

AUTROFLAME IR3 FLAME DETECTOR, BG-301, BG-301-EXIA, BG-301-EXIC

Product Datasheet

Features

- Standard, Ex ia and Ex ic variants
- Robust aluminum enclosure, IP66/IP67
- Two M20 cable glands included
- For indoor and outdoor applications
- Outstanding immunity to deceptive phenomena
- Four sensitivity classes
- Four response times
- Easy mounting and installation
- Not blinded by oil film on window
- Integrated alarm and fault indicator
- Built-in alarm indicator
- Short circuit isolator in each detector
- Event logging with time and date stamp
- Automatic addressing
- Interactive
- EN 54-10 and EN 54-17 certified



Description / Application

The AutoFlame IR³ Flame Detector BG-301 is to be used on AI_Com detection loops (for interactive fire detection systems).

The IR³ Flame Detector is used for the detection of fires involving combustion of carbonaceous materials.

The detector can be used for indoor and outdoor applications. It has a high IP rating making it suitable for the harshest environments. By means of the flame detector's three sensors, it can accurately distinguish between deceptive phenomena and real fires. The flame detector is suited for use in environments with deceptive phenomena, such as solar radiation or hot vibrating objects.

Applications

- Large industrial storage rooms
- Power plants
- Chemical production facilities
- Transformer stations
- Warehouses for chemicals
- Print shops
- Gas depots and pump stations
- Motor test beds
- Arc welding
- Atriums, malls
- Ferries and cargo ships
- Wood storage
- Machine rooms on ships
- Hangars for military and civil aircrafts
- Subway tunnels

Additional applications for the Ex variants:

- Chemical production facilities
- Oil refineries
- Gas depots
- Natural gas transshipment points
- Propane and butane gas filling systems
- All gas zones (0, 1 and 2)

Technical Specifications	
Dimensions	(see dimension drawing)
Weight	1 kg
Shipping Weight	1,2 kg
Materials	Enclosure: Aluminum (A360), powder coated Front cover: Aluminum (A360) Glass window: Sapphire
Color	Enclosure: Signal white, RAL 9003 Front cover: Black
Detector Sensitivity	See separate table.
Response Time	See separate table.
Field of view	Horizontal = +/- 45° Vertical = +/- 45°
Operating Voltage (AI-Com Interface)	<ul style="list-style-type: none"> Standard non-Ex and Ex ic version: 24 VDC Ex ia version (requires Barrier Unit BZ-500): Maximum 15,75 VDC
Average idle current consumption	0,35 mA
Current consumption with LED indicator ON	Maximum 3 mA
Current consumption – Remote LED output	5 mA (non-monitored)
Ingress protection	IP66 and IP67
Operating temperature	-40 to +70°C
Storage temperature	-40 to +70°C
Storage vibraton	According to mechanical class 1M11
Transportation vibraton	According to mechanical class 2M4
Operational vibraton	According to mechanical class 3M12 and 6M2
Hazardous location ratings	For info on EX data, refer to Control Drawing User Manual Doc-1010935
Humidity	0-96 % rh, non-condensing
Wiring	14 AWG or 2.5 mm ² shielded cable is recommended.
Cable requirements	Unshielded and shielded, twisted or non-twisted wire pairs, also for connection to the external alarm indicator.
Cable glands/size	M20x1,5 cable glands (2 pieces incl.) Cable diameter range: 6-12 mm Material: polyamide
Terminals	The connectors are “push-in” type (spring-cage connection), and do not require tools for stiff cables with larger cross section (> 0,5mm ² and up to a maximum of 2,5mm ²).
Indicator	Idle: LED OFF Alarm: Red LED ON Test mode: Blinking yellow LED 3 sec. ON, 3 sec. OFF
Compatibility	AutoSafe systems version 4.12 or higher
Maintenance	Cleaning of window
Service	Replace if faulty
Approvals	See the Autronica Web site

Flame Detectors – Part Numbers

Part Numbers	Description
116-BG-301	Standard IR ³ flame detector for non-Ex applications
116-BG-301-EXIA	IR ³ flame detector for Ex ia applications (zone 0, 1 and 2)
116-BG-301-EXIC	IR ³ flame detector for Ex ic applications (zone 2)

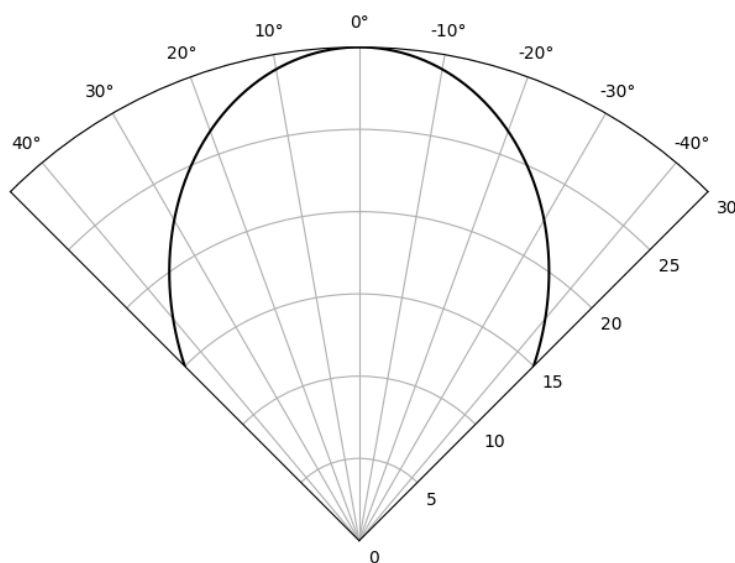
Accessories – Part Numbers

Name	Part Number	Description
Fixed Mounting Bracket, 45 degree	116-BGMB45	For volumetric surveillance, fixes the flame detector at a 45° angle.
Ball Joint Mounting Bracket	116-BGBJMB	The ball joint on the bracket allows you to adjust the bracket/flame detector both vertically and horizontally.
Weather Bracket	116-BGWB	For outdoor applications.
Standard Test Lamp for non-Ex applications	116-BGTL	For non-Ex applications.
EX Test Lamp for Ex applications	116-BGTLEX	For Ex applications.

Detector Sensitivity Classes

Class	Detector Sensitivity	Detection Distance
Class X	Extra high	30 m (minimum) – above EN 54-10 class range
Class 1	High (default)	25 m (minimum)
Class 2	Medium	17 m (minimum)
Class 3	Low	12 m (minimum)

Field of View



Detection distance for a 30x30cm pan of N-heptane (horizontal and vertical direction).

Response Time

The table below shows the BG-301 Response Time setting versus Expected Alarm Time for a 30x30cm N-heptane pan fire at 15m.

BG-301 Response Time	Additional Confirmation Time (sec)	Expected Alarm Time range (sec)
Fast	0	3-7
Medium	4	7-11
Slow (default)	8	11-15
Very slow	12	15-19

Resistance to Deceptive Phenomena

The flame detector has excellent resistance to deceptive phenomena, like for instance:

- Direct solar radiation
- Hot objects
- Arc welding

Refer to Technical Handbook for recommendations regarding installation.

Fuel Performance Table

EN 54-10				
Fuel Source	Condition	Distance (ft/m)	Angle (deg, H&V)	Alarm Time(sec)
N-heptane	30x30cm pan	100/30	0	<30
N-heptane	30x30cm pan	50/15	45	<30
Methanol	30x30cm pan	80/24	0	<30
Methanol	30x30cm pan	40/12	45	<30
Factory tested:				
Fuel Source	Condition	Distance (ft/m)	Angle (deg, H&V)	Alarm Time(sec)
Methane	75cm plume	60/18	0	<30
Methane	75cm plume	30/9	45	<30
Toluene	30x30cm pan	60/18	0	<30
Toluene	30x30cm pan	30/9	45	<30
Diesel	30x30cm pan	40/12	0	<30
Diesel	30x30cm pan	20/6	45	<30
Class A	25x6cm pile	40/12	0	<30
Class A	25x6cm pile	20/6	45	<30

Status Light Indicator

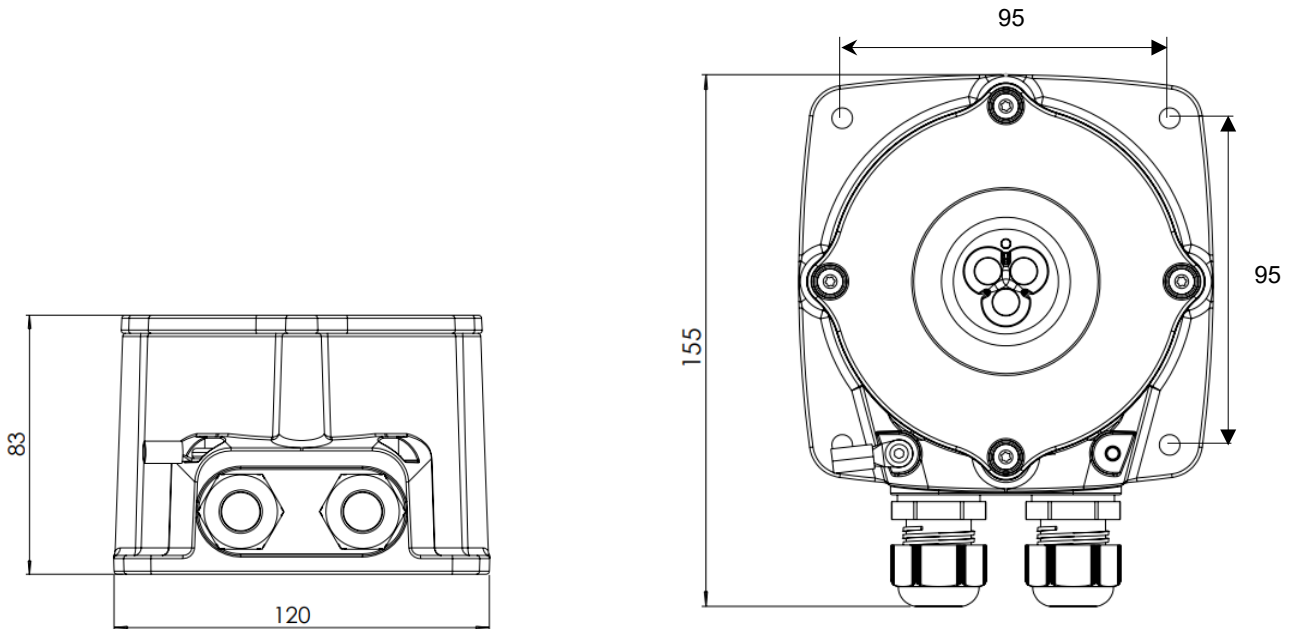
The status of the flame detector is indicated by an internal alarm indicator (red/yellow LED). The indicator can be observed from the ground within the field of view at mounting heights up to 6m.

Status	LED Behavior
Idle	LED OFF
Alarm	Red LED ON
Test mode	Blinking yellow LED 3 seconds ON, 3 seconds OFF

Testing

The flame detector can be tested by use of a test lamp. During the test, the flame detector is set in test mode. Depending on the type of flame detector (standard version or EX versions), a standard or EX test lamp is used (see Technical Handbook).

Dimensions (mm)



Connection of Loop Cables

The 4-pin loop cable connector is located on the communication board. The connector has polarity protection to avoid inserting it the wrong way.

- Connect the detection loop cables to +/- output and loop +/- input on the loop plug as shown below
- Insert the loop plug into the connector

1 2 3 4

