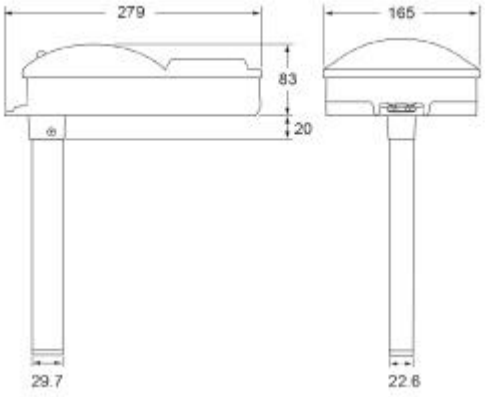
Axis EN Duct Detector

The Axis EN Duct Detector (Axis-DDH/OPX) is designed for monitoring of airflow in heating and ventilation ducts for fire combustion products.

The Duct Detector is fitted with an smoke detector and must be linked to an AxisEN control panel and a suitable sampling tube. Axis-DDH/OPX has been designed to allow optimum airflow through the detector and it is recommended for installations in ducts with low airflow and an air speed between 0.5 m/s and 20 m/s.





Features

- Easy to install
- Single tube air sampling system
- Simple servicing and maintenance
- Installer friendly cabling
- Sampling tube with innovative design
- Easy mounting of sampling tube
- Test hole positioned on the cover
- Pre-installed detector - Axis-OPX
- Sampling tube supplied in three lengths, 0.6m, 1.5m and 2.8m
- If the ventilation duct is wider than 0.6m the sampling tube should penetrate the whole duct.

Specification

Airflow Speeds	0.5 m/s to 20 m/s
Dimensions	279 mm X 165 mm X 83 mm (plus 20mm pipe entry)
Standby Current	500uA @ 24 Vdc
Weight	660g (without the detector installed)
Operating Temperature	-10ºC to +55ºC
Max Humidity (non condensing)	95% RH

Order Codes and Options

Axis-DDH/OPX	Duct Smoke Detector
DDH-STO.6	Air Sampling Tube 0.6m
DDH-ST1.5	Air Sampling Tube 1.5m
DDH-ST2.8	Air Sampling Tube 2.8m
20-DDH-BR-ADV	Mounting bracket (for insulated/circular ducts)

Advanced, The Bridges, Balliol Business Park, Newcastle upon Tyne, NE12 8EW, UK T: +44 (0)345 894 7000 E: enquiries@advancedco.com
W: www.advancedco.com

As our policy is one of constant product improvement the right is therefore reserved to modify product specifications without prior notice.

Advanced

Axis EN

Fireray 5000 Beam Detector

The FIRERAY 5000 motorised reflective, auto aligning infrared optical beam smoke detector can be installed with up to two detector heads per system, thus saving on installation time and costs. In addition, each system controller houses two pairs of fire and fault relays, one per detector. This innovative system has been designed from the ground up to include pioneering technology that fully addresses the needs of the installer and user, both now and in the future.

With its industry leading optics, the 5000 is ideally suited for the protection of large areas where the use of traditional detection technologies would prove to be too difficult and/or costly to install.

The 5000 combines an infrared transmitter and receiver in the same discrete unit and operates by projecting a well-defined beam to a reflective prism, which returns the beam to the receiver for analysis. Smoke in the beam path causes a drop.



Approvals

- Approved to EN54-12 and UL268

Features

- Allows for 2 Detectors per System Controller
- Each Detector configurable from 8m to 100m
- Separate Fire and Fault relays per Detector
- Building Movement and Contamination Compensation
- Building Movement and Contamination
- 20mm Cable Gland Knockouts on System Controller
- Integral LASER alignment
- Low Level System Controller

Specification

Parameter	Min.	Typ.	Max.	Unit
Operating Voltage (to System Controller)	14	-	36	VDC
Operating Current (constant) - with 1 detector	5	5.5	6	mA
Operating Current (constant) - with 2 detectors	7.5	8	8.5	mA
Operating Current (constant) - alignment modes, with 1 or 2 detectors	35	36	37	mA
Response Threshold/ Sensitivity (Default 35%)	0.45 10	- -	3.98 60	dB %
Delay to Alarm – user settable (Default 10 sec)	2	-	30	sec
Delay to Fault – user settable (Default 10 sec)	2	-	30	sec
Operating distance (separation) *	8	-	100	m
Maximum angular alignment of detector	-	-	+/-3.5	Deg
Optical wavelength		850		nm
Fault level/ Rapid obscuration (2 sec)	-	-	87	%
Operating temperature	-10	-	+55	Deg C

Storage temperature	-40	-	+85	Deg C
Relative humidity (non condensing)	-	-	93	%
IP rating		54		-
Contact Voltage - Fire & Fault relays (VFCO)	0.1	-	36	VDC
Contact Current - Fire & Fault relays (VFCO)	0.1	-	100	mA
Cable length - System Controller to Detector (2 core)	-	-	100	m
Cable gauge	24	-	14	AWG
	0.5	-	1.6	mm
Housing flammability rating	UL94V0			
CPD Reference	0832-CPD-0565			
UL File	S3417			

Dimensions and Weight	Width(mm)	Height (mm)	Depth (mm)	Weight (kg)
System Controller, including base:	202	230	87	1.0
Detector, including ‘easy fit’ base:	134	131	134	0.5
Reflector:	100	100	10	0.1

Operation

Getting the system operational is simplified by a number of groundbreaking features that combine to make the 5000 the quickest and easiest detector of its type to install.Each detector takes under 5 minutes to fully align. A full range of installation accessories are available including the newAdjustment Bracket,which allows a greater degree of flexibility during installation.

Once the detector heads are connected,using the First Fix system,an integral LASER can be activated.This allows the reflective prism to be positioned quickly and with confidence. Once the LASER has been used to coarsely align the beam, Auto- Align takes over and automatically steers the beam into the optimum position.During alignment the system automatically switches to high current mode and drops back to low current mode when in normal operation,however,alignment is still possible in low current mode.

Mounting Instructions

Please refer to our User Guide (UG) for mounting and wiring instructions.The installation of the infrared optical beam smoke detector should be undertaken in accordance with recognised national or international standards and codes of practice.

Specifications and wiring information are provided for information only and are believed to be accurate. Advanced assumes no responsibility for their use. Data and design are subject to change without notice. Installation and wiring instructions are shipped with the products and should always be used for actual installation. For more information,contact your Sales Representative.

Order Codes and Options

08-5000-101	FIRERAY 5000 System (50m)
08-5000-102	FIRERAY 5000 System (100m)
08-5000-002	FIRERAY 5000 Single Detector pack (50m)
08-5000-039	FIRERAY 5000 Single Detector pack (100m)
08-5000-005	FIRERAY 5000 Prism Wall Bracket (for detector head or prism plate)
08-5000-008	FIRERAY 5000 Prism Plate for single prism (not included)

Advanced, The Bridges, Balliol Business Park, Newcastle upon Tyne, NE12 8EW, UK T: +44 (0)345 894 7000 E: enquiries@advancedco.com
W: www.advancedco.com

As our policy is one of constant product improvement the right is therefore reserved to modify product specifications without prior notice.

Advanced

Axis EN

Fireray IR³ Flame Sensor

The sensor responds to low-frequency (1 to 15 Hz) flickering IR radiation emitted from flames during combustion.

IR flame flicker techniques enable the sensor to operate through a layer of oil, dust, water vapour, or ice.

Most IR flame sensors respond to 4.3µm light, emitted by hydrocarbon flames. By responding to 1.0 to 2.7µm light emissions from fires almost all flickering flames can be detected. Gas fires not visible to the naked eye e.g. hydrogen may also be detected.

The triple IR photoelectric detectors (IR³), responding to neighbouring IR wavelengths, enable it to discriminate between flames and spurious sources of IR radiation.

The combination of filters and signal processing allows the sensor to be used with a very low risk of false alarms in difficult situations characterised by factors such as flickering sunlight.

The sensor responds to varying sizes of flame at given distances. The further away the flame is from the sensor the larger the fire has to be, with detection beyond 50m becoming unpredictable. An n-heptane flame with a base area of 0.1m² will be detected on the sensor centre line at 25m, with the sensitivity set high for class 1 performance.

If the sensitivity switch were set to low, for class 3 performance, the same 0.1m² flame would be detected at 12m.



Features

- Class 1 Sensitivity to EN54-10 Detects 0.1m² fire @ 25m
- Excellent Optical Interference Immunity
- Selectable Output Options Conventional 2 wire 4-20mA Latching or Non-latching Relay Contacts; Fire/Fault, Pre-alarm
- Selectable Response Speed
- Optical Self Test
- Low Power Consumption
- LPCB & CPD Approved to EN54-10

Specification

Housing Material:	Die Cast Zinc Alloy (ZA12)
Housing Colour:	Blue
Dimensions (W, H, D)	108mm x 74mm x 82mm
Weight:	2kg
Cable Gland Entries:	2 x 20mm
Supply Voltage:	14 to 30Vdc
Supply Current:	See DIL switch settings
Power Up Time:	2 seconds max.
Test Signal Voltage:	14 to 30Vdc
Relay Contact Ratings: Current Voltage Resistive Loads Only Power	 1.0Amp. Max. 50Vdc. Max. 30W Max.
Range: - Class 1 (Sensitivity Setting - Class 3 see EN54-10)	0.1m² n-heptane at 25m 0.1m² n-heptane at 12m
Field of View:	90° min. Cone
Operating Wavelength Band: IR	 0.75 to 2.7µm
Sensitivity: (See note 2)	High = Class 1 Low = Class 3
Operating Temperature:	- 10°C to +55°C
Storage Temperature:	- 20°C to +65°C
Relative Humidity:	95% Non condensing
IP Rating:	IP65
EMC Immunity / Emissions:	EN61000-6-1, EN61000-6-2 EN61000-6-3, EN61000-6-4 EN 50130-4, EN 55022
Approval:	EN54-10 729a/01
CPD Certificate No:	0832-CPD-0595

Order Codes and Options

08-016589:	IR³ FLAME SENSOR
08-007127:	STAINLESS STEEL ADJUSTABLE MOUNT
08-012545:	STAINLESS STEEL WEATHER SHIELD

Electrical Connections

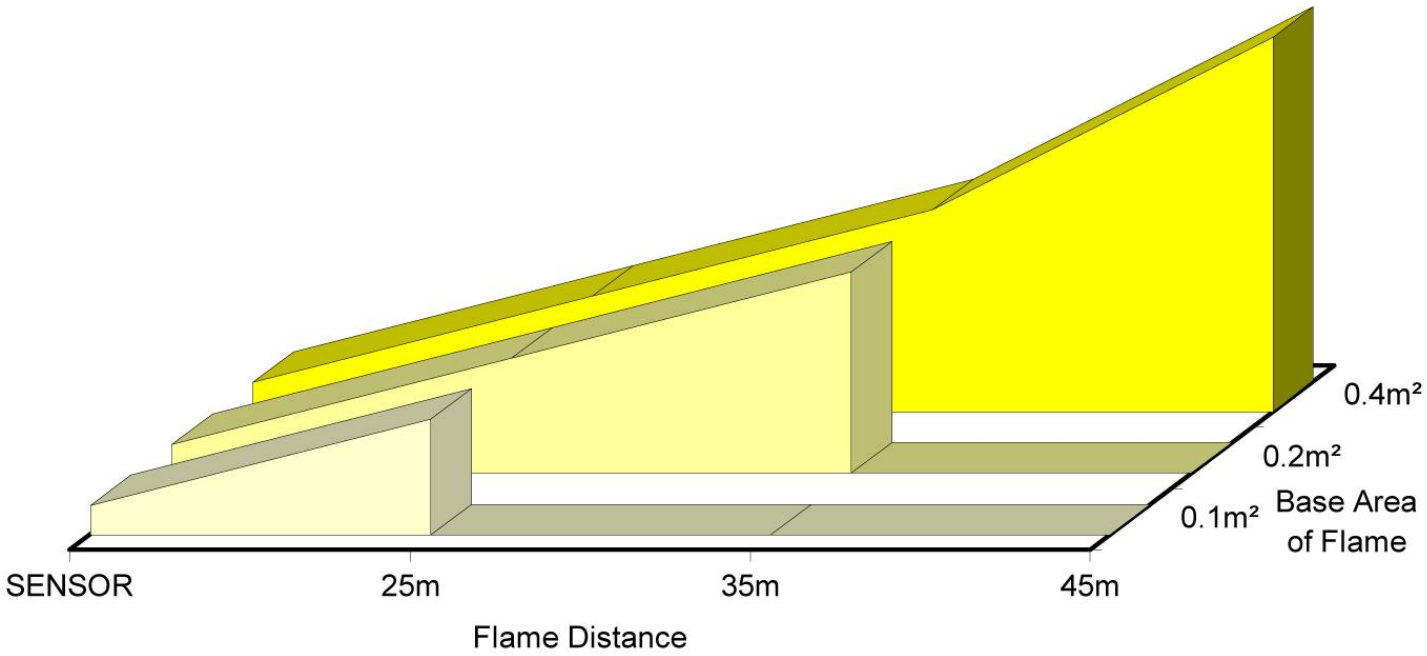
The sensor can be connected to a two-wire circuit supplying 14V to 30V dc. The sensor is connected to the supply via terminals 1(+IN) and 2(-IN) under the front terminal cover. Connections to the sensor are polarity sensitive.

A remote sensor optical test input is available on terminals 3(+R) for +IN and 4(-R) 0V. When a 14V to 30V dc supply is applied to this input IR test sources activate within the sensor and a flame-detected state will be outputted. See Fig. 1.

Flame Detection Characteristics

The sensor responds to varying sizes of flame at given distances. The further away the flame is from the sensor the larger the fire has to be, with detection beyond 50m becoming unpredictable. An n-heptane flame with a base area of 0.1m² will be detected on the sensor centre line at 25m, with the sensitivity set high for class 1 performance.

If the sensitivity switch were set to low, for class 3 performance, the same 0.1m² flame would be detected at 12m.



To meet the requirements of EN54:10 clause 5.1.2, all testing has been performed at the highest sensitivity (class1) setting.
The polar diagram shows that the sensor sensitivity is at its greatest along the central axis. The variation in relative range against viewing angle is show as a percentage of peak performance. The diagram is a section through the sensors conical field of view.

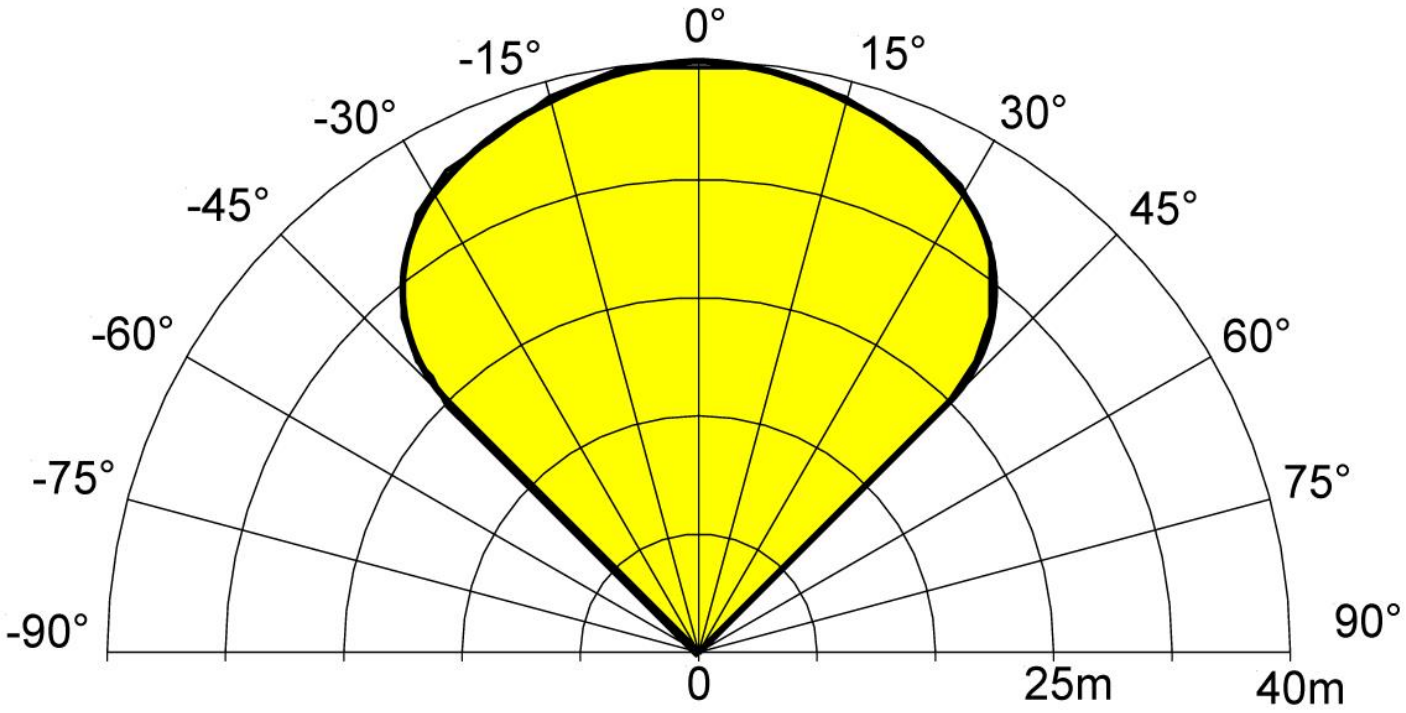


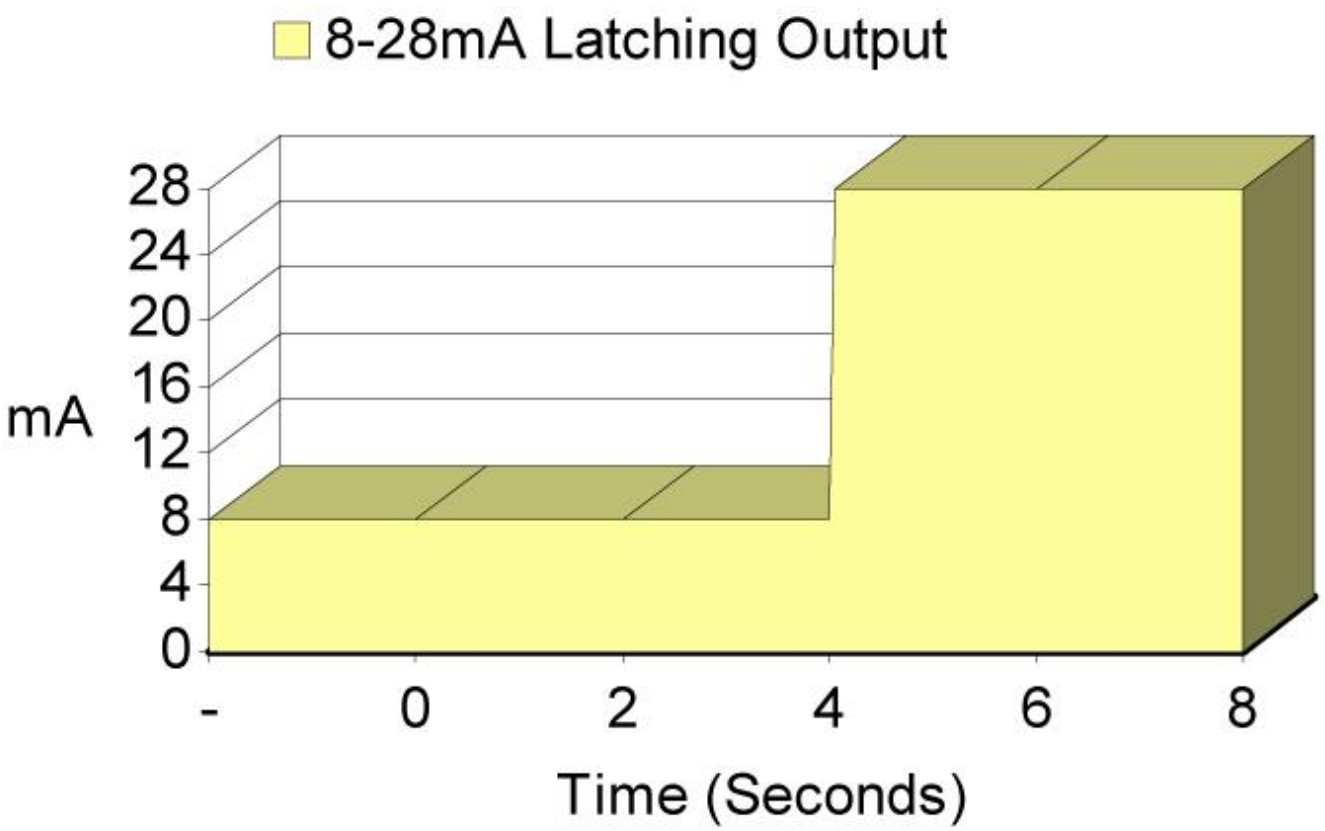
Fig. 3 Relative range as a function of viewing angle - IR³ Flame Sensor

Alarm Current Output Values

When the sensor detects a flame the sensor supply current value (4-20mA or 8-28mA) will increase.

The sensor is shipped with the internal DIL switch (5) set to give a latching alarm current. Normally the current required by the sensor is 4mA or 8mA at 24Vdc with no flame in view. When a flame is in view, the supply current value will increase to 20mA or 28mA, the fire relay RL1 will energise and red fire LED will illuminate.

The supply to the sensor has to be broken in order to reset the sensor. Values below 3.0mA are an indication of a fault conditions.

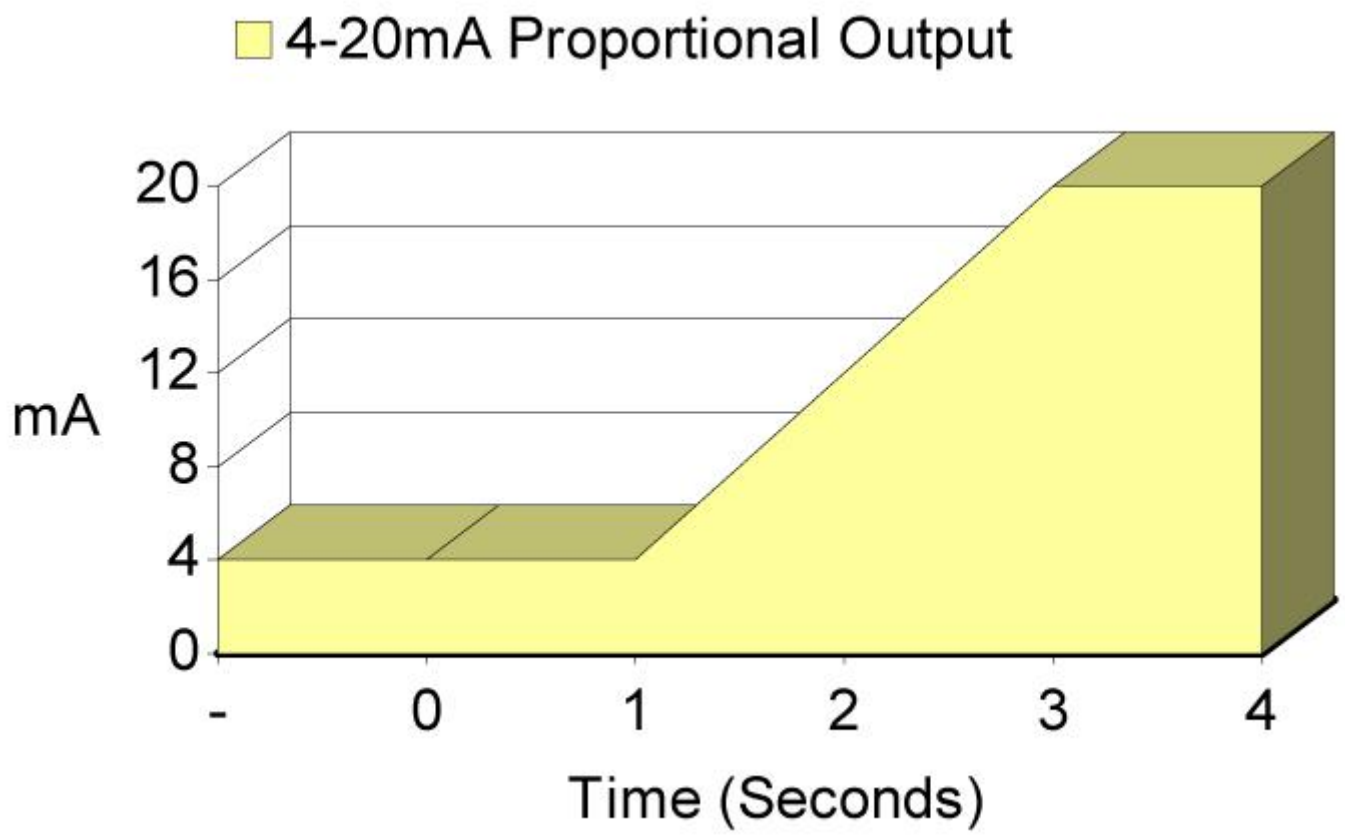


Proportional Output Vlaues **(Non-Latching)**

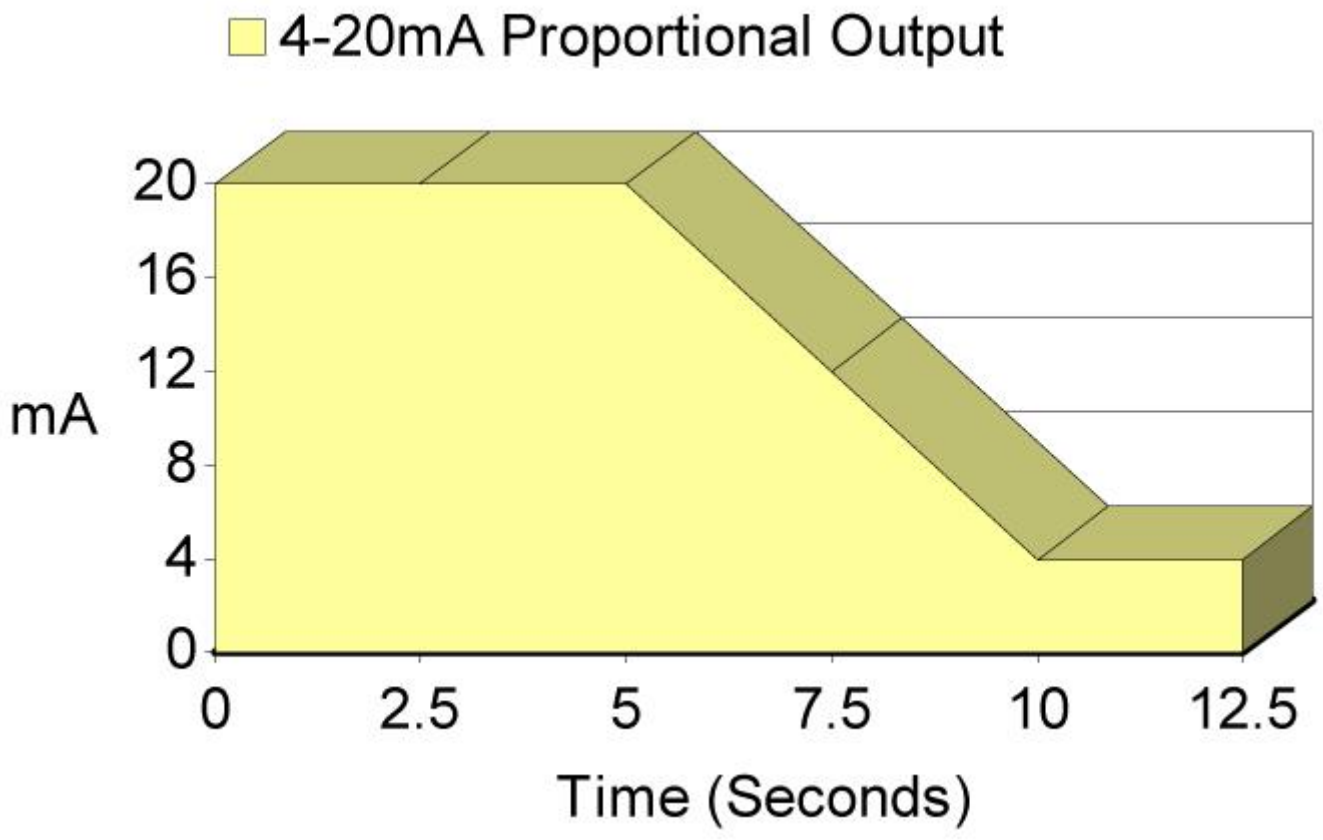
When the sensor sees any flame flicker the proportional values of (4-20mA or 8-20mA) will increase.

The sensor is set to give a proportional value of 4mA or 8mA with no flame in view. The value increments when flame flicker pulses are seen. With an output value approaching 20mA the fire LED will illuminate.

Values below 3.0mA are an indication of a fault conditions.



Once illuminated the red Fire LED and output value are held for 5 seconds after the last flame has been seen, after which the output value decrements back to 4 or 8mA.



Proportional output values between 4 or 8mA and 20mA can be used to provide an early warning of fire. These values hold only for 3 seconds from the last flame sighting.

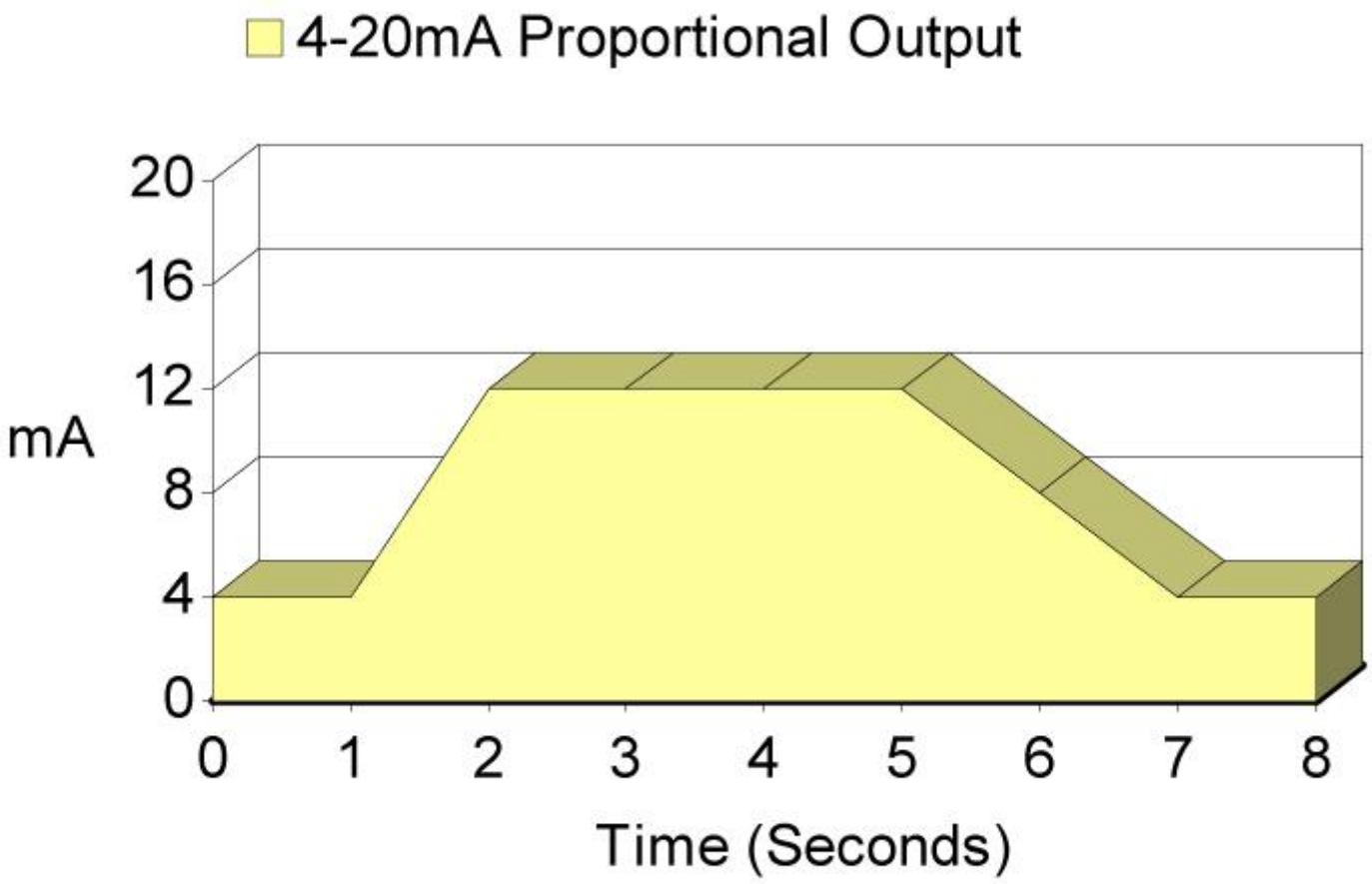


Fig. 7 Typical Response to Burst of Flame - IR³ Flame Sensor

Advanced, The Bridges, Balliol Business Park, Newcastle upon Tyne, NE12 8EW, UK T: +44 (0)345 894 7000 E: enquiries@advancedco.com
W: www.advancedco.com

As our policy is one of constant product improvement the right is therefore reserved to modify product specifications without prior notice.