

Crestron **TPMC-CH-IMC**
Interface Module

Operations Guide



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



Crestron Electronics, Inc.

15 Volvo Drive

Rockleigh, NJ 07647

1-888-CRESTRON

All brand names, product names and trademarks are the property of their respective owners.

©2005 Crestron Electronics, Inc.

Contents

Interface Module: TPMC-CH-IMC	1
Introduction	1
Features & Functions	1
Specifications	3
Physical Description	4
Industry Compliance	8
Setup	8
Network Wiring	8
CAT5 Wiring	10
Hardware Hookup	11
Problem Solving	13
Troubleshooting	13
Further Inquiries	14
Future Updates	14
Return and Warranty Policies	15
Merchandise Returns / Repair Service	15
CRESTRON Limited Warranty	15

Interface Module: TPMC-CH-IMC

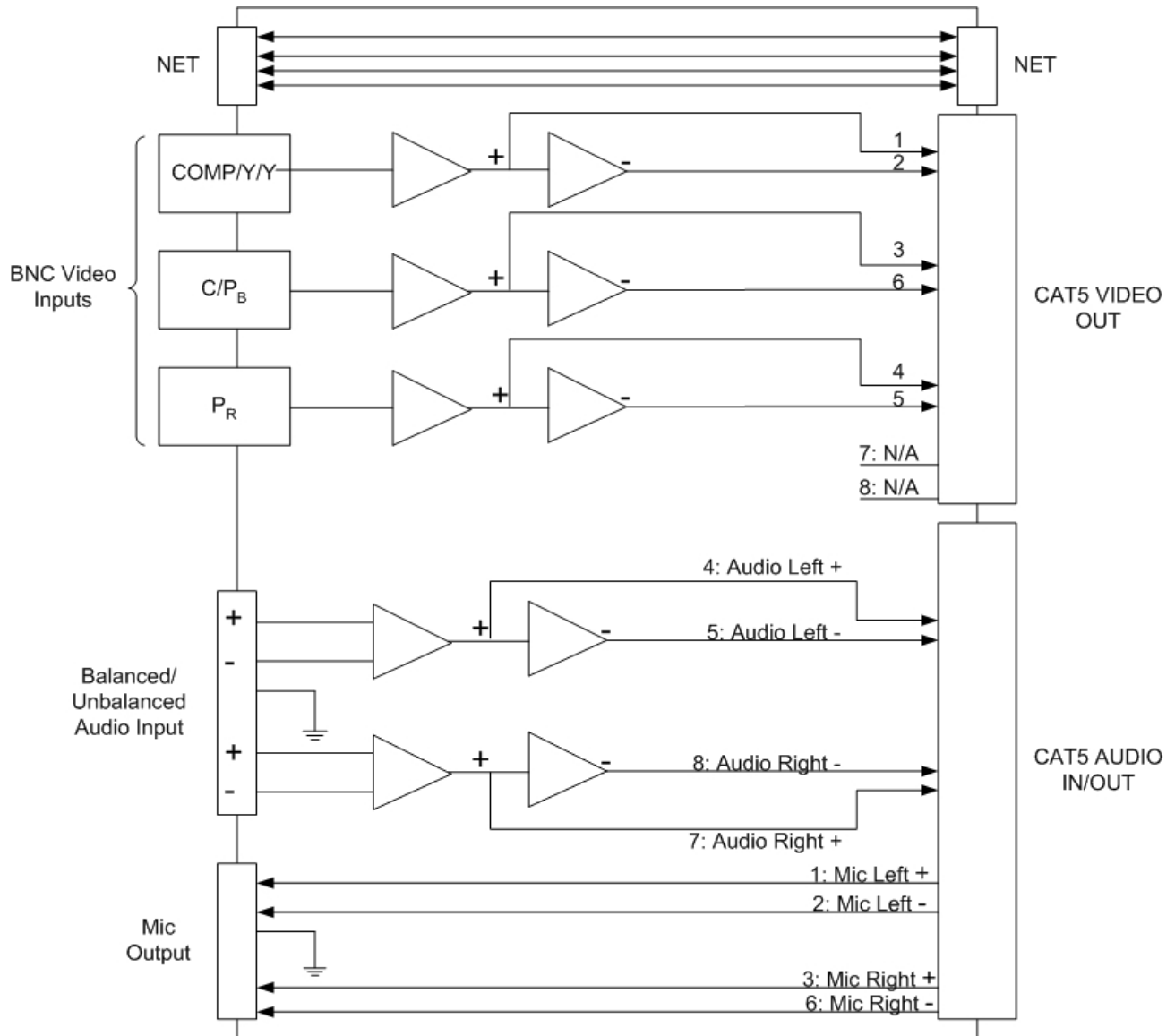
Introduction

Features & Functions

The TPMC-CH-IMC is an interface module designed for, and included with the Crestron TPMC-15-CH and TPMC-17-CH tilt touchpanel media centers. The interface module expands the configuration possibilities of the TPMC-15-CH and the TPMC-17-CH by allowing unbalanced video signals (via BNC) and balanced/unbalanced audio signals to be connected to the touchpanel's CAT5 inputs and outputs. This device can also be used to convert sources to CAT5 for use with other Crestron CAT5 devices such as the CNXRMCLV Enhanced Room Solution Box.

The following block diagram illustrates the function of the TPMC-CH-IMC.

Block Diagram of the TPMC-CH-IMC



Specifications

The following table provides a summary of specifications for the TPMC-CH-IMC.

Specifications of the TPMC-CH-IMC

SPECIFICATION	DETAILS
Cresnet Power Usage	2 Watts (0.08 Amp @ 24 VDC)
Video Input Connector Type Input Impedance Input Level Maximum DC Offset	BNC (x3) 75 Ω (internally terminated) 1 V _{pp} Nominal, 1.5 V _{pp} Maximum 1.5 V
Video To Panel Connector Type Output Impedance Bandwidth	RJ-45 100 Ω (balanced) 100 MHz
Audio Input Connector Type Input Impedance Max Input Level	5 position, mini-terminal block 10k Ω unbalanced, 20k Ω balanced 2 V _{RMS} unbalanced, 4 V _{RMS} balanced
Audio Output Connector Type Output Impedance Max Output Level	5 position, mini-terminal block 600 Ω balanced when connected to touchpanel 2 V _{RMS} when connected to touchpanel
Audio To Panel (RJ-45) Connector Type Output Impedance Max Output Level	RJ-45 100 Ω balanced 2 V _{RMS} balanced
Operating Temperature and Humidity	41° to 122° F (5° to 50° C), 10 to 90% Relative Humidity, non-condensing
Dimensions & Weight	Height: 1.29 in (3.26 cm) Width: 7.30 in (18.54 cm) Depth: 3.95 in (10.02 cm) Weight: 9.7 oz (0.28 kg)

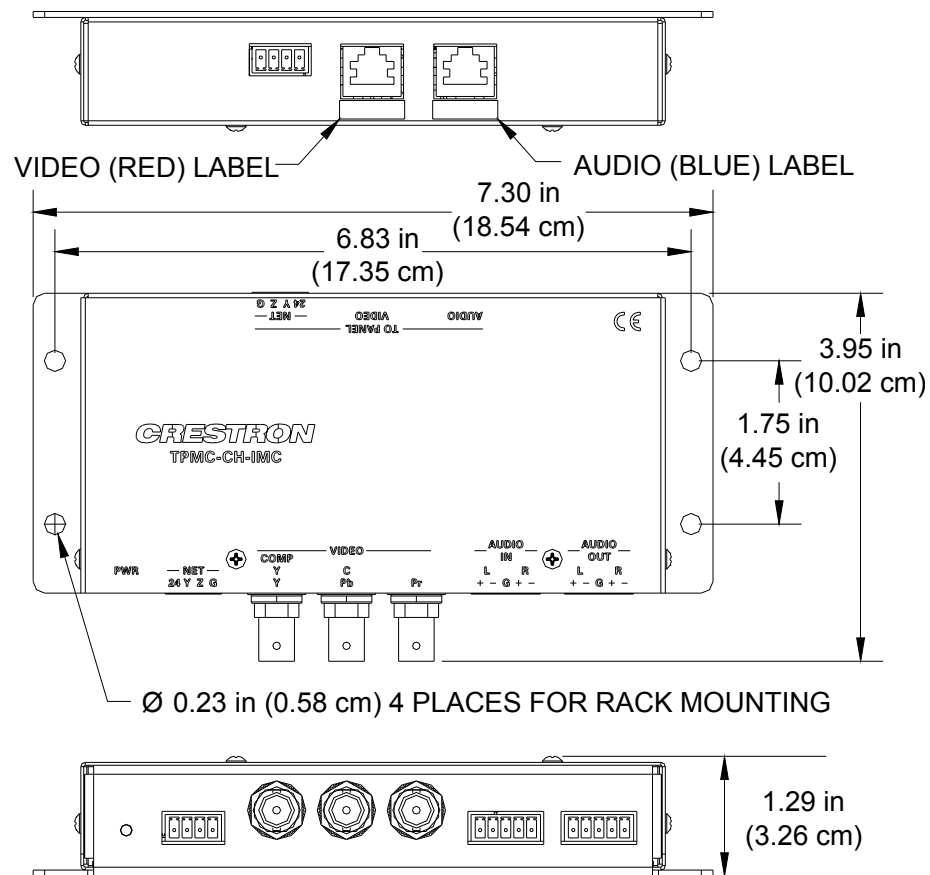
Physical Description

The TPMC-CH-IMC, shown in the following diagram, is supplied with the TPMC-15-CH and TPMC-17-CH tilt touchpanel media centers. The module is housed in a black enclosure with a silk-screened top panel. A Light Emitting Diode (LED) indicating power, a network connector, and connectors for video input, audio input, and audio output are located on one side of the unit. The opposite side provides an RJ-45 video output connector, an RJ-45 audio input/output connector and a network connector to the touchpanel. The TPMC-CH-IMC also has a mounting flange to secure the unit to a mounting surface or the rear of a rack. A 15-foot (4.6 meter) “triamese” cable with connections for network communications and CAT5 audio and video to the touchpanel is included with the TPMC-15-CH and TPMC-17-CH touchpanels.

TPMC-CH-IMC



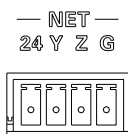
Physical Views of the TPMC-CH-IMC



Ports

There are seven ports that serve various functions on the TPMC-CH-IMC. Refer to the following diagrams and descriptions of each port.

NET

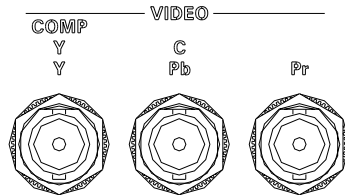


This 4-position mini-terminal block connector is used to connect to other Cresnet peripherals in a system. Another NET connector is located on the other side of the module. Data and power for the TPMC-CH-IMC are provided via either connection.

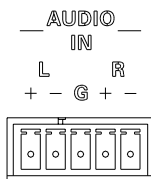
If making network connections to a control system or Cresnet peripherals, refer to “Network Wiring” on page 8.

VIDEO

The video input consists of three BNC connectors for unbalanced video signals. The component, composite or S-video input signal from an external video source is connected to these ports.



AUDIO IN

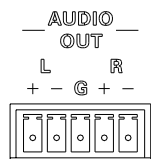


The 5-position mini-terminal block connector mates with the included connector which is wired to an external audio source and provides balanced and/or unbalanced audio input. Description of the pinouts is shown in the following table.

AUDIO IN Pinouts

PIN	DESCRIPTION
L +	Left Positive
L-	Left Negative
G	Ground
R +	Right Positive
R -	Right Negative

AUDIO OUT



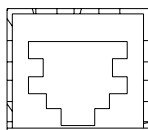
The 5-position mini-terminal block connector mates with the included connector and provides balanced and/or unbalanced microphone output. Description of the pinouts is shown in the following table.

AUDIO OUT Pinouts

PIN	DESCRIPTION
L +	Left Positive
L-	Left Negative
G	Ground
R +	Right Positive
R -	Right Negative

VIDEO (To Panel)

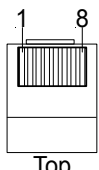
VIDEO



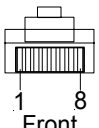
This RJ-45 connection mates with the TPMC-15-CH or TPMC-17-CH touchpanel. This port provides component, composite or S-video input to the touchpanel over CAT5 wiring. Description of the pinouts is shown in the following table.

Video Out Pin Assignments

PIN	WIRE COLORS (568B)	WIRE COLORS (568A)	COMPOSITE	S-VIDEO	COMPONENT
1	WHITE/ORANGE	WHITE/GREEN	+ Composite	+ Luminance	+ Y
2	ORANGE	GREEN	- Composite	- Luminance	- Y
3	WHITE/GREEN	WHITE/ORANGE	N/A	+ Chrominance	+ P _B
4	BLUE	BLUE	N/A	N/A	+ P _R
5	WHITE/BLUE	WHITE/BLUE	N/A	N/A	- P _R
6	GREEN	ORANGE	N/A	- Chrominance	- P _B
7	WHITE/BROWN	WHITE/BROWN	N/A	N/A	N/A
8	BROWN	BROWN	N/A	N/A	N/A



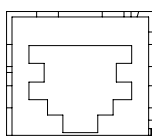
Top



Front

AUDIO (To Panel)

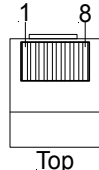
AUDIO



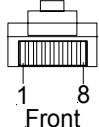
This 8-pin RJ-45 connector mates with the TPMC-15-CH or TPMC-17-CH touchpanel. This port uses CAT5 wiring and provides audio input to the touchpanel and microphone output from the touchpanel. A description of the pinouts is shown in the following table.

Audio In/Out Pin Assignments

PIN	WIRE COLORS (568B)	WIRE COLORS (568A)	AUDIO I/O
1	WHITE/ORANGE	WHITE/GREEN	+ Mic Left Out
2	ORANGE	GREEN	- Mic Left Out
3	WHITE/GREEN	WHITE/ORANGE	+ Mic Right Out
4	BLUE	BLUE	+ Audio Left In
5	WHITE/BLUE	WHITE/BLUE	- Audio Left In
6	GREEN	ORANGE	- Mic Right Out
7	WHITE/BROWN	WHITE/BROWN	+ Audio Right In
8	BROWN	BROWN	- Audio Right In



Top



Front

Indicator

This LED, located on the front panel, illuminates when 24 VDC is supplied to the TPMC-CH-IMC via the NET port.

Industry Compliance

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



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.

Setup

Network Wiring

CAUTION: In order to ensure optimum performance over the full range of your installation topology, Crestron Certified Wire, and only Crestron Certified Wire, should 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.

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 (www.crestron.com/calculators) to help calculate how much power is needed for the system.

CAUTION: Possible equipment damage if miswired.

NOTE: When installing network wiring, refer to the latest revision of the wiring diagram(s) appropriate to your specific system configuration, available from the Crestron website.

NOTE: Do not power up system until all wiring is verified. Care should be taken to ensure data (Y, Z) and ground (G) connections are not crossed when connecting the TPMC-CH-IMC.

When calculating the wire gauge for a particular Cresnet run, the length of the run and the Cresnet power usage of each Cresnet unit to be connected must be taken into consideration. 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 length of the run in feet and the Cresnet power usage of the run should be used in the following resistance equation to calculate the value on the right side of the equation.

Resistance Equation

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

Where: R = Resistance (refer to the following table).
 L = Length of run (or chain) in feet.
 P = Cresnet power usage of entire run (or chain).

The required wire gauge should be chosen such that the resistance value is less than the value calculated in the resistance equation. Refer to the table after this paragraph.

Wire Gauge Values

RESISTANCE (R)	WIRE GAUGE
4	16
6	18
10	20
15	22
13	Doubled CAT5
8.7	Tripled CAT5

NOTE: All network wiring must consist of two twisted pairs. One twisted pair is the +24V conductor and the GND conductor. The other twisted pair is the Y and Z conductors.

NOTE: 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.

NOTE: 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.

CAT5 Wiring

Category 5 (CAT5) wiring is a twisted pair cable designed for Ethernet networks. These networks operate at speeds of up to 100 Megabits per second (Mbps) using the 100baseT standard. Crestron takes advantage of this specification for a variety of audio and video applications.

Crestron recommends using CresCAT, CresCAT-D, or CresCAT-Q wiring solutions.

The following chart shows the maximum recommended cable lengths for various signal formats.

Recommended Maximum Cable Lengths for Audio/Video via CAT5

FORMAT	MAXIMUM DISTANCE
Composite	750 feet
S-Video	750 feet
Component	500 feet
Audio	1000 feet (balanced)*

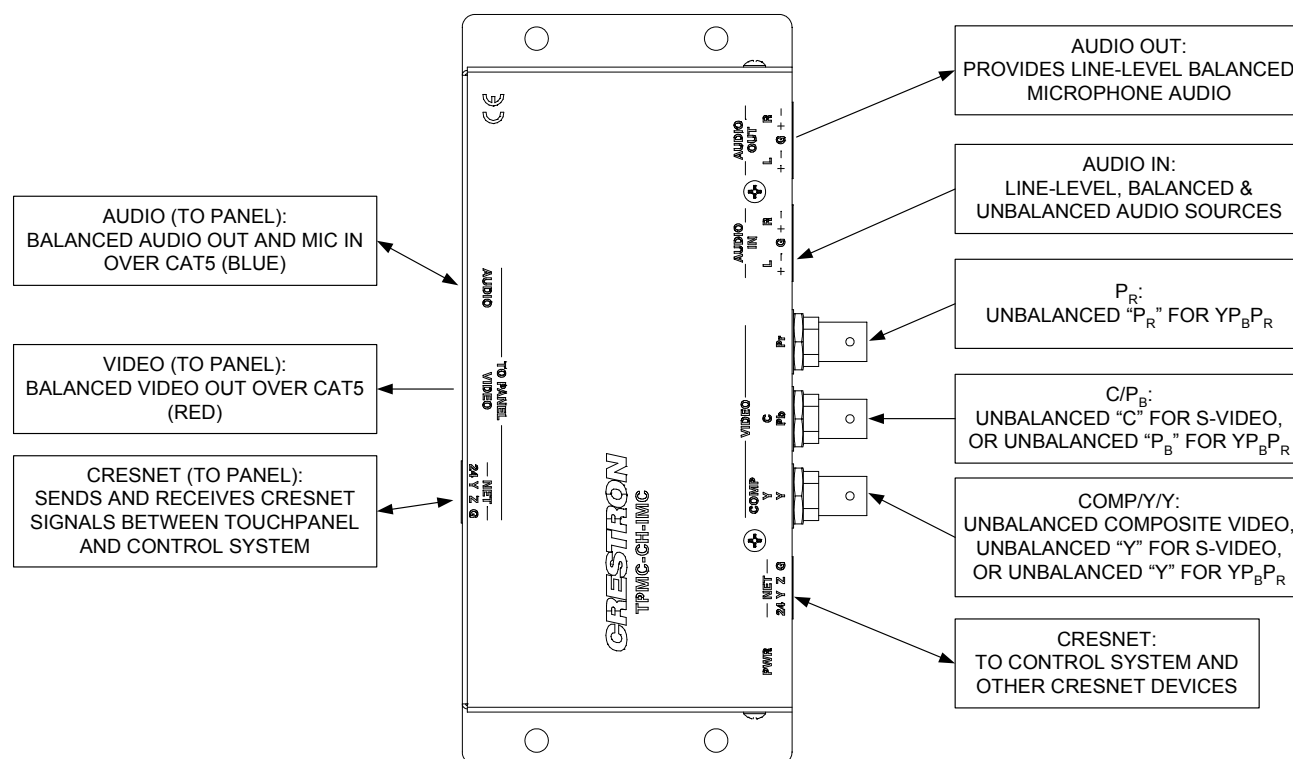
* The maximum distance for CAT5 audio is limited to approximately 15 feet when connecting the AUDIO OUT port to a device with an unbalanced input. If the AUDIO OUT port connects to a device with balanced inputs or no device is connected, the maximum cable length for CAT5 audio is 1000 feet.

For more information, refer to the latest version of the Crestron CAT5 Wiring Reference Guide (Doc. 6137).

Hardware Hookup

The TPMC-CH-IMC serves as an interface between the touchpanel and the Cresnet system. Refer to the illustration after this paragraph for proper connections; apply power last. When making network connections to a control system or Cresnet peripherals, refer to “Network Wiring” on page 8. 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.

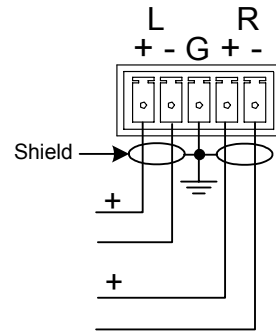
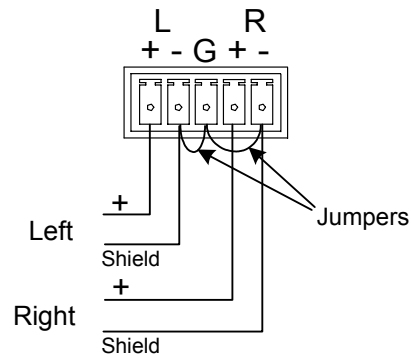
Hardware Hookup for the TPMC-CH-IMC



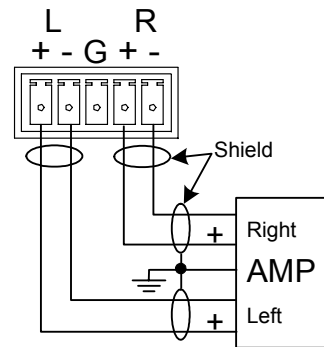
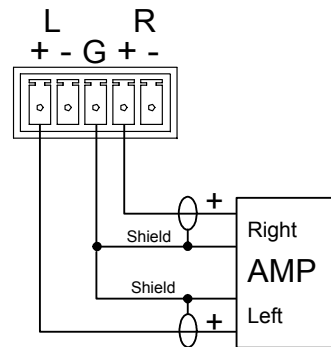
A triamese cable that is included with the touchpanel has an RJ-45 connector with a blue cover to match the blue label on the TPMC-CH-IMC and an RJ-45 connector with a red cover to match the red label on the TPMC-CH-IMC. The cable also has a 4-position mini-terminal block connector for making a network connection between the touchpanel and the TPMC-CH-IMC.

The TPMC-CH-IMC can send and receive balanced or unbalanced audio signals. Refer to the following diagrams when connecting balanced and unbalanced signals to the TPMC-CH-IMC.

Wiring for Audio Input: Unbalanced (left) and Balanced (right)



Wiring for Audio Output: Unbalanced (left) and Balanced (right)



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-IMC Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION
Touchpanel does not function.	Touchpanel is not communicating to the network.	Use Viewport (via SIMPL Windows or VT Pro-e) to poll the network. Verify network connection to the touchpanel.
Video window on touchpanel has no display.	Improper video connection.	Verify proper connections on the touchpanel and TPMC-CH-IMC.
	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.
No Audio from touchpanel speakers.	Improper audio connection.	Verify proper connections on the touchpanel and TPMC-CH-IMC.

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 (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 interface module, 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.

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 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.



Crestron Electronics, Inc.
15 Volvo Drive Rockleigh, NJ 07647
Tel: 888.CRESTRON
Fax: 201.767.7576
www.crestron.com

**Operations Guide - DOC. 6345
(2012969)**

04.05

Specifications subject to
change without notice.