Ethernet Cable

> You must use outdoor rated cable outside! Indoor ethernet cable will only last about 6 months outside due to UV damage. We mostly use Ubiquiti ToughCable Pro CAT5.

Crimping:

There is one commonly used standard for crimping ethernet: T-568B. (oO-gB-bG-brBR)

window/wall install
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A straight cable will work as long as both ends are the same configuration, but to stop confusion we only use the standard T-568B, which is the most common one in this country.

In 100base-T (100Mbps most old ethernet), orange is data transmit (pins 1 & 2) and green is receive (pins 3 & 6) pins 4,5,7,8 are not used for data.

In 1000Base-T (gigabit ethernet) all pins are used for data. If pins 4,5,7 & 8 are not connected the speed falls back to 100Mbps.

Ethernet cables need to be shorter than 100m (300'). Longer than that you will have data loss and the POE voltage will drop too low.
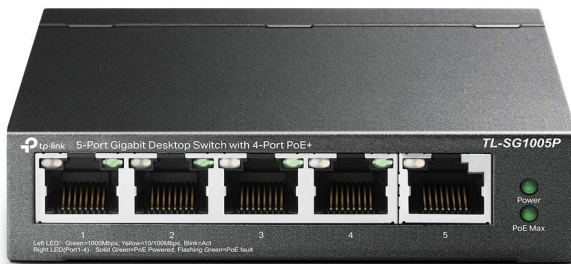
Power over Ethernet (POE):

Devices can provide/receive power over ethernet cables along with data. This is called POE or Power Over Ethernet.

Power is provided by dedicated POE Bricks or POE enabled routers and switches.

(Ubiquiti POE injector)

TP-Link 5 port POE Switch

POE Protocols:

For Ubiquiti and Mikrotik pins 4,5,7,8 on the ethernet plug are used for 24 volt passive power over ethernet (POE). Pins 4 & 5 are positive and 7 & 8 are negative. Passive POE doesn't negotiate with the other device so it will always send power even if a wrong device is plugged in.
If you plug a live POE cable into an adapter or some device that does not expect POE it can break. This is often how ethernet adapters and cable testers break! A cheap USB 100Base-T Ethernet adapter will survive as it doesn't use the POE pins.

There isn't a standard for passive POE so you need to check compatibility (which pins are used) if using a different manufacturer.

For active POE there are standards like PoE 802.3af, PoE+ 802.3at and PoE++ IEEE 802.3bt. Again you need to check which one to use. Active POE negotiates with the device before sending power, so it's safer and less likely to fry devices that are not expecting it.

Ubiquiti POE is 24V DC, **half the voltage of standard (802.3af/at) 48V DC POE.** If you use standard POE you need to use a Ubiquiti 8023af-adapter

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