Sound Control Technologies

RTK-X3™
Frequently Asked Questions
Tech Support: 203-854-5701

Q: What does the RTK-X3 do?

A: The **RTK-X3** is a conference room table extension solution with for BYOD/BYOM laptops. It includes three USB-C inputs and one HDMI input at the table and supports USB 3.2 data to the receiver.

Q: How do the video inputs work?

A: The three USB-C inputs support DisplayPort Alternate Mode (DP Alt Mode) video, so along with the single HDMI input the **RTK-X3-TX** is a 4x1 video switch.

Q: What is supported on the RTK-X3-TX USB-C ports?

A: The three USB-C ports on the transmitter support USB 3.2 data, Power Delivery (PD), and USB DisplayPort Alternate Mode (DP Alt Mode) video when connected to a Full Function USB-C device port.

Q: What is a Full Function USB-C port?

A: A full function USB-C port is one that supports traditional USB data, power delivery for charging, and DP Alt Mode video.

Q: How can I tell if my device has a Full Function USB-C port?

A: Not all USB-C ports are full function ports. If it's a Windows device it will typically have a lightning bolt symbol (ϟ) at the connector signifying that is Thunderbolt capable and therefore a full function USB-C port. MacBooks don't normally have printed symbols at the connector, but typically MacBooks 2018 and newer include full function USB-C ports. Check the specifications to be certain.

Q: What kind of device charging is available from the RTK-X3-TX USB-C ports?

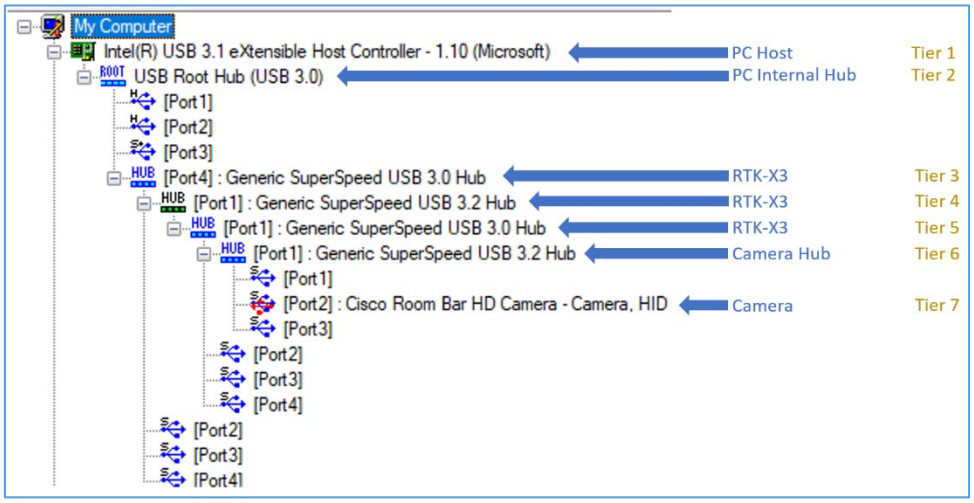
A: The USB-C ports support different Power Delivery (PD) modes based on DIP switch settings. In fixed charging mode all three ports have up to 60W available. In dynamic mode up to 100W is available for the first connected device while 60W, 40W, or 20W are available for additional devices. Total power will not exceed 180W.

Q: How does USB data work between the TX and RX?

A: The TX USB-C connectors must connect to USB hosts and the RX must connect to a USB device. The TX USB-A ports are designed for additional optional devices. All ports support USB 3.2 speeds.

Q: How many USB tiers does the RTK-X3 use?

A: A linked **RTK-X3** kit will use up three tiers (hubs) in the USB hierarchy. Be aware that some computers will use up two tiers internally, and the attached 3rd party device will use another tier. Seven total tiers is the maximum allowed per the USB specification, so take care to design your systems appropriately. Software programs such as UsbTreeView (freeware by Uwe Sieber) can be a useful tool in verifying tier structure. Below is a typical example of a USB camera connected through the **RTK-X3™** into a host PC:



HDMI

Q: What resolutions does the video section support?

A: The video section supports up to 4K60 4:4:4 resolution on all four video inputs (1 HDMI and 3 x DP Alt Mode). HDMI audio and HDCP up to v2.2 (if present) are also supported.

Q: What is HDMI to USB Video Capture mode?

A: Some legacy codecs do not natively present USB camera video. The **RTK-X3** has a built-in HDMI to USB capture function for these devices that can be enabled via DIP switch 8 on the transmitter. When enabled, HDMI video on the Local Input port of the receiver will be converted to USB video and enumerated on the PC host as “SCT USB Video Device”.

Control

Q: Can the RTK-X3 be controlled from a 3rd party RS-232 control system?

A: Yes, there is a 3rd party RS-232 port on the Transmitter which can receive commands for switching inputs and resetting the PoE ports. RS-232 parameters are 9600 baud, N, 8, 1. Please refer to the SCT Programming Guide which can be downloaded from the Tech Tips Support page at www.soundcontrol.net.

Q: How does Auto-Switching work?

A: There are two auto-switching modes: Last Source Detect Mode and Priority Mode. In Last Source Detect Mode the video switches to the last active device attached to the Transmitter.

In Priority Mode the video switches to the last active device attached, however when all other devices are removed the video falls back to the priority port (defined by TX DIP switch 4).

Operation

Q: What do the LEDs indicate?

A: The LEDs on both the **RTK-X3-TX™** and **RTK-X3-RX™** provide a good way to tell if the system is wired correctly and operating normally. Refer to the chart below for details.

Module	LED LABEL	STATUS	INDICATES
RTK-X3-RX	Power	Solid Green	Good Power
	Status	Blinking Green	Good Link Firmware
	FW*	Blinking Green	Good MCU Firmware
		Blinking Red (slow)	DIP switch 8 is on but no valid configuration file is loaded
		Blinking Red (fast)	Fan error – Fan has stopped or failed
	USB Link (SCTLink3)	Solid Green	USB Linked to RTK-X3-TX
		Off	USB Not Linked
	A/V Link (SCTLink4)	Solid Green	A/V Linked to RTK-X3-RX and video present
		Blinking Green	A/V Linked to RTK-X3-RX and video not present
		Off	A/V Not Linked
	In 1 – In 4	Solid Green	Video source selected & video present
		Blinking Green	Video source selected & no video present
RTK-X3-TX	Power	Solid Green	Good Power
	Status	Blinking Green	Good Link Firmware
	FW*	Blinking Green	Good MCU Firmware
		Blinking Red	Cooling Fan Failure
	USB Link	Solid Green	USB Linked to RTK-X3-RX
	A/V Link	Solid Green	A/V Linked to RTK-X3-RX
	In 1 – In 4	Solid Green	Video source selected

*FW blink pattern changes when performing firmware update or writing the log file. Refer to the "RTK-X3 Firmware/Log Guide" under the Support page at www.soundcontrol.net for details.

Q: What do the DIP switches do?

A: The following chart shows the functions of the 8 position DIP switches:

RTK-X3-RX DIP Switch

Switch	Function	OFF	ON
1	Codec Communications on Diag RS-232 Port	Disabled	Enabled
2	Codec Type	Cisco	n/a
3	USB Audio Capture Source	HDMI In	Line In
4	Cisco Expert Mode (see description below)	Disabled	Enabled (Overrides DIP switches 1 & 2)
5	AMA Mode (see description below)	Disabled	Enabled
6	Codec Connector ID – (Applies when DIP 1 is on and DIP 2 is off)	DIP 6 Off and DIP 7 Off – Auto detect the Connector ID. DIP 6 On and DIP 7 Off – Force Connector ID=2 DIP 6 Off and DIP 7 On – Force Connector ID=3 DIP 6 On and DIP 7 On – Force Connector ID=4	
7			
8	Use microSD Configuration File	Disabled*	Enable

*Default settings are used when Configuration File is disabled (See details below).

RTK-X3-TX DIP Switch

Switch	Function	Off	On
1	Power Sharing Mode	Up to 100W for the first connected device. Up to 60W for the second connected device. Up to 20W for the third connected device.	Up to 100W for the first connected device. Up to 40W for the other connected device.
2	Video Auto Switching	Disable	Enable
3	Video Auto Switch Mode (Applies when DIP 2 is on)	Last Source Detect Mode	Priority Mode
4	Auto Switch Priority Input (Applies when DIP 2 and DIP 3 are on)	USB-C Input 1	HDMI Input
5	Power Sharing Mode for USB-C PD Devices	All USB-C ports Support up to 60W PD	Power Sharing Profile follow DIP switch 1 setting
6	HDCP Follow	HDMI inputs report HDCP capability based on DIP switch 7 setting.	HDCP capability is passed through from RX output device to HDMI inputs
7	HDCP self-declaration (Applies when DIP 6 is off)	All HDMI inputs report no HDCP support	All HDMI inputs report support for HDCP1.4 and HDCP2.2

8	HDMI to USB Video Capture	Disabled	Enabled

Q: What are the default settings when the Configuration File is disabled? (RX DIP switch 8 Off)

A: The following settings are used when the **RTK-X3-RX™** DIP switch 8 is off:

These settings are only applicable when Cisco Codec Communications are Enabled:

Parameter	Default Value
Heartbeat timeout interval	30 seconds
SCT device name reported to codec	SCT RTK-X3
USB-C 1 input name on Cisco touch panel	SCT-USBC1
USB-C 2 input name on Cisco touch panel	SCT-USBC2
USB-C 2 input name on Cisco touch panel	SCT-USBC3
HDMI input name on Cisco touch panel	SCT-HDMI

Q: Are there any special settings when integrating with a Cisco codec?

A: After logging into the Cisco web interface, navigate to Settings, Video. Then scroll to the input that is connected to the **RTK-X3-RX™**. Under the settings of that connector verify the following parameters:

PresentationSelection = Manual
Visibility = IfSignal

Next, navigate to Settings, SerialPort and verify the following parameters:

BaudRate = 115200
LoginRequired = Off
Mode = On
Outbound Mode = Off

Be sure to click Save if you make any changes on these pages.

Q: What is AMA Mode?

A: The Cisco Codec EQ, Room Bar, and Room Bar Pro do not support audio on their USB-C connectors unless there is a USB host connected. As a result, these devices will not produce audio when the HDMI input on the **RTK-X3™** transmitter module has been selected. AMA Mode invokes dedicated circuitry to overcome this shortcoming. AMA mode should not be used for older Cisco codecs such as the Codec Plus and Codec Pro. It should also be disabled for all non-Cisco codecs.

Q: What is Cisco Expert Mode?

A: With Expert Mode off, the **RTK-X3™** communicates natively with Cisco codecs providing heartbeat, firmware versions, and creating buttons on the Cisco touch panel for selecting sources. These buttons have onscreen labels defined by the Configuration file or the default values. With Expert Mode on it is the responsibility of the installer to create these buttons within the codec via Cisco xCommands. The **RTK-X3™** will still show/hide the buttons based

on active video inputs and still provide heartbeat messages and firmware versions for monitoring.

xCommands are documented in the Cisco API Reference Guide on Cisco's website. The xCommands used to create the buttons in Expert Mode must be formatted correctly to be in compliance with the **RTK-X3™**.

First, the ConnectorId parameter must match the connector ID of the USB-C port of the Cisco codec. This is where the **RTK-X3™** will attach to. Here are the connector IDs of common devices:

Cisco Device	USB-C Connector ID	HDMI Connector ID
Codec EQ	4	1, 2, or 3
Room Bar Pro	3	2
Room Board Pro G1, G2, or G3	2	3
Room Bar	2	3
Codec Pro	n/a	1, 2, 3, 4, or 5
Codec Pro G2	6	1, 2, 3, 4, or 5
Codec Plus	n/a	1, 2, or 3

Next, the SourceIdentifier parameter must be set as defined in the following table:

RTK-X3 Input Connector	Source Identifier
Input 1 (USB-C)	sct1
Input 2 (USB-C)	sct2
Input 3 (USB-C)	sct3
Input 4 (HDMI)	sct4

The following is an example for a Codec EQ:

xCommand UserInterface Presentation ExternalSource Add ConnectorId: 4 Name: "Custom Button Name" SourceIdentifier: sct1 Type: PC

Text between the quotes will be the button text on the Cisco touch panel.

Q: I'm installing in a secure environment. Are there any options to be in compliance?

A: Some secure environments don't allow memory card slots on devices. In the Tech Support Downloads section of www.soundcontrol.net there is a special version of Secure firmware that will completely and **permanently** disable the microSD slot. Note: This is not reversible.