

## Protectowire CTI™ Confirmed Temperature Initiation Linear Heat Detectors



### Features

- Operates digitally with short circuit discrimination capable of distinguishing between short circuit and alarm conditions.
- Consists of multi-sensor heat detection technology.
- Includes confirmed temperature initiation for highest immunity to false alarms.
- Is compatible with Protectowire Alarm Point Location Meter.
- Approved for hazardous locations when used with required equipment.
- Available in six alarm temperatures to accommodate a wide range of applications.

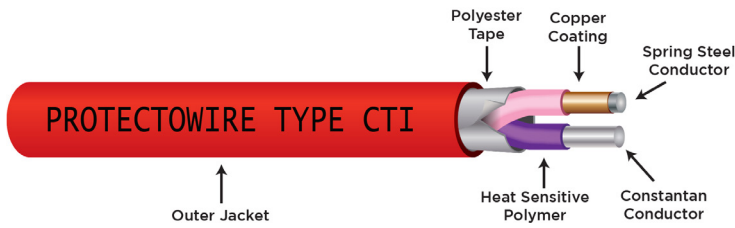
### Description

The Protectowire family of Confirmed Temperature Initiation Linear Heat Detectors are advanced multi-sensor detectors consisting of models with alarm temperatures ranging from 135°F (57°C) to 356°F (180°C). Each detector is comprised of two special metallic alloy conductors individually insulated with a heat sensitive polymer. The insulated conductors are twisted together to impose a spring pressure between them, then wrapped with a protective tape and finished with a durable flame retardant outer jacket.

The detectors are fixed temperature digital sensors that are capable of initiating an alarm signal. Once exposed to the rated temperature the heat sensitive polymer yields to the inherent spring tension allowing the conductors to move into contact with each other, thereby creating a short circuit temperature measuring junction point. A CTM Module is required to supervise all CTI Linear Heat Detectors. The CTM interface module is designed to detect a short circuit and enter a heat measuring thermocouple mode.

By entering the thermocouple mode, the interface module is able to identify the temperature at the short and determine the type of off-normal condition being created based upon the alarm temperature threshold of the detector.

If the interface module determines that the temperature at the short is above the predetermined alarm threshold temperature, the module initiates an ALARM condition and displays the location of the alarm if equipped with the Protectowire Alarm Point Location Meter. If, however, the interface module determines the temperature is below the alarm temperature threshold, it initiates a short circuit fault or TROUBLE condition and displays its location on the Protectowire Alarm Point Location Meter (if provided) so it can be corrected. The Protectowire advanced multi-sensor detectors are the first digital type linear heat detectors to provide true confirmed temperature initiation and mechanical short circuit discrimination. They provide reliable temperature response with verified alarm temperature confirmation for exceptional false alarm immunity.



### Features & Benefits

- Uses advanced multi-sensor detection for highest immunity to false alarms.
- Measures and confirms the temperature at the alarm point to provide true Confirmed Temperature Initiation (CTI).
- Includes reliable digital operation with separate short circuit fault identification.
- Distinguishes between short circuits and true alarm conditions.
- Identifies and displays the location of an overheat or fire condition anywhere along its length when used with a Protectowire Alarm Point Location Meter.
- Meets intrinsically safe standards and is FM Approved for Class I, II and III, Division 1, Groups A, B, C, D, E, F and G when used with required equipment.
- Is manufactured under U.S. Patent 8,096,708 and has patents in many countries around the world.

### Installation

Protectowire CTI Linear Heat Detectors are approved as heat actuated automatic fire detectors and are intended to be interfaced to a supervised initiating circuit with an approved fire protective signaling control unit. The detectors must be installed in continuous runs without taps or branches in accordance with applicable sections of NFPA 70 National Electrical Code, NFPA 72 National Fire Alarm Code, or as determined by the local authority having jurisdiction.

Protectowire may be installed at the ceiling level or on the side walls within 20 inches (50cm) of the ceiling, to protect areas within buildings. The detector has the additional benefit of being suitable for installation close to the hazard ( i.e. cable trays) in order to provide a rapid response. This is known as proximity or special application protection.

Common practice is to locate the associated Interface Module within the hazard area and connect the CTI Linear Heat Detector directly to the module. When the application requires control modules to be located outside of the hazard area, "T" type thermocouple extension grade wire, of an approved type, with a minimum conductor size of 20 AWG, may be installed as interposing cable from the Interface Module out to the beginning of the CTI Detector portion of the initiating circuit. The Interface Module provides Form C (SPDT) contacts for Alarm, Trouble, and Short Circuit Fault connection to the host fire alarm control panel.

The CTI Detector portion of each initiating circuit shall begin and terminate at each end in an approved zone box or end-of-line zone box. In order to hold the cable securely, SR-502 Series Strain Relief Connectors shall be installed in all zone boxes where the CTI Linear Heat Detector enters or exits the enclosure.

### Installation Accessories

A comprehensive range of mounting and installation accessories are available for the installation of Protectowire CTI Linear Heat Detectors. Only installation hardware supplied or approved by The Protectowire Company should be used.

Messenger wire is also available for the detector on special order. It consists of high tensile strength stainless steel wire, which is wound around the detector at the rate of approximately one turn per foot. It is a carrier or support wire that is designed to simplify the installation of the detector in areas where mounting is difficult. Consult The Protectowire Company for details regarding your specific application.

### Specifications

Maximum Voltage Rating:	30 VAC, 42 VDC
Resistance:	.282 ohms/ft. (.925 ohms/m)
Conductor Polarity:	Un-insulated Copper Colored Conductor - Positive (+) Un-insulated Silver Colored Conductor - Negative (-)
Minimum Bend Radius:	2.5 inches (6.4 cm) Nominal
Weight:	8 lbs. / 500 ft. (3.6 kg / 152 m)

**Model Numbers, Temperature Ratings, and Approved Spacing**

Product Type	Model Number	Alarm Temperature	Max. Ambient Temperature	UL/cUL Approval/ Max. Listed Spacing	FM Approval/ Max. Listed Spacing
<b>CTI-EPC</b> Multi-Purpose/ Commercial & Industrial Applications	CTI-155-EPC	155°F (68°C)	115°F (46°C)*	50 ft. / 15.2m	30 ft. / 9.1m
	CTI-190-EPC	190°F (88°C)	150°F (66°C)	50 ft. / 15.2m	30 ft. / 9.1m
	CTI-220-EPC	220°F (105°C)	175°F (79°C)*	50 ft. / 15.2m	25 ft. / 7.6m
	CTI-280-EPC	280°F (138°C)	200°F (93°C)	50 ft. / 15.2m	25 ft. / 7.6m
	CTI-356-EPC	356°F (180°C)	221°F (105°C)	50 ft. / 15.2m	See Note 1
<b>CTI-XCR</b> High Performance/ Industrial Applications Excellent Abrasion & Chemical Resistance	CTI-155-XCR	155°F (68°C)	115°F (46°C)*	50 ft. / 15.2m	30 ft. / 9.1m
	CTI-190-XCR	190°F (88°C)	150°F (66°C)	50 ft. / 15.2m	30 ft. / 9.1m
	CTI-220-XCR	220°F (105°C)	175°F (79°C)*	50 ft. / 15.2m	25 ft. / 7.6m
	CTI-280-XCR	280°F (138°C)	200°F (93°C)	50 ft. / 15.2m	25 ft. / 7.6m
	CTI-356-XCR	356°F (180°C)	250°F (121°C)	50 ft. / 15.2m	See Note 1
<b>CTI-LSZH</b> Multi-Purpose/Low Smoke Zero Halogen	CTI-135-LSZH	135°F (57°C)	100°F (38°C)	50 ft. / 15.2m	30 ft. / 9.1m
	CTI-155-LSZH	155°F (68°C)	115°F (46°C)*	50 ft. / 15.2m	30 ft. / 9.1m
	CTI-190-LSZH	190°F (88°C)	150°F (66°C)	50 ft. / 15.2m	30 ft. / 9.1m
	CTI-220-LSZH	220°F (105°C)	175°F (79°C)*	50 ft. / 15.2m	25 ft. / 7.6m
	CTI-280-LSZH	280°F (138°C)	200°F (93°C)	50 ft. / 15.2m	25 ft. / 7.6m
	CTI-356-LSZH	356°F (180°C)	250°F (121°C)	50 ft. / 15.2m	See Note 1
<b>CTI-XLT</b> Multi-Purpose/Excellent Low Temp. Properties	CTI-135-XLT	135°F (57°C)	100°F (38°C)	50 ft. / 15.2m	30 ft. / 9.1m

\* For Open Area Applications the recommended UL 521 maximum ambient temperature for CTI-155 models is 100°F (38°C) and CTI-220 models is 150°F (66°C).  
Temperature shown in table are acceptable for UL Special Application use.

Note 1: FM Approved for special application use only.

Note 2: Polarity MUST be maintained to ensure proper operation. Conductor Color Code: Copper = (+ Positive); Silver/Gray = (- Negative).

Note 3: All Protectowire models supplied on Messenger Wire are identified by the suffix "-M" after the model numbers shown above.

Note 4: All detectors rated to -40°F (-40°C) except CTI-135-XLT which has been rated to -60°F (-51 °C).