Fire Alarm/ Security Control & Sound Cable Basics and NEC Ratings

Fire Alarm and Security Control Sound Cables are both simple and complex. To answer your most basic questions about cable types, product selection and use, NEC ratings, we offer below guides:

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. Syston Cable Technology 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

Syston Cable Technology designed its Fire Alarm and Security Control Sound 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. Syston Cable Technology has combined General Use (FPL) and Riser (FPLR) into one category called Riser.

Syston Cable 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

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

		Bare Copper Standards		NEC and UL Standards					Miscellaneous Standards		
Power Limited Cable Type	**Listing**	**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**	**RoHSCompliant**
Fire Alarm, Non-Shielded and Shielded	Riser	✓		✓	✓	✓	✓		✓	✓	✓
	Plenum	✓		✓	✓	✓		✓	✓		✓
Security Control, Non-Shielded and Shielded	Riser	✓	✓	✓	✓	✓	✓		✓	✓	✓
	Plenum	✓	✓	✓	✓	✓		✓	✓		✓

Please note: Although Syston Cable makes every reasonable effort to ensure their accuracy at the time of this publication, information and specifications described herein are subject to error or omission and to change without notice.