



Description

Certain specifications pertaining to lightning protection outlined in the *FT 3120 / FT 3150 Smart Transceiver Data Book* have been updated. These include:

- Building Entrance Protection
- Network Line Protection
- Shield Protection
- Suggested Gas Discharge Arresters
- Network and Shield Lightning Protection Diagram

Building Entrance Protection

Echelon recommends using shielded twisted pair wire for all networks, or portions of networks, that are run outside of buildings or grounded structures. The shield, as well as the two network lines, should be connected via Data Line Lightning/Surge arresters to earth ground at each building entry point, to conduct excessive energy surges or lightning strike energy directly to earth and prevent their entry inside the building via the network shield and/or data line conductors. Therefore, three arresters are to be used at each building entrance in the case of Shielded Twisted Pair wiring.

Network Line Protection

The arresters used on the network data lines must be of the Gas Discharge type. The intrinsically low capacitance to ground of these devices, typically less than 5 pF, minimizes the corruption of any data signals. Due to their low capacitance construction, the use of Gas Discharge devices does not alter the maximum number of nodes allowed per network segment, i.e., 64 for unpowered TP/FT-10 segments, 128 for link powered TP/FT-10 segments. MOV and TVS protection devices must NOT be used on the network data lines due to their much higher capacitance (>200 pF) and potentially poor differential capacitance matching. These devices may corrupt, and possibly prevent, network communication between nodes.

Shield Protection

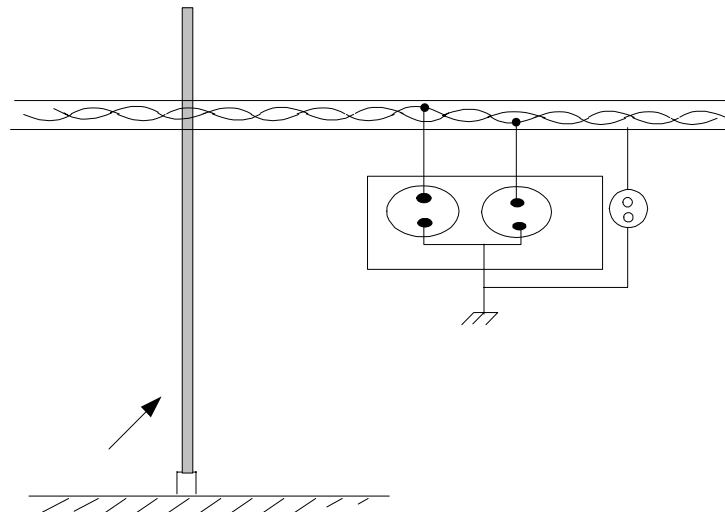
Gas Discharge, MOV, or TVS devices may be used for the shield-to-ground protection. MOV and TVS devices may not be used to protect the network data lines.

Suggested Gas Discharge Arresters

Three-electrode device configurations are suggested for the data network lines, as this will require the use of only one physical device to protect both lines. The network lines should be connected to the two outside ends of the arrester, while the middle terminal must be connected to a stable earth ground. Alternatively, two each of two-electrode configurations may be used (contact manufacturer for details). The following table provides a list of three-electrode Gas Discharge device manufacturers.

Vendor and Configuration	Series	Model	Voltage
Sankosha, 3 Electrode www.sankosha-usa.com/cp6.htm	3YW	A	90VDC
Citel, 3 Electrode www.citelprotection.com	BT (or BTR)	----	90VDC
Sumida, 3 Electrode www.srcdevices.com	PMT8	----	90VDC

The figure below presents a typical outdoor twisted pair network in which Gas Discharge arresters have been incorporated.



Network and Shield Lightning Protection

When the network data line extends outside of a building or grounded structure, every FTT-10A and FT 3120 / 3150 Free Topology Smart Transceiver-based device on the network segment, whether located indoors or outdoors, must be equipped with surge protection circuitry. In addition, protection devices must be added to the network at every point where the network cable exits the building or structure.