# Using your POE-16-1U
power injector for 16 devices – with power supply

Power 16 devices from one or two Power supplies

Each pair of ports is used to power one device – the data side goes to any non-PoE switch, and the Power + Data side goes to the device to be powered. Pins 4 and 5 are positive power, 7 and 8 are ground. Each port has a 650 ma current limiter – a self resetting PTC fuse.

The injector block has two inputs – one screw type and one 2.1mm x 5.5mm DC jack. The same voltage must be used if both are used. You are able to connect one or two power supplies to the injector. The 2nd power supply will operate as either a load balancer or as a failover. See note below.   You can purchase a 2nd power supply from our web page at https://shopify.poe-world.com.
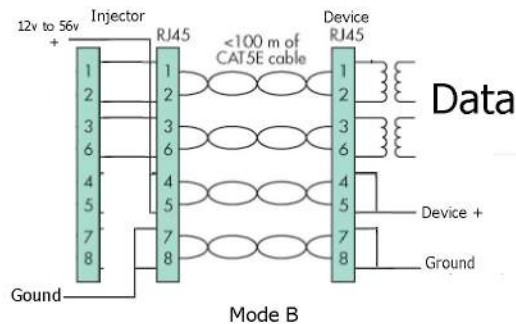
We also offer 24, 18, 15 and 12 volt power supplies – so if you need something else, please call.

VOIP phones, cameras and WiFi AP's need from 3 to 15 watts each, with this injector, you can provide remote power up to 328 ft from the power source. If your device data sheet shows "48v 350ma" please understand that this is not the power your device needs, but the max power that is available according to the 802.3af spec. For example, a Polycom VOIP phone is 802.3af compatible, but needs about 4.5 watts to operate. Therefore, one 12 port injector and a 60watt power supply can power 12 phones at low cost.

If the device shows "12v, PoE" on the data sheet – this usually means that the device uses 12v when powered from a transformer – and 48v when powered via CAT-5.

Connect the LAN port to your Ethernet switch.   This device does 100mb max – so if there is no data sync on a gigabit Ethernet switch – try a 100mb switch or set the port to 100mb max. Do not use a PoE switch – or disable PoE on the ports connected to the injector.

How PoE works

A device needs power to operate.   Not volts or amps – power expressed as watts. That power can be supplied at different voltages.   The electronics inside the device needs usually about 3.3 or 5 volts. But at low voltages, the wires from power supply have a lot of loss beyond about 5 feet.   So for short distance power, most IP phones and Cameras are shipped with a 12v or 24v power supply because 12v supplies are cheap.   But these same devices, when powered via the Ethernet cable, use 48 volts.   This is the 802.3af standard voltage.   So a 12v 1 amp power supply for local power – when using PoE at 48v – translates to 48v .25 amps for the same power

Here is why 24v or 48v is used on Ethernet cables

The device needs power – a phone needs about 4 watts.   Power loss is the current squared times the distance. With 48 volts instead of 12 volts – the loss is reduced by a factor of 4.

802.3at (passive)	56 Volts	for up to 240 watts total 30 watts per port, 2 supplies required
802.3af (passive)	48 volts	for up to 120 watts total 15 watts per port,
Passive 24v	24 volts	Mikrotik, UBNT, OpenMesh, Tranzeo

Is 120 watts going to damage my device?

No.   High **Voltage** can damage a device, because if the **voltage** is higher than allowed, the circuitry in the device "breaks down" **drawing** a lot of **power**, and that power will melt things. But at any allowed voltage – the device takes only the power it needs to operate - you cannot "push" power.

Two power supply operation – more power?

The device has 2 power inputs. If you need more than 120 watts for all 16 devices, then connect 2 power supplies of 120 watts each. Then balance the load by connecting from the outside in – use port 1 then 16 then 2 then 15.

Redundant power supply operation?

There is a circuit between 8 and 9 that kicks in if one of the two input jacks is not connected or has lost power. Therefore if you have two power supplies of the same voltage, and one fails, the entire rack will be powered by the operating power supply. Therefore in this usage – each power supply must be large enough to power all devices. During normal operation – the load will be shared.

Do you need Gigabit operation?

We have 6 and 12 port gigabit injectors.

Do you need 5v or 12v at up to 328 feet?

We also have active splitters, you can charge a remote USB device or power a Foscam camera