### Specifications

**DTP T USW 233**

#### Video

**VGA**
- Gain: Unity
- Bandwidth: 170 MHz (-3 dB)
- Crosstalk: -50 dB @ 10 MHz, -30 dB @ 100 MHz
- Switching speed: <5 ms (max)

**HDMI**
- Maximum data rate: 6.75 Gbps (2.25 Gbps per color)
- Maximum pixel clock: 165 MHz
- Resolution range: Up to 1920x1200 or 1080p @ 60 Hz; 2k
- Formats: RGB and YCbCr digital video
- Standards: DVI 1.0, HDMI, HDCP 1.1, CEA-861E

#### Video input — HDMI
- Number/signal type: 2 HDMI inputs (or single link DVI-D with the appropriate DVI-HDMI adapters)
- Connectors: 2 female HDMI type A

#### Video input — VGA
- Number/signal type: 1 VGA-QXGA; RGBHV
- Connectors: 1 female 15-pin HD
- Nominal level: 0.7 Vp-p
- Min./max. level: Analog, 0.3 V to 1.5 Vp-p with no offset
- Impedance: 75 ohms
- Horizontal frequency: 15 kHz to 145 kHz
- Vertical frequency: 30 Hz to 170 Hz
- Return loss: < -40 dB @ 5 MHz

**NOTE:** The VGA input is digitized and output as DTP. The VGA signal is not scaled.

#### Sync — VGA
- Input type: RGBHV, bi-level and tri-level sync
- Input level: 1.9 V to 5.0 Vp-p
- S/N: >90 dB at maximum input (unweighted)
- Max. input voltage: 5.0 Vp-p

#### Interconnection between transmitter and receiver
- Number/signal type: 1 DTP 230 output
- Connector: 1 female RJ-45
- Termination standard: TIA/EIA T568B
- Transmission distance: Up to 230’ (70 m) using shielded twisted pair cable or XTP DTP 24 STP cable
- Cable requirements: Solid conductor, 24 AWG or better
- Cable recommendations: 400 MHz bandwidth, STP (shielded twisted pair)

**NOTE:** Extron XTP DTP 24 shielded twisted pair cable is strongly recommended for optimal performance.

**NOTE:** Input and output mode signaling:
- **DTP:** HDMI with embedded audio, analog audio, RS-232 and IR, and remote power
- **HDBT:** HDMI with embedded audio plus RS-232 and IR
Audio
Gain........................................ Unbalanced output: 0 dB; balanced output +6 dB
Frequency response .................. 20 Hz to 20 kHz, ±0.5 dB
THD + Noise............................ 0.01% @ 1 kHz at nominal level
S/N........................................... >90 dB, at maximum input (unweighted)
Crosstalk ................................ <−45 dB @ 20 kHz, or −72 dB @ 1 kHz or below
Stereo channel separation......... >80 dB @ 1 kHz to 20 kHz

Audio input
Number/signal type............... 1 analog stereo, unbalanced or
2-digital audio, embedded in the HDMI
Connectors............................ 1 female 3.5 mm mini stereo jack
2 female HDMI Type A (shared with video input)
Source formats
Analog................................ Analog stereo audio
Impedance............................ 10k ohms, DC coupled
Nominal level........................ -10 dBV
Maximum level...................... +6dBV, unbalanced
CMRR.................................. >60 dB typ @ 1 kHz
Input gain adjustment............ -18 dB to +24 dB, 1 dB steps, adjustable per input

NOTE: 0 dBu = 0.775 Vrms, 0 dBV = 1 Vrms, 0 dBV ≈ 2 dBu

Audio output
Number/signal type............... 1 analog audio over DTP signal, or
1 embedded digital audio over DTP signal
Connectors............................ 1 RJ-45 jack

Communications — switcher
Serial control port............... RS-232 via (1) 3.5 mm, 3 pole captive screw connector
Serial control pin configuration Pin 1 = Tx, pin 2 = Rx, pin 3 = Gnd
Baud rate and protocol (RS-232) ... 9600 baud, 8 data bits, 1 stop bit, no parity
Tally port............................ (1) 3.5 mm, 4 pole captive screw connector
Tally port pin configuration..... Pin 1 = input 1 tally, pin 2 = input 2 tally, pin 3 = input 3 tally, pin 4 = +5 VDC
Contact closure remote control Pin 1 = input 1, pin 2 = input 2, pin 3 = input 3, pin 4 = Gnd
Contact closure pin configuration... (1) 3.5 mm, 4 pole captive screw connector
USB control port.................. 1 front panel female mini USB, type B
USB standards ...................... USB 2.0, high speed
Program control.................. Extron Simple Instruction Set (SIS™)
Communications — RS-232/IR over DTP

| NOTE: | Protocol is mirrored between the connected DTP 230 Rx and the Over DTP output port. Signals from a control device pass into the Over DTP port, are embedded with the DTP signal, and sent to the DTP 230 Rx endpoint for control of remote sink and source devices. The Over DTP port is a pass-through connection to the DTP endpoint. There is no RS-232 or IR insertion from the DTP T USW 233 control port to the Over DTP port. |

Communications — RS-232/IR over DTP

| Serial control pass-through port | 1 RS-232 and IR via (1) 3.5 mm, 5-pole captive screw connector |
| Serial control pin configuration | Pin 1 = Tx, pin 2 = Rx, pin 3 = Gnd |
| Baud rates | 300 to 115200 baud |
| Protocol | 8 or 7 data bits 1 or 2 stop bits no parity (default) even or odd parity |
| IR pass-through control port | TTL level (0 to 5 V) modulated infrared control from 30 kHz up to 60 kHz |
| IR control pin configuration | 3 = Gnd, 4 = IR Tx, 5 = IR Rx |

General

| Power supply | External |
| Input: | 100-240 VAC, 50-60 Hz |
| Output: | 12 VDC, 1.8 A, 18 watts |

| Power consumption |
| Device | 5.5 watts |
| Device and power supply | 7.2 watts |

| NOTE: | The DTP T USW 233 can be powered either locally by the external power supply or remotely by a receiver on the other end of the twisted pair cable. |

| Temperature/humidity | Storage: -40 to +158 °F (-40 to +70 °C) / 10% to 90%, noncondensing |
| Operating: | +32 to +122 °F (0 to +50 °C) / 10% to 90%, noncondensing |

| Cooling | Convection, vents on top and sides |

| Thermal dissipation |
| Device | 15.4 BTU/hour |
| Device and power supply | 21.0 BTU/hour |

| Mounting |
| Rack mount | Yes, with optional 1U high rack shelf |
| Furniture mount | Yes, with optional under-desk mounting kit |

| Enclosure type | Metal |
| Enclosure dimensions | 1.0" H x 8.75" W x 6.0" D (half rack wide) (2.5 cm H x 22.2 cm W x 15.2 cm D) (Depth excludes connectors.) |

| Product weight | 0.6 lbs (0.3 kg) |

| Regulatory compliance | CE, c-UL UL, CE**, C-tick, FCC Class A**, ICES, VCCI, Complies with the appropriate requirements of RoHS, WEEE |

| NOTE: | **CE and FCC testing is conducted with STP (shielded twisted pair) I/O cable. |

| Warranty | 3 years parts and labor |
| Everlast power supply warranty | 7 years parts and labor |

| NOTE: | All nominal levels are at ±10%. |

| NOTE: | Specifications are subject to change without notice. |

| NOTE: | Shipping weights and dimensions are available at www.extron.com. |

4346-090818-D12