

Fire Alarm/Security Control Cable

DISTANCE THE CABLE WILL RUN

Voltage drop should be calculated or refer to equipment manufacturer's recommendations. Knowing the cable run will help identify the right gauge size cable to select. A larger gauge size is suitable for longer runs.

NON-POWER LIMITED OR POWER LIMITED

The difference between power limited cables and non-power limited cables are specified in specific sections of the NEC.

- **Non-Power Limited Cable** is a fire alarm circuit powered by a source that complies with NEC sections 760-21 and 760-23. Non-power limited fire alarm cables have been designed for installations where fire alarm cables are permitted to occupy the same enclosure, or race way as other Class 1 Circuits, or 600V cables.
- **Power Limited Cable** is a fire alarm circuit powered by a source that complies with section 760-41. Power limited fire alarm cables are rated for 300V. Superior Essex offers only power limited fire alarm and power limited security control cables.

SHIELDED OR NON-SHIELDED

Is the system microprocessor based and therefore sensitive to EMI and RFI? If the system is computer based, a **shielded** cable will protect the circuits from this outside interference and keep the signal constant. If interference is not a concern, then a **non-shielded** cable is a cost effective solution.

- **EMI** (Electro Magnetic Interference): EMI can come from electrostatic sparks or spiking from motors, neon or fluorescent lighting ballasts or any other sources that cause noise. Shielded cables should be considered for installations in areas near dimmer panels and light switches, in parallel runs, near neon or fluorescent lights and near power cables.
- **RFI** (Radio Frequency Interference): Some frequencies used for radio communications can become coupled onto conductors to produce RFI.

SIMPLIFYING PRODUCT SELECTION

Superior Essex designed its Fire Alarm and Security Control cables to have multiple NEC and UL listings. A single cable design satisfies several listing categories and can be deployed if one listing category is called out by the customer. As an example, the Fire Alarm cable jacket is marked with three listings: FPLR, CL3R and CMR. This covers UL 1424 for the FPLR rating, UL 13 for the CL3R rating and UL 444 for the CMR rating.

When the customer specification calls for any one of the three specifications, this product is properly listed for that application. This simplifies product selection and helps with ordering stock and installation. Superior Essex has combined General Use (FPL) and Riser (FPLR) into one category called Riser.

Superior Essex Category	NEC/UL Listing	Suitable Applications	Substitutions
Non-Plenum or Riser	FPLR and FPL	Vertical runs in a shaft or from floor to floor and general purpose use	CM, CMR, CL3R
Plenum	FPLP	Ducts, plenums and other space used for environmental air	CMP, CL3P

Power Limited Cable Type	Listing	Bare Copper Standards		NEC and UL Standards				Miscellaneous Standards			
		ASTM B-3 (Solid Copper)	ASTM B-3 and B-8 (Stranded Copper)	UL 1424 Fire Alarm NEC Article 760	UL 13 Security NEC Article 725 (150 Volts)	UL 444 NEC Article 800 (300 Volts)	UL 1666	NFPA 262	California State Fire Marshall	Sunlight Resistant	RoHS-Compliant
Fire Alarm, Non-Shielded and Shielded	Riser	✓		✓	✓	✓	✓		✓	✓	✓
	Plenum	✓		✓	✓	✓		✓	✓		✓
Security Control, Non-Shielded and Shielded	Riser	✓	✓	✓	✓	✓	✓		✓	✓	✓
	Plenum	✓	✓	✓	✓	✓		✓	✓		✓

INSULATION COLORS

Fire Alarm Conductor Number	Insulation Color
1	Black
2	Red
3	Brown
4	Blue
5	Orange
6	Yellow
7	Violet
8	Gray

Security Control Conductor Number	Insulation Color
1	Black
2	Red
3	White
4	Green
5	Brown
6	Blue
7	Orange
8	Yellow
9	Violet
10	Gray
11	Pink
12	Tan

CABLE SELECTION FOR VIDEO APPLICATIONS

Closed circuit security cameras use baseband frequencies, typically under 5 MHz. These applications are best suited for the bare copper center conductors of the Superior Essex RG-59 coaxial cable, which also features 95% copper braiding. RG-59 coaxial cable is specifically designed for applications operating below 1 GHz, but will also support higher frequency applications at shorter distances than RG-6 coaxial cable.

Many video and RF applications use frequencies above 1 GHz. RG-6 coaxial cable is often the preferred cable choice for applications such as CATV transmission. In such cases, the decision is whether to use 60% or 80% braid/shield or a quad shield design. The quad shield design is slightly more expensive than the 60% and 80% shield designs, but offers superior interference protection than the 60% and 80% braid versions.

It is becoming more common however, for copper category (CAT) twisted pair cables, like CAT 5e and 6, to be used for Closed Circuit over Twisted Pair (CCTP) systems. Digitally formatted signals provide dramatically better pictures and better sound quality. Digital Signal Processed (DSP) cameras fed by copper twisted CAT 5e and 6 cables, typically have more control setting options, plus digital video recorders (DVRs) options. Both DSP cameras and DVRs can typically be connected with coax products, but you should consult the camera manufacturer for its recommendation before making a cable selection.