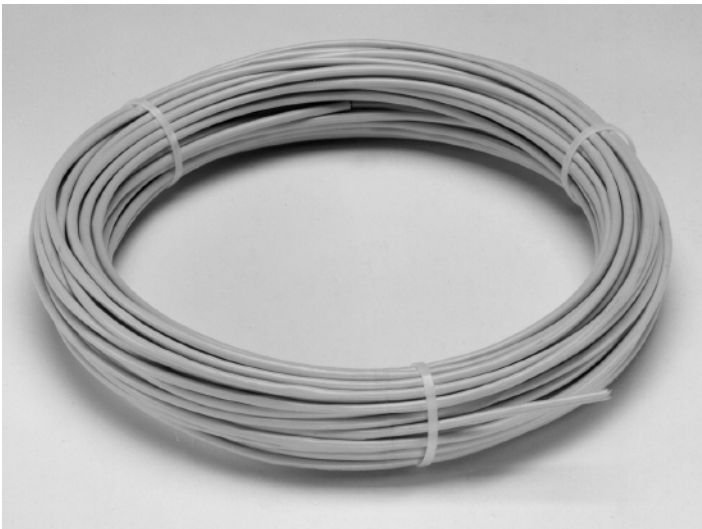




# TRI-Wire™ Dual Temperature Linear Heat Detector



## Features

- Separate pre-alarm and alarm actuations.
- Confirmed temperature initiation™ for sprinkler release.
- TRI-Wire™ provides line coverage with dual sensitivity.
- Withstands a wide range of environmental conditions.
- Easy to install, test, and splice. Only 3/16 of an inch in diameter.
- Compatible with other initiation devices on the same circuit.
- Approved for hazardous locations.

## Description

Protectowire Dual Temperature Linear Heat Detector, Type TRI™ is a unique sensor cable that detects heat anywhere along its length. The Detector is comprised of three steel conductors each individually insulated with a unique 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 an outer jacket designed to provide excellent mechanical and environmental protection.

The Detector is a dual temperature digital sensor, and is therefore capable of initiating separate pre-alarm and alarm signals once each of its rated activation temperatures is reached. At each of the rated temperatures, the heat sensitive polymer insulation yields to the pressure upon it, permitting the inner conductors to move into contact with each other thereby initiating the appropriate pre-alarm or alarm signal. This action takes place at the first heated point anywhere along the Detector's length. It does not require that a specific length be heated in order to initiate an alarm nor is system calibration necessary to compensate for changes in the installed ambient temperature. Protectowire Dual Temperature Linear Heat Detector, Type TRI™ provides the advantages of line coverage with point sensitivity and multiple temperature sensing, all in one.

When used with a Protectowire FireSystem Control Panel, the Detector will sense and activate a display, showing the location of an overheat or fire condition anywhere along its length. The Detector also meets intrinsically safe standards for Class I, II, or III, Div. 1, Applicable Groups C, D, E, F & G hazardous areas, when the appropriate FM approved Protectowire control panel option is ordered.



## Applications

- Cable trays
- Conveyors
- Power distribution apparatus: Switchgear, Transformers, Substations, Motor control centers.
- Dust collectors/baghouses
- Warehouses/rack storage
- Industrial process and material handling systems
- Bridges, piers, marine vessels
- Chemical storage facilities
- Aircraft hangars
- Computer rooms

## Protectowire Features & Benefits

- Confirmed Temperature Initiation (CTI)<sup>™</sup> for activating extinguishing systems.
- Identifies and displays at the control panel, the location of an overheat or fire condition anywhere along its length when used with the exclusive Protectowire Alarm Point Location Meter.
- Sensitivity not effected by changes in ambient temperature or length of cable used on the detection circuit. Compensating adjustments are not required.
- Steel inner conductors and durable outer jacket provide resistance to mechanical damage.
- Simple to install and splice with common tools. Junctions can be made without effecting the integrity of the system.
- Compatible with other types of alarm initiating devices on the same circuit, such as manual pull stations.
- Can be installed in hazardous areas when used with suitably approved Protectowire control panels.
- Available on stainless steel messenger wire for installations where mounting is difficult, such as large open areas.

## Installation

Protectowire Linear Heat Detector is approved as a heat actuated automatic fire detector and is intended to be used on a supervised initiating circuit of an approved fire protective signaling control unit. The Detector 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. The maximum FM approved spacing for the Detector is 15 feet (4.6m).

Protectowire may be installed at the ceiling level or on the side walls within 20 inches of the ceiling, to protect areas within buildings (area protection). The Detector has the additional benefit of being suitable for installation close to the hazard in order to provide a rapid response (proximity or special application protection).

When Protectowire is used to activate sprinkler systems, special Factory Mutual (FM) spacing guidelines may be applicable to the specific hazard protected. It is mandatory that engineering judgment be applied in determining final detector location and spacing.

In general, the use of Protectowire in any initiating device circuit (zone), is limited to coverage of a specific hazard or area. Copper wire, of an approved type, with a minimum conductor size of 18 AWG, shall be installed from the control panel out to the hazard area where it is then connected to the beginning of the Protectowire portion of the circuit. The Protectowire portion of each initiating circuit shall begin and terminate at each end in an approved zone box or end-of-line zone box. Strain relief connectors, Model SR-502, shall be installed in all zone boxes where Protectowire enters or exits the enclosure, in order to hold the cable securely.

## Installation Accessories

A comprehensive range of mounting and installation accessories are available for the installation of Protectowire Dual Temperature Linear Heat Detector. 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 which is designed to simplify the installation of the Detector in areas where mounting is difficult due to the lack of appropriate support structures or mounting surfaces. Consult The Protectowire Company for details regarding your specific application.

## Specifications

The maximum ambient temperature where the TRI-Wire<sup>™</sup> Detector will be installed should not exceed 100°F (38°C). When connected to a compatible Protectowire FireSystem 2000 series zone module, the Detector provides two distinct alarm signals based upon both a low temperature pre-alarm rating of 155°F (68°C) and a high temperature alarm rating of 200°F (93°C). This provides great versatility in establishing control panel operating sequences for selective audible signaling, equipment shutdown or extinguishing system actuation.

Confirmed Temperature Initiation (CTI)<sup>™</sup> for activating extinguishing systems, is now possible using a single digital cable on a single detection circuit. Similar to cross-zoning in concept, CTI<sup>™</sup> requires two distinct inputs based upon two different operating temperatures prior to initiating the extinguishment release cycle or other selectively controlled outputs. When manually activating TRI-Wire<sup>™</sup> detection zones to initiate extinguishing system release, CTI<sup>™</sup> circuitry requires the use of double pole manual pull stations.

Like all Protectowire Linear Heat Detectors, TRI-Wire<sup>™</sup> is compatible with the exclusive Protectowire Alarm Point Location Meter. Depending upon the model selected, all FireSystem Control Panels with meter option, have been designed to locate either the high temperature alarm or low temperature pre-alarm heat actuated point on the TRI-Wire<sup>™</sup> sensor. The meter provides a means to read the distance in feet or meters from the start of the Detector portion of the circuit to the heat actuated alarm or pre-alarm point.

## Electrical

Type TRI<sup>™</sup> cable is rated for 30 VAC, 42 VDC. Resistance is approximately .1 ohm per foot (.3m) per conductor.

## Ordering Information

| Model No.       | Description   |
|-----------------|---|
| PHSC-6893-TRI   | Dual Temperature Linear Heat Detector<br>155°/200°F                     |
| PHSC-6893-TRI-M | Dual Temperature Linear Heat Detector<br>155°/200°F with Messenger Wire |
| PWSC-3          | TRI-Wire <sup>™</sup> splicing connectors (10/pkg.)                     |

## System Capabilities

Protectowire Linear Heat Detector is a component of a complete family of systems manufactured by The Protectowire Company – a leader in fire detection for over sixty years.