

# User Guide

## IPOTW1052-111-LRT

### Hardened Ethernet Extender

- Extend Ethernet distance up to an additional 200m (656 feet) over 24AWG non-UTP cable
- Supports 2-wire transmission
- User selectable DIP switch to configure unit to Master unit or Slave
- Ethernet port supports Full/Half Duplex operation
- Ethernet port supports Auto MDI/MDI-X switching function
- Redundant 12~48VDC power inputs with Terminal Block
- Rigid IP-30 housing design
- DIN-Rail or wall mountable



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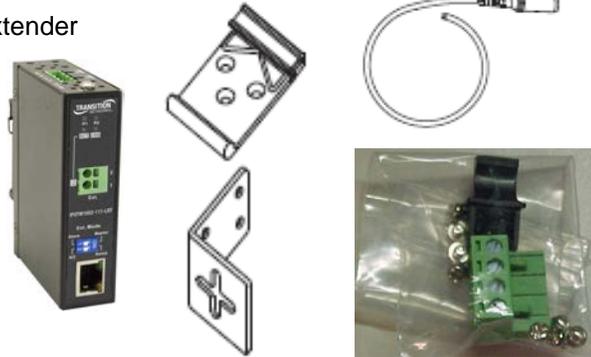
## Introduction

Transition Networks' IPOTW1052-111-LRT is a cost-effective solution for extending an Ethernet connection beyond its inherent distance limitation. The IPOTW1052-111-LRT has a terminal block interface that can extend the distance up to an additional 200 meters using a 24AWG non-UTP cable. The IPOTW1052-111-LRT supports 2-wire transmission and it provides a wide operating temperature range (-40° ~ +75° C) making it suitable for harsh operating environments. Installation is simple, as no IP address or MAC address is needed.

## Package Contents

The IPOTW1052-111-LRT is shipped with the following items. If any items are missing or damaged, contact your sales or service representative.

- One IPOTW1052-111-LRT Ethernet Extender
- One DIN-rail Kit
- One Wall-mount Kit (2 brackets)
- One printed Quick Start Guide
- One DC Plug
- One Terminal Block Kit



### Optional

- Power Supply (TN 25135) isolated power supply
- Country-specific Power Cord

Before installation, make sure you have all of the package contents. Save the packaging for possible future use.

## Safety Warnings

**⚠️ Elevated Operating Ambient:** If installed in a closed cabinet, the operating ambient temperature of the rack environment may be greater than room ambient. Therefore, consideration should be given to installing the equipment in an environment compatible with the maximum ambient temperature (T<sub>ma</sub>) specified by the manufacturer.

**⚠️ Reduced Air Flow:** Installation of the equipment should be such that the amount of air flow required for safe operation of the equipment is not compromised.

**⚠️ Mechanical Loading:** Mounting of the equipment should be such that a hazardous condition is not achieved due to uneven mechanical loading.

**⚠️ Circuit Overloading:** Consideration should be given to the connection of the equipment to the supply circuit and the effect that overloading of the circuits might have on overcurrent protection and supply wiring. Appropriate consideration of equipment nameplate ratings should be used when addressing this concern.

## Applications

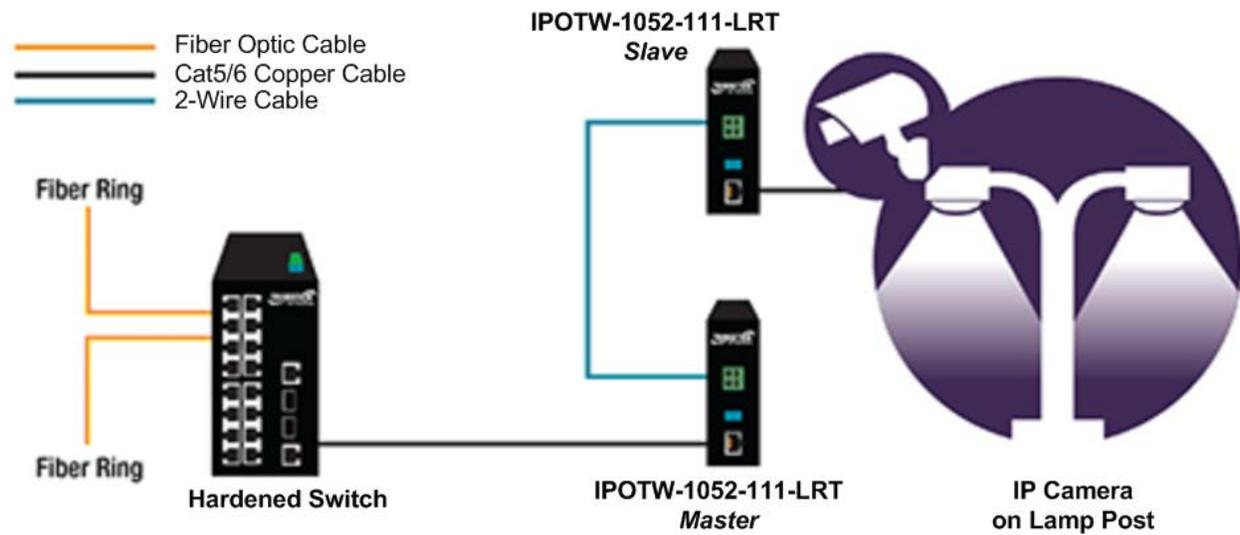
The IPOTW1052-111-LRT is a cost-effective solution for extending an Ethernet connection beyond its inherent distance limitation. The IPOTW1052-111-LRT uses include Traffic Monitoring and Security Surveillance where customers want to leverage their existing wiring infrastructure for analog cameras to support upgrades to IP camera technology.

The IPOTW1052-111-LRT is also used where two-wire twisted pair wiring already exists in support of analog video technologies and where there is a desire to upgrade to digital transmission technologies (i.e., IP cameras) by leveraging the existing wiring - as opposed to installing new wiring that may be limited by factors such as installation cost, accessibility, environment, or unsafe conditions such as the presence of high power voltage or hazardous materials such as asbestos.

Shown below are IPOTW1052-111-LRT devices with an AXIS P3214-V PTZ PoE camera and a L1000i-at PoE injector:

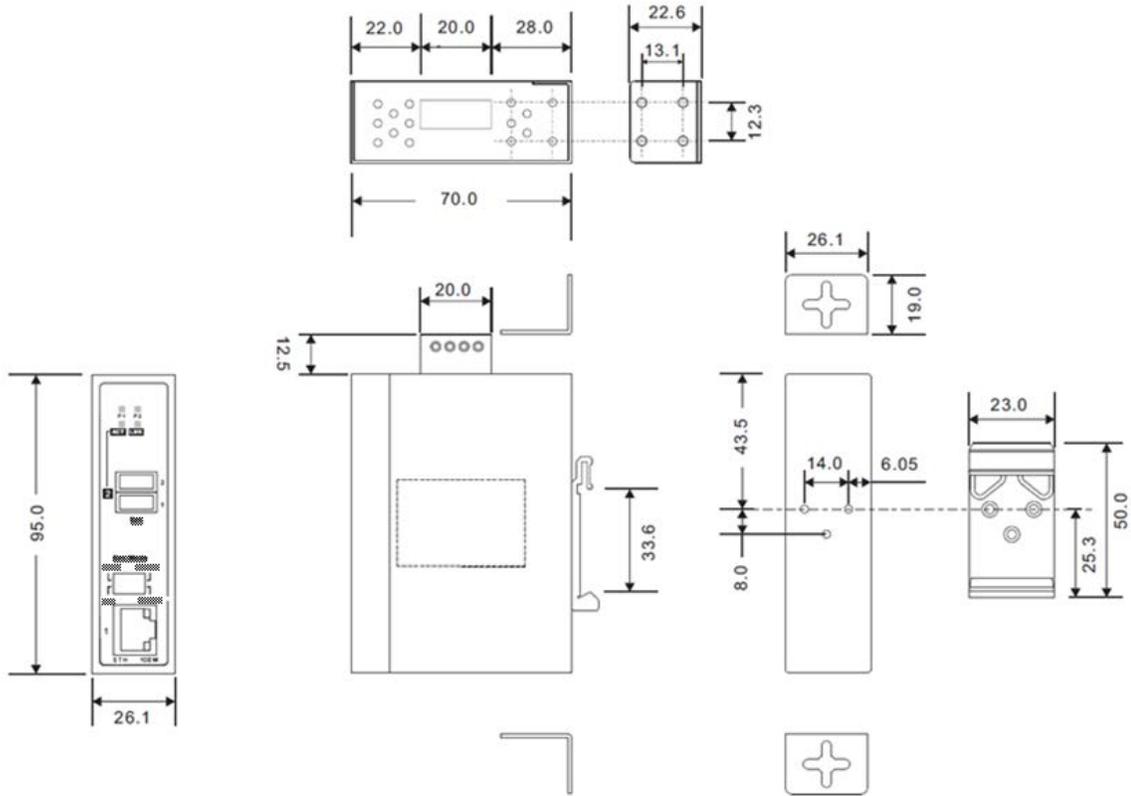


Below, two IPOTW1052-111-LRTs are used to extend the distance up to an additional 200 meters using 24AWG cable.



# Dimensions

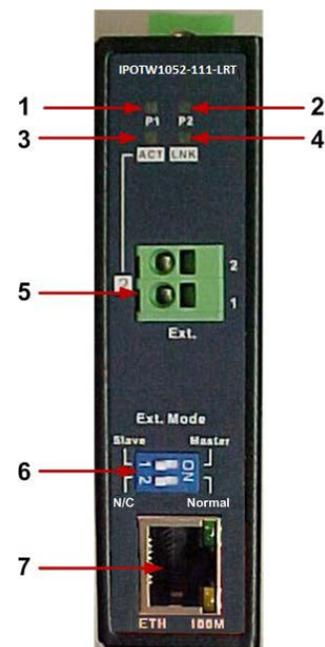
(Unit: mm)



## Panel Layouts

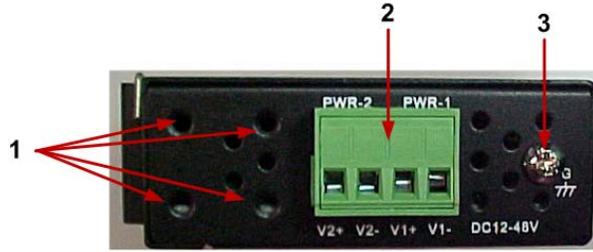
### Front Panel

- 1 PWR1 LED P1
- 2 PWR2 LED P2
- 3 LED for **Extension** port activity
- 4 LED for **Extension** port connection status
- 5 **Extension** port Terminal Block
- 6 DIP Switch for mode selection of **Extension** port
- 7 **ETH 100M** LAN Port



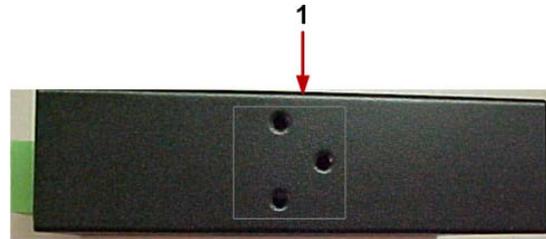
### Top Panel

- 1. Wall-mount screw holes
- 2. Terminal Block
- 3. Frame ground



### Rear Panel

- 1. DIN-rail screw holes



### Port Descriptions

Product Number	Port One	Port Two
IPOTW1052-111-LRT	One 100Base-TX	One 2-Wire Terminal Block

## Installation

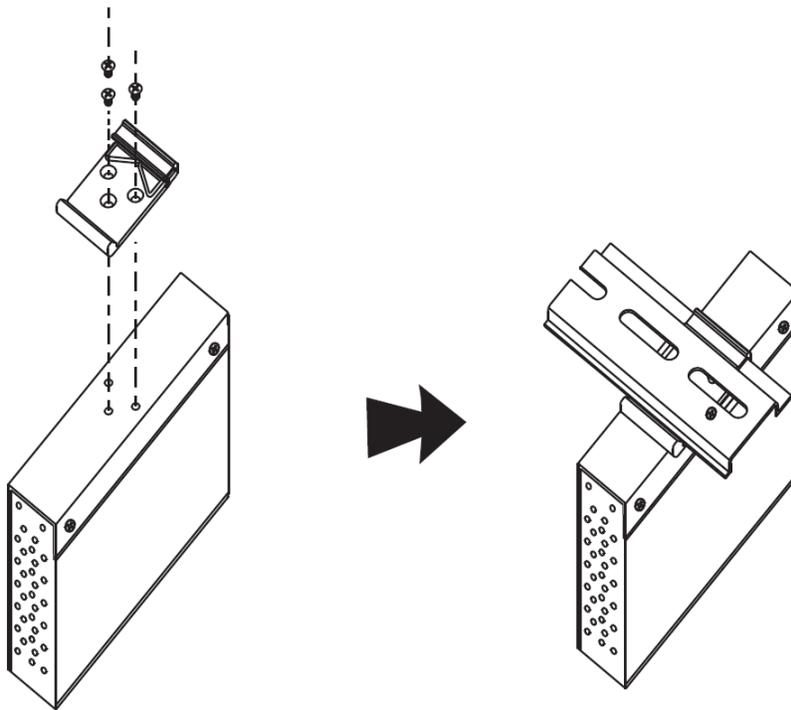
Install the IPOTW1052-111-LRT using the procedures below for Din Rail or wall mounting. **Note:** make all connections before applying power.

### *DIN-Rail Mounting*

**Step 1:** Slant the extender and screw the DIN-rail kit onto the back of the extender, right in the middle of the back panel. The DIN Rail bracket is fastened to the back of the IPOTW1052-110-LRT with three screws.

**Step 2:** Slide the extender onto a DIN Rail from the DIN-rail kit and make sure the extender 'clicks' into the rail firmly. To mount the extender on a DIN rail, slant the extender and position the metal spring behind the top edge of the DIN-Rail.

**Step 3:** Push the extender down on the DIN-Rail until the bottom of the clip grips the bottom edge of the DIN Rail. You may hear a "click" sound when this happens.



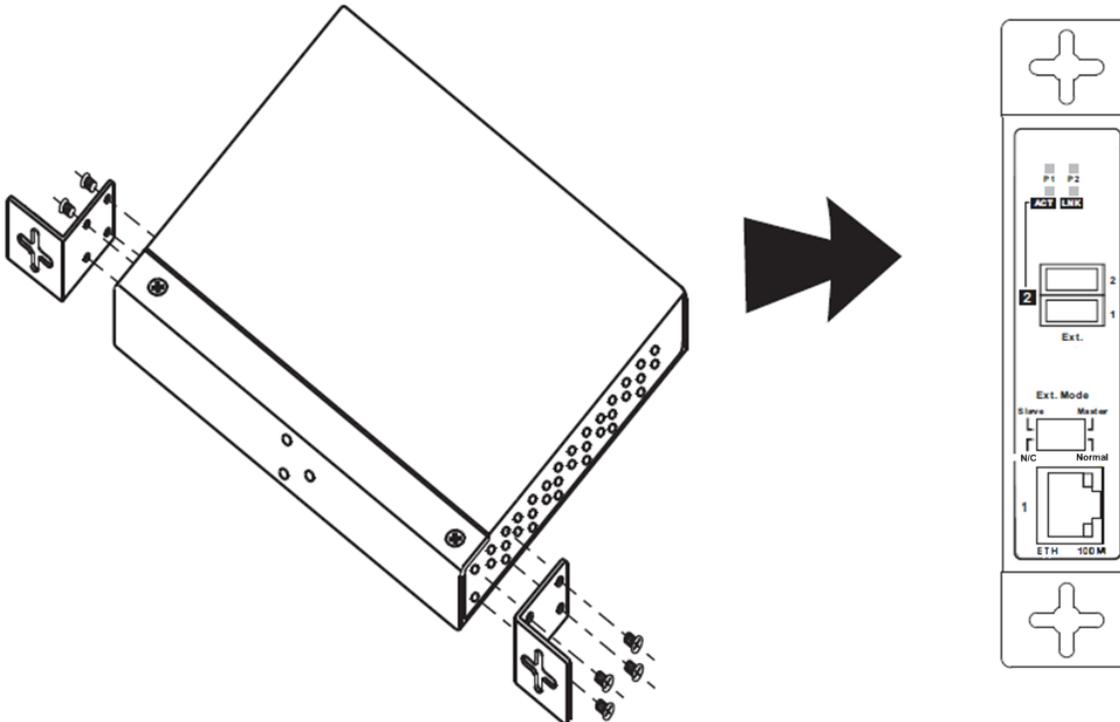
For optimal cooling, mount vertically and leave sufficient room above and below the venting holes.

## Wall Mounting

**Step 1:** The two wall mount brackets are fastened to the ends of the IPOT1052-111-LRT using four screws in each bracket as shown below.

**Step 2:** Using the extender with wall mount brackets attached as a template, mark hole locations on the wall or panel for mounting two screws per bracket are recommended.

**Step 3:** Pre-drill the marked holes on the wall or panel and securely fasten the extender to the wall or panel using appropriate sizes screws. For optimal cooling, mount vertically and leave sufficient room above and below the venting holes.



## Network Connection

The IPOTW1052-111-LRT has a standard 100Mbps RJ45 Ethernet port. Based on the link type, the device uses Cat 5 or better to connect to any other network devices (PCs, servers, switches, routers, or hubs). The cable specifications are provided below. **Note:** make all connections and DIP switch setting changes before applying power.

### Cable Type and Specifications

Cable	Type	Max. Length	Connector
100BASE-TX	Cat 5 100-ohm UTP	UTP 100m (328 ft)	RJ-45

Pin assignments for the various cable types are provided in the following tables.

#### 100Base-TX RJ-45

<u>Pin Number</u>	<u>Assignment</u>
1	TD+
2	TD-
3	RD+
4	Not used
5	Not used
6	RD-
7	Not used
8	Not used

#### 100Base-TX MDI/MDI-X

<u>Pin Number</u>	<u>MDI port</u>	<u>MDI-X port</u>
1	TD+(transmit)	RD+(receive)
2	TD-(transmit)	RD-(receive)
3	RD+(receive)	TD+(transmit)
4	Not used	Not used
5	Not used	Not used
6	RD-(receive)	TD-(transmit)
7	Not used	Not used
8	Not used	Not used

### 100Mbps Extension (Ext.) Port Terminal Block

<u>Pin Number</u>	<u>Assignment *</u>
1	D1+
2	D1-



**Step 1:** Insert a small flat-blade screwdriver into the rectangular opening and insert one wire, then remove the screwdriver from the opening to secure the wire.

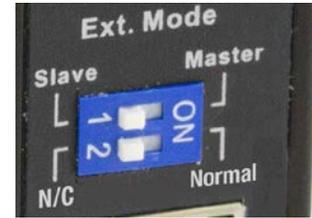
**Step 2:** Repeat step 1 for the other wire.

\* **Note:** the "+" and "-" signs represent the polarity of the wires that make up each wire pair.

## DIP Switch Functions

The Ext. Mode DIP Switch settings are described below. Make any DIP Switch changes before applying power.

\* **Note:** One unit must be set to Master mode and one unit must be set to Slave mode. **Both** units must be set to Normal mode. If both ends are not set to Normal mode, they will not link up. Set the PC/switch side extender to Master and set the IP camera/other device side to Slave.

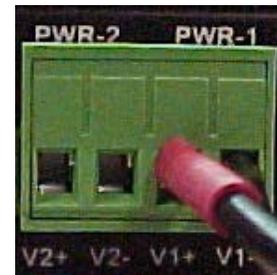


#	Position	Setting
1	ON	<b>Master Mode:</b> Puts extender in Master Mode (PC or switch side - user selectable).
	OFF	<b>Slave Mode:</b> Puts extender in Slave Mode (IP camera/other device side - user selectable).
2*	ON	<b>Normal Mode:</b> Allows user to configure Master Mode or Slave Mode based on DIP switch #1 settings. This is the default setting.
	OFF	<b>N/C Mode:</b> Not configurable – default operation should be “Normal”. Select Master mode or Slave mode using DIP switch 1.

## Terminal Block (PWR-2 and PWR-1) Wiring

The IPOTW1052-111-LRT requires 12-48 VDC. **Note:** make all connections and DIP switch setting changes before applying power. **Caution:** Before applying power, insert the screw terminal connectors into the Extender and verify all connections.

Step 1: The Extender supports dual redundant power supplies which are connected via the 4-pin terminal block. Insert the negative and positive wires into the **V-** and **V+** terminals, respectively.



Insert the negative wire(s) into the **V-** terminal(s) and insert the positive wire(s) into the **V+** terminal(s).

Step 2: To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.



## Grounding

### Required for proper grounding:

- Isolated DC Supply
- Connect chassis to earth ground

### Do not connect earth ground to:

- Negative input terminal
- Positive input terminal

If you have any questions, call us at 952.358.3601.



**Improper Grounding**  
**Required:**  
 Isolated DC Supply  
 Connect chassis to earth ground  
**Do not connect earth ground to:**  
 Negative input terminal  
 Positive input terminal  
 Questions? Call us at 1.952.358.3601

**DANGER**

## Optional Power Supply (25135)

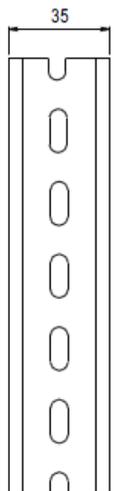
The optional power supply is a Mean Well DR-45 series 45 Watts DIN-Rail power supply. This power supply can be used to provide the required 12-48v input in situations where the only available power is 85 ~ 264VAC or 120 ~ 370VDC.

**Note:** the power supply used with the IPOTW1052-111-LRT must be an isolated type of power supply.

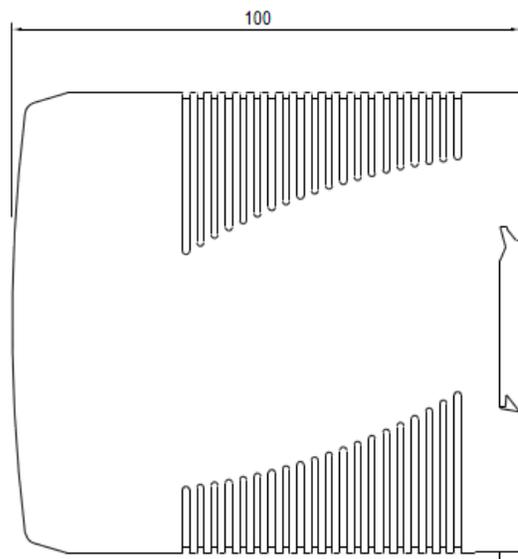
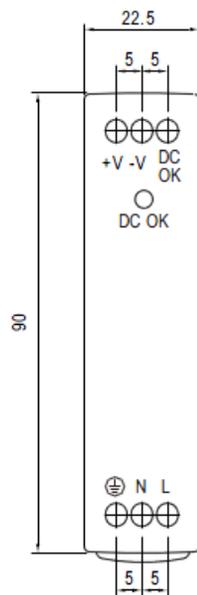
### Power Supply (25135) Specifications

The optional Transition Networks 25135 power supply can provide the IPOTW1052-111-LRT with the required 12~48v. Its specs are below:

Output Max. Output	10 W
Output DC Voltage	24 V
Output Rated Current	0.42A
Output Current Range	0 ~ 0.42A
Output Rated Power	10W
Input Voltage Range	85 ~ 264VAC / 120 ~ 370VDC
Input Frequency Range	47 ~ 63Hz
Input Efficiency (Typ.)	84%
Input AC Current (Typ.)	0.33A/115VAC / 0.21A/230VAC
Input Inrush Current (Typ.)	Cold Start 35A/115VAC / 70A/230VAC
Input Leakage Current	<1mA / 240VAC
Protections:	Short circuit, Overload, Over voltage
Safety Standards	UL508, TUV EN60950-1 approved
EMC Emission	Compliance to EN55011, EN55022 (CISPR22), EN61204-3 Class B, EN61000-3-2,-3
EMC Immunity	Compliance to EN61000-4-2, 3, 4, 5, 6, 8, 11, EN55024, EN61000-6-1, EN61204-3, light industry level, criteria A
MTBF	584K hrs min. MIL-HDBK-217F (25°C)
Dimensions	22.5 x 90 x 100 mm (W x H x D)



Install DIN rail TS35/7.5 or TS35/15



Case No. 956 Unit:mm

## Specifications

### Physical Ports

100Base-TX Ports in RJ45 Auto MDI/MDIX	One
100Mbps Ethernet Extender Ports	One (supports 2-wire on terminal block)

### Technology

Ethernet Standards	IEEE 802.3u for 100Base-TX, IEEE 802.1p, IEEE 802.3x
Processing	Store-and-Forward
Frame Size:	64 - 4096 bytes

### Power

Input power	Dual 12~48 VDC power inputs at 4-pin Terminal Block
Power consumption (Typ.)	2 Watts
Overload Current protection	Present 2A per UL508/60950
Reverse Polarity protection	Present on input power pins

### Physical Characteristics

Enclosure	IP-30
Dimensions (W x D x H)	26.1 (W) x 70 (D) x 95 (H) mm (1.03 x 2.76 x 3.74 in.)
Weight (g)	240 g (8.46 ounces)

### Environmental

Storage Temperature	-40° to +85° C (-40° to +185° F)
Operating Temperature	-40° to +75° C (-40° to +167° F)
Operating Humidity	5% to 95% Non-condensing

### Regulatory Approvals

EMI	FCC Part 15, CISPR (EN55022) Class A EN55024: 2010, EN6100-3-2:2006+A12009 + A2: 2009 EN6100-3-3:2013
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), EN61000-4-8, EN61000-4-11
Shock	IEC60068-2-27
Free Fall	IEC60068-2-32
Vibration	IEC60068-2-6
Safety	EN60950-1
MTBF	1860574.5156 hours at 25 °C (Telcordia SR-332 Issue 2)
Warranty	Limited Lifetime Warranty

For current information on the IPOTW1052-111-LRT view the online user guide at [www.transition.com](http://www.transition.com).

**IMPORTANT:** Copper based media ports such as Twisted Pair (TP) Ethernet, USB, RS232, RS422, RS485, DS1, DS3, Video Coax, etc., are intended to be connected to intra-building (inside plant) link segments that are not subject to lightening transients or power faults. Copper-based media ports such as Twisted Pair (TP) Ethernet, USB, RS232, RS422, RS485, DS1, DS3, Video Coax, etc., are NOT to be connected to inter-building (outside plant) link segments that are subject to lightening transients or power faults.

## LED Descriptions

After installing the extender and connecting cables, the green power LED should light. The LEDs are shown and described below.

LED	Color	Status	Description
<b>P1</b>	Green	On	DC Power Module 1 activated.
<b>P2</b>	Green	On	DC Power Module 2 activated.
<b>LINK</b>	Green	On	Ethernet Extender Port is linked.
<b>ACT</b>	Amber	On	Transmitting data over Ethernet Extender port.



## Troubleshooting

If the IPOTW1052-111-LRT fails, isolate and correct the fault by determining the answers to the following questions and then taking the indicated action:

- Is the **P1** or **P2** (power) LED lit?
  - NO
    - Is the power supply the proper type of voltage and cycle frequency for the AC outlet?
    - Is the Terminal Block installed on the IPOTW1052-111-LRT and connected correctly?
    - Verify the [DIP Switch Functions](#) on page 9.
    - Contact Tech Support; see [Contact Us](#) on page 14 below.
  - YES
    - Proceed to step 2.
- Is the **LNK** (copper link) LED lit?
  - NO
    - Check the cables for proper connection. See [Cable Type and Specifications](#) on page 8.
    - Check the DIP switch for proper settings. See [DIP Switch Functions](#) on page 9.
    - Contact Tech Support; see [Contact Us](#) on page 14 below.
  - YES
    - Proceed to step 3.
- Is the **ACT** (activity) LED lit?
  - NO
    - Check the cables for proper connection. See [Terminal Block \(PWR-2 and PWR-1\) Wiring](#) on page 9.
    - Verify that the cables on the local and remote IPOTW1052-111-LRT are properly connected.
    - Contact Tech Support; see [Contact Us](#) on page 14 below.
  - YES
    - Proceed to step 4.
- Is the Ethernet switch working properly?
  - YES
    - Is the far end device working properly?
    - YES
      - If there is activity on the port, disconnect and reconnect the copper cable to re-initialize.
      - Contact Tech Support; see [Contact Us](#) on page 14 below.

## Error Messages and Recovery

**Message:** Block Unknown Multicast Packets

**Problem:** A camera sends unicast packets OK, but the camera fails to deliver multicast streams.

**Meaning:** Occasionally an installation is created without the required IGMP querier. If the switch is not equipped with IGMP snooping then they just deliver all multicast traffic everywhere. If the cameras do not receive IGMP reports, then they will Block Unknown Multicast Packets, and the video will not pass through.

**Recovery:** Use a Packet Sniffer such as WireShark. Enable / configure an IGMP querier in the switch as is required for a properly configured multicast network. Contact Tech Support; see [Contact Us](#) on page 14 below.

## Record Model and System Information

After performing the troubleshooting procedures above, and before calling or emailing Tech Support, record as much information as possible in order to help the Tech Support Specialist.

Model #: \_\_\_\_\_ S/N: \_\_\_\_\_

Your Transition Networks service contract #: \_\_\_\_\_

LED conditions: \_\_\_\_\_

Power Supply used: \_\_\_\_\_

DIP Switch settings: \_\_\_\_\_

Describe the problem: \_\_\_\_\_

Describe any action(s) already taken to resolve the problem (e.g., changing mode, resetting, etc.): \_\_\_\_\_

The model # and serial # of all other Transition Networks products in the network: \_\_\_\_\_

Describe your network environment (layout, cable type, cable distance, etc.): \_\_\_\_\_

Transition Networks device history (have you returned the device before, is this a recurring problem, etc.): \_\_\_\_\_

Any previous Return Material Authorization (RMA) numbers: \_\_\_\_\_

## Contact Us

**Technical support:** Technical support is available 24-hours a day

US and Canada: 1-800-260-1312

International: 00-1-952-941-7600

**Transition now:** Chat live via the Web with Transition Networks Technical Support.

Log onto [www.transition.com](http://www.transition.com) and click the **Transition Now** link.

**Web-based seminars:** Transition Networks provides seminars via live web-based training.

Log onto [www.transition.com](http://www.transition.com) and click the **Learning Center** link.

**E-Mail:** Ask a question anytime by sending an e-mail to our technical support staff.

[techsupport@transition.com](mailto:techsupport@transition.com)

### Address

Transition Networks  
 10900 Red Circle Drive  
 Minnetonka, MN 55343, U.S.A.  
 telephone: 952-941-7600  
 toll free: 800-526-9267  
 fax: 952-941-2322



## Compliance Information

### Declaration of Conformity

## EU Declaration of Conformity

**IPOTW1052-111-LRT**  
Model/Part Number

*Transition Networks, Inc.*  
10900 Red Circle Drive, Minnetonka, Minnesota 55343 U.S.A.  
Manufacturer's Name and Address

This declaration of conformity is issued under the sole responsibility of the manufacturer.



**IPOTW1052-111-LRT**  
**Hardened Extended Media Converter**

is in conformity with the relevant Union harmonisation legislation:

Electromagnetic Compatibility (EMC) Directive 2014/30/EU:	EN 55022:2010, EN 55024:2010
Low-Voltage Directive (LVD) 2014/35/EU:	EN 60950-1:2006
EMI	FCC Part 15, CISPR (EN55022) Class A
EMS	EN61000-4-2 (ESD), EN61000-4-3 (RS), EN61000-4-4 (EFT), EN61000-4-5 (Surge), EN61000-4-6 (CS), N61000-4-8, EN61000-4-11
	IEC60068-2-27
Shock	IEC60068-2-32
Free Fall	IEC60068-2-6
Vibration	EN60950-1
Safety	EN60950-1

And hereby is declared compliant and carries the CE marking

I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standard(s).

<u>Minnetonka, Minnesota</u>	<u>5-16-16</u>	
<small>Place</small>	<small>Date</small>	<small>Signature</small>
<u>Stephen Anderson</u>	<u>Vice President of Engineering</u>	
<small>Full Name</small>	<small>Position</small>	

## FCC regulations

This device is in compliance with part 15 of the FCC rules. Operation is subject to these two conditions:

- (1) This device may not cause harmful interference.
- (2) This device must accept any interference received, including interference which may cause undesired operation.

## Canadian regulations

This digital apparatus does not exceed the Class A limits for radio noise for digital apparatus set out on the radio interference regulations of the Canadian Department of Communications.

Le présent appareil numérique n'émet pas de bruits radioélectriques dépassant les limites applicables aux appareils numériques de la Class A prescrites dans le Règlement sur le brouillage radioélectrique édicté par le ministère des Communications du Canada.

## European regulations

### Warning

This is a Class A product. In a domestic environment this product may cause radio interference in which case the user may be required to take adequate measures.

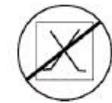
### Achtung !

Dieses ist ein Gerät der Funkstörgrenzwertklasse A. In Wohnbereichen können bei Betrieb dieses Gerätes Rundfunkstörungen auftreten. In diesem Fall ist der Benutzer für Gegenmaßnahmen verantwortlich.

### Attention !

Ceci est un produit de Classe A. Dans un environnement domestique, ce produit risque de créer des interférences radioélectriques, il appartiendra alors à l'utilisateur de prendre les mesures spécifiques appropriées.

In accordance with European Union Directive 2002/96/EC of the European Parliament and of the Council of 27 January 2003, Transition Networks will accept post usage returns of this product for proper disposal. The contact information for this activity can be found in the 'Contact Us' portion of this document.



CAUTION: RJ connectors are NOT INTENDED FOR CONNECTION TO THE PUBLIC TELEPHONE NETWORK. Failure to observe this caution could result in damage to the public telephone network.

Der Anschluss dieses Gerätes an ein öffentliches Telekommunikationsnetz in den EGMitgliedstaaten verstösst gegen die jeweiligen einzelstaatlichen Gesetze zur Anwendung der Richtlinie 91/263/EWG zur Angleichung der Rechtsvorschriften der Mitgliedstaaten über Telekommunikationsendeinrichtungen einschliesslich der gegenseitigen Anerkennung ihrer Konformität.

## Record of Revisions

Rev	Date	Notes
A	4/5/16	Initial release.
B	4/19/16	Clarify optional power supply use.
C	6/14/16	1. Clarify grounding and Terminal Block pin assignments. 2. Change front panel label. 3. Change default DIP switch settings to N/C and Normal. 4. Update graphics and DoC.

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IPOTW1052-111-LRT User Guide 33676 Rev. C

