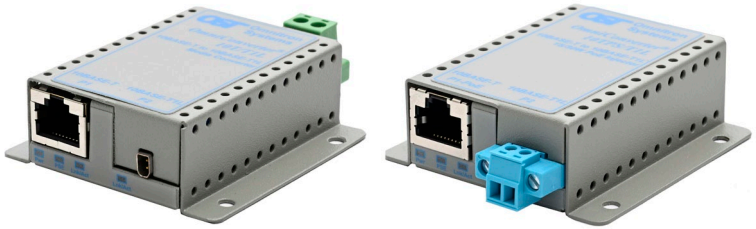
Omnitron Systems

# OmniConverter® Single Pair Ethernet Media Converter



# User Manual

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**Warranty**

This product is warranted to the original purchaser (Buyer) against defects in material and workmanship for a period of two (2) years from the date of shipment. A lifetime warranty may be obtained by the original purchaser by registering this product at www.omnitron-systems.com/support within ninety (90) days from the date of shipment. During the warranty period, Omnitron will, at its option, repair or replace a product which is proven to be defective with the same product or with a product with at least the same functionality.

For warranty service, the product must be sent to an Omnitron designated facility, at Buyer's expense. Omnitron will pay the shipping charge to return the product to Buyer's designated US address using Omnitron's standard shipping method.

**Limitation of Warranty**

The foregoing warranty shall not apply to product malfunctions resulting from improper or inadequate use and/or maintenance of the equipment by Buyer, Buyer-supplied equipment, Buyer-supplied interfacing, unauthorized modifications or tampering with equipment (including removal of equipment cover by personnel not specifically authorized and certified by Omnitron), or misuse, or operating outside the environmental specification of the product (including but not limited to voltage, ambient temperature, radiation, unusual dust, etc.), or improper site preparation or maintenance.

No other warranty is expressed or implied. Omnitron specifically disclaims the implied warranties of merchantability and fitness for any particular purpose.

The remedies provided herein are the Buyer's sole and exclusive remedies. Omnitron shall not be liable for any direct, indirect, special, incidental, or consequential damages, whether based on contract, tort, or any legal theory.

### Environmental Notices

The equipment covered by this manual must be disposed of or recycled in accordance with the Waste Electrical and Electronic Equipment Directive (WEEE Directive) of the European Community directive 2012/19/EU on waste electrical and electronic equipment (WEEE) which, together with the RoHS Directive 2015/863/EU, for electrical and electronic equipment sold in the EU after July 2019. Such disposal must follow national legislation for IT and Telecommunication equipment in accordance with the WEEE directive: (a) Do not dispose waste equipment with unsorted municipal and household waste. (b) Collect equipment waste separately. (c) Return equipment using collection method agreed with Omnitron.

The equipment is marked with the WEEE symbol shown to indicate that it must be collected separately from other types of waste. In case of small items the symbol may be printed only on the packaging or in the user manual. If you have questions regarding the correct disposal of equipment go to www.omnitron-systems.com/support or e-mail to Omnitron at intlinfo@omnitron-systems.com.

### Safety Warnings and Cautions

ATTENTION: Observe precautions for handling electrostatic discharge sensitive devices.

WARNING: Potential damage to equipment and personal injury.

WARNING: Risk of electrical shock.

### Technical Support:


Phone: (949) 250-6510
Fax: (949) 250-6514
Address: Omnitron Systems Technology
38 Tesla
Irvine, CA 92618 USA
E-mail: support@omnitron-systems.com
URL: http://www.omnitron-systems.com


040-02010-001C 6/26



### Description

The OmniConverter Single Pair Ethernet converters are IEEE 802.3cg compliant products that convert 10BASE-T Ethernet to single-pair 10BASE-T1L Ethernet. They use single-pair Ethernet cabling (SPE) to extend the Ethernet link distance up to 1km.

They feature one IEEE 802.3cg compliant 10BASE-T1L terminal or IEC 63171-2 SPE port and one 10BASE-T RJ-45 port supporting 10Mbps full-duplex data rates.

The 10T/T1L is a 10BASE-T RJ-45 Ethernet to single-pair 10BASE-T1L Ethernet converter. The 10TPS/T1L is an 10BASE-T IEEE 802.3at (PoE+) RJ-45 Ethernet to single-pair 10BASE-T1L Ethernet converter.

See data sheet for more information and models.

### Power Modes

Secure the ground wire to the grounding screw located on the back of the module.

**WARNING REGARDING EARTHING GROUND:**

- It is recommended to connect the equipment to the AC power system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the AC power system earthing electrode is connected for surge protection and to eliminate damaging potentials from developing on the isolated chassis.
- There shall be no switching or disconnecting devices in the earthed circuit conductor between the AC source and the earthing electrode conductor.

To power the module using the AC/DC adapter, connect the barrel connector from the AC/DC adapter to the module and connect the AC/DC adapter to the AC outlet. Confirm that the module has powered up properly by checking the power status LED located on the top of the module.

**WARNING!**

***Before inserting the Power Adapter, verify that the power on the unit is appropriate for your AC line voltage source.***

To power the unit using a DC power source, prepare a power cable using a two-conductor insulated wire (not supplied) with 12AWG to 14AWG thickness. Cut the power cable to the length required. Strip approximately 3/8 of an inch of insulation from the power cable wires.

**WARNING REGARDING EARTHING GROUND:**

- This equipment shall be connected to the DC supply system earthing electrode conductor or to a bonding jumper from an earthing terminal bar or bus to which the DC supply system earthing electrode is connected.
- This equipment shall be located in the same immediate area (such as adjacent cabinets) as any other equipment that has a connection between the earthed conductor of the same DC supply circuit and the earthing conductor, and also the point of earthing of the DC system. The DC system shall not be earthed elsewhere.
- The DC supply source is to be located within the same premises as this equipment.
- There shall be no switching or disconnecting devices in the earthed circuit conductor between the DC source and the earthing electrode conductor.

Connect the power cables to the unit by fastening the stripped ends to the DC power connector.

Connect the ground wire to the grounding screws on the back of the module.

Connect the power wires to the DC power source. The Power LED should indicate the presence of power.

WARNING: Note the wire colors used in making the positive and negative connections. Use the same color assignment for the connection at the DC power source.

## Mounting and Cable Attachment

The converter is available as a standalone module with or without integrated wall-mount brackets.

When using the converter with integrated mounting brackets, attach the unit to a wall, backboard or other flat surfaces. Make sure the unit is placed in a safe, dry and secure location.

When using the converter without integrated mounting brackets, place on a flat level surface,

The converter requires proper air flow and all vents holes must not be compromised or restricted. It is normal for the media converter to run at a slightly elevated temperature

Connect the RJ-45 uplink port via an Ethernet Category 3 or better cable to a 10BASE-T Ethernet switch.

For PoE+ models, connect the RJ-45 PoE+ port via an Ethernet Category 3 cable or better to an external PoE/PoE+ powered device.

Connect the 2-Pin Terminal or IEC 63171-2 SPE connector port via a single-pair Ethernet (SPE) cable to the IEEE 802.3cg device. Cable must meet the SPE cable requirements: IEC 61156-13 (fixed) or IEC 61156-14 (flexible) 18AWG cable or better.



## LED Indicators

### 10T/T1L Models

| LED | Color | Description |
|---|---|---|
| Power<br>“PWR” | Green | OFF: No power<br>ON: Module has power |
| P1 Link Activity<br>“Lnk/Act” | Green | OFF: No RJ-45 link<br>ON: Port linked at 10M<br>Blinking: Data activity |
| P2 Link Activity<br>“Lnk/Act” | Green | OFF: No link<br>ON: Port linked at 10M<br>Blinking: Data activity |

### 10TPS/T1L Models

| LED | Color | Description |
|---|---|---|
| Power<br>“PWR” | Green | OFF: No power<br>ON: Module has power |
| P1 PoE Power<br>“PSE” | Green | OFF: No PSE power<br>ON: PSE power active<br>Single Blink: Connected to 802.3af PoE<br>Two Blinks: Connected to 802.3at PoE+ |
| P1 Link Activity<br>“Lnk/Act” | Green | OFF: No RJ-45 link<br>ON: Port linked at 10M<br>Blinking: Data activity |
| P2 Link Activity<br>“Lnk/Act” | Green | OFF: No link<br>ON: Port linked at 10M<br>Blinking: Data activity |

## Specifications

### 10T/T1L Models

| | | |
|---|---|---|
| **Standard Compliances** | IEEE 802.3<br>IEEE 802.3cg | |
| **Environmental** | RoHS, WEEE, REACH | |
| **Frame Size** | Up to 1518 bytes | |
| **Port Types** | Copper: | 10BASE-T (RJ-45)<br>10BASE-T1L (2-Pin Terminal or IEC 63171-2 SPE connector) |
| **Cable Types** | RJ-45:<br><br>2-Pin Terminal:<br>or<br>IEC 63171-2 | Ethernet, EIA/TIA 568A/B, Cat 3 or better<br><br>Single-Pair Ethernet (SPE) cable, IEC 61156-13 (fixed) or IEC 61156-14 (flexible) 18AWG cable or better |
| **AC Power Requirements** | 100 - 240VAC/50 - 60Hz<br>0.6A @ 120VAC (max); 2.5mm connector | |
| **DC Power Requirements** | +9 to +24VDC;<br>0.034A @ 12VDC<br>2 Pin Terminal (isolated) | |
| **Dimensions W x D x H** | w/o Bracket:<br><br>w/ Bracket: | 1.75” x 2.50” x 0.84”<br>(44.5 mm x 63.5 mm x 21.3 mm)<br>2.10” x 2.50” x 0.84”<br>(53.3 mm x 63.5 mm x 21.3 mm) |
| **Weight** | Module:<br>With AC/DC : | 2.5 oz. (70.9 grams)<br>12 oz. (340.2 gram) |
| **Temperature** | Commercial:<br>Wide:<br>Extended:<br>Storage: | 0 to 50°C<br>-40 to 60°C<br>-40 to 75°C<br>-50 to 85°C |
| **Humidity** | 5 to 95% (non-condensing) | |
| **Altitude** | -100m to 4,000m | |
| **MTBF (hrs)** | Module Only:<br>US AC/DC Adapter:<br>Universal AC/DC Adapter: | 2,481,000<br>100,000<br>100,000 |
| **Warranty** | Lifetime warranty with 24/7/365 free Technical Support | |



### 10TPS/T1L Models

| | | |
|---|---|---|
| **Standard Compliances** | IEEE 802.3<br>IEEE 802.3cg<br>IEEE 802.3af<br>IEEE 802.3at | |
| **Environmental** | RoHS, WEEE, REACH | |
| **Frame Size** | Up to 1518 bytes | |
| **Port Types** | Copper: | 10BASE-T (RJ-45)<br>10BASE-T1L (2-Pin Terminal or IEC 63171-2 SPE connector) |
| **Cable Types** | RJ-45:<br><br>2-Pin Terminal:<br>or<br>IEC 63171-2 | Ethernet, EIA/TIA 568A/B, Cat 3 or better<br><br>Single-Pair Ethernet (SPE) cable, IEC 61156-13 (fixed) or IEC 61156-14 (flexible) 18AWG cable or better |
| **AC Power Requirements** | 100 - 240VAC/50 - 60Hz<br>1.5A @ 120VAC (max); 2.1mm connector | |
| **DC Power Requirements** | +44 to +57VDC;<br>0.56A @ 56VDC<br>2 Pin Terminal (isolated) | |
| **Dimensions W x D x H** | w/o Bracket:<br><br>w/ Bracket: | 1.75” x 2.50” x 0.84”<br>(44.5 mm x 63.5 mm x 21.3 mm)<br>2.10” x 2.50” x 0.84”<br>(53.3 mm x 63.5 mm x 21.3 mm) |
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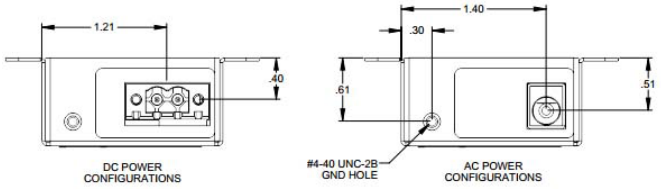
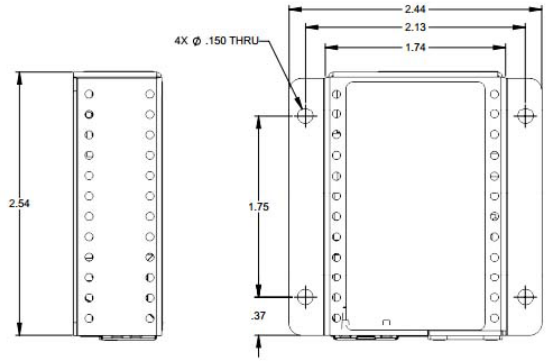
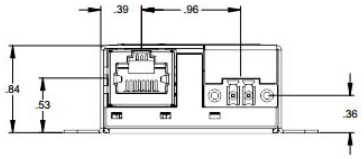
| **Humidity** | 5 to 95% (non-condensing) | |
| **Altitude** | -100m to 4,000m | |
| **MTBF (hrs)** | Module Only:<br>US AC/DC Adapter:<br>Universal AC/DC Adapter: | 2,160,000<br>100,000<br>100,000 |
| **Warranty** | Lifetime warranty with 24/7/365 free Technical Support | |

## Mechanical

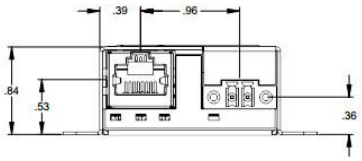


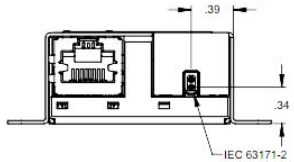

10T/T1L Model
2-Pin Terminal

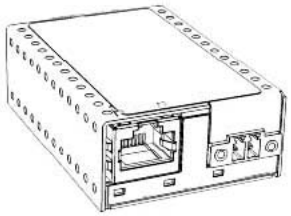



10TPS/T1L Model
2-Pin Terminal

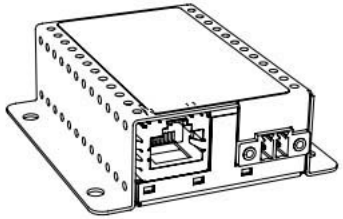



IEC 63171-2 SPE



WITHOUT MOUNTING FLANGES



WITH MOUNTING FLANGES