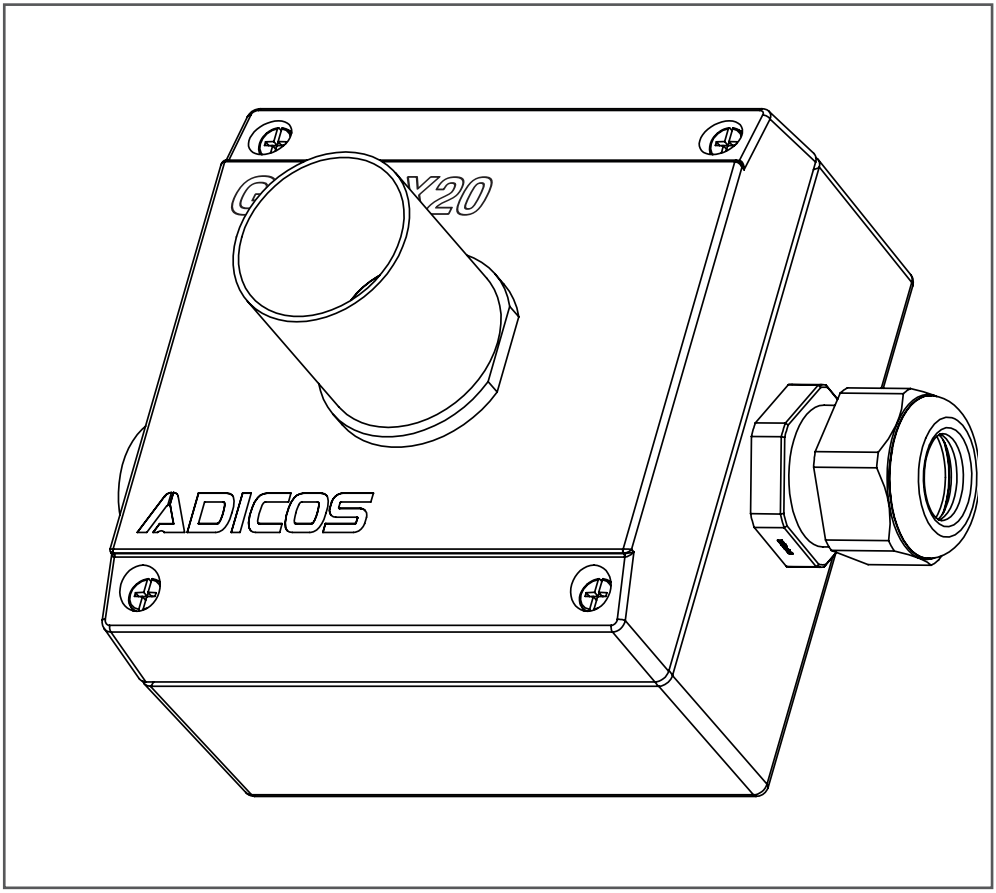

EN CE IP64

Supplementary Instruction Manual for GSME-X20

Fire Gas Detector

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Subject to technical changes!

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Abstract

The Advanced Discovery System (ADICOS®) is used for early detection of fires in industrial environments. It is comprised of various, separate detector units. By parameterizing and arranging the detectors appropriately, the system fulfills a predefined detection goal. The ADICOS system ensures reliable early detection of embers and smoldering fires even in adverse environments.

ADICOS GSME® fire gas detectors detect at an early stage gases that are characteristic for developing fires. They detect both open and concealed smoldering fires. Highly sensitive and at the same time robust, they are ideal for fire gas detection in industrial environments – and already in the incipient stage. With the ADICOS software, all detector states and concentration curves can be displayed graphically. Sensitivities as well as alarm thresholds can be parameterized individually for each detector. The GSME fire gas detectors can be used in almost any indoor plant area, taking into account the air flow conditions.

Four parameterizable semiconductor gas sensors monitor and evaluate the concentration curve of these gases according to multi-criteria technology. This enables the GSME detectors to distinguish real fires from interference signals. In industrial environments, this often occurs under harsh conditions, e.g. due to vehicle exhaust fumes, dust, mist or vapor.

ADICOS GME-X20 detectors are designed for operation in hazardous dust atmospheres up to ATEX zone 20.

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1 About this manual

1.1 Objective

This manual describes the special requirements on installation, wiring, commissioning, and operation of ADICOS detectors for explosive atmospheres up to ATEX zone 20. They are exclusively addressed to knowledgeable specialist personnel (–› Chap. 2, Safety instructions).

1.2 Explanation of Symbols

This manual features a continuous structure for best possible comprehension. The following labels are used.

Warning signs

The following types of notes are used through this manual.

DANGER!
This combination of symbol and signal word indicates an immediately dangerous situation that will lead to death or severe injuries if not avoided.

WARNING!
This combination of symbol and signal word indicates a possibly dangerous situation that could lead to death or severe injuries if not avoided.

Explosion Protection
This information type signals measures that must be implemented for maintaining the Explosion protection.

Tips and recommendations
Helpful tips and recommendations as well as information to ensure efficient and uninterrupted use.

1.3 Storing the Manual

Store this manual easily reachable and in direct vicinity of the detector system to enable use as needed.

2 Safety Instructions

ADICOS GSME-X20 detectors for explosive atmospheres up ATEX zone 20 ensure operational safety assuming proper installation, commissioning, operation, and maintenance. For this purpose, it is absolutely required to completely read, understand, and follow this manual and the safety information contained.

WARNING!
Personal injury and property damage!
Incorrect installation and operating errors can cause death, serious injury and damage to industrial equipment.
- **Read the entire manual and follow the instructions!**

Explosion protection
When using ADICOS detectors in potentially explosive atmospheres, follow the specifications of the ATEX operating directive.

2.1 Intended Use

ADICOS GSME-X20 are designated for the detection of fire scenarios in explosive atmospheres of ATEX zone 20, 21 and 22. In this context, the operating parameters described in Chap. 9, »Technical Data« must be met. Any deviating use requires prior consultation with the manufacturer.

Compliance with this manual as well as all applicable country-specific provisions is also part of the intended use.

2.2 Standards and Regulations

The safety and accident prevention regulations applicable for the specific application must be observed during detector installation, commissioning, maintenance, and test.

The following standards and directives in their current version are of particular importance when handling potentially explosive atmospheres:

Standards and Regulations	Description
EN 60079-0	Explosive atmospheres - Part 0: Equipment - General requirements
EN 60079-31	Explosive atmospheres - Part 31: Equipment dust ignition protection by enclosure „t“
EN 60691	Thermal-links – Requirements and application guide
EN 60529	Degrees of protection provided by enclosures (IP Code)
2014/34/EU	ATEX product directive (about equipment and protective systems intended for use in potentially explosive atmospheres)
1999/92/EG	ATEX operating directive (on safety and health protection of workers potentially at risk from explosive atmospheres)

2.3 Personnel Qualification

Any work on ADICOS systems may only be performed by qualified personnel. Persons, who can perform work on electrical systems and recognize possible dangers based on their professional education, knowledge, and experience as well as knowledge of the applicable provisions, are considered qualified personnel.

WARNING!
Personal injury and property damage!
Improperly performed work on and with the device can lead to malfuctions.

- **Installation, startup, parameterization and maintenance may be performed only by authorized and properly trained personnel.**

2.4 Handling Electrical Voltage

DANGER!
Risk of explosion by electrical voltage in potentially explosive atmospheres!
The electronics of ADICOS GSME-X20 detectors requires an electrical voltage that can trigger an explosion in potentially explosive atmospheres.

- **Do not open enclosure!**
- **De-energize the entire detector system and secure against unintentionally reactivation for all wiring work!**

2.5 Modifications

WARNING!
Property damage or detector failure by any form of unauthorized modification!
Any form of unauthorized modification or extension can lead to a failure of the detector system. The warranty claim expires.

- **Never make unauthorized modifications on your own authority.**

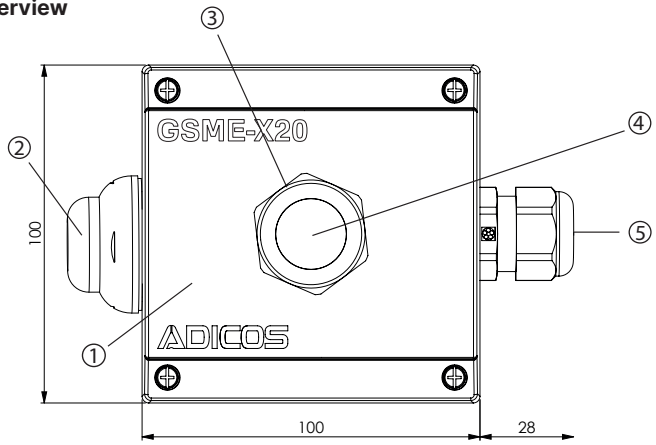
2.6 Accessories and Spare Parts

WARNING!
Property damage due to short circuit or failure of the detector system
The use of parts other than the manufacturer's original spare parts and original accessories may result in property damage due to short circuits.

- **Only use original spare parts and original accessories!**
- **Original spare parts and accessories may only be installed by trained specialist personnel.**
- **Qualified personnel are persons as described in Chap. 2.3**

3 Structure

3.1 Overview



No.	Description
①	Detector enclosure
②	Signal Dome
③	Spray protection
④	Sinter metal filter
⑤	Explosion protection cable gland

3.2 Cable Assignment

3.2.1 12-pin cable; LEONI KERPEN ICONBASE

Wire	Color	Signal	Limit value contact
1	black	Operating voltage DC 21.6 ... 40 V non-polarised	
1	white		
2	black	Relay output X6 e	Alarm NO[1]
2	white	Relay output X6 a	Alarm NO[1]
3	black	Relay output X7 a	Fault NC
3	white	Relay output X7 e	Fault NC
4	black	M-Bus max. 40 V non-polarised	
4	white		

[1] with series resistor

Option auxiliary relay

Wire	Color	Auxiliary relay
5	black	–
5	white	–
6	black	Normally open
6	white	Common

3.2.2 12-pin cable OELFLEX 415CP

Wire	Signal	Limit value contact
1	Operating voltage DC 21.6 ... 40 V non-polarised	
2		
3	M-Bus max. 40 V non-polarised	
4		
5	Relay output X6 e	Alarm NO[1]
6	Relay output X6 a	Alarm NO[1]
7	Relay output X7 a	Fault NC
8	Relay output X7 e	Fault NC

[1] with series resistor

Option auxiliary relay

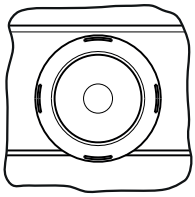
Wire	Auxiliary relay
9	–
10	–
11	Common
12	Normally open

3.3 Display Elements

Signal Dome

The signal dome is a translucent element. It includes the status LED to indicate the operating condition of the X20 detectors.

The light signals of the ADICOS X20-Detectors are identical to the signals of the ADICOS detectors without explosion protection properties.

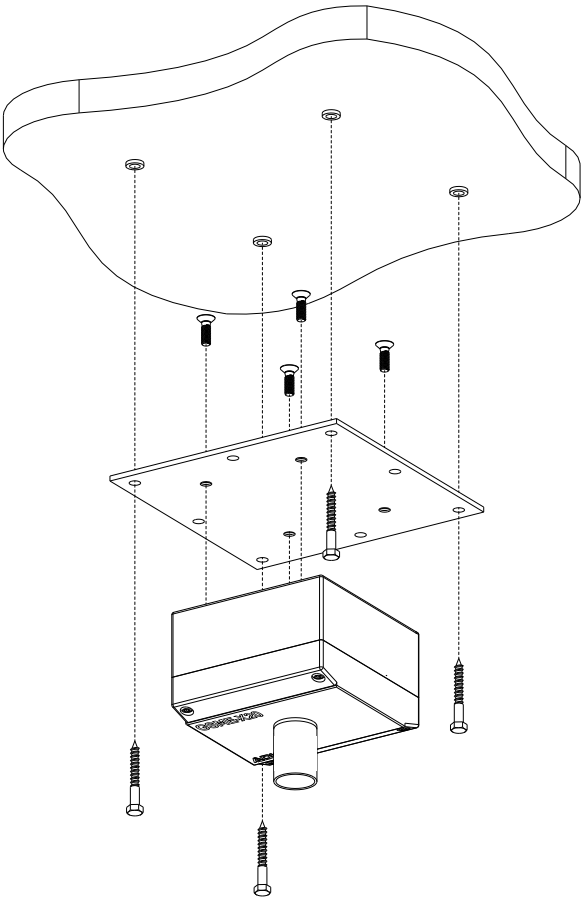


4 Installation

4.1 Mounting

DANGER!
Risk of explosion due to electrical voltage in hazardous areas.
The electronics of ADICOS GSME-X20 works with an electrical voltage that can trigger an explosion in potentially explosive atmospheres.

- **Do not open enclosure! Mount the device with closed housing!**
- **Use ADICOS mounting plate, if necessary!**



4.2 Wiring

Wiring according to chapter 3.2.

DANGER!
Risk of explosion due to electrical voltage in hazardous areas.
The electronics of ADICOS GSME-X20 works with an electrical voltage that can trigger an explosion in potentially explosive atmospheres.

- **Do not open enclosure! Mount the device with closed enclosure.**
- **De-energize the entire detector system and secure against unintentionally reactivation for all wiring work!**
- **In the case of wiring within potentially explosive atmospheres, only use Ex-protected connection boxes with respective approval!**
- **Do not bend connection cable! Observe minimum bending radius**! (–› Chap. 9), Technical Data)

5 Commissioning

DANGER!
Risk of explosion due to electrical voltage in hazardous areas.
The electronics of ADICOS GSME-X20 detectors works with an electrical voltage that can trigger an explosion in potentially explosive atmospheres.

- **Prior to switching on, check that all detectors are properly mounted and wired!**

6 Operation

DANGER!
Risk of explosion due to electrical voltage in hazardous areas.
The electronics of ADICOS GSME X20 detectors works with an electrical voltage that can trigger an explosion in potentially explosive atmospheres.

- **Never open the enclosure or loosen the cable gland during operation!**

7 Maintenance

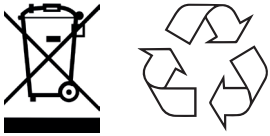
7.1 Detector Replacement

DANGER!
Risk of explosion due to electrical voltage in hazardous areas.
The electronics of ADICOS GSME-X20 works with an electrical voltage that can trigger an explosion in potentially explosive atmospheres.

- **Do not open enclosure!**
- **De-energize the entire detector system and secure against unintentionally reactivation for all wiring work!**
- **Replace the closed detector including connection cable only!**

8 Disposal

Return the device to the manufacturer when it reaches the end of its serviceable life. The manufacturer will ensure that the components are disposed of properly, in an environmentally friendly manner.



9 Technical Data

General

Model:		GSME-X20
Item No.:		408-2001-301
Enclosure dimensions:	mm	150 x 100 x 100 (Length x Width x Depth) (Length: cable gland and signal dome included)
Weight (10 m cable incl.):	kg	2.2
Degree of protection:		IP 64
Enclosure:		Aluminum die casting, powder-coated

Electrical properties

Voltage range:	V	DC 21.6 ... 40
Maximum power consumption (without heating):	VA	4
Maximum power consumption (with heating):	VA	14
M-Bus voltage (signal):	V/mA	max. 40 V non-polarized / max. 30 mA

Thermal, physical data

Ambient Temperature:	°C	–20 ... + 50 °C
Relative humidity:	%	≤ 95 (non-condensing)

Sensor data

Sensor combination:		CO – H_2 – HC – NO_x
Reaction time:	s	> 30
Detection scenarios:		Smoldering fires according to EN 54-7, Fires emerging from smoldering coals

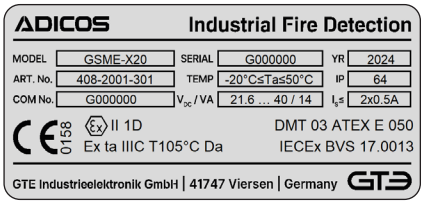
Information regarding explosion protection

Explosion protection class:		Ex ta IIIC 105°C Da Certified according to ATEX and IECEx
Max. surface temperature:	°C	105
Device group:		II, category 1D
Type approval:		Certificate according to 2014/34/EU

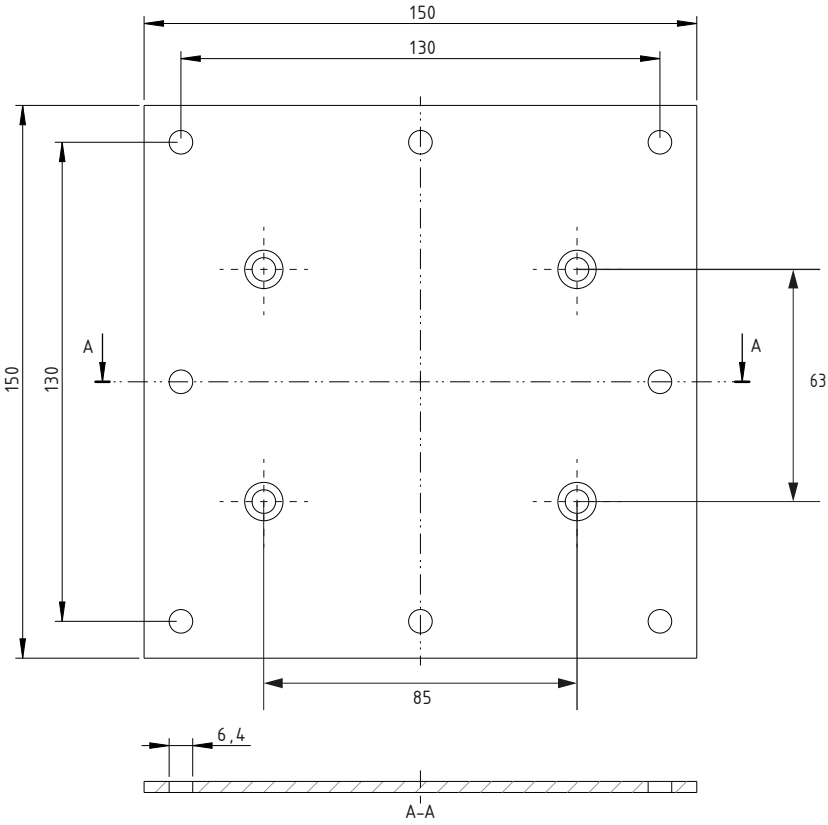
Other

Bending radius connection cable	mm	> 91.5

9.1 ID Plate



Model:	Device model	SERIAL	Serial number (variable)	YR	Year of production (variable)
ART-Nr:	Article number (variable)	TEMP	Ambient temperature	IP	Degree of protection
COM-Nr:	Communication number (variabel)	V_{DC}/VA	Voltage range / maximum power consumption (heating incl.)	I_s	Internal fusing (Short-circuit current)
	CE marking		Information on explosion protection		

10 Appendix

10.1 ADICOS Mounting Plate