Interchangeable family of devices

Eight transmitter models

Four receiver models

Two- and Four-gang box, mountable transmitter models

Enables short and long cable runs up to 1,000’ (304.8 m) using twisted pair (TP) cable (CAT 5/5e/6)

Supports computer video, component video, S-Video, composite video, and audio

Handles signals with 15-130 MHz horizontal scan rate and 30-150 Hz vertical scan rate

www.extron.com
Extron's Twisted Pair (TP) transmitters and receivers offer a versatile family of products for the precise distribution of computer video, component video, S-video, composite video, and stereo audio over shielded or unshielded twisted pair cable such as Category 5e, 6, and 6a cable. A pairing of a high-resolution twisted pair transmitter with a high-resolution receiver provides high-quality video performance. Transmittting 640 x 480 video up to 1,000 feet (304.8 m) or 1600 x 1280 video up to 200 feet (60.96 m) with no loss of signal integrity.

Extron's Twisted Pair Transmitters reduce the compact size, connectivity, front panel and packing control, receiver power capabilities, and most configurations need for high performance and architectural integration. Each receiver provides remote level and peaking control for cable-length compensation. Optional audio-fabric-through-deck and project-mic-reception links are available for any configuration in various sources or destinations.

Whether a projector accepts high-resolution computer or RGB video input, a twisted-pair link can transport the video format, the mix-and-match nature of Extron's Twisted Pair Transmitters allow systems designers to tailor a configuration to meet the requirements of the application's specific needs. Eight transmitter models and four receiver models provide flexibility for any video system environment.

Twisted-pair cable is a fraction of the size of coaxial cable, as well as being much lighter, more flexible, and less expensive. Transmission of the twisted pair cable with RJ-45 connectors is simple, quick, and economical. Extron's products help system integrators maintain professional video quality over cable runs while taking advantage of the reduced cost, weight, and ease of termination found with twisted pair cable.

### FEATURES
- Signal transmission over twisted pair cable (Category 5e) on RJ-45 connectors between transmitters and receivers.
- Computer-video transmission and integration supports signals with a 15-130 kHz horizontal scan rate and a 30-150 Hz vertical scan rate.
- Horizontal shift control on interface transmitters (TP T 15 HD A, TP T 15 HD AV , TP T 460, TP T 460 Dual, and TP T 468).
- Buffered local monitor output on interface transmitters (TP T 15 HD A, TP T 15 HD AV , TP T 460, TP T 460 Dual, and TP T 468).
- Variable level and peaking adjustments on all receivers.
- 15VDC external power supply for all models (except TP R BNC AV).
- Through an audio-mic-receivable output (except TP T 460 Dual, TP T 468, and TP R BNC AV).
- Balanced microphone input for front panels (except TP R 8-3HD A, TP R 8-3HD AV, TP R 8 HD A, and TP R 8 HD).
- 5A DC power input.
- 15VDC external power supply for all models (except TP T 460 Dual, TP T 468, and TP R BNC AV).
- Through an audio-mic-receivable output (except TP T 460 Dual, TP T 468, and TP R BNC AV).
- Balanced microphone input for front panels (except TP R 8-3HD A, TP R 8-3HD AV, TP R 8 HD A, and TP R 8 HD).
- 5A DC power input.
- 15VDC external power supply for all models (except TP T 460 Dual, TP T 468, and TP R BNC AV).
- Through an audio-mic-receivable output (except TP T 460 Dual, TP T 468, and TP R BNC AV).
- Balanced microphone input for front panels (except TP R 8-3HD A, TP R 8-3HD AV, TP R 8 HD A, and TP R 8 HD).

### APPLICATION DIAGRAM

Exceeding these distances is possible; however, image quality may be reduced.

### TRANSMISSION RANGE (@ 60Hz)

**Using Category 5e Cable**

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Maximum Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component Video &amp; S-Video</td>
<td>800 feet</td>
</tr>
<tr>
<td>Composite Video &amp; Audio</td>
<td>800 feet</td>
</tr>
<tr>
<td>640 x 480</td>
<td>500 feet</td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>400 feet</td>
</tr>
<tr>
<td>1600 x 1280</td>
<td>200 feet</td>
</tr>
<tr>
<td>Component Video &amp; S-Video</td>
<td>1,000 feet</td>
</tr>
<tr>
<td>Composite Video &amp; Audio</td>
<td>1,000 feet</td>
</tr>
<tr>
<td>640 x 480</td>
<td>1,000 feet</td>
</tr>
<tr>
<td>1280 x 1024</td>
<td>800 feet</td>
</tr>
<tr>
<td>1600 x 1280</td>
<td>600 feet</td>
</tr>
</tbody>
</table>

**Using Category 5/5e Cable**

<table>
<thead>
<tr>
<th>Resolution</th>
<th>Maximum Distance</th>
</tr>
</thead>
<tbody>
<tr>
<td>Component Video &amp; S-Video</td>
<td>800 feet</td>
</tr>
<tr>
<td>Composite Video &amp; Audio</td>
<td>800 feet</td>
</tr>
<tr>
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</tr>
<tr>
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<td>800 feet</td>
</tr>
<tr>
<td>1600 x 1280</td>
<td>600 feet</td>
</tr>
<tr>
<td>Component Video &amp; S-Video</td>
<td>1,000 feet</td>
</tr>
<tr>
<td>Composite Video &amp; Audio</td>
<td>1,000 feet</td>
</tr>
</tbody>
</table>
TRANSMITTERS

TP T AV Video Transmitter
- Accepts NTSC, PAL, or SECAM composite video and stereo audio and transmits them via twisted pair cable to an Extron Twisted Pair receiver.
- Accepts composite video on a coaxial BNC connector and accepts stereo audio on two female RCA connectors.

TP T 15 HD AV Interface Transmitter
- Accepts computer analog video and PC audio and transmits them via twisted pair cable to an Extron Twisted Pair receiver.
- Accepts composite video on a female RCA connector and accepts stereo audio on two female RCA connectors. Composite video input also supports digital audio signal transmission.

TP T 15 HD A Interface Transmitter
- Accepts computer analog video and PC audio and transmits them via twisted pair cable to an Extron Twisted Pair receiver.
- Accepts signals with a 15-130 kHz horizontal scan rate and a 30-150 Hz vertical scan rate. Compatible with nearly every computer and video signal type, including VGA, SVGA, XGA, SXGA, UXGA, Mac, Sun, SGI, component video, S-video, and composite video.
- Accepts computer video on a 15-pin HD female input connector and accepts PC audio on a 3.5 mm mini jack. A second 15-pin HD female connector is provided for buffered local monitor output.
- Accepts PC audio on a 3.5 mm mini jack and stereo audio on two female RCA connectors.

TP T 460 and TP T 460 Dual Architectural Interface Transmitters
- Accepts computer video and PC audio and transmits them via twisted pair cable to an Extron Twisted Pair receiver.
- Compact design fits in a two-gang wall box (TP T 460) or a four-gang wall box (TP T 460 Dual), combining shallow depth with wall mountability for easy installation.
- The TP T 460 and TP T 460 Dual Transmitters each accept signals with a 15-130 kHz horizontal scan rate and a 30-150 Hz vertical scan rate and are compatible with nearly every computer and video signal type, including VGA, SVGA, XGA, SXGA, UXGA, Mac, Sun, and SGI.
- Accepts computer video on a female 15-pin HD input connector and transmits the video on an RJ-45 female connector. The TP T 460 Dual inputs computer video on two 15-pin HD female input connectors and transmits the video on two RJ-45 female connectors. Both transmitters include buffered local monitor output on 15-pin HD female connectors.
- Accepts PC audio and stereo audio on 3.5 mm mini jacks.

TP T 468 Architectural Interface Transmitter with Architectural Adapter Plates
- Accepts computer video and PC audio and transmits them via twisted pair cable to an Extron Twisted Pair receiver.
- Compact design fits in a four-gang wall box, combining shallow depth with wall mountability for easy installation.
- Accepts signals with a 15-130 kHz horizontal scan rate and a 30-150 Hz vertical scan rate.
- Accepts computer video on a coaxial BNC connector and transmits the video on a 15-pin HD female connector. A second female 15-pin HD female connector is provided for buffered local monitor output.
- Accepts PC audio and stereo audio on 3.5 mm mini jacks.
- Includes four spaces for Architectural Adapter Plates for configurable cable pass-through connections.
### TRANSMITTERS (Cont.)

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP T BNC Video Transmitter</td>
<td>Accepts analog RGB video and transmits it via twisted pair cable to an Extron Twisted Pair receiver.</td>
</tr>
<tr>
<td>TP T BNC Video Distribution Amplifier/Transmitter</td>
<td>Splits a single analog RGB video input into four identical outputs and transmits them via twisted pair cable. It transmits RGB video up to four Extron Twisted Pair receivers with loss of signal integrity.</td>
</tr>
<tr>
<td>TP R 15HD A Video Receiver</td>
<td>Receives short-distance transmissions of RGB video with PC audio on twisted pair cable.</td>
</tr>
<tr>
<td>TP R BNC AV RGB/Video Receiver</td>
<td>Combines all the functionality and connections of the TP R AV and the TP R BNC A into a single 1/2 rack width, 1U high, rack mountable enclosure with an internal power supply.</td>
</tr>
</tbody>
</table>

### RECEIVERS

<table>
<thead>
<tr>
<th>Model</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>TP R BNC Video Receiver</td>
<td>Receives long-distance transmissions of NTSC, PAL, or SECAM composite video with stereo audio on twisted pair cable.</td>
</tr>
<tr>
<td>TP R BNC A RGB Receiver</td>
<td>Receives long-distance transmission of analog RGB video with PC audio on twisted pair cable.</td>
</tr>
<tr>
<td>TP R BNC AV RGB/Video Receiver</td>
<td>Combines all the functionality and connections of the TP R AV and the TP R BNC A into a single 1/2 rack width, 1U high, rack mountable enclosure with an internal power supply.</td>
</tr>
</tbody>
</table>

Compatible with nearly every computer and video signal type, including VGA, SVGA, XGA, SXGA, UXGA, Mac, Sun, SGI, component video, S-video, and composite video.

Special image enhancement features—automatic and manual level and peaking adjustments—give the TP BNC A the ability to improve the brightness and sharpness of the RGB video image.
## SPECIFICATIONS

### Video Input

<table>
<thead>
<tr>
<th>Number/signal type</th>
<th>Crosstalk</th>
<th>S/N</th>
<th>THD + Noise</th>
<th>Frequency response</th>
<th>Connectors</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;-80dB @ 1 kHz</td>
<td>&gt;90dB at the rated maximum output drive</td>
<td>0.03% @ 1 kHz, 0.3% @ 20 kHz at rated</td>
<td>20 Hz to 20 kHz, ±0.05dB</td>
<td>1 or 2 shielded RJ-45 female</td>
</tr>
</tbody>
</table>

### Audio Input

<table>
<thead>
<tr>
<th>Connectors</th>
<th>1 or 2 shielded RJ-45 female</th>
</tr>
</thead>
</table>

### Vertical Frequency

30 Hz to 150 Hz

### Horizontal Frequency

15 kHz to 130 kHz

### Impedance

75 ohms

### Minimum/maximum levels

0.3V to 1.45V p-p with no offset

### Connectors

- **TP T AV**: 1 RCA female
- **TP T 15HD AV**: 1 15-pin HD female (Mac and Sun/SGI to VGA adapters are available)
- **TP T 468**: 1 15-pin HD female (Mac and Sun/SGI to [Unsure])
- **TP T 15HD A, TP T 15HD AV , TP T BNC, TP T BNC DA4**: 1 analog RGBHV , RGBS, RGsB, component
- **TP T 460**: 2 analog RGBHV , RGBS, RGsB, component
- **TP T 460 Dual**: 2 analog RGBHV , RGBS, RGsB, component
- **TP T 15HD A, TP T 15HD AV , TP T BNC, TP T BNC DA4**: 1 analog RGBHV , RGBS, RGsB, component
- **TP T 460, TP T 468, TP T 460 Dual**: 1 analog RGBHV , RGBS, RGsB, component
- **TP T 15HD AV**, **TP T 460, TP T 468**: 1 stereo, unbalanced
- **TP T 15HD A, TP T 15HD AV , TP T BNC, TP T BNC DA4**: 1 stereo, unbalanced
- **TP T 15HD AV**: 1 3.5 mm mini jack, 2 female RCA
- **TP T 460 Dual**: 2 3.5 mm mini jacks
- **TP T 468**: 1 3.5 mm mini jack
- **TP T 15HD A, TP T 15HD AV , TP T BNC, TP T BNC DA4**: 2 stereo, unbalanced
- **TP T 15HD A, TP T 15HD AV , TP T BNC, TP T BNC DA4**: 1 stereo, unbalanced

### Interface Back Enclosure

- **TP T AV**: 2.7" H x 3.3" W x 1.1" D (6.6 cm H x 8.4 cm W x 2.8 cm D)
- **TP T 15HD A, TP T 15HD AV , TP T BNC, TP T BNC DA4**: 2.6" H x 3.1" W x 1.1" D (6.6 cm H x 7.9 cm W x 2.8 cm D)
- **TP T 460, TP T 468, TP T 460 Dual**: 2.7" H x 3.3" W x 1.1" D (6.6 cm H x 8.4 cm W x 2.8 cm D)

### Interface Front Panel Enclosure

- **TP T AV**: No, but wall or furniture mountable
- **TP T 15HD A, TP T 15HD AV , TP T BNC, TP T BNC DA4**: No, but furniture mountable with optional mounting brackets #60-190-01, and rack shelf mounting kit #70-123-01. Furniture mountable with optional 1U rack shelf, part #70-077-01, 70-077-02.

### Interface Enclosure

- **TP T AV**: 15VDC, 0.8A, external or provided by the user
- **TP T 15HD A, TP T 15HD AV , TP T BNC, TP T BNC DA4**: 15VDC, 0.8A, external or provided by the user
- **TP T 460 Dual**: 15VDC, 0.8A, external or provided by the user
- **TP T 460, TP T 468, TP T 460 Dual**: 15VDC, 0.8A, external or provided by the user
- **TP T AV**: No, but furniture mountable with optional 1U rack shelf, part #70-077-01, 70-077-02.

### Rack Mount

- **Enclosure dimensions— TP T 460 EC**: 2.5" H x 3.7" W x 1.75" D (6.4 cm H x 9.4 cm W x 4.5 cm D)
- **Enclosure dimensions— TP T 468 EC**: 2.6" H x 6.2" W x 1.1" D (6.6 cm H x 16.3 cm W x 2.8 cm D)
- **Enclosure dimensions— TP T 460 Dual**: 2.6" H x 3.1" W x 1.1" D (6.6 cm H x 7.9 cm W x 2.8 cm D)
- **Enclosure dimensions— TP T AV**: 4.5" H x 8.3" W x 0.1" D (11.4 cm H x 21.2 cm W x 0.3 cm D) (4-gang)
- **Enclosure dimensions— TP T 468**: 3.25" H x 3.9" W x 0.1" D (8.3 cm H x 10.0 cm W x 0.3 cm D) (3-gang)
- **Enclosure dimensions— TP T 15HD A, TP T 15HD AV , TP T BNC, TP T BNC DA4**: 3.25" H x 3.9" W x 0.1" D (8.3 cm H x 10.0 cm W x 0.3 cm D) (3-gang)
- **Enclosure dimensions— TP T 460**: 4.5" H x 8.3" W x 0.1" D (11.4 cm H x 21.2 cm W x 0.3 cm D) (4-gang)
- **Enclosure dimensions— TP T 460 Dual**: 4.5" H x 8.3" W x 0.1" D (11.4 cm H x 21.2 cm W x 0.3 cm D) (4-gang)
- **Enclosure dimensions— TP T 468**: 3.25" H x 3.9" W x 0.1" D (8.3 cm H x 10.0 cm W x 0.3 cm D) (3-gang)
- **Enclosure dimensions— TP T AV**: No, but furniture mountable with optional 1U rack shelf, part #70-077-01, 70-077-02.

### Interface Front Panel

- **Faceplate**: 3.2" H x 7.7" W x 0.1" D (8.0 cm H x 19.5 cm W x 0.3 cm D)
- **Plate**: 3.25" H x 3.9" W x 0.1" D (8.3 cm H x 10.0 cm W x 0.3 cm D)
- **Interface back enclosure**: 2.7" H x 3.3" W x 1.1" D (6.6 cm H x 8.4 cm W x 2.8 cm D)
- **Interface enclosure**: 2.5" H x 3.7" W x 1.75" D (6.4 cm H x 9.4 cm W x 4.5 cm D)

### General

- **CMRR**: >75dB @ 20 Hz to 20 kHz
- **Shipping weight**: 0.9 lbs (0.4 kg)
- **Listings**: UL, CUL
- **Compliances**: CE, FCC Class A
**General Audio Output**

Connectors — refer to the TP Transmitters Family User’s Manual.

**Audio Input** — refer to the TP Transmitters Family User’s Manual.

**Connectors**

- TP R AV .................................. 1 BNC female
- TP R 15HD A ............................ 1 15-pin HD female
- TP R BNC A .............................. 5 BNC female
- TP R AV ...................................... 1 NTSC/PAL/SECAM composite video
- TP R BNC AV ............................ 1 analog RGBHV , RGBS, RGsB, component

**Number/signal type**

- TP R AV .................................. No, but projector mountable with optional mounting kit (#70-077-04), furniture requires 0.3 A (minimum).
- TP R 15HD A ........................ 1 stereo audio balanced/unbalanced
- TP R BNC A, TP R AV .......... 15VDC, 0.8 A, external power supply. Product part #68-546-02
- TP R BNC A .......................... 1 analog RGBHV , RGBS, RGsB, component

**Power**

- Maximum level (600 ohm) .......... >+14dBm, balanced at stated %THD+N
- Gain error.................................... ±0.1dB channel to channel
- Impedance .................................. 50 ohms unbalanced, 100 ohms balanced
- CMRR ........................................ >75dB @ 20 Hz to 20 kHz
- Stereo channel separation ............ >80dB @ 1 kHz
- THD + Noise .............................. 0.03% @ 1 kHz, 0.3% @ 20 kHz at rated

**Connectors**

- 1 or 2 shielded RJ-45 female
- 75 ohms
- 1 BNC female
- THD+N

**Enclosure type ............................ Metal

**Specs**

- Rack mount
- TP R BNC AV ........................ 100VAC to 240VAC, 50/60 Hz, 40 watts,
- TP R 15HD A ........................ 60-450-01
- TP R BNC AV ............................ 60-350-02
- TP R BNC A .............................. 60-351-02
- TP R AV...................................... 60-352-02
- TP T BNC DA4.......................... 60-349-02
- TP T BNC .................................. 60-347-02
- TP T 15HD AV .......................... 60-346-02
- TP T 468 EC (white) .................. 60-434-10
- TP T 468 (white) ........................ 60-434-03
- TP T 468 (black) ........................ 60-434-02
- TP T 460 Dual (black) ................ 60-433-12
- TP T 460 Dual (gray).................. 60-433-11
- TP T 460 EC (white) .................. 60-433-10
- TP T 460 (black) ........................ 60-433-02
- TP T AV...................................... 60-348-02

**Mounting Kits**

- Mini underdesk mount kit .......... 70-212-01
- Through-desk kit ........................ 70-077-02
- Under-desk kit ............................ 70-077-01
- Projection mount ........................ 70-077-04
- Rack shelf  mounting kit ............ 70-123-01
- Through-desk kit ........................ 60-190-01
- 1U, 19" rack shelf........................ 60-190-01
- 15VDC / 0.8A ........................ 70-057-01
- 100-200 VAC, 50/60 Hz, to