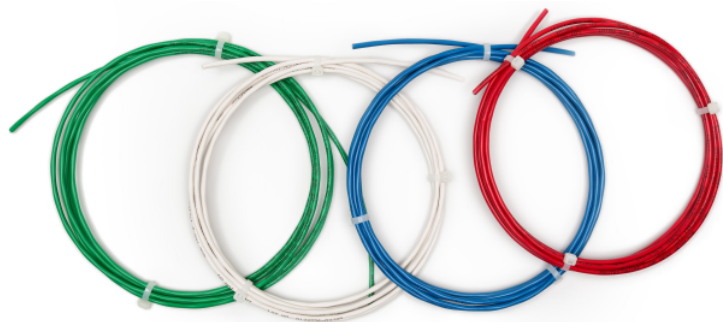


# Aero-X<sup>®</sup> Protectowire<sup>®</sup> linear heat detection cable



Picture: Aero-X<sup>®</sup> Protectowire<sup>®</sup>  
Linear Heat Detection Cable



Picture: Aero-X<sup>®</sup> Protectowire<sup>®</sup> Linear Heat Detection  
Cable with mechanical protection

## Introduction

Protectowire<sup>®</sup> Linear Heat Detector is a proprietary cable that detects heat anywhere along its length. The sensor cable is comprised of two steel 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 nished with an outer jacket suitable for the environment in which the detector will be installed.

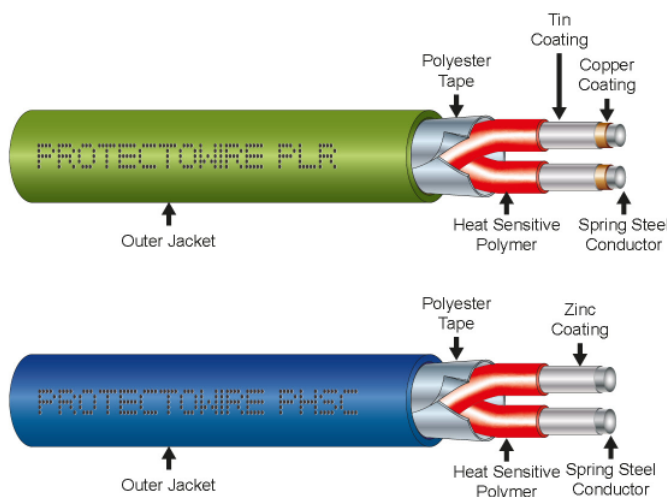
Protectowire<sup>®</sup> is a fixed temperature digital sensor and is therefore capable of initiating an alarm once its rated activation temperature is reached. At the rated temperature, the heat sensitive polymer insulation yields to the pressure upon it, permitting the inner conductors to move into contact with each other thereby initiating an alarm signal. This action takes place at the first heated point anywhere along the detector's length. It does not require a specific length to be heated in order to initiate an alarm, nor system calibration to compensate for changes in the installed ambient temperature. Protectowire<sup>®</sup> Linear Heat Detector provides the advantages of line coverage with point sensitivity.

Aero-X<sup>®</sup> developed a special mechanical protection to enable the Protectowire<sup>®</sup> linear heat detection cable to be applied in very harsh environments with high mechanical stress.



## Key features

- Line coverage ... continuous sensitivity
- Seven alarm temperature ratings
- The ability to withstand severe environmental conditions
- Approval for use at hazardous locations
- Ease of installation, testing and splicing
- Compatibility with other initiation devices on same circuit
- Listed for spacing up to 50 ft. (15.2m)



Picture: Aero-X® Protectowire® Linear Heat Detection Cable Composition

## Applications

- Cable trays
- Conveyers
- Power distribution apparatus: switchgear, transformers, motor control centers
- Dust collectors/baghouses
- Cooling towers
- Warehouses/rack storage
- Mines

## Applications (cont.)

- Pipelines
- Bridges, piers, marine vessels
- Refrigerated storage
- Tank farms
- Aircraft hangars
- Rolling stock, rail infrastructure
- Cable cars, ski lifts
- etc.

Ideally suited to industrial high risk hazards as well as many types of commercial applications, Protectowire® Linear Heat Detector has unique advantages over other types of detectors, especially when difficult installation factors or severe environmental conditions are present.

When used with the respective Protectowire® control equipment, the detector will activate a display, showing the location of an over heat or fire condition anywhere along its length. The detector also meets intrinsically safe standards and is Factory Mutual (FM) Approved for Class I, II, or III, Div. 1, Applicable Groups A, B, C, D, E, F & G hazardous areas, when used with suitably approved Protectowire® control equipment.

## Features & benefits

- Alarm location identified and displayed, at the control panel, anywhere along its length when used with the exclusive Protectowire Alarm Point Location Meter
- Sensitivity unaffected by changes in ambient temperature or length of cable used on the detection circuit. Compensating adjustments are not required
- Installation and splicing is simple with common tools. Junctions can be made without effecting the integrity of the system
- Compatibility with other types of alarm initiating devices on the same circuit such as manual pull stations, thermal heat detectors and smoke detectors
- Installation possible in hazardous areas when used with suitably approved Protectowire control equipment
- Full range of temperatures and models available to accommodate the most demanding applications
- Different temperature detectors may be utilized in the same initiating circuit
- Detectors available on integrated stainless steel messenger wire for installations where mounting is difficult such as large open areas.
- Test equipment is portable and available for easy field service.
- Detectors are ideal for activation of extinguishing equipment, such as deluge or pre-action sprinkler systems.

## Description

The detector is made in multiple temperature ratings to allow for differences in normal ambient temperature. Guidelines for selecting the proper detector temperature rating are the same as for automatic sprinklers and other heat actuated devices. Refer to the Temperature Rating Chart for proper model selection based upon installation temperature limits.

The detector's product range consists of two distinct types of cable. Standard PHSC models and low resistance "Universal" versions designated with the prefix PLR. Each model number designation also identifies a specific outer jacket material carefully selected to accommodate the widest range of installation environments. All specifications are subject to change without notice.

**EPC** – Type EPC consists of a durable flame retardant vinyl outer jacket and is designed for interior commercial and industrial applications. Features of this jacket include low moisture absorption, resistance to many common chemicals, and excellent flexibility at low temperatures.

**XCR** – Type XCR consists of a high-performance fluoropolymer jacket and is designed for exterior environments as well as harsh interior applications. Features of this low smoke jacket include excellent chemical resistance, abrasion resistance, weather resistance, and high-temperature performance. XCR is the only detector that is FM-approved for corrosive environments.

**XLT** – Type XLT consists of an outer jacket that is specifically selected for cold storage and freezers. Features of this jacket include low moisture absorption and excellent performance in extremely low temperatures. This detector has been UL and FM tested to  $-60^{\circ}\text{F}$  ( $-51^{\circ}\text{C}$ ).

**PLR-R** – Type PLR consists of a polypropylene elastomer jacket and is designed for universal compatibility through the use of special low-resistance inner conductors. Features of this jacket include good abrasion resistance, chemical resistance, and weather resistance.

**PLR-CR** – Type PLR -CR is constructed with low resistance inner conductors, allowing for longer detector zone lengths on most types of fire alarm panels including addressable panels. Utilizing a high performance fluoropolymer outer jacket, this detector is specifically designed for use in applications where extreme environment and product criteria must be met. The flame retardant, low smoke jacket provides excellent abrasion resistance and mechanical properties over a broad range of applications. It provides excellent chemical and permeation resistance to a wide range of acids, bases, and organic solvents, as well as simple gases. In addition, the jacket exhibits very little change in tensile properties upon outdoor exposure to sunlight and weather.

## Installation

The 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.



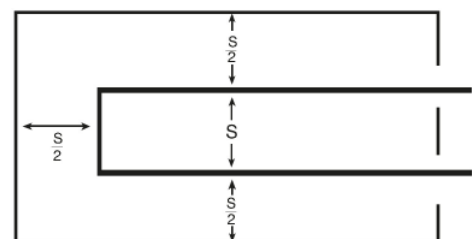
The Protectowire® Linear Heat Detector is approved as a heat actuated automatic fire detector and is intended to be used on a supervised initiating circuit of an approved fire protective signaling control unit. The detector must be installed in continuous runs without taps or branches in accordance with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

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).

On smooth ceilings, the distance between detector runs shall not exceed the listed spacing. There shall be a detector run within a distance of one half the listed spacing, measured at a right angle, from all walls, or partitions extending to within the top 15% of the ceiling height as shown in the illustration.

The listed spacing shall be used as a guide or starting point in detector installation layout. Reduced spacing is required based upon factors such as ceiling height and construction, physical obstructions, air movement, or when Protectowire® is used to activate sprinkler systems, special Factory Mutual (FM) spacing guidelines may also be applicable to the specific hazard being 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, 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. SR-502 Series, Strain Relief Connectors, shall be installed in all zone boxes where Protectowire® enters or exits the enclosure, in order to hold the cable securely.



Picture: Ceiling of protected area - S = listed spacing

## Temperature ratings & model numbers (use detector cable of proper temperature rating)

Product/Jacket Type	Model Number	Alarm Temperature	Max. Recommended Ambient Temperature	Max. Listed Spacing FM	Max. Listed Spacing UL/cUL
<b>EPC</b> multi-purpose / commercial & industrial applications	PHSC-155-EPC	155°F (68°C)	115°F (46°C)	30ft (9.1m)	50ft (15.2m)
	PHSC-190-EPC	190°F (88°C)	150°F (66°C)	30ft (9.1m)	50ft (15.2m)
	PHSC-220-EPC	220°F (105°C)	175°F (79°C)	25ft (7.6m)	50ft (15.2m)
	PHSC-280-EPC	280°F (138°C)	200°F (93°C)	25ft (7.6m)	50ft (15.2m)
	PHSC-356-EPC	356°F (180°C)	221°F (105°C)	See note 1	50ft (15.2m)
<b>XCR</b> high performance / industrial applications excellent abrasion & chemical resistance	PHSC-155-XCR	155°F (68°C)	115°F (46°C)	30ft (9.1m)	50ft (15.2m)
	PHSC-190-XCR	190°F (88°C)	150°F (66°C)	30ft (9.1m)	50ft (15.2m)
	PHSC-220-XCR	220°F (105°C)	175°F (79°C)	25ft (7.6m)	50ft (15.2m)
	PHSC-280-XCR	280°F (138°C)	200°F (93°C)	25ft (7.6m)	50ft (15.2m)
	PHSC-356-XCR	356°F (180°C)	250°F (121°C)	See note 1	50ft (15.2m)
<b>XLT</b> exclusively for cold storage and freezers	PHSC-135-XLT**	135°F (57°C)	135°F (57°C)	30ft (9.1m)	50ft (15.2m)
<b>PLR-R</b> good weathering properties & flexible over a wide temperature range	PLR-155R	155°F (68°C)	155°F (68°C)	30ft (9.1m)	50ft (15.2m)
	PLR-190R	190°F (88°C)	190°F (88°C)	30ft (9.1m)	50ft (15.2m)
<b>PLR-CR</b> high performance / industrial applications excellent abrasion & chemical resistance	PLR-500CR	500°F (260°C)	392°F (200°C)	See Note 1	50ft (15.2m)

\*For open area applications the recommended UL 521 maximum ambient temperature for all 155 models is 100°F (38°C), and 220 models is 150°F (66°C).

Temperatures shown in table are acceptable for UL Special Application use.

\*\*PHSC-135-XLT has been UL Listed and FM Approved for -60°F (-51°C).

Note 1: FM Approved for special application use only.

All Protectowire models can be supplied on Messenger Wire. Add suffix "-M" to above model numbers. oduct/Jacket Type

### Technical specification

Maximum voltage rating	30 VAC, 42 VDC
Resistance PHSC Models	0.185 Ω/ft (0.607 Ω/m)
Resistance PLR Models	0.058 Ω/ft (0.191 Ω/m)
Min. Bend Radius	2.5 inches (6.4cm)
Diameter	Nominal 5/32 inch (4mm)
Weight	Nominal 8lbs./500 ft. (3.6 kg/152m)

### System capabilities

Aero-X® Protectowire® Linear Heat Detection cable is a component of a complete family of systems distributed and manufactured by Aero-X AG - a leader in fire detection & extinguishing solutions since 2008.

Aero-X® fire detection and extinguishing solutions provide a complete single source solution for meeting active fire safety needs.

With 20 years of experience in fire protection, we develop our systems in Switzerland following world-leading standards, working with partners all around the globe. All the while, your personal safety requirements are at the heart of what we do: **For your safety...we go the extra mile.**




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