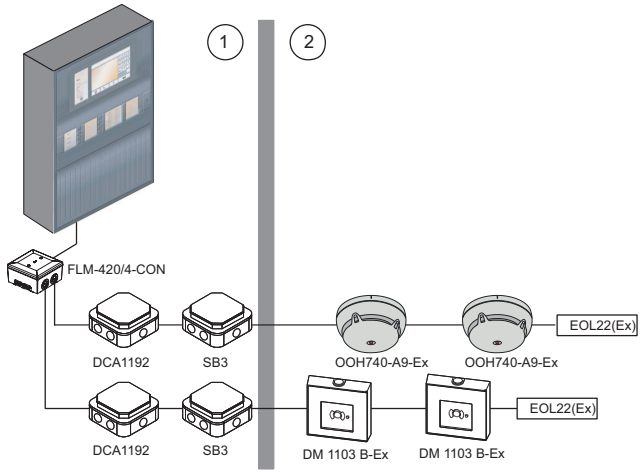
OOH740-A9-EX Dual-optical detector, explosive area

- Compact and robust design
- Earliest detection of lightest smoke with dual-optical or thermal detection
- Highly reliable and accurate
- High level of resistance to temperature fluctuations, humidity, corrosion and contamination
- High resistance to interference

The OOH740-A9-Ex is an Dual-Optical Detector for fire detection in potentially explosive areas in zones 0, 1 and 2. It can be programmed either as a dual-optical or as a thermal detector by inserting defined resistors.

System overview



1 Non-Ex area

2 Ex area:
zone 0, 1 or 2 for OOH740-A9-Ex
zone 1 or 2 for DM 1103 B-Ex

Functions

The following parameter sets can be selected in the point detector:
- Sensitive (dual optical/DO)
- A1R (thermal)
- BR (thermal)

A parameter set is selected by omitting (DO) or installing a resistor with a specified value (A1R or BR). The resistor is installed at the connection terminals for the external alarm indicator in the detector base.

Dual optical sensor (smoke sensor)
The two optical sensors in the smoke detector use the scattered-light method. In the event of a fire, smoke enters the measuring chamber and the smoke particles scatter the light. One sensor is used for forward scattering, the other for backscattering. The smoke particles will be illuminated from different angles. A photo diode acts as receiver. The amount of light hitting the photo diode is converted into a proportional electrical signal.

Thermal sensor (temperature sensor)
The following table shows the properties of the parameter sets for the thermal detector:

	Operating temperature typ. / max. (°C)	Static activation Temperature* (°C)	Differential activation Temperature** ΔT (K)	Differential activation possible from (°C)
A1R 60 °C rate of rise	25 / 50	60	25	3
BR 80 °C rate of rise	40 / 65	80	29	30

*Applicable with slow temperature increases <1 K/min

** Applicable with fast temperature increases of >10 K/min. When there is a slow temperature increase of <10 K/min, this value rises by a few degrees.

Visual indication of parameter set
When the detector line is being commissioned, the LED for the internal alarm indicator in the point detector flashes for a period of 3 minutes to show the set parameter set. The following table provides an overview of the flashing patterns:

	Resistance value R	Flashing pattern of internal alarm indicator after commissioning
DO	no resistor installed	once / 6 s
A1R	18 kΩ, min. 200 mW	twice / 6 s
BR	10 kΩ, min. 200 mW	3 / 8 s

Detector base
The entire electronic system is protected inside the detector. The base is used for the detector contact. The detector base is secured with a snap fastener.

Application in Ex area
The SB3 Safety Barrier limits the electrical energy between non-inherently safe and inherently safe circuits and thus prevents the ignition of gas mixtures by electrical sparks. The Safety Barrier must be installed outside the explosive area.
The DCA1192 Input/Output Module is the galvanical isolation between the fire panel and SB3 Safety Barrier.
The OOH740-A9-Ex detectors must be connected to the detector line established by the SB3 Safety Barrier.

Certifications and approvals

Region	Regulatory compliance/quality marks	
Europe	Ex	IECex 1411 OOH740-A9-Ex
	Ex	106_FDOOT241-A9-Ex_FDOOT241-A9-ExCN_OOH740-A9-Ex_ATEX_EXAM1309 106_FDOOT241-A9-Ex_FDOOT241-A9-ExCN_OOH740-A9-Ex_ATEX_EXAM1309
	CPR	0786-CPR-21369 OOH740-A9-Ex
Germany	VdS	G 214047 OOH740-A9-Ex

Region	Regulatory compliance/quality marks	
Europe	CE	OOH740-A9-Ex

Installation/configuration notes

- The detector base must be ordered separately.
- For installation in potentially explosive areas in zones 0, 1 or 2 use SB3 Safety Barrier and DCA1192. The SB3 Safety Barrier can be connected to the conventional line via the interface module FLM-420/4-CON.
- The directive 1999/92/EC standard contains important information on planning and installation in areas with a potential risk from explosive atmospheres.
- During planning works, it is essential to adhere to national standards and guidelines.
- The detector can be configured as either a dual optical detector (no additional steps necessary) or as a thermal detector (installing a resistor necessary, see installation guide).
- For planning an intrinsically safe detector line for Ex areas, you have to consider:
  - the number n of devices connected to the SB3 Safety Barrier's detector line
  - the cable length l of the SB3 Safety Barrier's detector line

  The following inequation must be fulfilled to achieve an intrinsically safe detector line:

C_i (nF)

resulting

$C_0 > (n \times C_i) + (l \times C_c)$

L_0 (SB3) > L_i

resulting

$L_0 > (n \times L_i) + (l \times L_c)$

Abbreviation (unit)	Description
C_0 (nF)	maximum external capacity

Abbreviation (unit)	Description
C_i (nF)	maximum internal capacity
C_c (nF)	cable capacitance
l (km)	length of entire detector line
L_0 (mH)	maximum external inductivity
L_i (mH)	maximum internal inductivity
L_c (mH)	cable inductance
n	total number of detectors

DANGER! Risk of explosion: Testing equipment must only be operated in the area not at risk of explosion.

Parts included

Quantity	Component
1	OOH740-A9-Ex Smoke Detector for Ex areas 0, 1, and 2 (FDB201 Detector Base not included)

Technical specifications

Electrical

Standby current consumption (µA)	200 - 280

Characteristics for intrinsically safety

Input voltage Ui (V)	≤ 28
Input current Ii (mA)	≤ 100
Input power Pi (mW)	≤ 700
Internal inductivity Li	Negligible
Internal capacity Ci (nF)	≤ 0.2

Mechanics

Dimensions (Ø x H, mm)	100 x 45.7
Color	Similar to RAL 9010, pure white
Weight (g)	116

Environmental conditions

Operating temperature (°C)	-25 to +70
Storage temperature (°C)	-30 to +75
Relative humidity (%)	≤95
Degree of protection (EN 60529)	IP43/IP44

OOH740-A9-Ex and FDB201 achieve IP44 for:

- flush mounted cables with 1 FDBZ295 (no designation plate possible)
- surface mounted cables with 1 FDBZ295, 2 FDB295M (compatible with designation plate DOW1171-IDENT)

Ex classification

IECEx	Ex ia IIC T4 Ga, Ta = -35 - +70 °C
94/9/EC	II 1 G Ex ia IIC T4 Ga, Ta = -35 - +70 °C
Ex approvals	BVS 12 ATEX E 087 X BVS 12.0076 X

Ordering information

OOH740-A9-EX Dual-optical detector, explosive area
Dual-optical detector for potentially explosive areas.
Order number **OOH740-A9-EX | F.01U.332.582**

Accessories

FDB201 Base for Dual-Optical Detector for Ex Ar
Base for OOH740-A9-Ex Dual-Optical detector for Ex Area, secured with a snap fastener. Base suitable for recess supply wiring, for surface supply wiring, cable diameter up to 6 mm.
Delivery unit is 1.
Order number **FDB201 | F.01U.332.583**

FDB291 Base attachment
Base attachment for OOH740-A9-Ex. For routing surface mounted cables, cable diameter larger than 6 mm. Also for recess supply wiring.
Delivery unit is 1.
Order number **FDB291 | F.01U.335.165**

FDB295 Base attachment wet
Base Attachment Wet for OOH740-A9-Ex with integrated additional rubber seal for surface-mounted cabling for applications in cold or wet environments. Mounted between detector base and ceiling. The detector base FDB201 simply clicks into place in FDB295. 6 breakout plugs for cable glands.
To achieve IP44 for surface mounted cables additional 2 FDB295M cable glands are required. The Base Attachment Wet is compatible with designation plate DOW1171-IDENT.
Delivery unit is 1.
Order number **FDB295 | F.01U.335.589**

FDBZ293 Detector locking device
Threaded pin M3 x 6 prevents the point detector being unscrewed from the detector base. The point detector can only be removed with the appropriate Allen key.
Delivery is 100. Additionally 2 Allen keys are included.
Order number **FDBZ293 | F.01U.335.591**

FDBZ295 Sealing element
Sealing element for OOH740-A9-Ex to achieve IP44 for flush mounted cables. The use of a designation plate is not possible.
Delivery unit is 1.
Order number **FDBZ295 | F.01U.335.592**

FDZ291 Detector dust cap
Detector Dust Cap for covering detectors as protection against dust during the construction phase.
Delivery unit is 10.
Order number **FDZ291 | F.01U.335.594**

FDUD291 Detector exchanger
for insertion and removal of detector OOH740-A9-Ex. A universal joint enables detector removal and replacement even if the detector cannot be accessed from directly underneath. The exchanger can only be used for detectors without sealing element FDBZ295.
Delivery unit is 1.
Order number **FDUD291 | F.01U.335.593**

FDBZ291 Designation plate
for labelling FDB201 with the location address.
Delivery unit is 10.
Order number **FDBZ291 | F.01U.335.590**

DOW1171-IDENT Detector marking
for labelling FDB295 with the location address.
Delivery unit is 10.
Order number **DOW1171-IDENT | 4.998.115.785**

FDB295M Metal cable gland
for M20 cable feed-through and complementary to Base Attachment Wet FDB295. 2 pieces of FDB295M are necessary per FDB295 Base Attachment Wet to achieve IP44 with surface mounted cables.
Delivery unit is 10.
Order number **FDB295M | F.01U.335.595**

SB3 Safety barrier
limits the electrical energy between non-inherently safe and inherently safe circuits
Order number **SB3 | 4.998.112.085**

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