ST1D/ST2D
Voice Switches

Quick Install Guide

Mitel®

Powering connections

The ST1D/ST2D Voice Switch package contains:

- ST1D or ST2D Voice Switch
- Power cord
- Adhesive rubber feet for surface placement
- Mounting Ears - attachable installation brackets

About The ST1D/ST2D Voice Switches*

Each ST1D/ST2D Voice Switch connects internal extensions or IP phones to a central office (CO) digital trunk line.

The switch provides connectivity through:

- One audio input port (3.5 mm stereo) for connecting to a music-on-hold source
- One audio output port (3.5 mm stereo) for connecting to a corporate paging system or night bell. You can use a paging adapter to provide a balanced output as well as a contact closure ideal for overhead paging systems. Refer to the *Paging Adapter (PA-1) Quick Install Guide* for information about the Paging Adapter.
- Two RJ-45 10/100/1000 Mbps LAN connectors
- One DB-9 (female), RS-232C maintenance port (default 115,200 bps, 8 bits, no parity, 1 stop bit, no handshake) for serial communications
- USB port for logging/troubleshooting
- RJ-48C Telco port(s) for connecting the switch to telephone company lines. The ST1D has one RJ-48C Telco port, and the ST2D has two RJ-48C Telco ports. These are the T1/E1 configurable connections.

*This document also applies to ShoreTel-branded models of the same model number:
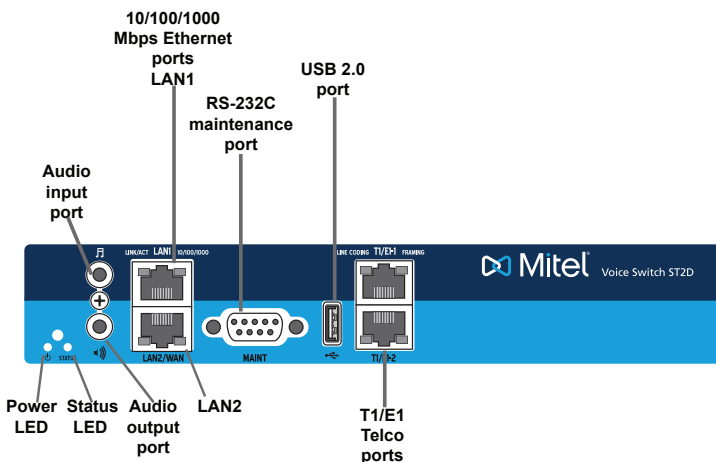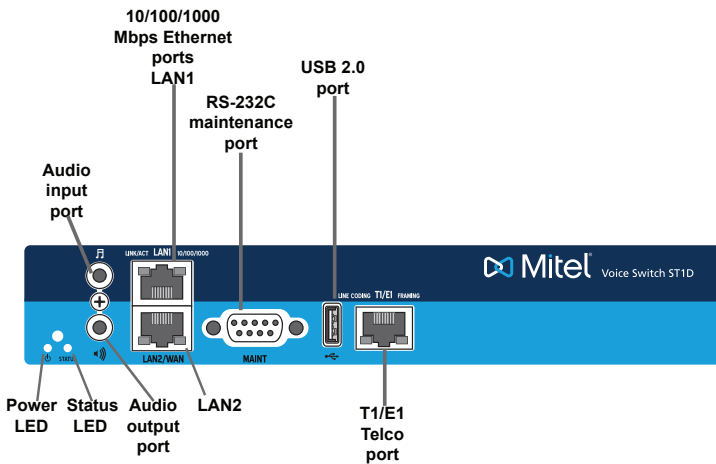
Installation

Installation Equipment

To install the switch, you need the following equipment:

- AC surge protector for the power connection
- RJ-45 cables for connecting the switch to the local area network and telco lines
- Music-on-hold source with a standard mini-headphone adapter (optional)
- Permanent earthing connector for grounding the device
- #1 Phillips screwdriver

Installation Location Requirements

To ensure optimum operating conditions for the ST1D/ST2D voice switch, verify the operating environment is adequately ventilated, free of gas or airborne particles, and isolated from electrical noise.

Installing an ST1D/ST2D Switch in a 19-inch Rack

An ST1D/ST2D switch is placed in a 19-inch rack only by installing a Rack Mount Dual Switch Tray into the rack, then installing the ST1D/ST2D into the Tray. You can install an ST1D/ST2D switch on the left or right side of the tray.

Refer to the *Rack Mount Dual Switch Tray Quick Install Guide* for information on using the tray.

Installing the ST1D/ST2D on a Wall

The ST1D/ST2D is placed on a wall by attaching the ST Voice Switch Wall Mount Bracket to the wall, and then attaching the appliance to the bracket. Refer to the *ST Voice Switch Wall Mount Bracket Quick Install Guide* for more information.

> ⚠️ **WARNING:** To prevent overheating and fire hazard, do not use the Rack Mount Dual Switch Tray to wall mount the following devices: ST1D/ST2D, ST50A/ST100A, ST200/ST500, or ST100DA. Use the ST Voice Switch Wall Mount Bracket to wall mount these devices.

Mounting the Voice Switch on a Flat Surface

If you plan to mount the switch on a flat surface, first attach the provided rubber feet to the bottom corners of the device. (You can stack up to three switches in a surface installation.)

Das Voice-Schaltgerät auf einer ebenen Oberfläche montieren

Wenn Sie planen, das Gerät auf einer ebenen Oberfläche zu montieren, befestigen Sie zunächst die mitgelieferten Gummifüße an den unteren Ecken des Geräts. (Bei einer Oberflächeninstallation können Sie bis zu drei Schaltgeräte übereinander stapeln.)

Attaching an Earthing Connector

To meet electrical safety requirements for proper grounding, you must connect a permanent earthing protector between the voice switch and the wiring system earth ground.

1. Connect a ground wire (#14 AWG wire or larger) to the screw on the back of the unit and to the right of the product label.
2. Connect the other end of the ground wire to the wiring system ground.

CAUTION: Always connect the permanent earthing connector before attempting to connect the switch to a LAN segment and telecommunication lines.

Einen Erdungsleiter anschließen

Um den elektrischen Sicherheitsanforderungen für eine korrekte Erdung nachzukommen, müssen Sie einen permanenten Erdungsschutz zwischen dem Gerät und der Erde des Kabelsystems installieren.

1. Schließen Sie ein Erdungskabel (Nr. 14 AWG oder größer) an die Schraube an der Rückseite des Geräts an, die sich rechts neben dem Produktetikett befindet.
2. Schließen Sie das andere Ende des Erdungskabels an die Erde des Kabelsystems an.

VORSICHT: Schließen Sie immer zuerst den permanenten Erdungsschutz an, bevor Sie versuchen, das Gerät an ein LAN-Segment und Telekommunikationsleitungen anzuschließen.

Connections

Servicing Procedures

WARNING: ST1D/ST2D switches contain no internal field serviceable parts. Return the equipment to Mitel for any required service procedures.

CAUTION: Internal fuses should be serviced only by qualified Mitel personnel. If internal fuses are blown and require replacement, return the ST1D/ST2D switch to Mitel for service.

WARTUNGSVERFAHREN

ACHTUNG: ST1D/ST2D enthält keine internen Teile, die vor Ort gewartet werden können. Senden Sie das Gerät an Mitel, falls Wartungsarbeiten erforderlich sein sollten.

VORSICHT: Interne Sicherungen dürfen nur von qualifizierten Mitel-Mitarbeitern gewartet werden. Wenn interne Sicherungen ausgetauscht werden müssen, senden Sie den ST1D/ST2D zur Wartung an Mitel.

Connecting the Voice Switch to the Network
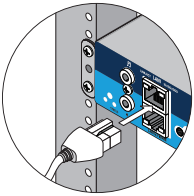
Once the ST1D/ST2D Voice Switch is secured to a rack, surface-mounted, or wall mounted, you can connect it to the data network.

Use an RJ-45 Ethernet cable to connect one or both of the LAN ports to the network subnet.

While both ports can detect and respond to link status, the switch creates a data connection on only one LAN port at a time.

Powering on the Voice Switch

After connecting the switch to the network, power on the device by connecting it to an AC power source.

1. Plug an AC surge protector (not provided) into a grounded AC power source.

2. Plug one end of the provided power cord into the receptacle on the back of the switch, then plug the other end into the AC surge protector.

The power LED flashes momentarily, and remains lit.

- If the LED is not lit, make sure the power cord is plugged into the switch and the power source.

- If the LED continues flashing, there is an internal error. Unplug the switch to power it off, then power it back on. Refer to the "Configuring Switches" chapter in the *Mitel Connect System Administration Guide* for information on flash patterns, or contact technical support at http://www.mitel.com/shoretel.

The LAN ports auto-sense the network transport rate. When the network connection is established, the network LED indicates a transport rate of 10/100/1000 Mbps, and whether the switch is receiving and transmitting data.

Optional Connections

After connecting the voice switch to the LAN, you can make optional connections, including input from a music-on-hold source or output to your internal paging system.

1. Connect a music-on-hold source (CD player or other audio source) to the audio input port.

2. Connect your site's paging system to the audio output port. You can use a Paging Adapter to facilitate paging connections. Refer to the *Paging Adapter (PA-1) Quick Install Guide* for more information.
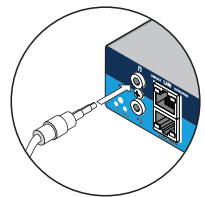
Connecting a T1/E1 Line(s)

After setting up the network connections and configuring the ST1D/ST2D Voice Switch for operations, you can connect your T1 or E1 line(s) to the switch.

Use an RJ-45 T1 or E1 cable to connect your T1 or E1 line(s) to the Telco port(s).

For detailed information on switch port and trunk configuration, refer to the sections "Configuring Switches" and "Configuring Trunks" in the *Mitel Connect System Administration Guide*.
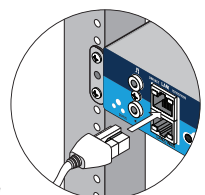
Configuration and Status

Network Configuration

Once the Mitel voice switch is installed and powered on, it must be configured for network operations. A switch gets a network configuration by assignment from a DHCP server, or directly from an administrator console (see procedure below).

For more information on setting up a switch for automatic configuration by a DHCP server, see the *Mitel Connect Planning and Installation Guide*.

Configuring the Voice Switch from a Console

1. Use a straight-through serial cable, DB9 male to DB9 female, or suitable USB-to-RS-232 serial adapter to connect the switch maintenance port to a console PC.

2. On the PC or laptop, start a terminal emulation program and connect to the voice switch using these serial communication settings: 115,200 bps, 8 data bits, no parity, one stop bit, no handshake.

3. At the login prompt, enter:

    Login: root
    Password: **ShoreTel**

4. Type `stcli` to bring up a configuration tool to set network parameters and view current status. The default switch configuration is to use DHCP for network parameters and automatic detection of speed, duplex, and flow control settings.

5. Choose Menu Options and follow the onscreen instructions for setting network parameters, including IP address, subnet mask, and gateway.

Power LED

The blue power LED indicates the operating status of the switch.

Light	Description
Steady	The switch is powered on, and the internal software is running.
Flashing	Continuous flashing or a two-flash pattern indicates a failed internal self-test (i.e. hardware failure). Refer to "Configuring Switches" in the *Mitel Connect System Administration Guide* for details on other flash patterns.
Off	The switch is not powered on, or the software is not running.

Status LED

The status LED provides voice switch activity information.

Color	Activity	Description
Off		No ports are assigned.
Green	Steady	No ports are handling active calls.
	Flashing-Fast	At least one port is handling an active call.
Yellow	Steady	No ports are handling active calls and at least one port is out of service.
	Flashing-Slow	The switch is not connected (or has lost connection) to an ST server.
	Flashing-Fast	At least one port is handling an active call and at least one port is out of service.

Network LEDs

Each LAN connector provides two LEDs: Link/Act (Left) and 10/100/1000 (Right). LAN LEDs indicate the activity and communication speed of the connected network.

LED	Color/State	Description
Link/Act	Off	There is no link present.
	Green-Steady	There is a link present, but no data packets are being transmitted or received.
	Green-Flashing	There is a link present, and data packets are either being transmitted or received.
10/100/1000	Off	A 10 Mbps link is present.
	Green	A 100 Mbps link is present.
	Yellow	A 1000 Mbps link is present.

Telco Status and Specifications

T1/E1 LEDs

T1/E1 LEDs indicate line coding, network framing, and loopback status. The Line Coding LED is on the port's left side. The Framing LED is on the port's right side.

LED	Color/State	Description
Line coding	Green	For the T1 connection, this indicates the AMI or B8ZS line coding signal is good. For the E1 connection, this indicates the HDB3 line coding signal is good.
	Yellow	This switch is receiving bipolar violations (BPV) at one-second intervals.
	Red*	A loss of signal (LOS) has occurred.
	Off	The switch has no power.
Framing	Green	The T1 or E1 signal is in frame (synchronized)
	Yellow	The CO has sent a yellow alarm.
	Yellow-Flashing	The frame-bit error rate has exceeded its limits
	Red*	T1 signal is out-of-frame (OOF) and cannot be framed to the Extended Superframe (ESF) or D4 format. E1 signal is out-of-frame (OOF).
	Off	The switch has no power.
*	Red Flashing	If both the line coding and framing LEDs are simultaneously flashing red, loopback is enabled. Loopback can be enabled from Director or at the CO for the T1 connection.

Specifications

Feature	Specification
Dimensions	14.65 x 8.35 x 1.65 inches (372 x 212 x 42 mm)
Weight	5.3 lb (2.40 kg)
Input voltage	100-240 VAC, 50-60 Hz
Power consumption	1A max.
Humidity	5-90% relative humidity (non-condensing)
Operating temperature	0-50˚ C