

Using your WS-POE-5v DC-DC converter for Cameras, Kiosks and other 5v or USB devices



The POE side of the injector goes to an Ethernet cable that goes to the 5v splitter. Connect each Splitter to the 8 port Poe side of the injector with a CAT-5e or better cable up to 328 ft long. Be sure that all 8 wires are connected – 568A or 568B pinout work – you can mix without any issues. Connect each LAN port to your Ethernet switch, router or hub.

Each splitter can handle 10 watts or 2 amps max. Cameras typically need about 7 watts each, so your power supply can be selected for the number of cameras connected. This 8 camera kit has a 60 watt supply. 120 watt supplies and rack mount kits are available.

Connect the output of the splitter to the 5v or USB device. Our 1.35mm x 3.5mm connector mates with all standard 5v cameras. Some older models need a 2.5mm x 5.5mm connector – we have those in stock. Nest Dropcams need a USB connector – we have those too.

How PoE works

10/100 ethernet need 2 pairs (orange and green) to operate. The other 2 pairs (brown and blue) are not used. These PoE injectors and splitters use those extra pairs for power – and therefore only one cable is required between the power source and the camera or other device remotely. Since the voltage is less than 50 volts – no licensed electrician is required for installation – saving money compared to a 110 volt outlet installation.

Here is why 24v(or higher) is used on Ethernet cables

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 these low voltages, the wires from power supply have a lot of loss beyond about 6 feet. So for short distance power, 5v Cameras are shipped with a 5v power supply because 5v supplies cost less. But if you try to make a longer DC cord at 5 volts there are problems.

A simple non-IR camera needs about 4 watts. So at 5 volts – that is .8 amps. The power cord in the 5v supply is very short – say 6 feet. The loss in 6 ft of power cord is about 120 milliwatts – not a problem. Power loss is the current squared times the distance. For calculation – please see <http://poe-texas.com/Calculator>

If the device needs 2 amps at 5 volts, that is 10 watts. With our convertor, 10 watts at 24v is less than .5 amps. The distance can now be 328 ft without problems.

An ethernet wire can be up to 328 ft – Increasing the voltage on the Ethernet wire by 5, means the current is 5 times lower – the power loss (a square of the current) is 25 times lower. A 10 watt device will cause about 2 watts to be lost in 328 ft of cable, so we should budget 12 watts worst case total per 10 watt device. At 5 volts – the cable loss over 328 ft for a 10 watt device would be 40 watts!

802.3af vs Passive PoE

This device uses passive PoE at 24 volts. More expensive 5v splitters work with 802.3af – that is a 48v technology. Passive PoE uses 802.3af mode B for power (+24v on 45 and ground on 78), but there is no negotiation between the power supply and the device.

Our Mode A injectors and 48 volt kits will not work with these splitters.

Typical non-PoE 5v devices



Product Description - WS-POE-5v10w



Specifications

Power and data source	RJ 45 female connector
DC output	1.35mm x 3.5mm
Data only connector	10BASE-T, 100BASE-T RJ-45 male
Data Pins	1&2 and 3&6
Power Pins (input)	4&5 and 7&8
Input Voltage Max	Up to 30v standard – 48 volt optional
Input Current at 24v	550 ma input delivers 2 amps out
Output Voltage Max	5v +- 5% at 2 amps 10 watts
Operating Temperature	0°C ~ 50°C
Size	19 x 35 x 50 mm

This device provides a low cost solution for delivering power to a 5 volt camera or USB device over 328ft of network cable. This scheme allows power to be carried on 10/100 networks over the spare, unused pairs of a CAT5, CAT5E, CAT6 or CAT7 Ethernet network cable. Use with our passive PoE switches or multi port injectors with 24v power supplies.

Not intended for use with Cisco /Netgear type 802.3af PoE switches – this passive PoE solution operates from any supply from 10v to 30v, and the output voltage is 5v 2 amps.

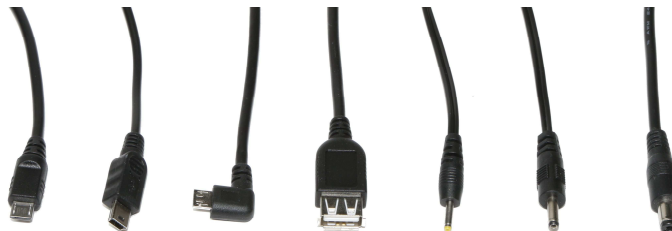
Normally used together with a power supply for 1 to 16 cameras, it is a compact and cost effective power solution. The injector inserts 24 volts DC at the source location. The higher DC voltage means the current is reduced by a factor of 5, and then carried with less loss over the spare pairs of the 10BASE-T or 100BASE-T network cable. The splitter extracts the DC voltage from the network cable and reduces the voltage to 5v, and increases the available current by the same factor to power the camera on the 1.35 mm x 3.5 mm splitter jack. Unlike simple injector / splitter sets, this combination of a 24v power supply and 5v converter allows you to extend the distance with this product for this application up to 328ft or 100 meters.

We also offer kits with up to 16 injectors – so one power supply can feed 4, 8, 12 or 16 cameras. These kits include the Multi Port Passive POE injector and a power supply of either 30 watts, 60 watts or 120 watts.

Typical Cameras or other USB devices

- Foscam W series Tenvis, Wansview, Maygion, EasyN, Apexis, EasySF,
- Dropcam, Vstarcam, any 5v device
- micro USB and Lightning adapters available for iPad, iPhone, Tablet, Android etc
- Dlink and Axis require our 2.5 mm x 5.5mm adapters
- Dropcam require our micro USB adapters

DC connector options



Optional adapter cables for USB, 2.1mm etc