G015326

Visual Flame Detector
CD-F-301

Part no. 5100793, 5100795

System: Salwico Cargo, Salwico Cruise, CFD5000

About the Datasheet

This data sheet contains product information for the following detectors:

Product name	Product no.
CD-F-301 Flame detector AL SB M25	5100793-00A
CD-F-301 Flame detector AL MB M25	5100793-10A
CD-F-301 Flame detector SS SB M25	5100795-00A
CD-F-301 Flame detector SS MB M25	5100795-10A

SS = Stainless Steel
AL = Aluminum (copper free)
SB = Standard Bracket (thickness 3 mm)
MB = Marine Bracket (thickness 8 mm). Shall be used in applications requiring DNV GL type approval.

Cable glands not included with unit.

WARNING!
For further information about the detectors, and when installing in Hazardous areas, see the FDS301 Technical manual 2200.5009 (Micropack).

General Description

The CD-F-301 is an explosion proof visual flame detector designed for hazardous locations where fast optical flame detection is critical and nuisance alarms are not an option. The device processes live video images to detect the characteristic properties of flames by means of its digital signal processing and hardcoded software algorithms.

Live Video

A live colour video image is available from each detector. This allows information about the protected area to be displayed on a monitor in the control room, providing the operator with a visual feedback of an event, which can reduce response time.

False Alarm Immunity

The CD-F-301 demonstrates superior false alarm immunity with live colour video direct from a specially designed optical detection device. It is the safest and most advanced flame detector on the market today, and its track record on the hundreds of installations where it is utilised has proven the instrument to be robust, even in the harshest of environments.

On-board microSD card

The CD-F-301 incorporates a microSD card capable of recording a video of detected fires pre and post alarm. This recording is invaluable when carrying out an incident investigation and essentially by using the CD-F-301, there will never be an instance of an unknown alarm.

Features and Benefits

- Visual flame detection principle which ensures maximum false alarm immunity.
- Live colour video output.
- Single sensitivity for ease of mapping and maximum coverage.
- On-board microSD card - pre/post alarm video recording.
- Separate function test device – Flame Simulator CD-FS-301.
- Advanced optical verification test.
- Multiple output options for maximum flexibility and compatibility.
- User programmable via HART or RS-485.
- Can operate stand-alone with or without video.
- Unrivalled MTBF – min 2,000,000 hours.

- Certified SIL 2 capable (Exida).
- Heated window for operation in harsh weather conditions (snow, ice, condensation).
- Hazardous area zones: Zones 1 & 2 with IIC gas group vapors present.
- Ex approved to ATEX & IECEx and FM/FMC.
- 3rd party performance tested: FM 3260 and EN54-10 Class 1 (VdS).

Spare parts:

Part name	Part no.
Marine bracket SS316	5101032-00A
Standard mounting bracket	5101033-00A

Data

Nominal supply voltage	24 V DC
Operating voltage range	18-32 V DC
Relay outputs	Alarm and fault
Current output	4-20 mA (source)
RS-485 output	
HART	Consult factory
Live colour video	PAL and NTSC
Power consumption	6 W minimum (no heater), 10 W typical, 15 W maximum (with heater)
Response time	<7 seconds (typical)
Operating temperature range	-60 °C to +85 °C (-76 °F to +185 °F)
Storage temperature range	-60 °C to +85 °C (-76 °F to +185 °F)
Ambient humidity	5 to 95% RH (non-condensing)
Ingress protection	IP66
Dimensions	Ø 100 mm, L = 200 mm
Material	Copper free aluminum or 316 stainless steel
Colour	Yellow
Entries	1 × M25
Weight	Al 2.5 kg (5.5 lbs) ± 5% SS 6 kg (13.2 lbs) ± 5%

Certified according to:

ATEX: Ex II 2 G Ex db IIC T4 Ta = -60 °C to +85 °C IP66 (FM07ATEX0033)

Factory Mutual: FM 3260, FM 3600, FM 3615, FM 3800

IEC 61508: SIL 2 (CNS 20-04-006 C001 R1.0)

IECEx: Ex db IIC T4 Gb Ta = -60 °C to +85 °C IP66 (IECEx FME 07.002)

Class 1 Div 1 Groups B, C, D

Class 1 Zone 1 AEx/Ex db IIC T4

VdS: G218049

Flame Sensitivity

Table 1. Flame Sensitivity

Fuel	Fire Size	Distance
Methane Jet Fire	0.9m (3ft) plume	30m (100 ft)
Ethanol	0.1m^2 (1sqft) pan	25m (85 ft)
n-Heptane: Pan Fire	0.1m^2 (1sqft) pan	44m (144 ft)
n-Heptane: in direct sunlight	0.1m^2 (1sqft) pan	44m (144 ft)
n-Heptane: in modulated sunlight	0.1m^2 (1sqft) pan	44m (144 ft)
n-Heptane: modulated black body	0.1m^2 (1sqft) pan	44m (144 ft)
n-Heptane: Arc welding	0.1m^2 (1sqft) pan	44m (144 ft)
n-Heptane: 1000watt lamp	0.1m^2 (1sqft) pan	44m (144 ft)
Gasoline Fire	0.1m^2 (1sqft) pan	44m (144 ft)
JP4	0.36m^2 (3.8sqft)	61m (200 ft)
Ethylene Glycol	0.1m^2 (1sqft) pan	15m (50 ft)
Diesel	0.1m^2 (1sqft) pan	40m (130 ft)
Crude Oil (heavy fuel oil) Pan Fire	0.25m^2 (2.7sqft)	40m (130 ft)
Silane	0.61m (2ft) plume	13m (42ft)

Field of View

Horizontal FOV -90°
Vertical FOV -65°

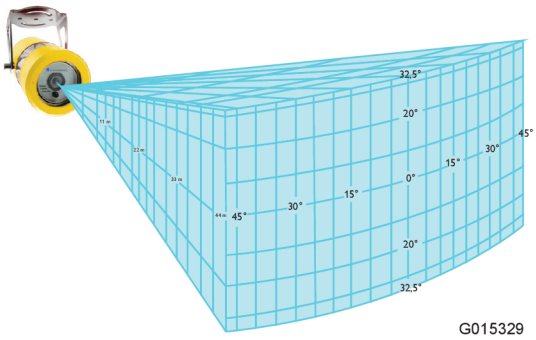
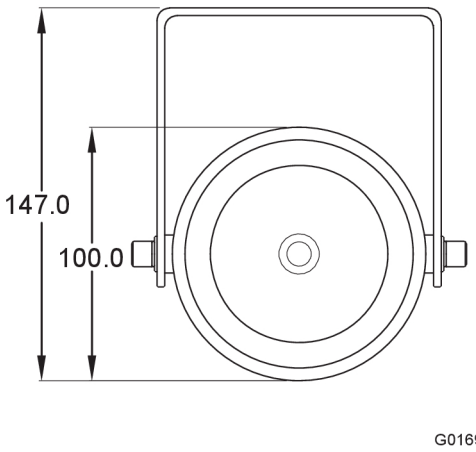
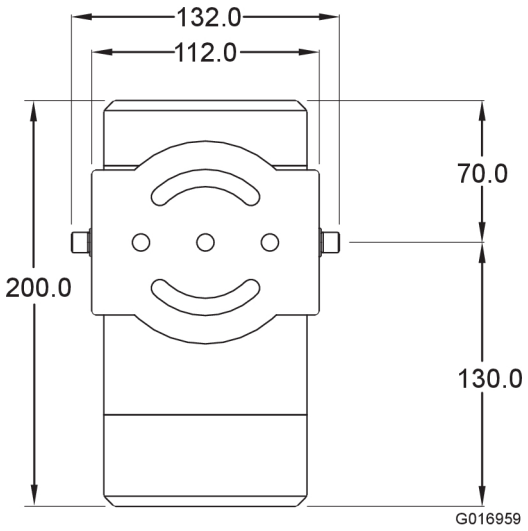


Figure 1. Field of View

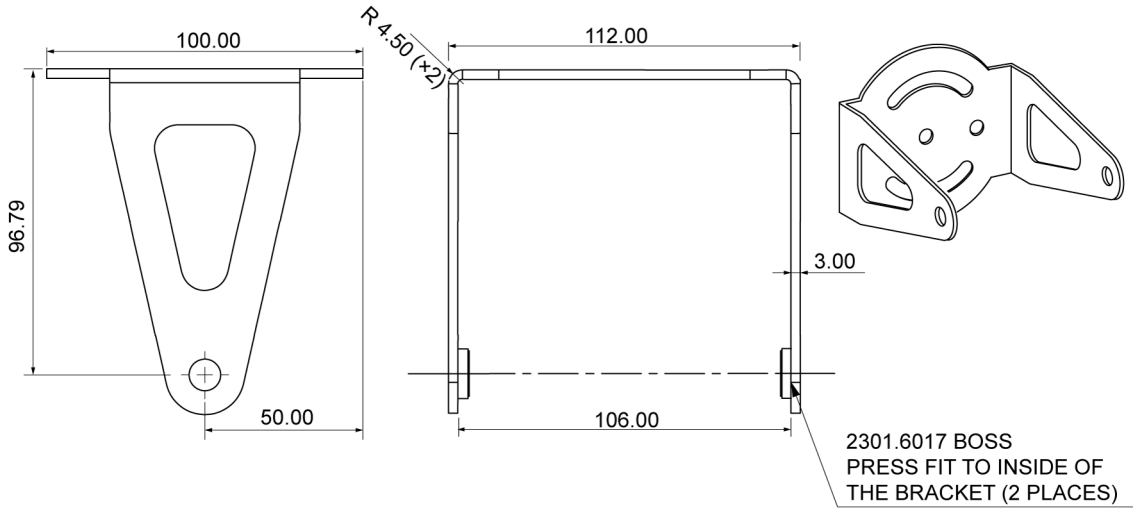
Dimensions (mm)

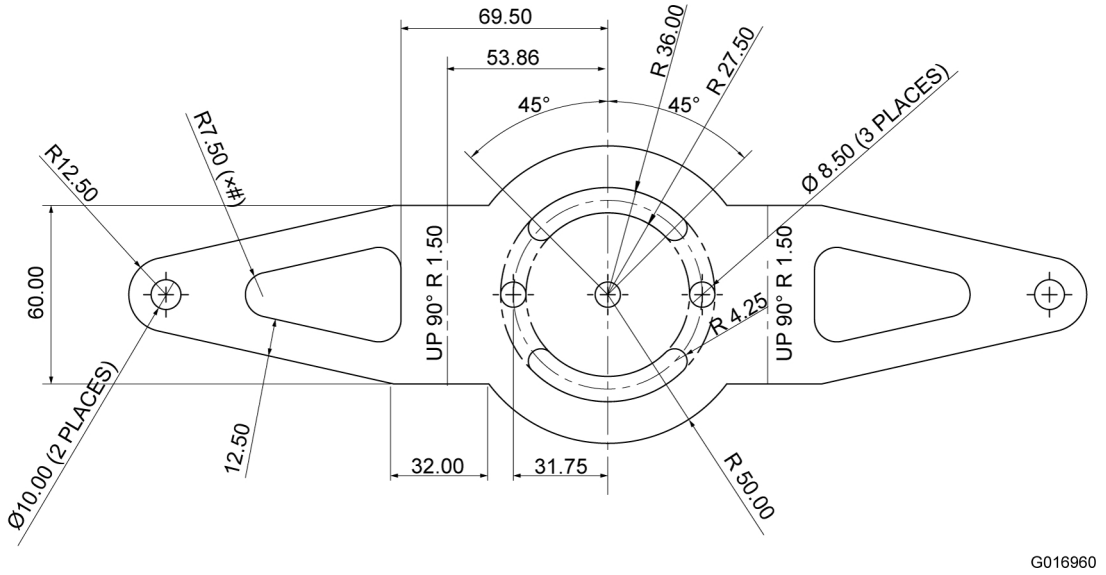
Visual flame detector, shown with standard bracket



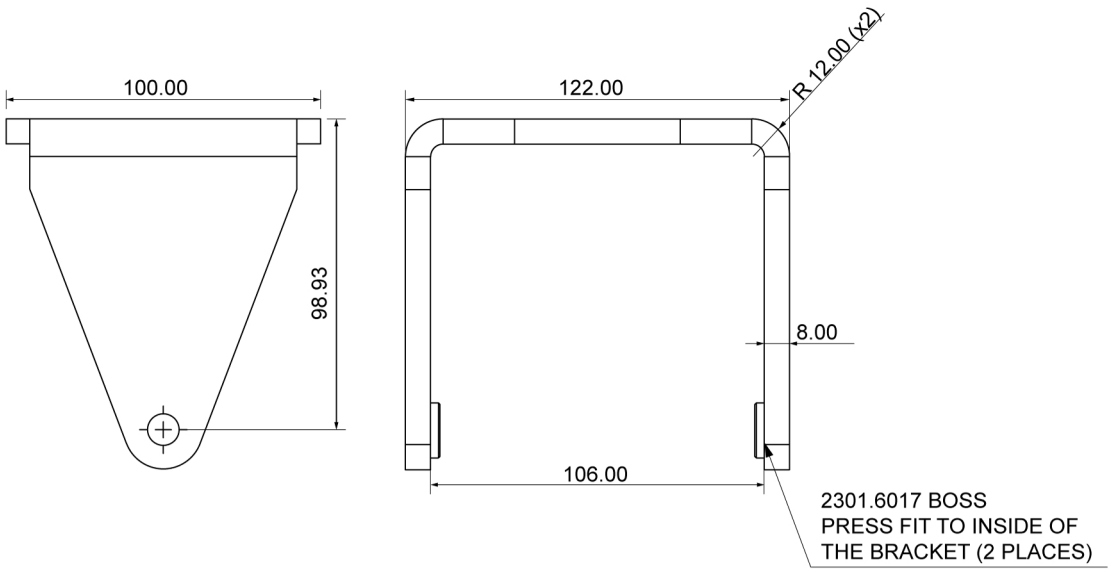


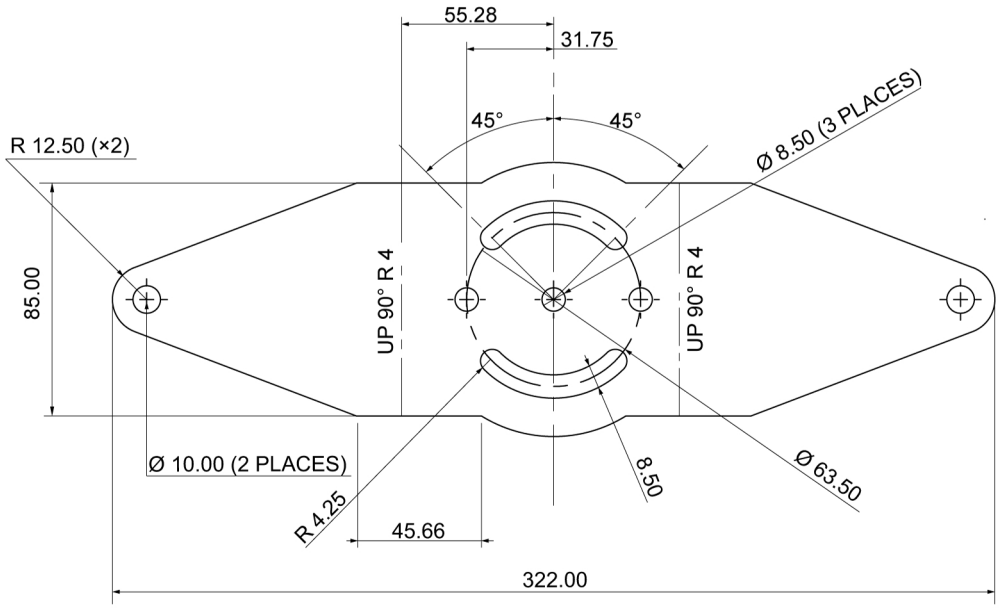
Standard bracket





Marine bracket





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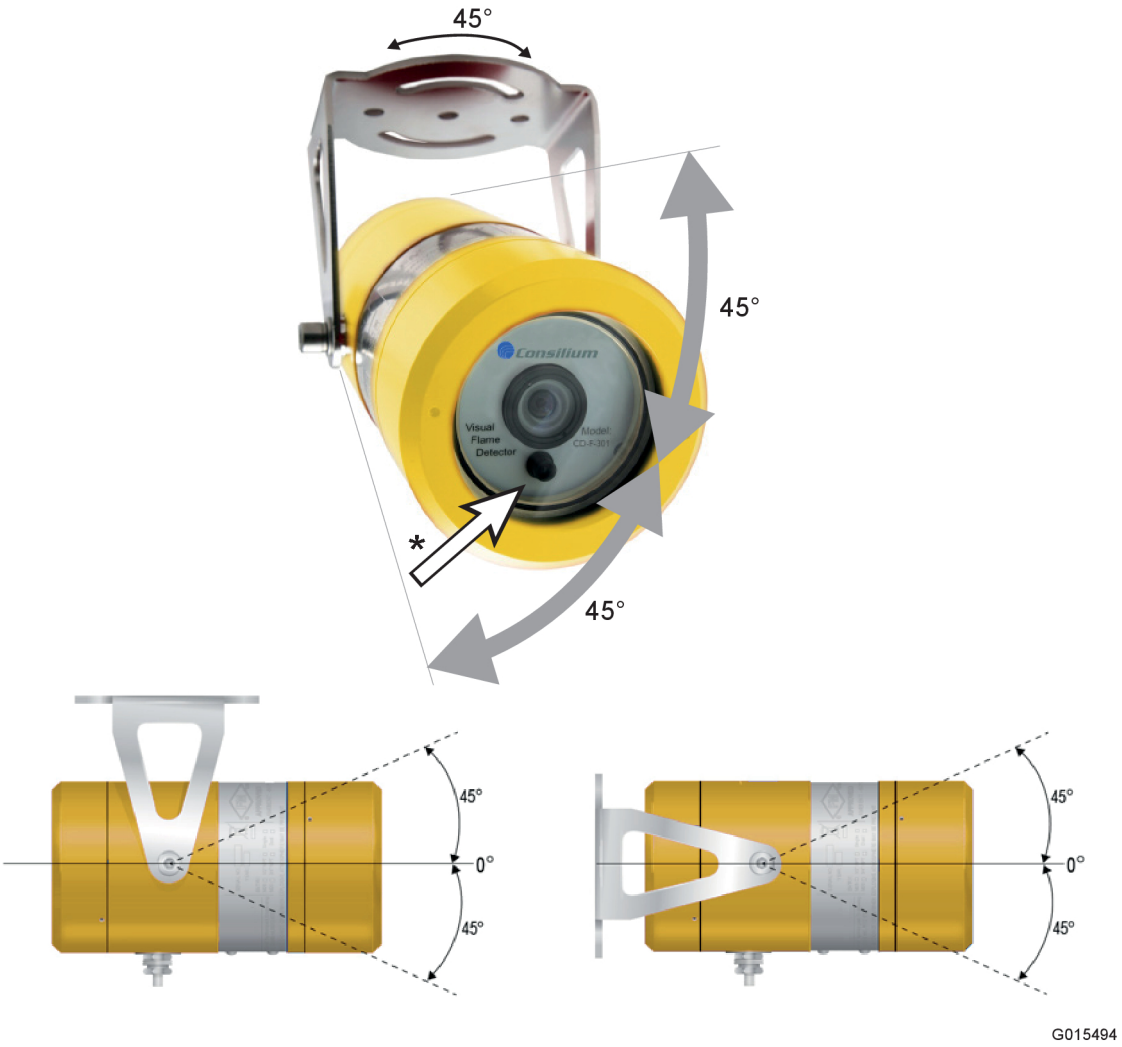
Mounting

The mounting bracket can be mounted in the ceiling or on the wall. The bracket allows the detector's vertical orientation to be adjusted from 0° to 45°, and allows a horizontal rotation of +/-45°.

NOTE!
Allow space for cable gland and cable, as these may otherwise restrict the rotation of the detector.



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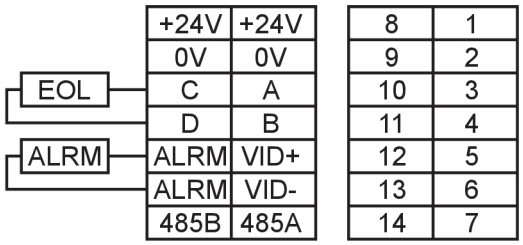
The arrow (*) indicates the position of the status LED that must be below the lens.

Connections



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4-20 mA configuration

Terminal	Description	Terminal	Description
8	+24 V DC power	1	+24 V DC power
9	0 V power	2	0 V power
10 (C)	Not connected	3	Spare
11 (D)	Not connected	4	4-20 mA signal
12	Not connected	5	Video +
13	Not connected	6	Video -
14	RS485B (comm.)	7	RS485A (comm.)

Standard relay configuration

Terminal	Description	Terminal	Description
8	+24 V DC power	1	+24 V DC power
9	0 V power	2	0 V power
10 (C)	EOL resistor	3 (A)	Relay
11 (D)	EOL resistor	4 (B)	Relay
12	Alarm resistor	5	Video +
13	Alarm resistor	6	Video -
14	RS485B (comm.)	7	RS485A (comm.)

NOTE!
If further details are required, full wiring details are found in the CD-F-301 Visual Flame Detector Safety and Technical Manual.