

Crestron **TPS-XVGA-BV**
RGB Computer Interface Card
with Balanced Video for TPS/Tilt Panel

Operations & Installation Guide



CRESTRON

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RGB Computer Interface Card with Balanced Video for TPS/Tilt Panel: TPS-XVGA-BV

Description

Functional Description

The TPS-XVGA-BV RGB computer interface card with balanced video is an optional feature designed for Crestron's Isys™ TPS-5000 and TPS-6000 tilt touchpanels. Through an RGB window on a page within the uploaded VisionTools™ Pro-e (VT Pro-e) touchpanel project, the card allows computer video to be displayed on the touchpanel full screen or in a window. Non-interlaced input video resolutions of up to 1600x1200 are supported. The resolutions are supported by scaling or sub-sampling in the H-direction and scaled down in the V-direction to the native resolution (or lower) of the touchpanel. Lower resolutions may be scaled up to fill the touchpanel screen.

NOTE: The TPS-XVGA-BV can only be installed into specific TPS-5000 and TPS-6000 tilt touchpanels. On the underside of the touchpanel base in the lower-left section of the barcode label, check the Crestron ZA number. Refer to the following table for the touchpanels that are capable of using the TPS-XVGA-BV.

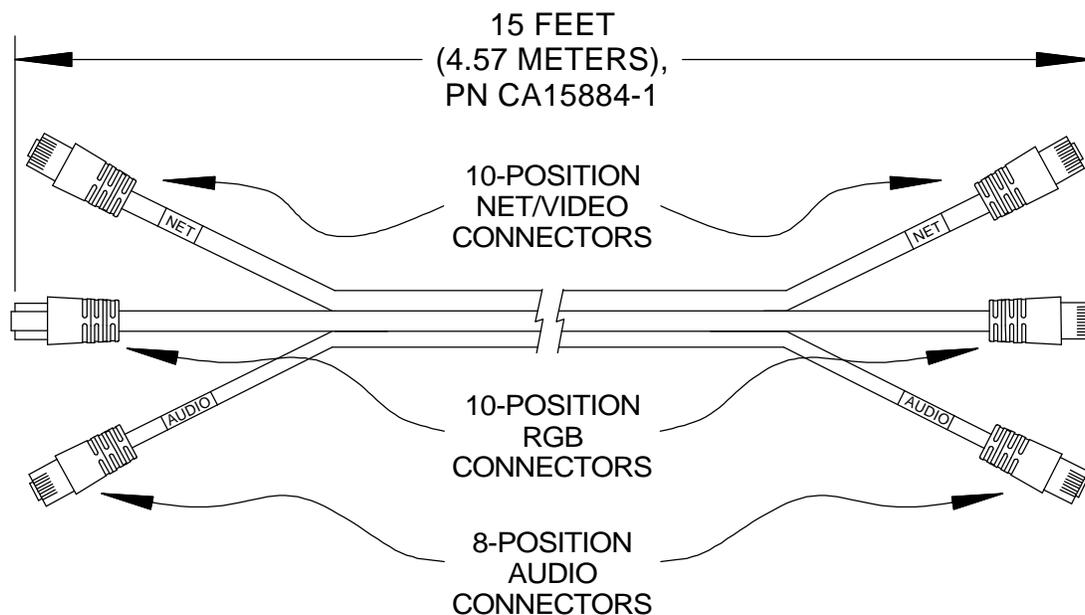
TPS-XVGA-BV Capable Touchpanels

TOUCHPANEL	ZA NUMBER
TPS-5000	ZA11500
TPS-6000	ZA11501

Optional touchpanel setups are also available to utilize the TPS-XVGA-BV. Serial mouse control driver software and instructions to integrate a Boeckeler Pointmaker® Video Marker telestrator with the TPS touchpanel are provided. For further information, refer to “Appendix: Optional Touchpanel Setups” that begins on page 16.

Supplied with the TPS-XVGA-BV is a TPS-IMC-BV Interface Module that serves as an interface between the touchpanel and the video source computer and/or the Crestron remote control system (herein referred to as the Cresnet system) and a triamese cable (three shielded cables within a single jacket, shown below). When a TPS touchpanel is equipped with optional TPS-VID and TPS-XVGA expansion cards, individual cables (including a cable for the audio input) are required. The TPS-IMC-BV and triamese cable minimize the number of cables attached to the touchpanel, only the triamese cable is needed for all three inputs.

Triamese Cable



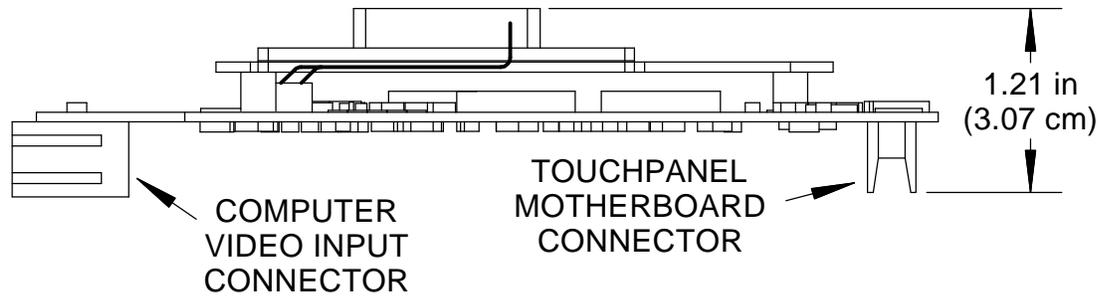
For further information, consult the TPS-IMC-BV Operations Guide (Doc. 5921). The latest revision can be obtained from the Products page (PRODUCT MANUALS section) or Downloads page (MANUAL Library) of Crestron's website (www.crestron.com). New users are required to register to obtain access to the FTP site.

Physical Description

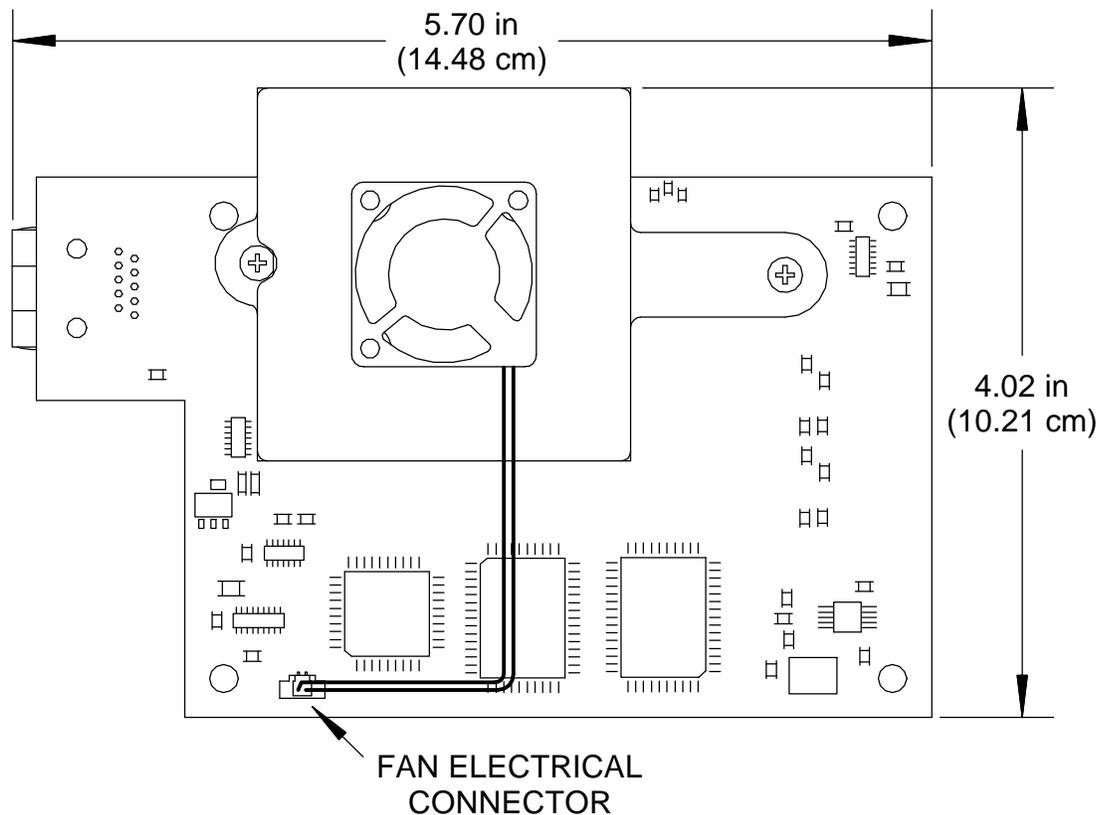
The TPS-XVGA-BV, shown below and continued on the next page, is a printed circuit board (PCB) designed to be installed into a specific expansion slot in the TPS touchpanel. The card is secured to the motherboard of the touchpanel with four supplied mounting screws.

The card contains a 60-pin connector that attaches directly to the motherboard and a 10-position RJ45 connector for the computer video. The video connector (labeled **RGB** on the touchpanel) is accessible at the rear of the touchpanel base. Mounted on top of the card is a cooling fan assembly to maintain the proper operating temperature of the card during operation.

TPS-XVGA-BV Side View



TPS-XVGA-BV Top View



Leading Specifications

The table below provides a summary of leading specifications for the TPS-XVGA-BV. Dimensions and weight are rounded to the nearest hundredth unit.

Leading Specifications of the TPS-XVGA-BV

SPECIFICATION	DETAILS
Power Requirements	10 Watts (0.417 Amps @ 24 VDC)
SIMPL™ Windows®	Version 1.50.05 or later ¹
VisionTools™ Pro-e	Version 2.2.0.0 or later ¹
Isys Touchpanel Firmware	Version 1.008.0 or later ²
CEN/CN-TVAV Update File	Version 51233V.UPZ or later ³
CNMSX-AV/Pro Update File	Version 51125X.UPZ or later ³
CNRACKX-DP Update File	Version 51125W.UPZ or later ³
ST-CP Update File	Version 40104S or later ^{3&4}
CNMS, CNRACK, CNLCOMP Operating System	Version 3.18.09 m, l, c or later ³
Max. Input Resolution	1600x1200
Max. Input Refresh Rate	85Hz at 1600x1200 Resolution ⁵
Video Sampling Rate	140MHz (Limited by Crestron)
Dimensions & Weight	Height: 1.21 in (3.07 cm) Width: 4.02 in (10.21 cm) Depth: 5.70 in (14.48 cm) Weight: 2.75 oz (0.08 kg)

- 1 The latest software versions can be obtained from the What's New page (SIMPL Windows and VisionTools Pro-e sections) or Downloads page (SIMPLWIN and VTPRO-E Libraries) of Crestron's website (www.crestron.com). New users are required to register in order to obtain access to the FTP site.
- 2 Touchpanels with later versions of firmware may include features not mentioned in this guide. Newer versions of this guide can be obtained from the Products page (PRODUCT MANUALS section) or Downloads page (MANUAL Library) of Crestron's website or contact Crestron customer service. Firmware upgrade files can be obtained from the What's New page (Touchpanels section) or Downloads page (TOUCHPNL Library) of Crestron's website.
- 3 CNX update files are required for either CNMSX-AV/Pro or CNRACKX/-DP. Filenames for CNX update files have a UPZ extension and ST-CP files are in one EXE or zipped UPZ file. All can be obtained from the What's New page (Control Systems Update Files section) or Downloads page (OPSYS Library) of Crestron's website. Update files are specifically designed for certain control systems. If an update file is loaded into a control system other than the device

for which it was intended, it may lockup the control system which would then have to be returned to Crestron. Update files with an “S” designator are for the ST-CP, “V” designator for CEN/CN-TVAV, “W” for CNRACKX/-DP, and “X” for CNMSX-AV/Pro control systems. Control systems are able to recognize and reject incorrect update files. However, when updating control systems, do not ignore any Crestron Viewport warning prompts or messages.

- 4 These control systems do not support loading of firmware or VT Pro-e files to the TPS-series touchpanels through the RS-232 port of the control system. In order to load these files to the TPS touchpanel when using these control systems, either use the RS-232 port on the TPS touchpanel or use Ethernet direct to the panel (assuming the TPS-ENET Ethernet Card is installed).
- 5 At the maximum input resolution of 1600x1200, the maximum refresh rate is 85Hz. Lower resolutions may use higher refresh rates.

As of the date of manufacture, this unit has been tested and found to comply with specifications for CE marking.



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.

Computer Video Connector Signals

Video Connector Pinouts

PIN	DESCRIPTION	PIN	DESCRIPTION
1	Vertical sync -	6	GREEN video +
2	Horizontal sync -	7	BLUE video -
3	RED video -	8	BLUE video +
4	RED video +	9	Horizontal sync +
5	GREEN video -	10	Vertical sync +

Preparation

The TPS-XVGA-BV is shipped within an electrostatic discharge (ESD) prevention bag that is packed into a shipping box. To minimize possible damage during shipping, the TPS-XVGA-BV contains packing material between the fan assembly and the card. This packing material **must** be removed to prevent over-heating of the card during operation. The only tools required for this procedure are a tool to open the packing box and a grounding strap (or grounded workstation).

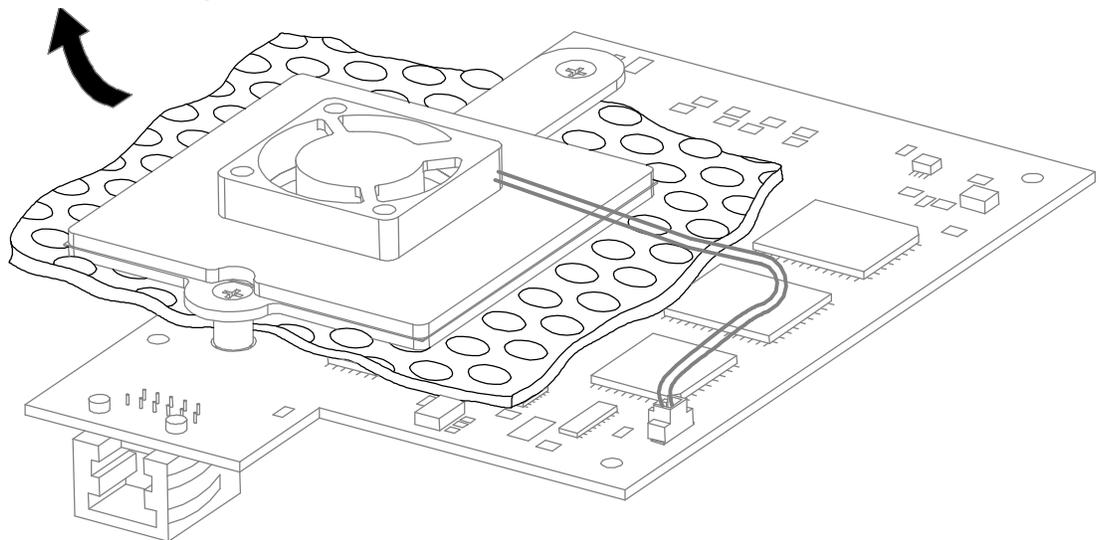
CAUTION: The TPS-XVGA-BV contains ESD sensitive devices. Perform the following procedure while wearing a grounding strap that is properly grounded or on a grounded work station to avoid damaging the card and/or the touchpanel.

1. Carefully open the shipping box and remove the ESD prevention bag that contains the TPS-XVGA-BV.
2. Carefully open the ESD prevention bag and remove the TPS-XVGA-BV.

CAUTION: To minimize possible damage during shipping, the TPS-XVGA-BV contains packing material between the fan assembly and the card. The packing material *must* be removed to prevent over-heating of the card during operation.

3. Refer to the diagram below. From the left-side of the card, carefully remove the packing material from between the fan assembly and the card.

Remove Packing Material



4. Make sure that any pieces of packing material that may have torn off during removal are not present in the fan assembly or on the card.

CAUTION: To prevent over-heating of the card during operation, make sure that the fan electrical connector has remained attached to the PCB connector of the TPS-XVGA-BV.

Installation and Hookup

The TPS-XVGA-BV is designed to be installed into a specific expansion slot in the TPS-5000 and TPS-6000 touchpanels. The only tools required for installation are a #1 Phillips screwdriver and a grounding strap (or grounded workstation).

CAUTION: The TPS-XVGA-BV and the touchpanel contain ESD sensitive devices. Perform the following procedure while wearing a grounding strap that is properly grounded or on a grounded work station to avoid damaging the card and/or the touchpanel.

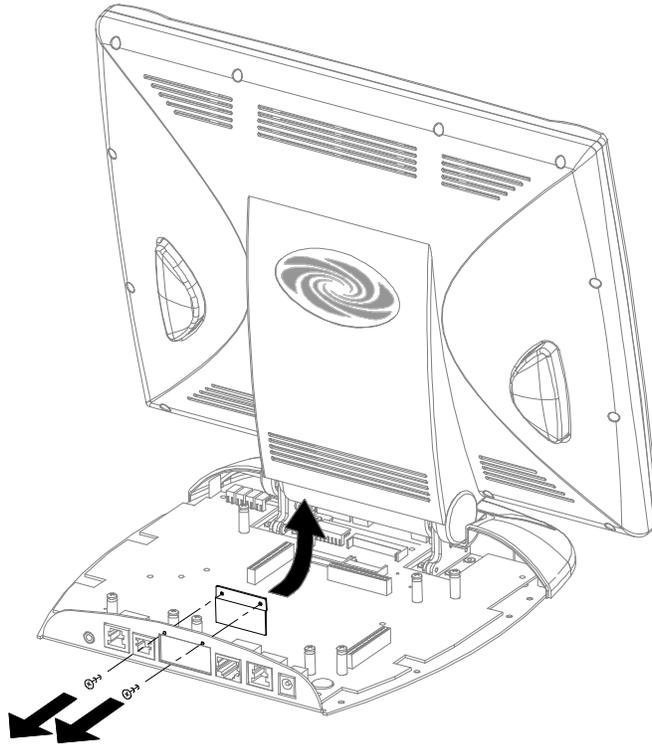
NOTE: If the angle of the touchscreen needs to be adjusted, consult latest revision of the appropriate operations guide for instructions of how to use the touchpanel position lock buttons. The latest version of the operations guide can be obtained from the Products page (PRODUCT MANUALS section) or Downloads page (MANUAL Library) of Crestron's website (www.crestron.com). New users are required to register to obtain access to the FTP site.

NOTE: The diagrams in this procedure show a TPS-6000 touchpanel but the steps for installation into the TPS-5000 are identical.

1. If the optional external power pack is utilized with the touchpanel, disconnect the plug of the power pack from the 24VDC 2.0A port on the rear of the touchpanel base.
2. To prevent errors when re-connecting, label and disconnect any cables attached to the ports on the rear of the touchpanel base.
3. If necessary, use the touchpanel position lock buttons to adjust the touchscreen to the maximum (most vertical/upright) angle.
4. To prevent scratching of the screen, place the touchpanel face-down onto a padded surface.
5. To prevent the touchpanel base cover from falling when the screws are removed, hold the cover in place by hand.
6. Refer to the diagram on the next page. Using a #1 Phillips screwdriver, loosen and remove the **eight** screws that secure the touchpanel base cover.

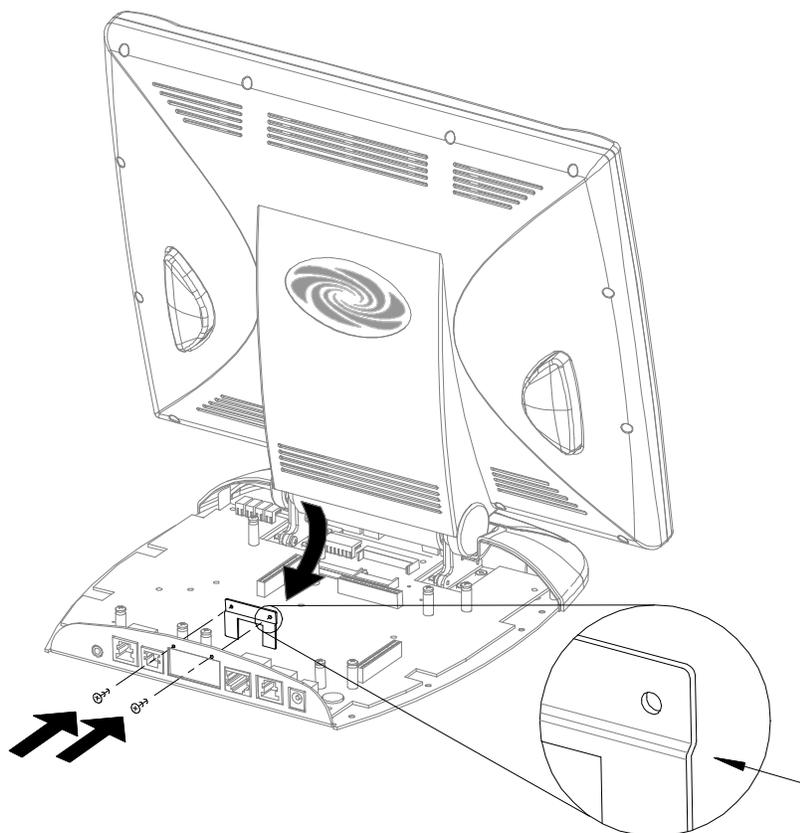
9. Refer to the diagram below. Using a #1 Phillips screwdriver, loosen, remove and discard the **two** screws that secure the RGB port blank plate. From the inside of the touchpanel base, remove the plate and discard.

Installation Diagram 3 of 7 - Remove RGB Port Blank Plate



CAUTION: During the next step, to prevent tearing or distorting the touchpanel label, tighten the plate mounting screws only to the specification described.

10. Refer to the diagram on the next page. Orient the RGB port access plate (supplied) with the **offset facing the rear** of the touchpanel base and position to the inside of the touchpanel base port. Install the **two** plate mounting screws (supplied), tighten to **finger-tight** then, using a #1 Phillips screwdriver, tighten an additional **1/16-turn**.

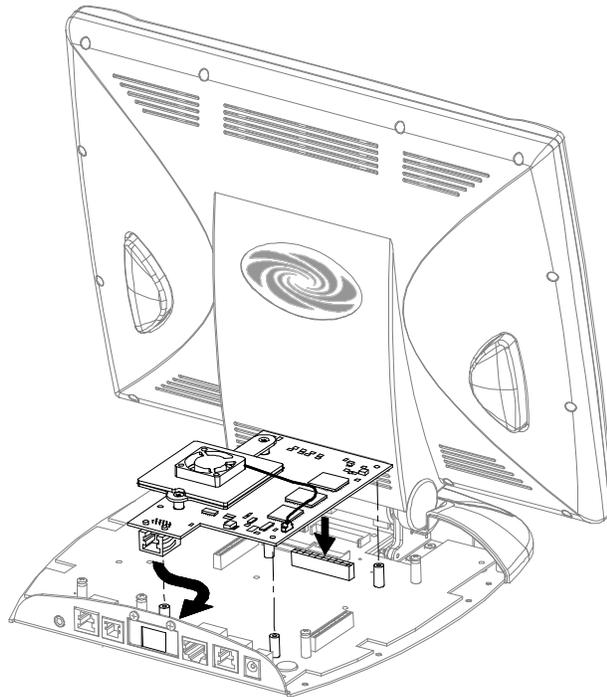
Installation Diagram 4 of 7 - Install Port Access Plate

CAUTION: To minimize possible damage during shipping, the TPS-XVGA-BV contains packing material between the fan assembly and the card. The packing material *must* be removed to prevent over-heating of the card during operation. If not removed, refer to “Preparation” that begins on page 5 for instructions.

NOTE: The TPS-XVGA-BV touchpanel interface connector pins are more easily inserted by gently “rocking” the TPS-XVGA-BV side-to-side while pressing onto connector.

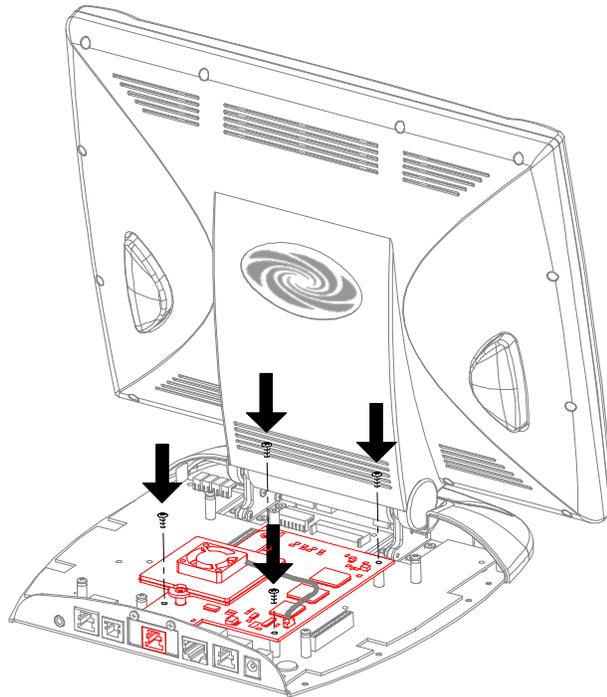
11. As shown on the next page, insert the computer video connector of the TPS-XVGA-BV through the **RGB** port on the rear of the touchpanel base. Align the pins on the touchpanel interface connector of the card with the touchpanel motherboard connector. **DO NOT** force pins into connector. Press the TPS-XVGA-BV until pins are fully seated. Make sure that the screw holes of the card align with the mounting posts on the motherboard.

Installation Diagram 5 of 7 - Install TPS-XVGA-BV



12. Refer to the diagram below. Install the **four** card mounting screws (supplied), tighten to **finger-tight** then, using a #1 Phillips screwdriver, tighten an additional **1/8-turn**.

Installation Diagram 6 of 7 - Install TPS-XVGA-BV Mounting Screws

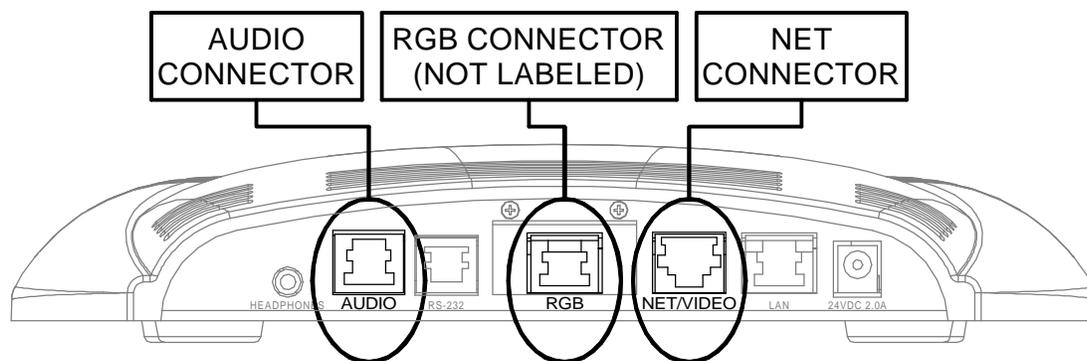


13. Position the touchpanel base cover onto the base.
14. Hold the touchpanel base cover in place and position the touchpanel face-down onto a padded surface to prevent scratching of the screen.
15. Re-install the **eight** base cover screws to **finger-tight** then, using a #1 Phillips screwdriver, tighten an additional **1/8-turn**.

NOTE: The TPS-IMC, optional TPS-IMW, and TPS-IMC-BV serve as an interface between the touchpanel and the video source computer and/or the Cresnet system. If the touchpanel is equipped with optional TPS-VID Video Card, the audio and video cables from the TPS-IMC to the touchpanel are replaced with the triamese cable. The TPS-IMC must be replaced by the TPS-IMC-BV. For further information, consult the TPS-IMC-BV Operations Guide (Doc. 5921). The latest revision can be obtained from the Products page (PRODUCT MANUALS section) or Downloads page (MANUAL Library) of Crestron's website (www.crestron.com). New users are required to register to obtain access to the FTP site.

16. Refer to the diagram below. At the rear of the touchpanel base, attach the triamese cable (supplied) connector labeled **AUDIO** to the **AUDIO** port, the **non-labeled** connector to the **RGB** port, and the connector labeled **NET** to the **NET/VIDEO** port.

Installation Diagram 7 of 7 - Attach Triamese Cable Connectors



17. Re-connect any cables that were disconnected in step 2 to the appropriate ports on the rear of the touchpanel base.
18. If the optional external power pack is utilized with the touchpanel, connect the output plug of the power pack to the 24VDC 2.0A port on the rear of the touchpanel base.

Touchpanel Setup

Configuring the Touchpanel

To configure the touchpanel for RGB computer video input, consult the latest revision of the TPS-5000 or TPS-6000 Operations Guide (Doc. 5863 or 5864, respectively). The latest version of the Operations Guide can be obtained from the Products page (PRODUCT MANUALS section) or the Downloads page (MANUAL Library) of Crestron's website (www.crestron.com). New users are required to register in order to obtain access to the FTP site.

Configure the touchpanel with the TPS-XVGA-BV properly installed. Upon entering the Setup Menu, an RGB button will be available and displayed. Selection of this button opens the RGB Menu from which RGB settings are adjusted.

SIMPL™ Windows® Programming

No special programming is required in SIMPL Windows for TPS-XVGA-BV operation.

NOTE: Join number remapping allows the Isys touchpanel to perform features in a new way. One group of features pertains specifically to use of the RGB Computer Interface Card with Balanced Video. Refer to the latest revision of the Join Number Remapping Reference Guide (Doc. 5969) for specific details. This document can be obtained from the Downloads page (MANUAL Library, search for JNR.PDF) of Crestron's website (www.crestron.com).

VT Pro-e Setup

In order for the RGB video to be displayed, the TPS-XVGA-BV must be installed into the proper expansion slot of the TPS-5000 or TPS-6000 and a RGB window object must reside on a page within the uploaded VT Pro-e touchpanel project in order for the computer video to be displayed. If the card is not present, the Viewport will display a warning message during the upload and the RGB window would be blank. For details regarding RGB window objects, refer to the VT Pro-e help file.

Problem Solving

Troubleshooting

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

TPS-XVGA-BV Troubleshooting

TROUBLE	POSSIBLE CAUSE(S)	CORRECTIVE ACTION	
RGB window of touchpanel has no display.	Vertical refresh rate from PC too high.	At PC, adjust vertical refresh rate to a lower refresh rate. ¹	
	Improper video connection.	Verify proper connections at touchpanel RGB port, TPS-IMC-BV, and PC.	
	Problem with TPS-IMC-BV.	Refer to "Problem Solving" in TPS-IMC-BV Operations Guide (Doc. 5921) ²	
	Incorrect firmware/software.	Upgrade touchpanel firmware/software versions.	
	Incorrect VT Pro-e project file loaded.	Make sure that RGB window object resides in project, re-compile, and reload.	
	TPS-XVGA-BV improperly installed.		Check that RGB button on the Setup Menu is displayed. If not, card is not being recognized by the TPS user interface.
			Follow "Installation and Hookup" procedure in this guide.
Damaged connector pins.	Inspect connector pins. If bent, carefully re-straighten. If broken, contact Crestron customer service.		
Display is distorted in RGB window.	Touchpanel not configured correctly.	Refer to the "Configuring the Touchpanel" section of this guide for reference to the appropriate touchpanel operations guide.	
RGB window has display when PC turns-on but then no display.	Energy saving features of monitor in PC are activated.	In the display properties of the PC, deselect the monitor energy saving features.	
		If serial mouse control driver is installed, touch the touchscreen to deactivate the energy saving features.	

- At the maximum input resolution of 1600x1200, the maximum refresh rate is 85Hz. Lower resolutions may use higher refresh rates.
- The latest revision can be obtained from the Products page (PRODUCT MANUALS section) or Downloads page (MANUAL Library) of Crestron's website (www.crestron.com). New users are required to register to obtain access to the FTP site.

Further Inquiries

If after reviewing this Operations & Installation Guide, you cannot locate specific information or have questions, please take advantage of Crestron's award winning customer service team by calling:

- In the US and Canada, call Crestron's corporate headquarters at 1-888-CRESTRON [1-888-273-7876] or 1-201-767-3400.
- In Europe, call Crestron International at +32-15-50-99-50.
- In Asia, call Crestron Asia at +852-2341-2016.
- In Latin America, call Crestron Latin America at +525-260-4336.

For local support from exclusive Crestron factory-trained personnel call:

- In Australia, call Soundcorp at +613-9488-1555.
- In New Zealand, call Amber Technologies at +649-410-8382.

Future Updates

As Crestron improves functions, adds new features, and extends the capabilities of the TPS-XVGA-BV, 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.

The Downloads page of the Crestron website (www.crestron.com) directs the reader to the location and description of each update. Check the site periodically for update availability and its subjective value. New users are required to register in order to obtain access to the FTP site.

Future Firmware Upgrades

As Crestron improves functions, adds new features, and extends the capabilities of the TPS user interfaces, firmware upgrades may be made available. The upgrade files can be obtained from the What's New page (Touchpanels section) or the Downloads page (TOUCHPNL Library) of Crestron's website.

Appendix: Optional Touchpanel Setups

Optional touchpanel setups that utilize the TPS-XVGA-BV include serial mouse control driver software and instructions to integrate a Boeckeler Pointmaker® Video Marker telestrator with the touchpanel and Cresnet system.

Serial Mouse Control Driver

The serial mouse control driver software allows the TPS touchpanel to function as a touchscreen monitor. The driver enables a physical press on the touch screen to simulate a computer mouse, and thus control the movement of the cursor. The driver is compatible with Microsoft® Windows™ 95/98/Me and NT/2000. The latest version of the driver and documentation (Serial Mouse Control Driver Programmer's Guide, Doc. 5916) can be obtained from the What's New page (Touchpanels section, search for PC Serial Mouse Driver) or Downloads page (TOUCHPNL Library, search for TPAD2560.EXE) of Crestron's website (www.crestron.com). New users are required to register in order to obtain access to the FTP site.

NOTE: This software is licensed for use only in conjunction with the TPS-XVGA, TPS-XVGA-BV and TPS-XVGA-L cards.

The serial mouse control driver may be operated via the following options:

- RS-232 port located on the rear of the TPS touchpanel base
- CNMSX internal COM port, one COM port required
- CNRACKX/-DP with optional CNXCOM-2 RS-232/422/485 Expansion Card, one COM port required
- ST-COM, one COM port required (CNMSX/CNRACKX required in Cresnet system)
- CEN-COM, one COM port required (CNMSX/CNRACKX with optional CNXENET/+ Ethernet Expansion Card required in Cresnet system)

Contact Crestron customer service for further information.

Telestrator Video Annotation Device

TPS touchpanels equipped with TPS-XVGA expansion cards can be integrated with the Boeckeler Pointmaker® Video Marker (model PVI-83) telestrator, a video annotation device by Boeckeler Instruments (www.pointmaker.com). This device (acquired separately) is used to enhance a video presentation by enabling users to emphasize key points or annotate details of an image. By utilizing the touch screen instead of a light pen and digitizing tablet, users draw and point on video or computer images by pressing and dragging a finger over the screen. In addition, a solid background can replace the video input to create an “electronic chalkboard.”

NOTE: Installation of the serial mouse control driver software is not required for telestrator operation.

For further information, refer to the latest revision of Pointmaker Telestrator (Doc. 5929). This document can be obtained from the Downloads page (MANUAL and TOUCHPNL Libraries) of Crestron’s website (www.crestron.com). Search for TELE.PDF. New users are required to register in order to obtain access to the FTP site.

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, Cresskill, 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 Cresnet products, denoted by a "CN" prefix model number, to be free from manufacturing defects in materials and workmanship for a period of three (3) years from the date of shipment to purchaser. Disk drives and any other moving or rotating mechanical parts are covered for a period of one (1) year. CRESTRON warrants all its other products for a period of one year from the defects mentioned above, excluding touchscreen display components which are covered for 90 days. Incandescent lamps are completely excluded from Crestron's Limited Warranty. 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.

CRESTRON shall not be liable to honor warranty terms 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 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 makes no other warranties nor authorizes any other party to offer any warranty, expressed or implied, including warranties of merchantability for this product. This warranty statement supersedes all previous warranties.

Trademark Information

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Operations & Installation Guide - DOC. 5920
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Specifications subject to
change without notice.