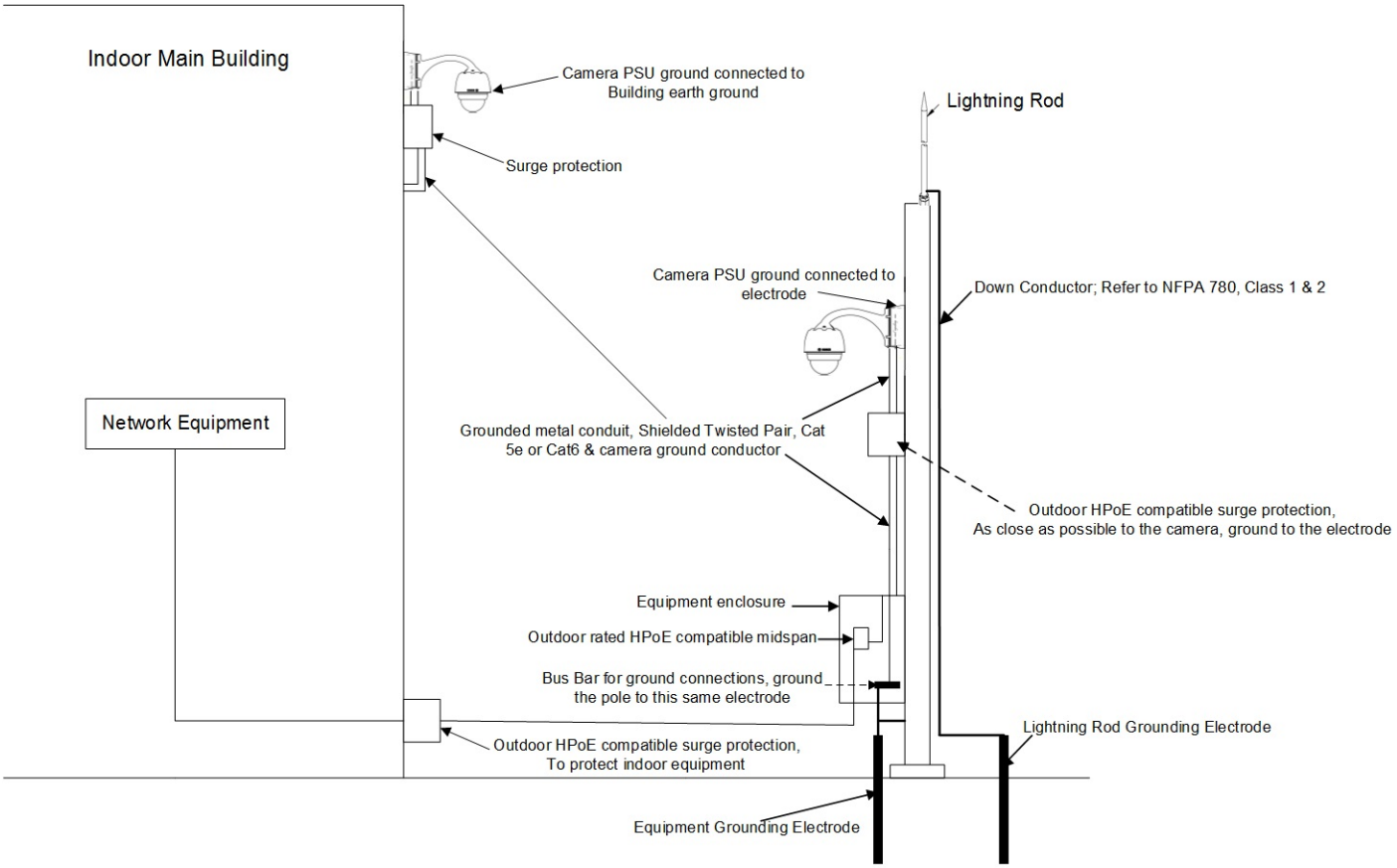
IP Cameras Surge/Lightning Protection (Best Practices)

APPLICABLE PRODUCTS

These practices apply to all Bosch IP cameras installed outdoors, especially if the location has a high incidence of lightning strikes.

OVERVIEW

This drawing is an overview of the correct installation to provide the optimum Lightning and Surge protection for an outdoor installation.



WIRING/CABLING

- **All cables** must be in metal grounded conduit. (Earth grounded across the entire span).
  - Power and signal cables must be in separate conduits.
- **Ethernet cables** must be a minimum of an overall braided Shield (S) with Unscreened Twisted Pairs (S/UTP), either Cat 5e or Cat 6.
  - The S/UTP cable should be grounded at both ends.
    - Bosch network cameras for outdoor installations, such as the VG5 7000 series Autodomes are internally protected against power surges and transients. But this requires the use of a grounded shield to ensure a path for the power surge to reach ground.
  - Don't exceed a cable length of 100 m (328 ft).
  - The following shielding methods provide additional protection for challenging installations.
    - SF/UTP, has both an overall braided shield (S) and a foil shield (F) with unscreened twisted pairs (UTP). This cable is very effective at preventing EMI from entering or exiting the cable.
    - S/FTP has an overall braided shield (S) with foil screened twisted pairs (FTP). The additional foil on individual pairs limits the amount of crosstalk between the pairs.
      - All Category 7 cables are S/FTP.

- **Additional wiring guidelines**
  - Maintain the separation distance between the Ethernet cable and high voltage/EMF.

Voltage Range	Minimum Separation Distance
For less than 600 VAC	50 mm (2 in)
For > 600 VAC < 3 kV	1.5 m (5 ft)
For > 3 kV	3 m (10 ft)

  - The camera Power Supply Unit (PSU) and the camera housing must be grounded using a separate earth conductor to a building ground or grounded electrode.
  - If a metal pole is being used, also ground the pole to this same electrode.
  - Refer to the local building codes.

OUTDOOR MIDSPAN

- Must be compatible with HPoE 4-wire operation.
  - Examples:
    - Bosch VJC-7000-90
    - Microsemi PD-9601GO (http://www.microsemi.com)
    - Or Equivalent.
  - Refer to the manufacturer's installation instructions and local building codes.

SURGE PROTECTION

- Lightning rod and electrode
  - (Refer to NFPA 780, Class 1 & 2, UL96A, or the equivalent code appropriate for the country/region).
  - Also refer to the manufacturer's installation instructions and local building codes.
- Must install surge protectors at the cable entrance into the building and at the camera.
  - Refer to the manufacturer's installation instructions and local building codes
  - Must be compatible with HPoE 4-wire operation.
    - Examples:
      - ITW Linx CAT6-75/P OE RJ45 (http://www.itwlinx.com/)
      - Microsemi PD-OUT-SP11
      - Or equivalent.
  - Refer to the manufacturer's installation instructions and local building codes.