

ProReact EN Analogue Linear Heat Detection System

Data Sheet



General Overview

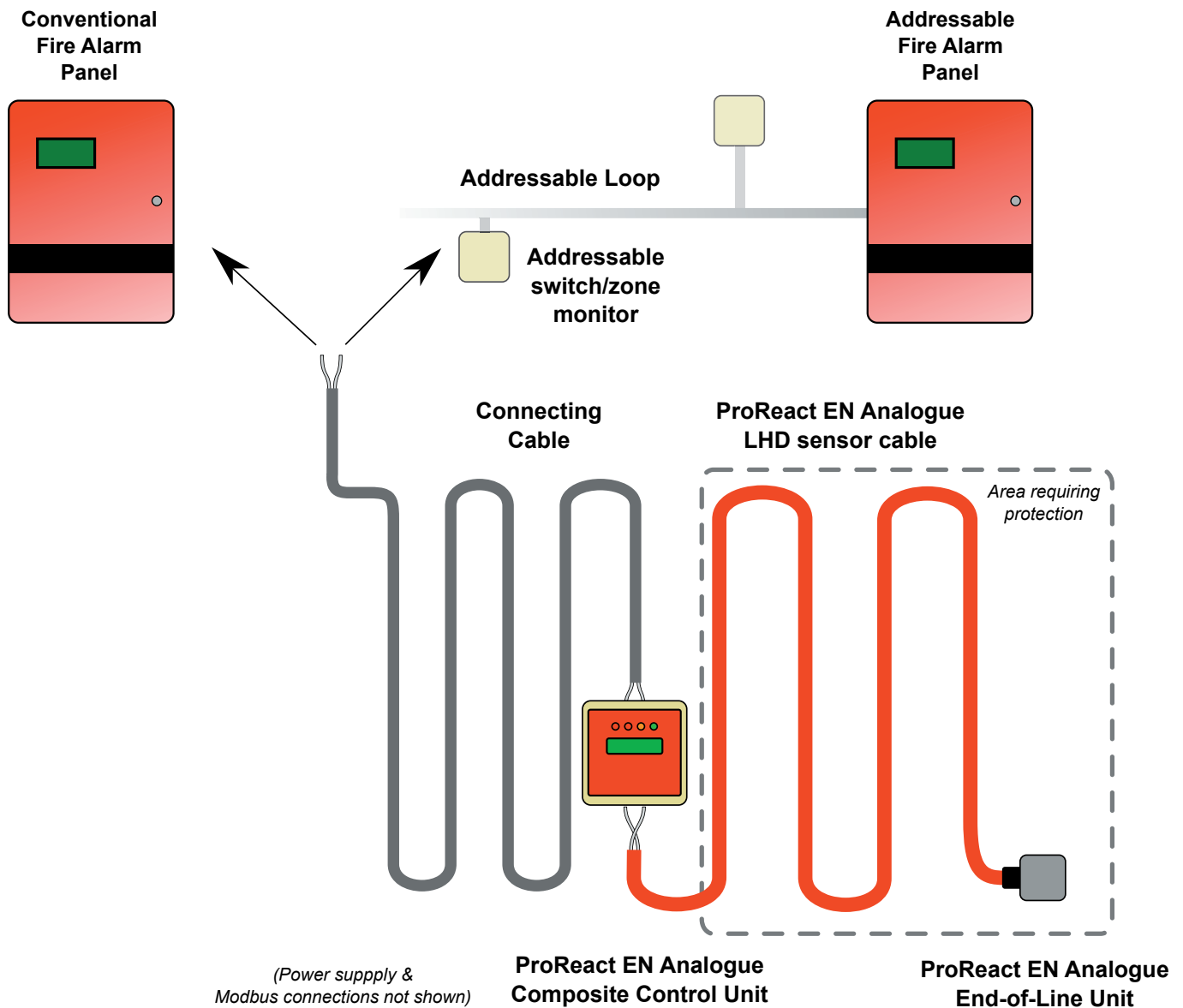
Introduction

Thermocable's ProReact EN Analogue Linear Heat Detection (LHD) system comprises of ProReact EN Analogue Linear Heat Detection (LHD) sensor cable, a ProReact EN Analogue Composite Control Unit and a ProReact EN Analogue end of line unit. The system offers alternative overheat protection in a vast range of applications and industries, from power generation to oil and gas industries.

The ProReact EN Analogue technology offers separate Pre-Alarm and Alarm outputs in order to maximise functionality, coupled with open and short circuit detection and discrimination.

Ambient temperature compensation maintains alarm temperature accuracy. The system is also resettable following an overheat or fire condition if the components are not exposed to temperatures above the maximum recoverable temperature.

Using a zone or switch monitor, or input/output module, the ProReact EN Analogue LHD system can easily be interfaced to an addressable loop. Alternatively it can be directly connected to the initiating zone of any conventional fire alarm control panel (as shown below).



Typical Installation of the ProReact EN Analogue LHD System

Theory of Operation

The ProReact EN Analogue LHD system uses a heat sensitive cable to monitor an area, critical equipment or the like, for an overheat or fire condition.

The ProReact EN Analogue Composite Control Unit continuously monitors the resistance of temperature sensitive polymers within the ProReact EN Analogue LHD cable. The resistance of the ProReact EN Analogue LHD cable decreases as the temperature around the cable increases. An abnormal change in resistance, due to an overheat condition, along the cable triggers either a Pre-Alarm or Alarm on the ProReact EN Analogue Composite Control Unit. The ProReact EN Analogue Composite Control Unit can be interfaced to a conventional or addressable fire alarm system.

Alarm Temperatures

The ProReact EN Analogue LHD system is designed so that an alarm will be triggered when the temperature around a section of ProReact EN Analogue LHD cable (equal to 3% of its total length) reaches a nominal alarm temperature predetermined by the chosen setting on the ProReact Composite Control Unit (as shown in the table below).

The actual exposure temperature required to trigger an alarm will be lower than the nominal alarm temperature (as shown below) if a larger section of ProReact EN Analogue LHD cable is exposed to an abnormal rise in temperature. Likewise, the actual exposure temperature will be higher than the nominal alarm temperature if a shorter section of ProReact EN Analogue LHD cable is exposed to an abnormal rise in temperature.

When the sensor cable is installed and operated in hotter environments, the sensor cable may need to be exposed to a higher temperature than that required in a cooler environment in order to trigger an alarm for a given setting on the ProReact EN Analogue Composite Control Unit. In

For the alarm temperature to be stable across a range of ambient temperatures, the ProReact EN Analogue Composite Control Unit measures the average ambient temperature across the entire cable and dynamically adjusts the alarm threshold accordingly.

It is important therefore to ensure that the ProReact EN Analogue Composite Control Unit is set up correctly and the cable resistance and the average ambient temperature as shown on the ProReact EN Analogue Composite Control Unit are as expected. See the Installation Instructions for more information about setting up a ProReact EN Analogue LHD system.

such circumstances, the ProReact EN Analogue Composite Control Unit dynamically adjusts the alarm threshold to reduce the likelihood of false alarms.

Refer to the Installation Instructions for more information on the typical and maximum application temperature for each controller setting.

Please refer to the Installation Instructions for illustrative examples of the expected temperature a given portion of Analogue LHD cable must be exposed to in order to trigger an alarm by ProReact Composite Control Unit setting.

Rate-of-rise activation

Note: for the Class A11/A21, 54°C and 64°C Alarm settings the control unit will also trigger an alarm if approximately 2% of the sensor cable is heated at more than 15°C per minute for longer than 3 minutes.

	Available Controller Setting	Nominal Alarm Temperature	
		°C	°F
VdS EN 54-22: 2015 Approved	Class A11/A21	66	151
VdS EN 54-22: 2015 Approved	Class BI	80	176
	54	54	129
	64	64	147
	72	72	162
	79	79	174
	86	86	187
	100	100	212

ProReact EN Analogue Composite Control Unit settings & nominal alarm temperatures in typical application temperatures (based on 3% of total cable length)

VdS EN54-22:2015/prA1:2017 Approval

Approval Specifics

Certificate No: G 220006
Holder of the Approval: Thermocable Flexible Elements Ltd, Pasture Lane, Clayton, Bradford, BD14 6LU UK
Subject of Approval: Resettable line-type heat detector (ProReact EN Analogue)
Use: in automatic fire detection and fire alarm systems
Basis of Approval: VdS 2344:2014-07
VdS 2543:2018-05
Test Agreement based on EN54-22
Environmental Group: II (All components)

Approval Components

Part No	Description	EN54-22 Definition
A1389	ProReact EN Analogue Composite Control (PACC) Unit	Sensor Control Unit
A1470	ProReact EN Analogue End-of-line Unit	Functional Unit
A1471	ProReact EN Analogue Junction Box	Functional Unit
F3050	ProReact EN Analogue PVC Coated Sensor Cable	Sensing Element

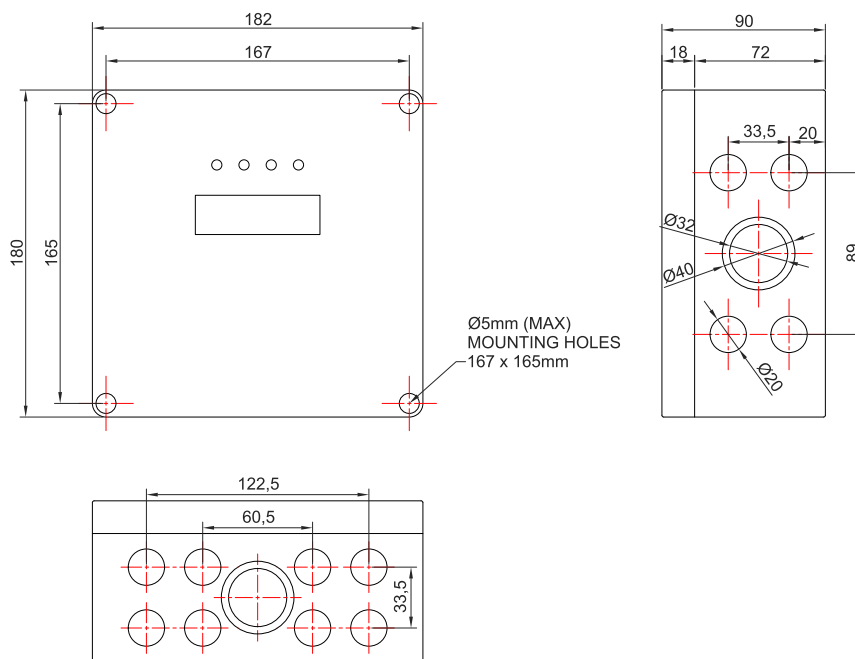
Response Classes

Sensor Control Unit	Sensing Element	Controller Parameter	Response Classification	Max sensor cable zone length	Min sensor cable zone length	Typical Application Temperature	Max application temperature
ProReact EN Analogue Composite Control Unit	ProReact EN Analogue PVC Coated Sensor Cable	Class A1I/A2I	A1I	500m	50m	25°C	50°C
ProReact EN Analogue Composite Control Unit	ProReact EN Analogue PVC Coated Sensor Cable	Class A1I/A2I	A2I	500m	50m	25°C	50°C
ProReact EN Analogue Composite Control Unit	ProReact EN Analogue PVC Coated Sensor Cable	Class BI	BI	500m	30m	40°C	65°C

Technical Specifications

ProReact EN Analogue Composite Control Unit

Operating Voltage:	20Vdc – 30Vdc
Max Power Consumption:	2W
Max Current Consumption	
...(without LCD backlight):	31mA @ 20Vdc to 20mA @ 30Vdc
...(without LCD backlight and alarm):	61mA @ 20Vdc to 39mA @ 30Vdc
...(with LCD backlight and alarm):	85mA @ 20Vdc to 59mA @ 30Vdc
Continuous Operating Temperature Range:	-20°C to +50°C
Continuous Operating Humidity Range:	0% to 95% RH (ambient temperatures -20°C to +30°C) 0% to 75% RH (ambient temperatures greater than +30°C)
Relay outputs:	Alarm & Pre-alarm FORM C 2A @ 30Vdc - resistive (60W) 0.25A @ 250Vac (62.5VA) - resistive
Fault output	Normally closed Opto-isolated phototransistor output Max V: 35Vdc Max I: 80mA Max P: 150mW
Dimensions:	W182mm x H180mm x D90mm (W 7 1/8" x H7 1/8" x D3 1/2")
Weight:	860g
Enclosure Rating:	IP65 (IK08)
Enclosure Material:	Polycarbonate
Remote Reset:	5-28Vdc for minimum 3 seconds
Modbus Output:	2-wire RS-485 Modbus RTU or ASCII
Integral Temperature Sensor:	Alarm if sensor control unit reaches 100°C

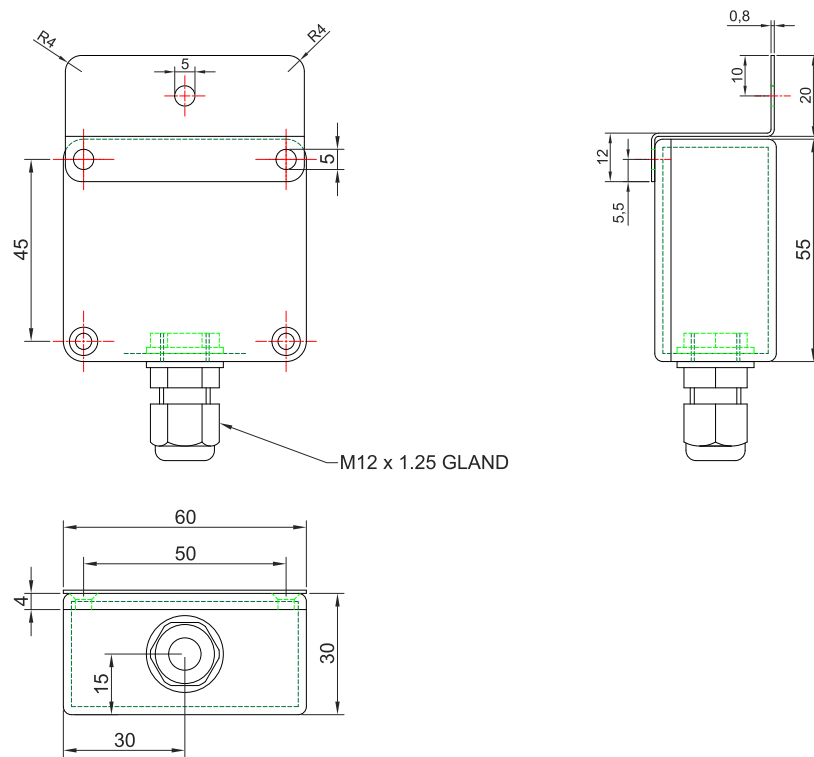


ProReact EN Analogue Composite Control Unit Dimensional Drawing

Technical Specifications

ProReact EN Analogue End-of-line Unit

Dimensions:	W100mm x D60mm x H35mm
(with gland and mounting bracket)	(W4" x D2 3/8" x H1 3/8")
Weight:	115g
Continuous Operating Temperature Range:	-40°C to +125°C
Continuous Operating Humidity Range:	0% to 99% RH (ambient temperatures between -40°C to +40°C) 0% to 75% RH (ambient temperatures greater than +40°C)
Enclosure Rating:	IP65
Enclosure Material:	Aluminium

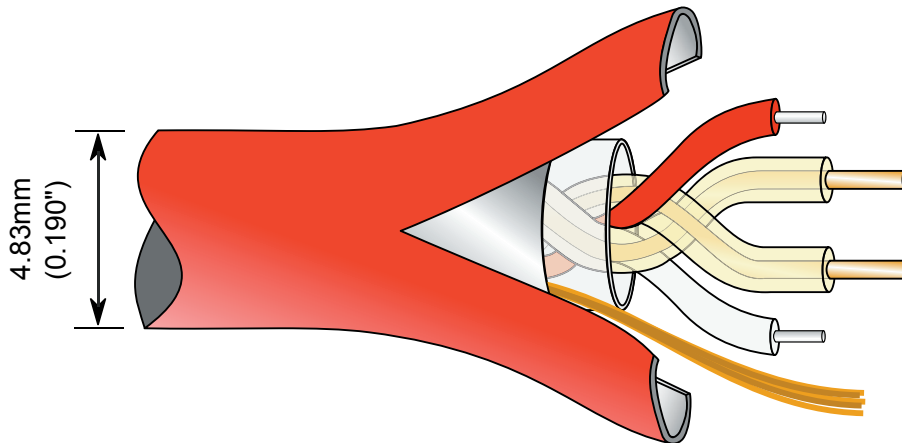


ProReact EN Analogue End-of-line Unit Dimensional Drawing

Technical Specifications

ProReact EN Analogue Sensor Cable

Construction:	Overall insulated, 4-core twisted and foil-shield with shield wire
Insulation:	1kV insulation tested, PVC outer coat
Wire Overall Diameter:	4.83mm +/- 0.2mm (0.190" +/- 0.0075")
Weight:	25.6g per m
Colour:	Red (PVC)
Minimum bend radius:	60 mm (2.36")
Minimum Ambient Temperature:	-40°C
Maximum Ambient Temperature	Dependent upon chosen alarm temperature (see below)
Maximum Recoverable Temperature:	+125°C
Continuous Operating Humidity Range:	0% to 99% RH (ambient temperatures between -40°C to +40°C) 0% to 75% RH (ambient temperatures greater than +40°C)
Minimum Zone Length:	50m (164ft) - Class A 1 I/A2I and 54 deg C alarm settings 30m (100ft) - all other alarm settings
Maximum Zone Length:	500m (1640ft) - all alarm settings

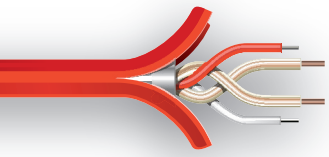


ProReact EN Analogue Sensor Cable Dimensional Drawing

	Available Controller Setting	Recommended Typical Application Temperature		Maximum Application Temperature	
		°C	°F	°C	°F
VdS EN 54-22: 2015 Approved	Class A1 I/A2I	25	77	50	122
VdS EN 54-22: 2015 Approved	Class BI	40	104	65	149
	54	15	59	30	86
	64	25	77	47	117
	72	30	86		
	79	35	95		
	86	40	104	65	149
	100	50	122		

Recommended typical and maximum application temperatures dependent upon chosen control unit setting

ProReact EN Analogue Linear Heat Detection Range



ProReact EN Analogue

Part No	Description	100m Reel			250m Reel			500m Reel		
		Net Kgs	Gross Kgs	Dimms mm	Net Kgs	Gross Kgs	Dimms mm	Net Kgs	Gross Kgs	Dimms mm
F3050	ProReact EN Analogue PVC Coated Sensor Cable	2.47	3.12	Ø300 x 100	6.18	8.84	Ø430 x 135	12.35	15.60	Ø430 x 250
A1388	Pro React EN Analogue Composite Control Unit and ProReact EN Analogue End-of-line Unit	1062g		255 x 210 x 110						
A1389	ProReact EN Analogue Composite Control Unit	948g								
A1471	ProReact EN Analogue Junction Box	240g								
A1470	ProReact EN Analogue End-of-line Unit	156g		155 x 145 x 60						



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