



Linear Heat Detection Cable Application Guide



INTRODUCTION

The purpose of this guide is to provide information about using Linear Heat Detection Cable in conjunction with Fike control panels. It outlines the equipment and basic methods that must be used to integrate linear heat detection cable into Fike systems. For more detail about the installation and operation of the linear heat detection Cable, refer to the applicable heat cable manufacturer's Installation and Operation manual.

WHAT IS LINEAR HEAT DETECTION CABLE?

Linear Heat Detection Cable consists of a twisted pair of extremely low resistance, tri-metallic conductors, sheathed in a thermal sensitive polymer. These polymers are chemically engineered to breakdown at specified fixed temperatures allowing the twisted conductors to make contact and initiate an alarm at the connected control panel without any calibration for changes in ambient temperatures.

Linear Heat Detection Cable can be installed in a manner similar to that of spot type heat detectors at the ceiling level. Installation must be in compliance with NFPA 70 National Electrical Code, NFPA 72 National Fire Alarm Code, Cable manufacturer's instructions and as indicated by the Local Authority Having Jurisdiction (AHJ).

COMPATIBILITY

Linear Heat Detection Cable may be used with Fike's SHP-Pro Conventional and Cheetah Xi and CyberCat Addressable Fire Alarm Control/Releasing Panels. The cable circuit may be installed either Class B or Class A to suit specific project requirements. The maximum length of cable allowed will vary according to the panel it is to be connected to, the cable manufacturer, and the required operation. The following connection methods and cable limitations have been approved by Fike and shall be adhered to, to ensure proper system operation.

SHP-Pro Panel

When using Linear Heat Detection Cable with the SHP-Pro, it may be connected to any of the panel's detection and/or switch input circuits (P3 terminal), as shown in Figure 1.

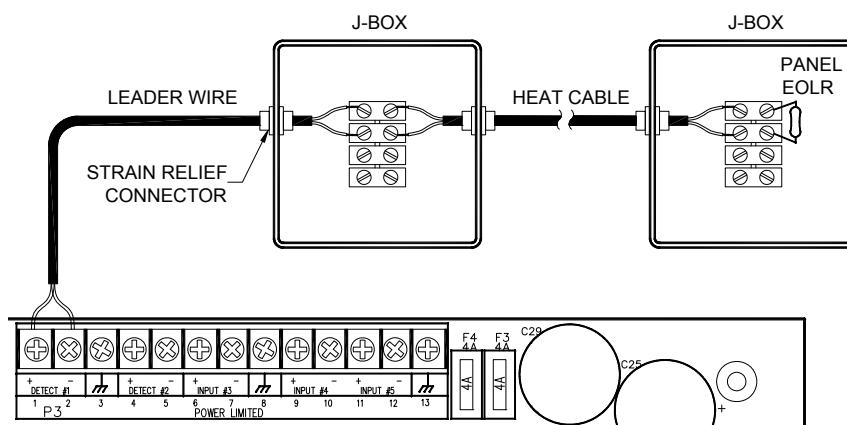


Figure 1 Typical SHP-Pro Connection Diagram (Class B)

If Class A wiring is required, a return leader wire is installed from the last heat cable junction box back to the SHP-Pro panel's Class A input module (P/N 10-2450), as shown in Figure 2.

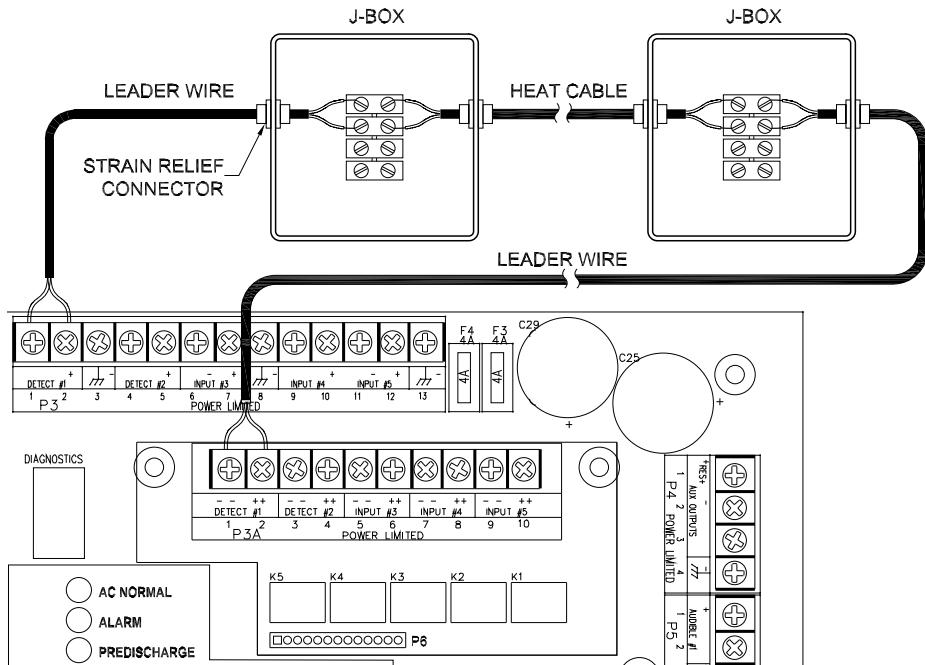


Figure 2 Typical SHP-Pro Connection Diagram (Class A)

Detection Inputs - When connected to the SHP-Pro's Detection inputs 1 or 2, the linear heat cable creates a short at the point of activation, which increases the current on the detection input. The panel's response to this activation depends upon its detection circuit configuration.

The detection circuits can be configured for Cross Zone, Sequential, or Single Detector Release operation and will operate as follows when used in conjunction with linear heat cable:

Cross Zone – Activation of heat cable creates an Alarm from the respective detection input. Advancement to Pre-discharge state requires an Alarm on both detection circuits 1 and 2. See Table 1 for cable length limitations.

Sequential/Single Detector Release (SDR) – Activation of heat cable will create an Alarm and Pre-discharge states on the respective detection input. See Table 1 for cable length limitations.

Caution: Do **NOT** cut the "0 ohm base" jumper when connecting linear heat cable directly to the SHP-Pro's Detection inputs 1 or 2.

Switch Inputs - When connected to the SHP-Pro's Switch inputs 3 – 5, the linear heat cable creates a contact closure input on the respective circuit. The panel's response to this activation depends upon its input circuit configuration. See Table 1 for cable length limitations.

Maximum Allowable Cable Lengths		
Panel Input	ThermoCable	Protectowire
SHP-Pro Detection (CZ)	8,800 ft (2,682 m), UL 10,000 ft (3,048 m), FM	2,200 ft (670 m)
SHP-Pro Detection (SEQ/SDR)	5,500 ft (1,676 m) ¹	1,375 ft (419 m) ¹
SHP-Pro Switch	2,000 ft. (609 m)	500 ft. (152 m)

Length values indicated reflect direct connection of cable to SHP-Pro detector or switch inputs.

Table 1 SHP-Pro Allowable Cable Lengths

¹**CAUTION:** Cable lengths in excess of stated values may only create an Alarm state on the detection circuit. The added wire resistance in long lengths of cable can create a voltage drop that will cause the panel to only reach the Alarm state. Therefore, it is important for designers and installers to use reduced lengths of Linear Heat Detection cable if the application requires Single Detector Release operation.

Cheetah Xi and CyberCat Intelligent Addressable Panels

When using Linear Heat Detection Cable with Fike's Cheetah Xi and CyberCat intelligent control panels, it may be connected to any of the panel's addressable contact monitor modules, as shown in Figure 3. When connected to a monitor module, the linear heat cable creates a contact closure input on the module. The panel's response to this activation depends upon the module programming. See Table 2 for cable length limitations.

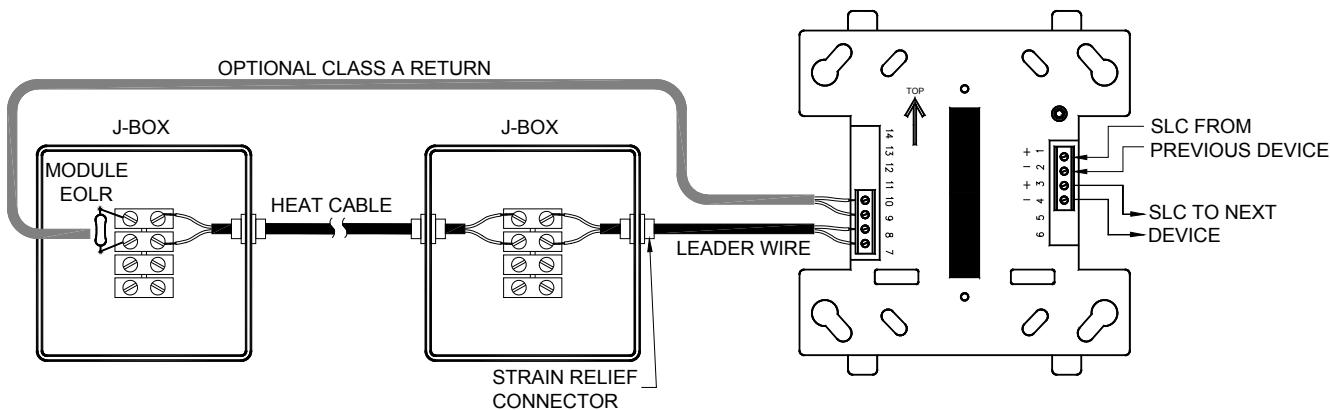


Figure 3 Typical Monitor Module Connection Diagram

Maximum Allowable Cable Lengths		
CyberCat/Cheetah Xi	ThermoCable	Protectowire
Addressable Monitor Module	2,000 ft. (609 m)	500 ft. (152 m)

Length values indicated reflect direct connection of cable to monitor module.

Table 2 Monitor Module Allowable Cable Lengths

INTRINSICALLY SAFE INSTALLATIONS

Linear Heat Cable applications in classified hazardous areas, with potentially explosive vapors, dust or fibers require the use of Intrinsic Safety Barriers. "Intrinsic Safe Installations" insures that a circuit operated under normal and specified fault conditions is not capable of causing ignition of the prescribed explosive atmosphere. Fike's P/N 02-12343 intrinsic safety barrier must be used in hazardous installations to prevent accidental ignition of flammable materials. The barrier is an energy limiting device that directs voltage spikes to ground. When used, the Intrinsic Safety Barrier is installed between the panel or contact monitor module and the linear heat cable, as shown in Figure 4.

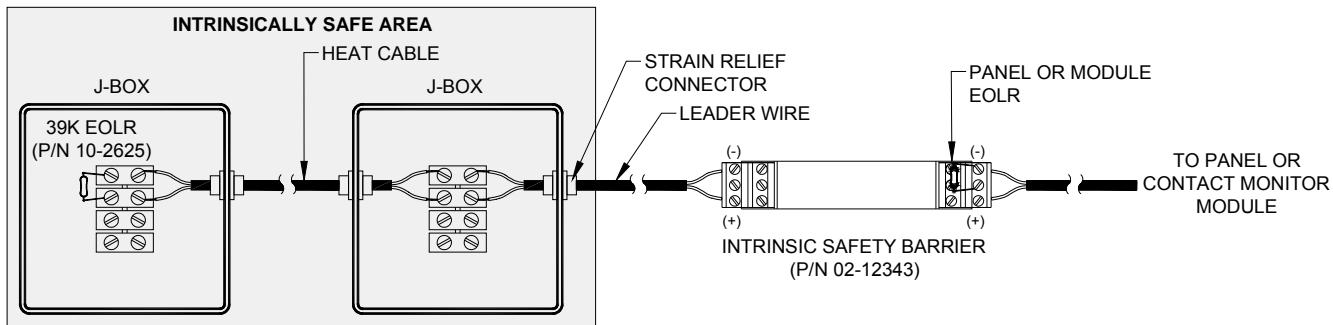


Figure 4 Typical Intrinsic Safety Barrier Connection Diagram

⚠WARNING: Substitutions of the Intrinsic Safety Barrier shall not be made.

The Intrinsic Safety Barrier has a single-channel input (Class B only) that provides a connection point for the cable. The maximum length of linear heat cable that can be connected to the barrier input is determined by the characteristics of the barrier, not the panel or monitor module that the cable is connected to. See Table 3 for cable length limitations.

Maximum Allowable Cable Lengths		
	ThermoCable	Protectowire
Intrinsic Safety Barrier Input	10,000 ft (3,048 m)	4,000 ft (1,219 m)

Length values indicated reflect direct connection of cable to Intrinsic Safe Barrier input.

Table 3 Intrinsic Barrier Allowable Cable Lengths

ⓘ Note: The intrinsic safety barrier is **NOT** capable of supporting Class A wiring.

When connecting the intrinsic safety barrier to either of the SHP-Pro's detection input circuits, the "0 ohm base" jumper (R52/R89) on the main board must be snipped for proper operation. In addition, the optional distance locator available for use with the linear heat cable can **NOT** be used in conjunction with the intrinsic safety barrier. Refer to Fike document 06-524, "Intrinsic Safety Barrier Installation Instructions Sheet" for further installation details.

If you have further questions regarding the application or installation of Linear Heat Cable, contact:

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