
- Fasten the option module using the fixing screw on it.
- Install the blank panel in case of not using the option module. It is necessary to keep EMC.



The option module is hot-swappable, so you can equip and unequip the option module without power down. For safety reasons, however, working on the option module with power down is recommended.

[Fig. 4.1](#) shows how to install the uplink option module.

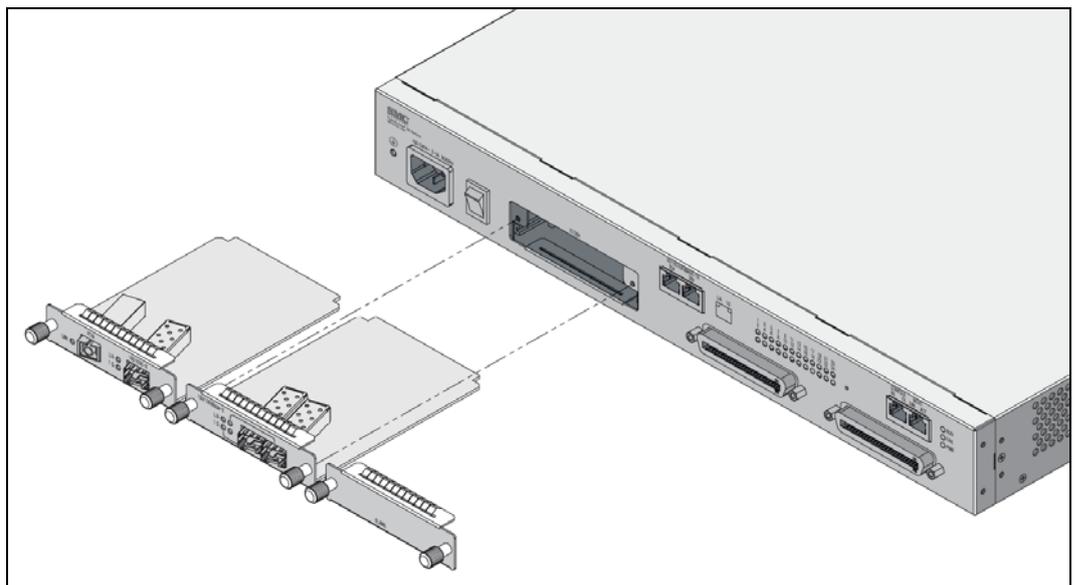


Fig. 4.1 Installing Uplink Option Modules

5 Cabling the System

Complete the following connections:

1. [Connecting Uplink Interface](#)
2. [Connecting VDSL Interface](#)
3. [Connecting Console Access](#)
4. [Connecting MGMT Interface](#)
5. [Connecting Power Supply](#)

Use the cable sets appropriate to your application, and consult your cabling plan for the required cable types for the various connecting cables:

- Category 5 Ethernet UTP cable
- Optical waveguide (OWG) cable
- Cable with connectors attached

The necessary steps for wiring are described in the following sections.

5.1 Connecting Uplink Interface

5.1.1 Installing Optical Connection

The switch provides uplink 1-slot which requires its own additional optical module. You can select the proper module in [Tab. 6.3](#). In this section, the case of installing an optical connection with the LC type SFP module is described.

Use the following procedure when installing the optical connection with the LC type SFP module.

1. Cut the optical cables with LC connector to length.
2. Attach the LC connectors.
3. Label and mark the cables.
4. Route and stow the cable in the rack.
5. Insert the SFP module into the service slot for optical connection.
6. Install the cables in accordance with your cabling plan.
7. Connect the fiber optic cable to SFP module.

[Fig. 5.1](#) shows how to install SFP module and fiber optic cable.



Fig. 5.1 Installing the Optical Connection with SFP Module

5.1.2 Installing GE-PON Connection

The switch provides 1-slot for an uplink module which has 1-port of 1000Base-X and 1-port of GE-PON interface. Use the following procedure when installing the GE-PON connection on uplink modular unit.

1. Cut the cables to length.
2. Attach the SC connectors.
3. Label and mark the cables.
4. Route and stow the cable in the rack.
5. Install the cables according to your cabling plan.
6. Connect the cable to the GE-PON interface.



Be sure to check the connector type when cabling PON lines. SC/APC type (green) connector should be connected to OLT side, and SC/PC type (blue) connector should be connected to PON uplink port on the switch.

Fig.5.2 shows how to connect the cable to GE-PON interface.



Fig. 5.2 Connecting the GE-PON Interface

5.1.3 Installing Electrical Connection

According to the network or installation environment, you can use 10/100/1000Base-T interface instead of the optical connection. The switch automatically recognizes MDI/MDIX connectors defined in IEEE 802.3.

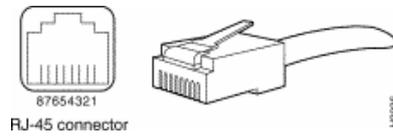


Fig. 5.3 RJ45 Connector

Use the following procedure when installing an electrical connection.

1. Cut the cables to length.
2. Label and mark the cables.
3. Route and stow the cable in the rack.
4. Install the cables in accordance with your cabling plan.
5. Connect the cable to a suitable electrical port.

Fig. 5.4 describes how to connect the cable to 10/100/1000Base-T interface.



Fig. 5.4 Installing the Electrical Connection

5.2 Connecting VDSL Interface

The switch provides 24 VDSL ports as a subscriber interface. To enable broadband services to the subscriber, connect the copper cable to the Main Distribution Frame (MDF).

5.2.1 Connecting the System to the Main Distribution Frame

Use this procedure when installing VDSL connections between the system and the MDF. Use the pre-assembled cables or adjust the cable lengths.

1. Cut the cables to length.
2. Attach the connectors to the cables.
3. Label and mark the cables.
4. Route and stow the cable in the rack.
5. Install the cables in accordance in accordance with your cabling plan.
6. Connect the cables depending on your application.
 - If your application is to provide broadband services only, connect the cables to the VDSL interface on the front panel of the switch and the MDF.
 - If your application is to provide broadband and narrowband services, connect the additional cables between the POTS interface and the PSTN switch.

Fig. 5.5 shows how to connect the cable to VDSL interface.

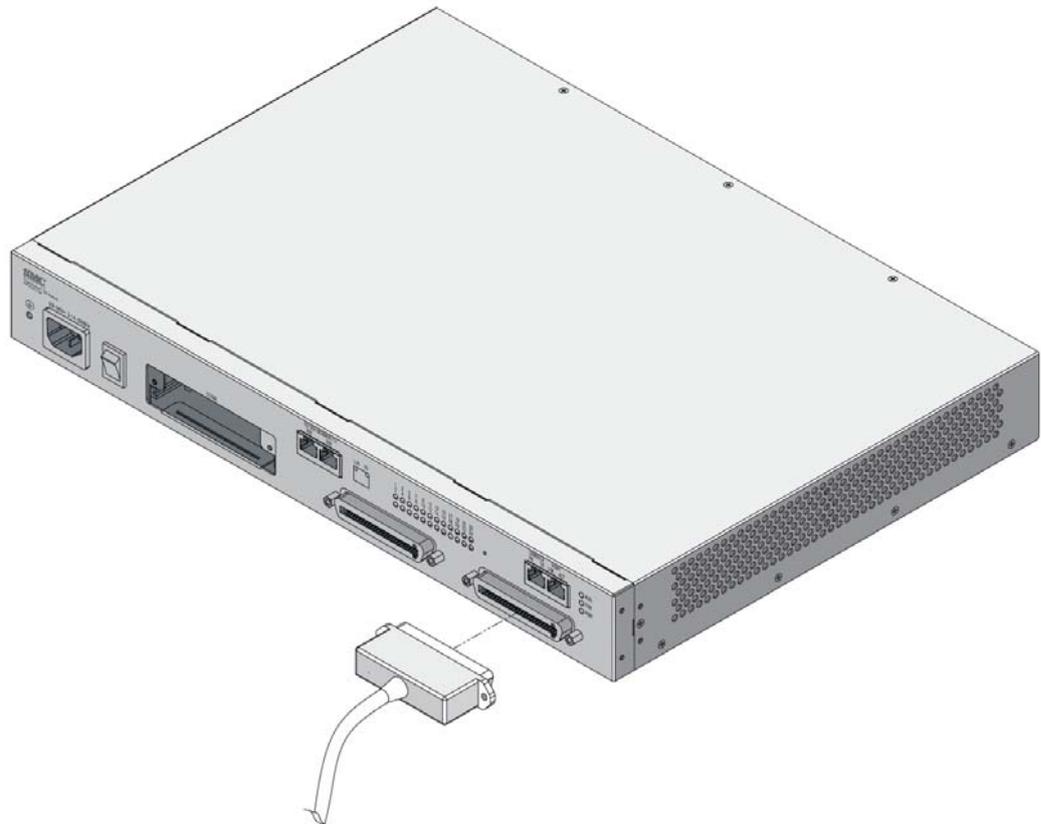


Fig. 5.5 Connecting the VDSL Interface

5.2.2 Connecting Narrowband Services

Use this procedure when connecting narrowband services.

1. Cut the cables to length.
2. Attach the connectors to the cables.
3. Label and mark the cables.
4. Install the cables to the POTS interfaces on the front panel of the switch in accordance with your cabling plan.
5. Route and stow the cable in the rack.
6. Connect the cables to the PSTN switch.

Tab. 5.1 shows pin assignments for the RJ21 connectors.

| Pin | Signal | Pin | Signal |
|-----|----------|-----|----------|
| 1 | TIP_1 | 26 | RING_1 |
| 2 | TIP_2 | 27 | RING_2 |
| 3 | TIP_3 | 28 | RING_3 |
| 4 | TIP_4 | 29 | RING_4 |
| 5 | TIP_5 | 30 | RING_5 |
| 6 | TIP_6 | 31 | RING_6 |
| 7 | TIP_7 | 32 | RING_7 |
| 8 | TIP_8 | 33 | RING_8 |
| 9 | TIP_9 | 34 | RING_9 |
| 10 | TIP_10 | 35 | RING_10 |
| 11 | TIP_11 | 36 | RING_11 |
| 12 | TIP_12 | 37 | RING_12 |
| 13 | TIP_13 | 38 | RING_13 |
| 14 | TIP_14 | 39 | RING_14 |
| 15 | TIP_15 | 40 | RING_15 |
| 16 | TIP_16 | 41 | RING_16 |
| 17 | TIP_17 | 42 | RING_17 |
| 18 | TIP_18 | 43 | RING_18 |
| 19 | TIP_19 | 44 | RING_19 |
| 20 | TIP_20 | 45 | RING_20 |
| 21 | TIP_21 | 46 | RING_21 |
| 22 | TIP_22 | 47 | RING_22 |
| 23 | TIP_23 | 48 | RING_23 |
| 24 | TIP_24 | 49 | RING_24 |
| 25 | Not used | 50 | Not used |

Tab. 5.1 RJ21 Connector Pin Assignment

5.3 Connecting Console Access

The switch provides the console access to configure the system locally with command line interface (CLI). The RJ45-to-DB9 console cable will be delivered as a basic delivery package.

1. Connect DB9 connector of the supplied RJ45-to-DB9 console cable to the serial interface of the PC.
2. Connect RJ45 connector of the cable to the console interface on the front panel of the switch.

Fig. 5.6 shows how to connect the RJ45-to-DB9 console cable to the console interface.

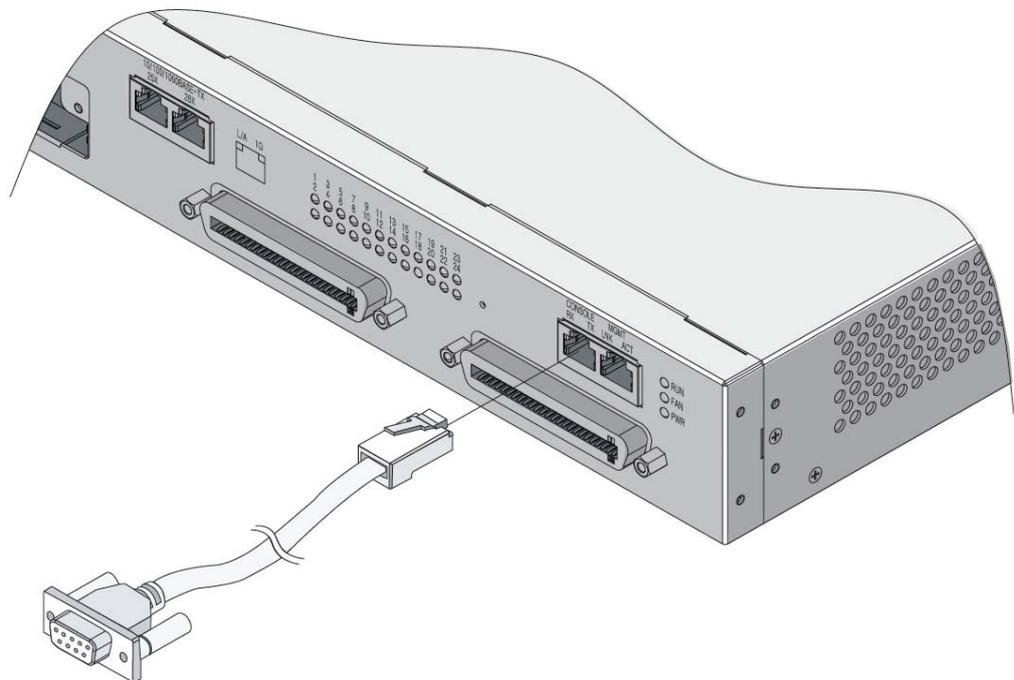


Fig. 5.6 Connecting the Console Access

5.4 Connecting MGMT Interface

Use this procedure when connecting the 100Base-T outbound MGMT interface.

1. Cut the cables to length.
2. Attach the RJ45 connector to the cable.
3. Label and mark the cables.
4. Route and stow the cable with the RJ45 connector in the rack.
5. Connect the cable to the MGMT interface on the front panel of the switch.

Fig. 5.7 shows how to connect the outbound MGMT interface.

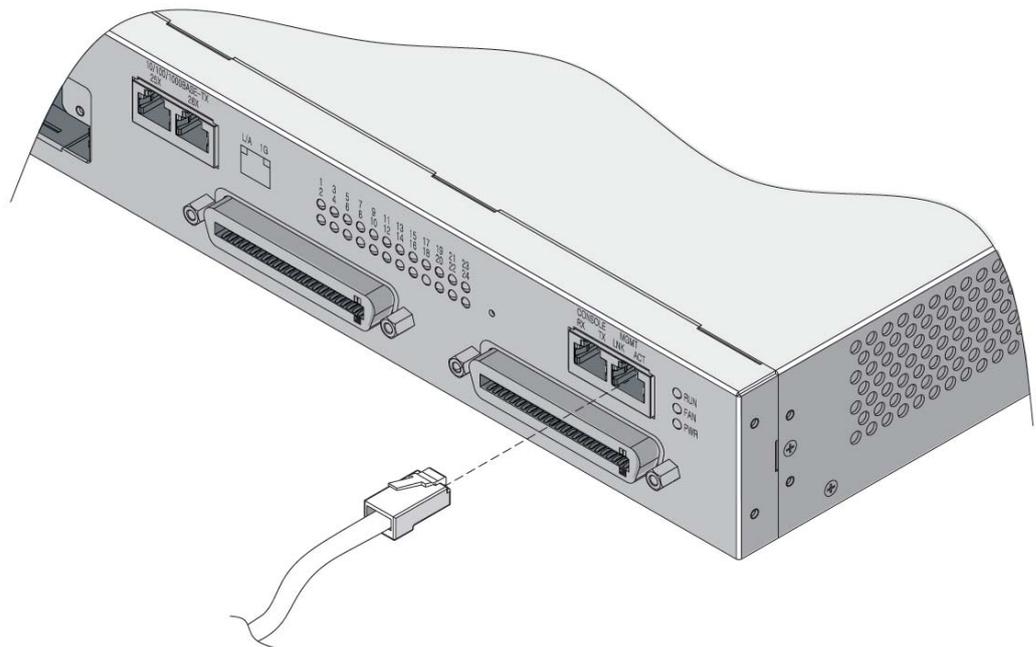


Fig. 5.7 Connecting MGMT Interface

5.5 Connecting Power Supply

To connect the operating voltage line to AC power supply and to the system:

1. Connect the provided AC power cable to AC power connector on the front panel of the switch.
2. Connect the other end of the power cable to AC power supply.

Fig. 5.8 describes how to connect the AC power cable.

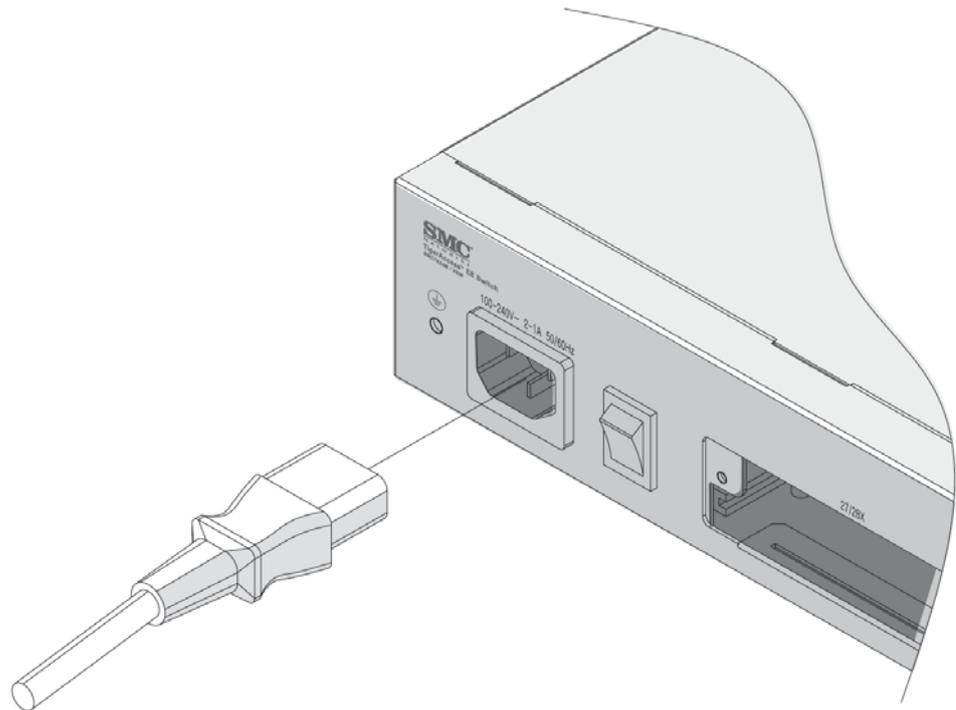


Fig. 5.8 Connecting the AC Power Cable



Make sure the power switch is in the OFF position before connecting.



Organize the wires downward from the terminal block to avoid interference with the on/off switch.

You are now ready to commission the system. For more information, see your network configuring documentation.

6 Appendix

A1 Abbreviations

| | |
|--------|---|
| CE | Communauté européenne, European Community |
| CPE | Customer Premises Equipment |
| DSLAM | Digital Subscriber Line Access Multiplexer |
| EN | European Norm |
| ETSI | European Telecommunications Standards Institute |
| FE | Fast Ethernet (100 Mbps) |
| GE | Gigabit Ethernet (1 Gbps) |
| IEC | International Electrotechnical Commission |
| IEEE | Institute of Electrical and Electronic Engineers |
| IP | Internet Protocol |
| LED | Light Emitting Diode |
| MDF | Main Distribution Frame |
| MDI | Medium Dependent Interface |
| MDIX | Medium Dependent Interface Crossover |
| MGMT | Management |
| OWG | Optical Waveguide |
| POTS | Plain Old Telephone System |
| PSTN | Plain Switched Telephone Network |
| RJ21 | Registered Jack 21 |
| RJ45 | Registered Jack 45 |
| SFP | Small Form-factor Pluggable |
| TMN-OS | Telecommunications Management Network Operating System |
| UTP | Unshielded Twisted Pair |
| VDE | Association for Electrical, Electronic & Information Technologies |
| WEEE | Waste Electrical and Electronic Equipment |

A2 Ordering Information

Bases

| Name | Description |
|--------------|--|
| SMC7824M/VSW | IKANOS CO5 FX100100-5 + Marvell based system - 100M Symmetric VDSL2 (All profile support) - Fixed 24 port VDSL interface (RJ-21) - Fixed 2-Port 10/100/1000Base-Tx uplink & 1-slot option module - 600 Ohm POTS Splitter without billing tone. - Fan : Fixed Type - Front access with 1.25U height - UL certification product - SMC specific product / Silk: SMC |

Tab. 6.1 Base Options

CPE options

| Name | Description |
|--------------|---|
| SMC7801A/VCP | IKANOS FX100100S-5 based system - 100M Symmetric + LR service interface (All profile support) - POTS 600 Ohm Splitter (Internal Splitter) - UL certification product - SMC specific product / Silk: SMC |

Tab. 6.2 CPE Options

Uplink Interface options – Not supported at first release

| Name | Description | Maximum quantity |
|---------------|--|------------------|
| 2SFPM | 2-port/module SFP uplink blank module - Hot swappable - UL safety compliance product | 1 |
| 1GEP/1SFPM-10 | 1-port GE-PON & 1-port SFP (Blank)/module uplink module. - GE-PON(PX10U, IEEE 802.3ah, Internal splicing) - Marvell based system - Hot swappable. | 1 |
| 1GEP/1SFPM-20 | 1-port GE-PON & 1-port SFP (Blank)/module uplink module. - GE-PON(PX20U, IEEE 802.3ah, Internal splicing) - Marvell based system - Hot swappable. | 1 |
| 1BP | Uplink Blank Panel for switch - UL safety compliance product | 1 |

Tab. 6.3 Uplink Interface Options

FOR TECHNICAL SUPPORT, CALL:

From U.S.A. and Canada (24 hours a day, 7 days a week)
(800) SMC-4-YOU; (949) 679-8000; Fax: (949) 679-1481

From Europe: Contact details can be found on
www.smc.com

INTERNET

E-mail addresses:
techsupport@smc.com

Driver updates:
http://www.smc.com/index.cfm?action=tech_support_drivers_downloads

World Wide Web:
<http://www.smc.com>

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| France: | 33 (0) 41 38 32 32; | Fax 33 (0) 41 38 01 58 |
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| Central Europe: | 49 (0) 89 92861-0; | Fax 49 (0) 89 92861-230 |
| Nordic: | 46 (0) 868 70700; | Fax 46 (0) 887 62 62 |
| Eastern Europe: | 34 -93-477-4920; | Fax 34 93 477 3774 |
| Sub Saharian Africa: | 216-712-36616; | Fax 216-71751415 |
| North West Africa: | 34 93 477 4920; | Fax 34 93 477 3774 |
| CIS: | 7 (095) 7893573; | Fax 7 (095) 789 35 73 |
| PRC: | 86-10-6235-4958; | Fax 86-10-6235-4962 |
| Taiwan: | 886-2-8797-8006; | Fax 886-2-8797-6288 |
| Asia Pacific: | (65) 6 238 6556; | Fax (65) 6 238 6466 |
| Korea: | 82-2-553-0860; | Fax 82-2-553-7202 |
| Japan: | 81-45-224-2332; | Fax 81-45-224-2331 |
| Australia: | 61-2-8875-7887; | Fax 61-2-8875-7777 |
| India: | 91-22-8204437; | Fax 91-22-8204443 |

If you are looking for further contact information, please visit www.smc.com, www.smc-europe.com, or www.smc-asia.com.



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TECHNICAL SUPPORT

From U.S.A. and Canada (24 hours a day, 7 days a week)
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Fax: (949) 679-1481

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www.smc-asia.com

Deutsch: Technischer Support und weitere Information unter www.smc.com

Español: En www.smc.com Ud. podrá encontrar la información relativa a servicios de soporte técnico

Français: Informations Support Technique sur www.smc.com

Português: Informações sobre Suporte Técnico em www.smc.com

Italiano: Le informazioni di supporto tecnico sono disponibili su www.smc.com

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