Conduit® PoE Application Note

For Conduit IP67 (MTCDTIP) models with -266, -267, -270, or -275 in the model number.

For Conduit AP (MTCAP2) models with POE in the model number.

Terminology

<table>
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<th>Term</th>
<th>Description</th>
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<tr>
<td>PoE</td>
<td>Power over Ethernet (802.3af). Provides DC power and high speed data through a single RJ45 connector.</td>
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<td>PoE+</td>
<td>Power over Ethernet higher power (802.3at) (MTCDTIP only).</td>
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<td>PSE</td>
<td>Power source equipment, also called an injector or supply.</td>
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<td>PD</td>
<td>Power Device, for example the MTCDTIP or MTCAP2.</td>
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<td>802.3af or 802.3at Type 1</td>
<td>PoE device with power rating up to 13W (MTCAP2).</td>
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<tr>
<td>802.3at Type 2</td>
<td>PoE device with power rating above 13 W and MUST be 25W or greater to turn on the device (MTCDTIP only).</td>
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Detection and Classification

During the detection and classification process the PSE looks for a 25kΩ signature resistor which identifies the device as a PD. The process varies depending on whether the PSE is Type 1 or Type 2.

A Type 1 PSE, after a successful PoE detection, may apply a classification probe voltage of 15.5V to 20.5V and measure current.

A Type 2 PSE probes for power classification twice, as shown. The PoE supply on the MTCDTIP recognizes this and pulls a pin up to VCC to signal the load detect circuit that Type 2 power is available. Otherwise it does not pull up on the pin, indicating that only Type 1 power is available.
Recommended PSE

The following PSEs have been tested and work with the MTCDTIP and MTCAP2:

- For standard MTCDTIP -266 and -267 models and MTCAP2 -042 models:
  - Phihong PoE29W-1AT
  - Microsemi PD-9001GR/AC =35W
  - Trendnet TPE-115Gi = 30W
- For V2.1 MTCDTIP -270 and -275 models:
  - Intellinet Network Solutions Part Number 561235

PoE Standards

For more information about POE, refer to the relevant IEEE standards: IEEE 802.3af, IEEE 802.3at, and IEEE 802.3bt. IEEE 802.3bt-2018 is the current standard. These standards contain technical details you may find useful.

Troubleshooting

Problem: Device fails to power up:

Possible Causes:

- PSE underpowered.
- PSE not 802.3at compliant. (MTCDTIP only)
- Ground loops affecting the 802.3at protocol and interfering with capacitance detection.

Note: (MTCDTIP only) If the power LED lights up and then shuts off, the PSE is not providing enough power.