

400-2410-001 EN10



Installation - Operation - Maintenance

Supplementary Instructions for Ex- and X20-Detectors



Supplementary Instructions for **Ex**- and X20-Detectors
Document version: 400-2410-001 EN10
– *Translation* –

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Subject to technical changes!

Abstract

The *Advanced Discovery System* (in short: *ADICOS*) is used for early detection of fire scenarios in the industrial environment. It comprises different, independent detector units that enable interference-resistant fulfillment of the detection objective defined during planning via suitable layout and parameterization.

The detector units are connected using the *ADICOS M-bus* to a central unit, which enables voltage supply and parameterization of every individual detector, and which stores all sensor data for statistical analyses.

ADICOS Ex and *X20-Detectors* are designed for for operation within explosive atmospheres of ATEX zones 22-20.

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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. 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

This manual uses the following information types.

**NOTE!**

This information type provides information directly important for further system operation.

**WARNING!**

This information type signals a danger that can lead to fatal or severe injuries.

**DANGER!**

This information type signals a danger that directly leads to fatal or severe injuries.

1.3 Storing this manual

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

2 Safety instructions

ADICOS detectors for explosive atmospheres (*ADICOS Ex- and X20-Detectors*) ensure operational safety assuming proper installation, commissioning, operation, and maintenance. For this purpose, it is absolutely required to completely read, understand, and follow these instructions and the safety information contained.

**WARNING!**

Installation and operating errors can lead to fatal and severe injuries and damage to the industrial plant.

- **Read and follow these instructions carefully!**

2.1 Intended use

ADICOS Ex- and X20-Detectors are designated for the detection of fire scenarios in potentially explosive atmospheres of zones 20, 21, and 22. In this context, the operating parameters described in Chap. 8, »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 are of particular importance when handling potentially explosive atmospheres:

Regulation	Description
DIN EN 60079	Explosive atmospheres
DIN EN 60529	Degrees of protection provided by enclosures
DIN EN 60691	ThermaHinks - Requirements And Application Guide
94/9/EC	European ATEX Directive
1999/92/EC	European ATEX Operation Directive
89/686/EEC	European Personal Protective Equipment Directive

2.3 Personnel qualification

Any work on the control 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!**

Installation, commissioning, parameterization, and maintenance may only be performed by authorized and respectively trained personnel

2.4 Handling electrical voltage

**DANGER!**

The electronics of ADICOS Ex-/X20-Detectors works with an electrical voltage that can trigger an explosion in potentially explosive atmospheres.

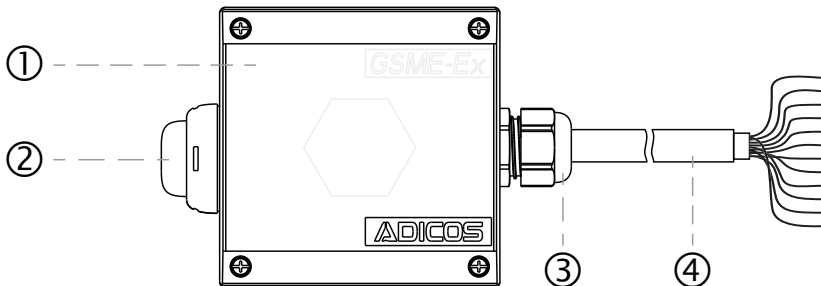
- **Do not open enclosure!**
- **De-energize the entire detector system and secure against unintentionally reactivation for all wiring work!**

2.5 Modification

Any form of unauthorized modifications or extensions are expressly prohibited! In the case of doubt, contact the manufacturer.

3 Structure

3.1 Overview



No.	Description
①	Detector enclosure
②	Signal lamp cap
③	Ex cable gland
④	Ready-made ADICOS connection cable

3.2 Cable assignment

3.2.1 8-wire cable variant

Wire	Color	Signal	Limit value contact	Siemens FDnet	BOSCH LSNi
1	black	Operating voltage 24 ... 40 V DC non-polarized			
1	white				
2	black	Relay output X6 i	Alarm NO ¹	FDnet-A (-)	LSN b1 in
2	white	Relay output X6 o	Alarm NO ¹	FDnet (+)	LSN a in
3	black	Relay output X7 o	Fault NC	FDnet-B (-)	LSN b2 out
3	white	Relay output X7 i	Fault NC	FDnet (+)	LSN a out
4	black	M-Bus max. 40 V non-polarized			
4	white				

¹ with series resistor, standard 680 Ω

3.2.2 12-wire cable variant

Wire	Color	Signal	Signal limit contact
1	black	Operating voltage 24 ... 40 V DC non-polarized	
1	white		
2	black	Relay output X6 i	Alarm NO ¹
2	white	Relay output X6 o	Alarm NO ¹
3	black	Relay output X7 o	Fault NC
3	white	Relay output X7 i	Fault NC
4	black	M-bus max. 40 V non-polarized	
4	white		

¹ with series resistor, standard 680 Ω**Coupling module option**

Wire	Color	Signal	Siemens FDnet	BOSCH LSNi
5	black	Coupling module B-in	FDnet-A (-)	LSN b1 in
5	white	Coupling module A-in	FDnet (+)	LSN a in
6	black	Coupling module B-out	FDnet-B (-)	LSN b2 out
6	white	Coupling module A-out	FDnet (+)	LSN a out

Analog signal option

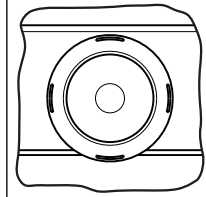
Wire	Color	Signal	Analog signal	Auxiliary relay
5	black	Analog signal - protected against polarity reversal	4 ... 20 mA	
5	white	Analog signal - protected against polarity reversal	4 ... 20 mA	NC
6	black	Analog signal	0 ... 5 V 0 ... 10 V	NO
6	white	Analog signal	0 V	C

3.3 Display elements

Signal calotte

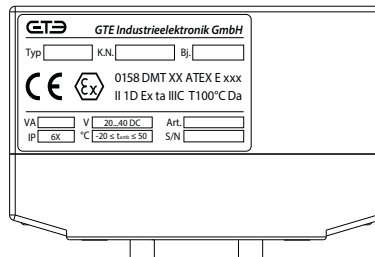
The signal calotte is a translucent element, through which the status LED of the Ex/X20 detector located inside the enclosure can be seen.

The light signals of the ADICOS Ex- and X20-Detectors are identical to the signals of the non-Ex ADICOS detectors.



3.4 Type plate information

The type plate of the ADICOS Ex- and X20-Detectors contains the following information:



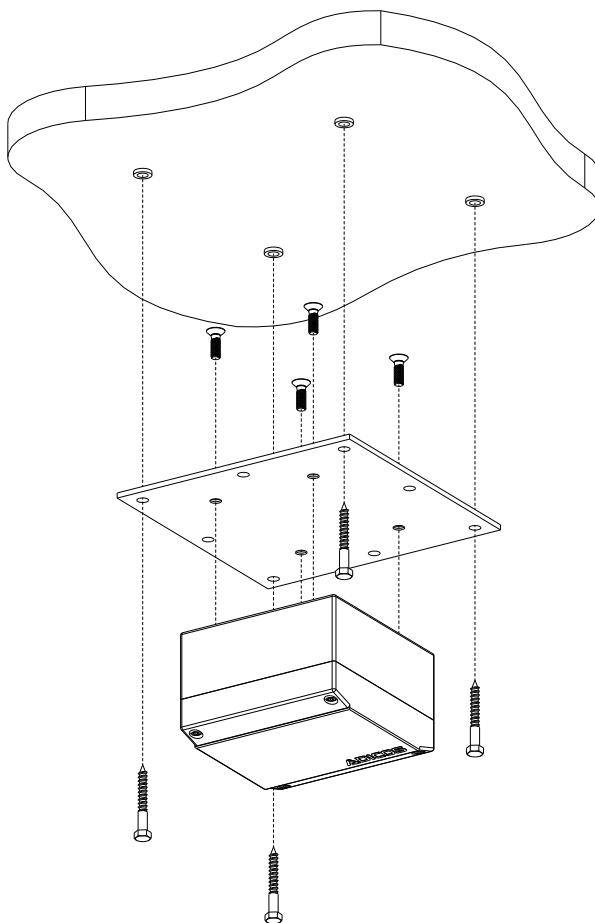
4 Installation

4.1 Mounting

**WARNING!**

ADICOS Ex- and X20-Detectors must be mounted with closed enclosure.

- **Do not open enclosure!**
- **Use ADICOS mounting plate!**



4.2 Wiring



DANGER!

The electronics of ADICOS Ex-/X20-Detectors 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!**
- **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. 8, Technical data)

5 Commissioning



DANGER!

The electronics of ADICOS Ex-/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!

The electronics of ADICOS Ex-/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!

The electronics of ADICOS Ex-/X20-Detectors 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 disassembly work!**
- **Replace the closed detector including connection cable only!**

8 Technical data

Specifications regarding explosion protection		
Explosion protection class:		Ex ta IIIC 100°C Da / IP6x
Surface temperature:	°C	< 100
Device group:		II, category 1D
Type approval:		Type approval certificate 94/9/EC
Connection cable bending radius	mm	> 7.5 × Ø _{Cable}



NOTE!

ADICOS Ex-/20-Detectors are rated **Protection by enclosure "ta"**.

- **An Ex barrier is not mandatory!**

9 Appendix

9.1 ADICOS mounting plate

