

Important Installation Information

CTI Linear Heat Detector

1. 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
CTI-EPC 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
CTI-XCR 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
CTI-LSZH 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)	221°F (105°C)	50 ft. / 15.2m	See Note 1
CTI-EPR Good Weathering Properties & Flexibility Over a Wide Temperature Range	CTI-155-EPR	155°F (68°C)	115°F (46°C)*	50 ft. / 15.2m	30 ft. / 9.1m
	CTI-190-EPR	190°F (88°C)	150°F (66°C)	50 ft. / 15.2m	30 ft. / 9.1m
	CTI-220-EPR	220°F (105°C)	175°F (79°C)*	50 ft. / 15.2m	25 ft. / 7.6m
	CTI-280-EPR	280°F (138°C)	194°F (90°C)	50 ft. / 15.2m	25 ft. / 7.6m
	CTI-356-EPR	356°F (180°C)	194°F (90°C)	50 ft. / 15.2m	See Note 1
CTI-XLT 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).

2. General

2.1 Protectowire Confirmed Temperature Initiation (CTI) Linear Heat Detector may be installed in a wide range of industrial and commercial fire detection applications. Please refer to the National Fire Alarm and Signaling Code, NFPA 72, for installation and spacing requirements.

2.2 For special applications where the detector is installed close to the hazard, the manufacturer's recommendations and/or installation instructions should be followed. Whenever there is a choice between two or more possible installation procedures, the one that results in increased protection should be utilized.

3. Electrical Arrangement

3.1 Protectowire CTI is a listed and approved line heat detector that is intended for use on a supervised initiating device circuit of a CTM Series Interface Module.

3.2 Detector Wiring – CTM Series Interface Module provides one supervised detection circuit that may be field wired for either Class A (Style D) or Class B (Style B) application. The initiating device circuit is capable of operating up to 4000 feet (1220 m) of Protectowire Type CTI Line Heat Detector. Designed to monitor Protectowire Type CTI Linear Heat Detectors only, each CTM Series Interface Module does not support other types of normally open contact alarm initiating devices. **Important: Detection circuit polarity MUST be maintained in all wiring configurations. Copper colored conductor is positive (+) and silver/gray conductor is negative (-). For all CTI Series Detectors, compatible “T” type thermocouple grade extension wire is required for use as interconnection feed cable on the detection circuit.**

NOTE: The combination of CTI Detector and extension grade feed cable shall not exceed 4000 feet (1220m) per module.

3.3 All terminations and/or splices in a CTI detection circuit must be made utilizing terminals rated for “T” type thermocouple connections. Use of standard terminals or connectors will impair operation of the detector.

3.4 Prior to installation, refer to the CTM Series Interface Module Installation and Operation Guide for complete installation and wiring information.

4. Storage and Shipping

4.1 Protectowire CTI Line Heat Detector is sensitive to heat and must be stored in areas where the temperature will not exceed the maximum ambient temperature rating of the detector. It must not be installed in contact with, or proximity to, any heat-producing equipment or environment that exceeds its maximum ambient temperature.

4.2 Each length of Protectowire CTI Line Heat Detector is fully tested for operational integrity prior to factory shipment. Proper precautions must be taken to avoid excessive heat exposure during shipment or storage, if not, the detector could be compromised prior to installation.

The Protectowire Company, Inc. recommends that every coil or spool of detector be inspected by the installer to verify type and temperature suitability for the application as well as test for electrical shorts prior to installation.

5. Installation Warnings

5.1 The detector is not fragile, however, pinching or crushing will damage it. Physical damage to the detector may or may not be apparent during the installation process. Damage to the outer jacket or unnecessary mechanical stress applied to the detector during installation may result in short circuits. In order to reduce the possibility of damage during installation, observe the following:

- DO NOT leave it on the floor and walk on it or set ladders on it during installation.
- DO NOT install it with commercial fasteners unless recommended by The Protectowire Company.
- DO NOT place it where it will be subject to mechanical damage by equipment processes.
- DO NOT over tighten the fasteners as this may breach the outer jacket or crush the inner insulation causing detector shorts. All fasteners must allow the detector to expand and contract with temperature changes.
- DO NOT over stretch the Protectowire runs; some detector “sag” between fasteners is normal.
- DO NOT MAKE NINETY DEGREE (90°) BENDS. All bends should be made using the fingers without holding the detector with pliers and consist of rounded turns with a minimum 2.5 inch (6.4 cm) radius.
- DO NOT USE WIRE NUTS. All connections must be made via compression terminals and/or recommended splicing devices.
- DO NOT PAINT THIS DETECTOR per UL and FM requirements.

5.2 Normally open contact alarm initiating devices such as manual pull stations, or spot heat detectors MUST not be connected to the CTM-530 Series Interface Module’s alarm initiating circuit as all short circuit conditions are reported as a trouble (fault) condition only.

6. Outdoor Applications

6.1 Exposure to direct sunlight may cause the temperature of the detector or its mounting surface to exceed the maximum ambient temperature limit or the alarm actuation temperature of the sensor. For this reason, outdoor use of 135°F (57°C) and 155°F (68°C) wire is not recommended. Depending upon the environment, shielding of higher temperature rated detectors may also be required in order to reduce the surrounding ambient temperature to acceptable limits.

6.2 Applications with high humidity or dampness require, as a minimum, the use of SFTS Sealant Tape for all in-line splices where CTIC splicing devices are used. For outdoor applications, the recommended method of splicing requires that all connections be made within appropriate NEMA rated zone/junction boxes utilizing SR-502 Series Strain Relief Connectors where Protectowire CTI enters or exits the box.

7. Installation Hints

7.1 Whenever possible, corners should be rounded by pulling the detector into a natural curve rather than bending it. This reduces installation time and improves the finished appearance. It also creates a spring tension at the corners that helps hold the detector in place. On flat mounting surfaces, such as ceilings, WAW Corner Clips should be used at all corners (turns) except for installations using drive rings, or messenger wire.

7.2 The spring steel conductors’ gives the detector a tendency to straighten out when taken from the spool. The same conductors, however, will take a “set” and try to retain curves or bends if pulled too hard around a corner. The rule, therefore, is “handle gently.” Do not pull kinks into it that could damage the inner insulation.

7.3 The use of a good portable wire reel is highly recommended.