Physical interface guide

for Cisco TelePresence SX80
Thank you for choosing Cisco!

Your Cisco product has been designed to give you many years of safe, reliable operation.

Our main objective with this guide is to address your goals and needs. Please let us know how well we succeeded!

May we recommend that you visit the Cisco web site regularly for updated versions of this guide.

The user documentation can be found on https://www.cisco.com/go/telepresence/docs

How to use this guide

The top menu bar and the entries in the Table of contents are all hyperlinks. You can click on them to go to the topic.

Table of contents

Introduction .................................................................................................................. 3
User documentation ................................................................................................... 4

Connecting to the codec ............................................................................................. 5
Connect to LAN, microphones, loudspeakers, Touch 10, screens and power ............ 6
Connect a PC (optional) ............................................................................................ 7
About cameras .......................................................................................................... 8
Connecting Cisco TelePresence SpeakerTrack 60 ..................................................... 9
Connecting Cisco TelePresence Precision 60 ......................................................... 10
Connecting Cisco TelePresence Precision 40 / PrecisionHD 1080p 4xS2 ............... 11
Connecting Cisco Quad Camera .............................................................................. 12

The physical interface ............................................................................................... 13
The front panel ........................................................................................................... 14
The rear panel—overview ....................................................................................... 15

Socket details .......................................................................................................... 16
Audio details .......................................................................................................... 17
GPIO details ............................................................................................................ 18

Cisco contacts ....................................................................................................... 19
Chapter 1

Introduction
This document describes the physical interface of the following codec:

- Cisco TelePresence SX80

## User documentation

The user documentation for the Cisco TelePresence systems running the TC or CE software includes several guides suitable for various user groups.

- **Installation guide:**
  How to install the product

- **Getting started guide:**
  Initial configurations required to get the system up and running

- **Administrator guide:**
  Information required to administer your product

- **Quick reference guide:**
  How to use the product

- **User guide:**
  How to use the product

- **API reference guide:**
  How to use the Application Programmer Interface (API), and reference guide for the command line commands

- **Video conferencing room primer:**
  General guidelines for room design and best practice

- **Video conference room acoustics guidelines:**
  Things to do to improve the perceived audio quality

- **Software release notes**

- **Regulatory compliance and safety information**

## Downloading the user documentation

We recommend you to visit the Cisco web site regularly for updated versions of the user documentation. Go to:

► [https://www.cisco.com/go/sx-docs](https://www.cisco.com/go/sx-docs)
Chapter 2

Connecting to the codec
Connect to LAN, microphones, loudspeakers, Touch 10, screens and power

Make sure all units are switched off when connecting or disconnecting cables.

- **LAN (RJ-45)**
  - Always use the 1st Ethernet port for LAN, as outlined.

- **Microphones, max 8**
  - (Euroblock, 3.5 mm)
  - If your microphone cable has 3 pins, use +, − and ground and leave the mute pin unused.

- **Loudspeakers, mono or stereo**
  - (Euroblock, 3.5 mm)
  - Use speakers with amplifiers. The speaker/amplifier should have balanced input to avoid ground loop noise.

- **Touch 10 control panel (RJ-45)**
  - Insert the provided PoE injector between Touch 10 and the codec’s 2nd or 3rd Ethernet port.

- **Audio Line level outputs**

- **Power (100-240 VAC, 50/60 Hz)**
  - Always use the provided power cable.
  - The codec inlet or the wall socket outlet must be easily accessible after installation.

1. The audio line outputs may be configured to be used for loudspeakers.
2. The Ethernet connector is behind the lid at the rear of Touch 10. The Ethernet cable between Touch 10 and the PoE injector must be PoE rated (provided). The Ethernet cable between the PoE injector and the codec is not required to be PoE rated (not provided).
Connect a PC (optional)

A PC can be connected to the codec to enable sharing of content locally or with conference participants.

Cisco offers a PC presentation cable that connects the codec’s DVI-I input and Audio line in port (Euroblock), to the PC’s VGA and mini-jack connectors; and a multihead cable that connects the codec’s HDMI input to the HDMI, DisplayPort, or Mini DisplayPort on the PC.

Alternatively, you can use a standard HDMI cable.
About cameras

You can connect cameras, laptop computers, and other input sources to the video inputs of the codec. The codec has the following inputs: three HDMI inputs, a DVI-I input, and an analog input. The DVI-I and analog inputs cannot be used simultaneously. If you need more inputs, you must add a video switcher.

Cisco provides the following cameras:

Cisco TelePresence SpeakerTrack 60 is based on two Cisco TelePresence Precision 60 cameras and a microphone panel for advanced speaker tracking.

Cisco TelePresence Precision 60 is a full HD camera with 1080p60 resolution, 20x total zoom, and wide angle view.

Cisco TelePresence Precision 40 / Cisco TelePresence PrecisionHD 1080p 4xS2 is a full HD camera with 1080p60 resolution and 4x optical zoom.

Cisco Quad Camera is a full HD camera with microphones for speaker tracking, auto-framing capabilities, and integrated loudspeakers.

You can use any combination of these cameras, as long as only one camera supports speaker tracking, and the maximum number of cameras does not exceed seven.

---

1 This camera is sold under two names. There is no difference.

2 Note that Cisco TelePresence SpeakerTrack 60 counts as two cameras.
Connecting Cisco TelePresence SpeakerTrack 60

Connect the two cameras in the SpeakerTrack 60 assembly to the codec’s 1st and 2nd camera inputs (HDMI).

Also connect SpeakerTrack 60 to the codec’s 2nd or 3rd Ethernet port, and to power.1

Refer to the installation guide that comes with SpeakerTrack 60 for further information about camera assembly and cabling.

Tip! Should you for any reason run out of Ethernet ports, just connect a switch to the codec’s 2nd or 3rd Ethernet port. Never connect the switch to the 1st Ethernet port. This is reserved for LAN connection only.

About the HDMI inputs

The codec automatically detects which video input each camera is connected to, as long as EDID information from the cameras is passed on to the codec.

This may not happen if you use an HDMI repeater. In such situations, when the codec does not receive EDID information from the cameras, you should connect the left camera (as seen from the front) to HDMI 1 and the right camera to HDMI 2.

You can use the following settings to override the default behavior:

Cameras > SpeakerTrack > ConnectorDetection > Mode

Set to Manual if you are going to decide yourself which connector each individual camera is connected to.

Default value: Auto

Cameras > SpeakerTrack > ConnectorDetection > CameraLeft

The number of the video input that the left camera is connected to. Default value: 1

Cameras > SpeakerTrack > ConnectorDetection > CameraRight

The number of the video input that the right camera is connected to. Default value: 2

1 Note that the camera surface is hot when the camera is in operation.
Connecting Cisco TelePresence Precision 60

Connect the camera to one of the codec’s camera inputs (HDMI).

Cisco recommends using the 1st camera input for the main camera.

Also connect the camera to the codec’s 2nd or 3rd Ethernet port, and to power.\(^1\)

Tip! Should you for any reason run out of Ethernet ports, just connect a switch to the codec’s 2nd or 3rd Ethernet port. Never connect the switch to the 1st Ethernet port. This is reserved for LAN connection only.

\(^1\) Note that the camera surface is hot when the camera is in operation.
Connecting Cisco TelePresence Precision 40 / PrecisionHD 1080p 4xS2

**Note:** This camera is sold under two names. There is no difference between Cisco TelePresence Precision 40 and Cisco TelePresence PrecisionHD 1080p 4xS2.

Connect the camera to one of the codec’s camera inputs (HDMI).

Cisco recommends using the 1st camera input for the main camera.

Also connect the camera to the codec’s dedicated camera control port (D-SUB 9), and to power.

---

**Power**

(100–240 V<sub>ac</sub>, 50/60 Hz)

Always use the provided power cable and adapter (12 V<sub>dc</sub>, minimum 2 A).
Connecting Cisco Quad Camera

Connect the camera to one of the codec’s camera inputs (HDMI). We recommend:

- Always use the codec’s 1st camera input for the main camera.
- Use the camera’s 1st HDMI output.

In order to play audio on the loudspeakers in the camera, connect the loudspeaker output of the codec (Euroblock) to the line input on the camera (mini-jack).

Also connect the camera to the codec’s 2nd or 3rd Ethernet port, and to power.

Tip! Should you for any reason run out of Ethernet ports, just connect a switch to the codec’s 2nd or 3rd Ethernet port. Never connect the switch to the 1st Ethernet port. This is reserved for LAN connection only.

Always use the provided power cable and adapter (12 VDC, minimum 5.83 A).

Power (100–240 VAC, 50/60 Hz)
Chapter 3

The physical interface
The front panel

Shutdown button
The shutdown button on the front panel can be used to switch the codec on/off, provided the power switch on the codec’s rear side is on.
- To switch off the codec, hold the button until the LEDs go out.
- To switch on the codec, hold the button until the LEDs flash. It may take a few minutes for the codec to start up. The system is ready for use when the Power LED lights steadily.

The shutdown button can also be used to factory reset the codec, more about this can be found in the Administrator guide for SX80.

Front panel LEDs

Power:
- Blinks when the system is starting up.
- Steady light when the codec is ready for use.
- Pulsates when the codec is in standby.

In Call:
- Steady light when in call.

IR:
- Not in use.

Alarm:
- Lights steady when a serious error occurs.
The rear panel—overview

**Tip!** Should you for any reason run out of Ethernet ports, just connect a switch to the codec’s 2nd or 3rd Ethernet port. Never connect the switch to the 1st Ethernet port. This is reserved for LAN connection only.

**Tip!** Should you for any reason run out of HDMI inputs, connect a video switcher to one of the inputs. The codec supports up to 7 cameras.

- **3 × LAN (RJ-45)**
  - Always use the 1st Ethernet port for LAN
- **3 × HDMI input**
  - For camera, laptop, or other input sources
- **3 × screen output**
  - (2 HDMI, 1 DVI-I)
- **2 × loudspeakers, mono or stereo**
  - (Euroblock, 3.5 mm)
- **2 × stereo audio line in**
  - e.g., from PC (Euroblock, 3.5 mm)
- **2 × stereo audio line out**
  - (Euroblock, 3.5 mm)
- **4 × programmable GPIO pins**
  - (Euroblock, 3.5 mm)
- **8 × microphones**
  - (Euroblock, 3.5 mm)
  - If your microphone cable has 3 pins, use +, – and ground, leaving the mute pin unused
- **2 × USB**
- **3 × HDMI input**
  - For camera, laptop, or other input sources
- **Analog video input**
  - (2 × BNC)
  - Composite: Y
  - S-video: Y and C
- **Video input**
  - e.g., from PC (DVI-I)
- **10 Gb Ethernet**
- **2 × stereo audio line out**
  - (Euroblock, 3.5 mm)
- **Camera control for the Precision 40 / PrecisionHD 1080p 4xS2 camera (D-SUB 9)**

**Note:** The analog and DVI-I inputs are mutually excluding. You may only use either the DVI-I, the Composite, or the S-video at a time.

1 There is no DC power output from the camera control port.
Chapter 4

Socket details
### Audio details

#### Audio Input/Output Levels

<table>
<thead>
<tr>
<th></th>
<th>Microphone In</th>
<th>Line In</th>
<th>Line Out</th>
</tr>
</thead>
<tbody>
<tr>
<td>Min. level</td>
<td>-48 dBu</td>
<td>-2 dBu</td>
<td>-2 dBu</td>
</tr>
<tr>
<td>Default level</td>
<td>-36 dBu</td>
<td>6 dBu</td>
<td>12 dBu</td>
</tr>
<tr>
<td>Max. level</td>
<td>22 dBu</td>
<td>22 dBu</td>
<td>22 dBu</td>
</tr>
<tr>
<td>No. of steps</td>
<td>70</td>
<td>24</td>
<td>24</td>
</tr>
</tbody>
</table>

0 dBu = 1 mW@600Ω (0.775 Vrms)

---

**Note:** The Microphone inputs are configured for the use of Euroblocks with up to 4 ports, while the Line In/Line Out are configured for the use of Euroblocks with 3 ports only.

If you use Euroblocks with 3 ports as microphone connectors make sure the Euroblock is inserted so that the Microphone Mute is not engaged, i.e. insert it in the leftmost position possible, marked using green in the lower left illustration.

Connect as indicated by green when using Euroblocks with 3 connectors for microphones. Do not connect as indicated by red.

---

These illustrations show best practice when connecting the SX80 to unbalanced connectors.
### GPIO details

1× GPIO (General Purpose Input/Output)

6 pins Euroblock, with 4 ports for On/Off control, GND and +12V.

You can configure input/output integrations by using predefined behavior. Exposure of states and commands for external control requires external programming.

For information about the API commands, see the API Guide for the codec, go to: [https://www.cisco.com/go/sx-docs](https://www.cisco.com/go/sx-docs)

#### Operating principles

- A contact closure between the GND and a GPIO port pin is detected as a low input signal.
- When used for voltage inputs, the GPIO port detects it as:
  - Low signal for voltages 0–1 V<sub>DC</sub>
  - High signal for voltages 2–12 V<sub>DC</sub>
- When used for outputs, the GPIO port acts as a switch to GND, and is rated for 500 mA @ 48 V DC. The +12V pin provides +12 VDC, and is capable of sourcing up to 500mA.
- The GND connector is a common ground for all pins in the GPIO port.
Intellectual property rights

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB’s public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED “AS IS” WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Cisco and the Cisco Logo are trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and other countries. A listing of Cisco’s trademarks can be found at www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company. (1005R)

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

TANDBERG is now a part of Cisco. TANDBERG® is a registered trademark belonging to Tandberg ASA.

Cisco contacts

On our web site you will find an overview of the worldwide Cisco contacts.

Go to ► https://www.cisco.com/go/offices

Corporate Headquarters
Cisco Systems, Inc.
170 West Tasman Dr.
San Jose, CA 95134 USA