DM-RMC-4K-SCALER-C/-DSP

4K DigitalMedia 8G+® Receivers and Room Controllers with Scaler

Supplemental Guide
Crestron Electronics, Inc.

Contents

DM-RMC-4K-SCALER-C/-DSP: 4K DigitalMedia 8G+® Receivers and Room Controllers with Scaler

Introduction

The DM-RMC-4K-SCALER-C and DM-RMC-4K-SCALER-C-DSP provide advanced one-box interface solutions for a single display device as part of a complete Crestron® DigitalMedia™ system. Each device functions as a DM 8G+® receiver, 4K/60 video scaler, and control interface, providing a single HDMI® output. In addition, an analog audio output, Ethernet, RS-232, IR, and relay control ports are provided. Built-in scaling enables the connected display to handle virtually any video signal—including 4K and Ultra HD. The DM-RMC-4K-SCALER-C-DSP also provides internal surround sound processing. For additional information about the various features and capabilities of the DM-RMC-4K-SCALER-C and DM-RMC-4K-SCALER-C-DSP, refer to the product specification sheet on the corresponding product page of the Crestron website (www.crestron.com). For installation information, refer to the DM-RMC-4K-SCALER-C/ DM-RMC-4K-SCALER-C-DSP DO Guide (Doc. 7708) at www.crestron.com/manuals.

NOTE: Throughout the remainder of this guide, all references to the DM-RMC-4K-SCALER-C apply to both the DM-RMC-4K-SCALER-C and the DM-RMC-4K-SCALER-C-DSP unless otherwise noted.

This guide provides information about the following:

- Physical description of the top and side views of the DM-RMC-4K-SCALER-C

- Configuration of some of the capabilities of the DM-RMC-4K-SCALER-C, for example, video processing

- HDCP 2.2. compliance

- Troubleshooting

- Pin assignments

Physical Description

This section provides information about the connectors, controls, and indicators on the top, left side, and right side of the DM-RMC-4K-SCALER-C.

Top View

The following illustration shows the top of the DM-RMC-4K-SCALER-C.

Top View
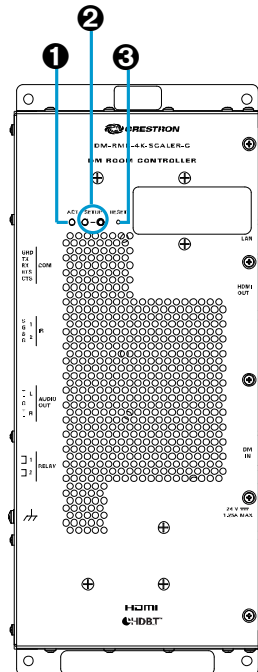
❶ **ACT:** Green LED, indicates activity

❷ **SETUP:** (Applicable only to a configuration in which a DigitalMedia switcher is not used) Red LED and recessed push button for Ethernet setup of the default static IP address of the device

> **NOTE:** The default static IP address of the DM-RMC-4K-SCALER-C is 192.168.1.221. The default static IP address of the DM-RMC-4K-SCALER-C-DSP is 192.168.1.222.

❸ **RESET:** Recessed push button for reboot of the device

Side View, Left

The following illustration shows the left side of the DM-RMC-4K-SCALER-C.

Side View, Left

❶ **COM:** 5-pin 3.5 mm detachable terminal block;
Bidirectional RS-232 port;
Up to 115.2k baud, hardware and software handshaking support

❷ **IR 1-2:** 4-pin 3.5 mm detachable terminal block comprising 2 IR/serial ports;
IR output up to 1.1 MHz;
1-way serial TTL/RS-232 (0-5 volts) up to 19200 baud

NOTE: The IR 1 and IR 2 commands can be sent in parallel but are processed serially.
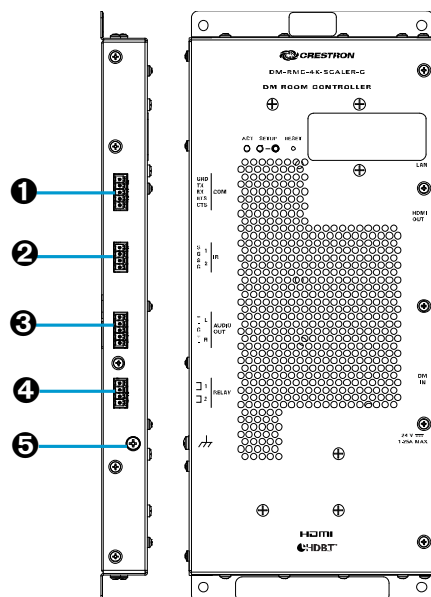
❸ **AUDIO OUT L, R:** 5-pin 3.5 mm detachable terminal block;
Balanced/unbalanced stereo line level audio output;
Output impedance: 200 ohm balanced or 100 ohm unbalanced;
Maximum output level: 4 Vrms balanced or 2 Vrms unbalanced

NOTE: The analog stereo audio output is active only when the
DM-RMC-4K-SCALER-C is receiving a 2-channel stereo signal. For applications using a
multichannel surround sound source, use the DM-RMC-4K-SCALER-C-DSP, which
provides a stereo downmix of the multichannel signal.

❹ **RELAY 1-2:** 4-pin 3.5 mm detachable terminal block comprising 2 normally open,
isolated relays;
Rated 1 amp, 30 Vac/Vdc;
MOV arc suppression across contacts

❺ **Ground (⏚):** 6-32 screw, chassis ground lug

Side View, Right

The following illustration shows the right side of the DM-RMC-4K-SCALER-C.

Side View, Right
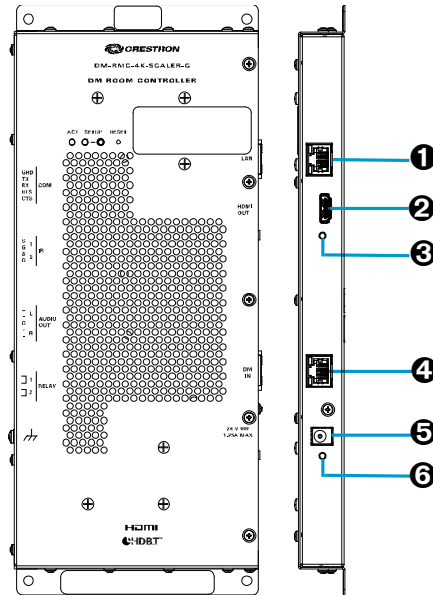
❶ **LAN:** 8-pin RJ-45 female, shielded, with two LEDs;
10BASE-T/100-BASETX Ethernet port;
Green LED indicates Ethernet link status;
Amber LED indicates Ethernet activity

> NOTE: Do not connect the LAN port to an Ethernet switch if the DM IN port connects
> to a DigitalMedia switcher.

❷ **HDMI OUT:** 19-pin Type A HDMI female;
HDMI digital video/audio output (DVI compatible)

> NOTE: HDMI OUT requires an appropriate adapter or interface cable to accommodate
> a DVI signal. CBL-HD-DVI interface cable is available separately.

❸ **HDMI LED:** Green LED, indicates video signal presence at the HDMI output

❹ **DM IN:** 8-pin RJ-45 female, shielded, with two LEDs;
DM 8G+ input, HDBaseT® standard compliant;
PoDM+ PD (Powered Device) port;
Connects to the DM 8G+ output of a DM® switcher, transmitter, or other DM device, or
to an HDBaseT device via CAT5e, Crestron DM-CBL-8G, or Crestron DM-CBL-ULTRA
cable;
Green LED indicates DM link status;
Solid amber LED indicates HDCP video;
Blinking amber LED indicates non-HDCP video

> NOTE: Receiving PODM+ requires connection to a switcher or other equipment that
> has a PoDM+ PSE (Power Sourcing Equipment) port. Any wiring that is connected to a
> PoDM+ PSE port is for intrabuilding use only and should not be connected to a line that
> runs outside of the building in which the PSE is located.

➎ **24 VDC 1.25A MAX:** 2.1 x 5.5 mm dc power connector;
24 Vdc power input;
Power pack included

➏ **Power LED:** Green LED, indicates operating power supplied via PoDM+ or 24 Vdc
local power pack

For pin assignment information, refer to the Appendix on page 15.

Configuration

This section provides configuration information about the following:

- Video wall processing

- Adjustable underscan and overscan

- User-selectable output resolution

- Standby timeout

- Display mode

- EDID

- Connection to a third-party HDBaseT transmitter

Video Wall Processing

Multiple DM-RMC-4K-SCALER-C units can be combined to configure a video wall
composed of up to 64 individual displays (up to eight columns of displays by eight rows of
displays). A separate DM-RMC-4K-SCALER-C is required for each display, and a
DigitalMedia switcher with sufficient DM 8G+ outputs is also required. Each
DM-RMC-4K-SCALER-C provides zoom capability and bezel compensation on its output to
display a portion of the source image.

To configure a video wall, use the Crestron Toolbox™ DMTool or use SIMPL Windows as
discussed in the following sections.

Configuration Using DMTool

An overview of the steps necessary to configure a video wall using DMTool follows.

NOTE: For detailed information, refer to the Crestron Toolbox help file.

1. Connect to the DigitalMedia switcher.

2. Connect to the desired DM-RMC-4K-SCALER-C.

3. Open the Setup window of the HDMI output.

4. In the Video Settings dialog box, configure the video wall. In addition, configure
   bezel compensation to compensate for image loss at the edges of the display.

Video Settings Dialog Box—Video Wall and Bezel Compensation Configuration

5. Repeat steps 2-4 for each DM-RMC-4K-SCALER-C that connects to a display for inclusion in the video wall.
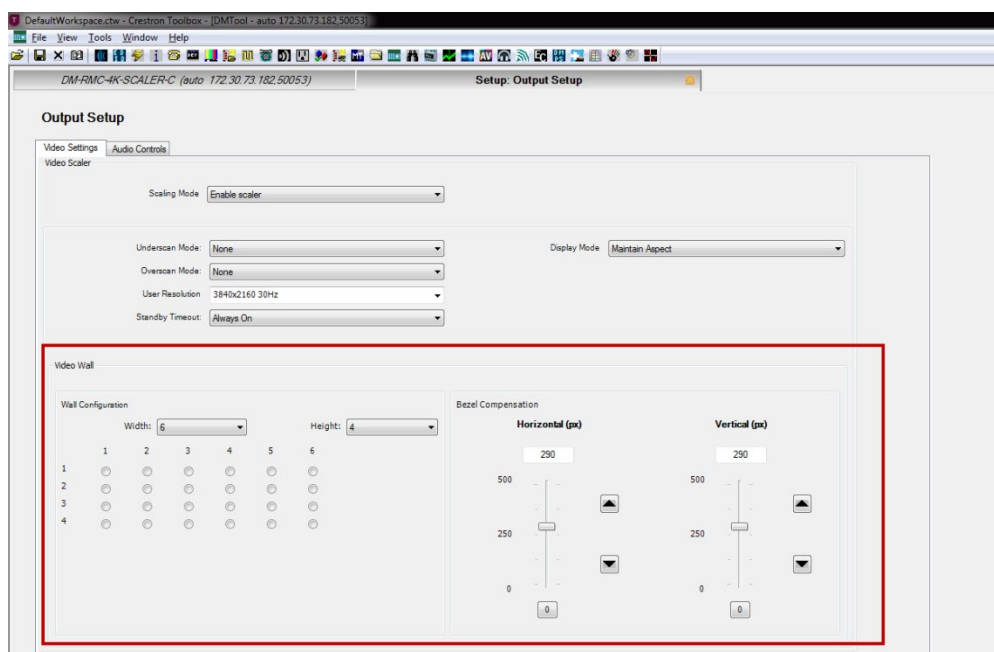
Configuration Using SIMPL Windows

An overview of the steps necessary to configure a video wall using SIMPL Windows follows.

NOTE: For detailed information, refer to the SIMPL Windows help file.

1. Configure slot 3 for a DM-RMC-4K-SCALER-C Scaler by setting the **<Scaler_Out_Wall_Mode>**, **<Scaler_Out_Horizontal_Bezel_Compensation**>, and **<Scaler_Out_Vertical_Bezel_Compensation>** analog input joins to the desired values.

2. Repeat step 1 for each DM-RMC-4K-SCALER-C that connects to a display for inclusion in the video wall.

Adjustable Underscan and Overscan

If content does not fit properly on a display, adjustments to underscan or overscan may be desired. Adjustments can be made up to 7.5%. Adjusting the underscan reduces the image size by the specified percentage so that the entire video frame is displayed. Adjusting the overscan expands the image size by the specified percentage so that extra information around the edges is not displayed.

To adjust underscan and overscan settings, use DMTool or SIMP Windows as discussed in the following sections.
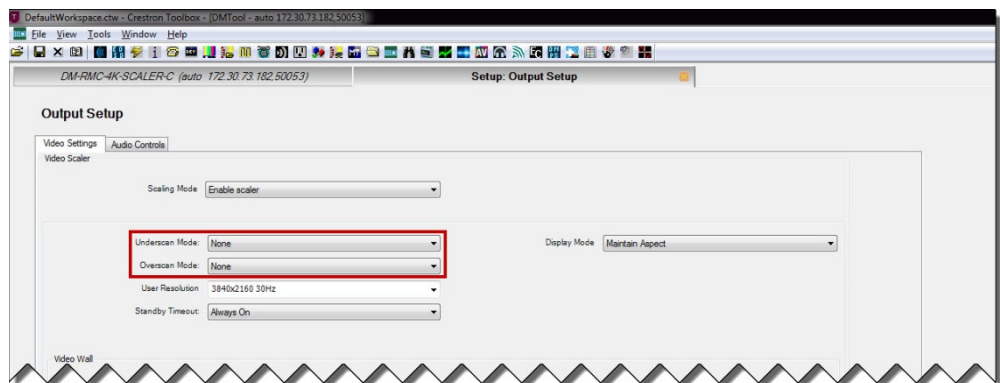
Configuration Using DMTool

An overview of the steps necessary to adjust underscan and overscan settings using DMTool follows.

NOTE: For detailed information, refer to the Crestron Toolbox help file.

1. Connect to the DigitalMedia switcher.
2. Connect to the DM-RMC-4K-SCALER-C.
3. Open the Setup window of the HDMI output.
4. In the Video Settings dialog box, select the desired value in the **Underscan Mode** and **Overscan Mode** drop-down lists as necessary.

Video Settings Dialog Box—Underscan and Overscan Configuration

Configuration Using SIMPL Windows

An overview of the steps necessary to adjust underscan and overscan settings using SIMPL Windows follows.

NOTE: For detailed information, refer to the SIMPL Windows help file.

- Adjust underscan in slot 3 for the DM-RMC-4K-SCALER-C Scaler. Set the **<Scaler_Out_Underscan_Mode>** analog input join to the desired value.
- Adjust overscan in slot 4 for the DM-RMC-4K-SCALER-C DM Input. Set the **<Source_Overscan_Mode>** analog input join to the desired value.

User-Selectable Output Resolution

The output resolution of the scaler is user selectable. To select the output resolution, use DMTool or SIMPL Windows as discussed in the following sections.
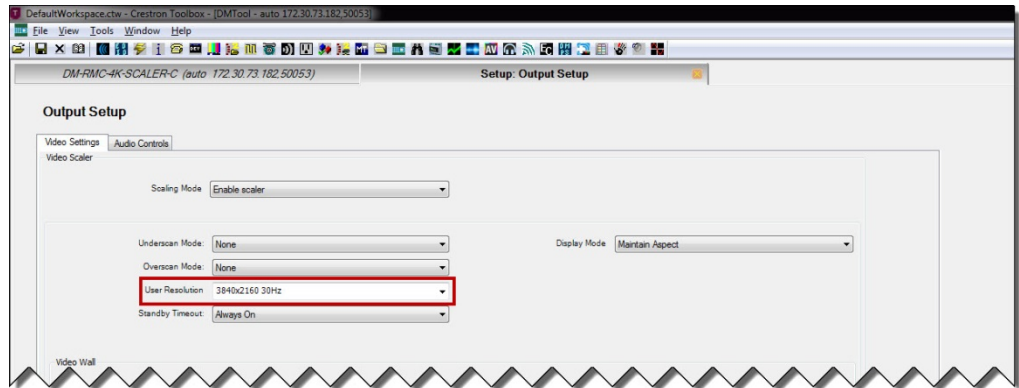
Configuration Using DMTool

An overview of the steps necessary to select the output resolution of the scaler follows.

1. Connect to the DigitalMedia switcher.
2. Connect to the DM-RMC-4K-SCALER-C.
3. Open the Setup window of the HDMI output.

4. In the Video Settings dialog box, select the desired resolution in the **User Resolution** drop-down list.

Video Settings Dialog Box—User Resolution Selection

Configuration Using SIMPL Windows

Using SIMPL Windows, set the output resolution in slot 3 for the DM-RMC-4K-SCALER-C Scaler. To do so, set the **<Scaler_Out_User_Resolution_Index>** analog input join to the desired value.

NOTE: For detailed information, refer to the SIMPL Windows help file.

Standby Timeout

Standby timeout sets the output to shut down if no video is detected on the input for a user-specified period of time.

To configure Standby Timeout settings, use DMTool or SIMPL Windows as discussed in the following sections.

Configuration Using DMTool
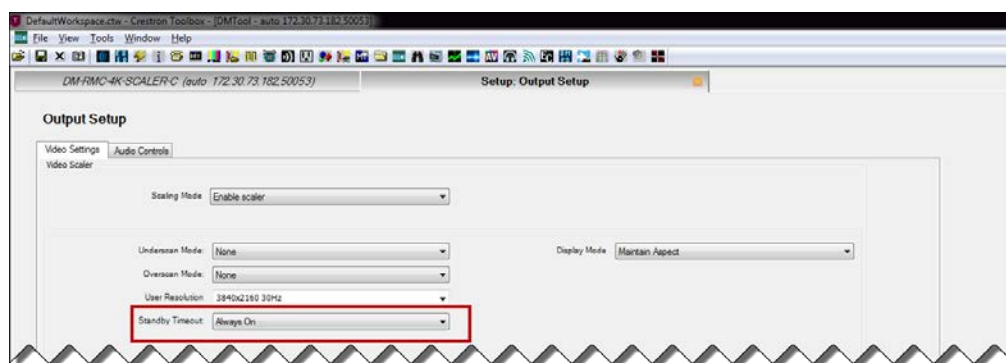
An overview of the steps necessary to set Standby Timeout using DMTool follows.

NOTE: For detailed information, refer to the Crestron Toolbox help file.

1. Connect to the DigitalMedia switcher.

2. Connect to the DM-RMC-4K-SCALER-C.

3. Open the Setup window of the HDMI output.

4. In the Video Settings dialog box, select the desired value in the **Standby Timeout** drop-down list.

Video Settings Dialog Box—Standby Timeout Configuration

Configuration Using SIMPL Windows

Using SIMPL Windows, set the standby timeout in slot 3 for the DM-RMC-4K-SCALER-C Scaler. To do so, set the **<Scaler_Out_Standby_Timeout>** analog input join to the desired value.

NOTE: For detailed information, refer to the SIMPL Windows help file.

Display Mode

The display mode of an image can be set to one of the following:

- Maintain aspect ratio
- Stretch to fit
- 1:1 pixel mapping

To configure Display Mode settings, use DMTool or SIMPL Windows as discussed in the following sections.
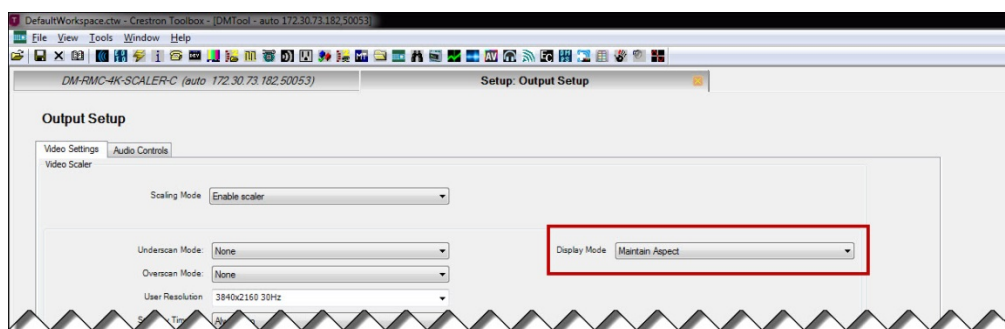
Configuration Using DMTool

An overview of the steps necessary to set Display Mode using DMTool follows.

NOTE: For detailed information, refer to the Crestron Toolbox help file.

1. Connect to the DigitalMedia switcher.
2. Connect to the DM-RMC-4K-SCALER-C.
3. Open the Setup window of the HDMI output.
4. In the Video Settings dialog box, select the desired value in the **Display Mode** drop-down list.

Video Settings Dialog Box—Display Mode Configuration

Configuration Using SIMPL Windows

Using SIMPL Windows, set the display mode in slot 3 for the DM-RMC-4K-SCALER-C Scaler. To do so, set the **<Scaler_Out_Display_Mode>** analog input join to the desired value.

NOTE: For detailed information, refer to the SIMPL Windows help file.

EDID

EDID (Extended Display Identification Data) configuration allows management of the EDID that is to be sent to the upstream device connected to the DM 8G+ input of the DM-RMC-4K-SCALER-C. By default, the EDID is set to **DM default 4k 60Hz 2 ch.** If a different EDID is desired, use DMTool to configure the EDID. An overview of the steps necessary to configure the EDID follows.

NOTE: For detailed information, refer to the Crestron Toolbox help file.

1. Connect to the DM-RMC-4K-SCALER-C.

2. Open the Setup window of the DM input.

3. In the EDID Configuration dialog box, configure the EDID by doing any of the following:

   - Customize the current EDID.

   - Load an EDID template and modify it.

   - Create a new EDID file.

   - Load the existing EDID and modify it.

   - Obtain an EDID from the output and then save or customize it.

   - Apply an EDID that is saved on a computer.

EDID Configuration Dialog Box
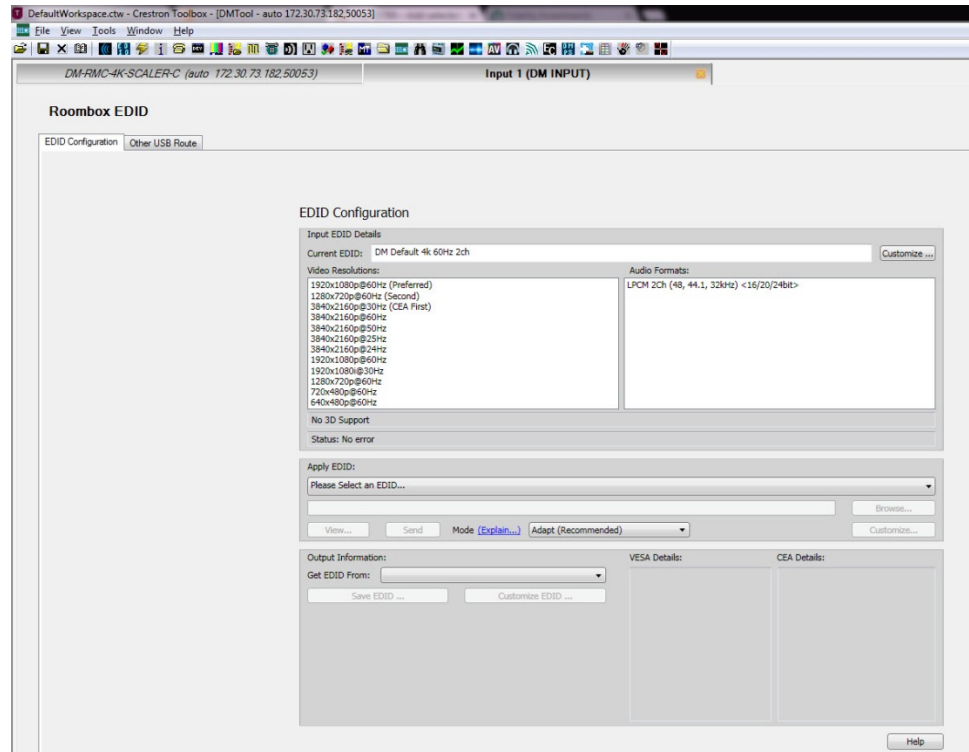
Connection to a Third-Party HDBaseT Transmitter

The DM-RMC-4K-SCALER-C is HDBaseT certified, enabling direct connection to other HDBaseT certified equipment. Via the DM 8G+ input, the DM-RMC-4K-SCALER-C can be connected directly to a third-party HDBaseT compliant source without requiring a DigitalMedia transmitter.
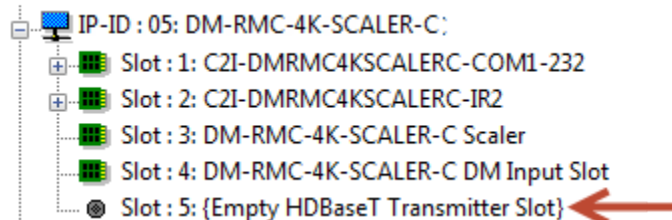
SIMPL Windows allows an HDBaseT transmitter device to be added to the DM-RMC-4K-SCALER-C. The HDBaseT transmitter device adds a COM port to the DM-RMC-4K-SCALER-C and enables two-way serial communication.

To add a third-party HDBaseT transmitter device to the DM-RMC-4K-SCALER-C, use SIMPL Windows. An overview of the necessary step follows.

NOTE: For detailed information, refer to the SIMPL Windows help file.

In the Configure View of SIMPL Windows, add a third-party HDBaseT transmitter device to slot 5 for the HDBaseT transmitter slot of the DM-RMC-4K-SCALER-C.

HDBaseT Transmitter Slot (Slot 5)

When the third-party HDBaseT transmitter device is added to slot 5, the HDBaseT Transmitter symbol adds a COM port to the device and enables two-way serial communication.

Addition of HDBaseT Transmitter to Slot 5 and COM Port in Slot 1
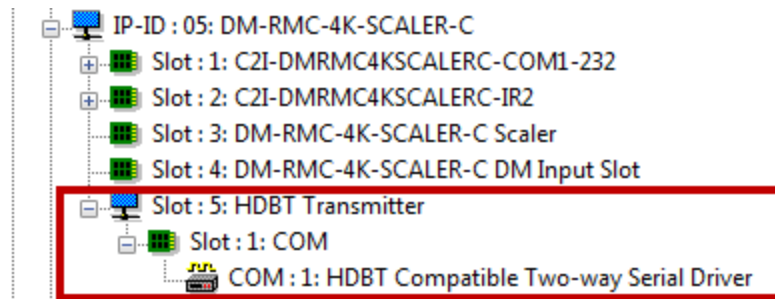
HDCP 2.2 Compliance

The DM-RMC-4K-SCALER-C is compliant with HDCP 2.2. HDCP 2.2, commonly referred to as HDCP 2, is the next generation of HDCP (High-Definition Content Protection). Note the following about HDCP 2:

- Compared to HDCP 1, HDCP 2 brings a higher level of cryptographic protection to HDMI® technology.

- HDCP 2 is **not** HDMI 2. It is possible to have a system built on HDCP 1 and HDMI 2, HDCP 2 and HDMI 1, or HDCP 2 and HDMI 2.

- Although not all 4K content requires HDCP 2, most 4K consumer video content does require HDCP 2.

- Any product that supports HDCP 2 also supports HDCP 1.

- HDCP matters only when the source demands HDCP. If the source demands HDCP 2, then every device in the signal path must support HDCP 2.

- There are no issues related to HDCP 2 and cabling—all cables are "compatible."

Troubleshooting

The following table provides troubleshooting information. If further assistance is required, contact a Crestron customer service representative.

DM-RMC-4K-SCALER-C Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
The video is not being displayed but the audio may be heard.	The HDCP settings of one or more DigitalMedia devices in the signal path do not support the HDCP level of the source.	Ensure that the HDCP settings of all DigitalMedia devices in the signal path support the HDCP level of the source.
	The display does not support the HDCP level of the source.	Ensure that the display supports the HDCP level of the source.
The video is intermittent.	The HDMI cable connections are faulty.	Verify that each end of the cable is connected properly.
The LAN connection is unresponsive.	The DM-RMC-4K-SCALER-C and another DigitalMedia endpoint are both connected to a DigitalMedia switcher, and the LAN port of the other endpoint is also connected to an Ethernet switch.	When a DigitalMedia endpoint is connected to a DigitalMedia switcher, the LAN port of the endpoint cannot be connected to an Ethernet switch. Disconnect the LAN port from the Ethernet switch.
The message "Unsupported Resolution" appears on the display.	The scaler is not set to a resolution that the display can support.	Change the scaler resolution setting to a resolution that the display can support.
The DM-RMC-4K-SCALER-C cannot establish a link to the device that is connected to the DM IN port. The DM link status LED is off.	The cable connections are faulty.	Verify that each end of the cable is properly connected. If necessary, check the cable terminations.
Analog audio is not being heard from the device connected to the AUDIO OUT port of the DM-RMC-4K-SCALER-C.	The EDID is not set to 2-channel audio (not applicable to the DSP model).	Set the EDID to 2-channel audio (not applicable to the DSP model).
	The analog audio output is not enabled in DMTool.	Ensure that the **Enable Analog Audio Output** check box is selected in DMTool.
	The analog audio output is not programmed properly in SIMPL Windows.	Ensure that the analog audio output is programmed properly in SIMPL Windows.
	The volume is not set properly in DMTool or in the SIMPL program for the DM-RMC-4K-SCALER-C.	Verify that the volume is properly set for the DM-RMC-4K-SCALER-C.
The DM-RMC-4K-SCALER-C does not remain powered on.	When the DM-RMC-4K-SCALER-C is not being powered by the included power pack, the DM IN port is not connected to a PoDM+ power sourcing equipment (PSE) port.	Ensure that the DM IN port is connected to a PoDM+ PSE port when not being powered by the included power pack.

(Continued on following page)

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
The SIMPL Windows program is not operational.	In a configuration in which a DigitalMedia switcher is not used, the IP table is not set properly.	Verify that the IP table is set properly in System Info in the Crestron Toolbox application.
	If the DM-RMC-4K-SCALER-C connects to a DigitalMedia switcher, the DM-RMC-4K-SCALER-C does not connect to the correct DM output port of the switcher.	Ensure that the DM-RMC-4K-SCALER-C connects to the correct DM output port of the switcher.
The video flickers or drops when the DM-RMC-4K-SCALER-C is touched or when metal in the vicinity of the device is touched.	The DM-RMC-4K-SCALER-C is not properly grounded.	Ensure that the DM-RMC-4K-SCALER-C is properly grounded.
(DM-RMC-4K-SCALER-C-DSP only) HDMI output audio is of poor quality or is not present.	The audio sampling frequency at the source is not supported by the display.	Set the input's audio EDID to sampling frequencies that are supported by the display.

NOTE: If, for any reason, the factory default settings of the DM-RMC-4K-SCALER-C must be restored, do the following: From the **Tools** menu in the Crestron Toolbox application, select **Text Console** and enter the following command:
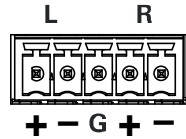
```
restore y
```

Appendix: Pin Assignments

This section provides information about pin designations and wiring for the following DM-RMC-4K-SCALER-C connectors:
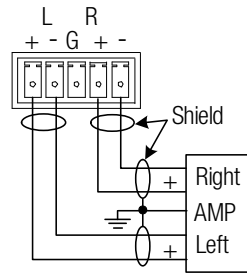
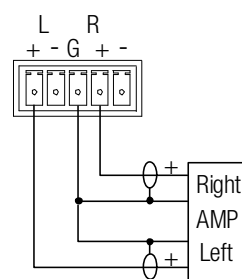- AUDIO OUT
- LAN
- DM IN

AUDIO OUT Pin Assignments and Wiring

SIGNAL NAME	BALANCED AUDIO OUTPUT	UNBALANCED AUDIO OUTPUT
+	L+	L+ Out
–	L–	Open
G	Shield/Ground	Common Ground
+	R+	R+ Out
–	R–	Open

Balanced Output

Unbalanced Output

LAN Pin Assignments
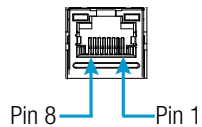
PIN NUMBER	SIGNAL	PIN NUMBER	SIGNAL
1	TX+	5	N/C
2	TX–	6	RX–
3	RX+	7	N/C
4	N/C	8	N/C

DM IN Wiring
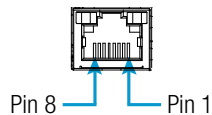
PIN NUMBER	WIRE COLOR	PIN NUMBER	WIRE COLOR
1	Orange/White	5	Blue/White
2	Orange	6	Green
3	Green/White	7	Brown/White
4	Blue	8	Brown