Operating Instructions

Flame Detector

UniVario® FMX5000 IR

Target group of the document

This document is intended exclusively for the operator.
Take further personnel requirements into account!

This document is a mandatory component of the product and should therefore always be freely accessible and retained for further usage.

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1 General

1.1 About this document

If this document refers directly or indirectly to laws, regulations, or guidelines or quotes from them, the manufacturer cannot be held responsible for the correctness, completeness, or up-to-date nature of the reference.

The manufacturer reserves the right to make modifications resulting from further developments while retaining the key features of the product described without making corrections to this document.

Illustrations in this document are intended to facilitate basic understanding and may differ from the actual product version.

1.2 Validity

These operating instructions are valid for flame detectors of the type UniVario® FMX5000 IR (hereinafter referred to as the FMX5000 IR) with software version V02E35 or later together with all the variants listed in the appendix
↳ *Appendix D “Detector types with part numbers” on page 103*.

1.3 Intended use

FMX5000 IR flame detectors are designed to detect open flames that can occur during combustion of carbonaceous materials, such as methane, oil products, plastics or wood.

2 Safety

2.1 Safety and warning notices

Safety and warning notices are marked with symbols in this document. The introductory signal words express the extent of the danger in each case.

DANGER

This signal word describes a danger with a high risk level. If the danger is not avoided, it will result in death or serious injury.

WARNING

This signal word describes a danger with a medium risk level. If the danger is not avoided, it may result in death or serious injury.

CAUTION

This signal word describes a danger with a low risk level. If the danger is not avoided, it may result in minor or moderate injury.

NOTICE

This signal word describes a danger with a low risk level. If the danger is not avoided, it may result in property and environmental damage.

Further markings

INFORMATION

This marking emphasizes useful tips and recommendations as well as information for efficient and trouble-free operation.

In instructions, this marking starts with the symbol .

2.2 Intended use

These products are designed for use in industrial production plants only.

These products must only be used in accordance with the operating conditions detailed in the contract documentation and the operating manual. Use for any other or additional purpose does not constitute an intended use. The manufacturer is not liable for any damage resulting from such use; this is entirely at the risk of the user.

Intended use includes:

- Observing all notices contained in the operating manual
- Complying with the operating, servicing, maintenance, and ambient conditions.

2.3 Safe operation

The products described here exhibit a high degree of operational safety. However, the products can pose hazards or impair the system or other property if used improperly or for other than their intended purpose. The products must only be used in an undamaged and fully functional condition. Physical modifications to the product are not permitted.

The following details must be observed for proper and safe operation:

- National safety regulations
- National accident prevention regulations
- National assembly and installation regulations
- Generally accepted technical principles
- Operating manual including its safety and warning notices
- Characteristics and technical data

If safe operation can no longer be ensured (e.g. in the case of damage), the product must be put out of operation without delay and secured against accidental start-up.

2.4 Personnel qualifications

The various tasks described in this manual require that the persons responsible for them have different qualifications.

Before starting any work, the following persons must be designated who have the knowledge required to operate the system:

- Person in charge of the system
- An operator/person authorized by the operator

Keep unauthorized persons away from control equipment!

For all tasks, only persons from whom it can be expected that they will carry out their tasks reliably are authorized to perform such tasks. Persons whose reaction time is affected, for instance by drugs, alcohol or medication are not authorized.

In this manual, the qualifications required for persons assigned to perform various tasks are listed in the following section:

Qualified specialist personnel
Qualified specialist personnel are persons with the following qualifications and authorizations:

- Such persons are qualified for the respective activities as a result of their education, experience and participation in a training course conducted by the manufacturer.
- These persons have the appropriate knowledge of standards, directives, accident prevention regulations and operating conditions.
- These persons have been authorized by the person responsible for the safety of the installation to carry out the necessary activities and are capable of recognizing and avoiding possible risks.

2.5 Obligations of the operator

Operator in the sense of this document is any natural person or legal entity using the product personally or on whose behalf it is used. In special cases (e.g. leasing, rental), the operator is the person responsible for ensuring that the operator obligations are observed in accordance with the contractual agreements between the owner and user of the product.

During operation, the operator is responsible for the legal product stewardship for the protection of the user, personnel or third parties.

The area of responsibility, the competence, and the monitoring of personnel must be precisely defined by the operator.

The operator is obliged to undertake the following:

- Avoid any risks to life and health of the user or third parties.
- Ensure protection against unauthorized access.
- Operate the installation or system taking into consideration the applicable standards, guidelines and this document.
- Prevent use for other than the intended purpose.
- Check the permanent functional readiness of the installation or system at regular intervals.
- Have only persons carry out work who are appropriately qualified, trained, and authorized.
- Ensure the use of suitable personal protective equipment.

2.6 Fields of use

FMX5000 IR flame detectors are used in areas where an open flame can be immediately anticipated at the beginning of a fire, e.g. in storage locations for flammable liquids or gases. Only flames from fuels containing carbon can be detected.

These detectors are especially well suited for use where fire risks arise from gaseous or liquid materials in areas with aggressive media, e.g. tank storage locations and to protect objects located indoors and outdoors.

Because of their relatively large possible monitoring range, their application is recommended especially in particularly large, high rooms while taking account of the fire development to be anticipated and disturbance variables which may exist.

⚠ WARNING

Explosion hazard when used in explosion hazard area
The flame detector FMX5000 IR must not be used in explosion hazard areas!
Exception: FMX5000 IR 3GD

NOTICE

Smoldering fires are not detected
FMX5000 IR flame detectors must not be used at locations where fires can occur without a clearly detectable flame formation (e.g. smoldering fire).

Field of application – FMX5000 IR 3GD

These detectors are suitable for use in explosion hazard areas 2 and 22. Category 3 detectors (for use in gas and dust explosion hazard areas) have a corresponding 3GD marking on the nameplate and an additional nameplate on the outside of the detector ↳ *Chapter 3.11.2 “Nameplate on FMX5000 IR 3GD” on page 20*.

Field of application – FMX5000 IR SF

All detectors are available in silicone-free versions and thus free of substances which inhibit paint adhesion. For example, these detectors can be used in paint finishing plants.

INFORMATION

Ensure that the assembly and installation accessories as well as the detector base are also silicone-free during assembly and installation.

Field of application – FMX5000 IR HR

These detectors have a special corrosion protection coating and can be used to a limited extent in areas with aggressive media, such as a hydrochloric acid atmosphere. The color and design of the detector deviate from the standard FMX5000 IR detector and are not described or illustrated here in detail. Note: These detectors must be used with a special detector base and a special mounting bracket ↳ *Chapter 10 “Accessories and spare parts” on page 87*. In order to ensure the corrosion protection, special care must be taken to ensure that the coating is not damaged.

3 Design and function

3.1 General description of the function

FMX5000 IR flame detectors have three optical input channels and react to flames from fuels containing carbon.

Extensive analyses of the flame characteristics and their comparison with the characteristics of typical disturbance variables have allowed a high degree of security against false alarms to be achieved by suppressing disturbance variables, so that on the one hand large flames are quickly detected, and on the other hand even weak signals from small flames are reliably detected.

The fire sensitivity of the detector can be set either to correspond to EN 54 Part 10, classes 1, 2 or 3 or set to correspond to maximum fire sensitivity X (50 m (164 ft)). The setting can be carried out either at the DIP switch ↬ *Chapter 5 “Configuration” on page 35* or via the SMX5000 service device.

The electronic equipment is designed for low energy consumption, allowing use in battery-powered systems. The extremely rugged industrial aluminum die-cast housing complies with protection type IP66 and IP67.

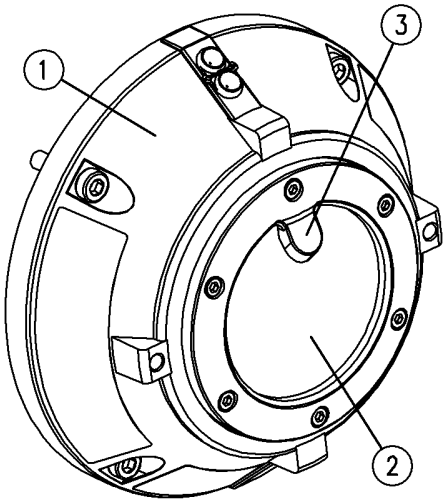
The detectors use constant current to indicate a fire has been detected. This current additionally flows from the supply voltage through an internal alarm circuit.

Test triggering is possible via a reed switch using a magnet.

Due to the extended operating voltage range, the detector can not only be operated on a standard fire detector line but also be used, for example, with local supply from a power supply unit. The connection of an external indicator and the use of an optional relay module allow connection to various systems such as PLC controllers.

A communication module which can be retrofitted enables operation as individually addressable detectors on fire alarm control panels with Apollo protocol technology.

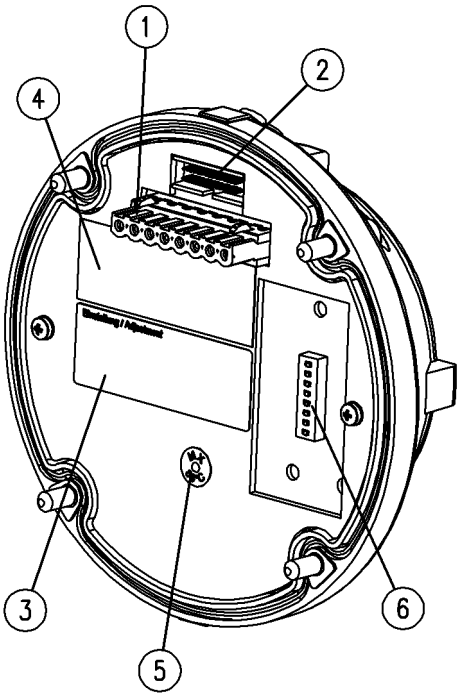
Basic detector configuration



1 Detector
2 Optical system
3 Reflector

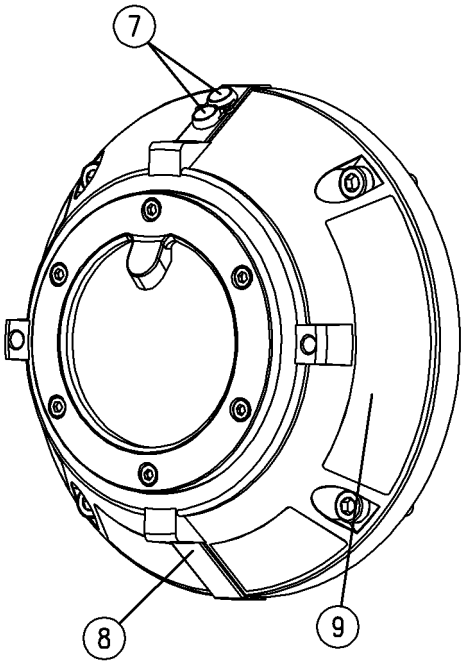
Fig. 1: Front view

Front and rear view



1 Connection port
2 Terminal strip for plugging in MX5000 LCD detector base (option) and SMX5000 service device (option)
3 Fire sensitivity sign
4 Nameplate *Chapter 3.11 “Device markings” on page 20*
5 Temperature measuring pad *Chapter 3.10 “Temperature measuring pad” on page 19*
6 DIP switch *Chapter 5 “Configuration” on page 35*

Fig. 2: Rear view



7 Status indicators
8 Reed switch (inside)
9 Additional nameplates (FMX5000 IR 3GD only) *Chapter 3.11 “Device markings” on page 20*

Fig. 3: Front view

3.2 Detector types

The designs and characteristics of the different detector variants are described below.

3.2.1 Detector type FMX5000 IR

Flame detector with integrated function test of the optical channels via IR emitters. This detector is also available as a silicone-free version.

3.2.2 Detector type FMX5000 IR 3GD

Flame detector with integrated function test of the optical channels via IR emitters. These flame detectors are suitable for use in explosion hazard areas of zones 2 and 22. This detector is also available as a silicone-free version.

3.2.3 Detector type FMX5000 IR HR

Flame detector with integrated function test of the optical channels via IR emitters and additional corrosion protection coating. This detector is only to be used with the MX5000 HR detector base.

3.3 Response behavior

The sensitivity of a flame detector was tested in fire tests in combination with various combustible materials (fuels). The following overview helps you select a suitable flame detector based on flammable liquids or solids.

Response sensitivity in percent (detection distance) to n-Heptane standard fire (0.1 m² (1.08 sq-ft) fire pan, 0.5 liter (0.13 gal))

Fuel	FMX5000 IR	FMX5000 UV
Avgas 100 (0.1 m² (1.08 sq-ft); 0.5 l (0.13 gal))	90 %	100 %
Fuel oil / diesel (0.1 m² (1.08 sq-ft); 0.5 l (0.13 gal))	55 %	55 %
Jet A1 (0.1 m² (1.08 sq-ft); 0.5 l (0.13 gal))	65 %	80 %
JP 8 (0.1 m² (1.08 sq-ft); 0.5 l (0.13 gal))	75 %	80 %
n-heptane (0.1 m² (1.08 sq-ft); 0.5 l (0.13 gal))	100 %	100 %
BP North Sea crude oil (0.2 m² (2.15 sq-ft); 0.5 l (0.13 gal))	50 %	80 %
Methylated spirits (0.25 m² (2.69 sq-ft); 1.5 l (0.4 gal))	100 %	80 %
Gasoline (Super) (0.1 m² (1.08 sq-ft); 0.5 l (0.13 gal))	55 %	80 %
Ethane (28 l/min (7.4 gal/min); 4.0 mm (0.16 in) nozzle; 0.5 m (1.64 ft) flame)	60 %	100 %
Methane (48 l/min (12.68 gal/min); 6.0 mm (0.24 in) nozzle; 0.5 m (1.64 ft) flame)	65 %	90 %

Fuel	FMX5000 IR	FMX5000 UV
Propane (20 l/min (5.28 gal/min); 2.5 mm (0.1 in) nozzle; 0.5 m (1.64 ft) flame)	55 %	90 %
Hydrogen (20 l/min (5.28 gal/min); 2.5 mm (0.1 in) nozzle; 0.2 m (0.66 ft) flame)	X	30 %

Detection distance solid-material fires

Fuel	FMX5000 IR Class X (50 m)	FMX5000 IR Class 1	FMX5000 IR Class 2	FMX5000 IR Class 3	FMX5000 UV Class 1
Cotton 100 g (3.5 oz), fluffed up	10 m (10.94 yd)	7.5 m (8.2 yd)	5 m (5.47 yd)	x	10 m (10.94 yd)
Cotton 500 g (17.6 oz), fluffed up	15 m (16.4 yd)	10 m (10.94 yd)	x	x	15 m (16.4 yd)
Beechwood 70 sticks 1 x 2 x 25 cm^3	30 m (32.81 yd)	20 m (21.87 yd)	15 m (16.4 yd)	x	30 m (32.81 yd)
Dry magnesium 100 g (3.5 oz)	x	x	x	x	20 m (21.87 yd)
Oily magnesium from compressed tabs with cutting oil	15 m (16.4 yd)	x	x	x	20 m (21.87 yd)
Sulfur powder 300 g fluidized on burner 0.25 x 0.25 m^2 pan	x	x	x	x	10 m (10.94 yd)

3.4 Viewing range

The viewing range of the detector is shown in the following figure. The relative sensitivity is given (in percent).

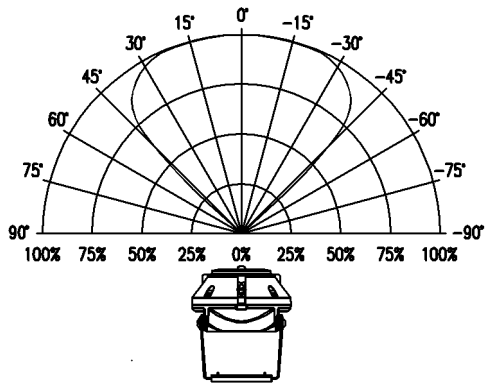


Fig. 4: FMX5000 IR and FMX5000 IR 3GD viewing range

3.5 Status indicators

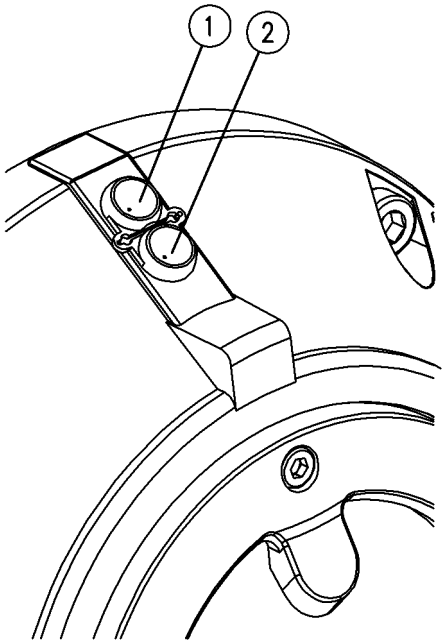


Fig. 5: FMX5000 IR status indicators

1 Alarm indicator (red)
2 Operation indicator (green) or fault indicator (yellow)

The status indicators show that operation is normal or if an alarm or fault exists.

The detector has a red status indicator as well as a two-color green/yellow status indicator.

Status indicator	Indicator behavior	Description	Miscellaneous
green (operation)	flashes every 10 seconds	Correct operation.	
yellow (fault)	lit	A malfunction exists. The fault line current simultaneously increases by approx. 15 mA.	The fault display is lit only if an alarm is present and only for the duration of the fault. A connected fault line is required for this. Measures in the event of faults ↳ *Chapter 9 “Troubleshooting” on page 85*. Further information on connection of the fault line ↳ *Chapter 9 “Troubleshooting” on page 85*.
red (Alarm)	lit	The detector is in an alarm state. The alarm line current simultaneously increases by approx. 15 mA. If an external indicator is connected (option): The external indicator is triggered.	Further information on connecting the alarm line and external indicators Flame Detector ↳ *Chapter 6.8 “Connect the complete system (control drawings)” on page 65*.

3.6 Alarm signaling

If the alarm condition is met, the internal alarm circuit is activated and an additional alarm current flows. This increase in current allows a connected evaluation unit to recognize that a detector is in an alarm state. The alarm indicator of the detector lights up. The alarm can be configured as latching or non-latching; see ↳ *Chapter 5 “Configuration” on page 35*.

INFORMATION

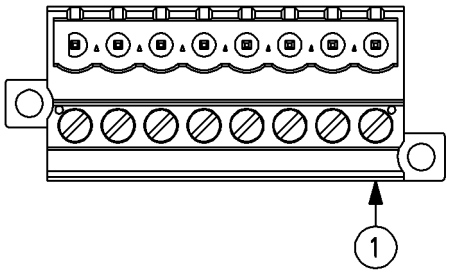
An alarm circuit configured as latching can be reset by briefly switching off the supply voltage. Switching off the supply voltage for a longer period may cause the detector to restart ↳ *Chapter 12.1 “Functional data” on page 91.*

3.7 Fault signaling

If a fault condition is met, the internal fault circuit is activated and an additional fault current flows[1)]. This increase in current allows a connected evaluation unit to recognize that a detector is in a fault state. The fault indicator of the detector lights up. The fault circuit is non-latching. There is no fault signaling during alarm signaling. If an alarm is detected during fault signaling, fault signaling is first turned off or interrupted and then alarm signaling is switched on. Only after the end of alarm signaling are currently pending faults immediately displayed again.

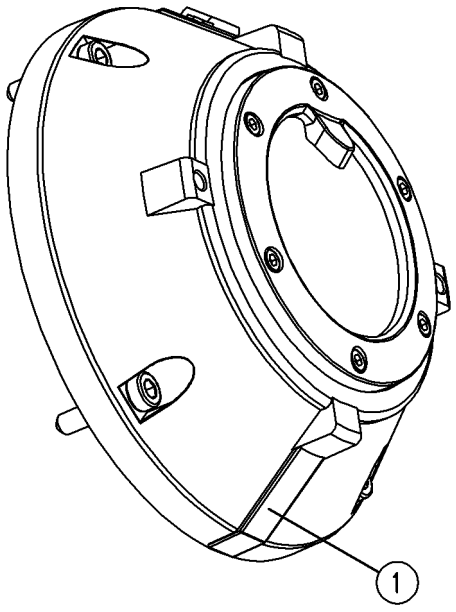
[1)] only with connected fault line

3.8 Test/Reset input and reed switch



1 Test/reset input connecting terminal

Fig. 6: Detector base connecting terminal



1 Reed switch (inside)

Fig. 7: FMX5000 IR reed switch

Test triggering can be initiated and then reset via the "T/R" (test/reset input) connecting terminal (Fig. 6) in the detector base or via the reed switch (Fig. 7/1) in the detector:

- The test is triggered via the "T/R" connecting terminal by pressing the test/reset button (Fig. 36/8).
- The test is triggered via the reed switch by holding a permanent magnet against the switch.

For more information, *Chapter 8.3 “Test triggering” on page 79*.

3.9 Note on the DIP switch

The detector can be configured via the DIP switch (Fig. 2/6).

For more information, see *Chapter 5 “Configuration” on page 35*.

3.10 Temperature measuring pad

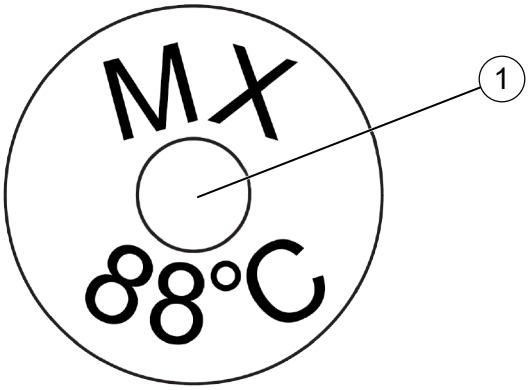


Fig. 8: Temperature measuring pad

1 Dot on temperature measuring pad with permanent change in color

The dot is white when it is shipped from the factory (Fig. 8). If the dot is a dark color, the detector was operated, stored, or transported above the maximum operating or storage temperature *Chapter 9 “Troubleshooting” on page 85*.

3.11 Device markings

3.11.1 Nameplate FMX5000 IR

The nameplate of the FMX5000 IR (on the rear of the detector) contains at least the following information:

Manufacturer and address	Viking GmbH 23840 Bad Oldesloe
Detector type	UniVario FMX5000 IR
CE marking	CE

3.11.2 Nameplate on FMX5000 IR 3GD

The nameplate of the FMX5000 IR 3GD (on the exterior of the detector) contains at least the following information:

Manufacturer and address	Viking GmbH 23840 Bad Oldesloe
Detector type	UniVario FMX5000 IR 3GD
CE marking	CE
Explosion protection marking, category 3G (gas)	Ⓔx II 3G Ex ec nC IIC T4 Gc
Explosion protection marking, category 3D (dust)	Ⓔx II 3D Ex tc IIIC T110 °C Dc
Number of type examination certificate	BVS 17 ATEX E003
Year of manufacture	2023
FM approval	Zone 2, AEx ec nC IIC T4 Gc Zone 22, AEx tc IIIC T110°C Dc CLASS I, II, III, DIV 2, GRP A, B, C, D, E, F, G T4 IP65
Ambient temperature range	-40 °C ≤ Ta ≤ 80 °C

3.11.3 Nameplate on FMX5000 IR HR

The nameplate of the FMX5000 IR HR (on the outside of the detector) contains at least the following information:

Manufacturer and address	Viking GmbH D-23840 Bad Oldesloe
Detector type	UniVario FMX5000 IR HR
CE marking	CE

3.12 Detector base

The detector bases described below can be used for this detector type.

3.12.1 UniVario® MX5000 detector base

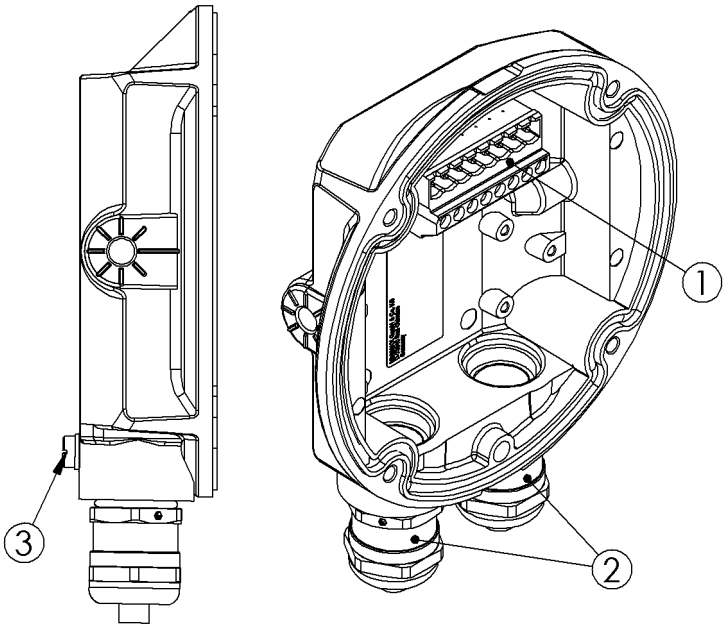


Fig. 9: Example, detector base MX5000 M20 Ex

1 Terminal block (8-pole)
2 Cable entries with cable gland
3 Potential equalization terminal

Detector base	Cable gland	Cable diameter	Equipotential bonding terminal
MX5000	M16 x 1.5 (2 pcs)	5 mm ... 9 mm (0.20 in ... 0.35 in)	no
MX5000 M20	M20 x 1.5 (2 pcs)	5 mm ... 13 mm (0.20 in ... 0.51 in)	no

Detector base	Cable gland	Cable diameter	Equipotential bonding terminal
MX5000 Ex	M16 x 1.5 Ex (2 pcs)	6 mm ... 8 mm (0.24 in ... 0.31 in)	yes
MX5000 M20 Ex	M20 x 1.5 Ex (2 pcs)	7 mm ... 12 mm (0.28 in ... 0.47 in)	yes
MX5000 NPT	- non - (1/2 in. - 14 NPT thread) [1)]	- none -	yes
MX5000 M20 NG Ex	- non - M20 x 1.5 thread	- none -	yes

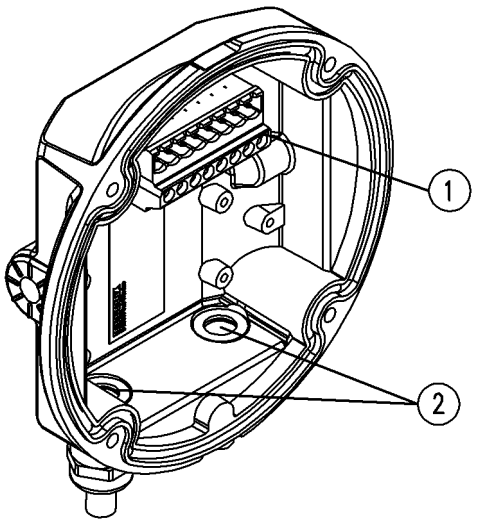
[1)] in accordance with ANSI B 1.20.1

INFORMATION

The FMX5000 IR 3GD must be included in the potential equalization of the explosion hazard area. The potential equalization terminal of the detector base can be used for this.

3.12.2 UniVario® MX5000 HR detector base

Only for UniVario HR detectors with special coating.



1 Terminal block (8-pole)
2 Cable entries with cable gland

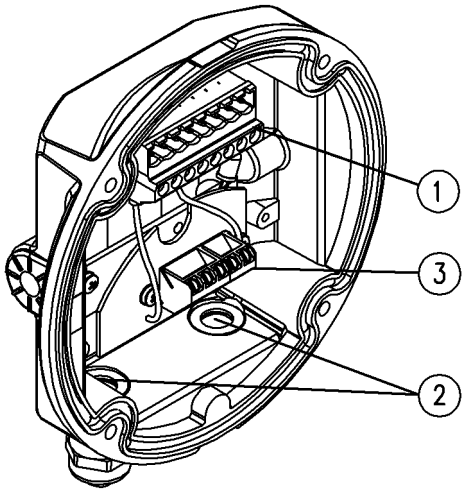
Fig. 10: MX5000 HR detector base

The MX5000 HR detector base has a terminal block (Fig. 10/1 and Fig. 33) and two cable entries (Fig. 10/2) with plastic M16 cable glands .

3.12.3 UniVario® MX5000 I detector base

This option is NOT valid for the FMX5000 IR 3GD detector.

This detector base is equipped with an isolator and can be used for the FMX5000 IR with KMX5000 AP in loop applications.

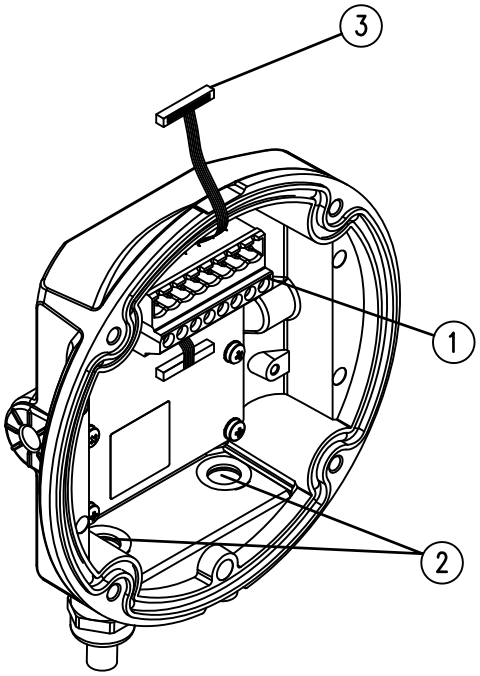


1 Terminal block (8-pole)
2 Cable inputs with a cable gland
3 Isolator ISX284

Fig. 11: MX5000 I detector base

3.12.4 UniVario® MX5000 LCD detector base (option)

This option is NOT valid for the detector FMX5000 IR 3GD. For additional information, see the MX5000 LCD technical description.



1 Terminal block (8-pole)
2 Cable entries with cable gland
3 Ribbon cable for connecting the detector

Fig. 12: MX5000 LCD detector base

The MX5000 LCD detector base has a terminal block (Fig. 12/1 and Fig. 33), two cable inputs (Fig. 12/2) with M16 cable glands, and a flat ribbon connector (Fig. 12/3) for the LCD display connection.

- This base can be combined with any UniVario® model series detector starting with software version V01Exx.
- This base must NOT be used in explosion hazard areas.

INFORMATION

Alternatively, M16/M20 cable glands can be used.

The display consists of three lines of 12 characters each. When the detector is switched on, the state and message texts of the connected detectors are shown in the display (e.g., fault messages, settings and software release versions). The display is controlled by the connected detector and varies depending on the detector type and its software version.

Power up

No.	Example display	Description
1	`UniVario` `FMX5000 IR`	UniVario® FMX5000 IR.

2	`Softw: V02EXX`
	`Hardware: XX`
	`DIP: ----5---`
		Software version.
		Hardware version.
		DIP switch position ↳ *Chapter 5.1 “DIP switch” on page 35*.

3	`Temperature`
	`actual`
	`---.-°C`
		Actual temperature of the detector.
		The current value is displayed approx. 10 minutes after power-up.

4	`Temp. Life`
	`Min: -5,2°C`
	`Max: 49,0°C`
		Lowest and highest temperature of the detector since it was built.

5	`Temp. Service`
	`Min: -3,4°C`
	`Max: 38,9°C`
		Lowest and highest temperature of the detector since last maintained. Values can be reset with the SMX5000 tool.

6	`Sensitivity`
	`Class`
	`1`
		The detector is operated with class 1 fire sensitivity.

No.	Example display	Description
7	Optical Test Level ---%	Lens contamination level test. The current value is displayed approx. 3 minutes after power-up. Values greater than 100 % are possible. A fault message is displayed at 0 %.
8	Hours of Operation 00012h 13min	Detector operating hours.

Display text for normal operation

Example display	Description
UniVario FMX5000 IR	UniVario® FMX5000 IR

Display text every 60 seconds

No.	Example display	Description
1	Softw: V02EXX Hardware: XX DIP: ----5---	Software version Hardware version DIP switch setting
2	Sensitivity Class 1	The detector is operated with class 1 fire sensitivity.
3	Autoreset for alarm is active!	Auto-reset is configured
4	Temperature actual 22.2°C	Actual temperature of the detector
5	Temp. Life Min: -5.2°C Max: 49.0°C	Lowest and highest temperature of the detector since it was built.
6	Temp. Service Min: -3.4°C Max: 38.9°C	Lowest and highest temperature of the detector since last maintenance. Values can be reset with the SMX5000 device.

No.	Example display	Description
7	Optical Test Level 89%	Contamination level optics test Approx. 3 min after *power-up* the current value is displayed. Values greater than 100% are possible. A fault signal is issued at 0%.
8	Hours of operation 00012h 13min	Detector operating hours

Display texts for alarms

Example display	Description
-ALARM- - A L A R M -	Alternating display in the event of an alarm
TESTALARM by Testinput	Displayed during alarm by test input
TESTALARM Reed-Contact	Displayed during test alarm by reed switch
TESTALARM by Apollo	Displayed during test alarm by KMX5000 AP

Fault text is displayed

No.	Example display	Description
1	FMX5000 IR Malfunction Min Temp Amb	Displayed if fault occurs

The third line in the display shows the fault type. The error messages in the following table can be displayed:

Fault type	Description
Min Temp Amb	Temperature has fallen below the minimum permissible detector temperature
Max Temp Amb	Temperature has exceeded the maximum permissible detector temperature
UL too low	Line voltage too low
UL too high	Line voltage too high
CRC Error	CRC error (µ controller memory defective)

Fault type	Description
Stack Error	Stack error of the µ controller
ADC Error	AD converter error in the µ controller
KMX Error	Communication to KMX5000 AP defective
Flash memory	Error in µ controller memory
DIP switch	DIP switch error (switch changed during operation)
ADC Err.Sens	AD converter error in the µ controller
Conf Memory	Segment error in controller flash memory
Conf inconsi	Detector configuration data inconsistent
IR Sensor	Optical test failed
IR Error	Infrared sensor defective
Optic Test Cal	Unable to calibrate optical test
Oscillator	Clock generator error
DIP invalid	Invalid DIP switch position
Code 00110001	Several errors/faults present

For more information about troubleshooting , ↳ *Chapter 9 “Troubleshooting” on page 85*.

3.13 UniVario® KMX5000 RK and KMX5000 RK 3GD relay module

For the FMX5000 IR 3GD detector, the KMX5000 RK 3GD relay module must be used.

The relay module allows the detector to be operated independently of a fire alarm control panel ↳ *Chapter 10 “Accessories and spare parts” on page 87*.

The detector can be connected via the relay module to the following units:

- Any fire alarm and hazard detection control panel
- Building management system or
- PLC systems

The relay module contains one relay with floating changeover contacts for the alarm message and the fault message.

The relay module is placed in the detector base and connected ↳ *Chapter 6.9.1 “Assembly of KMX5000 RK, KMX5000 RK 3GD relay module” on page 68*.

Voltage supply

The detector and relay module can be operated using a shared voltage supply (24 V DC) (Fig. 38). The detector can alternatively be operated on a conventional line and the relay module via a separate voltage supply (24 V DC) (Fig. 39) and ↳ *Chapter 6.9.2 “Relay module connection diagram” on page 69*.

Alarm and fault signaling

When an alarm occurs at the detector or test triggering is done, the alarm relay is activated (the contact between “NO” and “COM” is closed, the contact between “NC” and “COM” is opened). The fault relay is activated during normal operation (the contact between “NO” and “COM” is closed, the contact between “NC” and “COM” is opened). When a detector fault occurs or the test input or reed switch on the detector is activated, the fault relay drops out (the contact between “NC” and “COM” is closed, the contact between “NO” and “COM” is opened). Fault signaling does not occur at the same time as alarm signaling. Alarm signaling always has priority. The alarm can be configured as latching or non-latching ↳ *Chapter 5 “Configuration” on page 35*. The fault is reset automatically.

INFORMATION

If the alarm condition is no longer present, an alarm circuit configured as latching can be reset manually by briefly switching off the detector voltage supply or by switching the test/reset input (“T/R”) to “-UL”
↳ Chapter 3.13 “UniVario® KMX5000 RK and KMX5000 RK 3GD relay module” on page 27.

3.14 UniVario® KMX5000 AP communication module (option)

MIndividually addressable detector loop operation with an Apollo XP95-compatible protocol is possible with the communication module ↳ *Chapter 10.3 “Communication interfaces” on page 87*. The KMX5000 AP has no isolator.

An isolator base MX5000-I is available for the FMX5000 IR.

A separately installable isolator ISX 284-I 3GD is available for the FMX5000 IR 3GD.

Further information on the detector base accessory ↳ *Chapter 10 “Accessories and spare parts” on page 87*.

INFORMATION

With the communication module installed, conventional transmission of state conditions by the detector's current rise technology is deactivated! In this case, the states are transmitted to the control panel by loop protocol.

For more information on assembly and addressing the communication module ↳ *Chapter 6.10 “UniVario® KMX5000 AP communication module” on page 70*.

3.15 UniVario® SMX5000 service device (option)

⚠ WARNING

Explosion hazard in an explosive atmosphere
Do NOT use the SMX5000 in potentially explosive areas. It has NO mechanisms for preventing explosions.

The SMX5000 service device ↳ *Chapter 10.4 “Service accessories” on page 88* is used for configuration, diagnosis and function checks of the UniVario® detector and for displaying events from the history memory.

Further information, see product information on UniVario®SMX5000 service device and ↳ *Chapter 5.4 “UniVario® SMX5000 service device” on page 37*.

3.16 Self-monitoring

The detector tests itself at regular intervals and checks the most important functions:

- Operating voltage
- Function of the optical channels via integrated IR emitters
- Integrity of the storage content in the microcontroller
- Function of clock generator
- Function of the integrated AD converter
- Adherence to allowable detector operating temperature range
- Function and setting of DIP switch

If the self-monitoring system detects a fault, the operation indicator no longer flashes and the fault indicator (Fig. 5/2) comes on. For more information, ↳ *Chapter 9 “Troubleshooting” on page 85*.

INFORMATION

The yellow fault indicator lights up only when there is no alarm present and when the fault line is connected.

INFORMATION

A light pulse is transmitted approximately every 90 seconds via the integrated IR emitter. This light pulse is transmitted even when the optical test is deactivated.

INFORMATION

The maximum reaction time to a soiled optical system is 10 minutes.

4 Project planning information

- Coordinate the number of detectors with the area to be monitored and the kind of event to be detected. Where appropriate, observe any applicable national regulations and laws.
- KMX5000 AP communication module (option): Give consideration to detector-type restrictions of the loop used during the system configuration.
- MX5000 LCD detector base (option): Give consideration to an additional detector current consumption due to the LCD monitor during the system configuration.

4.1 Maximum number of detectors on a detector line

The maximum number of detectors that can be operated for each detector line depends on the terminal resistance as well as the alarm and short circuit thresholds. Give consideration to power consumption during an alarm as well. The system must be made using conductor cross-sections of between 0.5 and 2.5 mm² (AWG 21 to AWG 14). The conductor cross-section should be based on the number of detectors to be connected, the supply voltage and the cable length. The supply voltage must correspond with the technical data.

4.2 Classification

In accordance with EN54-10, detectors in various classes must detect a n-Heptane fire 33 cm x 33 cm (13 in x 13 in) in size (surface of approx. 0.1 m² (1.08 sq ft)) from various distances within 30 seconds.

- Class 3: max. 12 m (13.12 yd)
- Class 2: max. 17 m (18.59 yd)
- Class 1: max. 25 m (27.34 yd)
- Class X (50 m): max. 50 m (54.68 yd)

Further information on configuration ↬ *Chapter 5 “Configuration” on page 35*.
Fire detection follows the inverse-square law. If the distance from the detector is doubled, the fire must be four times larger in order to be detected.

The minimum surface area of a fire that should be detected with certainty from a given distance can be determined using the inverse-square law. The following figure shows the distances and corresponding surface areas. A distance of 50 m (54.68 yd) should not be exceeded.

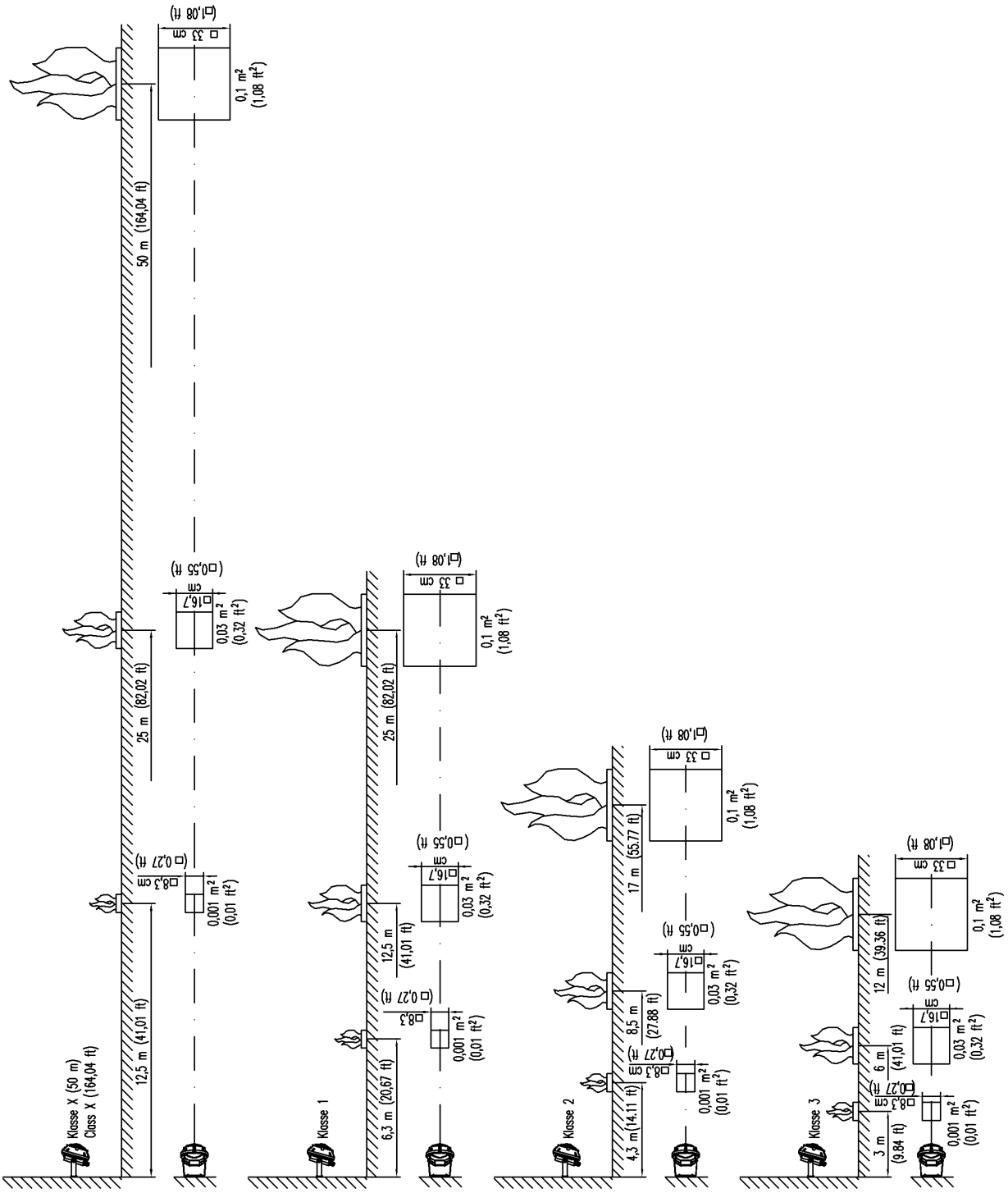


Fig. 13: Classification

NOTICE

False alarm due to too high fire sensitivity
The detector class should only be set as sensitive as is necessary in order to avoid false alarms.

4.3 Room monitoring as per VdS 2095: 2010-05 (07)

In a rectangular room the detector must be aligned at an angle of 45° between the optical axis and wall.

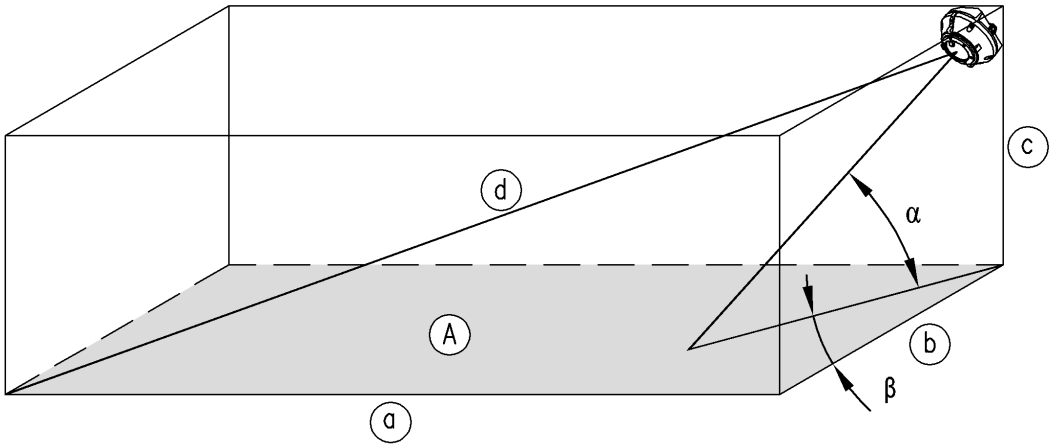


Fig. 14: Room monitoring as per VdS 2095: 2010-05 (07)

Flame detector class	Maximum edge length of room (a, b, c)	Longest path to the most distant point in room (d)	Maximum surface area to be monitored (A)
1	26 m (85 ft)	45 m (148 ft)	676 m^2 (7276 sq ft)
2	20 m (65 ft)	33 m (108 ft)	400 m^2 (4305 sq ft)
3	13 m (43 ft)	23 m (75 ft)	169 m^2 (1819 sq ft)

Tab. 1: Room monitoring as per VdS 2095: 2010-05 (07)

Observe the national regulations and standards applicable in each country of use!

4.4 Sources of interference

In order to prevent false alarms, the detectors should not be used in areas where sources of interference are anticipated.

Sources of interference which can trigger an alarm are:

- Warm, turbulent air circulation near the optical system of the detector
- Exhaust gas or air containing carbon monoxide/CO_2 in the viewing range of the detector
- High-energy sources of interference which override the sensor system
- Welding
- Powerful sources of IR radiation
- Several sources of interference combined

The inverse-square law also applies to sources of disturbance!

If the radiative heat transfer of a modulated source of interference is considerably larger than the radiative heat transfer of a fire to be detected, then detection is delayed considerably or does not take place at all. Warm air circulating near the detector or air with higher concentrations of carbon monoxide and/or CO_2 such as exhaust gas should be avoided within the detector viewing range. If it is not possible to entirely avoid these sources of interference, then it is important to set the detector to low sensitivity (to Class 3 or Class 2).

The detector does not respond to:

- Solar radiation (direct, reflected and/or modulated)
- Sources of light such as fluorescent lamps, light bulbs, LEDs and energy-saving lamps (direct, reflected and/or modulated)

As a general rule: The more modulated radiation due to sources of interference present, the longer the delay before an alarm is set off, making a false alarm more likely.

INFORMATION

The fault sensitivity of the detector may increase if the optical system is contaminated unevenly. The formation of dew or droplets on the optics may impair detection capability and cause faults (optical test failure).

4.5 Impairment of fire sensitivity

- If the detector is behind panes, fire detection is not possible because (nearly) all materials attenuate the wavelengths needed for detection. **Operating the detector from behind a pane is prohibited!**
- If a coat of dirt such as dust or condensation forms on the optical system, radiative heat transfer is attenuated. With the optics test switched on, the detector monitors the pane of the optical system and gives a fault signal if attenuation is too strong.
- A high proportion of carbon monoxide or CO_2, gases, vapors, extreme humidity or also fog and rain attenuate certain wavelengths required for fire detection.
- If modulated sources of disturbance are present in the viewing range of the detector, fire detection may be delayed or fires may not be detected at all.
- At an angle of 45°, sensitivity is reduced by half and thus the largest possible distance from a fire.

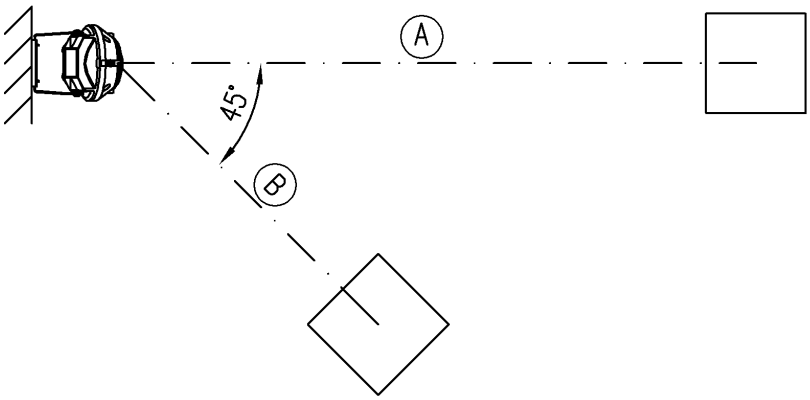


Fig. 15: Sensitivity is reduced by half at an angle of 45°

NOTICE

Hot surfaces in the detector viewing range can prevent fire detection.
At minimum, maintain a distance of 5 m (16 ft) between hot surfaces (e.g. electrical resistance heaters, fan heaters, radiators) and the detector.

5 Configuration

Have the work described in this section carried out only by the following persons:

Personnel: ■ Qualified specialist personnel

5.1 DIP switch

DIP switch settings on the detector:

- Setting the configuration

INFORMATION

Alternatively, the configuration can also be carried out using the SMX5000 service device. For further information, see ↳ Chapter 10 “Accessories and spare parts” on page 87 and the technical description of the SMX5000 service device.

DIP switch settings on the KMX5000 AP communication module:

- Addressing the detector for loop operation *↳ Chapter 6.10.4 “Address communication module” on page 73*

Explanation of the DIP switch settings shown in the following tables:

DIP switch	Meaning
X	DIP switch position of no significance
2	If a digit is shown: The corresponding DIP switch is in the ON position (here: DIP switch 2)
-	DIP switch in OFF position

5.1.1 Example of switch position

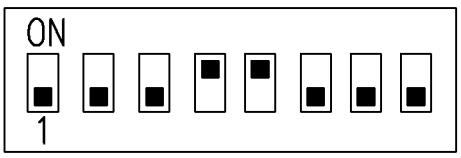


Fig. 16: Example of DIP switch position

DIP switch	Meaning	Configuration/fire sensitivity
---45---	DIP switch 1 in OFF position	Reed switch active
---45---	DIP switch 2 in OFF position	Latching alarm
---45---	DIP switch 3 in OFF position	Not currently used
---45---	DIP switch 4 in ON position	Optics test switched off
---45---	DIP switch 5 in ON position DIP switch 6 in OFF position DIP switch 7 in OFF position DIP switch 8 in OFF position	Fire sensitivity setting, here Class 1

5.2 Carry out configuration

DIP switches 1 to 4: Configuration setup

DIP switch 12345678	Meaning
-XXXXXXX	Reed switch active
1XXXXXXX	Reed switch inactive
X-XXXXXX	Alarm latching during limit value operation / Discovery during loop operation
X2XXXXXX	Alarm non-latching during limit value operation / XP95 during loop operation
XX-XXXXX	Not currently used
XX3XXXXX	Not currently used
XXX-XXXX	Optics test is switched on or switched off via SMX5000
XXX4XXXX	Optics test is switched off

5.3 Set response behavior

DIP switches 5 to 8: Set response behavior

DIP switch 12345678	Meaning
XXXX----	Fire sensitivity configuration via SMX5000
XXXX5678	Fire sensitivity configuration via SMX5000
XXXX5---	Fire sensitivity in accordance with EN54 class 1
XXXX-6--	Fire sensitivity in accordance with EN54 class 2
XXXX56--	Fire sensitivity in accordance with EN54 class 3
XXXX--7-	Fire sensitivity in accordance with EN54 class X (50 m)

INFORMATION

An impermissible setting causes a fault signal. In this case fire sensitivity Class 1 is activated.

5.4 UniVario® SMX5000 service device

5.4.1 Connection

For general information about the SMX5000 service device, see the technical description of the UniVario® SMX5000 service device.

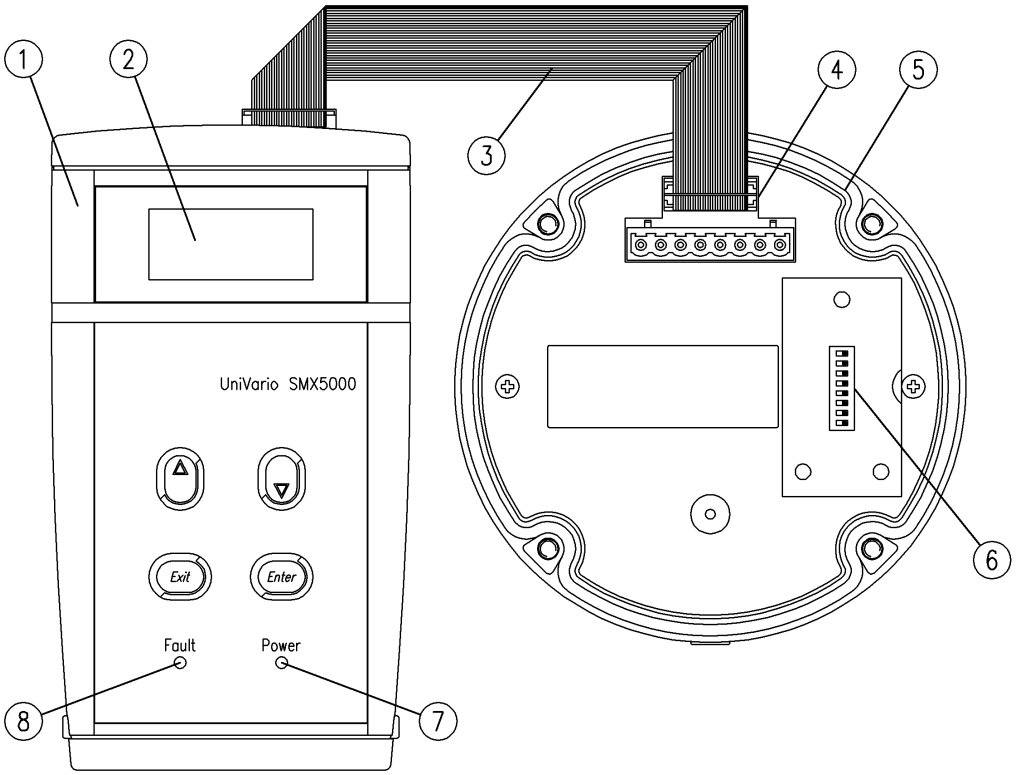


Fig. 17: SMX5000 connected to UniVario® detector

1 SMX5000 service device
2 Display
3 Connection cable (30-pole)
4 Pin connection (service connection)
5 Detector
6 DIP switch on the detector
7 Power LED
- Lights up green when there is a connection to the detector
- Flashes green or does not light up when the batteries are weak or discharged

8 Fault LED (from software version V02Exx)
- Lights up yellow in the event of a fault signal in the ring memory of the connected detector

1. Remove the detector from the detector base.
2. Connect SMX5000 and detector using a connection cable:

   NOTICE! ***Damage to the pin connection possible in the event of wrong positioning of the plug.***
   Insert the plug into the pin connection so that the lug engages in the groove in the pin connection.

   - Insert the plug at one end of the cable carefully into the corresponding connection on the upper side of the SMX5000.
   - Carefully insert the plug at the other end into the pin connection on the detector.

   ⇨ The SMX5000 switches on automatically on connection to the detector and the Power LED lights up green.

   If the Power LED flashes green or the Power LED does not light up, the batteries are discharged. Replace batteries.
3. The display is controlled by the connected detector and varies depending on the detector type and its software version. The welcome mask appears briefly on the display, followed by the starting mask.

   The display has three lines each with 12 characters. Each time the detector is switched on, all the segments of the LCD are briefly activated. Check if individual segments have failed. If so: Have the service device checked or replaced by Customer Service.
4. Confirm with *[Enter]* to access the main menu selection.

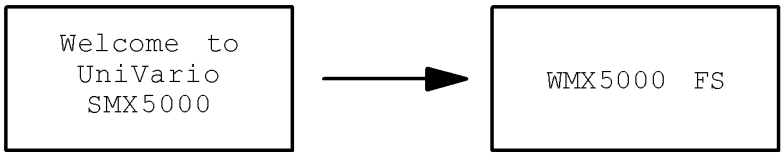
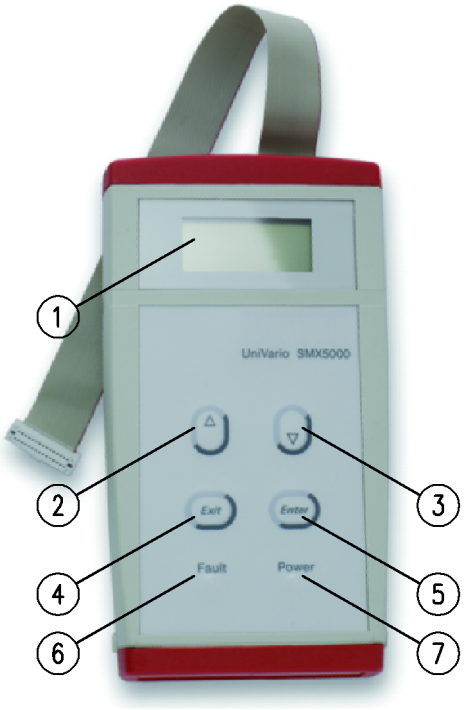


Fig. 18: SMX5000 example display after switching on

5.4.2 Operation



1 LCD monitor
2 △ button – menu level upwards
3 ▽ button – menu level downwards
4 Exit button – abort input
5 Enter button – confirm input
6 Fault LED
7 Power LED

Fig. 19: SMX5000 operation

Item	Meaning
1	LCD monitor
2	Button *[△]* Navigate upwards ● Navigate upwards within a main menu or submenu level. ● Increase setting values.
3	Button *[▽]* Navigate downwards ● Navigate downwards within a main menu or submenu level. ● Decrease setting values.
4	Button *[Exit]* – cancel input ● Abort the input of setting values without saving. ● Move to a higher menu level.
5	Button *[Enter]* – confirm input ● Confirm a menu item or input. ● Move to a lower menu level.

Item	Meaning
6	Fault LED (from software version V02Exx) ● Lights up yellow in the event of an error message in the ring memory of the connected detector
7	Power LED ● Lit green when there is a connection to the detector ● Flashes green or is not lit when the batteries are weak or discharged

5.4.3 Overview of main menus

Main menu	Description	Example display
Display versions	Display of the hardware and software versions, article numbers and production data. On detectors with KMX5000 AP Communication Module, the data of the module are also displayed.	`FMX5000 IR` `Versions`
Configure detector	Display and edit the detector settings	`FMX5000 IR` `Config.`
Display history memory	Display the detector history and reset the service values.	`FMX5000 IR` `History`
Apollo data	Display of the data according to Apollo specification.	`FMX5000 IR` `Apollo Data`
Detector mode	Switch the detector connected to the service device to "Detector" mode. The service device then supplies the supply voltage.	`FMX5000 IR` `DetectorMode`
Access level	Enable special access authorizations.	`FMX5000 IR` `Access Level`

5.4.4 Main menu "Display versions"

Level			Submenu	Description	Example display
1	2	3			
X			Detector card software Part No.	Display part number of the detector software.	Versions Detectorcard Soft.#904880
X			Detector card software version	Display software version of the detector (V: version status, E: development status).	Versions Detectorcard Soft. V01E00
X			Detector card programming date	Display programming date of the detector software (yymmdd, yy: Year, mm: Month, dd: Day).	Versions Detectorcard PDate 071221
X			Detector card RI	Display revision index of the detector card from hardware encoding.	Versions Detectorcard Hardware V02
X			Detector card WO No.	Works order number of the detector card.	Versions Detectorcard WA 100112479
X			Detector card S. No./WO	Display production number (serial number) for the detector card works order.	Versions Detectorcard WA FNo 00050
X			Detector card week/BC [a)]	Display week and year of manufacture for the detector card works order (wwyy, ww: week; yy: year).	Versions Detectorcard BC Week 4812
X			Detector card Part No./BC [a)]	Display part number of the detector card.	Versions Detectorcard BC 0 #903844
X			Detector card RI/Part No./BC [a)]	Display revision index of the detector card.	Versions Detectorcard BC 0 V02
X			KMX5000 AP Software Part No. [b)]	Display Part No. of the communication module software.	Versions Detectorcard Soft.#904923
X			KMX5000 AP Software version [b)]	Display software version of the communication module (V: version status, E: development status).	Versions KMX5000AP Soft. V00E00

Level			Submenu	Description	Example display
1	2	3			
X			KMX5000 AP Programming date [b]	Display programming date of the communication module software (yymmdd,yy: Year,mm: Month,dd: Day).	Versions KMX5000AP PDate 071221
X			KMX5000 AP RI card [b]	Display revision index of the communication module card.	Versions KMX5000AP Hardware V00
X			KMX5000 AP Order No. of the card [b]	Display works order number of the communication module card.	Versions KMX5000AP WA 100112479
X			KMX5000 AP S. No./WO No. [b]	Display production number (serial number) for the communication module card works order.	Versions KMX5000AP WA FNo 00001
X			KMX5000 AP week/BC [a] [b]	Display week and year of manufacture for the communication module card works order (wwyy, ww: week; yy: year).	Versions KMX5000AP BC Week 5207
X			KMX5000 AP Part No./BC [a]	Display Part No. of the communication module card.	Versions KMX5000AP BC 0 #903844
X			KMX5000 AP RI/Part No./BC [a] [b]	Display revision index of the communication module card.	Versions KMX5000AP BC 0 V02

[a] BC = barcode

[b] Menu item available only with installed KMX5000 AP

5.4.5 Main menu "Configure detector"

FMX5000 IR

Configuration of the flame detector via the service device is only possible when DIP switches 5 to 8 are in position OFF (DIP switch position 1 to 4 unchanged).

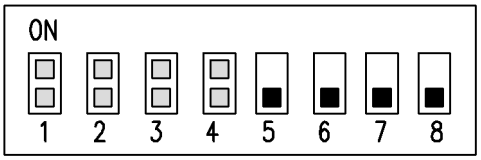


Fig. 20: DIP switch position FMX5000 IR

Level			Submenu	Description	Example display
1	2	3			
X			Detector DIP switch position	Display DIP switch position of the detector Representation convention: "X" = DIP switch position of no significance "5" = If a digit is shown: The corresponding DIP switch is in the ON position (here: DIP switch 5) "-" = DIP switch in OFF position	Config. DetDIPSwitch ----5---
X			Display/set response sensitivity	Display response sensitivity status	Config. Class x (50 m)
X	X		Set response sensitivity	Set a class index for alarm circuit A with buttons △ and ▽ and confirm with button ↵ (Enter). The value is saved. The display then switches to the next higher menu level.	Class Edit: 1
X			KMX5000 Address [a]	Display the DIP switch setting for addressing communication module KMX5000 AP	Config. KMX Address 1---5--
X			Display/set detector test	Display detector test status	Config. Detectortest on
X	X		Detector test ON/OFF [b]	Switch detector test on and off	Detectortest Edit: on

[a] Menu item is only available when KMX5000 AP is installed.

[b] Menu item is only available when DIP switch 4 is in the OFF position.

5.4.6 Main menu “Display history memory”

Level			Submenu	Description	Example display
1	2	3			
X			Elapsed hour counter (EHC)	Display of the elapsed hour counter (EHC) xxxxxx:yy:zz (xxxxxx: hours, yy: minutes, zz: seconds). The counter is a pure elapsed hour counter and runs only when the power supply to the detector is switched on. It provides no information as to the age of the detector!	History Elap.HourCnt 875:22:16
X			Temperature history	Display of the temperature history of the detector during operation (not of the sensor).	History Temp.Hist.
X	X		Min. temperature (lifetime)	Display of the minimum detector temperature during operation over the whole period of operation (lifetime).	Temp.Hist. Temp.Life Min. -11.8 °C
X	X		Max. temperature (lifetime)	Display of the maximum detector temperature during operation over the whole period of operation (lifetime).	Temp.Hist. Temp.Life Max. 71.2 °C
X	X		Min. temperature (service time)	Display of the minimum detector temperature during operation since the last reset of the values (service time).	Temp.Hist. Temp.Service Min. -10.0 °C
X	X		Max. temperature (service time)	Display of the maximum detector temperature during operation since the last reset of the values (service time).	Temp.Hist. Temp.Service Max. 51.7 °C
X	X		RESET min/max temperature (service time) [a]	Press the ↵ (Enter) button to reset the min/max temperature values (service time).	Temp.Hist. Temp.Service Reset ?
X	X		Service time per temperature range	Display of the operating times per temperature range, broken down into 10 K temperature intervals.	Temp.Hist. TimeOverTemp
X	X	X	TimeOver-Temp -55 °C ±5 °C	Display of all operating hours in the temperature range -60 °C ... -50 °C (-76 °F ... -58 °F)	TimeOverTemp Hrs @ T ±5 °C 0 -55 °C

Level			Submenu	Description	Example display
1	2	3			
X	X	X	TimeOver-Temp Display	Display of all the operating hours in the respective temperature ranges, in 10 K intervals	
X	X	X	TimeOver-Temp 115 °C ±5 °C	Display of all operating hours in the temperature range 110 °C ... 120 °C (230 °F ... 248 °F)	TimeOverTemp Hrs @ T ±5 °C 0 115 °C
X			Alarm counter	Display number of detected alarms.	History Alarm Count. 12
X			Alarm history	Display of the alarm history	History Alarm Hist.
X	X		Alarm history absolute/relative to EHC	Use the △ or ▽ buttons to select the alarm history (absolute or relative) for the elapsed hour counter (EHC) and press the ↵ (Enter) button to confirm. Absolute: Alarm was at elapsed-hour counter reading xy. Relative: Alarm was xxx:yy:zz ago (xxx: hours, yy: minutes, zz: seconds)	Alarm Hist. Relat.to EHC Relative
X	X	X	Alarm history relative to EHC	Alarm 1 occurred 0 hours, 9 minutes and 32 seconds ago	Alarm Hist. A-No: 1 -0.09.32
X			Fault history	Display the fault history.	History Fault Hist.

Level			Submenu	Description	Example display
1	2	3			
X	X		Fault history by type	Display of the fault history by fault type (by type). You can display the individual fault types by pressing the △ or ▽ buttons followed by OK (currently no faults in the memory) or Err (one or more faults in the memory). ● Sensor: Optics test failed ● Temp.Min: Temperature below minimum admissible card temperature ● Temp.Max: Temperature above maximum admissible card temperature ● UL-Min: Voltage below minimum admissible supply voltage ● UL-Max: Voltage above maximum admissible supply voltage ● CRC-Sum: Errors in program memory ● Stack: Error in stack ● AD-Conv.: Error in A/D converter ● KMX: Error in communication module (only if installed) ● Flash: Error in ring memory ● DIP-Sw.: DIP switches for detector configuration defective ● SPM.Mem: Configuration data memory defective	`History` `Fault Hist.`
X	X		Fault history by occurrence	Selection menu for display of the faults that have occurred, followed by the absolute or relative elapsed hour counter reading. All the currently stored fault signals are displayed according to this selection.	`Fault Hist.` `Order of App`
X			Sensor history	Display of the temperature history of the sensor during operation (not of the detector).	`History` `Sensor Hist.`

[a] Only with access level 1 or higher

5.4.7 Main menu "Apollo data"

Level			Submenu	Description	Example display
1	2	3			
X			Apollo values DISCOVERY	Display of the Apollo values according to DISCOVERY table.	Apollo Data A-Values
X	X		Apollo Type Code	Apollo Type Code is displayed.	A-Values TypeCode dec200 hexC8
X	X		Month of manufacture	Month of manufacture is displayed xxx (number of months since November 1997, e.g. 121 = January 2008) and mm/yyyy (month/year).	A-Values MonthManufac 115 7/2007
X	X		Drift Flag	Drift Flag is displayed.	A-Values Drift Flag reset
X	X		Drift Range	Drift Range is displayed.	A-Values Drift Range 00
X	X		Sensitivity	Sensitivity is displayed.	A-Values Sensitivity 3
X			Apollo register Contents	Display of the Apollo register.	Apollo Data A-Register
X	X		Register display 0	Display of register 0: xx in hexadecimal	A-Register RegNo hex 0 00
X	X		Register display 1	Display of register 1: xx in hexadecimal	A-Register RegNo hex 1 00
X	X		Register displays 2 ... 14	Display of register 2 ... 14: xx in hexadecimal	
X	X		Register display 15	Display of register 15: xx in hexadecimal	A-Register RegNo hex 15 00

5.4.8 Main menu "Detector Mode"

Level			Submenu	Description	Example display
1	2	3			

X			Activation of detector mode	Detector mode is activated by pressing key *[Enter]* .
				The LCD monitor of the service device displays the current detector data.
				Fault and Power LED of the service device go out.
				This mode can be deactivated by holding button *[Exit]* depressed (approx. 2 s) or by disconnecting the connection cable.
					`DetectorMode`
					`push ENTER`
					`to activate`

6 Installation

Have the work described in this section carried out only by the following persons:

Personnel: ■ Qualified specialist personnel

6.1 Safety

The assembly and installation work described below requires that all project planning documents for the complete system as well as for the respectively valid national regulations and laws be observed.

6.2 Preparation for installation

- Project planning documents for the complete system must be observed in all installation work.
- Before installing the detector, make sure all information on the nameplate matches the project planning documents ↳ *Chapter 3.11 “Device markings” on page 20*. The detector must correspond with the project planning requirements.
- Observe the maximum operating temperature of the detector.
- An upward angle of the detector should be avoided because this may allow contamination to accumulate on the optical system.
- The viewing range of the detector should not face toward sources of interference. The largest possible distance should be maintained from sources of interference.

6.3 Carrying out the installation

When installing in areas with agressive media (e.g. grinding oil in machine tools):

- Lay an appropriate cable loop to allow these materials to be conveyed away from the detector.

For installation with more demanding seal tightness requirements (e.g. outdoor applications or in an environment contaminated with oil):

- Use recommended cables ↳ *Chapter 10.5 “Recommended connection cables” on page 88*.
- Use the recommended shrinkable tube ↳ *Chapter 10.7 “Special accessories” on page 89*.

6.4 Preparation for assembly

The assembly location has been specified based on the configuration documents.

The detector has been configured in accordance with the configuration requirements ↳ *Chapter 4 “Project planning information” on page 30*.

INFORMATION

The detector base can remain covered with a dust cap MX5000 until the detector is fitted ↳ Chapter 10 “Accessories and spare parts” on page 87.

6.5 Carrying out the assembly

Assembly can be carried out according to the assembly variants described below.

6.5.1 Bracket mounting

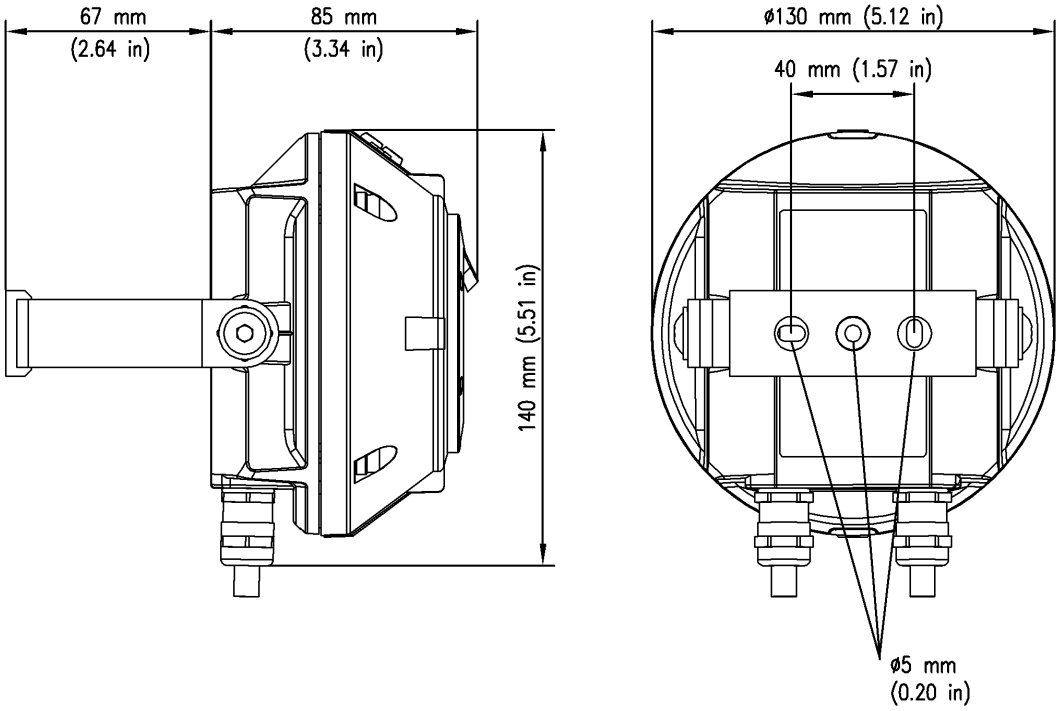
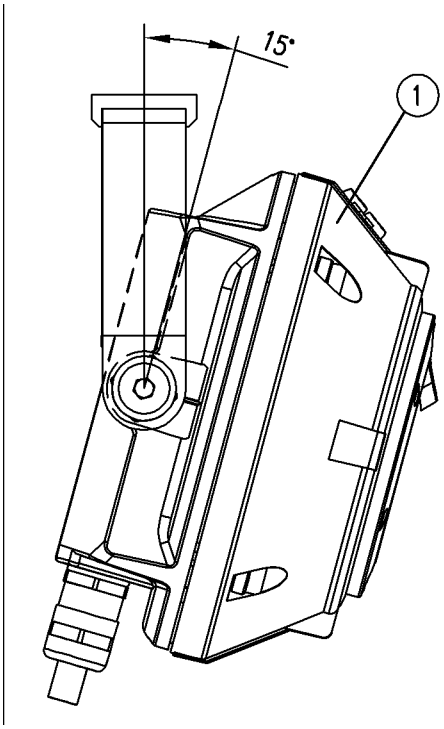


Fig. 21: FMX5000 IR – Device dimensions and assembly dimensions for swivel mount installation



1 Detector is adjustable in 15° increments

Fig. 22: FMX5000 IR – Inclination angle for swivel mount installation

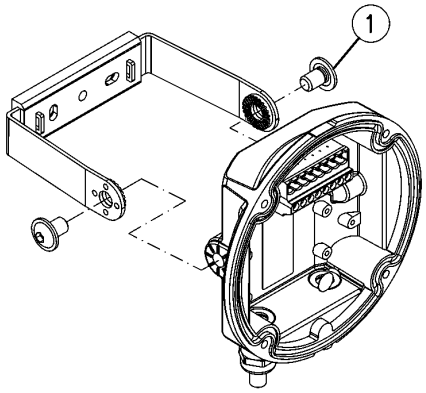


Fig. 23: MX5000 detector base for swivel mount installation

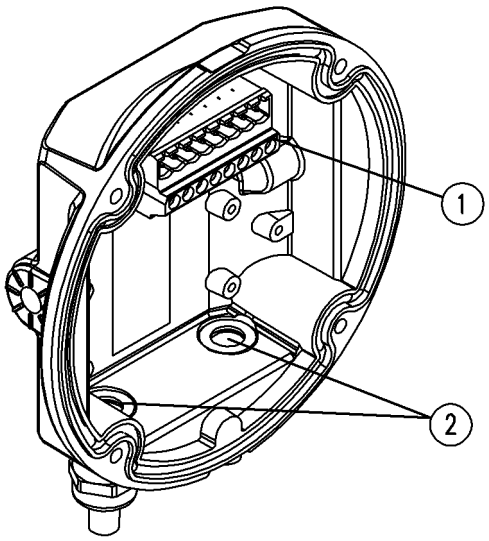
1 U-bolts

1. Drill the bores required for mounting the swivel. Be sure to observe the dimensions and pivot area of the detector.
2. Mount the swivel with suitable fastening materials.
3. Screw the swivel to the detector base using the U-bolts (Fig. 23/1) supplied. The cable entries on the detector base should face down.

4. Feed the connection cable through the cable entry (Fig. 24/2 and Fig. 25/2) into the detector base and connect to the terminal block (Fig. 24/1) and (Fig. 25/1). For more information, *Chapter 6.6 “Electrical connection” on page 60*.
5. Use the supplied plugs to seal off any unused cable entries.
6. When using the MX5000 LCD detector base: Carefully insert the ribbon cable connector (Fig. 25/3) of the LCD into the terminal strip (Fig. 2/2) on the detector.
7. Place the detector (Fig. 26/3) onto the detector base (Fig. 26/2). The terminal strip of the detector must be inserted into the terminal block (Fig. 26/1).
8. Screw the detector and detector base together with the screws (Fig. 26/4) supplied. Tighten the screws crosswise using a hexagon socket wrench (size 4 mm (0.16 in), 3.5 Nm (2.58 ft lb)) to ensure seal tightness.

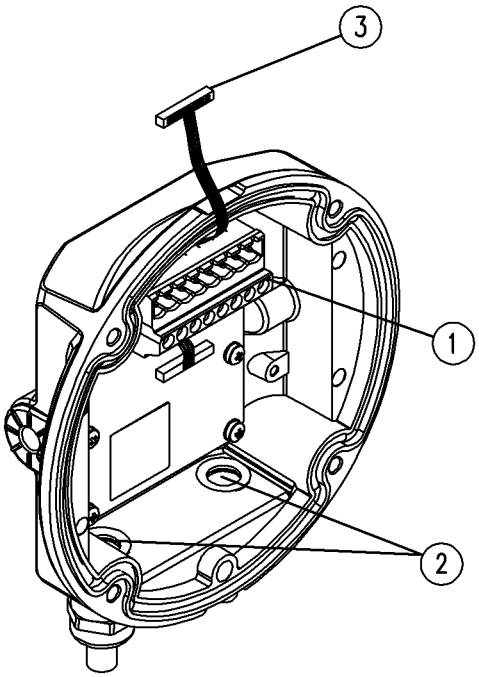
NOTICE

When using the UniVario® MX5000 LCD detector base: The ribbon cable for connecting the LCD could become trapped and damaged.
Before connecting the detector and detector base, pull the ribbon cable as far as possible toward the cable gland.



1 Terminal block
2 Cable entry

Fig. 24: MX5000 detector base



1 Terminal block
2 Cable entry
3 Ribbon cable connector

Fig. 25: MX5000 LCD detector base

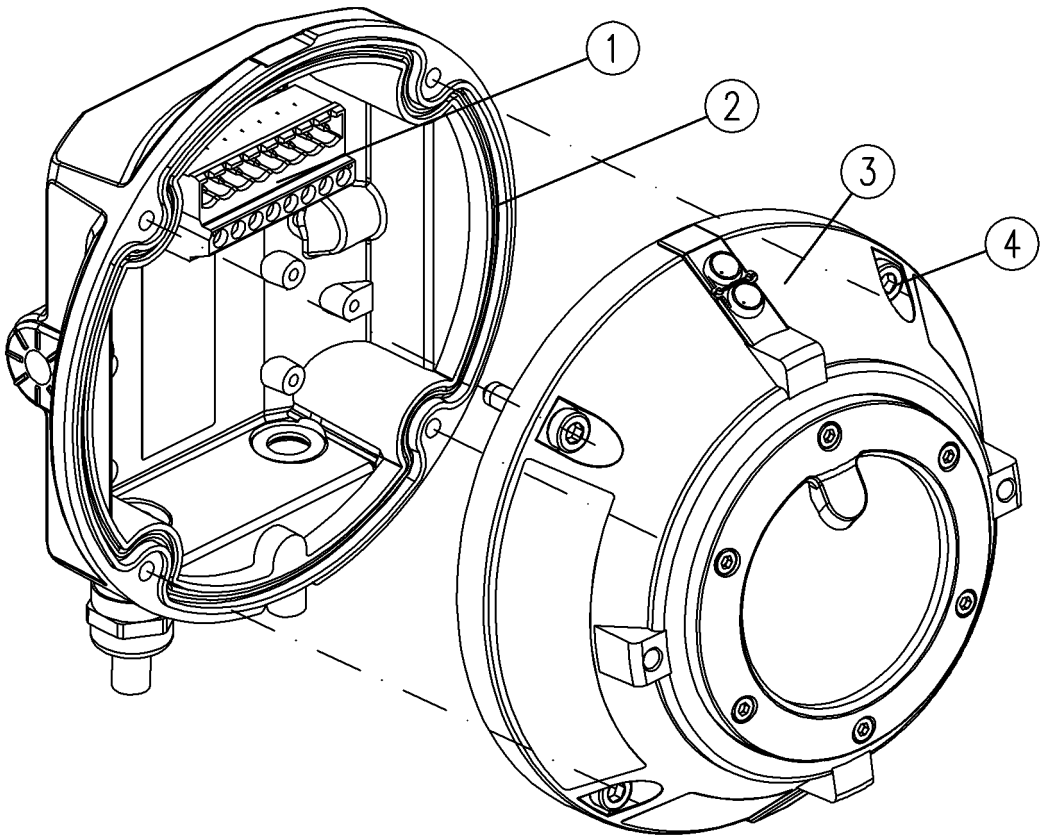


Fig. 26: Screw the detector onto the detector base

1 Terminal block
2 Detector base
3 Detector
4 Screws

6.5.2 Assembly with mounting bracket

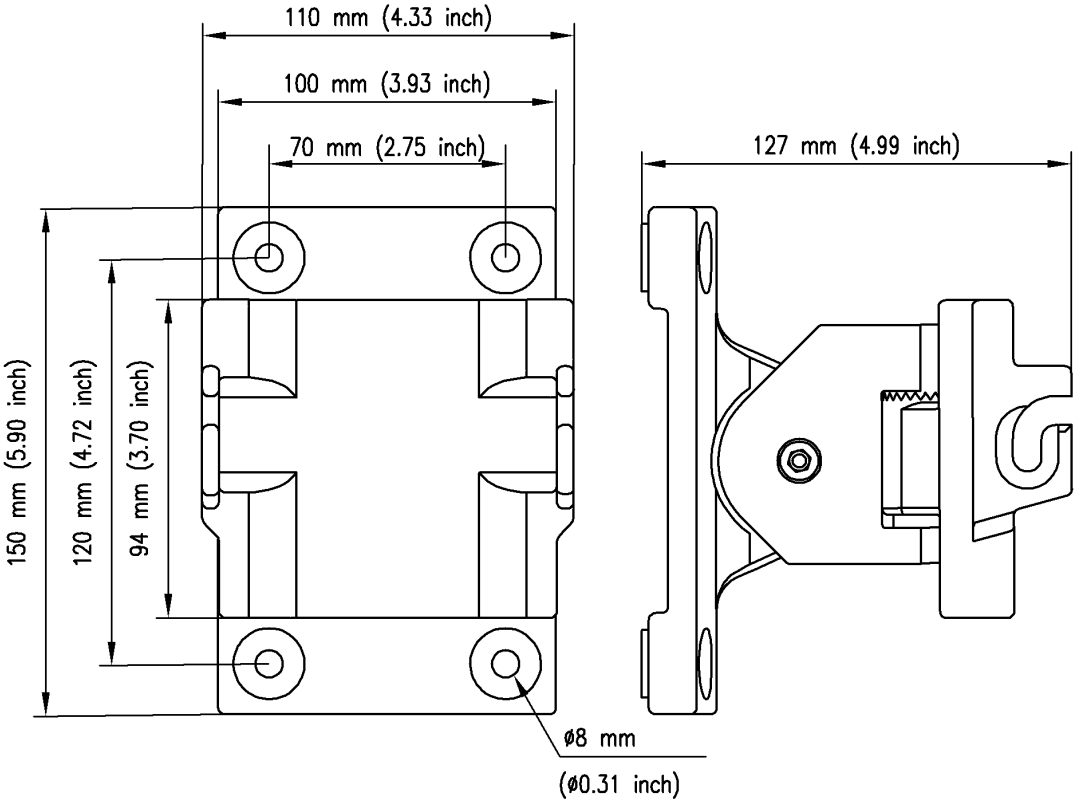


Fig. 27: Assembly dimensions of MX5000 ST mounting bracket

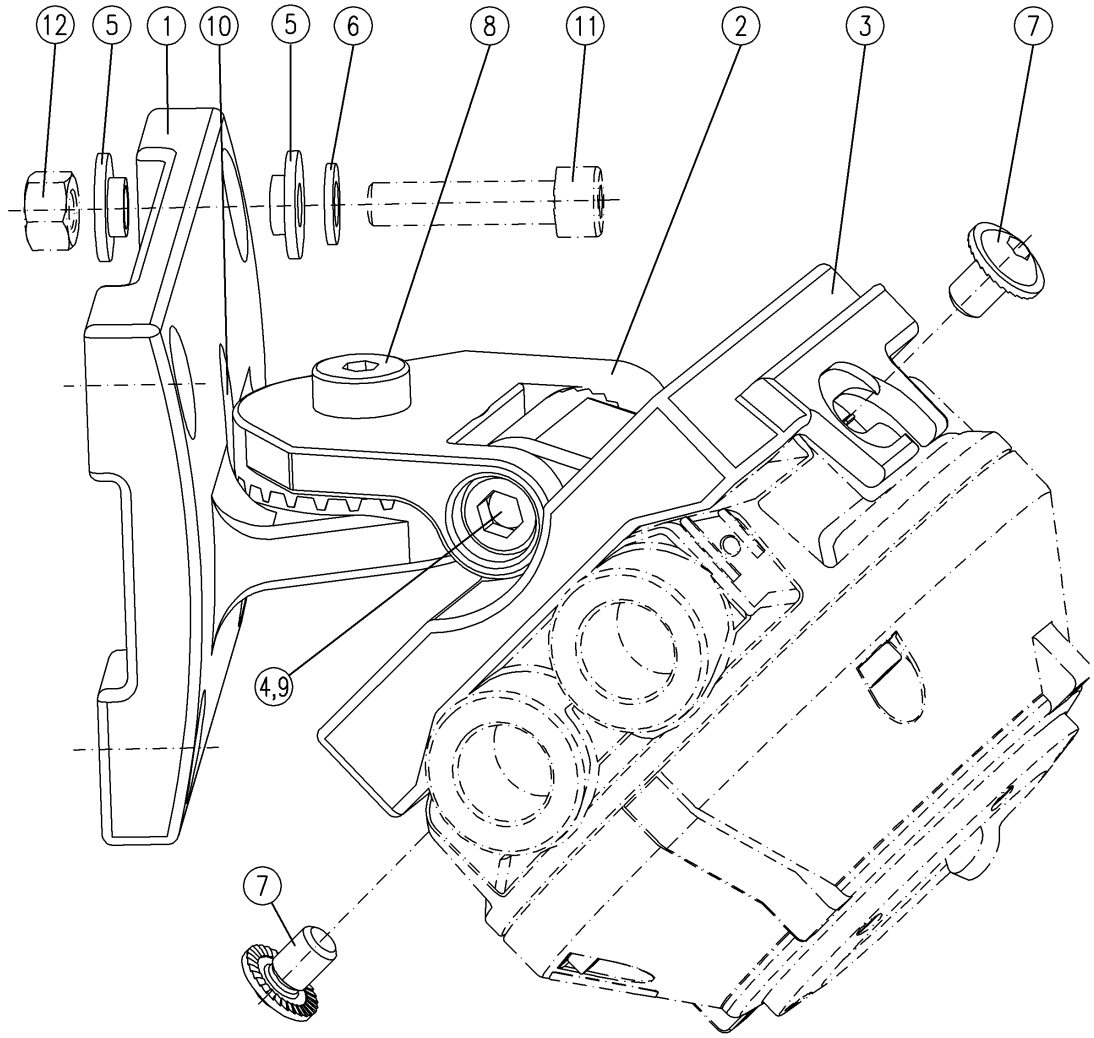


Fig. 28: Assembly of MX5000 ST wall mounting bracket

1 MX5000 ST wall mounting bracket
2 Pivot arm of MX5000 ST mounting bracket
3 Mounting for MX5000 ST mounting bracket
4 Socket head screw ISO 4762-M10x55-A4
5 Bushing for MX5000 wall bracket
6 Washer ISO 7092-8 4-A4
7 Screw M8x12 for MX5000 ST bracket
8 Screw DIN 6912-M12x30-A4
9 Loctite 243 [1)]
10 Recess for pivot arm
11 Screws M8-A4 [1)]
12 Nuts M8-A4 [1)]

[1)] Not included in scope of supply

1. Install wall mounting bracket (1) according to the situation at the installation location. For insulated installation, use bushings MX5000 (5). Install the wall mounting bracket vertically so that the recess for the pivot arm (10) is on the left.
2. The four bores are designed for M8 screws stainless steel A4 ISO 4762 (11) [1] with washers ISO 7092-8,4-A4 (6) and nuts M8-A4 (12) [1]. With this connection, coat the screw threads with Loctite 243 (9) [1] and tighten using an Allen key (size 6 mm; 16 Nm (11.8 ft lb)) and ring or socket spanner (size 13 mm).
3. Align pivot arm of MX5000 ST mounting bracket (2). Coat thread of screw DIN 6912-M12x30-A4 (8) with Loctite 243 and tighten using an Allen key (size 10 mm; 56 Nm (41.3 ft lb)).
4. Align mounting for MX5000 ST mounting bracket (3). Coat thread of socket head screw ISO 4762-M10x55-A4 (4) with Loctite 243 and tighten using an Allen key (size 8 mm; 32 Nm (23.6 ft lb)).
5. Insert detector into wall mounting bracket (1). Coat thread of screws M8x12 (7) for mounting the detector with Loctite 243 and tighten using an Allen key (size 5 mm; 16 Nm (11.8 ft lb)).

[1] Not included in scope of supply (optional)

NOTICE

The curing time of Loctite 243 on steels is 12 hours.

6.5.3 Bracket mount installation

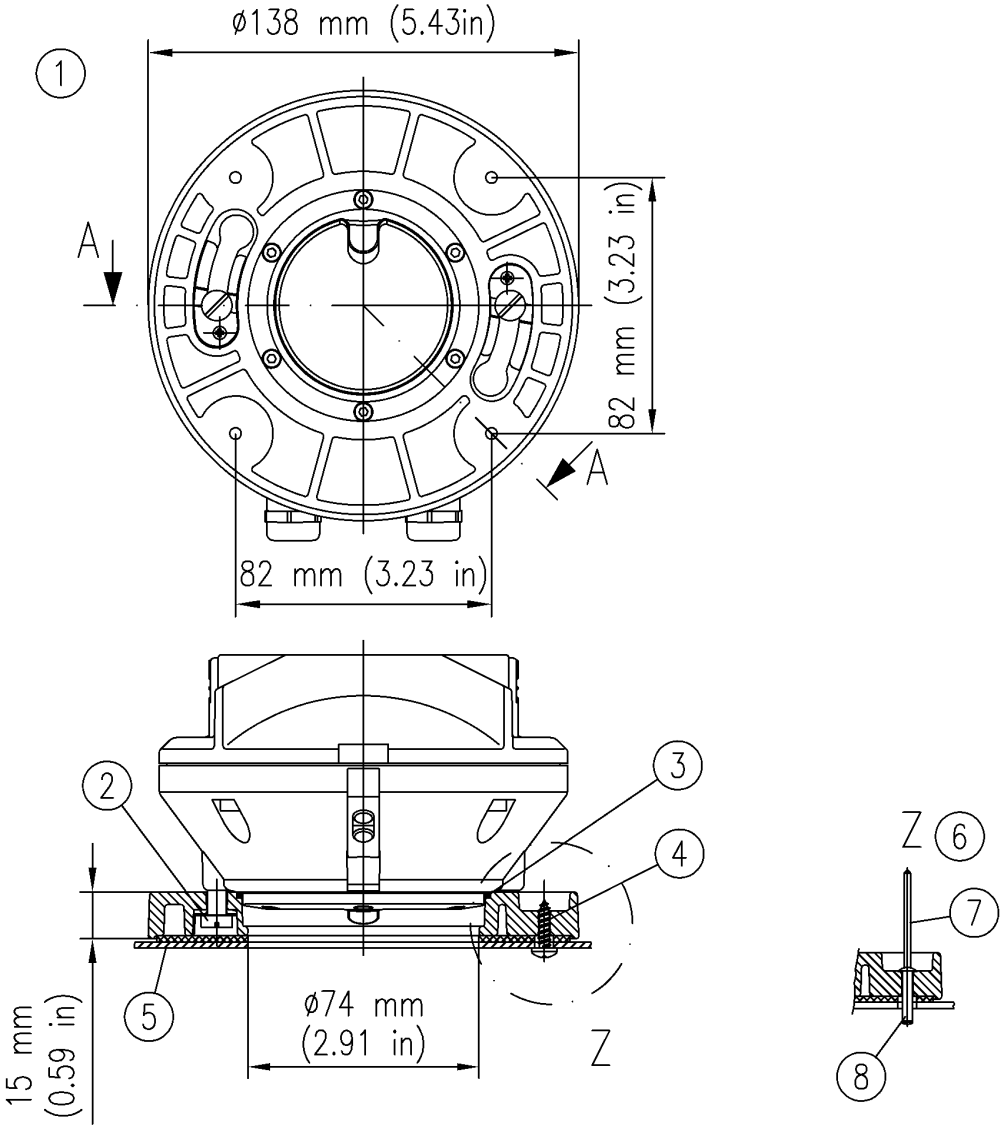


Fig. 29: Device and assembly dimensions for the bracket mount installation

1 Flame detector mounting, depicted without gasket
2 M5 bolt
3 O-ring
4 Tapping screw
5 Machine housing
6 Alternative bracket mount installation
7 Rivet at installation site
8 Blind rivet

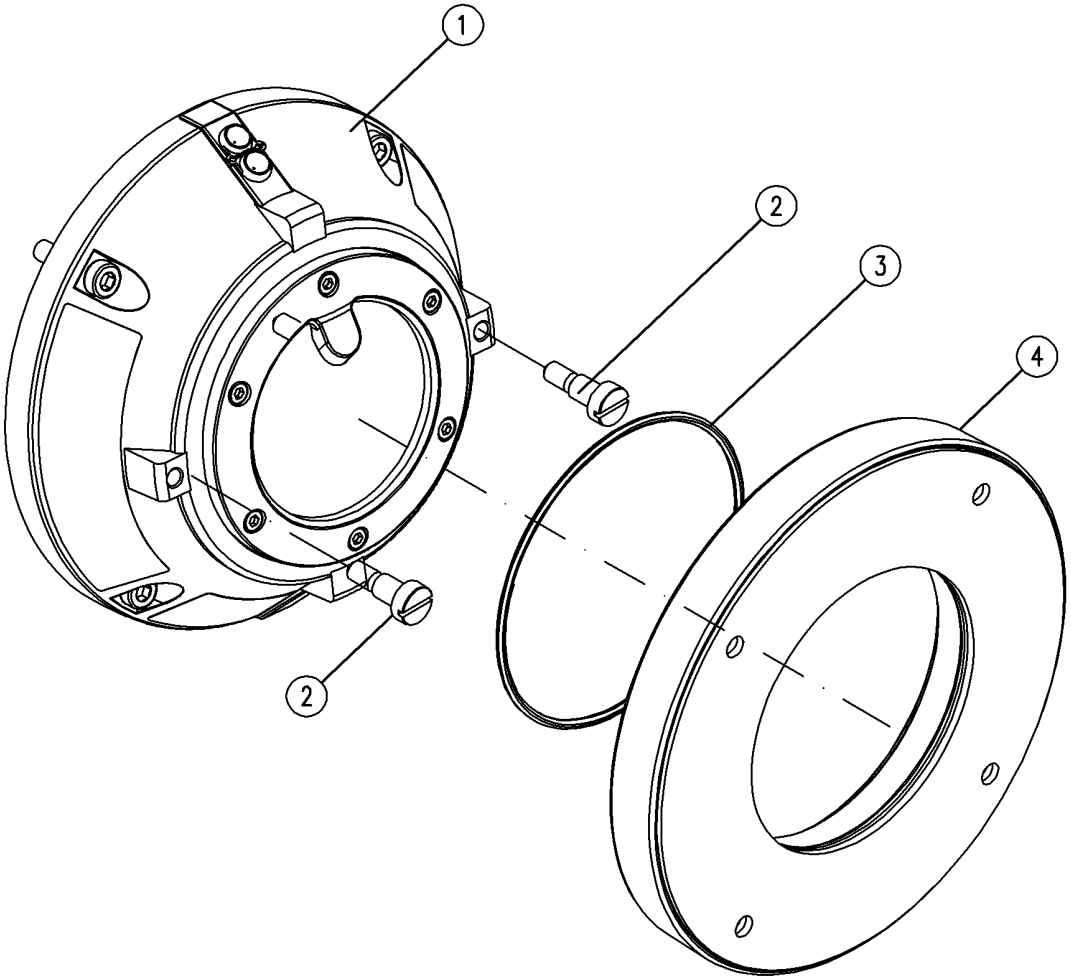


Fig. 30: FMX5000 IR 3GD bracket mount installation

1 Detector
2 M5 screws
3 O-ring
4 MX5000 console F

1. Drill the holes required for installing the console. Use the console as a drilling template. Observe the dimensions of the console (Fig. 30/4) and the detector.
2. Install the console onto the object to be monitored using the supplied tapping screws, supplied blind rivets or other suitable fastening materials.
3. Screw the M5 screws (Fig. 30/2) supplied into the detector (Fig. 30/1).
4. Insert the connection cable through the cable entry into the detector base and connect to the terminal block Fig. 25.
5. Use the supplied plugs to seal off any unused cable entries.
6. Place the detector (Fig. 26/3) onto the detector base (Fig. 26/2). he connection port of the detector must be inserted into the terminal block (Fig. 26/1). The cable entries on the detector base should face down.

7. Screw the detector and detector base together with the screws (Fig. 26/4) supplied. Tighten the screws crosswise using an Allen key (SW 4 mm, 3,5 Nm (2,58 ft lb)) in order to ensure seal-tightness.
8. High seal-tightness requirements: Insert the O-ring (Fig. 30/3) supplied into the console groove.
9. Place the detector onto the console and lock into place with the bayonet catch. The detector must be firmly attached to the console.

   If it is not possible to lock the detector onto the console without tools:

10. Back off the M5 screws (Fig. 30/2) in the detector by about one turn, place the detector back onto the console and lock into place with the bayonet catch.

NOTICE

The MX5000 F console consists of conducting antistatic plastic.
If assembly is not with electrical insulation, the detector housing must be included in the equipotential bonding. When using shielded cabling, ensure that the same equipotential bonding is present throughout the entire cable guide.

6.6 Electrical connection

6.6.1 General connection instructions

⚠ CAUTION

Risk of injury from electric shock!
Touching live parts can cause an electric shock and result in injuries.
- Switch off the supply voltage to the detector before starting any connection and assembly work.

⚠ WARNING

Explosion hazard from electrostatic charging!
Electrostatic charges can cause explosive atmospheres to ignite and electronic components can be damaged.
- During all work, ensure a safe equipotential bond between persons, place of work and device/control panel/detector.
- If installation is without electrical insulation: Include the detector housing in equipotential bonding.
- When using shielded cabling: Ensure that the same equipotential bonding is present throughout the entire cable guide.
- Ensure that there is no explosion hazard during the connection work.

- The cable insulation must extend all the way to the connecting terminal. Do not damage the cable when stripping off insulation.
- The maximum permissible cable temperatures must not be exceeded. Choose suitable cables. Choose a suitable laying method.

- Observe the maximum line lengths and maximum voltage drop on the line impedance ↳ *Chapter 6.6.2 “Maximum terminal resistance” on page 61*.
- Connect a leaded metal layer resistor with sufficient performance as end-of-line resistor (EOL) in the last detector of a detection circuit ↳ *Chapter 6.8 “Connect the complete system (control drawings)” on page 65*, if this is necessary for wire break detection.
  Adapt the resistance to the line voltage and the necessary current in accordance with the specification of the fire alarm control panel or evaluation unit.

6.6.2 Maximum terminal resistance

⚠ CAUTION

Malfunction due to excessive line resistance!
The line resistance of the connection cable must remain so small that in each operating state of the entire fire detector line a fire detection message can always be safely reported to the evaluation unit.

Work with extreme care when dimensioning the connection cables. The conductor cross-section must have been determined during project planning based on

- the number of detectors to be connected,
- the supply voltage and
- the cable length

and a correspondingly suitable cable chosen ↳ *Chapter 10.5 “Recommended connection cables” on page 88*.

- Check if the connection cable selected is in compliance with the project planning directives and regulations.

Also observe the following:

- The maximum line resistance can be limited by the evaluation unit used and must never be exceeded. Information on the maximum line resistance can be found in the operating manual of the control unit.
- For alarm currents which are switched on: The additional voltage drop on the line impedance must not cause the voltage on the detector terminals to fall below the permitted level.
- If the detector line is monitored for short-circuits: The total current must never exceed the short circuit threshold.

INFORMATION

The total current is the total of all currents together. This can be from
- *the quiescent currents of the detectors,*
- *the current via the end-of-line resistor at the end of the line,*
- *the alarm currents of all detectors which can switch to an alarm state simultaneously.*

INFORMATION

The maximum number of detectors that can be operated for each detector line depends on the terminal resistance as well as the alarm and short circuit thresholds. Special attention must be given to power consumption if an alarm is detected. The system must be made using conductor cross-sections of from 0.5 to 2.5 mm² (AWG 21 to AWG 14). The conductor cross-section should be based on the number of detectors to be connected and cable length. The supply voltage must correspond with the technical data.

6.7 Preparation of cable connection

INFORMATION

Shielded cabling for the detector is not mandatory. However, the connection conditions of the evaluation unit used might require this. Check the operating manual of the evaluation unit.

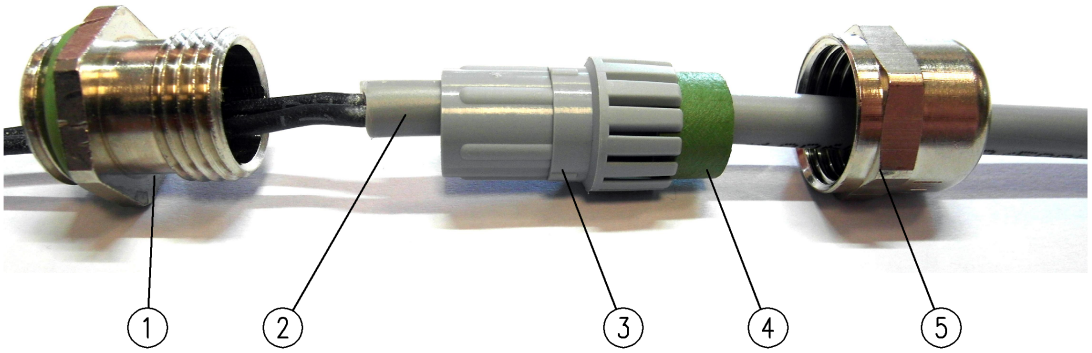


Fig. 31: Cable gland unshielded, example M16x1,5

1 Intermediate fitting
2 Cable sheath
3 Plastic insert
4 Seal
5 Union nut

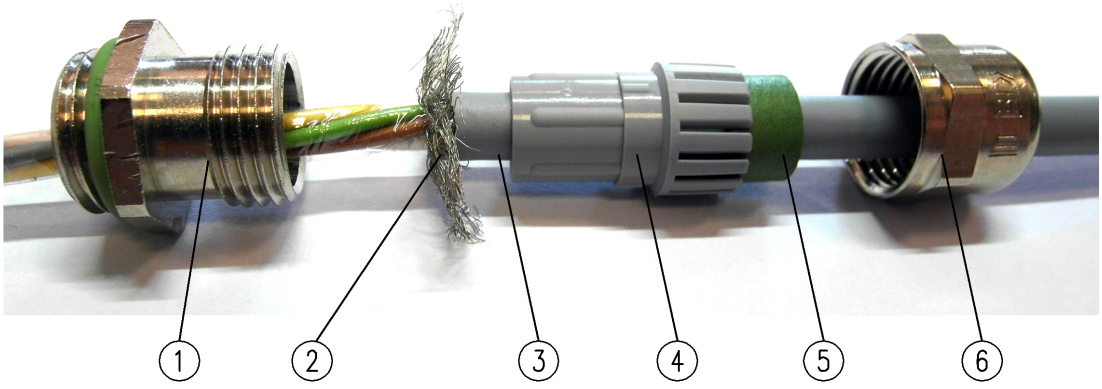


Fig. 32: Cable gland shielded, example M16x1,5

1 Intermediate fitting
2 Shield
3 Cable sheath
4 Plastic insert
5 Seal
6 Union nut

For the procedure described below, see Fig. 31 and Fig. 32.

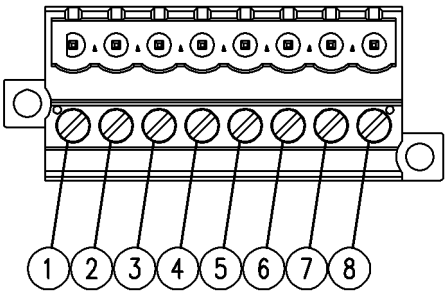
INFORMATION

In the following description and in the Fig. 31 and Fig. 32, the M16 x 1.5 cable gland is described as an example. Other cable glands can deviate from this.

1. Remove the cable gland union nut and plastic insert with seal from the detector base.
2. Slide the union nut onto the connection cable.
3. Slide the plastic insert with seal onto the connection cable.
4. Strip the cable insulation to the required connection cable length (approx. 100 mm (3.94 in)).
   ⇨ For unshielded cables, steps 5, 6 and 8 can be skipped.
5. Remove the shield up to approx. 10 mm (0.39 in) from the end of the outer sheath. If using a cable with static shield consisting of aluminum-clad plastic foil and sheath wire (e.g. fire detection cable): Remove the plastic foil down to the end of the outer jacket.
6. Bend the shield or sheath wire outward by about 90°.
7. Slide the plastic insert with seal all the way to the end of the outer sheath.
8. Fold the shield or sheath wire over the plastic insert with seal. The shield or sheath wire is only permitted to extend to the first edge of the plastic insert.
9. By twisting it back and forth, work the plastic insert together with the seal into the intermediate fitting until the twist protection (stub insert) snaps into place.
10. Screw the union nut onto the intermediate stub and tighten securely using a wrench (size 17 mm (0.67 in), 3.5 Nm (2.58 ft lb)).

6.7.1 Connecting terminal configuration

Carry out connection to the power supply and the complete system according to the following terminal configuration.



1 "+UL" Alarm line voltage input
2 "+UL" Alarm line voltage output
3 "-UL" GND input
4 "-UL" GND output
5 "+UF" Fault line voltage input
6 "+UF" Fault line voltage output
7 "Ext" External display, open collector
8 "T/R" Test/reset input

Fig. 33: Connecting terminal configuration

Connect the detector to the voltage supply and complete system in accordance with the connecting terminal configuration ↬ *Chapter 6.8 “Connect the complete system (control drawings)” on page 65*.

6.8 Connect the complete system (control drawings)

The proper integration of the detector into the configured complete system is shown in the following figure.

6.8.1 Alarm line wiring diagram

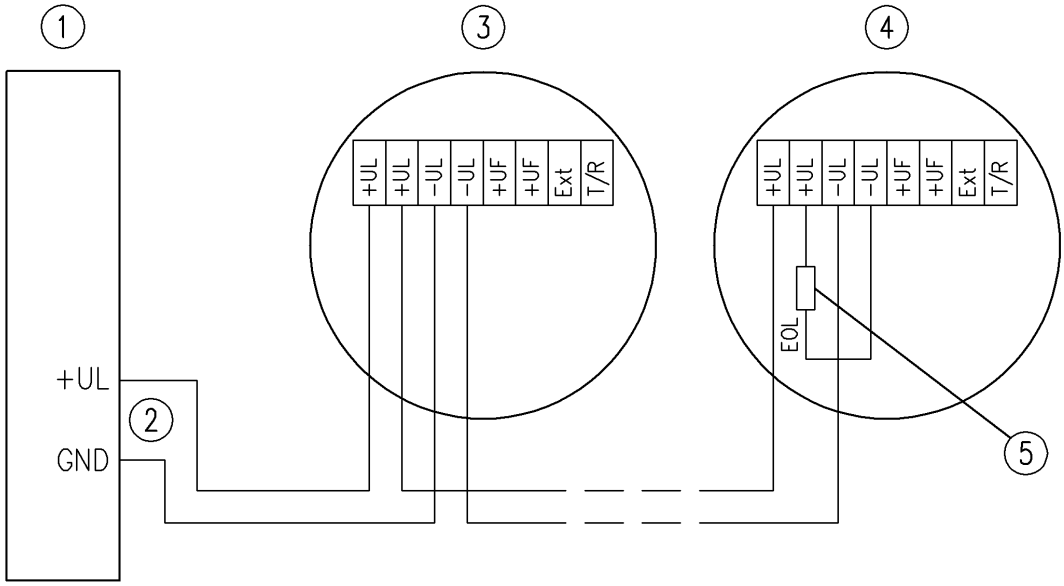


Fig. 34: Alarm line wiring diagram, without fault line

1 Fire detection control panel
2 Alarm line
3 Detector 1
4 Detector n
5 End-of-line-resistor (EOL)

6.8.2 Alarm and fault line wiring diagram

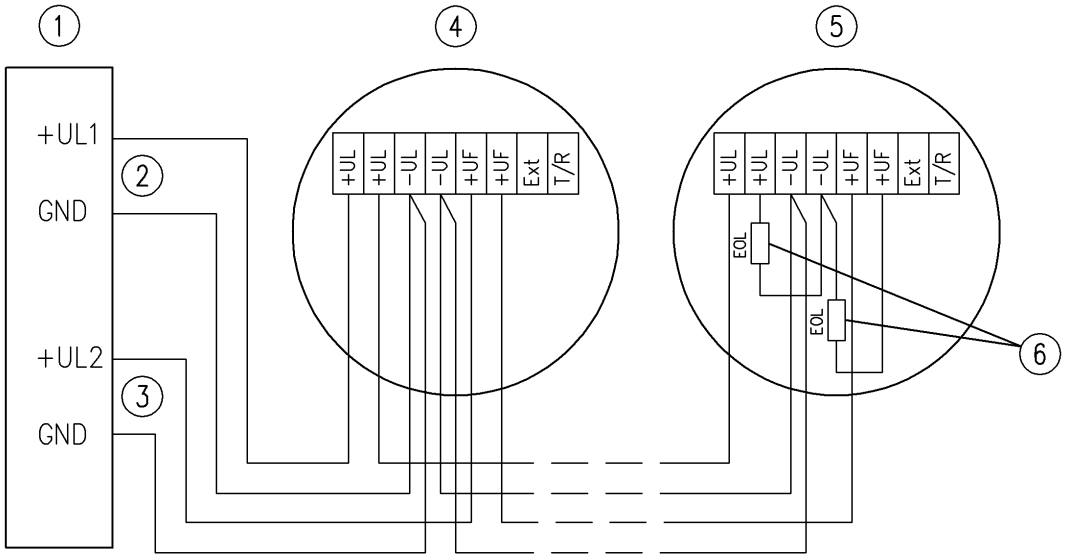


Fig. 35: Connection of alarm line to fault line

1 Fire detection control panel
2 Alarm line
3 Fault line
4 Detector 1
5 Detector n
6 End-of-line resistor (EOL)

INFORMATION

If a fault line is used, the complete cabling must have a separately laid "-UL/GND" wire for each detector line.

6.8.3 Alarm line wiring diagram, external display and test/reset button

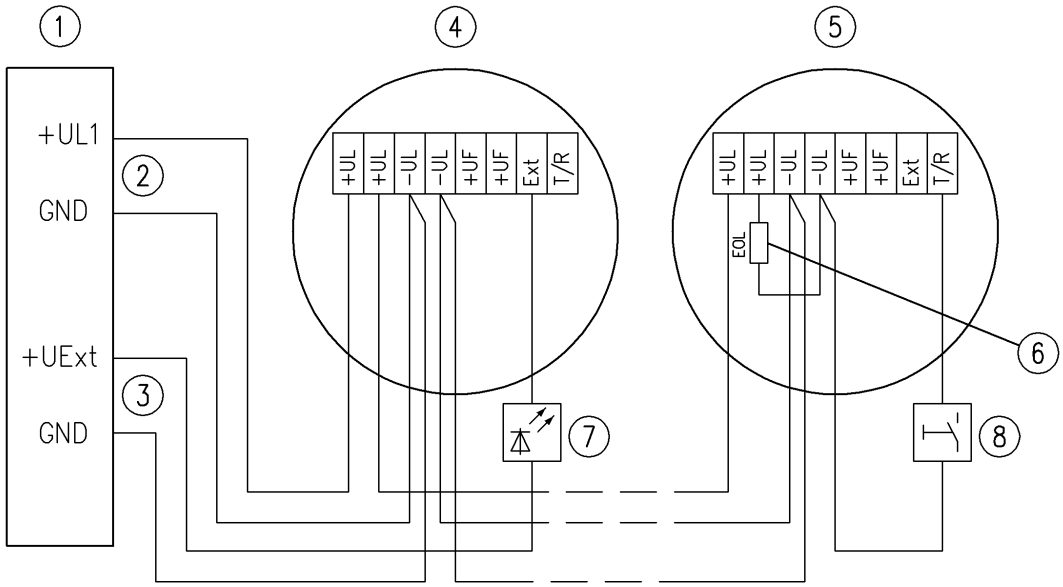


Fig. 36: Alarm line wiring diagram, external display and test/reset button

1 Fire detection control panel
2 Alarm line
3 Voltage supply external indicator
4 Detector 1
5 Detector n
6 End-of-line resistor (EOL)
7 External indicator
8 Test/reset button for test triggering

Connection instructions

The line connected to the "T/R" connecting terminal for the test/reset button (Fig. 36/8) must not exceed 1500 mm (59.06 in) in length or total an impedance of 100 Ω.

If using external indicators: Run a separate "GND" wire up to the indicator which is the farthest away from the evaluation unit.

6.9 KMX5000 RK and KMX5000 RK 3GD relay module

6.9.1 Assembly of KMX5000 RK, KMX5000 RK 3GD relay module

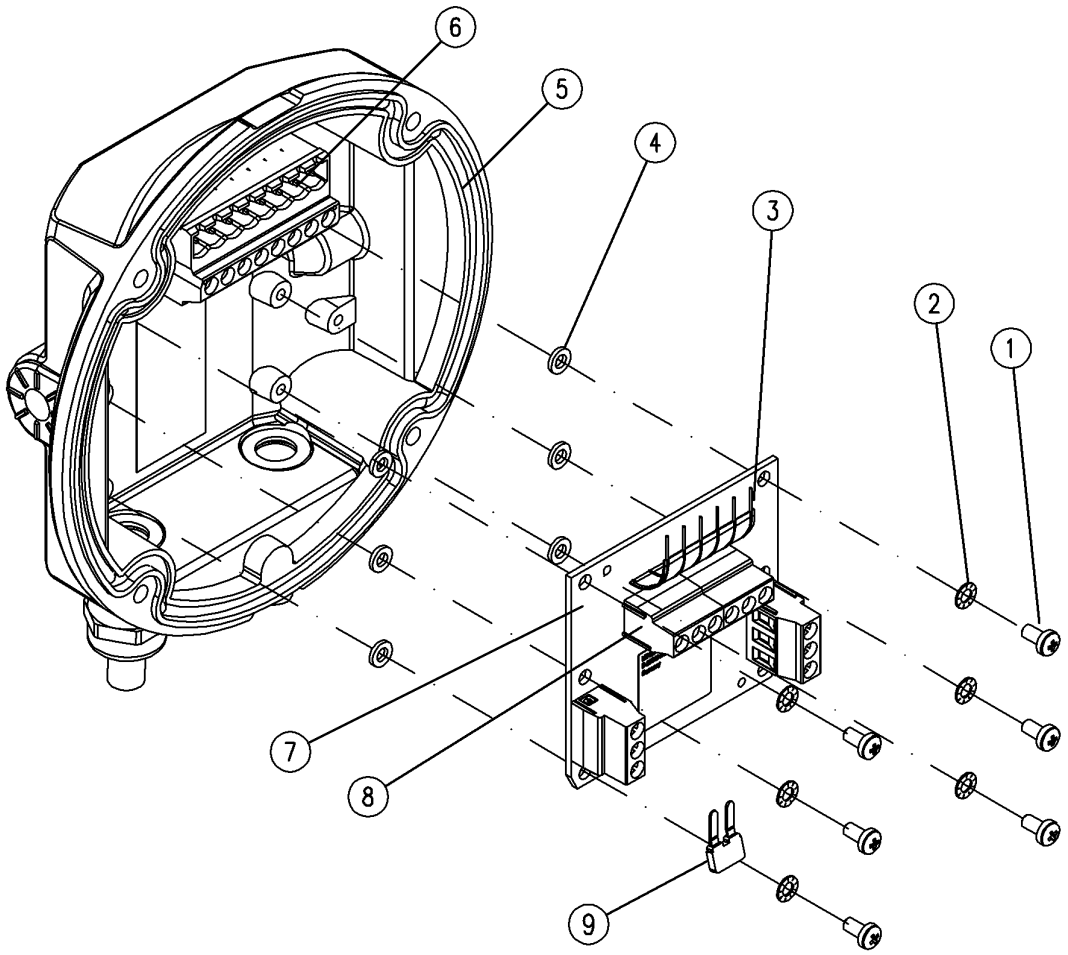


Fig. 37: Assembling the relay module, example KMX5000 RK

1 Fixing screws
2 Serrated lock washers
3 6-pole flex connection
4 Plastic insulating bushes
5 Detector base
6 Terminal block
7 Relay module
8 X4 terminal block
9 Short-circuit bridge

1. Using the six fixing screws (Fig. 37/1), serrated lock washers (Fig. 37/2), and plastic insulating bushes (Fig. 37/4), firmly screw the relay module (Fig. 37/7) iinto the detector base (Fig. 37/5).
2. Connect and screw in 6-pole flex connection (Fig. 37/3) with corresponding connecting terminals (Fig. 37/6) to the detector base.
3. If using shared voltage supply: Insert short-circuit bridge (Fig. 37/9) and (Fig. 38/2) into connecting terminals "+24V" and "+UL" and screw into place.

4. For separate voltage supplies: Remove short-circuit bridge (Fig. 38/2) and insert two common return conductors ("-UL" / "0 V") (Fig. 39/4). The conductor cross-section has to be the same for both lines.

INFORMATION

With relay module mode, the alarm must be configured as latching (Chapter 5 “Configuration” on page 35). Short response times are not possible in relay module mode!

6.9.2 Relay module connection diagram

6.9.2.1 Common voltage supply

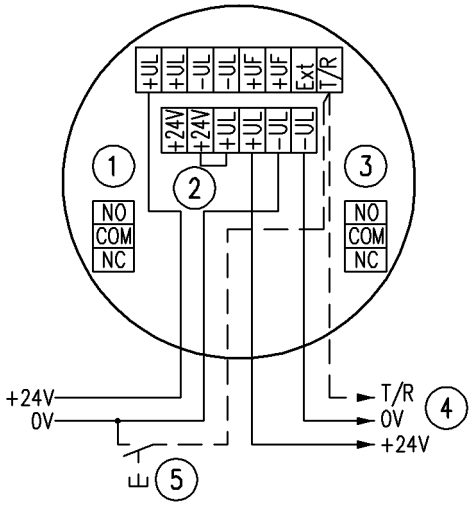


Fig. 38: Relay module connection - common voltage supply

1 Alarm
2 Short-circuit bridge
3 Fault
4 To the next detector
5 Test/reset (option)

6.9.2.2 Separate voltage supply

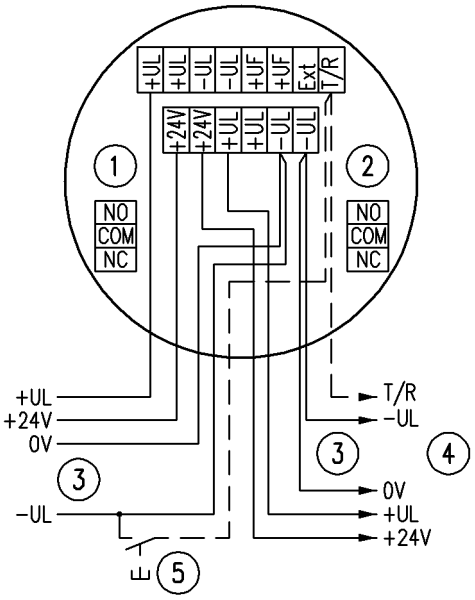


Fig. 39: Connection for separate voltage supply

1 Alarm
2 Fault
3 Shared return conductor
4 To the next detector
5 Test/reset (option)

NOTICE

With separate voltage supplies to detector and relay module, no fault message occurs at the relay module if the detector is switched off or is removed from the detector base.

6.10 UniVario® KMX5000 AP communication module

6.10.1 Installation of communication module

The detector address has been assigned to the communication module (Fig. 40/2) via DIP switches *Chapter 6.10.4 “Address communication module” on page 73*.

Mount the communication module as illustrated until it clicks into position.

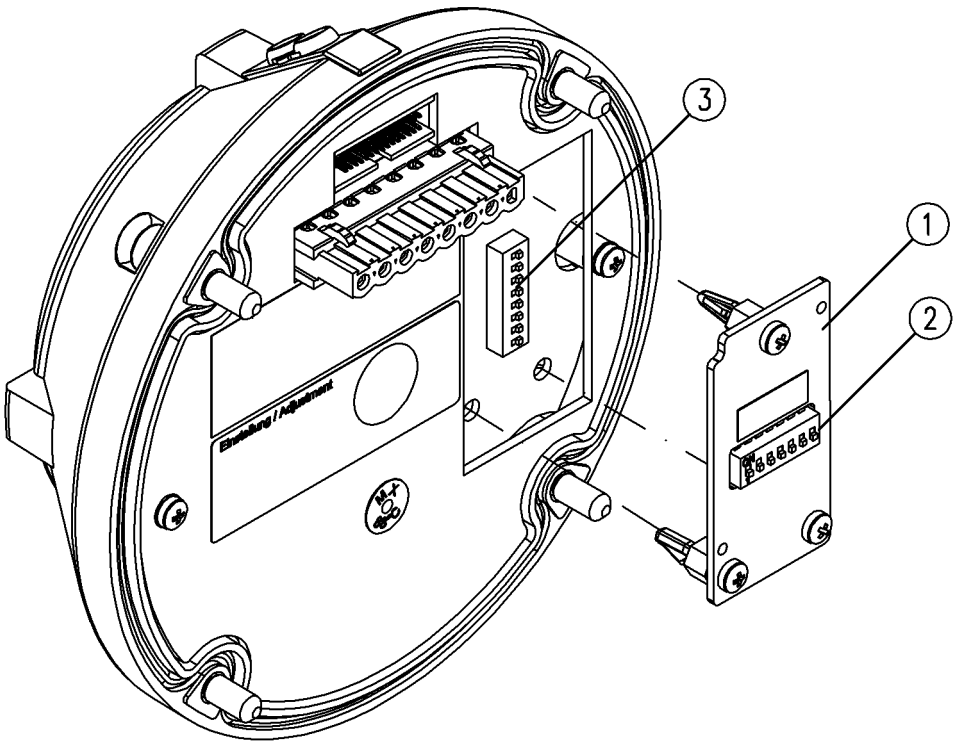


Fig. 40: Mount KMX5000 AP

1 KMX5000 AP communication module
2 DIP switch on the KMX5000 AP communication module
3 DIP switch on the detector

INFORMATION

- *When connecting (Fig. 41), note that removing a detector will cause the wire to break! In order to prevent this, alternatively the wires of the incoming loop and outgoing loop can be jointly run through one connecting terminal (with the same rigid cross-section up to 1 mm² (AWG 18), flexible up to 1.5 mm² (AWG 16)).*

6.10.2 Communication module connection diagram

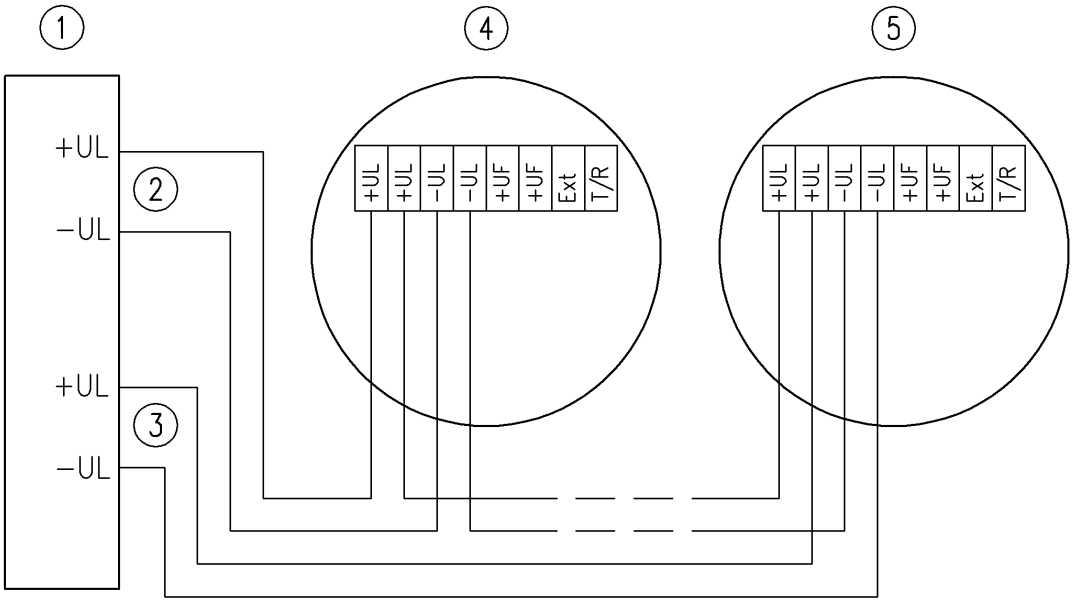


Fig. 41: Loop mode connection diagram

1 Fire detection control panel
2 Loop start
3 Loop end
4 Detector 1
5 Detector n

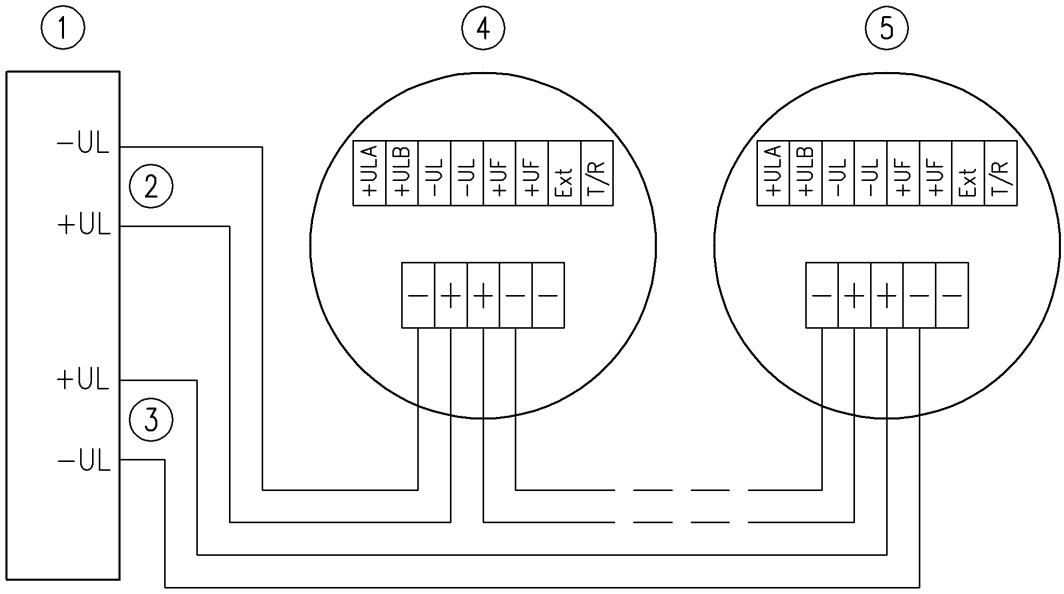
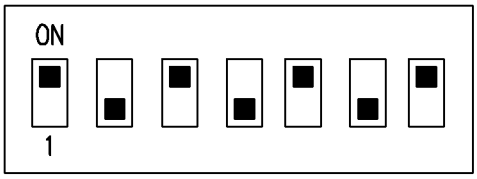


Fig. 42: Insulator base connection diagram

1 Fire detection control panel
2 Loop start
3 Loop end
4 Detector 1
5 Detector n

6.10.3 Example addressing



Address 42	Switches 1-3-5-7

Fig. 43: DIP switches on KMX5000 AP
Ex – example address 42

6.10.4 Address communication module

Address	DIPswitch	Address	DIPswitch	Address	DIPswitch
1	-234567	43	--3-5-7	85	-2-4-6-
2	1-34567	44	12--5-7	86	1--4-6-
3	--34567	45	-2--5-7	87	---4-6-
4	12-4567	46	1---5-7	88	123--6-
5	-2-4567	47	----5-7	89	-23--6-
6	1--4567	48	1234--7	90	1-3--6-
7	---4567	49	-234--7	91	--3--6-

Address	DIPswitch	Address	DIPswitch	Address	DIPswitch
8	123-567	50	1-34--7	92	12---6-
9	-23-567	51	--34--7	93	-2---6-
10	1-3-567	52	12-4--7	94	1----6-
11	--3-567	53	-2-4--7	95	-----6-
12	12--567	54	1--4--7	96	12345--
13	-2--567	55	---4--7	97	-2345--
14	1---567	56	123---7	98	1-345--
15	----567	57	-23---7	99	--345--
16	1234-67	58	1-3---7	100	12-45--
17	-234-67	59	--3---7	101	-2-45--
18	1-34-67	60	12----7	102	1--45--
19	--34-67	61	-2----7	103	---45--
20	12-4-67	62	1-----7	104	123-5--
21	-2-4-67	63	------7	105	-23-5--
22	1--4-67	64	123456-	106	1-3-5--
23	---4-67	65	-23456-	107	--3-5--
24	123--67	66	1-3456-	108	12--5--
25	-23--67	67	--3456-	109	-2--5--
26	1-3--67	68	12-456-	110	1---5--
27	--3--67	69	-2-456-	111	----5--
28	12---67	70	1--456-	112	1234---
29	-2---67	71	---456-	113	-234---
30	1----67	72	123-56-	114	1-34---
31	-----67	73	-23-56-	115	--34---
32	12345-7	74	1-3-56-	116	12-4---
33	-2345-7	75	--3-56-	117	-2-4---
34	1-345-7	76	12--56-	118	1--4---
35	--345-7	77	-2--56-	119	---4---
36	12-45-7	78	1---56-	120	123----
37	-2-45-7	79	----56-	121	-23----
38	1--45-7	80	1234-6-	122	1-3----
39	---45-7	81	-234-6-	123	--3----
40	123-5-7	82	1-34-6-	124	12-----

Address	DIPswitch	Address	DIPswitch	Address	DIPswitch
41	-23-5-7	83	--34-6-	125	-2-----
42	1-3-5-7	84	12-4-6-	126	1------

7 Commissioning

Have the work described in this section carried out only by the following persons:

Personnel: ■ Qualified specialist personnel

7.1 Preparation for start-up

NOTICE

Unwanted triggering due to incorrect installation!
Incorrect installation of the device may cause unwanted triggering.
Ensure that the equipment has been installed correctly before starting any work on the fire detection system.

The following must be ensured before start-up:

- The detector has been configured in accordance with the configuration requirements
- The detector has been correctly installed
- The detector is not damaged
- Connection has been carried out correctly
- Cable entries have been sealed
- All screws have been securely tightened
- End-of-line resistor (EOL) has been installed in the last detector (if necessary)

7.2 Carrying out start-up

Operation without fire detection control panel

1. Switch on the voltage supply.
   ⇨ After a maximum of one minute, the green operation indicator flashes at 10-second intervals. If the green normal operation indicator does not start to flash or if the fault indicator lights up *Chapter 9 “Troubleshooting” on page 85*.
2. Carry out a function check *Chapter 8.4.2 “Function test with test light” on page 81*.

Operation with a fire detection control panel

1. Put the detector line into operation in accordance with the operating instructions of the fire detection control panel.
2. Switch on the voltage supply.
   ⇨ After a maximum of one minute, the green operation indicator flashes at 10-second intervals. If the green normal operation indicator does not start to flash or if the fault indicator lights up *Chapter 9 “Troubleshooting” on page 85*.

3. Carry out a function check *Chapter 8.4.2 “Function test with test light” on page 81*.

INFORMATION

The fault indicator lights up only when there is no alarm and the fault line is connected.

INFORMATION

The yellow fault indicator does not light up during loop mode.

8 Maintenance

Have the work described in this section carried out only by the following persons:

Personnel: ■ Qualified specialist personnel

Maintenance work must be carried out in accordance with national guidelines and standards and at regular intervals, taking account of operating conditions and environmental factors.

INFORMATION

Maintenance is supported by the SMX5000 service device ↳ Chapter 5.4 “UniVario® SMX5000 service device” on page 37.

8.1 Test intervals

The intervals given are minimum values. If required due to ambient conditions, maintenance intervals must be done more frequently:

- At high ambient temperatures.
- If used in areas with aggressive media.
- If contamination can be anticipated due to operating conditions.

Interval	Activity	Component	Chapter
At least quarterly	Inspection	All detectors	↳ *Chapter 8.2 “Inspection” on page 79*
At least quarterly	Test triggering (random sample)	At least one detector per detector line	↳ *Chapter 8.3 “Test triggering” on page 79*
Quarterly	Function check (random sample)	At least one detector per detector line	↳ *Chapter 8.4.2 “Function test with test light” on page 81*
Annually	Inspection	Display on MX5000 LCD detector base (option)	↳ *Chapter 8.6 “Check the LCD monitor on the MX5000 LCD detector base” on page 83*
Annually	Cleaning	Optical system	↳ *Chapter 8.5 “Cleaning” on page 82*

Interval	Activity	Component	Chapter
Annually	Test triggering	All detectors	↳ *Chapter 8.3 “Test triggering” on page 79*
Annually	Function check	All detectors	↳ *Chapter 8.4 “Function check” on page 81*

8.2 Inspection

Carry out the following inspections:

- Check the detector housing, especially the cable entries, for seal tightness.
- Check the detector housing, especially the optical system, for mechanically flawless and clean condition.
- Check to ensure that the detector and detector base are properly anchored.
- Check the area to be monitored for a change in the use of the room and any sources of interference.
- Check the ambient temperature in the area to be monitored for adherence to the permissible operating temperature (↳ *Chapter 3.10 “Temperature measuring pad” on page 19*).
- Check the operation indicator.

8.3 Test triggering

Test triggering ensures that the software and the transmission paths (alarm line and, if present, fault line) to the evaluation unit are functioning properly.

INFORMATION

Test triggering does not replace the function check! Only an IR source test verifies full functionality of the sensor system ↳ Chapter 8.4 “Function check” on page 81.

Prerequisites

- Detector has been in operation longer than 30 s.
- If test triggering via the reed switch: DIP switch 1 in OFF position ↳ *Chapter 5 “Configuration” on page 35*.
- When a fire alarm control panel is connected: The relevant lines/groups of the fire alarm control panel are in revision mode.
- There is no alarm message or fault signal present.

8.3.1 Execution

NOTICE

Property damage caused by unauthorized release of a transmission unit or a fire extinguishing system is possible!
Prior to the function test, ensure that the relevant lines/groups of the fire detection control panel are in revision mode and any connected transmission unit or fire extinguishing system is deactivated and secured.

When actuating the reed switch or test/reset button the first time, test triggering begins, actuating a second time ends test triggering. Actuation must last at least 2 s.

Example of test triggering via reed switch

1. Check if the prerequisites have been met ↳ *Chapter 8.2 “Inspection” on page 79*.
2. Move the permanent magnet to the position of the reed switch (Fig. 7) on the detector and hold there.
   ⇨ If a fault line is connected, the fault indicator lights up.
3. Remove the magnet from the detector housing.
   ⇨ If a fault line is connected, the fault indicator turns off.
   The alarm indicator lights up.
   If an optional external indicator is connected, the external indicator lights up.
4. In the case of two-detector dependency, repeat steps 1 to 3 on the second detector.
5. When connecting a fire alarm control panel, the message inputs must be checked on that panel.
6. Move the magnet to the position of the reed switch (Fig. 7) on the detector and hold there.
   ⇨ The alarm indicator turns off.
   If a fault line is connected, the fault indicator lights up.
   If an optional external indicator is connected, the external indicator turns off.
7. Remove the magnet from the detector housing.
   ⇨ If a fault line is connected, the fault indicator turns off.
8. In the case of two-detector dependency, repeat steps 6 to 7 on the detector used in step 4.

8.4 Function check

NOTICE

Property damage caused by unauthorized release of a transmission unit or a fire extinguishing system is possible!
Prior to the function test, ensure that the relevant lines/groups of the fire detection control panel are in revision mode and any connected transmission unit or fire extinguishing system is deactivated and secured.

8.4.1 Prerequisites

- Before carrying out this function check, the detector must have been in operation for longer than 1 minute.
- In the case of two-detector dependency a detector, as described in *Chapter 8.3.1 “Execution” on page 80* steps 1 to 3, can be switched to the "test alarm" state so that the function check to be carried out here, if successful, represents the second alarm. Alternatively, the check must also be done on a second detector at the same time (for fire detection control panels within the analysis time).

Resetting an alarm is only possible after approx. 5 s without IR radiation.

If no triggering can be caused using the function checks described below, the electrical connection must be inspected as described in *Chapter 6.6 “Electrical connection” on page 60* and the procedure described in *Chapter 8.5 “Cleaning” on page 82* followed.

If the device is not triggered after doing the function test again, the device should be replaced immediately and checked by Customer Service.

8.4.2 Function test with test light

WARNING

Risk of explosion caused by open flames, hot surfaces or optical radiation
Never use open flames or other ignition sources in explosion hazard areas.
Only used permissible operating equipment for the function check or ensure there is no explosion hazard present.

WARNING

Danger of eye damage!
Never look into the beam of light or point at another person when using a test light.

The check can be carried out with a test light as follows:

1. Switch the test light on and point the light beam at the flame detector from about 10 cm (3.94 in) away.
2. The detector alarm must trip within 10 s (alarm indicator). (The time depends on the fire sensitivity setting of the detector.)

3. Where appropriate, give consideration to two-detector dependency as described above.
4. Check that the message has reached the fire detection control panel.
5. After successfully carrying out the function check, all the alarms of the detectors used must be reset, also at the fire detection control panel if necessary.

8.4.3 Contamination monitoring function test

INFORMATION

The maximum self-monitoring system response time to soiled optics is 10 minutes.

This function test must be performed as necessary and is not part of the regular function tests to be performed. Contamination monitoring can be tested as follows while the optics test is aktivited (↬ *Chapter 5.2 “Carry out configuration” on page 36*):

1. Use a suitable object to cover the side of the reflector that faces the optics.
   ⇨ The view between the reflector and optics is interrupted. Based on the usage, a fault signal is issued as per ↬ *Chapter 3.7 “Fault signaling” on page 18*.
2. Following a successful function test, remove the optical interruption between the reflector and optics.
   ⇨ The fault signal is reset automatically.

8.5 Cleaning

NOTICE

Functional impairment of the detector from cleaning agents
Using other cleaning products may impair the functionality of the detector. Cleaning of the lenses may only be carried out according to the instructions given above.

INFORMATION

The optical system cleaning set can be used to clean the lenses ↬ Chapter 10.7 “Special accessories” on page 89. The use of the cleaning set is described in the corresponding product information.

Procedure

1. Soak a cotton cloth (if possible pure natural fiber without other material) in some isopropyl alcohol. Carefully clean the optical system with the cloth from the outside, as well as the reflector from both sides, until dirt is no longer visible.
2. Use a clean portion of the cloth dipped in some isopropyl alcohol to wipe it clean again.

3. Polish clean with a dry, clean portion of the cotton cloth.
4. Complete a function check.

If, after cleaning the optical system, the flame detector no longer allows triggering as described in *Chapter 8.4 “Function check” on page 81*, the device must be replaced immediately and checked by Customer Service.

8.6 Check the LCD monitor on the MX5000 LCD detector base

Each time the detector is switched on, all segments of the LCD are activated. Check if individual segments have failed.

If so:

- Replace the MX5000 LCD detector base.

The LCD displays change cyclically in trouble-free operation. A constant display may indicate that the display is no being activated.

- Check and record the state values.
  - ⇨ This can be used for deciding how to service the detector.

8.7 Detector replacement

Depending on the ambient conditions, detectors must be replaced **after 10 years at the latest**. Depending on the demand at the installation location, components may age prematurely and need to be replaced sooner. The following table provides a guideline for detector replacement intervals in accordance with the demand at a particular installation location:

Demand	Ambient conditions	Detector replacement
High	Constant temperature at installation location between 60 °C (140 °F) and 80 °C (176 °F) or frequent and high temperature fluctuations (more than 50 times annually with temperature variances of more than 50 K)	Recommended after 4 years of operation
Medium	Constant temperature at installation location between 0 °C (32 °F) and 60 °C (140 °F) or frequent and medium temperature fluctuations (more than 50 times annually with temperature variances of between 20 K and 50 K)	Recommended after 7 years of operation
Normal	Constant temperature at installation location between 10 °C (50 °F) and 30 °C (86 °F) and less frequent and infrequent temperature fluctuations (less than 50 times annually with temperature variances under 20 K)	Required after 10 years of operation

9 Troubleshooting

Have the work described in this section carried out only by the following persons:

Personnel: ■ Qualified specialist personnel

The following symptoms indicate a fault:

- The fault indicator lights up with connected fault line when there is no alarm.
- The operation indicator does not flash.

Check the possible causes of the fault in the following order:

Possible causes	Remedy
The optical system is dirty or damaged.	1. If damaged: Replace the detector. 2. Clean if necessary, *Chapter 8.5 “Cleaning” on page 82*. 3. If the fault indicator does not go out 2 minutes after cleaning, have the detector checked or replaced by Customer Service *Chapter 8.4 “Function check” on page 81*.
The detector was operated outside the permissible operating temperature range.	1. Remove the detector from the detector base. 2. Check the dot on the temperature measuring pad for dark color. If the color of the dot on the temperature measuring pad is dark, the detector was used above the maximum permissible operating temperature *Chapter 12.4 “Climatic data” on page 94*. In this case: 3. Replace the detector.

Possible causes	Remedy
The detector was operated outside the operating voltage range.	1. For line operation: If present, measure the operating voltage of the next detector (away from the fire detection system). 2. If there is no adjacent detector present: Remove the detector from the detector base. 3. Measure the voltage at the "+UL" and "-UL" connecting terminals. The voltage must be within the operating voltage range ↳ *Chapter 12.3 “Electrical data” on page 93*! 4. If voltage is sufficient: Put the detector back into operation ↳ *Chapter 7 “Commissioning” on page 76*. If after putting it back into operation again, a fault message already occurs after approx. 30 s or the operating indicator does not flash within one minute, see the following step.
● DIP switch malfunction ● Error in the memory contents ● Internal AD converter defective ● General fault	Have the detector checked or replaced by Customer Service.

No test alarm is triggered during a function check or test triggering:

Possible causes	Remedy
Electrical connection not correct	Check the electrical connection ↳ *Chapter 6.6 “Electrical connection” on page 60*.
Optical system dirty	Clean the optical system ↳ *Chapter 8.5 “Cleaning” on page 82* and carry out the function check again. If triggering does not occur after that: Have the detector checked or replaced by Customer Service.

10 Accessories and spare parts

10.1 Detector base

Designation	Part No.
UniVario® MX5000 base [a) c) d)]	904701
UniVario® MX5000 M20 base [a) c) d)]	924178
UniVario® MX5000 M20 Ex base [c) d)]	922432
UniVario® MX5000 M20 NG Ex base [c) d)]	924179
UniVario® MX5000 NPT base [c) d)]	922431
UniVario® MX5000 Ex base [c) d)]	912082
UniVario® MX5000 3M16 base [a) c) d)]	907011
UniVario® MX5000 LCD base [a) b) c)]	906127
UniVario® MX5000 HR base [a)]	909406
UniVario® MX5000-I base (insulator base) [a) b) c) d)]	912493
MX5000 dust cap	921694

a) not for FMX5000 IR 3GD

b) cannot be used when using relay module KMX5000 RK

c) not for FMX5000 IR HR

d) also available as silicone-free version

10.2 Detector mounting

Designation	Part No.
UniVario® MX5000 bracket	904757
MX5000 console	904758
M5 housing screw for UniVario® detector	904282
Bracket screw for UniVario® MX5000 bracket	904355
UniVario® MX5000 HR bracket	909359
MX5000 ST mounting bracket	914914

10.3 Communication interfaces

Designation	Part No.
UniVario® KMX5000 RK relay module [a) b)]	906361
UniVario® KMX5000 RK 3GD relay module [b)]	925999

Designation	Part No.
UniVario® KMX5000 AP communication module	905883
ISX 284-I 3GD isolator	915864
LMX5000 repeater panel	908499

[a)] not for FMX5000 IR 3GD

[b)] cannot be used with MX5000 LCD detector base

10.4 Service accessories

Designation	Part no.
UniVario® SMX5000 service device	906136

10.5 Recommended connection cables

Designation	Part No.
J-Y(St)Y connection cable 2 x 2 x 0.8 red	747180
LiYCY connection cable 5 x 0.5 mm² shielded, gray	606061
Ölflex connection cable EB CY 3 x 0.75 mm²	919318

10.6 Installation material

Designation	Part no.
Cable gland, M16 x 1,5 [a)] (cable diameter 5 mm … 9 mm) (0.20 in ... 0.35 in)	901861
Cable gland, M20 x 1,5 [a)] (cable diameter 5 mm … 13 mm) (0.20 in ... 0.51 in)	907084
Cable gland with pressure relief function, M20x1.5 Vent[a) b)] (cable diameter 5 mm … 11 mm) (0.20 in ... 0.43 in)	934428
Cable gland, M16/M20 [a)] (cable diameter 9 mm … 13 mm) (0.35 in ... 0.51 in)	907096
Explosion-proof cable gland, M20 x 1,5 Vent (with pressure relief function) [b)] (cable diameter 5 mm … 11 mm) (0.20 in ... 0.43 in)	933514
EMC explosion-proof cable gland, M20 x 1,5 Vent EMC Ex (with pressure relief function) [b)] (cable diameter 5 mm … 11 mm) (0.20 in ... 0.43 in)	933515
Explosion-proof cable gland, M16 x 1,5 (cable diameter 6 mm … 8 mm) (0.24 in ... 0.31 in)	904652

Designation	Part no.
Explosion-proof cable gland, M16 x 1,5 (as #904652, but cable diameter 8 mm ... 10 mm) (0.31 in ... 0.39 in)	4003993
Explosion-proof cable gland, M20 x 1,5 Ex-d A4 (cable diameter 7 mm ... 12 mm) (0.28 in ... 0.5 in)	920793
Seal for UniVario® detector (on detector side)	904762
EMC seal for UniVario® detector (on detector base side)	904752
For UniVario® KMX5000 AP (option): Pan head screw ISO7045- M3x4-PA-H	905033
For UniVario® KMX5000 AP (option): Spacer M3x6 PA6.6	905032

[a)] Not for FMX5000 IR 3GD

[b)]Cannot be combined with the special silicone cold shrinkable tube accessory (part no.: 905337)

10.7 Special accessories

Designation	Part No.
Cold-shrinkable tube, silicone 25 > 5.6 mm	905337
Complete weatherproof housing MX5000	910134
Lens cleaning set	916644

11 Disassembly and disposal

After end of use, the detector must be disposed of or brought to a recycling center in accordance with statutory regulations.

Upon request the manufacturer can take back and properly dispose of the electrical equipment and electronic devices for you within the European Union according to Directive 2012/19/EU.

Procedure

1. Loosen screws (Fig. 26/4) and remove detector (Fig. 26/3) from the detector base (Fig. 26/2).
2. When using the MX5000 LCD detector base: Carefully disconnect the ribbon cable connector (Fig. 25/3) of the LCD from the terminal strip (Fig. 2/2).
3. Disconnect the cable connections from the terminal block.
4. Disconnect the connection cable from the cable gland on the detector base.
5. Remove the detector base.

12 Technical data

12.1 Functional data

Measuring principle	Detection of IR radiation
Response threshold values	In accordance with EN54 – Part 10: Classes 1, 2 or 3 Outside EN54 – class x (50 m)
Detection criterion	Change in IR intensity
Response time	1 s to 30 s (depending on intensity)
Quiescent condition	30 s after switching on
Duration of voltage interruption for alarm reset, line cycle time	30 ms
Duration of voltage interruption for reset, detector restart	4 s
Operation indicator	LED green With no fault: flashing every 10 s With fault: no flashing
Alarm indicator	LED red
Fault indicator	LED yellow (with connected fault line only)
Wall or corner assembly (VdS)	Rectangular room volume with an edge length of Class 1: max. 26 m (85 ft) Class 2: max. 20 m (65 ft) Class 3: max. 13 m (43 ft)
Area to be monitored (VdS)	Class 1: max. 676 m² (808 sq yd) Class 2: max. 400 m² (478 sq yd) Class 3: max. 169 m² (202 sq yd)
Room height (VdS):	Class 1: max. 45 m (148 ft) Class 2: max. 33 m (108 ft) Class 3: max. 23 m (75 ft) Depending on respective surface area to be monitored
Viewing angle	90°

12.2 Mechanical data

Detector

Housing	Die-cast aluminum
Color	Red (similar to RAL 3000)
Weight (including base and bracket)	approx. 991 g (35 oz)
Dimensions (including base)	92 mm x 130 mm x 140 mm (L x W x H) (3.62" x 5.12" x 5.51")
Cable entry [a)]	depending on the detector base (*Chapter 3.12 “Detector base” on page 21*)
Connection cable diameter [a)]	depending on the detector base (*Chapter 3.12 “Detector base” on page 21*)
Conductor cross-section of connection cable	
One conductor, stiff or flexible	0,5 mm^2 ... 2,5 mm^2 (21 AWG ... 14 AWG)
Two conductors with same cross-section, stiff	0,5 mm^2 ... 1 mm^2 (21 AWG ... 18 AWG)
Two conductors with same cross-section, flexible	0,5 mm^2 ... 1,5 mm^2 (21 AWG ... 16 AWG)
Protection type	IP 66 / IP 67 (DIN EN 60529)

KMX5000 RK and KMX5000 RK 3GD relay module (option)

Weight	approx. 50 g (1.76 oz)
Dimensions	57 mm × 64 mm × 24 mm (2.24" x 2.52" x 0.94") (L x W x H)

MX5000 LCD detector base (option)

Weight	approx. 350 g (12.35 oz)
Dimensions	140 mm × 130 mm × 36 mm (5.51" x 5.12" x 1.42") (L x W x H)
Protection type	IP 67

12.3 Electrical data

Detector

Nominal voltage	9 V ... 24 V DC
Operating voltage	7.6 V ... 30 V DC
Start-up current	Max. 5 mA
Nominal current consumption (quiescent current) Detector Detector with MX5000 LCD (option) Detector with KMX5000 AP (option) Detector with MX5000 LCD (option) and KMX5000 AP (option)	Approx. 30 s after start-up 2.3 mA 2.4 mA 2.4 mA 2.6 mA
Ripple current Detector Detector with MX5000 LCD (option) Detector with KMX5000 AP (option) Detector with MX5000 LCD (option) and KMX5000 AP (option)	 2.5 mA approx. millisecond range 2.4 mA approx. millisecond range 2.4 mA approx. millisecond range 2.2 mA approx. millisecond range
Alarm power consumption (without quiescent current)	Approx. 15 mA
Fault line power consumption (without fault indicator)	Approx. 250 µA
Fault indicator power consumption (without quiescent current)	Approx. 15 mA, with connected fault line only
External indicator	Open collector, I_{max}= 10 mA, U_{max} = 30 V
Test/reset input	Switch from “T/R” to “-UL” at a distance of max. 1.5 m (5 ft), max. 100 Ω

KMX5000 AP communication module (option)

Loop-side operating mode	Apollo protocol XP95
Operating voltage	17 ... 28 V DC plus 5 ... 9 V (peak-to-peak) protocol hub, voltage supply from detector
Operating currents	230 µA rms, 300 µA peak

KMX5000 RK and KMX5000 RK 3GD relay module (option)

Operating voltage	24 V (14 V ... 29 V) DC
Operating current, KMX5000 RK only (without detector current)	Approx. 20 mA at 24 V (normal operation, fault relay ON) Approx. 30 mA at 24 V (alarm relay and fault relay ON) Approx. 7 mA at 24 V (alarm relay and fault relay OFF)
Operating current, KMX5000 RK 3GD only (without detector current)	Approx. 18 mA at 24 V (normal operation, fault relay ON) Approx. 35 mA at 24 V (alarm relay and fault relay ON) Approx. 6 mA at 24 V (alarm relay and fault relay OFF)
Relay contact switching voltage	Max. 60 V DC / max. 25 V AC
Relay contact switching current	Max. 1 A
Conductor cross-section	Min. 0.5 mm², max. 2.5 mm²
Contact type	6-pole flexible connector

MX5000 LCD detector base (option)

Operating voltage	Voltage supply from detector
Additional power consumption of detector with MX5000 LCD base	Approx. 300 µA

12.4 Climatic data

Detector

Ambient temperature Ta	-40 °C ≤ Ta ≤ +80 °C (-40 °F ≤Ta ≤ +176 °F)
Storage temperature	-40 °C ... +85 °C (-40 °F ... +185 °F)
Relative humidity	95 % at 35 °C (95 °F), non-condensing
Atmospheric pressure	66 kPa ... 106.7 kPa
Max. altitude for use above sea level	approx. 3500 m (11500 ft)

KMX5000 AP communication module (option):

Ambient temperature	-40 °C ... +80 °C (-40 °F ... +176 °F)

KMX5000 RK and KX5000 RK 3GD relay module (option)

Ambient temperature	-40 °C ... +80 °C (-40 °F ... +176 °F)
Storage temperature	-40 °C ... +80 °C (-40 °F ... +176 °F)
Relative humidity	5 % ... 85 %, non-condensing

MX5000 LCD detector base (option):

Ambient temperature	-20 °C ... +70 °C (-4 °F ... +158 °F)
Storage temperature	-25 °C ... +80 °C (-13 °F ... +176 °F)

12.5 Approvals / conformity

Detector

VdS approval	G217027 (EN54-10)
CE Directives	2014/30/EU (EMC) 2011/65/EU (RoHS) 2014/34/EU (ATEX) [a)]
Certificate of conformity	0786-CPR-20784
Conformity in accordance with 2014/34/EU [a)]	II 3G II 3D
Ignition protection category [a)]	Ex ec nC IIC T4 Gc Ex tc IIIC T110°C Dc
Type examination certificate [a)]	BVS 17 ATEX E003

[a)] Only for FMX5000 IR 3GD with corresponding marking on the outside *Chapter 3.11 “Device markings” on page 20*.

KMX5000 AP communication module (option)

VdS approval	G207032
Standard	EN54-18:2005
Certificate of conformity	0786-CPR-20315

KMX5000 RK and KMX5000 RK 3GD relay module (option)

VdS approval	G221020
Standard	EN54-18:2005
Certificate of conformity	0786-CPR-20314

13 Packaging, Storage and Transport

13.1 Transport and Packaging

The product described here is packed according to the quantity, transportation mode and transportation conditions.

- Transport the product in such a way that it does not create a source of danger by falling.
- Protect the product against external force such as impact, shock and vibrations.
- Inspect the product for completeness and visible signs of damage immediately on receipt.
- Store the product in the original packaging until it is installed.
- Dispose of the packaging material in accordance with the prevailing legal provisions and local regulations.

13.2 Storage

The product described here has to be stored always in a dry place, free of dirt and under the conditions as specified in the chapter “Technical data”. The product has to be stored in the original packaging. If this is not possible use a similar packaging to protect the product described here against damage and pollution.

Appendix

A Declaration of conformity FMX5000 IR

VIKING

Trusted above all.

EU-Konformitätserklärung
EU Declaration of Conformity

Gegenstand / Typ:
Subject / Type:
Flammenmelder UniVario FMX5000 IR, FMX5000 IR HR
Module KMX5000 AP, KMX5000 RK
Flame Detector UniVario FMX5000 IR, FMX5000 IR HR
Modules KMX5000 AP, KMX5000 RK

Zum Einsatz in Brandmeldesystemen und Löschsteueranlagen
For use in fire detection and extinguishing control systems

Die vorgenannten Geräte entsprechen in der gelieferten Ausführung den im Folgenden genannten einschlägigen Bestimmungen und harmonisierten Rechtsvorschriften:
The above mentioned devices correspond in the delivered condition to the relevant regulations and harmonized standards:

Angewandte EU Richtlinie:
Applied EU-Directives:
2011/65/EU Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten und Delegierte Richtlinie 2015/863
2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment and Commission delegated directive 2015/863

Angewandte harmonisierte Normen:
Applied harmonized standards:
EN IEC 63000:2018

Angewandte EU Richtlinie:
Applied EU-Directives:
2014/30/EU Elektromagnetische Verträglichkeit
2014/30/EU Electromagnetic compatibility

Angewandte harmonisierte Normen:
Applied harmonized standards:
EN 61000-6-3:2007 +A1:2011 +AC:2012
EN 50130-4:2011

Bei Veränderung des benannten Gegenstandes erlischt die Konformitätserklärung.
In case of modification of the designated subject, the conformity declaration is no longer valid.

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.
This declaration of conformity is issued under the sole responsibility of the manufacturer.

Diese Erklärung wird abgegeben durch:
This declaration has been stated by:

Art.-Nr.: 924174 ÄI05

Bad Oldesloe, den 06.12.2021

Viking GmbH, Geschäftsführer
Managing Director Viking GmbH
Tim Strieder

Viking GmbH, Qualitätsmanagement
Viking GmbH Quality Management
Jean-Claude Mangin

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Industriestraße 10/12
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Sitz der Gesellschaft: Bad Oldesloe
AG Lübeck HRB 21644 HL
USt-Ident-Nr.: DE253774642
Steuer-Nr.: 30 293 00819

Geschäftsführer:
Dr. Alan Arelli Maffioli
Tim Strieder

UniCredit Bank AG
BLZ 200 300 00 Kto.-Nr. 649 971 553
IBAN DE14 2003 0000 0649 9715 53
SWIFT-BIC HYVE DEMM 300

Fig. 44: 92417405_CE declar FMX5000 IR VK

B Declaration of conformity FMX5000 IR 3GD

VIKING

Trusted above all.

EU-Konformitätserklärung
EU Declaration of Conformity

Gegenstand / Typ:
Subject / Type:
Flammenmelder UniVario FMX5000 IR 3GD
Module KMX5000 AP, KMX5000 RK 3GD
Flame Detector UniVario FMX5000 IR 3GD
Modules KMX5000 AP, KMX5000 RK 3GD

Zum Einsatz in Brandmeldesystemen und Löschsteueranlagen
For use in fire detection and extinguishing control systems

Die vorgenannten Geräte entsprechen in der gelieferten Ausführung den im Folgenden genannten einschlägigen Bestimmungen und harmonisierten Rechtsvorschriften:
The above mentioned devices correspond in the delivered condition to the relevant regulations and harmonized standards:

Angewandte EU Richtlinie:
Applied EU-Directives:
2011/65/EU Beschränkung der Verwendung bestimmter gefährlicher Stoffe in Elektro- und Elektronikgeräten und Delegierte Richtlinie 2015/863
2011/65/EU Restriction of the use of certain hazardous substances in electrical and electronic equipment and Commission delegated directive 2015/863

Angewandte harmonisierte Normen:
Applied harmonized standards:
EN IEC 63000:2018

Angewandte EU Richtlinie:
Applied EU-Directives:
2014/30/EU Elektromagnetische Verträglichkeit
2014/30/EU Electromagnetic compatibility

Angewandte harmonisierte Normen:
Applied harmonized standards:
EN 61000-6-3:2007 +A1:2011 +AC:2012
EN 50130-4:2011

Angewandte EU Richtlinie:
Applied EU-Directives:
2014/34/EU Geräte und Schutzsysteme zur bestimmungsgemäßen Verwendung in explosionsgefährdeten Bereichen
2014/34/EU Equipment and protective systems intended for use in potentially explosive atmospheres

Angewandte harmonisierte Normen:
Applied harmonized standards:
EN IEC 60079-0:2018
EN IEC 60079-7:2015 +A1:2018
EN IEC 60079-15:2019
EN 60079-31:2014

Eingeschaltete benannte Stellen:
Engaged notified bodies:
DEKRA Testing and Certification GmbH
Dinnendahlstraße 9
D-44809 Bochum

Zugehörige Bescheinigungen:
Certificates which are included:
BVS 17 ATEX E 003

Bei Veränderung des benannten Gegenstandes erlischt die Konformitätserklärung.
In case of modification of the designated subject, the conformity declaration is no longer valid.

Die alleinige Verantwortung für die Ausstellung dieser Konformitätserklärung trägt der Hersteller.
This declaration of conformity is issued under the sole responsibility of the manufacturer.

Diese Erklärung wird abgegeben durch:
This declaration has been stated by:

Art.-Nr.: 924173 AI07

Bad Oldesloe, den 06.12.2021

Viking GmbH, Geschäftsführer
Managing Director Viking GmbH
Tim Strieder

Viking GmbH, Qualitätsmanagement
Viking GmbH Quality Management
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USt-Ident-Nr.: DE253774642
Steuer-Nr.: 30 293 00819

Geschäftsführer:
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Tim Strieder

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SWIFT-BIC HYVE DEMM 300

Fig. 45: 92417307_CE declar FMX5000 IR 3GD VK

C Type examination certificate

Translation

1 **Type Examination Certificate Supplement 2**

2 Equipment intended for use in potentially explosive atmospheres Directive 2014/34/EU

3 Type Examination Certificate Number: **BVS 17 ATEX E 003**

4 Product: **Flame detector type UniVario FMX5000 IR 3GD**

5 Manufacturer: **Viking GmbH**

6 Address: **Industriestraße 10/12, 23843 Bad Oldesloe, Germany**

7 This supplementary certificate extends Type Examination Certificate No. BVS 17 ATEX E 003 to apply to products designed and constructed in accordance with the specification set out in the appendix of the said certificate but having any variations specified in the appendix attached to this certificate and the documents referred to therein.

8 DEKRA Testing and Certification GmbH certifies that this product has been found to comply with the Essential Health and Safety Requirements relating to the design and construction of products intended for use in potentially explosive atmospheres given in Annex II to the Directive.
The examination and test results are recorded in the confidential Report No. PP 17.2017 EU.

9 The Essential Health and Safety Requirements are assured in consideration of:

EN IEC 60079-0:2018	**General requirements**
EN IEC 60079-7:2015+A1:2018	**Increased Safety "e"**
IEC 60079-15:2017	**Type of Protection "n"**
EN 60079-31:2014	**Protection by Enclosure "t"**

10 If the sign "X" is placed after the certificate number, it indicates that the product is subject to the Special Conditions for Use specified in the appendix to this certificate.

11 This Type Examination Certificate relates only to the design and construction of the specified product. Further requirements of the Directive apply to the manufacturing process and supply of this product. These are not covered by this certificate.

12 The marking of the product shall include the following:

II 3G Ex ec IIC T4 Gc
II 3D Ex tc IIIC T110°C Dc
or
II 3G Ex ec nC IIC T4 Gc
II 3D Ex tc IIIC T110°C Dc

DEKRA Testing and Certification GmbH
Bochum, 2021-12-01

Signed: Jörg-Timm Kilisch

Managing Director

DEKRA Testing and Certification GmbH, Handwerkstr. 15, 70565 Stuttgart, Germany
Certification body: Dinnendahlstr. 9, 44809 Bochum, Germany
Phone +49.234.3696-400, Fax +49.234.3696-401, e-mail DTC-Certification-body@dekra.com

13 **Appendix**

14 **Type Examination Certificate**

BVS 17 ATEX E 003
Supplement 2

15 **Product description**

15.1 **Subject and type**

Flame detector type UniVario FMX5000 IR 3GD

15.2 **Description**

Reasons for the supplement

- Modification of type of protection
- Modification of the documents

Description of Product

The flame detector is used to detect open fire with IR-light radiating flames. It consists of a metal enclosure with a sapphire-window and optionally accessories for mounting can be fitted to the detector.

Optionally the flame detector can be equipped with a communication module type KMX5000 AP or a relay module type KMX5000 RK 3GD. The modules transfers serial data of the detector status via the supply connection cable of the flame detector e.g. to a superior fire-detection system.

15.3 **Parameters**

15.3.1 **Electrical parameters**

Maximum voltage	U_m	DC	30	V
Current consumption (detector)			350	µA
Current (alarm signal)		approx.	16	mA
Current (fault signal)		approx.	16	mA

15.3.2 **Thermal parameters**

Ambient temperature range	T_{amb}	-40 °C up to +80 °C

15.3.3 Type of protection according EN 60529 IP65

16 **Report Number**

BVS PP 17.2017 EU, as of 221-12-01

17 **Special Conditions for Use**

None

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18 **Essential Health and Safety Requirements**

The Essential Health and Safety Requirements are covered by the standards listed under item 9.

19 **Drawings and Documents**

Drawings and documents are listed in the confidential report.

We confirm the correctness of the translation from the German original.
In the case of arbitration only the German wording shall be valid and binding.

DEKRA Testing and Certification GmbH
Bochum, 2021-12-01
BVS-Wlo/Mu A20211077

Managing Director

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D Detector types with part numbers

The FMX5000 IR flame detectors described in this operating manual are available in the following versions:

Type	Part No.	Description
FMX5000 IR [a)]	907481	Basic type, with integrated function test of the optical channels.
FMX5000 IR 3GD [a)]	909481	Basic type, with integrated function test of the optical channels. These detectors are suitable for use in explosion hazard areas 2 and 22.
FMX5000 IR HR	909404	Basic type, with integrated function test of optical channels and special corrosion protection.

[a)] also available in silicone-free version (suffix: SF)


924176