

Crestron **TPMC-CH-IMW**  
CAT5 Balanced AV Interface Wall Plate  

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Operations Guide



This document was prepared and written by the Technical Documentation department at:



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# CAT5 Balanced AV Interface Wall Plate: TPMC-CH-IMW

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## Introduction

### Features & Functions

- CAT5 Balanced AV Interface Wall Plate for Isys<sup>®</sup> TPS and TPMC-CH touchpanels\*
- Mounts in a 2-gang electrical box
- Uses CresCAT<sup>™</sup>-D cable to carry Cresnet<sup>®</sup>, bidirectional audio, and video signals up to 500 feet
- Carries 24 Volts DC power to touchpanels that require power from the NET connector
- Supports composite, S-video, and component video
- Connects to conventional audio and coaxial video sources

\* The TPMC-CH-IMW is not compatible with QuickMedia<sup>™</sup> touchpanels or touchpanels with a 10-pin RJ-45 NET/VIDEO connector.

## Specifications

Specifications for the TPMC-CH-IMW are listed in the following table.

### *TPMC-CH-IMW Specifications*

SPECIFICATION	DETAILS
Front Panel	
AUDIO	RJ-45 female, CAT5 balanced audio input/output port
Output Impedance	100 ohms balanced
Maximum Output Level	2 V <sub>RMS</sub>
Input Impedance	Infinite (unbuffered pass-thru to rear AUDIO OUT port)
VIDEO	RJ-45 female, CAT5 balanced video output port carries composite, S-video, and component signals to touchpanel
Output Impedance	100 ohms balanced
Rear Panel	
VIDEO	9-pin terminal block connector for video input to touchpanel.
Input Impedance	100 ohms balanced (also accepts 75 ohm unbalanced)
Input Level	1 V <sub>p-p</sub> nominal, 1.5 V <sub>p-p</sub> maximum
Maximum DC Offset	1.5 Volts
AUDIO IN	5-pin terminal block connector. Balanced/unbalanced stereo line-level input to touchpanel.
Input Impedance	20k ohm balanced, 10k ohm unbalanced
Maximum Input Level	4 V <sub>RMS</sub> balanced, 2 V <sub>RMS</sub> unbalanced
AUDIO OUT	5-pin terminal block connector. Balanced stereo line-level output from touchpanel (unbuffered pass-thru from front AUDIO port).

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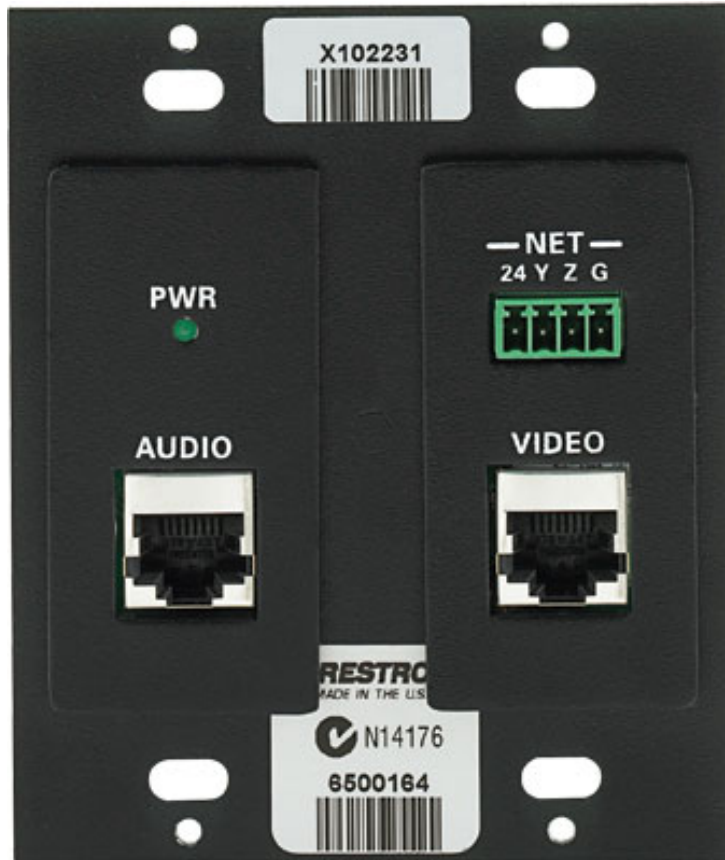
*TPMC-CH-IMW Specifications (continued)*

<b>SPECIFICATION</b>	<b>DETAILS</b>
Power Requirements Cresnet Power Usage	2 Watts (0.08 Amps @ 24 Volts DC)
Environmental Temperature Humidity	41° to 122°F (5° to 50°C) 10% to 90% RH (non-condensing)
Enclosure	2-gang mountable in a standard electrical box (2.5 inch deep minimum). Includes black metal front panel Decora® inserts; requires Decora faceplate (provided by others).
Dimensions Height Width Depth	4.11 in (10.44 cm) 3.50 in (8.89 cm) 1.66 in (4.22 cm)
Weight	7.5 oz (0.21 kg)

## Physical Description

This section provides information on the connections and indicators available on your TPMC-CH-IMW.

### *Physical View of the TPMC-CH-IMW, Front*

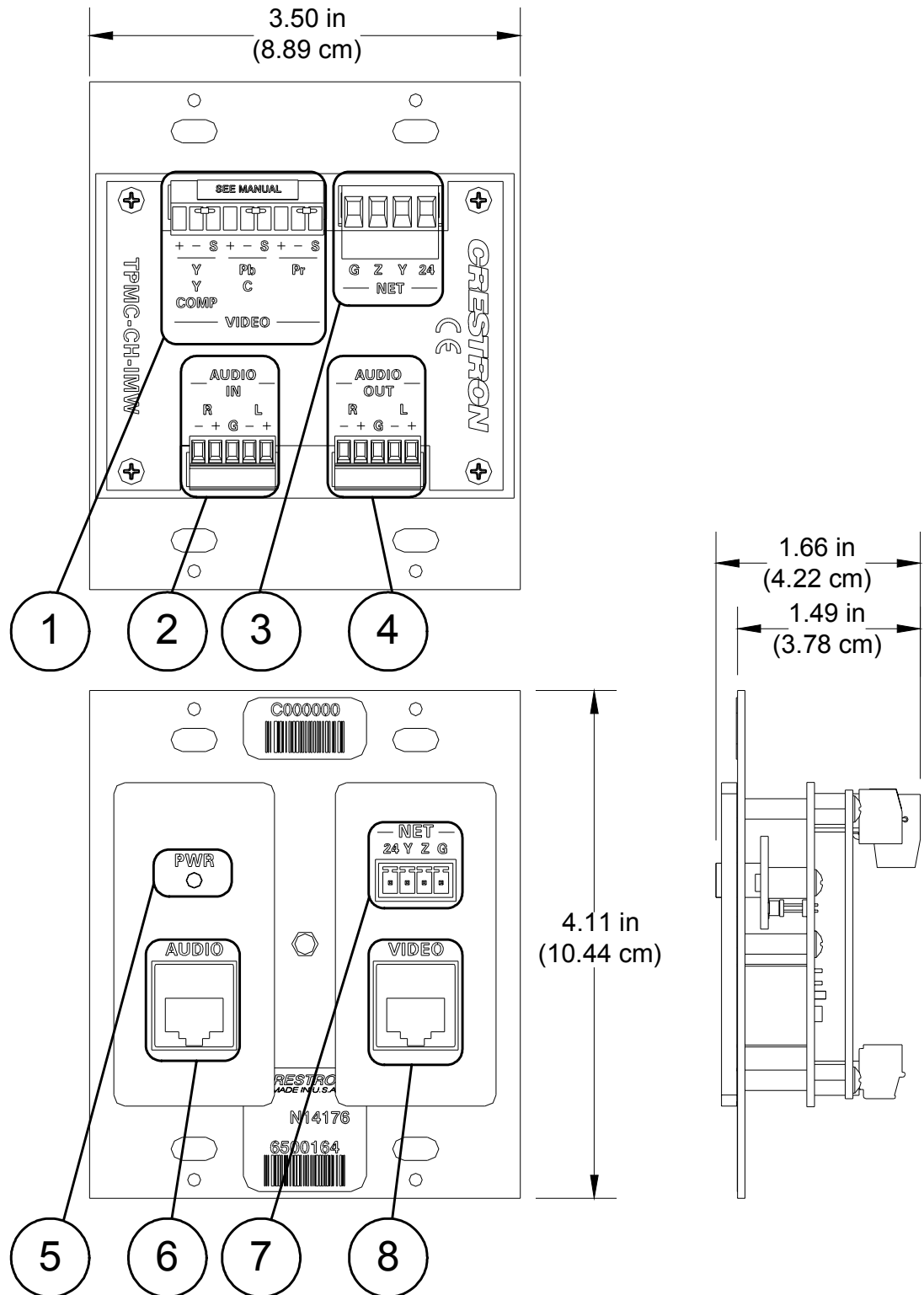




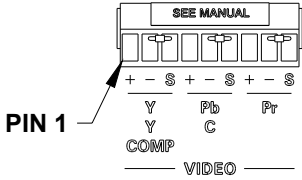
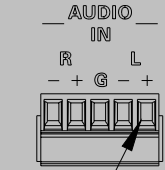
*Physical View of the TPMC-CH-IMW, Rear*



**TPMC-CH-IMW Overall Dimensions**  
*(Clockwise from top – Front, Side, Rear)*

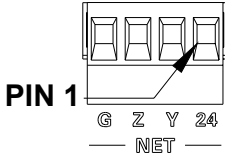

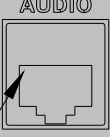


*Connectors, Controls, & Indicators*

#	CONNECTORS, CONTROLS, & INDICATORS	DESCRIPTION
1	<p style="text-align: center;"><b>VIDEO</b></p> 	<p>9-pin terminal block connector for twisted pair wiring of balanced or unbalanced video signals to the touchpanel.</p> <p>Pin 1: COMP+ (composite) Y+ (Luminance) (S-video) Y+ (Y/Pb/Pr)</p> <p>Pin 2: COMP - (composite) Y- (Luminance) (S-video) Y- (Y/Pb/Pr)</p> <p>Pin 3: COMP Shield (Composite) Y Shield (Luminance) (S-video) Y Shield (Y/Pb/Pr)</p> <p>Pin 4: C+ (Chrominance) (S-video) Pb+ (Y/Pb/Pr)</p> <p>Pin 5: C- (Chrominance) (S-video) Pb- (Y/Pb/Pr)</p> <p>Pin 6: Pb Shield (Y/Pb/Pr) C Shield (Chrominance) (S-video)</p> <p>Pin 7: Pr+ (Y/Pb/Pr)</p> <p>Pin 8: Pr- (Y/Pb/Pr)</p> <p>Pin 9: Pr Shield (Y/Pb/Pr)</p> <hr/> <p><b>NOTE:</b> Except for differential input (balanced) video signals, the jumpers on the nine-pin connector (included) should be installed at all times. Refer to “Hardware Hookup” on page 11 for details.</p>
2	<p style="text-align: center;"><b>AUDIO IN</b></p> 	<p>5-pin terminal block connector for twisted pair wiring of balanced or unbalanced audio signals to the touchpanel.</p> <p>Pin 1: Left +</p> <p>Pin 2: Left -</p> <p>Pin 3: Ground</p> <p>Pin 4: Right +</p> <p>Pin 5: Right -</p>

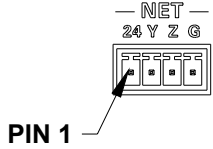
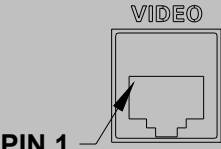
*(continued on following page)*

*Connectors, Controls, & Indicators (continued)*

#	CONNECTORS, CONTROLS, & INDICATORS	DESCRIPTION
3	<p style="text-align: center;">NET</p>  <p style="text-align: center;">PIN 1</p>	<p>4-pin terminal block connector for data and power. Interface connector for the Cresnet connector is provided.</p> <p>Pin 1: (24) Power                      Pin 2: (Y) Data                      Pin 3: (Z) Data                      Pin 4: (G) Ground</p>
4	<p style="text-align: center;">AUDIO OUT</p>  <p style="text-align: center;">PIN 1</p>	<p>5-pin terminal block connector for twisted pair wiring of balanced or unbalanced audio signals from the touchpanel.</p> <p>Pin 1: Left +                      Pin 2: Left -                      Pin 3: Ground                      Pin 4: Right +                      Pin 5: Right -</p>
5	<p style="text-align: center;">PWR LED</p>	<p>Indicates 24 Volts DC power supplied from Cresnet control network.</p>
6	<p style="text-align: center;">AUDIO</p>  <p style="text-align: center;">PIN 1</p>	<p>RJ-45 connector uses CAT5 wire to provide audio input to the touchpanel and microphone output from the touchpanel.</p> <p>Pin 1: Mic Output Left (+)                      Pin 2: Mic Output Left (-)                      Pin 3: Mic Output Right (+)                      Pin 4: Audio Input Left (+)                      Pin 5: Audio Input Left (-)                      Pin 6: Mic Output Right (-)                      Pin 7: Audio Input Right (+)                      Pin 8: Audio Input Right (-)</p>

*(continued on following page)*

*Connectors, Controls, & Indicators (continued)*

#	CONNECTORS, CONTROLS, & INDICATORS	DESCRIPTION
7	<p style="text-align: center;">NET</p> 	<p>4-pin terminal block connector for data and power. Interface connector for the Cresnet connector is provided.</p> <p>Pin 1: (24) Power                      Pin 2: (Y) Data                      Pin 3: (Z) Data                      Pin 4: (G) Ground</p>
8	<p style="text-align: center;">VIDEO (TO PANEL)</p> 	<p>RJ-45 connector uses CAT5 wire to provide video input to the touchpanel.</p> <p>Pin 1: COMP + (Component)                      Y+ (Luminance) (S-video)                      Y+ (Y/Pb/Pr)</p> <p>Pin 2: COMP - (composite)                      Y- (Luminance) (S-video)                      Y- (Y/Pb/Pr)</p> <p>Pin 3: C+ (Chrominance) (S-video)                      Pb+ (Y/Pb/Pr)</p> <p>Pin 4: Pr+ (Y/Pb/Pr)</p> <p>Pin 5: Pr- (Y/Pb/Pr)</p> <p>Pin 6: C- (Chrominance) (S-video)                      Pb- (Y/Pb/Pr)</p> <p>Pin 7: N/C                      Pin 8: N/C</p>

## Industry Compliance

As of the date of manufacture, the TPMC-CH-IMW has been tested and found to comply with specifications for CE marking and standards per EMC and Radiocommunications Compliance Labelling.



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**NOTE:** This device complies with part 15 of the FCC rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
  - Increase the separation between the equipment and receiver.
  - Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
  - Consult the dealer or an experienced radio/TV technician for help.
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## Setup

### Network Wiring

When wiring the network, consider the following:

- Use Crestron Certified Wire.
- Use Crestron power supplies for Crestron equipment.
- Provide sufficient power to the system.

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**CAUTION:** Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (<http://www.crestron.com/calculators>).

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- For larger networks, use a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality.

For more details, refer to “Check Network Wiring” on page 15.

### CAT5 Wiring

In addition to Ethernet applications, Category 5 (CAT5) wiring is used by Crestron for a variety of audio and video applications.

Crestron recommends using CresCAT-D wire or other high-quality CAT5 cable for transmitting CAT5 audio and video signals.

When using a Crestron wiring solution, the CresCAT-D wire can carry audio and video signals up to 500 feet (observe distance limitations based upon power consumption for the touchpanel in use). For more information, refer to the latest version of the Crestron CAT5 Wiring Reference Guide (Doc. 6137).

### Hardware Hookup

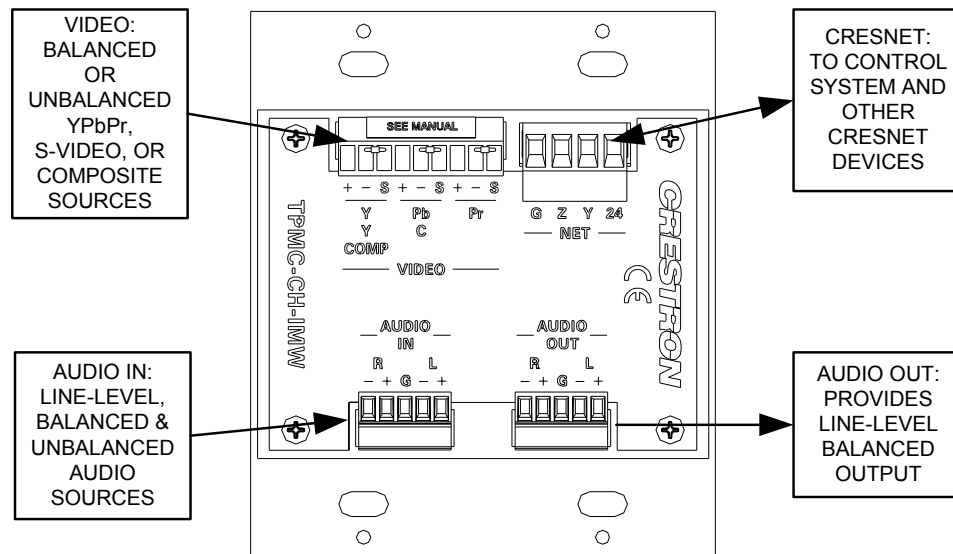
#### **Ventilation**

To prevent overheating, do not operate this product in an area that exceeds the environmental temperature range listed in the table of specifications. Contact with thermal insulating materials should be avoided on all sides of the unit.

**Connect the Device**

Make the necessary connections as called out in the illustration that follows this paragraph. Refer to “Network Wiring” on page 11 before attaching the 4-position terminal block connector. Apply power after all connections have been made.

**Hardware Connections (Rear) for the TPMC-CH-IMW**

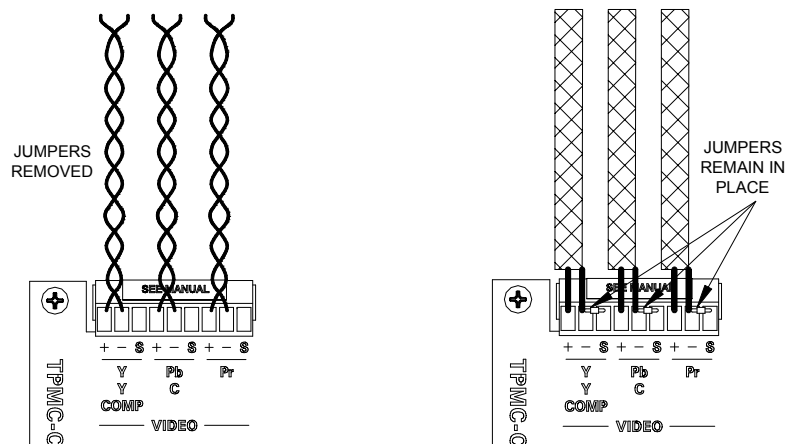


**NOTE:** It is not necessary to make connections to a video source unless a video window object resides on a page within the uploaded Crestron VisionTools® Pro-e (VT Pro-e) project.

**Connect Video Sources**

The TPMC-CH-IMW allows for the connection of balanced or unbalanced video signals using twisted pair cable for balanced signals and coaxial cable for unbalanced signals. Refer to the following diagrams to connect balanced or unbalanced video signals.

**Balanced Video Connection      Unbalanced Video Connection**



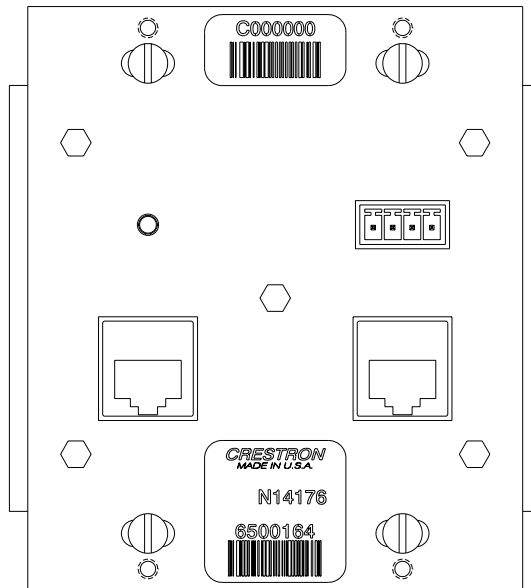


If a video signal is not going to be connected, leave the connector with the jumpers attached to the VIDEO connector.

## **Mount in Electrical Box**

The TPMC-CH-IMW mounts into a 2-gang electrical box (recommended 2.5" depth). Verify that the unit is mounted into the electrical box as shown in the following diagram. Secure the TPMC-CH-IMW to the electrical box with the four #6-32 flat-head slotted screws (supplied).

### ***TPMC-CH-IMW Mounting***



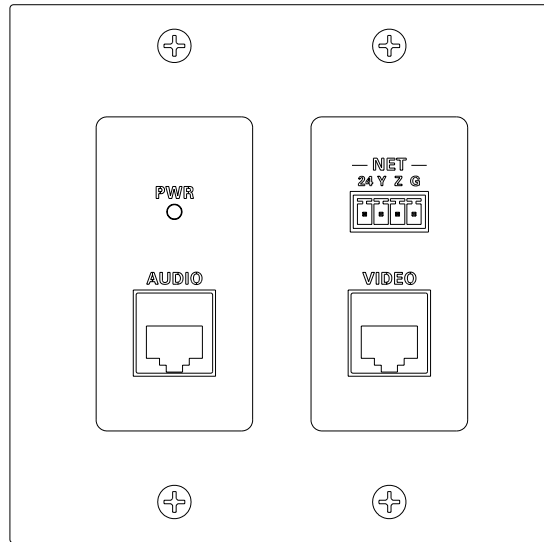
## **Install Decora Wallplate**

Once the TPMC-CH-IMW is mounted into a 2-gang electrical box, it can be covered with a Decora wallplate (purchased separately).

## **Install Decora Inserts**

Remove the backing from the tape on the back of the supplied insert plates. Affix each insert plate into its proper opening in the wallplate. For the proper orientation of the two insert plates with respect to the installed TPMC-CH-IMW, refer to the following diagram.

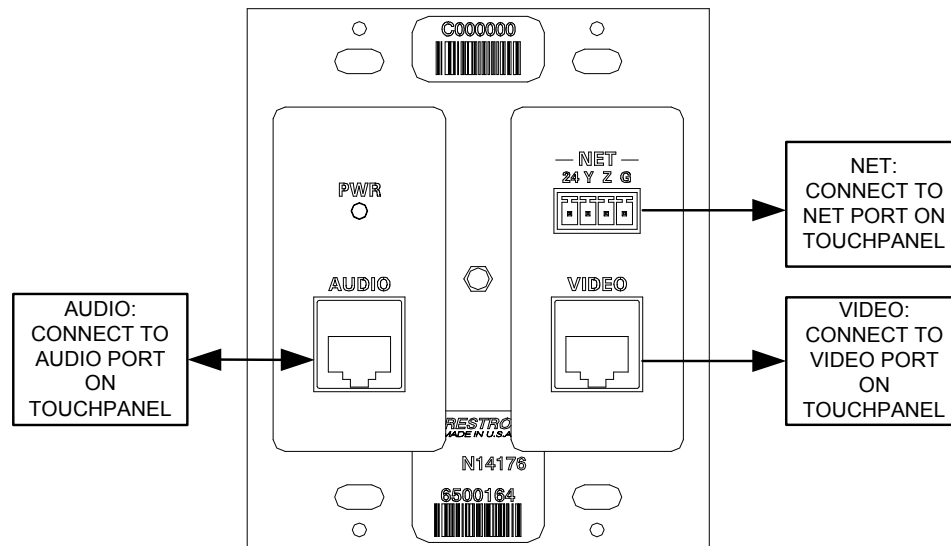
*Orientation of the Insert Plates*



**Connect to the Touchpanel**

Connect the TPMC-CH-IMW to the touchpanel as shown in the following diagram using the triamese cable supplied with the touchpanel. The triamese cable has labels indicating the port to connect.

*Connecting to the Touchpanel*



## Problem Solving

### Troubleshooting

The following table provides corrective action for possible trouble situations. If further assistance is required, please contact a Crestron customer service representative.

#### *TPMC-CH-IMW Troubleshooting*

<b>TROUBLE</b>	<b>POSSIBLE CAUSE(S)</b>	<b>CORRECTIVE ACTION</b>
Touchpanel does not function.	Touchpanel is not receiving power.	Confirm that power is supplied via the Cresnet connector.
	Touchpanel is not communicating to the network.	Use Crestron Toolbox to poll the network. Verify network connection to the touchpanel.
Video window on touchpanel has no display.	Improper video connection.	Verify connections on the touchpanel and TPMC-CH-IMW.
	Incorrect video format selection.	Select the proper video input configuration in the touchpanel configuration SETUP MENU.
	Incorrect VT Pro-e project file loaded.	Make sure that video window object resides in project, re-compile, and reload.
	Damaged connector pins.	Inspect connector pins. If bent, carefully re-straighten. If broken, contact Crestron customer service.

### Check Network Wiring

*Use the Right Wire*

In order to ensure optimum performance over the full range of your installation topology, Crestron Certified Wire, and only Crestron Certified Wire, may be used. Failure to do so may incur additional charges if support is required to identify performance deficiencies as a result of using improper wire.

**Calculate Power**

**CAUTION:** Use only Crestron power supplies for Crestron equipment. Failure to do so could cause equipment damage or void the Crestron warranty.

**CAUTION:** Provide sufficient power to the system. Insufficient power can lead to unpredictable results or damage to the equipment. Please use the Crestron Power Calculator to help calculate how much power is needed for the system (<http://www.crestron.com/calculators>).

When calculating the length of wire for a particular Cresnet run, the wire gauge and the Cresnet power usage of each network unit to be connected must be taken into consideration. Use Crestron Certified Wire only. If Cresnet units are to be daisy-chained on the run, the Cresnet power usage of each network unit to be daisy-chained must be added together to determine the Cresnet power usage of the entire chain. If the unit is a home-run from a Crestron system power supply network port, the Cresnet power usage of that unit is the Cresnet power usage of the entire run. The wire gauge and the Cresnet power usage of the run should be used in the following equation to calculate the cable length value on the equation's left side.

**Cable Length Equation**

$$L < \frac{40,000}{R \times P}$$

Where: L = Length of run (or chain) in feet.  
 R = 6 Ohms (Crestron Certified Wire: 18 AWG (0.75 MM<sup>2</sup>))  
 P = Cresnet power usage of entire run (or chain).

Make sure the cable length value is less than the value calculated on the right side of the equation. For example, a Cresnet run drawing 20 watts should not have a length of run more than 333 feet.

**NOTE:** All Crestron certified Cresnet wiring must consist of two twisted pairs. One twisted pair is the +24V conductor and the GND conductor, and the other twisted pair is the Y conductor and the Z conductor.

**Strip and Tin Wire**

When daisy-chaining Cresnet units, strip the ends of the wires carefully to avoid nicking the conductors. Twist together the ends of the wires that share a pin on the network connector, and tin the twisted connection. Apply solder only to the ends of the twisted wires. Avoid tinning too far up the wires or the end becomes brittle. Insert the tinned connection into the Cresnet connector and tighten the retaining screw. Repeat the procedure for the other three conductors.

**Add Hubs**

For larger networks (i.e., greater than 28 network devices), it may become necessary to add a Cresnet Hub/Repeater (CNXHUB) to maintain signal quality throughout the network. Also, for networks with lengthy cable runs, it may be necessary to add a Hub/Repeater after only 20 devices.

## Reference Documents

The latest version of all documents mentioned within the guide can be obtained from the Crestron website (<http://www.crestron.com/manuals>). This link will provide a list of product manuals arranged in alphabetical order by model number.

### *List of Related Reference Documents*

DOCUMENT TITLE
CAT5 Wiring Reference Guide

## Further Inquiries

If you cannot locate specific information or have questions after reviewing this guide, please take advantage of Crestron's award winning customer service team by calling the Crestron corporate headquarters at 1-888-CRESTRON [1-888-273-7876]. For assistance in your local time zone, refer to the Crestron website (<http://www.crestron.com/>) for a listing of Crestron worldwide offices.

You can also log onto the online help section of the Crestron website to ask questions about Crestron products. First-time users will need to establish a user account to fully benefit from all available features.

## Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the TPMC-CH-IMW, additional information may be made available as manual updates. These updates are solely electronic and serve as intermediary supplements prior to the release of a complete technical documentation revision.

Check the Crestron website periodically for manual update availability and its relevance. Updates are identified as an “Addendum” in the Download column.

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## Return and Warranty Policies

### Merchandise Returns / Repair Service

1. No merchandise may be returned for credit, exchange, or service without prior authorization from CRESTRON. To obtain warranty service for CRESTRON products, contact an authorized CRESTRON dealer. Only authorized CRESTRON dealers may contact the factory and request an RMA (Return Merchandise Authorization) number. Enclose a note specifying the nature of the problem, name and phone number of contact person, RMA number, and return address.
2. Products may be returned for credit, exchange, or service with a CRESTRON Return Merchandise Authorization (RMA) number. Authorized returns must be shipped freight prepaid to CRESTRON, 6 Volvo Drive, Rockleigh, N.J., or its authorized subsidiaries, with RMA number clearly marked on the outside of all cartons. Shipments arriving freight collect or without an RMA number shall be subject to refusal. CRESTRON reserves the right in its sole and absolute discretion to charge a 15% restocking fee, plus shipping costs, on any products returned with an RMA.
3. Return freight charges following repair of items under warranty shall be paid by CRESTRON, shipping by standard ground carrier. In the event repairs are found to be non-warranty, return freight costs shall be paid by the purchaser.

### CRESTRON Limited Warranty

CRESTRON ELECTRONICS, Inc. warrants its products to be free from manufacturing defects in materials and workmanship under normal use for a period of three (3) years from the date of purchase from CRESTRON, with the following exceptions: disk drives and any other moving or rotating mechanical parts, pan/tilt heads and power supplies are covered for a period of one (1) year; touchscreen display and overlay components are covered for 90 days; batteries and incandescent lamps are not covered.

This warranty extends to products purchased directly from CRESTRON or an authorized CRESTRON dealer. Purchasers should inquire of the dealer regarding the nature and extent of the dealer's warranty, if any.

CRESTRON shall not be liable to honor the terms of this warranty if the product has been used in any application other than that for which it was intended, or if it has been subjected to misuse, accidental damage, modification, or improper installation procedures. Furthermore, this warranty does not cover any product that has had the serial number altered, defaced, or removed.

This warranty shall be the sole and exclusive remedy to the original purchaser. In no event shall CRESTRON be liable for incidental or consequential damages of any kind (property or economic damages inclusive) arising from the sale or use of this equipment. CRESTRON is not liable for any claim made by a third party or made by the purchaser for a third party.

CRESTRON shall, at its option, repair or replace any product found defective, without charge for parts or labor. Repaired or replaced equipment and parts supplied under this warranty shall be covered only by the unexpired portion of the warranty.

Except as expressly set forth in this warranty, CRESTRON makes no other warranties, expressed or implied, nor authorizes any other party to offer any warranty, including any implied warranties of merchantability or fitness for a particular purpose. Any implied warranties that may be imposed by law are limited to the terms of this limited warranty. This warranty statement supercedes all previous warranties.

#### Trademark Information

*All brand names, product names, and trademarks are the sole property of their respective owners. Windows is a registered trademark of Microsoft Corporation. Windows95/98/Me and WindowsNT/2000 are trademarks of Microsoft Corporation.*

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Specifications subject to  
change without notice.