

INTRINSICALLY SAFE FIRE DETECTORS AND CALL POINT

Intellia Intrinsicly Safe Fire Detectors and Call point

The Intellia I.S. range comprises addressable ionisation and optical smoke detectors, a temperature detector, a detector base and a compatible manual call point. There is also a choice of two translators which ensure integrity of communication between detectors and control equipment within the constraints of an intrinsically safe system.

The Intellia range intrinsically safe fire detectors and call points have been approved by BASEEFA. The approvals are to BS EN 60079-0:2004, BS EN 50284:1999, BS EN 50020:2002 and BS EN 60079-26:2004. All types are certified to EEx ia IIC T5 at ambient temperatures up to 40 °C, or T4 at ambient temperatures up to 60 °C.



Intellia I.S. Ionisation Smoke detector

Intellia I.S. Ionisation Smoke detector 55000-640 APO

The sensing part of the detector consists of two chambers – an open, outer chamber and a reference chamber within.

Mounted in the reference chamber is a low-activity radioactive foil of Americium 241 which enables current to flow across the inner and outer chambers when the detector is powered up.

As smoke enters the detector, it causes a reduction of the current flow in the outer chamber and hence an increase in the voltage measured at the junction between the two chambers. This analogue voltage signal is converted to a digital signal by the electronic circuitry and transmitted to the control panel on interrogation. The micro-processor in the control equipment then compares the signal with stored data and initiates a pre-alarm or fire alarm as smoke density increases. When a fire condition exists, the panel instructs the detector to switch on its indicator LED.

Safety Note

The detectors, independently tested by the National Radiological Protection Board (NRPB), conform to all the requirements specified in the 'Recommendations for ionisation smoke detectors in implementation of radiation standards' published by the Nuclear Energy Agency of the Organisation for Economic Co-operation and Development (OECD) 1977.

At the end of their recommended working life of ten years, ionisation smoke detectors should be returned to Pelco for safe disposal or disposed of in an otherwise locally approved and environmentally safe manner.

Intellia I.S. Optical Smoke Detector 55000-540 APO

Intellia Optical smoke detectors incorporate a pulsing LED located in a labyrinth within the housing of the detector. The labyrinth is designed to exclude light from any external source. At an angle to the LED is a photo-diode which, in clear air conditions, does not receive light directly from the LED. The detector transmits a clear air signal to the control panel. When smoke enters the labyrinth, light is scattered onto the photo-diode and the signal to the panel increases. The signal is processed by the electronic circuitry and transmitted to the control equipment in exactly the same way as in the case of the ionisation smoke detector.



Intellia I.S. Optical Smoke Detector

Intellia I.S. Heat Detectors 55000-440 APO

The Intellia I.S. heat detector is distinguishable from Intellia I.S. smoke detectors by its low air-flow resistance case which allows good contact between the sensing thermistor and the surrounding air.

The device monitors temperature by using a single thermistor network which provides a voltage output proportional to the external air temperature. The voltage signal is processed and transmitted to the control equipment in the same way as in the case of the ionisation smoke detector.



Intellia I.S. Heat Detectors

Technical data

Detector	Intellia I.S. Optical Smoke Detector 55000-640 APO	Intellia I.S. Ionisation Smoke detector 55000-540 APO	Intellia I.S.Heat Detectors 55000-440 APO
Detector principle	Photo-electric detection of light scattered in a forward direction by smoke particles	Ionisation chamber Radioactive isotope: Americium 241. Activity: 33,3 kBq, 0,9µCi	Temperature sensitive resistance.
Operating voltage	14 - 22 VDC		
Quiescent current	340 µA	300 µA	300 µA
Alarm indicator	1 red Light Emitting Diodes (LEDs)		
Supply wiring	Two wire supply, polarity sensitive		
Humidity	0 to 95 % relative humidity (no condensation or icing)		
IP rating	IP43		
Operating temperature	-20 °C to +40 °C (T5) -20 °C to +60 °C (T4)		
Temperature Range (No condensation or icing)	-20 °C to +60 °C.		
Max. relative humidity (no condensation)	0 to 95 %		
Dimensions	100 mm diameter 42 mm height 50 mm (height in base)		
Weight	105 g		
Materials Housing Terminals	White polycarbonate V-0 rated to UL94 Nickel plated stainless steel		
BASEEFA Certificate No	BAS02ATEX1289		
Classification:	E Ex ia IIC T5 (T4 at Ta ² 60 °C)		
Product codes	0672 5227	0672 5217	0672 5257

Mounting Base

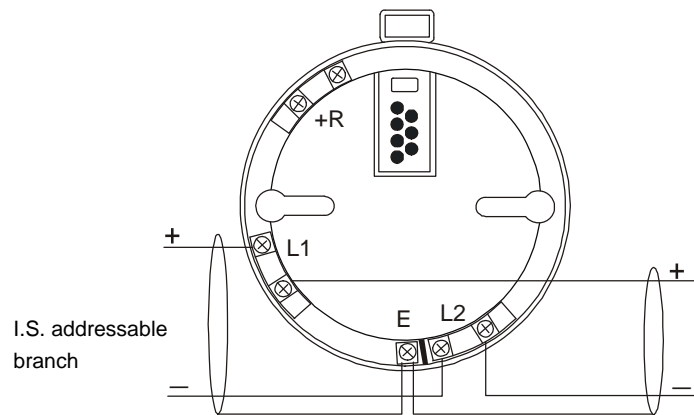
Product code	Mounting Base 45681-215 APO	0672 5207
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Pelco reserves the right to modifications.

Heat detector						
Mode	Class (EN54-5:2000)	Application Temperature °C		Static Response Temperature °C		
		Typ	Max	Min	Typ	Max
1	A1R	25	50	54	57	65
2	A2	25	50	54	61	70
3	A2S	25	50	54	61	70
4	CR	55	80	84	90	100
5	CS	55	80	84	90	100

Intellia I.S. Base 55000-215 APO

The base for the intrinsically safe range is not identical with that for the standard range. This ensures that standard detectors cannot inadvertently be fitted to an intrinsically safe system.



L1 = Loop +
L2 = Loop -
E = Screen

Intellia I.S. Manual Call Points 55000-940

When activated, the intrinsically safe call point not only interrupts the polling cycle to indicate to the control panel that it has been operated, but also reports its address. Thus an alarm and its location can be reported in less than 0,2 seconds.

The standard call point is based on the waterproof model and is a red, break-glass call point, and a protective lift-up flap is available.



Technical data

Operating voltage	14 - 22 VDC
Quiescent Current	230 µA
Supply Wiring	Two wire supply, polarity sensitive.
Terminal Functions	L1: positive supply L2: negative supply Note! I.S. devices are polarity sensitive
IP Rating	IP65 or IP67
Operating temperature	-20 °C to +40 °C (T5). -20 °C to +60 °C (T4).
Humidity (no condensation)	0 to 95 %
Dimensions	124 x 124 x 60 mm
Weight	400 g
Colour	Red
BASEEFA Certificate No	BAS02ATEX1290
Classification	E Ex ia IIc T5 (T4 at Ta ² 60 °C)
Product code 55000-940	0672 3737

Pelco reserves the right to modifications.

Intellia Protocol Translator

The translator is a loop-powered device which draws a low quiescent current and is therefore transparent to both the loop driver and the I.S. detectors. Since the translator is used within the safe area, i.e., before the safety barrier, no certification is necessary. The translator falls within the generic description "Safe Area Apparatus" on the certified system diagram.

The translator is housed in a moulded plastic enclosure which can be either clipped onto a standard 35 mm DIN rail (DIN 46277) or panel mounted by using pull-out latches in the base. The translator is available in single-channel or dual-channel versions. Each channel should only be connected to a single intrinsically safe circuit through an appropriate safety barrier. Each channel is thus capable of supplying up to twenty Intellia I.S. devices.



Intellia Protocol Translator

Technical data

Operating voltage	19 - 28 VDC
Input Current (no load condition)	2 mA max (dual channel) 1 mA max (single channel)
Supply Wiring	Two wire supply, polarity sensitive
Modulation Voltage at Translator	5 to 9 Volts peak to peak
Output Voltage (to barrier)	16,5 to 19 Volts
Output Modulation Voltage (to barrier)	5 to 6,5 Volts
Output Current (to barrier)	0,2 to 30 mA
Input Pulse Current (from barrier)	8 to 12 mA
Output Pulse Current (drawn from loop)	17 to 23 mA
IP rating	
Operating temperature	-20 °C to +60 °C
Humidity (no condensation)	10 to 95 % RH
Shock, Vibration and Impact	
Dimensions	92,5 x 110 x 20 mm
Weight	Approx. 100 g.
Materials (housing)	Makrolon 6485 V-0 rated to UL94
BASEEFA Certificate No	
Product code	
55000-855 (single channel)	0672 5201
55000-856 (dual channel)	0672 5202

Pelco reserves the right to modifications.

Intellia Galvanic Isolator 29600-098APO (Barrier)**Technical data**

Um	250 V terminals 11, 12
Operating voltage max.	40 V terminals 11, 12
Uo	28,0 V Terminals 1, 2
Io	93 mA Terminals 1, 2
Ceg	5,64 Nf Terminals 1, 2
Terminal Functions	1 = Input + 2 = Input - 11 = Output + 12 = Output -
IP Rating	IP20
Operating temperature	-20 °C to +60 °C.
Humidity (no condensation)	0 to 95 %
Dimensions	92,5 x 110 x 20 mm
Weight	90 g
Colour	Green
BASEEFA Certificate No	BAS00ATEX7087
Classification	E Ex ia IIc T5 (T4 at Ta \geq 60°C)
Product code 29600-098APO	0672 5203

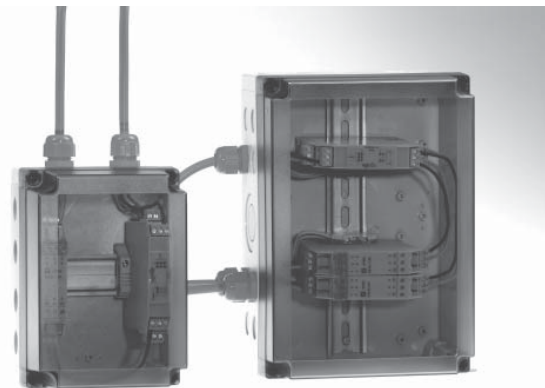
*Intellia Galvanic Isolator (Barrier)*

Pelco reserves the right to modifications.

DIN-RAIL Modules Enclosures

The enclosures are available in two sizes and can be used for housing intrinsically safe (IS) barriers or DIN-rail mounted modules.

The enclosures have a frosted polycarbonate lid through which LEDs can be viewed. A multi-purpose label, that features a section for use with IS systems is supplied. For non-IS systems, the part referring to IS can simply be removed.



The smaller enclosure (left)
The larger enclosure (right)

Intrinsically safe circuits

When using these enclosures with intrinsically safe systems, it is important that segregation be provided between the IS and non-IS circuits. A distance of at least 50mm must be preserved between live conducting parts of IS and other circuits.

If the enclosure is used as part of an IS circuit, then it must always be installed inside the safe area. Never install these enclosures in the hazardous area.

Please refer to the diagrams overleaf for more information on how to configure units.

Capacity

The smaller enclosure is suitable for one addressable or two conventional IS circuits or up to four DIN-rail interfaces (dependent on the number of knock-outs required).

The larger enclosure can be used with up to five addressable IS circuits (using the dual protocol translator) or up to eight conventional IS circuits or up to ten DIN-rail interfaces (dependent on number of knock-outs required).

For more information on the capacity of these enclosures, please refer to the table overleaf.

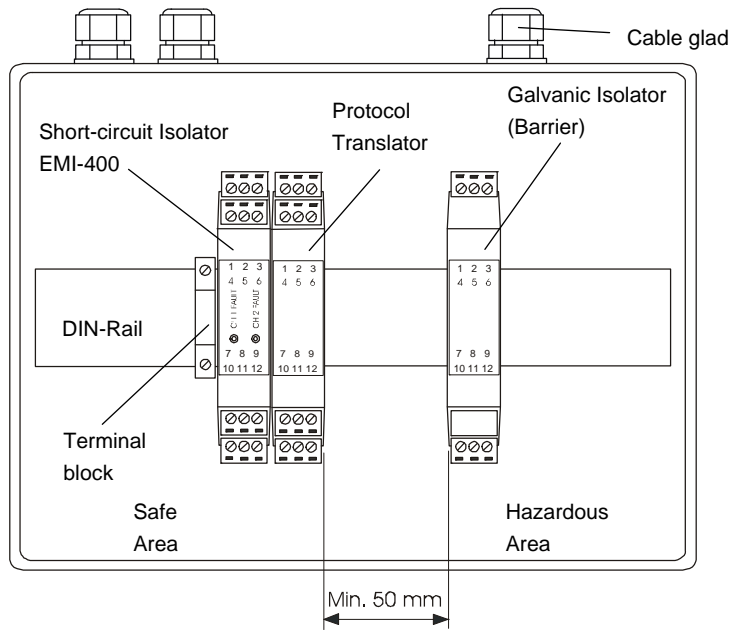
Technical data

DIN-RAIL Modules Enclosure	Dimensions L x W x H	20mm knock outs available	Maximum Capacity			Product codes
			Standard DIN-Rail	Conventional IS DIN-Rail	Addressable IS DIN-Rail	
29600-239APO	180 x 125 x 130	12 (drillable)	4	2*	1 barrier and 1 x translator*	0672 7460
29600-240APO	225 x 180 x 130	22 (pre-drilled)	10	8*	5 x barriers and 3 x translators (2 x dual and 1 x single)*	0672 7461

*Note: quantities calculated on minimum spacing required for IS wiring segregation.

Pelco reserves the right to modifications.

Addressable IS configuration (a large enclosure)



Schematic Diagram & Wiring Connections

