Protectowire® Linear Heat Detector
Important Installation Information - Please Read!

1. General

1.1 Protectowire Linear Heat Detector may be installed at the ceiling level to protect areas within buildings (area protection) in the same fashion as the more fam iliar spot heat detectors. Please refer to the National Fire Alarm and Signaling Code, NFPA 72, for basic information on the installation and spacing of linear heat detectors for area protection.

1.2 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.

2. Model Numbers, Temperature Ratings and Approved Spacing

Product Type	Model Number	Alarm Temperature	Max. Ambient Temperature	Approvals/Max. Listed Spacing UL / cUL	FM
EPC Multi-Purpose/ Commercial & Industrial Applications	PHSC-155-EPC PHSC-190-EPC PHSC-220-EPC PHSC-280-EPC PHSC-356-EPC	155° F (68° C) 190° F (88° C) 220° F (105° C) 280° F (138° C) 356° F (180° C)	100° F (38° C) 150° F (66° C) 175° F (79° C) 200° F (93° C) 221° F (105° C)	50 ft. / 15.2m 50 ft. / 15.2m N/A 50 ft. / 15.2m 50 ft. / 15.2m	30 ft. / 9.1 m 30 ft. / 9.1 m 25 ft. / 7.6m 25 ft. / 7.6m *See Note 1*
EPR Good Weathering Properties & High Temperature Jacket Performance	PHSC-155-EPR PHSC-190-EPR PHSC-280-EPR PHSC-356-EPR	155° F (68° C) 190° F (88° C) 280° F (138° C) 356° F (180° C)	100° F (38° C) 150° F (66° C) 200° F (93° C) 250° F (121° C)	50 ft. / 15.2m 50 ft. / 15.2m 50 ft. / 15.2m 50 ft. / 15.2m	30 ft. / 9.1 m 30 ft. / 9.1 m 25 ft. / 7.6m *See Note 1*
TRI (TRI-Wire) Applications Requiring Pre-alarm	PHSC-6893-TRI *See Note 2*	Pre-alarm: 155° F (68° C) Alarm: 200° F (93° C)	100° F (38° C)	N/A	15 ft. / 4.6m
XCR High Performance Industrial Applications/ Excellent Abrasion & Chemical Resistance	PHSC-155-XCR 1 PHSC-190-XCR PHSC-220-XCR PHSC-280-XCR PHSC-356-XCR	155° F (68° C) 190° F (88° C) 220° F (105° C) 280° F (138° C) 356° F (180° C)	100° F (38° C) 150° F (66° C) 175° F (79° C) 200° F (93° C) 250° F (121° C)	50 ft. / 15.2m 50 ft. / 15.2m N/A 50 ft. / 15.2m 50 ft. / 15.2m	30 ft. / 9.1 m 30 ft. / 9.1 m 25 ft. / 7.6m 25 ft. / 7.6m *See Note 1*
XLT Multi-Purpose / Excellent Low Temp. Properties.	PHSC-135-XLT	135° F (57° C)	100° F (38° C)	50 ft. / 15.2m	30 ft. / 9.1 m

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

Note 1: FM Approved for special application use only.
Note 2: Maintain continuity to ensure proper operation. Conductor Color Code: Red/Pink = 155°F; White/Clear = 200°F; Black = Common.

3. Electrical Arrangement

3.1 Protectowire is a listed heat-actuated automatic fire detector, and is intended for use on a supervised initiating circuitof an approved fire protective signaling control unit.

3.2 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 connected to the beginning of the Protectowire portion of the circuit. Each end of the Protectowire portion of every initiating circuit shall terminate in an approved zone box, end-of-line zone box, or junction box provided as part of the system. Strain relief connectors, Model SR-502 or equivalent, shall be installed in all junction boxes where Protectowire enters or exits the enclosure, in order to hold the detector securely and to provide a proper seal against dirt and moisture. All zone box enclosures shall be rated and approved for use in the environment in which they will be installed.

Manfred K. Mueller Eng.
Temperature Control
Mannheimer Strasse 12
75179 Pforzheim
Germany
www.thermostat-muller.biz

Phone: + 49 - 7231 1583- 0
Sales: + 49 - 7231 1583-12
Techn. ass.: + 49 - 7231 1583-11
Fax: + 49 - 7231 1583-20
Mobile: + 49 - 174 247 3690
e-mail: info@thermostat-muller.biz

Bank: Sparkasse Pforzheim-Calw
BLZ: 666 500 85 Kto-Nr: 745 965
IBAN DE90 6665 0085 0000 7659 45
BIC (SWIFT-CODE) PZHSDE66
Registered HRA Mannheim 503251
VAT-ID-No.: DE 144 137 729

3.3 All electrical connections made within each zone box between Protectowire and the circuit's interconnecting copper wiring or end-of-line device shall be made via terminals. The Protectowire Company, supplies zone boxes, identified by the letters QC, which contain a compression type terminal that allows for the direct connection of Protectowire conductors to the terminals. In all other cases, PFL Flexible Leads, as furnished by The Protectowire Company, must be used to connect the Detector to terminals. The use of wire nuts or other similar wiring devices not specifically approved by The Protectowire Company shall be considered an improper installation technique and a misapplication of the product.

4. Storage and Shipping

4.1 This wire 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 in proximity too, any heat-producing equipment or environment that exceeds its maximum ambient installation temperature.

4.2 Each length of Protectowire is individually tested for operational integrity prior to shipment from the Factory. Because Protectowire is a heat-activated device, it is possible that if proper precautions are not taken to avoid high ambient temperatures during shipment or storage, the wire could be activated (shorted) before it is installed. *The Protectowire Company recommends that every coil or spool of wire be inspected by the customer to verify the type and temperature is as ordered, and then tested for shorts before installation begins.*

5. Installation Warnings

5.1 This detector is not fragile, but crushing or pinching will damage it. The results of such damage may not appear at once and may not be obvious by the outward appearance of the wire, but damage to the outer jacket or unnecessary mechanical stress applied to the wire during installation may cause "false alarms" later on. Therefore:

- **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 specially approved 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 "false alarms." All fasteners must allow the wire to expand and contract with temperature changes.
- **DO NOT** over stretch the Protectowire runs; some wire "sag" between fasteners is normal.
- **DO NOT MAKE NINETY DEGREE (90°) BENDS.** All bends should be made using the fingers without holding the wire 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 terminals and/or approved splicing devices. The use of PFL Flexible Leads is recommended for all Protectowire to terminal connections (except in QC type zone boxes).
- **DO NOT PAINT THIS DETECTOR** per UL and FM requirements.

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 or 155 degree 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 PWSC or PWS 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 Strain Relief Connectors where Protectowire 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.

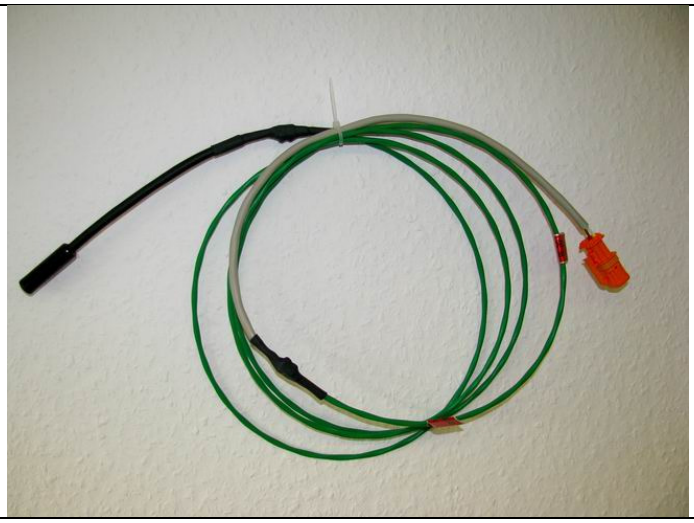
7.3 The use of a good portable wire reel (Protectowire Model SU-15 or equivalent) is highly recommended.

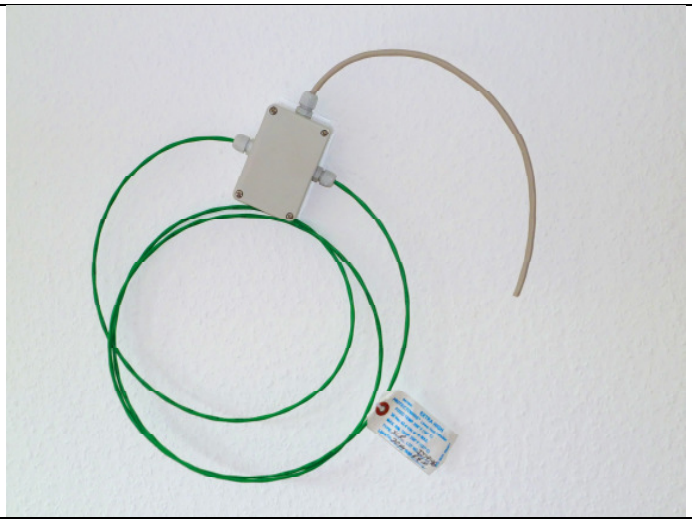
Manfred K. Mueller Eng.
Temperature Control
Mannheimer Strasse 12
75179 Pforzheim
Germany
www.thermostat-muller.biz

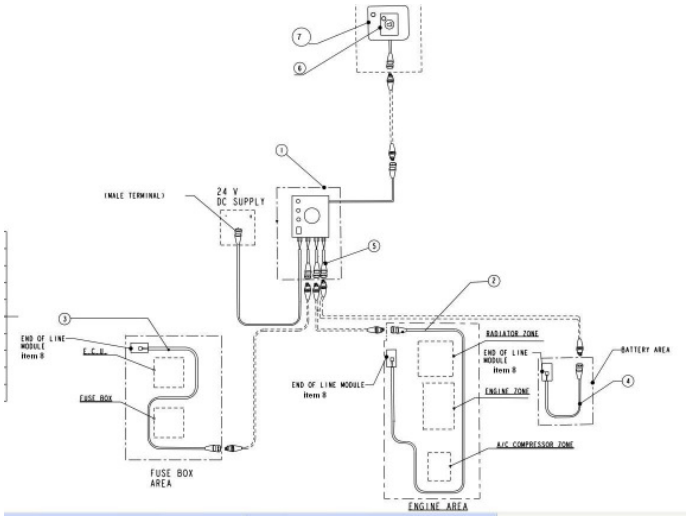
Phone: + 49 - 7231 1583- 0
Sales: + 49 - 7231 1583-12
Techn. ass.: + 49 - 7231 1583-11
Fax: + 49 - 7231 1583-20
Mobile: + 49 - 174 247 3690
e-mail: info@thermostat-muller.biz

Bank: Sparkasse Pforzheim-Calw
BLZ: 666 500 85 Kto-Nr: 745 965
IBAN DE90 6665 0085 0000 7659 45
BIC (SWIFT-CODE) PZHSDE66
Registered HRA Mannheim 503251
VAT-ID-No.: DE 144 137 729

8. Special applications

LHD-180°-6m-4p-EK	
Linear detector 6 m detecting temperature 180°C, sensor type PHSC-356-XCR, Heat shrink hose IP65, Cable approx. 0,3 m with 4-pole Lear connector, Load resistance endkit, complete prepared wires and ready for assembly	

LHD-CB-138°-9m-SS	
Linear detector 9 m detecting temperature 138°C, sensor type PHSC-280-XCR, with connection box IP65, Loadresistance, Cable approx. 0,3 m with Superseal connector, complete prepared wires and ready for assembly	

LHD-ME01-138°-9m_88°-2m	
1 x Indicator unit ME-01 1 x Linear detector 6 m detecting temperature 138°C sensor type PHSC-280-EPC with connection box, Loadresistance, Cable approx. 0,3 m with Superseal connector complete prepared wires and ready for assembly 2 x Linear detector 2 m detecting temperature 88°C sensor PHSC-190-EPC with connection box, Loadresistance, Cable approx. 0,3 m with Supersealconnector complete prepared wires and ready for assembly	

Manfred K. Mueller Eng.
Temperature Control
Mannheimer Strasse 12
75179 Pforzheim
Germany
www.thermostat-muller.biz

Phone: + 49 - 7231 1583- 0
Sales: + 49 - 7231 1583-12
Techn. ass.: + 49 - 7231 1583-11
Fax: + 49 - 7231 1583-20
Mobile: + 49 - 174 247 3690
e-mail: info@thermostat-muller.biz

Bank: Sparkasse Pforzheim-Calw
BLZ: 666 500 85 Kto-Nr: 745 965
IBAN DE90 6665 0085 0000 7659 45
BIC (SWIFT-CODE) PZHSDE66
Registered HRA Mannheim 503251
VAT-ID-No.: DE 144 137 729