

5000 Series: Model 5410

Infra-Red Transit Heat Sensor



The 5000 Series is an early warning infra-red transit heat sensor, which can trigger at temperatures as low as 100°C, when monitoring materials being transported on conveyor systems, before they have reached the ember or flame condition.

Its unique dual detector enhanced Infra-red monitoring has been created to detect black heat. Black body emissions occur for all material, the sensor is designed to detect a change in these emissions even at relatively low temperatures, when the material moves through its field of view.

Air purging from a mains operated Air Purged Blower (APB) feed is used to maintain a positive air pressure in the sensor enclosure, and ensures the prevention of dust settling on the sensor window. The air supply is monitored by a pressure switch, which on air failure is signalled as a fault status.

The 5410 incorporates within the unit a series of user programmable SIL switches. Option selection including detector sensitivity settings, auto/manual reset sequence selection and single / coincidence voting from the two individual internal detectors for the alarm trip and shutdown outputs.

The sensor air pressure and signal cable connections are fault monitored and fail safe. The controller incorporates an auxiliary fault input and common fault output contact.

Features

Detection of hazards at temperatures below flame point including both embers and buried hot spots.

Air purged system for dusty environments with air pressure monitoring.

Twin high integrity detection circuit channels for maximum reliability

Two wire operation - Powered by direct connection to standard fire trigger circuits or addressable loop interface

Single / Coincidence voting output

Timed auto reset / coincidence analyser circuit

Tuned response — solar blind

Volt free relay contact output operation selectable as standard

Fault Monitored, with Test & Reset push buttons

Field Programmable

Applications

Conveyors

Escalators

Drying Lines

Sorting Machines

Food Processing

Baggage Handling

Production Lines

Warehouse Robots

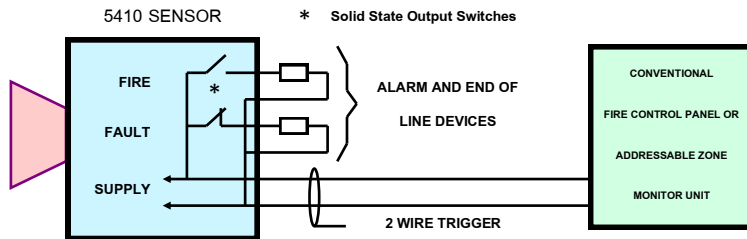
Waste Recycling Conveyors

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Standard / Low Power Mode

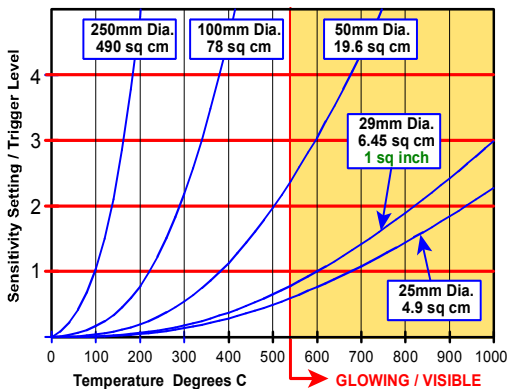
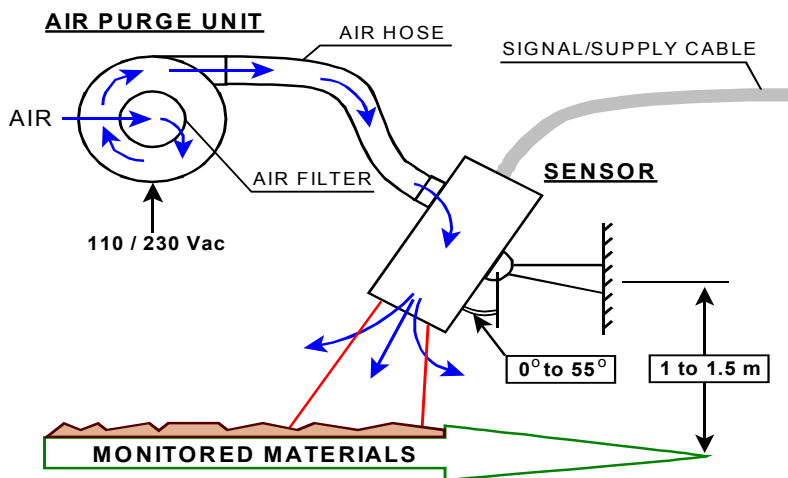
The unit can be used in two principle operating modes. Either relay mode, with its own 24 Vdc power supply or in low power mode (as shown below), see datasheet for further details



System Setup

The sensor is located above or beside the materials transit path (conveyor, roadway, etc.) by means of the adjustable mounting bracket and aligned such that the monitored hazard passes through the sensor's field of view. The distance and angle of the sensor determine the width of the monitored path.

Typically conveyor widths of 1.6 to 4.2 m can be monitored with a sensor mounted 1.0 to 1.5 m above the conveyor at an angle of 0° to 55° (see separate datasheet).



The chart (left) indicates the correlation between the temperature and size of 'hot spot' anomalies for a typical installation to produce one or more detector channel activations at various trigger level settings.

Exact response is dependant on the emissivity factor of the monitored material, sensor orientation and target speed.

Specification

Detectors:	2off—Employing reflective cone optical focus system
Spectral Filter:	5 to 14µm wide band
Sensitivity:	10 to 40µm
Transit Speed:	0.5 6m/s
Sensor Head:	1.5Kg (IP66)
Supply voltage:	
Relay Mode:	11mA Quiescent 26mA Max/Full Alarm
Low Power Mode:	1.8 mA Normal Mode <350µA Fault 5mA Fire + Alarm Load
Temperature:	-20°C to +70°C
Outputs:	
Alarm Contact	1 Pole C/O
Trip Contact	1 Pole C/O
Fault Contact	1 Pole C/O
Rating	30 Vdc—500mA
Indicators:	
Internal:	2 off red channel LED's
External:	1 Red LED (Normal-Off, Fire Trip-On) 1 Green LED (Normal-On, Fault-Off)
Auxiliary Input:	PSU / Charger etc.
Purge Air:	
Input Fitting	45mm Hose Adaptor

Ordering Information

Description	Part Number
5410: Polycarbonate, 5040 (230 vac) APB, 4 metre x 45mm flexible air hose and clips, mounting arm and bracket	710-007
5410: Polycarbonate, 5041 (115 vac) APB, 4 metre x 45mm flexible air hose and clips, mounting arm and bracket	710-009
Sensor 5410, including bracket	720-012
5040 Air Purge Blower 230 Vac	710-040
5041 Air Purge Blower 115 Vac	710-041