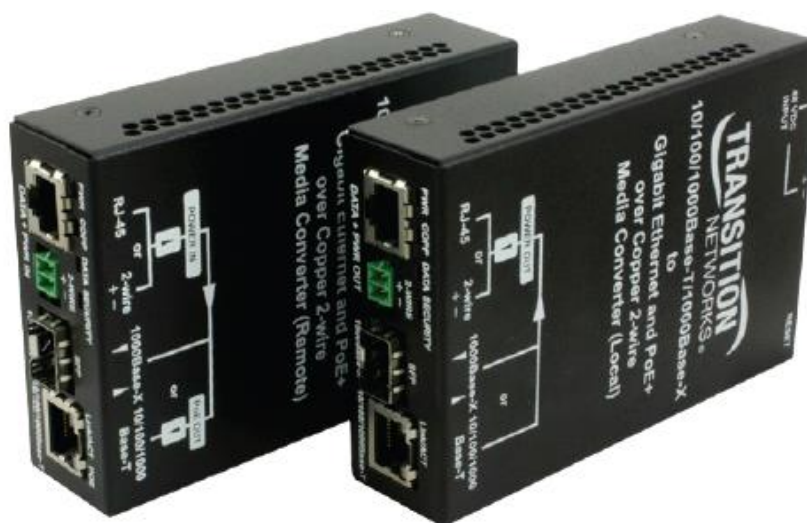


## EO2Pxx4052-111

### Ethernet over 2-Wire Extender With PoE+



E02PD4052-111

E02PSE4052-111

### User Guide

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## Introduction

Transition Networks' Ethernet Over 2-Wire Extenders with PoE+ (EO2P) are used in pairs, with a local device required at one end and a remote device required at the other end of a UTP cable, to support delivery of power and data over UTP cables. These flexible extenders have a 10/100/1000Base-T RJ-45 connector or 100/1000Base-X SFP combo port allowing connection to either copper or fiber Ethernet devices. The Local device provides a Gigabit 2-wire terminal block or RJ-45 connection to provide SELV (Safety Extra Low Voltage) power over twisted pair cable to the Remote device. The Remote device receives data and power via the 2-wire terminal block or RJ-45 connection and provides either a 100/1000Base-X SFP or 10/100/1000Base-T RJ-45 connector output with PoE+ power for IP cameras, WAPs, or other PoE powered end devices. Power for the Local device can be supplied via a +48VDC power source that meets IEEE 802.3 af/at isolation requirements of 1500VAC or 2200VDC or via the designated 90 Watt power adapter. The designated 90 Watt power adapter is optional at the Remote device for additional power or for providing redundant power.

Transition Networks EO2P are a flexible and cost-effective way to extend Ethernet networks at near Gigabit speeds and provide full PoE+ power to security cameras, WAPs or other IP end devices beyond the typical 100m Ethernet cable limit. The EO2P leverage the existing 18-24 AWG UTP (CAT6/5, CAT3, or 2-wires of other 18-24 AWG TP or UTP cable) cable infrastructure to provide data and SELV power to IP/Ethernet devices in remote locations, saving time and money over installing new cable and electric power when upgrading or extending networks.

## Ordering Information

#	Description
<b>EO2PSE4052-111</b> (Local)	One 10/100/1000Base-T RJ-45 or one 100/1000Base-X SFP Combo Port and one 10/100/1000Base RJ-45 or 2-Wire Terminal Block Combo Port; PSE.
<b>EO2PD4052-111</b> (Remote)	One 10/100/1000Base-T RJ-45 or 2-Wire Terminal Block Combo Port and one 10/100/1000Base-T IEEE 802.3af/at or one 100/1000Base-X SFP Combo Port; PD and PSE for connected IP device.
<b>25148</b> <b>Power Adapter</b>	Optional 90W Industrial Power Supply provides power for Local Unit and can be used optionally at the Remote Unit for redundant power. 90 ~ 264 VAC; 127 ~ 370 VDC. (Sold separately; country specific power cord included.)
<b>RMS19-SA4-02</b>	Optional 4-Slot Media Converter Shelf
<b>WMBL</b>	Optional 4" Wall Mount Kit (long); sold separately.
<b>WMBD</b>	Optional 5" [127 mm] DIN Rail Mount Bracket; sold separately.
<b>WMBD-F</b>	Optional 3.3" [84 mm] DIN Rail Mount Bracket (flat); sold separately.
<b>WMBV</b>	Optional 5" [127 mm] Vertical Mount; sold separately.

**Note:** Extenders must be used as a pair, with one Local Unit and one Remote Unit required. A properly isolated power source is required for each Local Unit and an external power supply is optional for Remote Units depending on power requirements.

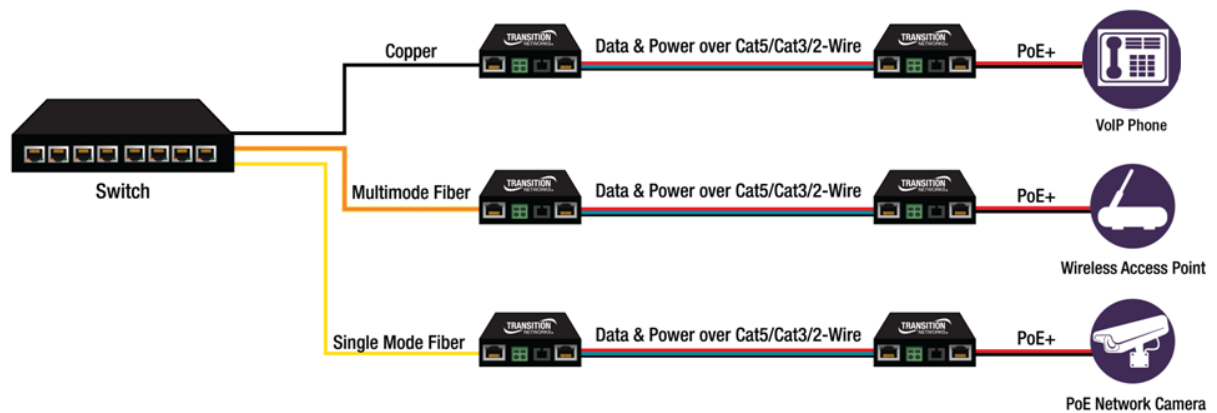
## Application Examples

The Ethernet Over 2-Wire Extenders With PoE+ allow utilization of existing 18-24 AWG unshielded twisted pair (CAT5, CAT3 and other 2-wire TP or UTP cabling) for:

- Extending network connectivity and power to IP devices such as wireless access points (WAPs) or VoIP phones,
- Bridging between two networks using a 2-wire TP or UTP infrastructure,
- Redundancy (failover) with copper and 2-wire twisted-pair,
- Conversion of analog surveillance systems to IP-based cameras, and more.

### Extending Network Connectivity and Power to IP Devices

The figure below shows multiple usage scenarios. The Ethernet over 2-Wire Extenders With PoE+ are flexible for use in most networks, offering both copper and fiber connections.



## Features

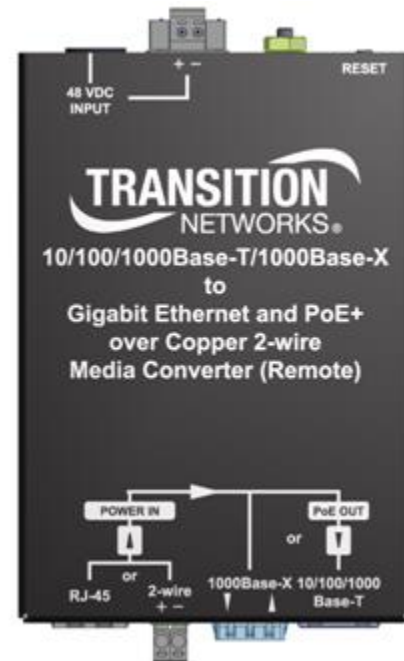
### Features

- Copper or fiber combo Ethernet port
- IEEE 802.3af/at compliant Remote PoE+ port for powering cameras or other remote devices
- Full PoE+ at 335-1500 ft. over a single twisted pair or 1500-6800 ft. over multiple twisted pairs (dependent on cable type). To determine power and distance for specific cable types, refer to the online calculator at <https://www.transition.com>.
- Half-Gigabit Ethernet speeds over UTP cable at distances of 660 feet (200m) or Fast Ethernet speeds at 2000 feet (610m) (dependent on wire gauge). (Typical 24 AWG cable DC resistance of 20 ohm per 1000 ft. A cable with less DC resistance may increase distance.)
- Web browser configurable; Web-based management of both local and remote
- Plug-and-Play installation
- Field upgradeable firmware
- Can be managed through a single IP address
- Auto MDI/MDI-X
- 128 Bit AES encryption over 2-wire STP or UTP
- IPv4 and IPv6 supported
- Client for DHCP, DNS, NTP
- Maximum frame size 1518 bytes
- Proprietary 2-wire SELV end device classification prevents power delivery to unintended devices.
- Power monitoring allows user to determine power available at the remote device over different cable lengths.
- Auto Power Reset (APR): PoE+ connected device can be monitored and power cycled/rebooted in the event it becomes unresponsive.
- Reverse polarity protected, but does not support telco -48V (positive connection to earth ground).

## Device Views



EO2PSE4052-111 (Local PSE Unit)



EO2PD4052-111 (Remote PD Unit)

## Package Contents

Carefully unpack the contents of your order and verify you have ordered and received all required items:

- One EO2PD4052-111 Remote PD Unit (ordered separately but used as a pair with Local PSE Unit) and:
  - four rubber feet
  - printed Quick Start Guide
  - one 2-Position Terminal Block Plug Option (TN 28993)
  - one 2-Position Terminal Block Plug Option (TN 28992)
- One EO2PSE4052-111 Local PSE Unit (ordered separately but used as a pair with Remote PD Unit) and:
  - four rubber feet
  - printed Quick Start Guide
  - one 2-Position Terminal Block Plug Option (TN 28993)
  - one 2-Position Terminal Block Plug Option (TN 28992)
- One 25148 90W Power Adapter
  - includes country-specific power cord

Save the packaging for possible future use.

## Related Information

A printed Quick Start Guide is shipped with each EO2P unit. A full User Guide manual is available online. Related manuals include:

- EO2Pxx4052-111 Quick Start Guide, 33705
- EO2Pxx4052-111 User Guide, 33706 (this manual)

For Transition Networks Drivers, Firmware, etc. go to the [Product Support](#) webpage (login required).

For Transition Networks Application Notes, Manuals, Brochures, Data Sheets, Specifications, etc. go to the [Support Library](#) (no login required).

For SFP manuals and other information see Transition Networks [SFP page](#).



## Installation

### Install Cautions and 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 (Tma) 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. Do not place any equipment on top of a rack-mounted unit.

**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.

**Inter-building and Protection Requirements:** These products incorporate surge protection.

**Not Designed for Use in Life Support Equipment or Applications:** These products are not designed for use in life support equipment or applications that would cause a life-threatening situation if any such product failed. Do not use this product in these types of equipment or applications.

**Export Rules:** With respect to the product described herein, the user or recipient, in the absence of appropriate U.S. government authorization, agrees:

- 1) Not to re-export the or release any such information consisting of technology, software or source code controlled for national security reasons by the U.S. Export Control Regulations ("EAR"), to a national of EAR Country Groups D:1 or E:2;
- 2) Not to export the direct product of such technology or such software to EAR Country Groups D:1 or E:2, if such technology or software and direct products thereof are controlled for national security reasons by the EAR; and
- 3) In the case of technology controlled for national security reasons under the EAR where the direct product of the technology is a complete plant or component of a plant, not to export to EAR Country Groups D:1 or E:2 the direct product of the plant or major component thereof, if such direct product is controlled for national security reasons by the EAR, or is subject to controls under the U.S. Munitions List ("USML").

At all times hereunder, the recipient of such information agrees that they shall be deemed to have manually signed this document in connection with their receipt of any such information.

## Mounting Options

Several mounting options are available; please note the following:

- Install the EO2Pxx4052-111 units indoors (or in an appropriately rated enclosure).
- Securely mount the EO2Pxx4052-111 units.
- Do not support the EO2Pxx4052-111 units by the attached cables.
- Use an optional wall mounting bracket or rack mount shelf (ordered separately).
- Mount an EO2Pxx4052-111 unit onto a DIN rail using an optional DIN Rail Mount Kit (ordered separately).

## Desktop

Install the four rubber feet on the bottom of the EO2Pxx4052-111 units.



## DIN Rail

For DIN Rail mounting, these bracket options can be used:

- WMBD - 5" DIN Rail Mount Bracket
- WMBD-F 3.3" DIN Rail Mount Bracket (Flat)

## Wall Mount

For wall mounting, these bracket options can be used:

- WMBL - 4" Wall Mount Bracket
- WMBV - 5" Vertical Mount Wall Mount Bracket

## RMS19-SA4-02 Shelf Mount

For mounting up to four EO2P units use the optional RMS19-SA4-02 4-Slot Media Converter Shelf.

See the related manual for DIN Rail, Wall Mount, or Shelf specifications and procedures.

## Port Descriptions

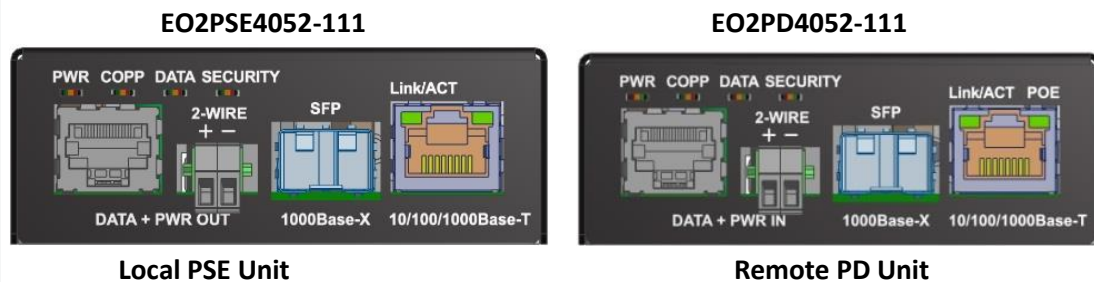
The extenders leverage existing 18-24 AWG shielded or unshielded twisted pair (CAT 5, CAT 3 or 2-wire STP or UTP phone wire) cabling infrastructure to extend the Ethernet network at near Gigabit speeds and provide data and power to IP devices in remote locations.

These extenders are used as a pair of devices, with a Local Unit required at one end and a Remote Unit required at the opposite end of the 2 twisted wire cable. The Local Unit can accept a 10/100/1000Base-T RJ-45 or 100/1000Base-X SFP connection. The local device also provides a 2 Wire connection with power over two-wire.

The remote device can be powered by the 2 Wire Power connection and provides a PoE+ 10/100/1000Base-T RJ-45 connection, or a 100/1000Base-X SFP connection.

## Connections

This section illustrates and describes connecting the EO2PSE4052-111 (Local PSE unit with GB combo RJ45/SFP and 2 Wire) to the EO2PD4052-111 (Remote PD unit with 2 Wire and GB combo RJ45 PoE+/SFP).



## Network Connection

The EO2PSE4052-111 offers a Combo (Shared) port for connecting to either copper or fiber network equipment.

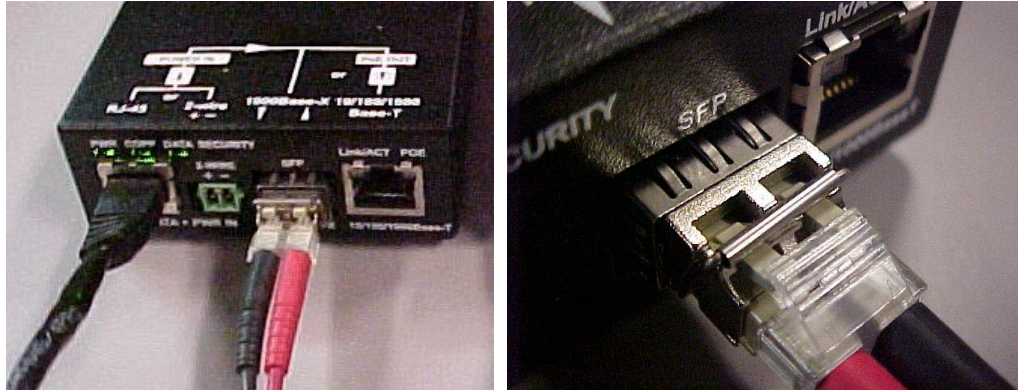
In terms of copper versus fiber port selection / priority, only one port can be active at any given time; by default the SFP port takes precedence over the copper port (configurable on the Ethernet Web GUI page).

## SFP / Fiber Connection

The SFP port supports any MSA compliant 100/1000Base-X SFP module. For temperatures above +50°C, industrial (+85°C) SFP modules must be used.

## Installing SFP Devices

The EO2P lets you install a SFP device of your choice in order to make a fiber connection. The EO2P has a single SFP port.



## SFP Installation

Transition Networks SFPs are small form factor, hot-pluggable transceivers which allow for a single piece of network equipment to be connected to a multitude of interfaces, protocols, and transmission media via the SFP port. All Transition Networks SFPs are compliant with the Multi-Sourcing Agreement (MSA) ensuring interoperability with all other MSA compliant networking devices. See [SFF-8472](#) Specification for details. See the SFP manual for important **Safety** cautions and warnings.

To install an SFP device in the EO2P:

1. Position the SFP device at the open SFP slot, with the label facing up.
2. Carefully slide the SFP device into the slot, aligning it with the internal installation guides.
3. Ensure that the SFP device is firmly seated against the internal mating connector.
4. Connect the fiber cable to the fiber port connector of the SFP device (see above).

See the [TN SFP/XFP Optical Transceivers](#) web page for the latest information.

**Connecting Two-strand Fiber Cable**

A duplex fiber cable consists of two strands of glass or plastic fiber. Typically found in a “zipcord” construction format, this cable is most often used for duplex communication between devices where a separate transmit and receive are required.

1. Locate a 100/1000Base-X compliant fiber cable with male, two-stranded TX to RX connectors installed at both ends.
2. Connect the fiber cables to the EO2P’s 100/1000Base-X fiber port as described below:
  - Connect the male TX cable connector to the female TX connector.
  - Connect the male RX cable connector to the female RX connector.
3. Connect the fiber cables to the 100/1000Base-X fiber port on the other EO2P:
  - Connect the male TX cable connector to the female RX connector.
  - Connect the male RX cable connector to the female TX connector.

For information on available SFP modules, see the Transition Networks [Small Form factor Pluggables webpage](#). For information on specific SFP characteristics, unpacking, installation, connecting, and removing see the specific SFP User Guide.

**Connecting Single-strand Fiber Cable**

Single fiber (simplex) technology helps maximize the usage of a limited number of fiber runs. In a traditional optical link, a fiber pair consists of two uni-directional strands. Single fiber technology multiplexes two optical wavelengths of 1310nm and 1550nm into a single strand fiber. In a single fiber EO2P each wavelength is responsible for either the transmit or the receive function. Consequently, the bi-directional transmission is achieved by using a single strand. The EO2Ps in a single fiber scenario “match” each other’s wavelengths. For example, one EO2P transmits at the wavelength of 1310nm and receives at 1550nm while the other EO2P transmits at 1550nm and receives at 1310nm. The EO2Ps are used in pairs.

1. Locate or build IEEE 803.2™ compliant 1000Base-X fiber cable with a male, single-strand LC connector installed at each end.
2. Connect the fiber cable to the EO2Ps.
3. Connect the fiber cable to the other device (another EO2P, hub, etc.).

## Ethernet Cable Connection

Connect the EO2PSE4052-111 RJ45 Ethernet jack to the EO2PD, camera or other network equipment using a standard Ethernet cable.

## Power over Ethernet

Using the PoE option, the EO2PSE4052-111 can automatically enable delivery of up to 30 watts of power to the EO2PD4052-111. The EO2PD4052-111 can supply up to 25.5 Watts of PoE (IEEE 802.3at-class) power to a connected powered device.

Local Power Source	Remote POE-PSE	Power Out	Power at PD
DIN or TB (48V@45W)	802.3at - Class 4	30 W	25.5W

## Installing the RJ-45 Copper Cable - 10/100/1000Base-T Copper Port

1. Locate a 10/100/1000Base-TX compliant copper cable with male RJ-45 connectors installed at both ends.
2. Connect the RJ-45 connector at one end of the cable to the EO2Pxx4052-111 10/100/1000Base-RJ-45 port.
3. Connect the RJ-45 connector at the other end of the cable to the 10/100/1000Base-RJ-45 port on the other device (camera, wireless access point, etc.).

**IMPORTANT:** Copper based media ports such as Twisted Pair (TP) Ethernet, USB, RS232, RS422, RS485, DS1, DS3, Video Cat 3/Cat5, etc., are intended to be connected to link segments that are not subject to lightening transients or power faults.

**Warning:** Do not plug a network cable into the **Power Out** or **Power In** RJ-45 jacks. Plugging a network cable into the RJ-45 PoE port with a 2-wire cable already connected is not supported.

## Two Wire Connection (Local to Remote Unit)

Connect the EO2PSE4052-111 unit's 2-wire connector to the 2-wire TP or UTP cable. The 2-wire connector should only be used to connect a Local Unit to a Remote unit. The EO2Pxx4052-111 is not compatible with other equipment such as analog video amplifiers. The 2-wire cable may be STP (shielded twisted pair) or UTP (unshielded twisted pair); the 2-wire cable must be twisted pair. There can be an issue with the cable not being shielded and sharing the same conduit. If the units share the same wire bundle, the difference in spectral content may cause cross-talk. See the "Crosstalk Mitigation" description on the [2 Wire](#) page section on page [22](#).

## Grounding

An earth ground chassis stud is provided on the back panel. Note that bonding the earth ground to the chassis stud is required for circuit protection.

## Back Panel Device Power Options

The EO2P back panel provides a +48 VDC IN option and a 4-Pin Mini DIN Power option. You can connect one or the other or both. Having both power options connected does not provide redundancy/failover.

## 2-Wire Connection Options

Both 2-Wire options are shown and described below. Both are keyed slide-in options that are not screwed into the 2-Wire connector. Note the polarity for both options.

### 2 Position Terminal Block Plug Option (TN 28992)

The provided 2 Position Terminal Block is a Female Socket 0.138" (3.50mm) 180° Free Hanging (In-Line) squeeze-type Plug (TN 28992) as shown right. Squeeze the sides, insert the Terminal Block (slotted tabs up), insert each of the two wires (note the polarity) and use a small slotted screwdriver to tighten the wires.



### 2 Position Terminal Block Plug Option (TN 28993)

The provided 2 Position STR Terminal Block is a Female Socket 0.138" (3.50mm) 180° Free Hanging (In-Line) Plug (TN PN 12111) as shown right. Insert the Terminal Block (slotted tabs up), insert each of the two wires (note the polarity) and use a small slotted screwdriver to tighten the wires.





## 48 VDC IN Options

### Local (EO2PSE4052-111) Power Input Options

The power input options for the EO2PSE4052-111 (Local PSE unit) devices are:

1. 4-Pin mini DIN with the designated AC to DC adapter OR
2. 2-Pin Terminal Block connectors for **+48 VDC** power source that must meet IEEE 802.3 af/at isolation requirements of 1500VAC or 2250 VDC. **Note:** this must be +48 VDC IN.

### Remote (EO2PD4052-111) Power Input Options

The power input option for the EO2PD4052-111 (Remote PD unit) devices are:

1. 4-Pin mini DIN with the designated AC to DC adapter OR
2. 2-Pin Terminal Block connectors for **+48 VDC** power source that must meet IEEE 802.3 af/at isolation requirements of 1500VAC or 2250 VDC. OR
3. PoE input power to the Remote from the Local via the Cat 3/Cat5 cable.

The two options for 48 V DC input to the EO2P units are shown and described below:



**Note:** the Black Power Plug with Retention is for back panel unit power only; do not try to use it for the front panel 2 Wire connection.

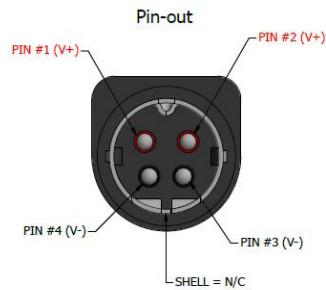


### 4-Pin Mini DIN Power Option

The 48VDC IN 4-Pin Mini DIN power input option is shown and described below.

**Note:** grip the power supply cable from the 48VDC IN 4-Pin Mini DIN connection with the flat-topped grip facing up; you will notice a slight slide before disconnection.

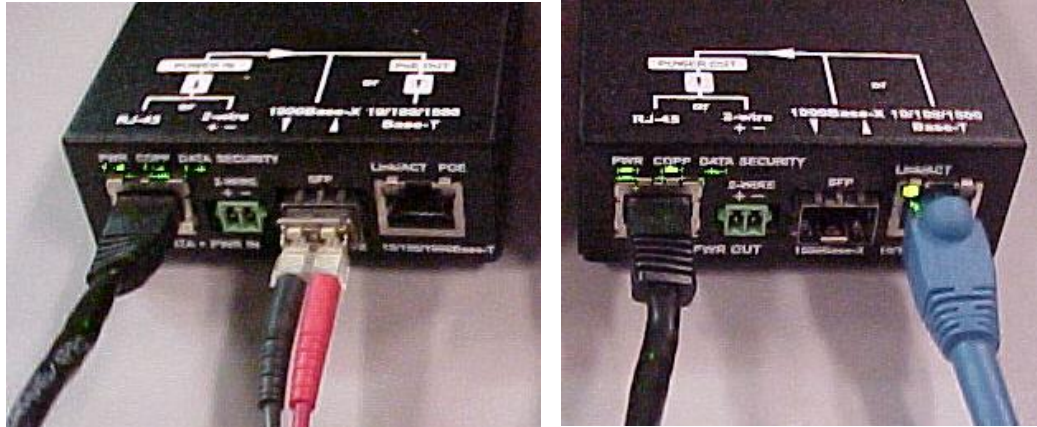
Do not try to pull the connector from the 4-Pin Mini DIN by the cord itself as damage may occur.



### Local PSE Unit Delivery of PoE to Remote (End) Device

The remote unit can automatically detect whether the connected end device (e.g. camera) is PoE capable. If the remote end device does not need PoE, the remote unit does not provide PoE.

If you want to manually disable PoE power from the Remote Unit to the remote (end) device, enable Auto Power Reset, select PoE Power Down mode and Ping an unused IP address on the subnet. Once the Ping times out, PoE power will be disabled until you use the pulldown on the Auto Power Reset page.



## Operation

### Web GUI Configuration

#### Web Browsers Supported

Current versions of most web browsers are supported.

The default IP address is **192.168.0.1**.

The default password is **admin**. The factory reset login is **betera** (not currently configurable).

#### Configuration

2 Wire  
IP  
Ethernet  
Device  
Auto Power Reset  
Advanced

#### Status

Power  
Power (No Auto Update)  
SFP  
SFP (No Auto Update)  
Remote Upgrade Status

#### Information

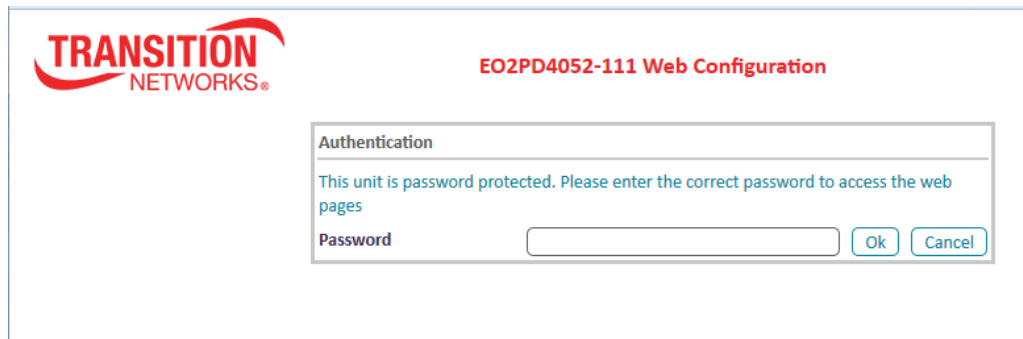
Help

### Web Configuration Pages

The web UI lets you access the **Login** page and subsequently the various Configuration pages (2 Wire, IP, Ethernet, Device, Auto Power Reset, Advanced) and Status pages (Power, with and without Auto Update), SFP (with and without Auto Update), and Remote Upgrade Status, and Help pages as described below.

### Login page

The **Login** page requires password access to the web pages.



**Authentication Password:** This unit is password protected. The default password is **admin**. Please enter the correct password to access the web pages. Click the **Ok** button when done. The 2 Wire page then displays, as described in the next section. **Note:** Transition Networks strongly recommends you change your password immediately for security purposes. Transition Networks is not responsible for damages incurred due to insecure password protection.

### Buttons

**Ok:** Click the **Ok** button to access the web pages if the password is accepted.

**Cancel:** Click the **Cancel** button to negate the Password entry.

**Web browser Timeout:** 1 hour inactivity timer, after which you must log back in to the EO2P Web GUI.

**Messages:**

*Forbidden* You don't have permission to access <http://192.168.0.1/2wire.html> on this server.

*403 Error* Please, wait until redirected or click on <http://192.168.0.1/>.

**Forbidden**

You don't have permission to access <http://192.168.0.1/coax.html> on this server

**403 Error**

Please, wait until redirected or click on <http://192.168.0.1>

**Recovery:** 1. Wait a few moments for the message to clear. 2. Click the on-screen link.  
3. Log back in to the EO2P web GUI.

**Problem:** An inactive web session never times out. If a browser is closed with an active web session, a log-in from a different host results in a "Other active session error" message (see below).

**Message:** *Other active session error. There is another active web session running. Please log out or wait till timeout, and try again. Please click on <http://192.168.0.1/>.*

**Meaning:** The message indicates that after a timeout the session will be available but it never appears to timeout. A power reset is required before a log-in is possible.

**Other active session error**

There is another active web session running. Please logout or wait till timeout, and try again

Please, click on <http://192.168.0.1/>

**Recovery:** 1. Perform a power reset. 2. Log back in to the EO2P web GUI.

## Menu Navigation

The 2 Wire page displays after a successful login; it lets you select Configuration sub-menu pages, Status sub-menu pages, and the Information (Help) page. The PD and PSE menus are nearly identical; both are described below, and differences are noted where they exist.

Configuration	Status	Information
2 Wire	Power	Help
IP	Power (No Auto Update)	
Ethernet	SFP	
Device	SFP (No Auto Update)	
Auto Power Reset	Remote Upgrade Status	
Advanced		

### Configuration Menu

**2 Wire:** page displays basic Local and/or Peer Unit parameters.

**IP:** lets you configure IPv4, IPv6, and NTPv4/v6 client configuration parameters.

**Ethernet:** displays the current Combo Port parameters (read only). Here you can configure Autonegotiation, Link speed, and Duplex parameters. This page also lets you configure SFP Detection and Primary Link modes and Powersaving mode.

**Device:** displays current HW and SW information and lets you configure Configuration Password, SW Update, and HTTP SW Update parameters.

**Auto Power Reset:** lets you configure Auto Power Reset parameters and view current status.

**Advanced:** lets you configure Hardware Reset and Factory Reset.

### Status Menu

**Power:** displays current Power Information and Power over 2-Wire Status, with automatic parameter update (page refresh) every 2 seconds.

**Power (No Auto Update):** displays current Power Information and Power over 2-Wire Status, with no automatic parameter updates (no automatic page refresh).

**SFP:** displays current SFP Information and DMI Information with automatic parameter updates (page refresh) every 2 seconds.

**SFP (No Auto Update):** displays current SFP Information and DMI Information with no automatic parameter updates (page refresh).

**Remote Upgrade Status:** displays the Remote Unit Automatic Upgrade Status page.

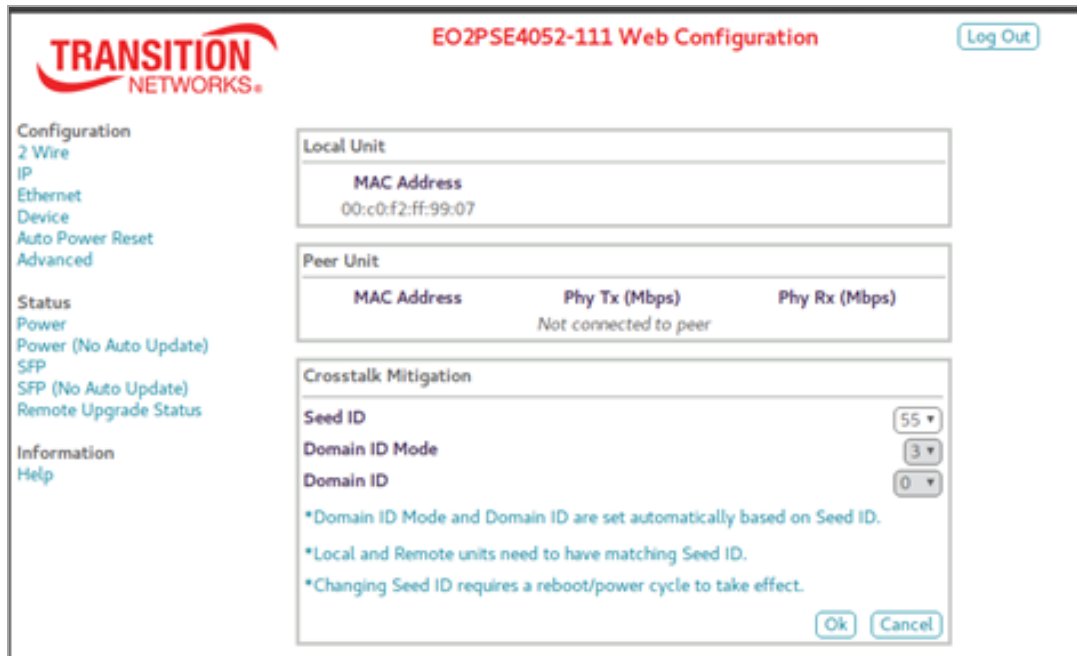
### Information Menu

The **Help** selection (initial release) displays a link to this manual. Updated Help pages will display in release versions. Please visit Transition Networks [EO2P Product Page](#), click on the Resources tab and download the latest manual.

The sub-menu pages are described in the following sections.

## 2 Wire page

Navigate to the Configuration > 2 Wire page to view basic Local and/or Peer Unit parameters. Note that EO2P FW v 0.6.0.4 added the Seed ID field on the 2 Wire tab for installations where multiple pairs of unshielded cable are in a single conduit. If co-locating cables, it is recommended that no more than 6 pairs are placed in a single conduit.



The screenshot shows the 'EO2PSE4052-111 Web Configuration' interface. On the left is a navigation menu with options: Configuration, 2 Wire, IP, Ethernet, Device, Auto Power Reset, Advanced, Status, Power, Power (No Auto Update), SFP, SFP (No Auto Update), Remote Upgrade Status, Information, and Help. The main content area is titled '2 Wire' and contains three sections: 'Local Unit', 'Peer Unit', and 'Crosstalk Mitigation'. The 'Local Unit' section shows the MAC Address as '00:c0:f2:ff:99:07'. The 'Peer Unit' section shows the MAC Address, Phy Tx (Mbps), and Phy Rx (Mbps), with a note 'Not connected to peer'. The 'Crosstalk Mitigation' section includes fields for Seed ID (set to 55), Domain ID Mode (set to 3), and Domain ID (set to 0). Below these fields are three notes: '\*Domain ID Mode and Domain ID are set automatically based on Seed ID.', '\*Local and Remote units need to have matching Seed ID.', and '\*Changing Seed ID requires a reboot/power cycle to take effect.' At the bottom right of this section are 'Ok' and 'Cancel' buttons.

### Local Unit

**MAC Address:** the EO2P Local Unit's MAC address (e.g., 00:c0:f2:58:3c:9d).

### Peer Unit

**MAC Address:** the EO2P Remote (Peer) unit's MAC address (e.g., 00:c0:f2:58:3c:9d).

**Phy Tx (Mbps):** the EO2P unit's Transmit speed (e.g., 928 Mbps).

**Phy Rx (Mbps):** the EO2P unit's Receive speed (e.g., 827 Mbps).

### Crosstalk Mitigation

**Seed ID:** The Seed ID must match on a pair of units but also must be unique from other pairs to be installed into a single conduit. The Seed IDs must be set before the units are installed into a common conduit. The default Seed ID is 0.

To change the Seed ID, connect to each unit in a pair via the Web UI, set the Seed ID and then click **Ok**. **Note** that the units must be reset/power cycled for the Seed ID change to take effect. If connecting to a remote unit through a local unit be sure to set the Seed ID on both units before rebooting/power cycling. If you forget to do this, you will need to connect directly to the remote unit to set its Seed ID. The valid range is 10 - 59. The default

is 0. If the seed ID is changed, the Domain ID Mode and Domain ID will automatically be changed.

**Domain ID Mode:** set automatically based on Seed ID.

**Domain ID:** set automatically based on Seed ID.



**Notes** for installations where multiple pairs of unshielded cable are in a single conduit:

1. Domain ID Mode and Domain ID are set automatically based on Seed ID.
2. Local and Remote units must have matching Seed ID.
3. Changing Seed ID requires a reboot/power cycle to take effect.
4. It is recommended that you write the assigned channel on the labels of the respective units to more easily identify paired units (see label below). It is also recommended that no more than 6 pairs be co-located in a single conduit.



## Buttons

**Log Out:** Click the **Log Out** button to exit the EO2P web GUI.

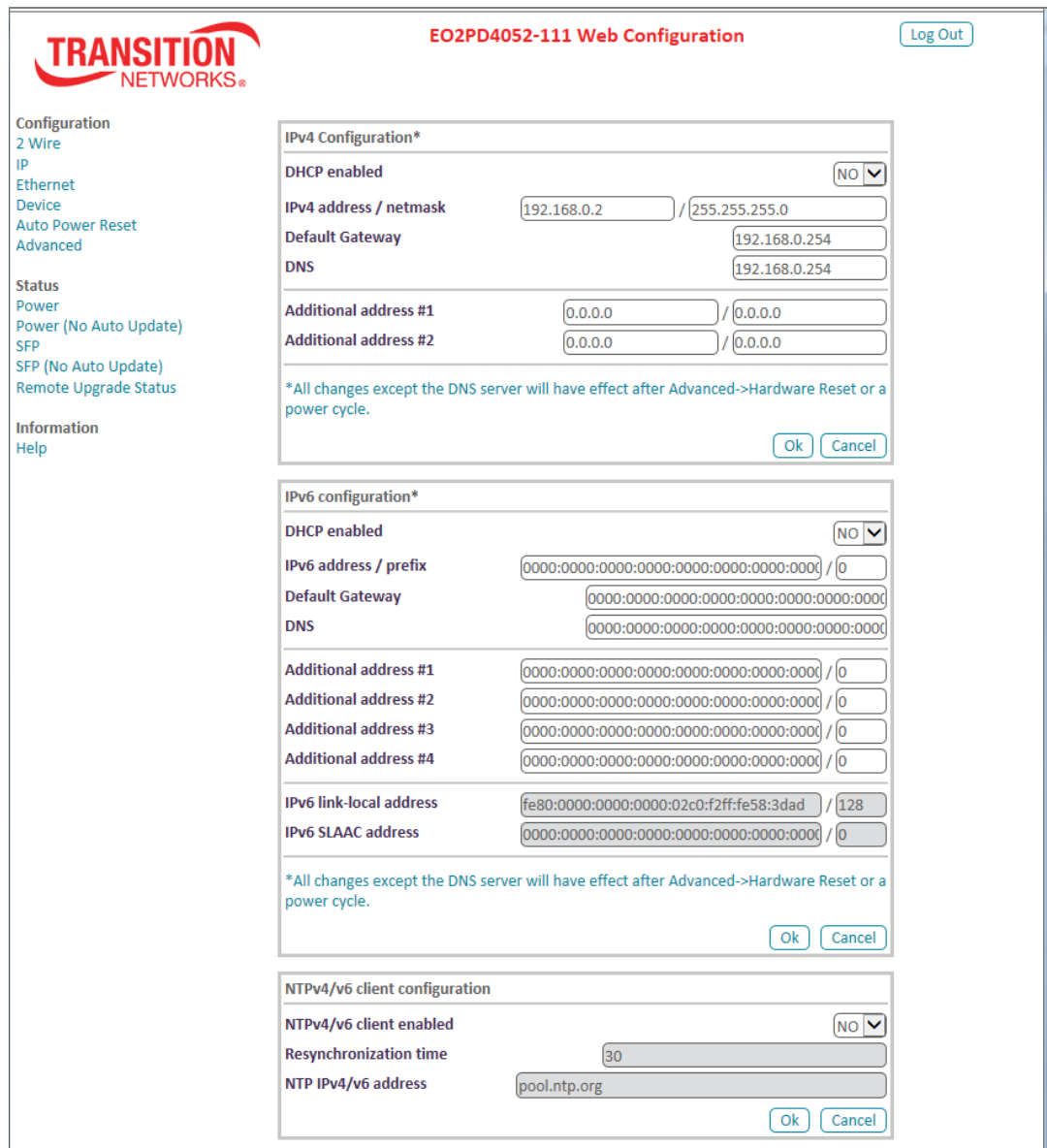
**Ok:** Click the **Ok** button to accept the changes.

**Cancel:** Click the **Cancel** button to negate the entry.



## IP page

The **IP** page lets you configure and view IPv4, IPv6, and NTPv4/v6 Client parameters.



**TRANSITION NETWORKS®** **EO2PD4052-111 Web Configuration** [Log Out](#)

**Configuration**  
 2 Wire  
 IP  
 Ethernet  
 Device  
 Auto Power Reset  
 Advanced

**Status**  
 Power  
 Power (No Auto Update)  
 SFP  
 SFP (No Auto Update)  
 Remote Upgrade Status

**Information**  
 Help

---

**IPv4 Configuration\***

DHCP enabled NO

IPv4 address / netmask  /

Default Gateway

DNS

Additional address #1  /

Additional address #2  /

\*All changes except the DNS server will have effect after Advanced->Hardware Reset or a power cycle.

[Ok](#) [Cancel](#)

---

**IPv6 configuration\***

DHCP enabled NO

IPv6 address / prefix  /

Default Gateway

DNS

Additional address #1  /

Additional address #2  /

Additional address #3  /

Additional address #4  /

IPv6 link-local address  /

IPv6 SLAAC address  /

\*All changes except the DNS server will have effect after Advanced->Hardware Reset or a power cycle.

[Ok](#) [Cancel](#)

---

**NTPv4/v6 client configuration**

NTPv4/v6 client enabled NO

Resynchronization time

NTP IPv4/v6 address

[Ok](#) [Cancel](#)

### IPv4 Configuration\*

\*All changes except the DNS server will take effect after system boot.

**DHCP enabled:** at the dropdown, select **YES** (enabled) or **NO**. The default is **YES** (enabled).

**IPv4 address / netmask:** displays the configured IPv4 address and Netmask (e.g., 192.168.61.36 / 255.255.255.0). The default IP address is 192.168.0.1 for the Local PSE unit and 192.168.0.2 for the Remote PD unit.



**Default Gateway:** displays the configured IPv4 Default Gateway (e.g., 192.16.6.5).

**DNS:** displays the configured IPv4 DNS Server (e.g., 192.16.44.3).

**Additional address #1 - 2:** two entry fields for optional additional IPv4 address / netmask.

#### **IPv6 configuration\***

\*All changes except the DNS server will have effect after system boot.

**DHCP enabled:** at the dropdown, select **YES** (enabled) or **NO**. The default is **No** (disabled).

**IPv6 address / prefix:** lets you enter an IPv6 IP address / prefix. The default is all 0s.

**Default Gateway:** lets you enter an IPv6 default Gateway IP address.

**DNS:** lets you enter an IPv6 DNS Server IP address. The default is all zeros.

**Additional address #1:** entry field for optional additional IPv6 address / prefix.

**Additional address #2:** entry field for a second optional IPv6 address / prefix.

**Additional address #3:** entry field for third additional IPv6 address / prefix.

**Additional address #4:** entry field for a fourth optional IPv6 address / prefix.

**IPv6 link-local address:** entry field for an IPv6 link-local address. The default is fe80:0000:0000:0000:02c0:f2ff:fe58:3c5a / 128.

**IPv6 SLAAC address:** entry field for an IPv6 SLAAC address. With SLAAC (State Less Address Auto Configuration), IPv6 hosts can configure themselves automatically when connected to an IPv6 network using the Neighbor Discovery Protocol via Internet ICMPv6 router discovery messages. When first connected to a network, a host sends a link-local router solicitation multicast request for its configuration parameters; routers respond to the request with a router advertisement packet that contains Internet Layer configuration parameters.

#### **NTPv4/v6 client configuration**

**NTPv4/v6 client enabled:** at the dropdown select **YES** (enabled) or **NO** (disabled). The default is **YES** (enabled).

**Resynchronization time:** entry field for resync time (e.g., 30 seconds).

**NTP IPv4/v6 address:** entry field for an NTP server IPv4/v6 address (e.g., 204.152.184.72 or [pool.ntp.org](http://pool.ntp.org)).

Note that the manual clock setting is not persistent through a reboot/HW reset or a power reset. There is no battery on the device to maintain a persistent clock. Correctly configuring NTP is the best solution for keeping time. Timezone and DST settings persist across reboots. NTP persists across Resets as well.

### IP page Buttons

**Ok:** Click the **Ok** button to accept the current page parameter changes.

**Cancel:** Click the **Cancel** button to negate the current page parameter changes and revert to the default parameter settings.

**Log Out:** Click the **Log Out** button to exit EO2P Web Configuration.


**IP Addressing Note:** EO2P units are intended to be fully managed through a single IP address. Note that two IP addresses will always be present but the IP address in the Remote Unit can remain the default 192.168.0.2 and typically not impact network addressing while the IP address in the Local Unit can be user-defined.

The following operations and settings cannot be performed on the Remote Unit using the Web interface on the Local Unit:

- 1) Hardware reset (can be done using the **RESET** buttons, or can be done by logging in to the Remote Unit directly).
- 2) Factory default reset (can be done using the **RESET** buttons, or can be done by logging in to the Remote Unit directly).
- 3) Security pairing and unpairing (can be done using the **RESET** buttons).
- 4) Ethernet Link Settings, SFP Detection Setting, and Primary Link (can only be done by logging in to the Remote Unit directly).

## Ethernet page

The **Ethernet** page lets you view the Combo Port parameters and configure Link Settings, SFP Detection Settings, Primary Link Mode, Powersaving parameters.


EO2PD4052-111 Web Configuration
Log Out

**Configuration**

2 Wire

IP

Ethernet

Device

Auto Power Reset

Advanced

**Status**

Power

Power (No Auto Update)

SFP

SFP (No Auto Update)

Remote Upgrade Status

**Information**

Help

Ethernet		
<b>Combo Port</b>		
Speed	Duplex	Link
100	FULL_DUPLEX	NO

**Link Settings**

Autonegotiation Enable YES ☐

Autonegotiation Advertise 1000Mbit Full Duplex YES ☐

Autonegotiation Advertise 100Mbit Full Duplex YES ☐

Autonegotiation Advertise 100Mbit Half Duplex YES ☐

Autonegotiation Advertise 10Mbit Full Duplex YES ☐

Autonegotiation Advertise 10Mbit Half Duplex YES ☐

Link Speed 100 ☐

Link Duplex FULL\_DUPLEX ☐

\*Set Autonegotiation Enable to what you want, Link Settings->Save, and then change Autonegotiation Advertise or Link settings and Link Settings->Save.

Save Cancel

**SFP Detection Settings**

SFP Detection Mode Auto ☐

\*Auto is for Gigabit SFP's. When selected, SFP will attempt auto-negotiation and if that fails will force the link.

\*To use 100FX SFP's or to manually force Gigabit SFP's, select speed in SFP Detection Mode, SFP Detection Settings->Save, and then in Link Settings above, disable Autonegotiation, Link Settings->Save, and finally set Link Speed/Duplex and Link Settings->Save.

Save Cancel

**Primary Link**

Primary Link Mode SFP Port ☐

Save Cancel

**Powersaving**

Inactivity Detection Mode Disabled ☐

Inactivity Time (seconds) 300

Save Cancel

### Combo Port

**Speed:** e.g., 100 or 1000 Mbps speed currently configured.

**Duplex:** e.g., FULL\_DUPLEX or HALF\_DUPLEX mode.

**Link:** e.g., YES if a link currently exists between Local and Remote units; otherwise NO.

### Link Settings

\*Set Autonegotiation Enable to what you want, save, and then change Autonegotiation Advertise or Link settings and save again.

**Autonegotiation Enable:** at the dropdown select NO or YES. The default is YES (enabled). This setting affects the other settings in this section (Link Settings).

**Autonegotiation Advertise 1000Mbit Full Duplex:** at the dropdown select NO or YES. The default is YES. Only applies if Autonegotiation Enable (above) is set to YES.

**Autonegotiation Advertise 100Mbit Full Duplex:** at the dropdown select NO or YES. The default is YES. Only applies if Autonegotiation Enable (above) is set to YES.

**Autonegotiation Advertise 100Mbit Half Duplex:** at the dropdown select NO or YES. The default is YES. Only applies if Autonegotiation Enable (above) is set to YES.

**Autonegotiation Advertise 10Mbit Full Duplex:** at the dropdown select NO or YES. The default is YES. Only applies if Autonegotiation Enable (above) is set to YES.

**Autonegotiation Advertise 10Mbit Half Duplex:** at the dropdown select NO or YES. The default is YES. Only applies if Autonegotiation Enable (above) is set to YES.

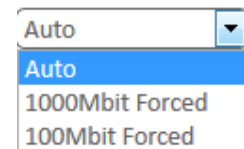
**Link Speed:** at the dropdown select 10, 100, or 1000 bps link speed. Only applies if Autonegotiation Enable (above) is set to NO.

**Link Duplex:** at the dropdown select HALF\_DUPLEX or FULL\_DUPLEX for the link. Only applies if Autonegotiation Enable (above) is set to NO.

### SFP Detection Settings

**SFP Detection Mode:** at the dropdown select Auto, 1000Mbit Forced, or 100Mbit Forced SFP detection. The default is Auto.

Auto is for Gigabit SFP's. When selected, the SFP will attempt auto-negotiation and if that fails will force the link.

A screenshot of a dropdown menu for 'SFP Detection Mode'. The menu is open, showing four options: 'Auto' (selected and highlighted in blue), '1000Mbit Forced', and '100Mbit Forced'. The 'Auto' option is currently selected.

To use 100FX SFP's or to manually force Gigabit SFP's, select speed in SFP Detection Mode, Save, and then in Link Settings above, disable Autonegotiation, Save, and finally set Link Speed/Duplex and Save.

### Primary Link

**Primary Link Mode:** at the dropdown select SFP Port, RJ45 Port, or First Link available as the primary link port. The default is SFP Port.

A screenshot of a web interface showing the 'Primary Link' section. It includes a label 'Primary Link Mode' and a dropdown menu. The dropdown menu is open, showing three options: 'SFP Port' (selected and highlighted in blue), 'RJ45 Port', and 'First Link'. A 'Save' button is visible next to the dropdown menu.

### Powersaving

**Inactivity detection mode:** at the dropdown, select Disabled or ETH link (enabled by Ethernet link) or ETH activity (enabled by Ethernet activity) as the power save trigger. The default is Disabled.

**Inactivity time(s):** e.g., 300 seconds of inactivity will cause the EO2P to enter the Powersaving mode (only if Inactivity detection mode is set to Enabled). This “idle timer” default is 300 seconds. The valid range is 10 - 999 seconds.



### **Ethernet page Buttons**

**Ok:** Click the **Ok** button to accept the current page parameter changes.

**Cancel:** Click the **Cancel** button to negate the current page parameter changes and revert to the default parameter settings.

**Log Out:** Click the **Log Out** button to exit EO2P Web Configuration.

### **Ethernet page Messages**

**Message:** *Error Error detected when calling param value check function in set POWERSAVING.GENERAL.IDLE\_TIME=3*

**Meaning:** At the **Ethernet** page, you misconfigured the Inactivity time parameter.

**Recovery:** **1.** At Ethernet > Powersaving > Inactivity time (s), set the Inactivity Time (Idle Timer) to a valid setting in the range of 10-999 seconds. **2.** Click the **Ok** button to accept the current page parameter changes.

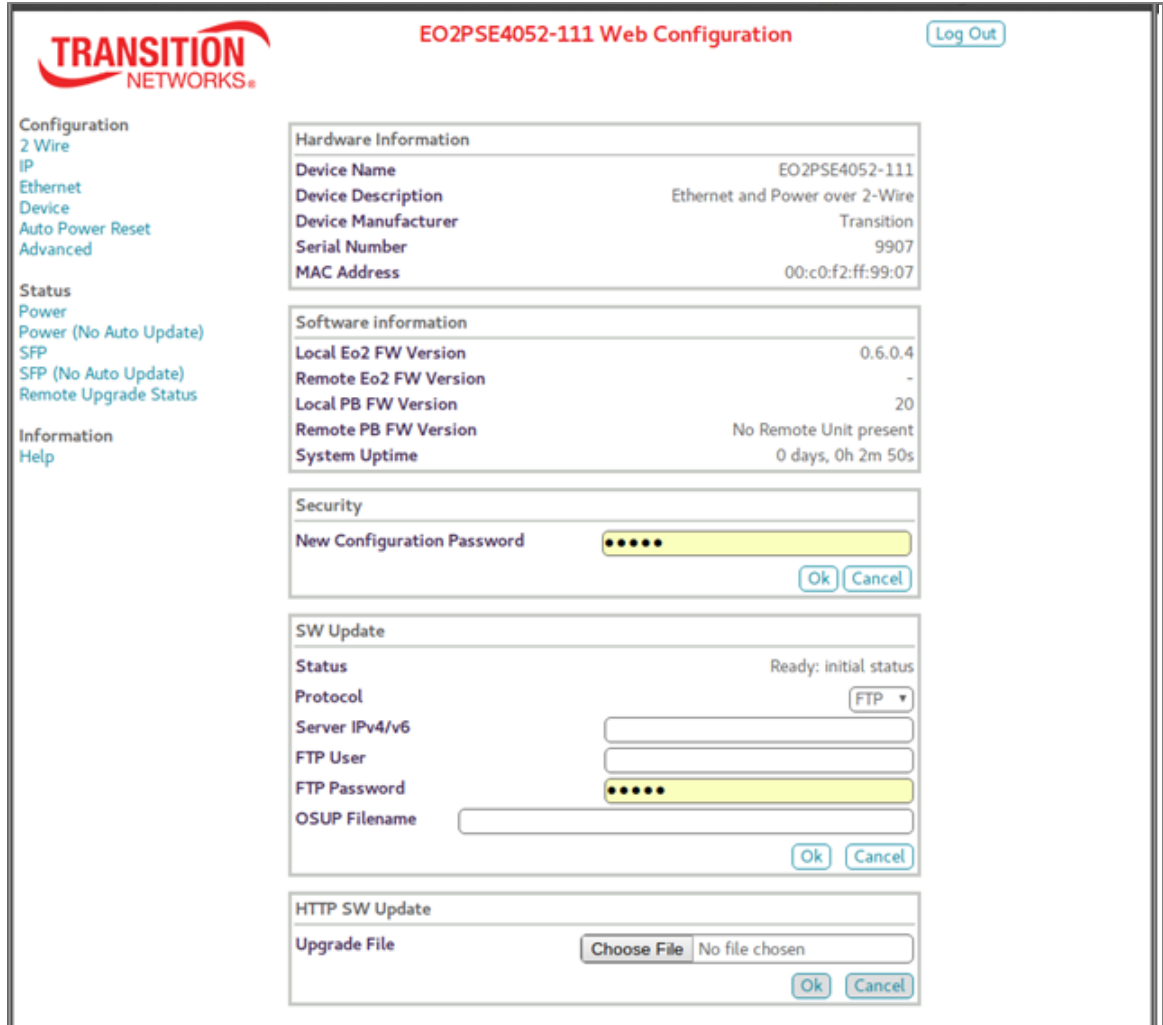
**Issue:** Ethernet Powersaving Mode drops 2 Wire communications.

**Meaning:** With the Powersaving feature enabled on the remote unit (either ETH Link or ETH ACTivity) when the inactivity time expires, communication over the 2 Wire drops.

This prevents managing the Remote Unit from the Local Unit until the link or activity is restored. The expectation is that only the remote Ethernet port should be affected by this feature.

## Device page

The **Device** page lets you configure and view hardware and software information, security password, and FTP and HTTP software updates. Note that EO2P FW v 0.6.0.3 fixed the name field from EoC to Eo2; FW v 0.6.0.4 addresses the channel separation]



**TRANSITION NETWORKS®** **EO2PSE4052-111 Web Configuration** [Log Out](#)

**Configuration**  
[2 Wire](#)  
[IP](#)  
[Ethernet](#)  
[Device](#)  
[Auto Power Reset](#)  
[Advanced](#)

**Status**  
[Power](#)  
[Power \(No Auto Update\)](#)  
[SFP](#)  
[SFP \(No Auto Update\)](#)  
[Remote Upgrade Status](#)

**Information**  
[Help](#)

**Hardware Information**

Device Name	EO2PSE4052-111
Device Description	Ethernet and Power over 2-Wire
Device Manufacturer	Transition
Serial Number	9907
MAC Address	00:c0:f2:ff:99:07

**Software information**

Local Eo2 FW Version	0.6.0.4
Remote Eo2 FW Version	-
Local PB FW Version	20
Remote PB FW Version	No Remote Unit present
System Uptime	0 days, 0h 2m 50s

**Security**

New Configuration Password

[Ok](#) [Cancel](#)

**SW Update**

Status Ready: initial status

Protocol [FTP](#)

Server IPv4/v6

FTP User

FTP Password

OSUP Filename

[Ok](#) [Cancel](#)

**HTTP SW Update**

Upgrade File [Choose File](#) No file chosen

[Ok](#) [Cancel](#)

### Hardware information

**Device Name:** the device model (e.g., EO2PD4052-111 or EO2PSE4052-111).

**Device Description:** e.g., Ethernet and Power over 2-Wire.

**Device Manufacturer:** i.e., Transition.

**Serial Number:** the device S/N (e.g., 9907).

**MAC Address:** e.g., 00:c0:f2:58:3c:5a.

### Software information

**Local EO2P FW Version:** the Local PSE Unit's current firmware version (e.g., 0.6.0.4).

**Remote EO2P FW Version:** the Remote PD Unit's current firmware version (e.g., 0.6.0.4).

On the Remote PD Unit, displays the message "Use Device page to directly manage Remote Unit".

**Local PB FW Version:** the Local PSE Unit's current Power over Cat 3/Cat5 firmware version (e.g., 20).

**Remote PB FW Version:** the Remote PD Unit's current Power over Cat 3/Cat5 firmware version (e.g., 20).

**System Uptime:** the length of time the EO2P has been running (e.g., 3 days, 0h 3m 45s) (days, hours, minutes, seconds).

### Security

**New Configuration Password:** enter the updated security password and click **Ok**.

### SW Update

**Status:** e.g., *Ready: initial status*, or *Running: downloading image*, or *Failed. Modem was reset during the last upgrade. (-45)* or *Ready: finished correctly*.

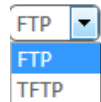
**Protocol:** at the dropdown select **FTP** or **TFTP** as the file transfer protocol.

**Server IPv4/v6:** the IP address of the Upgrade (e.g., FTP) server.

**FTP User:** the file transfer utility user name.

**FTP Password:** the file transfer utility password.

**OSUP Filename:** browse to and select the name of the OSUP (One Step Update) file to be transferred. The EO2P has several modules that make up the full firmware image. The 'OSUP' file combines all of these into one downloadable image and is referred to as 'One-Step-Update'.



SW Update

Status

Ready: initial status

Protocol

FTP ▼

Server IPv4/v6

192.168.1.30

FTP User

admin

FTP Password

•••••

OSUP Filename

dcp362\_v1\_x\_osup-SPIRIT.v6\_4\_r398+73\_cvs.ftp

Ok

Cancel

### Device page Buttons

**Ok:** Click the **Ok** button to accept the current page parameter changes.

**Cancel:** Click the **Cancel** button to negate the current page parameter changes and revert to the default parameter settings.

**Log Out:** Click the **Log Out** button to exit EO2PD4052-111 Web Configuration.

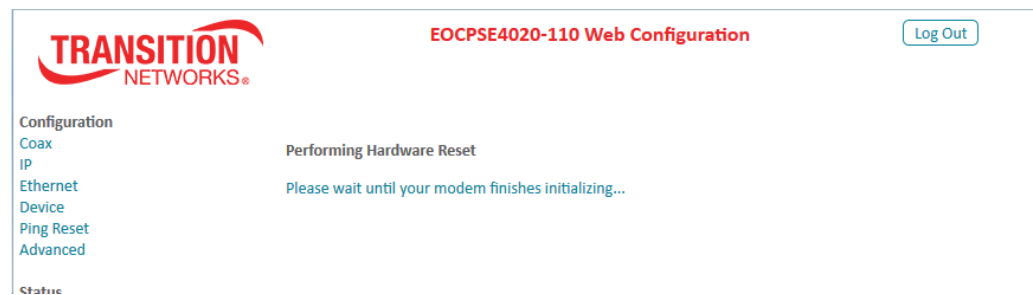
### Device page Messages

**Message:** *Performing Hardware Reset*

*Please wait until your modem finishes initializing...*

**Meaning:** You clicked the **Hardware Reset/Reboot** button with a SW Update in process.

**Recovery:** 1. Wait until initializing is finished. 2. Refresh the web browser. 3. Continue operation.





## Firmware Upgrade Procedures

All upgrades require accessing the Device page in the web interface which requires that you are logged in. You may need to login as the sessions timeout and reboots clear the sessions. Login with the password (**admin** by default) when asked. For all examples 192.168.0.1 is the Local Unit (EO2PSE4052-111) and 192.168.0.2 is the Remote Unit (EO2PD4052-111).

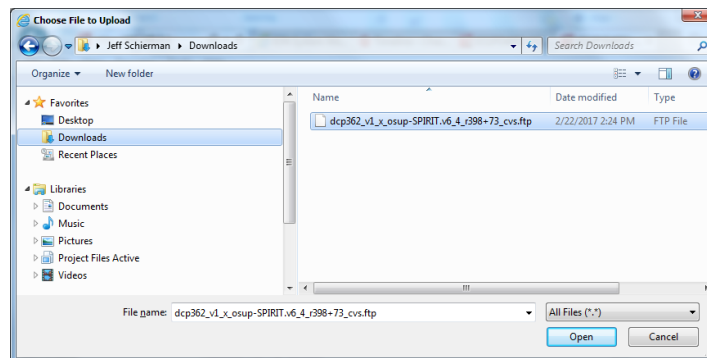
**Note:** all HTTP SW Update upgrades are handled directly by the web server on the EO2P device. The web server expects these files to show up quickly so it is best to copy the update files locally to the PC running the update. In other words, trying to give the "HTTP SW Update" a file from a network mounted file system will likely fail the first attempt. The EO2P device will reboot, you will have to login again, and usually the network mounted file will work the second time around as the file should be in the PC's cache. You would typically have them in your Downloads directory.

## HTTP SW Update Procedure

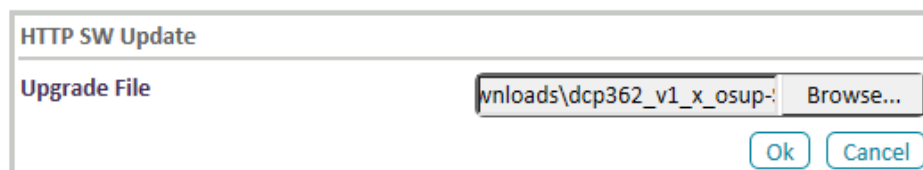
1. Check if EO2P firmware upgrade (or downgrade) is needed by browsing to the Device page on 192.168.0.1 and comparing the EoC FW Version to the expected version.

If update is necessary:

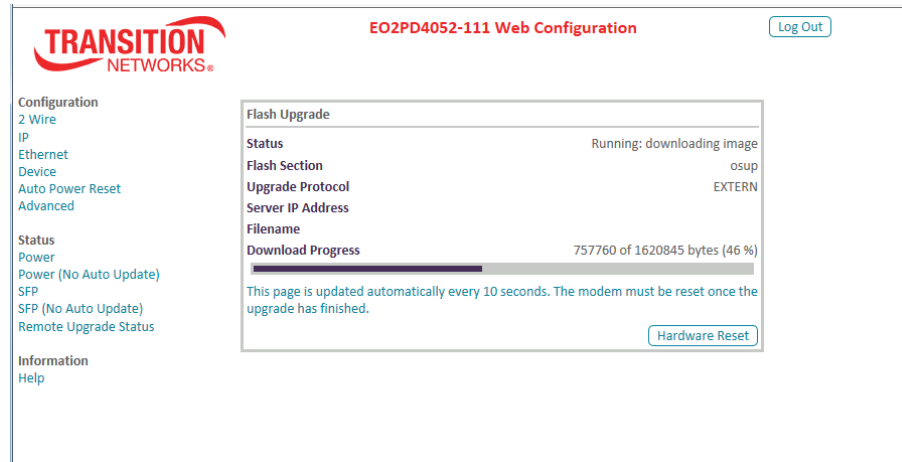
2. On the Device page on 192.168.0.1, scroll to the HTTP SW Update section and click the **Browse...** button. The files are named like this and per the note above should be available on your computer's hard drive:
  - ❑ Local: dcp362\_v1\_x\_osup-SPIRIT.v6\_4\_r398+73\_cvs.ftp
  - ❑ Remote: dcp362\_v1\_x\_osup-SPIRIT.v6\_4\_r398+73\_cvs.ftp
3. Browse to and select the file to be upgraded with and click the **Open** button. A local source is the most effective.



4. Click the **OK** button in the HTTP SW Update section:

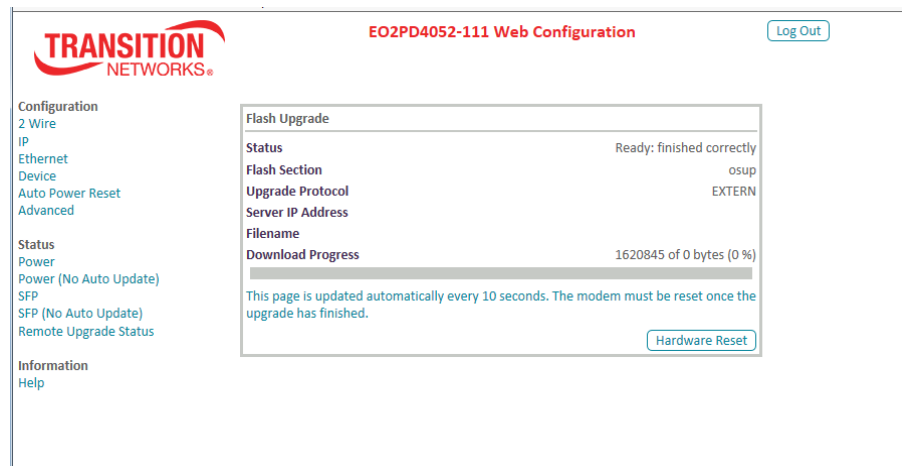


- Observe the upgrade process. The Download Progress bar displays the percentage of completion (e.g., x of y bytes (34%).



The message *"This page is updated automatically every 10 seconds. The modem must be reset once the upgrade has finished."* displays.

- When the message *"Ready: finished correctly"* displays, click the **Hardware Reset/Reboot** button.



The message *"Performing Hardware Reset Please wait until your modem finishes initializing..."* displays. When finished, you are logged out.

- At the login page, enter your password and click the **OK** button.
- At the Local Unit's Configuration > Device page, verify the firmware version in the "Local EoC FW Version" field.
- When complete, verify that the FW versions on the Device page on 192.168.0.1 and .2 both match the expected version.

## Notes on FW Upgrade

1. The Local Unit can handle either a Local or a Remote upgrade file, assuming the remote unit is attached and up and running.
2. The Remote Unit can only handle a Remote FW update file.
3. You must put matching versions on both units.
4. If upgrading PoC FW on a Local Unit with a powered Remote Unit, the Remote Unit will reboot after the Local Unit upgrades its FW. When a PoC FW update completes, the PoC board automatically reboots itself (whether Local or Remote).  
If the Local Unit is powering a Remote Unit, a reboot will cause a power classification event rebooting the entire Remote Unit. The only way to avoid this is to externally power the Remote Unit.
5. PoC Upgrade Status displays during the upgrade process (e.g., *Upgrading PIC..., Copy complete.* and then *PIC will automatically reboot*).
6. There are 3 different firmware files for the Ethernet extender devices. There is a baseboard firmware that is common to both the Local and Remote units. There is a Local daughterboard firmware and a Remote daughterboard firmware.
7. The file names can be changed; the system does not expect the long filenames listed above.

**Flash Upgrade status:** This page is updated automatically every 10 seconds. The modem must be reset once the upgrade has finished. Status displayed includes *Failed: bad source specified*, *Ready: finished correctly*,

**Flash Section:** the osup (One-Step-Update) filename.

**Upgrade Protocol:** the file transfer protocol (EXTERN, FTP or TFTP).

**Server IPv4/v6:** the IP address of the Upgrade (e.g., FTP) server.

**Filename:** the name of the file to be transferred.

**Download Progress:** e.g., *x of y bytes (z %)*.

**Hardware Reset:** click the button to reset the EO2P to factory default settings.

**Successful SW Update:** *Ready: finished correctly* indicates a successful SW update.

Flash Upgrade	
Status	Ready: finished correctly
Flash Section	osup
Upgrade Protocol	EXTERN
Server IP Address	
Filename	
Download Progress	1620845 of 0 bytes (0 %)
<p>This page is updated automatically every 10 seconds. The modem must be reset once the upgrade has finished.</p> <p>Hardware Reset</p>	

**Failed Flash Upgrade Statuses**

*Failed: bad source specified* indicates the file format selected you tried to upload was invalid. Select a valid filename and format and retry the SW update.

*Running: starting*

*Running: downloading image*

## TFTP FW Upgrade

The TFTP firmware upgrade mechanism can upgrade both units at the same time via TFTP. There is a single update file for both the Local and Remote Units.

## Notes for SW Update

**Note:** this procedure should only be used at the direction of Transition Networks Technical Support. Currently, TFTP/FTP updates do not do the necessary steps to have the Remote Unit upgrade automatically to match the local version. This feature only works using the HTTP SW Update method. TFTP upgrades are overall faster because they can be done in parallel and they do not store the upgrade file in flash.

## TFTP SW Update Procedure

The EO2P firmware files are named *dcp362\_v1\_x\_osup-SPIRIT.v6\_4\_r398+73\_cvs.ftp*.

a. Place the osup file on the TFTP server. This is a one-time operation per software update version.

b. Open two browser windows (or tabs) and login to 192.168.0.1 and 192.168.0.2.

Do steps 1-5 on both 192.168.0.1 and 192.168.0.2 web interfaces and then do steps 6-9 in order:

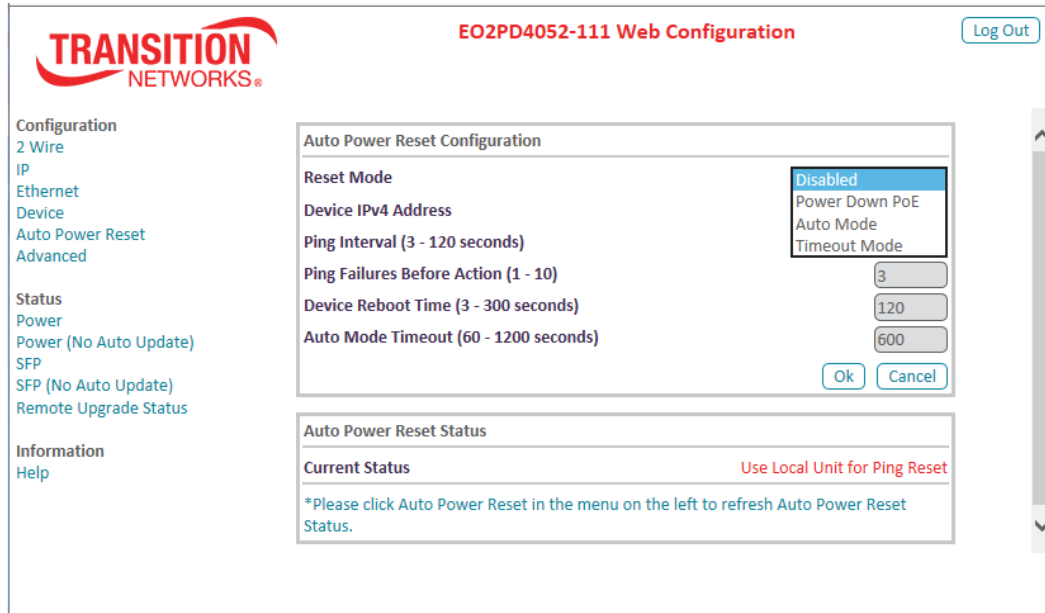
(Note that you can start either upgrade first; they can run at the same time and after your first time through, the web browser should remember the TFTP Server IP address and the update filename so you can just click on the fields and select them.)

1. Access the Device page and scroll down to the SW Update section.
2. At the Protocol pulldown select TFTP.
3. On the Server IPv4/v6 page enter the TFTP server's IP Address.
4. In the OSUP Filename field enter the Name of the update file (e.g., *dcp362\_v1\_x\_osup-SPIRIT.v6\_4\_r398+73\_cvs.ftp*).
5. Click the **OK** button in the SW Update section.
6. Wait for both upgrades to complete.
7. Go to the 192.168.0.2 web interface and click the **Hardware Reset/Reboot** button.
8. Wait for 5 seconds.
9. Go to the 192.168.0.1 web interface and click the **Hardware Reset/Reboot** button.

After the units reboot, you can log back in to 192.168.0.1, go to the Device page and you should see the versions you just updated to (both EO2P and PoC versions for both Remote and Local Units are on the Local Unit's Device page).

## Auto Power Reset page

The **Auto Power Reset** (ping reset) page lets you enable and configure APR mode parameters and view current status. Auto Power Reset (APR) monitors the connected PoE+ device and can restart it if it is unresponsive. **Note:** If the remote device does not need PoE, the remote unit does not provide PoE. If you do not want PoE power from the Remote Unit to the remote (end) device, enable Auto Power Reset, select PoE Power Down mode and ping an unused IP address on the subnet. Once it times out, PoE power will be disabled until you use the pulldown on this page.



The screenshot shows the "EO2PD4052-111 Web Configuration" interface. On the left is a navigation menu with options: Configuration (2 Wire, IP, Ethernet, Device, Auto Power Reset, Advanced), Status (Power, Power (No Auto Update), SFP, SFP (No Auto Update), Remote Upgrade Status), Information, and Help. The main content area is titled "Auto Power Reset Configuration". It includes a "Reset Mode" dropdown menu currently set to "Disabled", with other options being "Power Down PoE", "Auto Mode", and "Timeout Mode". Below this are input fields for "Device IPv4 Address", "Ping Interval (3 - 120 seconds)" (set to 3), "Ping Failures Before Action (1 - 10)" (set to 120), "Device Reboot Time (3 - 300 seconds)" (set to 600), and "Auto Mode Timeout (60 - 1200 seconds)". There are "Ok" and "Cancel" buttons. Below the configuration section is the "Auto Power Reset Status" section, which shows "Current Status" as "Use Local Unit for Ping Reset" and a note: "\*Please click Auto Power Reset in the menu on the left to refresh Auto Power Reset Status."

### Auto Power Reset Configuration

**Reset Mode:** At the dropdown select Power Down PoE, Auto Mode, or Timeout Mode. The default is **Disabled**. The other parameters on this page can only be configured when this is changed from Disabled to Power Down PoE, Auto Mode, or Timeout Mode. The other APR Mode parameters are:

**Power Down PoE:** Pings start after the configurable Device Reboot Time. When the configurable number of pings fail the PoE will power down. In this mode you must configure Ping Interval, Ping Failures Before Action, and Device Reboot Time parameters (described below). To recover, go to the Local PSE unit and change the Reset Mode dropdown selection to anything, and then click the **Save** button. The PD device then powers back up. No pinging occurs during the specified Device Reboot Time.

**Auto Mode:** automatically self-determines if the device is connected; it pings until the end device (ping target or PD) is found. No pinging occurs during the configurable Device Reboot Time. During the configurable Auto Mode Timeout period, pinging occurs until discovery or until the Auto Mode Timeout period is reached (1 - 20 minutes). If discovery occurs, Pinging continues per the specified settings. If no discovery occurs, the PoE will be

reset and the sequence re-started. Use this mode if you are unsure how long the end device takes to respond. In this mode you must configure all page parameters (described below).

**Timeout Mode:** basic mode where all attached devices are pinged until ping fails.

No ping occurs during the configurable Device Reboot Time. In this mode you must configure Ping Interval, Ping Failures Before Action, and Device Reboot Time parameters (described below). Use this mode if you know how much time your PD needs to come up; it will power cycle the PD device continuously if too short of a Device Reboot Time is set.

**Device IPv4 Address:** With an APR mode selected, enter the IP address to be pinged.

**Ping Interval (3-120 seconds):** With an APR mode selected, enter the interval time in seconds between ping attempts. The default is 5 second intervals.

**Ping Failures Before Action (1-10):** With an APR mode selected, enter the number of ping attempts that fail before resetting. The default is 3 attempts (3 consecutive ping failures before the selected action is taken).

**Device Reboot Time (3-300 seconds):** With an APR mode selected, enter the amount of time before the device automatically reboots. The default is 120 seconds.

**Auto Mode Timeout (60-1200 seconds):** With APR Mode set to Auto Mode, enter the amount of time before APR mode times out. The default is 600 seconds (10 minutes). This parameter is not configurable in Power Down PoE mode or in Timeout Mode.

### **Auto Power Reset Status**

Click the Auto Power Reset menu item to update the Auto Power Reset Status during an APR (ping mode) operation.

**Current Status:** Displays the APR Mode (*Enabled, Disabled, or Remote Unit not available*) as selected above (read only field). The Remote PD unit displays the message “*Use Local Unit for Ping Reset*” in the Current Status field. Please click **Auto Power Reset** in the menu on the left to refresh Auto Power Reset Status.

*Reboot Coldown - seconds remaining: xxx:* displays during ping process; click the **Ok** button to update the count displayed.

*Monitor Mode: Successful Ping Count: x* displays if the ping was successful (x is the number of pings).

*Mode Power Down PoE - PoE Device powered off*

### **Auto Power Reset page Messages**

*Error Error detected when calling param set function in set TN.PING\_RESET.PING\_MODE=0*

*Error Error detected when calling param set function in set TN.PING\_RESET.PING\_MODE=1*

*Error Error detected when calling param set function in set TN.PING\_RESET.PING\_INTERVAL=125*

*Monitor Mode: Failed Ping Count: x* displays if the ping was successful (x is the number of pings).

### **Auto Power Reset page Buttons**

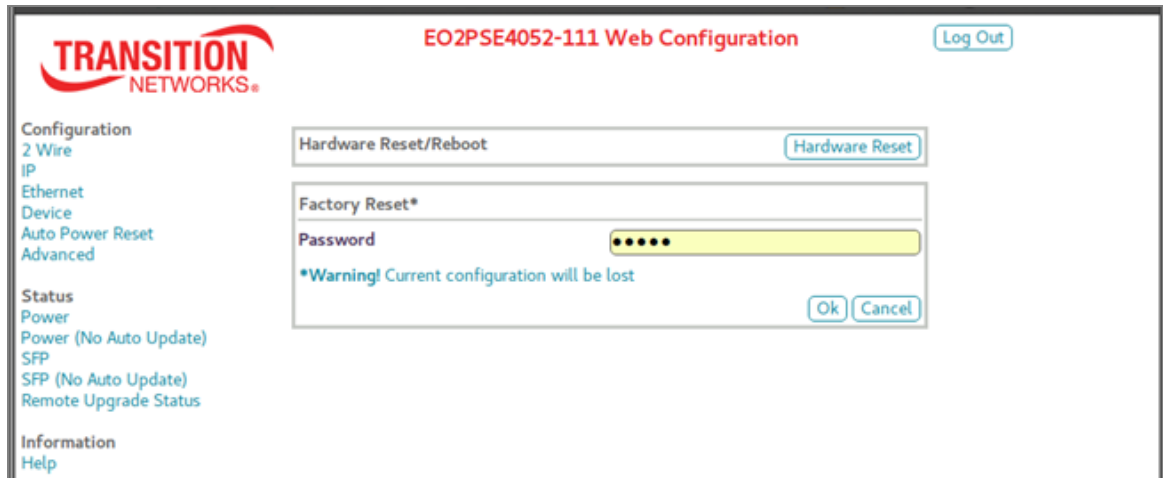
**Ok:** Click the **Ok** button to accept the current page parameter changes.

**Cancel:** Click the **Cancel** button to negate page parameter changes and revert to default settings.

**Log Out:** Click the **Log Out** button to exit EO2P Web Configuration.

## Advanced page

The **Advanced** page lets you configure and view EO2P broadcast suppression and perform a hardware reset and factory reset.



The screenshot shows the 'EO2PSE4052-111 Web Configuration' interface. On the left is a navigation menu with links: Configuration (2 Wire, IP, Ethernet, Device, Auto Power Reset, Advanced), Status (Power, Power (No Auto Update), SFP, SFP (No Auto Update), Remote Upgrade Status), and Information (Help). The main content area has a 'Log Out' button in the top right. Below the Transition Networks logo, there are two sections: 'Hardware Reset/Reboot' with a 'Hardware Reset' button, and 'Factory Reset\*' which includes a 'Password' field (masked with dots) and a warning message: '\*Warning! Current configuration will be lost'. At the bottom of the Factory Reset section are 'Ok' and 'Cancel' buttons.

**Hardware Reset/Reboot:** click the button to perform a reset to factory default settings on the EO2P. Momentarily displays the message *“Performing Hardware Reset Please wait until your modem finishes initializing...”* and then displays the login page. Click the **Advanced** page link to update the status and then log in again.

### Factory Reset\*

**Password:** you must enter the Password (**betera**) and then click the **Ok** button for a Factory Reset to default parameter settings. **Warning!** Current configuration will be lost.

### Buttons

**Ok:** Click the **Ok** button to accept the current page parameter changes.

**Cancel:** Click the **Cancel** button to negate the current page parameter changes and revert to the default parameter settings.

**Hardware Reset:** click the **Hardware Reset/Reboot** button to perform a reset to factory default settings on the EO2P.

**Log Out:** Click the **Log Out** button to exit EO2P Web Configuration.

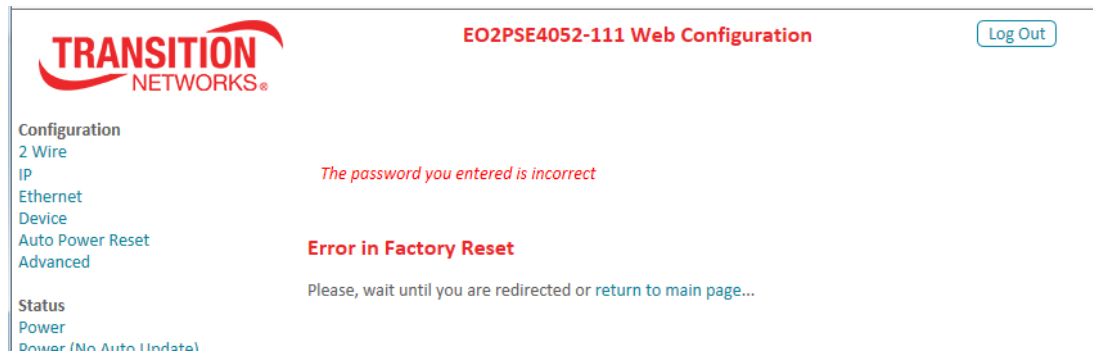


### Advanced page Messages

**Message:** *The password you entered is incorrect*

**Meaning:** Error in Factory Reset

**Recovery:** Wait until you are redirected or click [return to main page...](#)



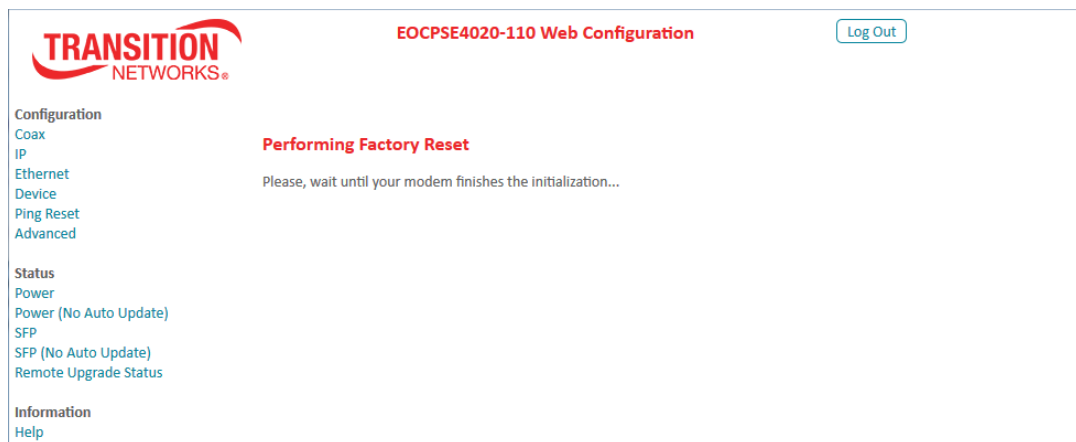
**Message:** *Performing Factory Reset*

**Please, wait until your modem finishes the initialization...**

**Meaning:** A factory reset from the Configuration > Advanced menu path is in process.

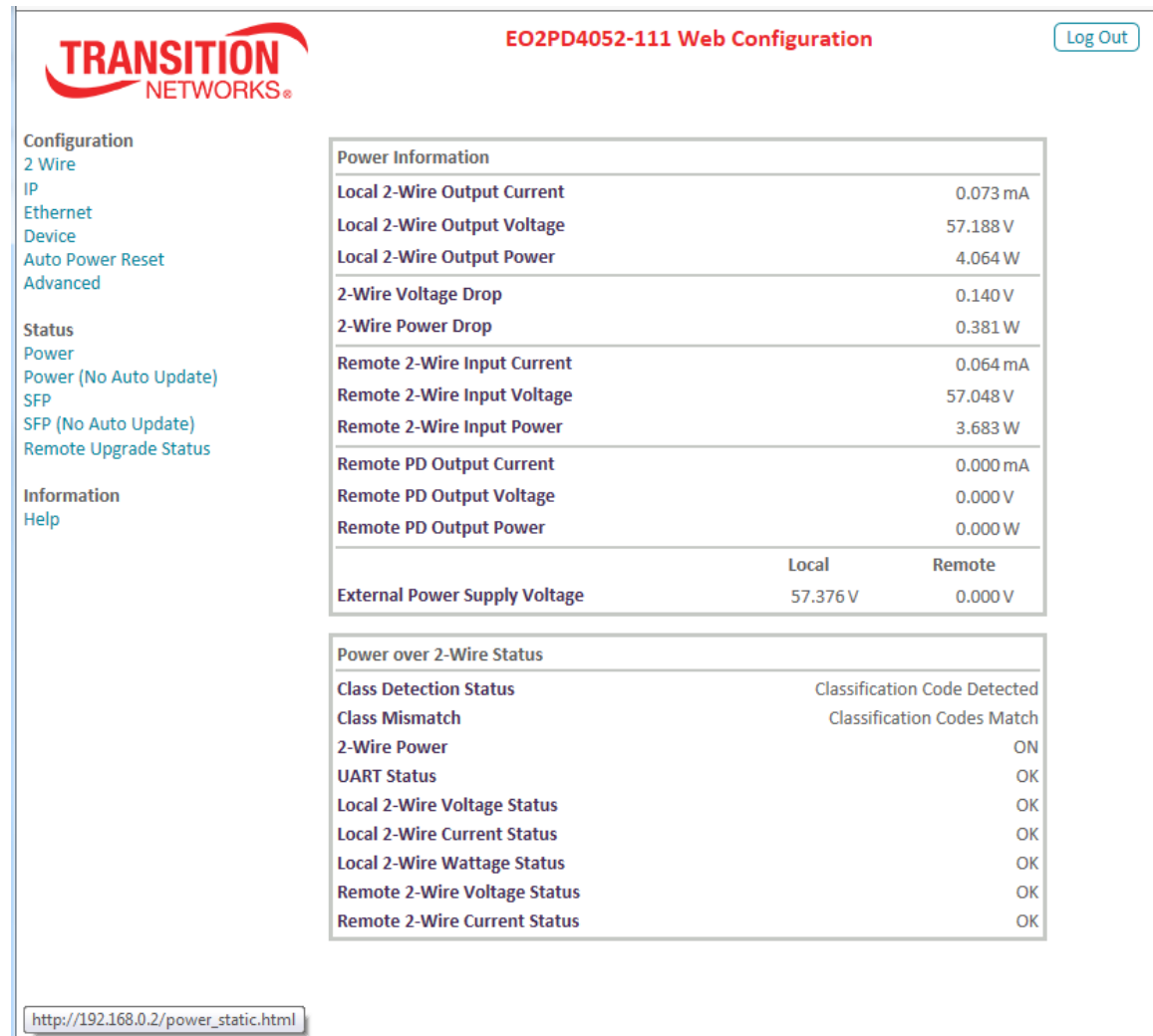
**Recovery:** Wait a few moments for the Advanced page factory reset to complete.

If necessary, refresh the browser to clear the message and return to the login page.



## Power and Power (No Auto Update) pages

The **Power** and **Power (No Auto Update)** pages let you view the current EO2P current, voltage, power, power supply, and power over 2 wire status information.



**TRANSITION NETWORKS®** **EO2PD4052-111 Web Configuration** [Log Out](#)

**Configuration**  
[2 Wire](#)  
[IP](#)  
[Ethernet](#)  
[Device](#)  
[Auto Power Reset](#)  
[Advanced](#)

**Status**  
[Power](#)  
[Power \(No Auto Update\)](#)  
[SFP](#)  
[SFP \(No Auto Update\)](#)  
[Remote Upgrade Status](#)

**Information**  
[Help](#)

Power Information		
Local 2-Wire Output Current	0.073 mA	
Local 2-Wire Output Voltage	57.188 V	
Local 2-Wire Output Power	4.064 W	
2-Wire Voltage Drop	0.140 V	
2-Wire Power Drop	0.381 W	
Remote 2-Wire Input Current	0.064 mA	
Remote 2-Wire Input Voltage	57.048 V	
Remote 2-Wire Input Power	3.683 W	
Remote PD Output Current	0.000 mA	
Remote PD Output Voltage	0.000 V	
Remote PD Output Power	0.000 W	
External Power Supply Voltage	Local	Remote
	57.376 V	0.000 V

Power over 2-Wire Status	
Class Detection Status	Classification Code Detected
Class Mismatch	Classification Codes Match
2-Wire Power	ON
UART Status	OK
Local 2-Wire Voltage Status	OK
Local 2-Wire Current Status	OK
Local 2-Wire Wattage Status	OK
Remote 2-Wire Voltage Status	OK
Remote 2-Wire Current Status	OK

[http://192.168.0.2/power\\_static.html](http://192.168.0.2/power_static.html)

### Power Information

**Local 2-Wire Output Current:** displays the local EO2P 2 Wire output current in mA.

**Local 2-Wire Output Voltage:** displays the local EO2P 2 Wire output voltage in Volts.

**Local 2-Wire Output Power:** displays the local EO2P 2 Wire output power in Watts.

**2-Wire Voltage Drop:** displays the voltage drop between the local and remote EO2Ps (e.g., 0.140 Volts).

**2-Wire Power Drop:** displays the power drop between the local and remote EO2Ps (e.g., 0.381 Watts).

**Remote 2-Wire Input Current:** displays the remote EO2P 2 Wire input current in mA.

**Remote 2-Wire Input Voltage:** displays the remote EO2P 2 Wire input voltage in Volts.

**Remote 2-Wire Input Power:** displays the remote EO2P 2 Wire input power in Watts.

**Remote PD Output Current:** displays the remote powered device's output current measurement in mA.

**Remote PD Output Voltage:** displays the remote powered device's output voltage in Volts.

**Remote PD Output Power:** displays the remote powered device's output power in Watts.

**External Power Supply Voltage:** displays the local and remote EO2P input voltage measurements in Volts.

#### **Power over 2-Wire Status**

**Class Detection Status:** e.g., Hunting for Classification Code, or Classification Code Detected.

**Class Mismatch:** e.g., Classification Codes Match, or Classification Codes Mismatch.

**2 Wire Power:** e.g., OFF or ON.

**UART Status:** e.g., OK or Error.

**Local 2-Wire Voltage Status:** e.g., Local 2-wire Power OFF or OK.

**Local 2-Wire Current Status:** e.g., Local 2-wire Current OFF or OK.

**Local 2-Wire Wattage Status:** e.g., Local 2-wire Wattage OFF or OK.

**Remote 2-Wire Voltage Status:** e.g., Remote 2-wire Voltage OFF or OK.

**Remote 2-Wire Current Status:** e.g., Remote 2-wire Current OFF or OK.

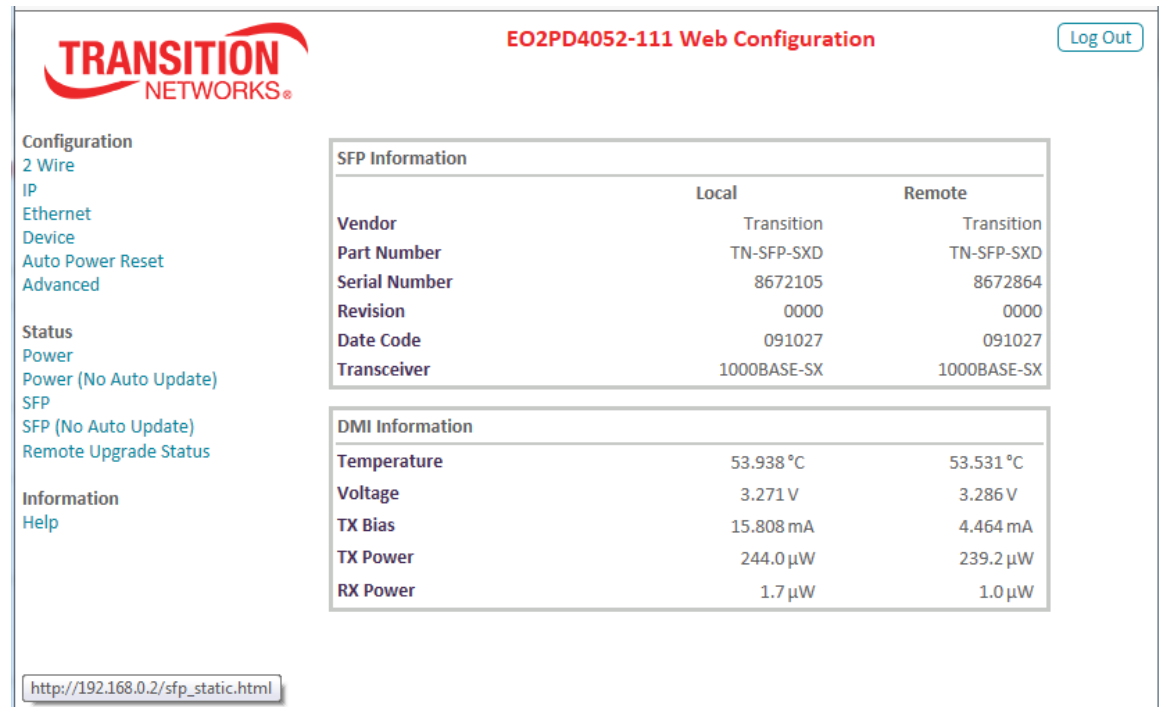
Power over 2-Wire Status	
Class Detection Status	Classification Code Detected
Class Mismatch	Classification Codes Match
2-Wire Power	ON
UART Status	OK
Local 2-Wire Voltage Status	OK
Local 2-Wire Current Status	OK
Local 2-Wire Wattage Status	OK
Remote 2-Wire Voltage Status	OK
Remote 2-Wire Current Status	OK

#### **Power and Power (No Auto Update) page Buttons**

**Log Out:** Click the **Log Out** button to exit EO2P Web Configuration.

## SFP and SFP (No Auto Update) pages

The **SFP** and **SFP (No Auto Update)** pages let you view SFP and DMI information for both the Local and Remote EO2P devices. The fields are blank if no SFPs are connected.



The screenshot shows the "EO2PD4052-111 Web Configuration" interface. On the left is a navigation menu with links: Configuration, 2 Wire, IP, Ethernet, Device, Auto Power Reset, Advanced, Status, Power, Power (No Auto Update), SFP, SFP (No Auto Update), Remote Upgrade Status, Information, and Help. The main content area displays two tables: "SFP Information" and "DMI Information". The "SFP Information" table compares Local and Remote device details. The "DMI Information" table shows temperature, voltage, TX Bias, TX Power, and RX Power for both devices. A "Log Out" button is in the top right corner. The URL bar at the bottom shows "http://192.168.0.2/sfp\_static.html".

	Local	Remote
Vendor	Transition	Transition
Part Number	TN-SFP-SXD	TN-SFP-SXD
Serial Number	8672105	8672864
Revision	0000	0000
Date Code	091027	091027
Transceiver	1000BASE-SX	1000BASE-SX

	Local	Remote
Temperature	53.938 °C	53.531 °C
Voltage	3.271 V	3.286 V
TX Bias	15.808 mA	4.464 mA
TX Power	244.0 μW	239.2 μW
RX Power	1.7 μW	1.0 μW

### SFP Information

**Vendor:** the SFP maker (e.g., Transition) for the Local and Remote EO2P devices.

**Part Number:** the SFP part number (model #) e.g., TN-SFP-SXD, where the **D** indicates DMI capability.

**Serial Number:** the SFP serial number (e.g., 8672207).

**Revision:** the SFP revision (e.g., 1234).

**Date Code:** e.g., 141016 in the format ddmmyy (day/month/year).

**Transceiver:** e.g., 1000BASE-SX

### DMI Information

**Temperature:** the SFP temperature in degrees Celsius.

**Voltage:** the SFP voltage measurement in Volts.

**TX Bias:** the SFP transmit bias current in mA (Milliamps).

**TX Power:** the SFP transmit power measurement in mW (milliWatts).

**RX Power:** the SFP receive power measurement in mW (milliWatts).

### Buttons

**Log Out:** Click the **Log Out** button to exit EO2PD4052-111 Web Configuration.

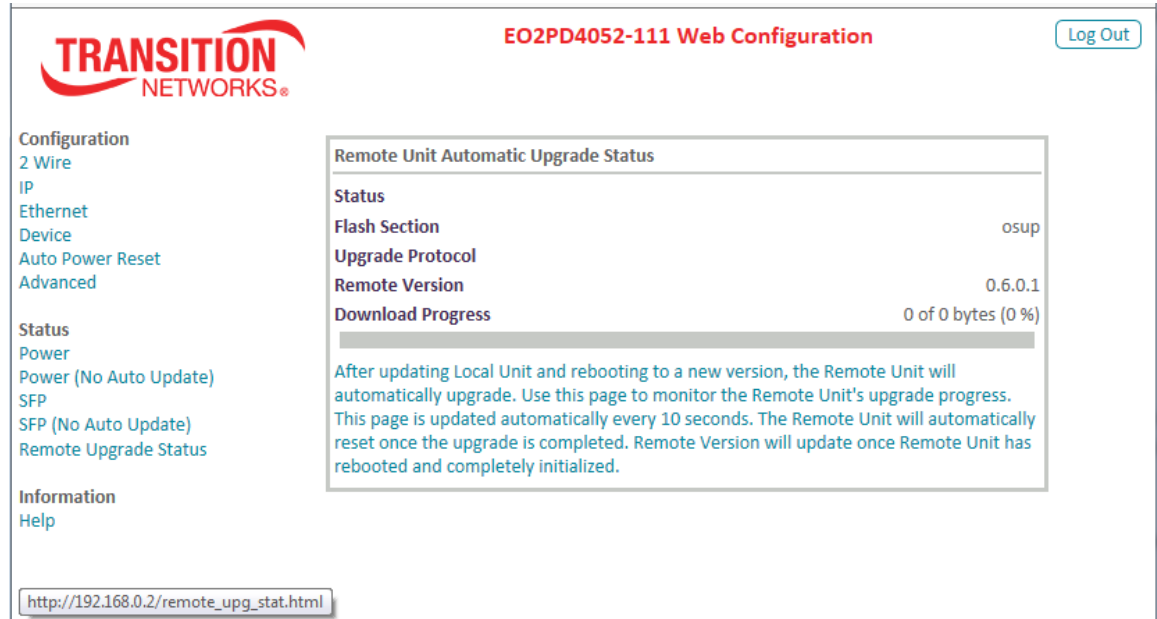
**Note:** With an SFP installed, if the SFP information displays but no DMI information displays, it may be because the installed SFP does not support DMI. Only TN SFPs with the suffix **D** support the DMI capability (the TN-SFP-SX does not support DMI, but the TN-SFP-SXD does support DMI).

## Remote Upgrade Status

Navigate to the Status > Remote Upgrade Status menu path to display the Remote Unit Automatic Upgrade Status.

After updating the Local Unit and rebooting to a new version, the Remote Unit will automatically upgrade. Use this page to monitor the Remote Unit's upgrade progress.

This page is updated automatically every 10 seconds. The Remote Unit will automatically reset once the upgrade is completed. The Remote Version will update once the Remote Unit has rebooted and completely initialized.



The screenshot shows the 'EO2PD4052-111 Web Configuration' interface. On the left is a navigation menu with categories: Configuration (2 Wire, IP, Ethernet, Device, Auto Power Reset, Advanced), Status (Power, Power (No Auto Update), SFP, SFP (No Auto Update), Remote Upgrade Status), and Information (Help). The 'Remote Upgrade Status' option is selected. The main content area is titled 'Remote Unit Automatic Upgrade Status' and contains the following fields:

Status	
Flash Section	osup
Upgrade Protocol	
Remote Version	0.6.0.1
Download Progress	0 of 0 bytes (0 %)

Below the table is a text box with the following message:

After updating Local Unit and rebooting to a new version, the Remote Unit will automatically upgrade. Use this page to monitor the Remote Unit's upgrade progress. This page is updated automatically every 10 seconds. The Remote Unit will automatically reset once the upgrade is completed. Remote Version will update once Remote Unit has rebooted and completely initialized.

At the bottom left, the URL `http://192.168.0.2/remote_upg_stat.html` is displayed. At the top right, there is a 'Log Out' button.

**Status:** the current upgrade status (e.g., blank or various status displays).

**Flash Section:** the OSUP (One-Step-Update) filename.

**Upgrade Protocol:** the file transfer protocol selected for the upgrade (e.g., *FTP* or *TFTP*).

**Remote Version:** the current firmware version of the remote PD unit (e.g., *0.6.0.4*).

**Download Progress:** the percentage of completion (e.g., *0 of 0 bytes (0 %)*).

### Buttons

**Log Out:** Click the **Log Out** button to exit EO2PD4052-111 Web Configuration.

## Back Panel RESET Button Functions

The EO2P back panel **RESET** button is used for other functions besides Pairing / Unpairing the units for secure (encrypted) 2 Wire network operation. You press and hold the **RESET** button for different periods of time to perform different functions; the LEDs blink at different rates to indicate the function selected.

Press and hold the **RESET** button on the back panel for:

- **1-10** seconds to reset / reboot the device. Blink rate is medium (on = off).
- **10-20** seconds to start Pairing. Blink rate is Slow (long on then short off). See next section.
- **20-30** seconds to unpair security. Blink rate is Fast (long on then short off).
- **30-40** seconds to do a Factory Reset (reset to factory default settings). Blink rate is long on and then long off.
- **> 40** second: if you press and hold the back panel **RESET** button for over 40 seconds, nothing happens when you release the **RESET** button.

### **Note:**

1. Re-boot at the end of security Pairing, even if cancelled or stopped part way.
2. Re-boot both units if security pairing was started and completed.
3. If you started just one unit, just re-boot that one unit.
4. The **SECURITY** LED lights on both units when Paired successfully.

### Summary of RESET Button Functions

Function to perform	Press and hold <b>RESET</b> for:	LED blink rate
Reset / reboot the device	<b>1-10</b> seconds	Medium (on = off)
Start security Pairing	<b>10-20</b> seconds	Slow (long on then short off)
Unpair security	<b>20-30</b> second	Fast (short on then long off)
Factory Reset (reset to factory defaults)	<b>30-40</b> second	Long on and then long off

Security Pairing and Unpairing via the **RESET** button is described in the following section.

### Security Pairing & Unpairing Devices via the RESET button

Transmission between the Local and Remote units can be encrypted using AES 128-bit encryption as described below.

**Note:** If performing pairing / security encryption, you may want to perform these steps before final deployment of Local PSE and Remote PD units in the field.

**Caution:** Security pairing or unpairing of the units requires that the procedures below be executed in the specified time periods. If the procedures are not properly completed, the extension data link may become disabled, and a power reset of both units required.

With “One Push Pairing” just start securing pairing on each unit via the button and they pair up. Note that the **RESET** push button no longer cycles through the four states. After the units are rebooted, the **RESET** button works as before.

#### **Procedure:**

1. Designate one of the units Device #1. This can be either unit. The other units will be Device #2.
2. On device # 1, press and hold the **RESET** button for 10-20 seconds (until the SECURITY LED starts slow blinking) to open a configuration period for 60 seconds.
3. On device # 2, press and hold the **RESET** button for 10-20 seconds (until the SECURITY LED starts slow blinking).
4. When the SECURITY LED is lit solid on both devices (this takes 2-3 minutes), re-boot both devices. You can do this by unplugging and re-plugging the power cord at the Local device if the Remote device is powered by the Local device, or by cycling power at both devices, or via the Web GUI at the Advance page by clicking the Hardware **Reset/Reboot** button.

At this point both devices can communicate data, the SECURITY LED remains lit on both devices, and their “DATA” LEDs will show the quality of the link between them.

### Security Unpairing Procedure

Security unpairing returns the adapter to its default security settings. A return to default Pairings settings is done to force an adapter to return to its default security settings.

This procedure will only reset the Domain Name and AES Encryption Password, and will not affect other parameters such as the IP configuration.

1. On device # 1, press and hold the **RESET** button for 20-30 seconds; the SECURITY LED starts fast blinking.
2. On device # 1, release the **RESET** button. The adapter resets its running security configuration to the default settings (Unpaired).
3. On device # 2, press and hold the **RESET** button for 20-30 seconds; the SECURITY LED starts fast blinking.
4. On device # 2, release the **RESET** button. The adapter resets its running security configuration to the default settings (Unpaired).
5. Reset both devices again.

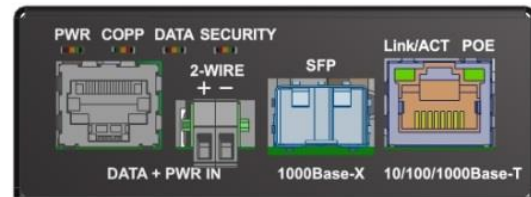
The 2 Wire link between devices is down until both devices are done security unpairing.

## Status LEDs

The EO2Pxx4052-111 provides multiple LEDs for status and diagnostics of the Ethernet, Cat 3/Cat5 and POE functions. Use the status LEDs to monitor EO2Pxx4052-111 operation in the network.



**Local PSE Unit**



**Remote PD Unit**

**PWR:** Power and bootloader status:

Power applied: **Green** - ON  
Firmware update in progress: **Orange** – ON and/or BLINK

**COPP:** 2 Wire Power delivery (local) or sourcing (remote) status and/or fault:

### EO2PSE4052-111 (Local PSE unit)

*Classification:* Hunting for remote **Green – BLINK**

*Classification fault:* Classification error, restarting detection **Red – ON/BLINK**

*Power applied:* 57VDC Power over 2-wire enabled **Green – ON**

*Classification:* Remote Unit sourcing power from external PS **Green – BLINK**

### EO2PSE4052-110 (Remote PD unit)

Power from 2-wire status

Sourcing power from 2-wire **Green – ON**

Sourcing power from external PS **Green – BLINK**

- If the external power supply (4-pin DIN or 2-Pin Terminal block) is present this will be used in favor of the 2-wire power.
- If the external power is lost, the unit will briefly power down and then start sourcing from the 2-wire.
- If the external power is then re-established, the device will switch back without interruption to the external power.

IEEE 802.3af/at port POE delivery **Red – BLINK**

- *Cannot maintain RJ-45 POE power delivery*
- *Indicates that the 2-wire power loss is too great to maintain the requested power from the IEEE 802.3af/at RJ-45 POE-PSE port*

**DATA:** 2-Wire data link

Linked: **Green – BLINK**

**SECURITY:** Secure mode, pairing mode, and key/config state:

Not secure: OFF  
Secure: **Green** – ON  
In Config mode: **Green** – Slow BLINK  
In Pairing mode: **Green** – Fast BLINK  
Received key & finished config: **Green** – 3 BLINKS



**Link/ACT:** 1GE TP or Fiber port:

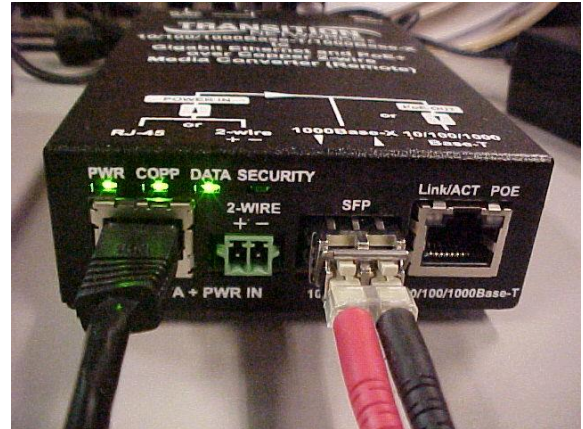
- 1000Mbps: **Green** - ON link, BLINK activity
- 100Mbps: **Green** and **Yellow** - ON link, BLINK activity
- 10Mbps: **Yellow** - ON link, BLINK activity

**POE – Power Over Ethernet status (Remote PD unit only):**

- No PD detected: OFF
- Power applied: **Green** – ON
- Detect fault: **Yellow** – ON: Fault or Remote is not a PoE device
- Classification fault: **Yellow** - BLINK



Local Unit LEDs



Remote Unit LEDs

## Technical Specifications

Transition Networks' EO2Pxx4052-111 was designed to meet these specifications:

<b>Standards</b>	IEEE 802.1p, IEEE 802.1Q, IEEE 802.3, IEEE 802.3ab, IEEE 802.3af/at, IEEE 802.3az, IEEE 802.3u, IEEE 802.3x, IEEE 802.3z
<b>Ingress Protection</b>	IP30
<b>Data Speed</b>	TP – 10/100/1000Mbps. SFP –100/1000Mbps.
<b>10/100/1000BaseT Twisted Pair Port</b>	<ul style="list-style-type: none"> <li>• Connector: RJ45 female</li> <li>• MDI/MDI-X selection: Automatic</li> <li>• Cable specification: CAT5 UTP</li> </ul>
<b>Fiber Port</b>	<ul style="list-style-type: none"> <li>• Connector: SFP</li> <li>• Modes: 1000Base-X, 100Base-FX, SGMII</li> </ul>
<b>Console Port</b>	RS-232 internal 4-pin header to TN11182 serial port debug board, 57600 baud
<b>RESET Switch</b>	Configuration/RESET pushbutton switch; press and hold the RESET button on the back panel for a fixed amount of time; see <a href="#">Back Panel RESET Button Functions</a> on page 46.
<b>Power Source</b>	4-Pin mini DIN or 2-Pin Terminal Block: 48VDC 48V wall adapter, 4 pin mini DIN (TN 25148)
<b>Power Consumption</b>	EO2PSE4052-111 = 4.0W. EO2PD4052-110 = 4.4W. Total system: 45W (max). See <a href="#">Throughput, Power, and Distance Worksheets</a> on page 53.
<b>Dimensions</b>	EO2Pxx4052-111: 3.25" [82.5 mm] Wide x 1.25" [31.75 mm] Deep x 5.38" [136.7 mm] High Power Adapter: 2.25 x 6 x 1.31 inches (5.72 x 15.25 x 3.32 cm)
<b>Weight</b>	EO2xxx4052-111: 0.85 lb. (0.39 Kg.) Power Adapter: 0.99 lb. (0.45 Kg.) (not incl. power cord)
<b>Environment</b>	Operating: 0°C to +65°C (Industrial +85°C SFP modules must be used above 50°C ambient temperature) Storage: -40°C to 85°C Humidity: 5% to 95% (non-condensing) Altitude: 0 – 10,000 ft.
<b>Compliance</b>	Safety: External Power Supply: CE Mark; Emissions: FCC Part 15, CISPR22/EN55022 Class A; Immunity: EN55024
<b>MTBF</b>	Greater than 200,000 MIL-HDBK-217F Hours
<b>Warranty</b>	5 years

## Power Supply 25148 Specifications

Power Supply 25148 is a highly reliable, 90W desktop style single-output green adaptor. It is a class I power unit (with FG), equipped with a standard IEC320-C14 AC Inlet. It is compliant with USA EISA 2007/DoE, Canada NRCAN, Australia and New Zealand MEPS, EU ErP, and Code of Conduct (CoC) Version 5. The adaptor saves energy when it is in operating mode or in standby mode. It utilizes 94V-O flame retardant plastic case, and is certified for international safety regulations.

The 90W Power supply, 25148 is an option for powering the Local PSE unit, and is optional for use with the Remote PD unit. (For indoor use only.) The Local and Remote Unit Power Supplies do **not** provide isolation or load sharing capabilities.

The Power Supply has a blue LED to indicate the presence of power to the Power Supply. The EO2P **PWR** LED will blink to indicate the presence of power to the EO2Pxx4052-111.

Universal AC input / Full range

3 pole AC inlet IEC320-C14

Built-in active PFC function

No load power consumption < 0.15W

Energy Efficiency Level VI

Comply with EISA 2007/DoE, NRCAN, AU/NZ MEPS, EU ErP and CoC Version 5

Class 1 power (with earth pin)

Protections: Short circuit / Overload / Over voltage / Over temperature

Fanless design with -30° ~ +70° C working temperature

LED indicator for PS power on

Output DC Voltage: 48V

Output Rated Current: 1.87A

Output Current Range: 0 ~ 1.87A

Output Rated Power (max.): 90W

Input Voltage Range: 90~246 VAC, 127~370 VAC

Input Frequency Range: 47-63 Hz

Input Efficiency (typ.): 91%

Input AC Current (typ.): 1.3A / 115VAC / 0.6A / 230 VAC

Overload: 110 - 150% rated output power

Overload Protection Type : Hiccup mode, recovers automatically after fault condition is removed

Over voltage: 105-135% rated output voltage

Overvoltage Protection type : Shut down o/p voltage, re-power on to recover

Over temperature: Shut down o/p voltage, re-power on to recover



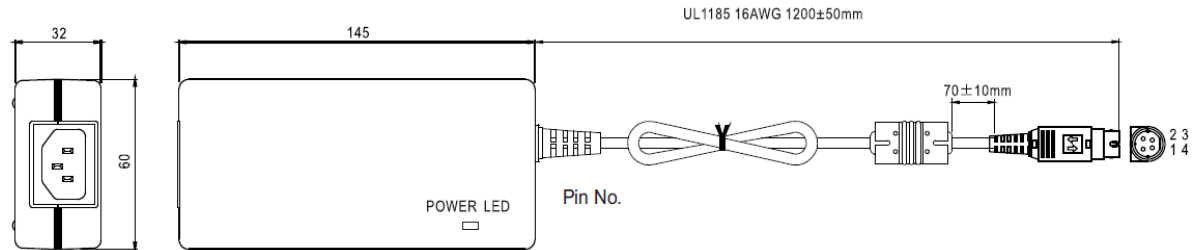
Safety Standards: UL60950-1, CSA C22.2, TUV EN60950-1, BSMI CNS14336, CCC GB4943, PSE J60950-1, AS/NZ 60950.1 approved

EMC Emission: Compliance to EN55022 class B, EN61000-3-2,3, FCC PART 15 / CISPR22 class B, CNS13438 class B, GB9254, GB17625.1

EMC Immunity: Compliance to EN61000-4-2,3,4,5,6,8,11, light industry level, criteria A

MTBF: 348.7K hrs min. MIL-HDBK-217F(25°C)

Dimensions: 145\*60\*32mm (L\*W\*H)



DC plug: power DIN 4 pin with lock type

KYCON KPPX-4P		
	Pin No.	OUTPUT
	1, 2	+V
	3, 4	-V
	Shell	NC

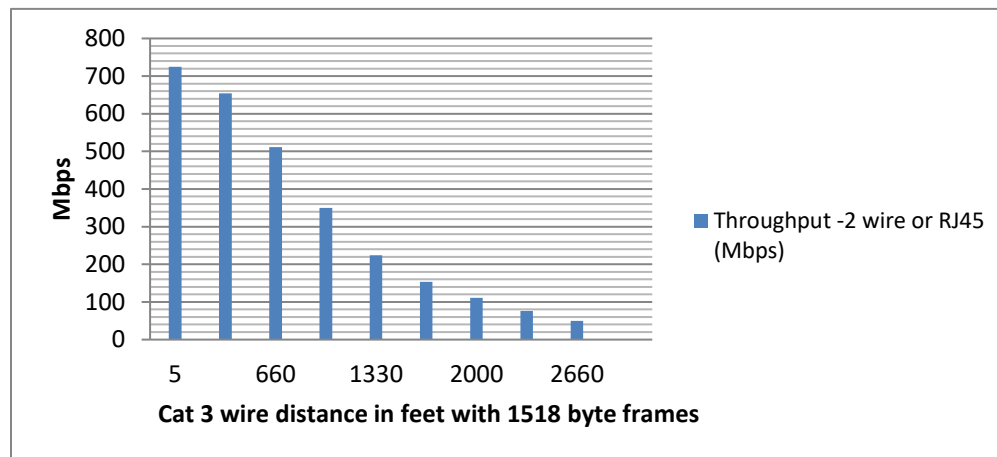


## Throughput, Power, and Distance Worksheets

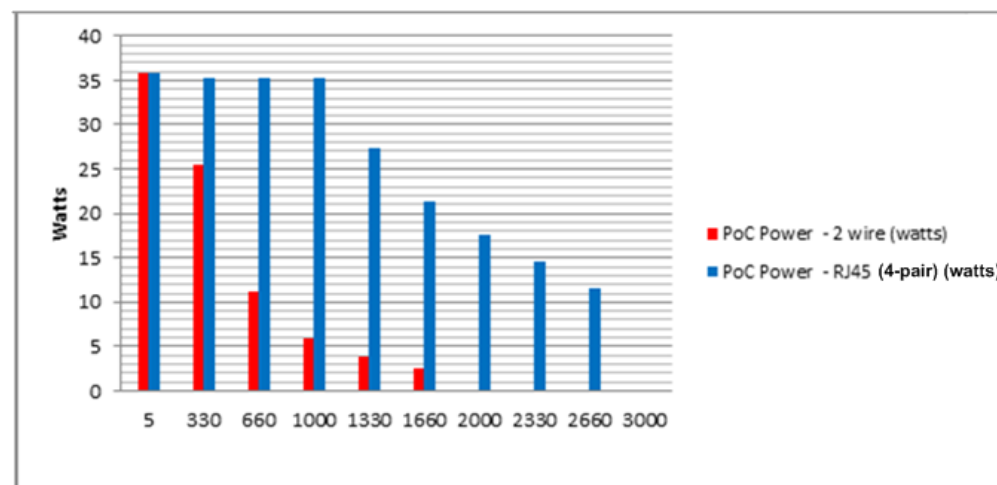
This section provides static examples of the calculation worksheets available. For the latest power and distance over 2 twisted wire or multi-pair twisted wire cable, view the online calculators at <https://www.transition.com>.

The figures below contain data transfer rates and PoE available for the EO2P extenders as a function of wire length. The RFC2544 test was run with 1518 byte frames. The configuration options tested were Cat3 cable with only 2 wires connected via the terminal block and Cat 3 cable with all 8 wires terminated in an RJ45 connector. Note that the 2-wire cable may be shielded twisted-pair wire (STP) or unshielded twisted-pair wire (UTP), but it must be twisted pair wire.

### Data Throughput over Distance (1518 byte frames)

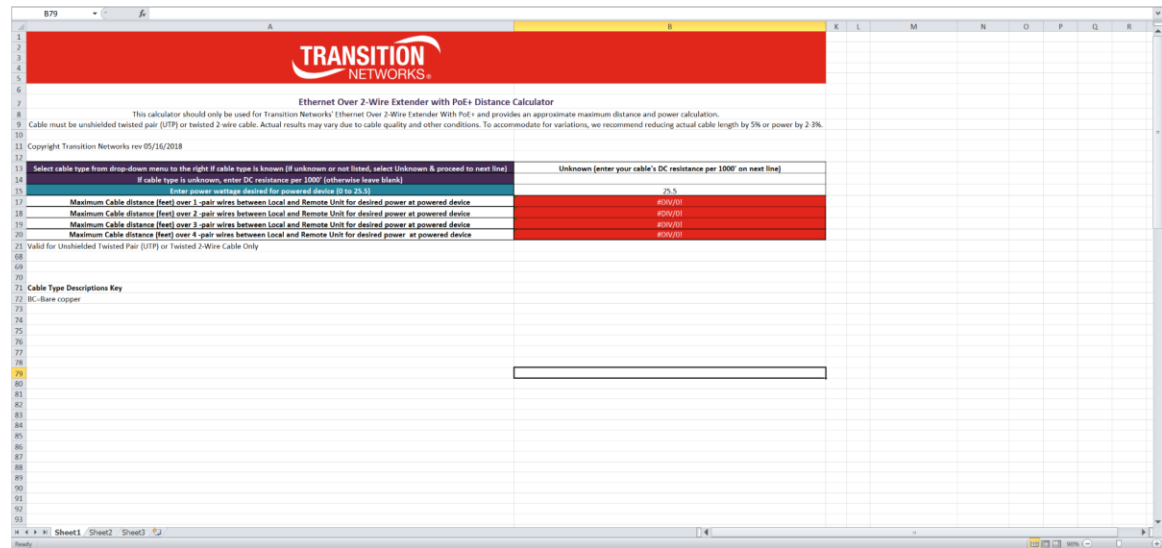


### Power over Distance



## Ethernet Over 2-Wire Power Distance Calculator

A static version of the online distance calculator is shown below. The active online distance calculator is available on the Transition Networks [webpage](https://www.transition.com/support/library/calculators/) at <https://www.transition.com/support/library/calculators/>.



The screenshot shows a spreadsheet titled "Ethernet Over 2-Wire Extender with PoE+ Distance Calculator". The spreadsheet includes the Transition Networks logo and the following text:

This calculator should only be used for Transition Networks' Ethernet Over 2-Wire Extender With PoE+ and provides an approximate maximum distance and power calculation. Cable must be unshielded twisted pair (UTP) or twisted 2-wire cable. Actual results may vary due to cable quality and other conditions. To accommodate for variations, we recommend reducing actual cable length by 5% or power by 2-3%. Copyright Transition Networks rev 05/16/2018

Select cable type from drop-down menu to the right if cable type is known (if unknown or not listed, select Unknown & proceed to next line). If cable type is unknown, enter DC resistance per 1000' (otherwise leave blank). Enter power wattage desired for powered device (0 to 25.5).

Maximum Cable distance (feet) over 1-pair wires between Local and Remote Unit for desired power at powered device	Maximum Cable distance (feet) over 2-pair wires between Local and Remote Unit for desired power at powered device	Maximum Cable distance (feet) over 3-pair wires between Local and Remote Unit for desired power at powered device	Maximum Cable distance (feet) over 4-pair wires between Local and Remote Unit for desired power at powered device
25.5	400/10	400/10	400/10

Valid for Unshielded Twisted Pair (UTP) or Twisted 2-Wire Cable Only

Cable Type Descriptions Key  
BC- Bare copper

This calculator should only be used for Transition Networks' Ethernet Over 2-Wire Extender With PoE+ to provide approximate maximum distance and power calculation. Actual results may vary due to cable quality and other conditions. To accommodate for variations, we recommend reducing cable length by 5% or reducing power by 2-3%. This calculation is valid for Unshielded Twisted Pair (UTP) cable only.



## RJ45 Cable Configurations

Install a straight-through RJ45 connectorized cable between Local Unit **DATA + PWR OUT** and the Remote Unit **DATA + PWR IN** RJ45 connectors.

The cable can be fully pinned or can use various pin combinations of each connector.

Supported RJ-45 cable configurations are described below.

### One Pair (2-Wire) RJ45

Connect pins 4 & 5 of each connector.

### Two Pair (4-Wire) RJ45

Connect pins 4 & 5 and one other pair using your choice of pins 3 & 6, or pins 1 & 2, or pins 7 & 8 of each connector.

### Three Pair (6-Wire) RJ45

Connect pins 4 & 5 and two other pairs using your choice of pins 3 & 6, or pins 1 & 2, or pins 7 & 8 of each connector.

### Four Pair (8-Wire) RJ45

Connect pins 4 & 5 and three other pairs using pins 3 & 6, pins 1 & 2, and pins 7 & 8 of each connector.

## RJ45 Pin Number Designations

RJ45 cables have eight color-coded wires, and the plugs have eight pins and conductors. Eight wires are used as 4 pairs, each representing positive and negative polarity. The most common 100-Base-T wiring standards are EIA 568A and 568B standards.

An RJ-45 data cable contains 4 pairs of wires; each pair consists of a solid colored wire and a stripe of the same color. The two wiring standards for RJ-45 wiring are T-568A and T-568B. Although there are 4 pairs of wires, 10BaseT/100BaseT Ethernet uses only 2 pairs: **Orange** and **Green**. The two wiring standards are used to create a cross-over cable (T-568A on one end and T-568B on the other end), or a straight-through cable (T-568B or T-568A on both ends).

The RJ45 cable may be straight-through or cross-over. To create a straight-through cable, either use T-568A on both ends of the cable or use T-568B on both ends of the cable. If using cross-over cable, all pairs must be crossed.

There are pin number designations for each color in T-568B and T-568A.

#### T-568A Pins

Pin #	Color	Designation
1	Green Stripe	RX+
2	Green	RX-
3	Orange Stripe	Tx+
4	Blue	Not Used
5	Blue Stripe	Not Used
6	Orange	Tx-
7	Brown Stripe	Not Used
8	Brown	Not Used



#### T-568B Pins

Pin #	Color	Designation
1	Orange Stripe	TX+
2	Orange	TX-
3	Green Stripe	RX+
4	Blue	Not Used
5	Blue Stripe	Not Used
6	Green	RX-
7	Brown Stripe	Not Used
8	Brown	Not Used





## Troubleshooting

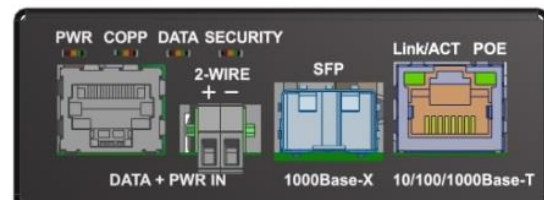
### Troubleshooting Procedures

If the EO2P fails, isolate and correct the fault by determining the answers to the following questions and then taking the indicated action. First isolate the problem to the EO2P; troubleshoot any other network gear (Ethernet switch, remote cameras, etc.) to isolate the problem to the EO2P.

#### EO2PSE4052-111 Local PSE Unit



#### EO2PD4052-111 Remote PD Unit



#### 1. Check the LEDs:

- a. If the **PWR** LED is not lit:
  - Verify the power adapter type, connection, and the AC outlet.
  - Verify the 2 Wire connections (DATA + PWR OUT on the Local device and DATA PWR IN on the Remote device).
- b. If the **COPP** LED is not lit, check the Cat3/Cat5 cable and 2 Wire connections.
- c. If the **DATA** LED is not lit:
  - Check the fiber cables for proper connection.
  - Verify that the TX and RX cables on the Local are connected to the RX and TX ports, respectively, on the Remote device.
  - If the EO2P units are connected using fiber, verify the fiber run and connection.
  - Use the **RESET** button to start OBUS pairing and security key exchange. See page 46.
- d. If the **SECURITY** LED is not Blinking:
  - If there is activity on the 10/100/1000Base-T port, disconnect and reconnect the twisted-pair copper cable to restart the initialization process.
  - Restart the Ethernet switch.
  - Use the **RESET** button to reset the security configuration to defaults. See page 46.
  - Use the **RESET** button to reset the device to factory defaults. See page 46.

2. Check for any Red LED BLINKING or Yellow LED BLINKING that indicates a fault. Green BLINKING LEDs usually indicate the device is functioning and that there is not a fault, except if the COPP LED never stops blinking Green; then it may mean the Local cannot find the Remote. Otherwise, the Green BLINKING LEDs indicates the device is not in a trouble state.

3. Click the browser back button.

4. Refresh the web browser page.

5. Click the EO2P Web Config page's Cancel button.

6. Log out of the EO2P Web Config and log back in again.

7. Check the Ethernet connection between the PC and the EO2P Local adapter.

8. Click the Web Config page's "Refresh network" button when an EO2P node is correctly connected to the PC (to refresh network discovery and update all configuration tabs and fields).

9. Check for more recent firmwares / upgrade firmwares. Local and Remote EO2Ps must have the same FW image. Each EO2P (L + R) has two firmware instances. The EO2P Forced Update / Auto Update functions if Local and Remote FW don't match (makes Remote FW match the Local FW).

10. If an IP Router is between EO2P devices, verify that two IP addresses are configured.

11. Unplug the Cat 3/Cat5 connector and then re-connect it.
12. If power shuts down or LEDs blink abnormally, make sure a network cable has not inadvertently been plugged into the power RJ-45 port. Plugging a network cable into the RJ-45 PoE port when a 2-wire cable is already connected is not supported. Untwisted wire is not supported.
13. If PoE power fails or power is intermittent, reduce cable length between Local Unit and Remote Unit or between Remote Unit and connected PD.
14. Record Model and System Information (below) and contact Tech Support; see below.



Box Label



Device Label

## Record Model and System Information

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

1. Record Device page Hardware and Software Information:

	EO2PSE4052-111 (Local)	EO2PD4052-111 (Remote)
Serial Number		
HW Version		
EO2P FW Version		
PoC FW Version		

2. Record EO2PSE4052-111 LED Status: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

3. Record EO2PD4052-111 LED Status: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

4. Your Transition Networks service contract number: \_\_\_\_\_

5. Describe the problem: \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

6. Describe action(s) already taken to resolve the problem (e.g., change mode, reset, etc.):  
 \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

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

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

9. This device history (i.e., have you returned the device before, is this a recurring problem, previous Return Material Authorization (RMA) numbers, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

10. List 3<sup>rd</sup> party equipment in the network (e.g., Ethernet switch, Remote camera, etc.): \_\_\_\_\_  
 \_\_\_\_\_  
 \_\_\_\_\_

## Warranty

Transition Networks warrants to the original consumer or purchaser that each of its EO2Pxx4052-111 products and all components thereof, will be free from defects in material and/or workmanship for a period of five years from the original factory shipment date. Any warranty hereunder is extended to the original consumer or purchaser and is not assignable. Transition Networks makes no express or implied warranties including, but not limited to, any implied warranty of merchantability or fitness for a particular purpose, except as expressly set forth in this warranty. In no event shall Transition Networks be liable for incidental or consequential damages, costs, or expenses arising out of or in connection with the performance of the product delivered hereunder. Transition Networks will in no case cover damages arising out of the product being used in a negligent fashion or manner.

This warranty does not cover damage from accident, acts of God, neglect, contamination, misuse or abnormal conditions of operation or handling, including over-voltage failures caused by use outside of the product's specified rating, or normal wear and tear of mechanical components.

Transition Networks will, at its option:

- Repair the defective product to functional specification at no charge
- Replace the product with an equivalent functional product
- Refund a portion of purchase price based on a depreciated value

To return a defective product for warranty coverage, contact Transition Networks' Customer Support for a return authorization number.

Send the defective product postage and insurance prepaid to the following address:

Transition Networks, Inc.  
10900 Red Circle Drive  
Minnetonka, MN 55343  
USA

Attn: RETURNS DEPT: CRA/RMA # \_\_\_\_\_

Failure to properly protect the product during shipping may void this warranty. The return authorization number must be written on the outside of the carton to ensure its acceptance. We cannot accept delivery of any equipment that is sent to us without a CRA or RMA number.

CRA's are valid for 60 days from the date of issuance. An invoice will be generated for payment on any unit(s) not returned within 60 days.

Upon completion of a demo/ evaluation test period, units must be returned or purchased within 30 days. An invoice will be generated for payment on any unit(s) not returned within 30 days after the demo/ evaluation period has expired.

The customer must pay for the non-compliant product(s) return transportation costs to Transition Networks for evaluation of said product(s) for repair or replacement. Transition Networks will pay for the shipping of the repaired or replaced in-warranty product(s) back to the customer (any and all customs charges, tariffs, or/and taxes are the customer's responsibility).

Before making any non-warranty repair, Transition Networks requires a \$200.00 charge plus actual shipping costs to and from the customer. If the repair is greater than \$200.00, an estimate is issued to the customer for authorization of repair. If no authorization is obtained, or the product is deemed not repairable, Transition Networks will retain the \$200.00 service charge and return the

product to the customer not repaired. Non-warranted products that are repaired by Transition Networks for a fee will carry a 180-day limited warranty. All warranty claims are subject to the restrictions and conventions set forth by this document.

Transition Networks reserves the right to charge a \$50 fee for all testing and shipping incurred, if after testing, a return is classified as “No Problem Found.”

THIS WARRANTY IS YOUR ONLY REMEDY. NO OTHER WARRANTIES, SUCH AS FITNESS FOR A PARTICULAR PURPOSE, ARE EXPRESSED OR IMPLIED. TRANSITION NETWORKS IS NOT LIABLE FOR ANY SPECIAL, INDIRECT, INCIDENTAL OR CONSEQUENTIAL DAMAGES OR LOSSES, INCLUDING LOSS OF DATA, ARISING FROM ANY CAUSE OR THEORY. AUTHORIZED RESELLERS ARE NOT AUTHORIZED TO EXTEND ANY DIFFERENT WARRANTY ON TRANSITION NETWORKS’S BEHALF.

## Contact Us

tel: +1.952.941.7600 | toll free: 1.800.526.9267 | fax: 952.941.2322

[sales@transition.com](mailto:sales@transition.com) | [techsupport@transition.com](mailto:techsupport@transition.com) | [customerservice@transition.com](mailto:customerservice@transition.com)

## Compliance Information

### ERN #

ERN # (Encryption Registration Number) R111839 (self-declaring).

## Declaration of Conformity

<h3 style="margin: 0;"><i>Declaration of Conformity</i></h3>			
<p><i>Transition Networks, Inc.</i> <small>Manufacturer's Name</small></p>			
<p><i>10900 Red Circle Drive, Minnetonka, Minnesota 55343 U.S.A.</i> <small>Manufacturer's Address</small></p>			
<p><b>Declares that the products:</b>  <b>EO2PSE4052-111 and EO2PD4052-111</b></p>			
<p><b>Conforms to the following Product Regulations:</b></p>			
<p><b>FCC Part 15 Class A, EN 55032:2012, EN 55024:2010</b></p>			
<p><b>Directive 2014/30/EU</b></p>			
<p><b>Low-Voltage Directive 2014/35/EU</b></p>			
<p><b>IEC /EN 60950-1:2006+A2:2013</b></p>			
<p><b>2011/65/EU EN 50581:2012</b></p>			
<p>With the technical construction on file at the above address, this product carries the</p>			
<p><b>CE Mark</b></p>			
<p>I, the undersigned, hereby declare that the equipment specified above conforms to the above Directive(s) and Standards(s).</p>			
<p><i>Minnetonka, Minnesota</i> <small>Place</small></p>	<p><i>Oct 31, 2016</i> <small>Date</small></p>	<p><i>Stephen Anderson</i> <small>Signature</small></p>	
<p><i>Stephen Anderson</i> <small>Full Name</small></p>		<p><i>Vice President of Engineering</i> <small>Position</small></p>	
<p><small>28141B</small></p>			

### FCC Regulations

This equipment has been tested and found to comply with the limits for a Class A digital device, pursuant to Part 15 of the FCC rules. These limits are designed to provide reasonable protection against harmful interference when the equipment is operated in a commercial environment. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instruction manual, may cause harmful interference to radio communications. Operation of this equipment in a residential area is likely to cause harmful interference, in which case the user will be required to correct the interference at the user's own expense.

### 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	3/29/17	Initial release for Local & Remote EO2P FW Version 0.6.0.2 and Local and Remote PoC FW Version 22.
B	1/24/18	Updated LED descriptions and clarified "Local PSE Unit Delivery of PoE to Remote (End) Device".
C	5/16/18	Noted twisted wire requirement and updated the static online distance calculator.
D	7/25/18	For EO2P FW v 0.6.0.4. Add Seed ID field on 2 Wire tab for installations with multiple pairs of unshielded cable in a single conduit. Add recommendation to write the assigned channel on the labels of the respective units. FW v 0.6.0.3 corrected firmware name fields on Device tab and changed Hardware Reset button to Hardware Reset/Reboot button.
E	6/8/20	Update grounding information.
F	8/24/20	Update power consumption information.

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