

## Scaling Receivers RX-70-4K-SCL

### Application Programming Interface

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Supported Firmware:	v1.0.0 or higher



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# 1. Overview

The following document contains the Application Program Interface (API) commands to configure and control a scaling receiver via RS-232. Read this document in its entirety before starting any communication with the product.

## Before You Begin

Verify that the following items are on hand and that all documentation is reviewed before continuing.

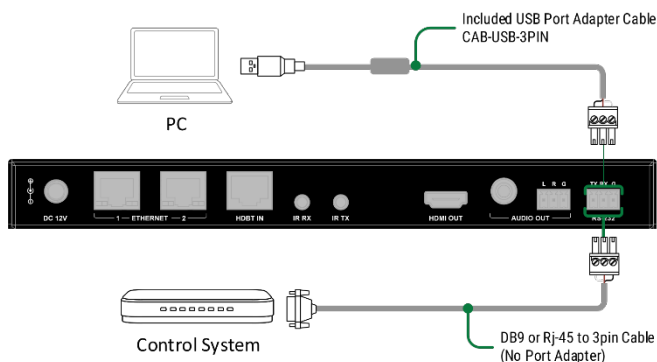
- RX-70-4K-SCL.....
- Control System and Control System Documentation.....
- PC or Mac for Configuring Product and Telnet Communications.....
- Network Connection with Network Passwords.....
- Visit the Product Page on [WyreStorm.com](http://WyreStorm.com) to download firmware and additional product information.....

# 2. Wiring and Communication Configuration

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.

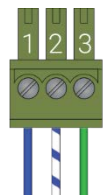
## PC and Control System Connections

Connection to a PC requires the use of a USB to 3-pin Port Adapter cable (CAB-USB-3PIN) in order for a port to be provided on the PC. Each RX-70-4K-SCL is supplied with this adapter that can also be supplied by WyreStorm should it not be available.



## Connector Pinout

While not shown, connect the TX (transmit) to RX (receive) pins at the control system or PC side of the cable. Most control systems and computers are configured for Digital Terminal Equipment (DTE) where pin 2 is RX and pin 3 is TX. This can vary from device to device, refer to the documentation for the connected device for pin functionality to ensure that the connect connections can be made.



- Pin 1: TX (Transmit)
- Pin 2: RX (Receive)
- Pin 3: Ground (GND)

Wire colors shown follow EIA-561 standard.

## Serial and IP Settings

Baud rate:	115200
Data Bits:	8bits
Parity:	None
Stop Bits:	1bit
Flow Control:	None
Default IP Address:	192.168.11.143
Default IP Port:	23

## Command Elements

- Command Type: ASCII
- Commands and parameters are Case Sensitive and must be entered as defined in this document.
- *prm* = optional parameters
- Command termination requires <CR><LF>

Example: SET AUTOCEC\_D *out prm*<CR><LF>

## 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 [PC and Control System Connections](#).
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.

See [RS-232 Port Mode](#) for more details.

## 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 or through HDBT when connected to a WyreStorm H2X matrix. Be sure to record the IP address and location of the receiver so that it can be configured once it is installed.

### 3. RS-232 Port Mode

Action	API Command Reference	Parameters
Open Scaler Connection	Command: CONNECT <i>prm</i> <CR><LF> Return: CONNECT <i>prm</i> <CR><LF>	<i>prm</i> = SCA=Scaler UPG=Receiver Update VS=Valens Update
	Example: Open scaler connection for commands. CONNECT <i>sca</i> <CR><LF> Returns: CONNECT <i>sca</i> <CR><LF>	
Query Scaler Connection	Command: GET CONNECT<CR><LF> Return: CONNECT <i>prm</i> <CR><LF>	<i>prm</i> = SCA=Scaler UPG=Receiver Update VS=Valens Update
	Example: Port open to scaler commands. GET CONNECT<CR><LF> Returns: CONNECT <i>sca</i> <CR><LF>	

### 4. Audio/Video Output Control

#### Display On and Off via CEC Commands

Action	API Command Reference	Parameters
Power Display On/off	Command: DISPLAY <i>prm</i> <CR><LF> Return: DISPLAY <i>prm</i> <CR><LF>	<i>prm</i> = {on, off}
	Example: Power on display DISPLAY <i>on</i> <CR><LF> Returns: DISPLAY <i>on</i> <CR><LF>	
Configure CEC Power Delay Time	Command: DISPLAY AUTO DELAY <i>prm</i> <CR><LF> Return: DISPLAY AUTO DELAY <i>prm</i> MINUTES<CR><LF>	<i>prm</i> = {0,1,2,3,...} // In Minutes
	Example: Delay time set to 1 minute DISPLAY AUTO DELAY <i>1</i> <CR><LF> Returns: DISPLAY AUTO DELAY <i>1</i> MINUTES<CR><LF>	

## Audio Control

Action	API Command Reference	Parameters
Adjust Volume to Specific Level	Command: SET VOL prm<CR><LF> Return: VOL prm<CR><LF>  Example: Set volume to 50 SET VOL 50<CR><LF> Returns: VOL 50<CR><LF>	prm = {0~100}
Increase Volume Single Step	Command: SET VOLGAIN_INC<CR><LF> Return: VOLGAIN_INC prm<CR><LF>  Example: Increase volume by 1 SET VOLGAIN_INC<CR><LF> Returns: VOLGAIN_INC 51<CR><LF>	prm = {0~100}
Decrease Volume Single Step	Command: SET VOLGAIN_DEC<CR><LF> Return: VOLGAIN_DEC prm<CR><LF>  Example: Decrease volume by 1 SET VOLGAIN_DEC<CR><LF> Returns: VOLGAIN_DEC 51<CR><LF>	prm = {0~100}
Query Current Volume Level	Command: GET VOL<CR><LF> Return: VOL prm<CR><LF>  Example: Query current volume level GET VOL<CR><LF> Returns: VOL 50<CR><LF>	prm = {0~100}
Mute Audio	Command: SET MUTE prm<CR><LF> Return: MUTE prm<CR><LF>  Example: Mute audio volume SET MUTE on<CR><LF> Returns: MUTE on<CR><LF>	prm = {on, off}
Query Current Audio Mute State	Command: GET MUTE<CR><LF> Return: MUTE prm<CR><LF>  Example: Query current mute state GET MUTE<CR><LF> Returns: MUTE on<CR><LF>	prm = {on, off}
Speaker Selection (ARC On/Off)	Command: SET ARC prm<CR><LF> Return: ARC prm<CR><LF>  Example: Set ARC On SET ARC on<CR><LF> Returns: ARC on<CR><LF>	prm = {on, off}
Query ARC Status	Command: GET ARC<CR><LF> Return: ARC prm<CR><LF>  Example: Query ARC Status GET ARC<CR><LF> Returns: ARC on<CR><LF>	prm = {on, off}

## 5. Receiver Configuration and Reset

### Video Configuration

Action	API Command Reference	Parameters
Set Input EDID	Command: SET EDID input prm<CR><LF> Return: EDID input prm<CR><LF>  Example: Set EDID to 3840x2160@30_6ch SET EDID input 3840x2160@30_6ch<CR><LF> Returns: EDID input 3840x2160@30_6ch<CR><LF>	prm = Copy 1024x768@60_2ch 1024x768@60_6ch 1280x720@60_2ch 1280x720@60_6ch 1280x800@60_2ch 1280x800@60_6ch 1920x1080@60_2ch 1920x1080@60_6ch 1920x1200@60_2ch 1920x1200@60_6ch 3840x2160@30_2ch 3840x2160@30_6ch
Configure Output Resolution (Scaling)	Command: SET SCALER prm<CR><LF> Return: SCALER prm<CR><LF>  Example: Set scaling to 1920x1080@60 SET SCALER 1920x1080@60<CR><LF> Returns: SCALER 1920x1080@60<CR><LF>	prm = AUTO 800x600@60 1024x768@60 1280x1024@60 1280x720@50 1280x720@60 1280x768@60 1280x800@60 1280x960@60 1360x768@60 1366x768@60 1440x900@60 1600x1200@60 1600x900@60 1680x1050@60 1920x1080@50 1920x1080@60 1920x1200@60 3840x2160@24 3840x2160@25 3840x2160@30 3840x2160@50 3840x2160@60
Query Output Resolution (Scaling)	Command: GET SCALER<CR><LF> Return: SCALER prm1: prm2<CR><LF>  Example: Scaler set to Auto 1920x1080@60 SET SCALER 1920x1080@60<CR><LF> Returns: SCALER AUTO:1920x1080@60<CR><LF>	prm1 = {AUTO, FIX} prm2 = Auto 1024x768@60 1280x720@60 1280x800@60 1600x1200@60 1920x1080@60 1920x1200@60 3840x2160@30 3840x2160@60

## Reboot and Reset

Action	API Command Reference	Parameters
	Command: REBOOT<CR><LF> Return: REBOOT<CR><LF>	
Reboot Receiver	Example: Reboot Device REBOOT<CR><LF> Returns: REBOOT<CR><LF>	None
	Command: RESET<CR><LF> Return: RESET<CR><LF>	
Reset to Factory Defaults	Example: Reset to defaults RESET<CR><LF> Returns: RESET<CR><LF>	None

## 6. Revision History

### V1.2 - 171106 - November 2017

Section	Update
Various	Updated instances for carriage return/line feed to <CR><LF> which is more commonly used by terminal programs.
Wiring and Configuration	Rearranged order of sub sections.

### V1.1 - 171030 - October 2017

Section	Update
Sending Commands at Start of Session	Added section to explain sending of Open Scaler Connection before other commands.

### V1 - 170614 - June 2017

Section	Update
All	Original Release



## Publication Disclaimer

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