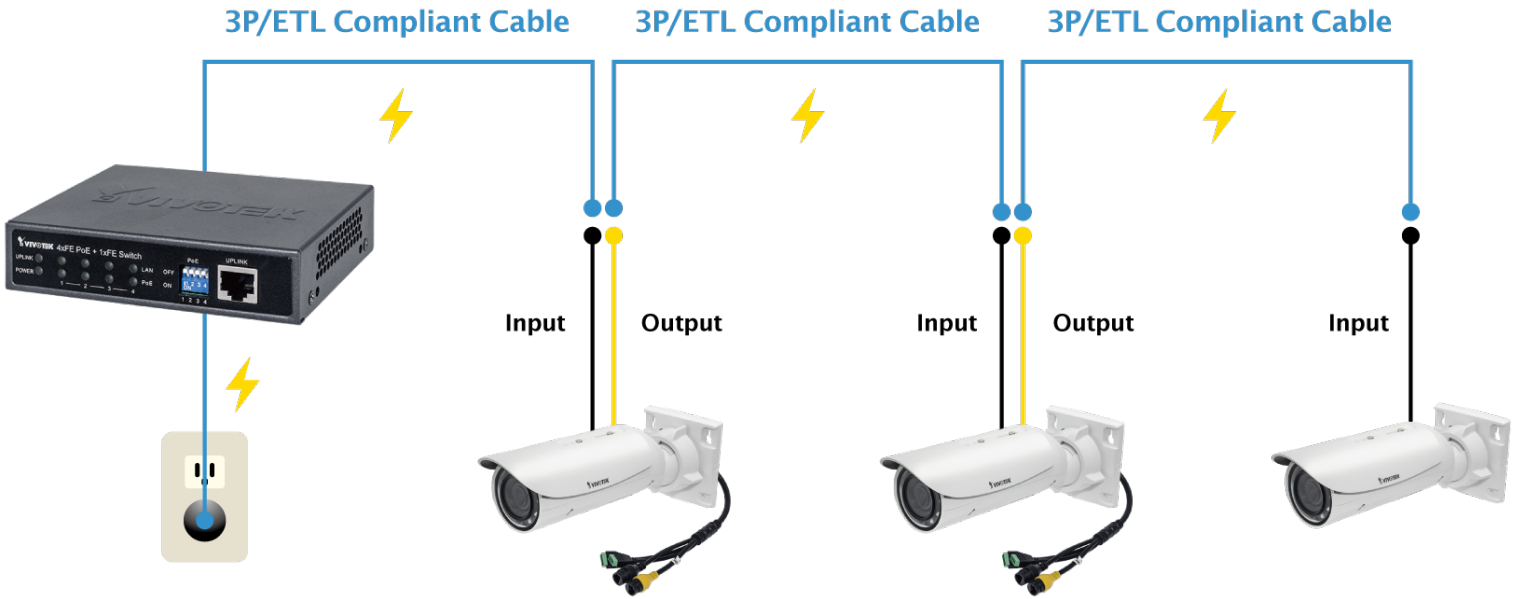
Cat.5e/6 Cable Issue

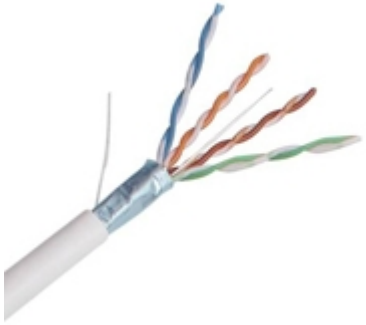
VIVOTEK has innovatively designed a series of Daisy-chain PoE cameras, including the IB8367-R, IB8367-RT and IB8338-HR, which enable a surveillance system to be extended up to 300 meters without the need for additional power supplies. Please note that when adopting this series of products and extending the range of a surveillance system, CAT5e & CAT6 Ethernet cables compliant with 3P/ETL standards are highly recommended.



Standard Cat. 5e UTP Cable

- **Wire structure:**
  four pairs of single-strand type twisted pair24AWG
  solid copper
- **Maximum conductor resistance:**
  Max 9.38 Ω per 100m
- **Certifications:**
  3P / ETL Certification

Standard Cat. 5e FTP/SFTP Cable



- **Wire structure:**
  - four pairs of single-strand type twisted pair, 24AWG solid copper
  - FTP taken overall aluminum foil and ground wire SFTP copper foil shield network
- **Maximum conductor resistance**
  Max 9.38Ω per 100m
- **Certification:**
  3P Certification

Types of Non-Standard Cable

- **CCA: Copper Clad Aluminium**
  - Four pairs CCA, 24AWG
  - Maximum conductor resistance: 24Ω per 100m

- **CCS : Copper Clad Steel**
  - Four pairs CCS, 24AWG
  - Maximum conductor resistance: 75Ω per 100m

- **CCA+CCS : Copper Clad Aluminium + Copper Clad Steel**
  - Two pairs CCA + two pairs CCS, 24AWG
  - Maximum conductor resistance: 24 or 75Ω per 100m

Cable Resistance Comparison-1

Resistance	3P/ETL Standard Cable	CCA	CCS
12 m	1.12 Ω	2.88 Ω	9 Ω
39 m	3.66 Ω	9.38 Ω	29.25 Ω
100 m	9.38 Ω	24 Ω	75 Ω

A 100-meter 3P/ETL standard cable has the same resistance as:
-a 12-meter non-standard CCS cable
-a 39-meter non-standard CCA cable

Cable Resistance Comparison-2

Resistance	3P/ETL Standard Cable	CCA	CCS
305 m	28.609 Ω	73.2 Ω	228.75 Ω

The Risk of Non-Standard Cable

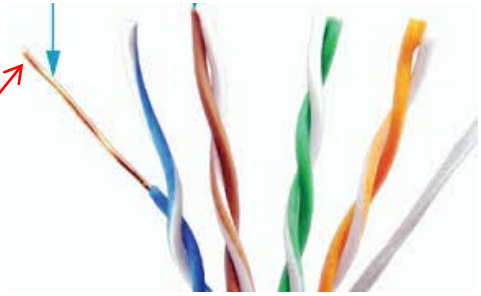
CCA/CCS cables present a potentially dangerous scenario when using as PoE cables. Since its tensile strength is much lower than pure copper, it will cause overheating of cables, resulting in higher wattage consumption. The power supply will become unstable for Daisy-chain cameras in long-range environment. In the end make a higher cable failure rate.

Aluminium corrosion in contact with air easily make lots of post installation problems. In addition, because of the higher resistance, it highly recommended not to use CCA/CCS cables for Power-Over-Ethernet solution, even it says CAT5e or CAT6 in the box.

How to test Cable resistance ?

Please use Volt-Ohm meter to the amount ends Ethernet cable, the normal standard Ethernet cable resistance should be around 9.38 ohm per 100 meters (please reference the table in page 6).
As long as it does not excess 9.38 ohm per 100 meter, it is safe to use.

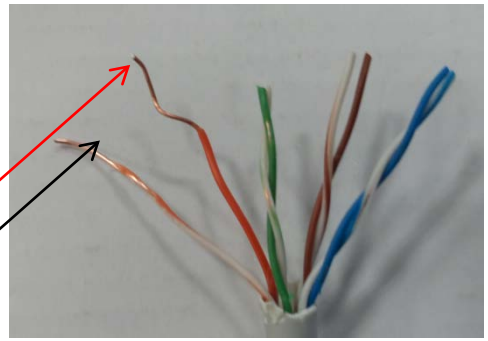
Resistance	3P/ETL Standard Cable	CCA	CCS
100m	9.38 Ω	24 Ω	75 Ω

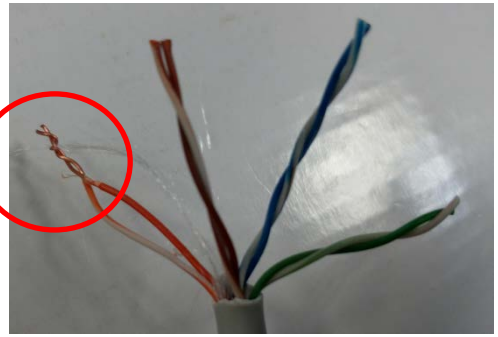


How to test Cable resistance ?

If cable was installed already, please short one pair in one side, then test resistance in another side. In this case Ethernet cable resistance should be18.76 ohm per 200 meters. (Please make sure no excess 18.76 ohm)

Resistance	3P/ETL Standard Cable	CCA	CCS
200m	18.76 Ω	48 Ω	150 Ω

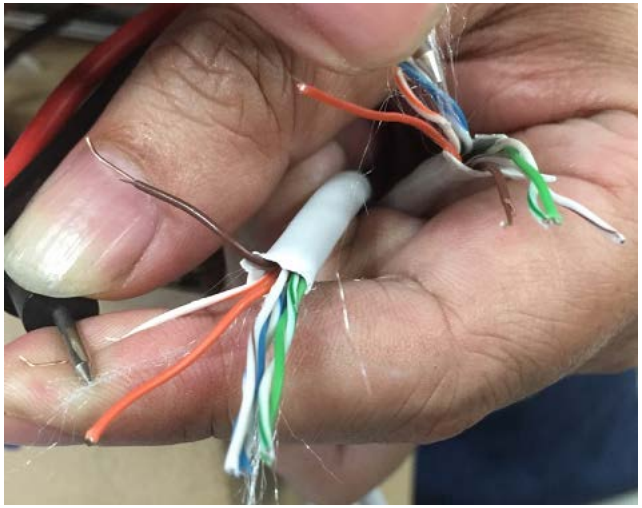




Short

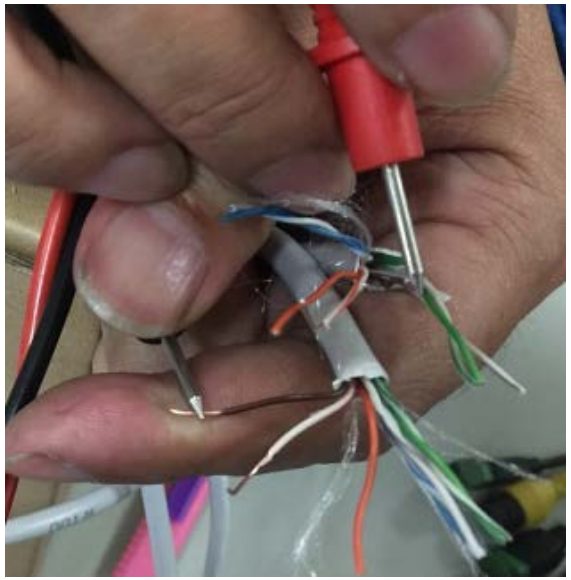
Test Cable CCA resistance

CCA: Copper Clad Aluminium
four pairs CCA, 24AWG
Conductor resistance: 24Ω per 100m



Test Cable CCS resistance

CCS: Copper Clad Steel
four pairs CCS, 24AWG
Conductor resistance: 75Ω per 100m



Again, it is highly recommended to use **STANDARD CAT5e & CAT6 cables** which are compliant with the **3P/ETL standard.** More details are available through the VIVOTEK website (http://www.vivotek.com)

Thank you

for your attention

The End