

4K HDBaseT™ Low Profile Receiver with Scaling & Dual Ethernet Ports

RX-70-4K-SCL v1



Quickstart Guide

WyreStorm recommends reading through this document in its entirety to become familiar with the product's features prior to starting the installation process.



IMPORTANT! Installation Requirements

- Install the latest firmware to ensure that all features described in this document are available.
- The following items are required for [Setup and Configuration](#).
 - o PC or Mac
 - o Telnet and Terminal software such as [PuTTY](#).
 - o USB to 3-pin Port Adapter Cable (Included)
 - o Network router and/or switch for quick configuration after installation without the need to connect directly.

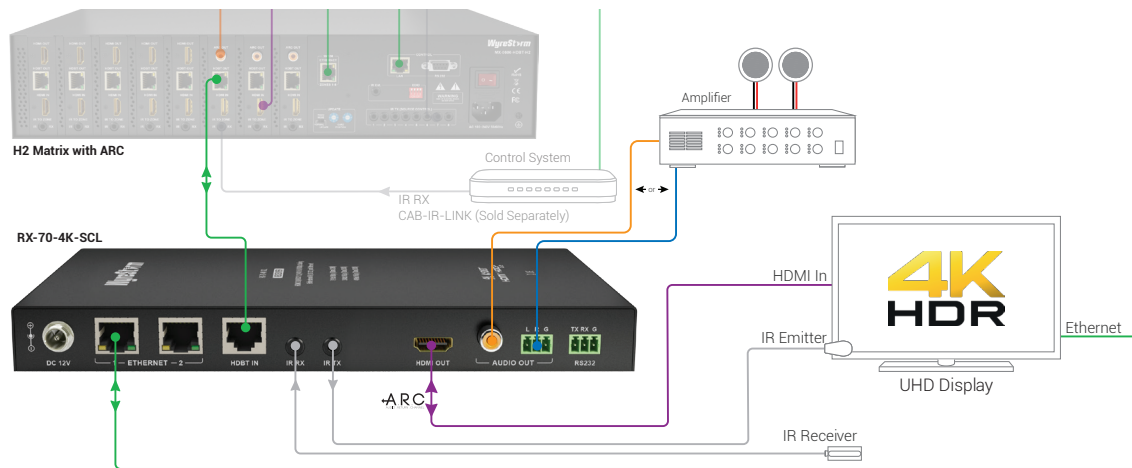
In the Box

- 1x RX-70-4K-SCL Scaling Receiver
- 1x 12V DC 3A Power Supply
- 1x AC Cable
- 2x 3-pin Phoenix Connector
- 1x IR Emitter
- 1x IR Receiver
- 1x USB to 3-pin RS-232 Port Adapter Cable
- 2x Mounting Brackets
- 1x Quickstart Guide (this document)

Additional Information

Setup and control of the receiver for functions such as EDID and audio volume commands can be found in the [RX-70-4K-SCL API](#). This and other documentation pertaining to this product can be found in the Downloads Tab located on the product page at [WyreStorm.com](#).

Basic Wiring Diagram



Key ● HDMI/Digital Video ● HDBaseT/Ethernet ● Digital Audio ● Analog Audio ● IR

Troubleshooting

No or Poor Quality Picture (snow or noisy image)

- Verify that power is being supplied to all devices in the system and that they are powered on.
- Verify that all source and HDBaseT connections are not loose and are functioning properly.
- Verify that the transmitter or matrix, receiving device, and display support the output resolution configured in the receiver. Refer to [Video Resolutions](#) in the [Specifications](#) table before determining cable type and length.
- Verify that the receiving device and display support the output resolution of the source.
- If transmitting 3D or 4K, verify that the HDMI cables used are 3D or 4K rated.

No or Intermittent 3rd party Device Control

- Verify that the IR cable(s) is properly terminated. See [IR RX \(Receiver\) Wiring](#).
- Verify that the IR emitter is located near the IR receiver on the device.
- Verify that the connected matrix is connected to a network switch or router.
- Verify that the RS-232 cable is properly terminated per the [RS-232 Wiring](#) section.

Troubleshooting Tips:

- WyreStorm recommends using a cable tester or connecting the cable to other devices to verify functionality.
- Use a flashlight to locate the IR sensor behind any tinted panels on the device being controlled. It will likely appear as a small round disc.

Wiring and Connections

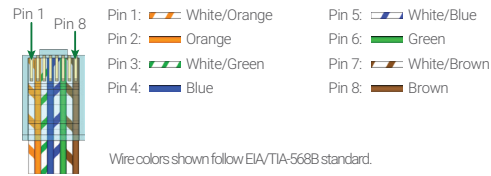
WyreStorm recommends that all wiring for the installation is run and terminated prior to making connections to the switcher. Read through this section in its entirety before running or terminating the wires to ensure proper operation and to avoid damaging equipment.

HDMI/HDBaseT Wiring

⚠ IMPORTANT! HDMI/HDBaseT Wiring Guidelines

- The use of patch panels, wall plates, cable extenders, kinks in cables, and electrical or environmental interference will have an adverse effect on HDMI and Ethernet transmission limiting performance. Steps should be taken to minimize or remove these factors completely during installation for best results.
- WyreStorm recommends using high quality HDMI cables such as WyreStorm Express to ensure the highest content performance available.
- The type of category cable used and length can restrict the available video resolution. While Cat5e can be used, WyreStorm recommends using Cat6 or higher to ensure the highest content performance available. See **Video Resolutions** in the **Specifications** table before determining cable type and length.

Cat6 Cable Performance Guide



Control Wiring

IR TX (Emitter) Wiring

Connection for IR TX (transmit) uses a 3.5mm (1/8in) mono plug.



IR RX (Receiver) Wiring

Connection for IR RX (receive) uses a 3.5mm (1/8in) stereo jack that outputs +5V DC to power the included IR receiver.

⚠ IMPORTANT! IR TX Connection Guidelines

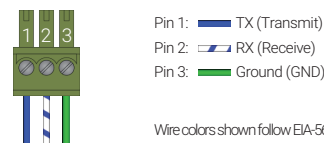
- 3rd party IR receivers may require a different voltage, refer to the documentation provided with the IR receiver before making any connections to avoid damaging the device.
- When connecting to an IR control system use the WyreStorm CAB-IR-LINK cable. This cable compensates for differences between the WyreStorm RX and the control systems TX connection. Visit the **CAB-IR-LINK** product page for details.



RS-232 Wiring

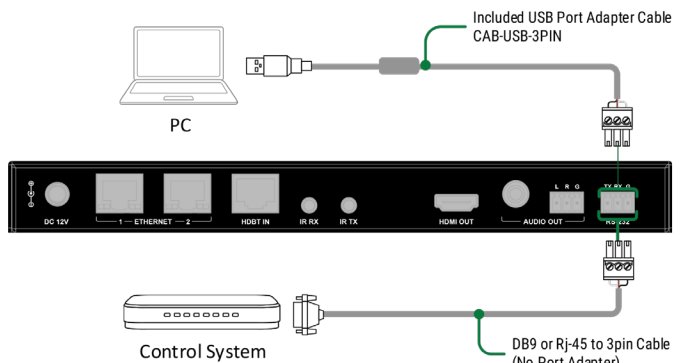
RS-232 Connection Guidelines

Most control systems and computers are DTE where pin 2 is RX, this can vary from device to device. Refer to the documentation for the connected device for pin functionality to ensure that the correct connections can be made.



Connecting to a PC or Control System

Connection to a PC requires the use of the included USB to 3-pin Port Adapter cable in order for a port to be provided on the PC.



Audio Wiring

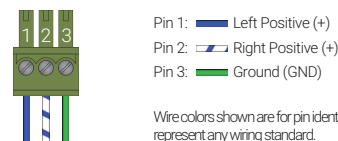
The audio outputs on the receiver can be used to output de-embedded audio from the source to an external amplifier in the remote location.

Audio Out

S/PDIF Digital Coax



Analog Audio 3-pin Phoenix



Setup and Configuration

Note: All commands in this section are case sensitive and must be sent as defined.

Sending Commands at Start of Session

In order to send the commands listed below to an RX-70-4K-SCL the receiver must first be put into a state to receive the commands. This is due to the port for control also having functions for updating the receiver. This command only needs to be sent once at the start of communication as it will set the receiver into a state where it can receive scaler commands. Note that the receiver needs to remain in this state to be controlled via a control system.

1. Connect the receiver to a matrix that is connected to a network.
2. Connect the receiver to a PC via the RS-232 connection. See [RS-232 Wiring](#).
3. Open a terminal program and configure the following com port settings:

```
Baud Rate – 115200
Data Bits – 8 bits
Parity – None
Stop Bits – 1 bit
Flow Control – None
```

4. Open the COM port and Send the Open Scaler Connection command `CONNECT SCA<CR><LF>`.
5. Once the message `CONNECT SCA` is received the commands for configuration and control can be sent.

Assigning a Static IP Address

While the receiver is provided with an IP address via DHCP when connected to a network or a matrix via HDBaseT, the address is not available to IP scanners. For this reason WyreStorm recommends setting a static IP address that will never change so that it can be configured once it is installed.

1. Perform the steps under [Sending Commands at Start of Session](#)
2. `SET IPADDRESS STATIC ip4addr [IP Address] netmask [Netmask]<CR><LF>`

Replace [IP address] with the desired IP address and [Netmask] with the netmask for the network.

Example:
`SET IPADDRESS STATIC ip4addr 192.168.2.128 netmask 255.255.255.0<CR><LF>`

Once a static IP address is configured the configuration commands can be sent to the receiver via IP. Be sure to record the IP address and location of the receiver so that it can be configured once it is installed.

EDID and Video Scaling Configuration

Configuration of EDID and scaling is performed via API sent to the receiver via IP or RS-232. Commands can be sent using Telnet applications such as Hercules or Putty via IP or RS-232 through the matrix. Before sending the below commands perform the steps under [Sending Commands at Start of Session](#).

Note: While only the Video Configuration commands are shown here other commands exist to control the Audio and Video of the receiver. Refer to the [RX-70-4K-SCL API](#) located on the website for more information.

Video Configuration Commands

Action	API Command Reference	Parameters
Set Input EDID	Command: <code>SET EDID input prm<CR><LF></code>	prm= COPY
	Return: <code>EDID input prm<CR><LF></code>	1024x768@60_2ch 1920x1080@60_2ch 1024x768@60_6ch 1920x1080@60_6ch
	Example: Set EDID to 3840x2160@30_6ch	1280x720@60_2ch 1920x1200@60_2ch
	<code>SET EDID input 3840x2160@30_6ch<CR><LF></code>	1280x720@60_6ch 1920x1200@60_6ch
	Returns: <code>EDID input 3840x2160@30_6ch<CR><LF></code>	1280x800@60_2ch 3840x2160@30_2ch 1280x800@60_6ch 3840x2160@30_6ch
	Configure Output Resolution (Scaling)	Command: <code>SET SCALER prm<CR><LF></code>
Return: <code>SCALER prm<CR><LF></code>		800x600@60 1600x1200@60 1024x768@60 1600x900@60 1280x1024@60 1680x1050@60 1280x720@50 1920x1080@50 1280x720@60 1920x1080@60
Example: Set scaling to 1920x1080@60		1280x768@60 1920x1200@60
<code>SET SCALER 1920x1080@60<CR><LF></code>		1280x800@60 3840x2160@24
Returns: <code>SCALER 1920x1080@60<CR><LF></code>		1280x960@60 3840x2160@25 1360x768@60 3840x2160@30 1366x768@60 3840x2160@50 1440x900@60 3840x2160@60

Specifications

Audio and Video	
Inputs	1x HDBaseT 8-pin RJ-45 female
Outputs	1x HDMI 19-pin type A 1x S/PDIF Out Coaxial Digital (Audio de-embedded from HDBaseT signal) 1x Audio Out 3pin Phoenix Connector (Audio de-embedded from HDBaseT signal)
Audio Formats	S/PDIF: 2ch PCM Multichannel: Up to 5.1 DTS and Dolby Digital HDMI: 2ch PCM Multichannel: LPCM and Up to DTS-X and Dolby Atmos
Video Resolutions (Max)	Using HDMI 1920x1080p @60Hz 12bit (15m/50ft) @60Hz 16bit (7m/23ft) 3840x2160p @24/25/30Hz 4:4:4 8bit (7m/23ft) @24Hz 4:2:0 HDR 10bit (3m/9.8ft) 4096x2160p @60Hz 8bit 4:2:0 (7m/23ft) @60Hz 8bit 4:4:4 (7m/23ft) Using Cat6 1920x1080 @60Hz 12bit (100m/328ft) @60Hz 16bit (70m/230ft) 3840x2160p @30Hz 4:4:4 8bit (70m/230ft) @24Hz 4:2:0 HDR 10bit (70m/230ft) 4096x2160p @60Hz 4:2:0 8bit (70m/230ft) Using Cat6a/7 1920x1080 @60Hz 12bit (100m/328ft) @60Hz 16bit (100m/328ft) 3840x2160p @24/25/30Hz 4:4:4 8bit (100m/328ft) @24Hz 4:2:0 HDR 10bit (100m/328ft) 4096x2160p @60Hz 4:2:0 8bit (100m/328ft)
Color Depth	1080p: 16bit 4K UHD: 8bit HDR @24p: 10bit BT.2020
Maximum Pixel Clock	297MHz
Communication and Control	
HDMI	HDCP 2.2 EDID (Configurable) CEC DVI-D supported with adapter (not included)
HDBaseT	HDMI HDCP 2.2 EDID (Configurable) CEC Bidirectional IR, RS-232, and Ethernet
Ethernet	2x 8-pin RJ-45 female 10/100 Mbps auto-negotiating Bidirectional over HDBaseT
IR	1x IR TX 3.5mm (1/8in) TS Mono 1x IR RX 3.5mm (1/8in) TRS Stereo Transmitted over HDBaseT
RS-232	1x 3-pin Phoenix Connector Bidirectional over HDBaseT when used with H2X matrix
Audio Return Channel (ARC)	Returns audio from displays built-in applications via ARC HDMI Input over HDBaseT
Power	
Power Supply	12V DC 3A
Max Power Consumption	16.4W
Environmental	
Operating Temperature	32°F ~ 113°F (0°C ~ 45°C) 10% ~ 90%, non-condensing
Storage Temperature	-4°F to ~ 158°F (-20°C ~ +70°C) 10% ~ 90%, non-condensing
Maximum BTU	55.96 BTU/hr
Dimensions and Weight	
Rack Units/Wall Box	0.56U
Height	25mm/1in
Width	234.4mm/9.23in
Depth	143.5mm/5.65in
Weight	0.66kg/1.45lbs
Regulatory	
Safety and Emission	CE FCC RoHS

Note: WyreStorm reserves the right to change product specification, appearance or dimensions of this product at any time without prior notice.

Warranty Information

This product is covered by a 3 year limited parts and labor warranty. During this period there will be no charge for unit repair, component replacement or complete product replacement in the event of malfunction. The decision to repair or replace will be made by the manufacturer. This limited warranty only covers defects in materials or workmanship and excludes normal wear and tear or cosmetic damage. Visit the product page located at wyrestorm.com for additional information on this product including important technical information not provided in this document and warranty terms & conditions.

