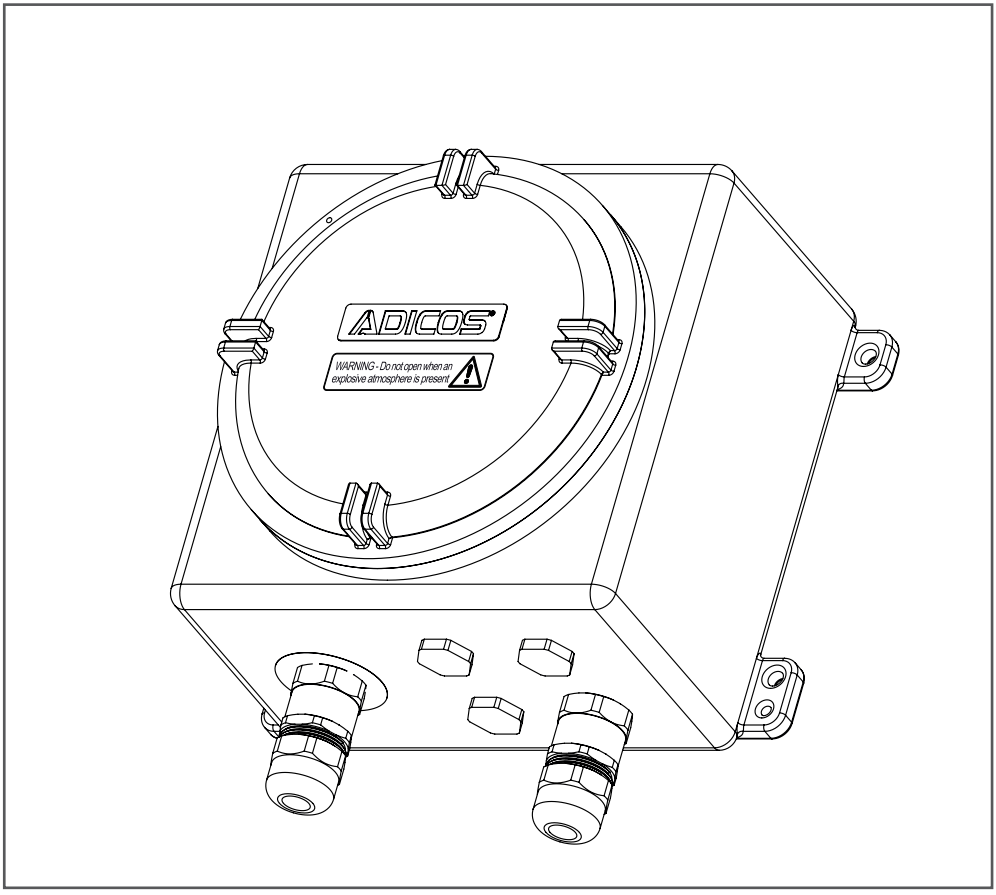

EN CE IP66

Operating Manual

HOTSPOT-X0
Interface-X1

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ADICOS HOTSPOT-X0 Sensor Unit and Interface-X1
- Operating manual -
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– Translation –

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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.

The detectors of the HOTSPOT® product series are equipped with thermal imaging sensors and use infrared measurement technology and intelligent signal analysis to detect all types of smoldering fires and open fires, even in the incipient stage. The fast response speed of 100 milliseconds enables the monitoring of conveyor belts or other conveyor systems, e.g. on moving embers.

ADICOS HOTSPOT-X0 consists of the sensor unit and the ADICOS HOTSPOT-X0 Interface-X1.

The ADICOS HOTSPOT-X0 Sensor Unit is an infrared sensor unit that, in combination with the ADICOS HOTSPOT-X0 Interface enables an optical and spatially resolved fire and heat detection in potentially explosive atmospheres of ATEX zones 0, 1, and 2.

The ADICOS HOTSPOT-X0 Interface-X1 is an interface between the ADICOS HOTSPOT-X0 Sensor Unit and the fire control panel within potentially explosive atmospheres of ATEX zones 1, and 2. Additionally it can be used as a connection and branching box (AAB) within these zones.

This manual contains information exclusively for the product component of the HOTSPOT-X0 Interface-X1.

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1 About this Manual

1.1 Objective

These instructions describe the requirements on installation, wiring, commissioning, and operation of the ADICOS HOTSPOT-X0 Interface-X1. After commissioning it is used as reference work in the case of faults.
It is exclusively addressed to knowledgeable specialist personnel (–› Chap. 2, Safety instructions).

1.2 Explanation of Symbols

This manual follows a certain structure to make it easy to work with and understand. The following designations are used throughout.

Operational objectives

Operational objectives specify the result to be achieved by following the subsequent instructions. Operational objectives are shown in **bold print**.

Instructions

Instructions are the steps to be taken in order to achieve the previously stated operational objective.
Instructions appear like this

► Indicates a single instruction

1 First of a series of instructions
2 Second of a series of instructions
3 etc.

Intermediate states

When it is possible to describe intermediate states or events resulting from the instruction steps (e.g. screens, internal function steps, etc.), they are shown like this:

▷ Intermediate state

Warnings

The following types of notes are used through this manual:

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

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

CAUTION!
This combination of symbol and signal word indicates a possibly dangerous situation which could lead to minor injuries if it is not avoided.

NOTICE!
This combination of symbol and signal word indicates a possibly dangerous situation which could lead to property damage if it is not avoided.

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

Tips and recommendations
This type of note provides information that is directly relevant for the further operation of the device.

1.3 Abbreviations

This manual uses the following abbreviations.

Abbr.	Meaning
ADICOS	Advanced Discovery System
X0	ATEX zone 0
X1	ATEX zone 1
LED	Light-emitting diode

1.4 Storing the Manual

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

2 Safety Instructions

The ADICOS HOTSPOT-X0 Sensor Unit and the HOTSPOT-X0 Interface-X1 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!
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

The ADICOS HOTSPOT-X0 Interface-X1 is intended for use with the ADICOS HOTSPOT-X0 Sensor Unit and is designated for the detection of fire scenarios in potentially explosive atmospheres. The ADICOS HOTSPOT-X0 Sensor Unit can be operated in ATEX zones 0, 1, and 2. The ADICOS HOTSPOT-X0 Interface X1 is only allowed to be operated in ATEX zones 1 and 2. It may be exclusively operated within ADICOS systems. In this context, the operating parameters described in Chap. 10, »Technical Data« must be met.

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 ADICOS HOTSPOT-X0 Sensor Unit and HOTSPOT-X0 Interface-X1 installation, commissioning, maintenance, and test.

This product also meets the following standards and directives in its current version:

Standards and Regulations	Description
EN IEC 60079-0: 2018	Explosive atmospheres - Part 0: Equipment - General requirements
EN 60079-1: 2014	Explosive atmospheres - Part 1: Equipment protection by flame proof enclosures „d“
EN 60079-11: 2014	Explosive atmospheres - Part 11: Equipment protection by intrinsic safety ‚i‘
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 in potentially explosive atmospheres and recognize possible dangers based on their professional education, knowledge, and experience as well as knowledge of the applicable provisions, are considered qualified persons.

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 HOTSPOT-X0Interface-X1 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 Modification

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.**

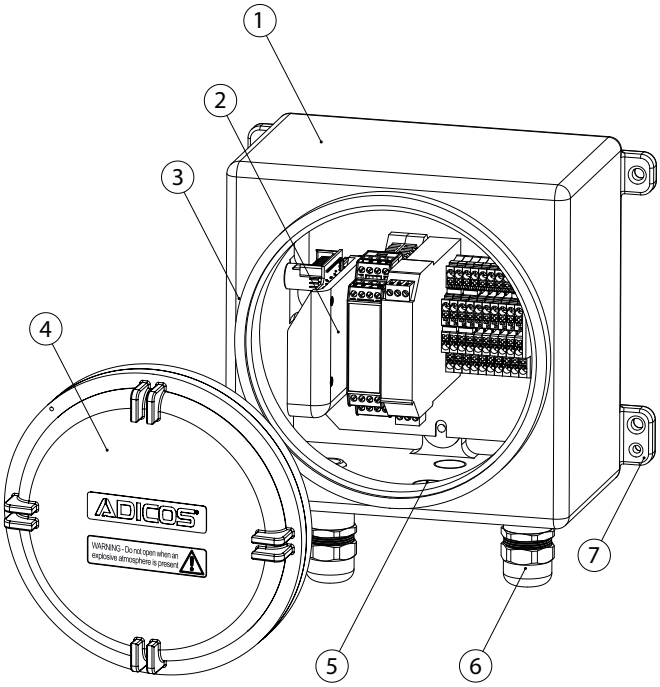
The following accessories are available:

Art No.	Description
410-2401-310	HOTSPOT-X0 Sensor Unit
410-2401-410	HOTSPOT-X0-Interface X1
410-2403-301	HOTSPOT-X0 Mounting bracket with ball and axle joint
83-09-06052	Cable gland for non-reinforced and non-sealed cables
83-09-06053	Cable gland for reinforced and non-sealed cables
83-09-06050	Cable gland for non-reinforced and sealed cables
83-09-06051	Cable gland for reinforced and sealed cables

3 Special Conditions of Use

The threaded flame path of the cover is more than required by EN 60079-1. Contact the manufacturer for information on the dimensions of the flameproof joints.

4 Structure

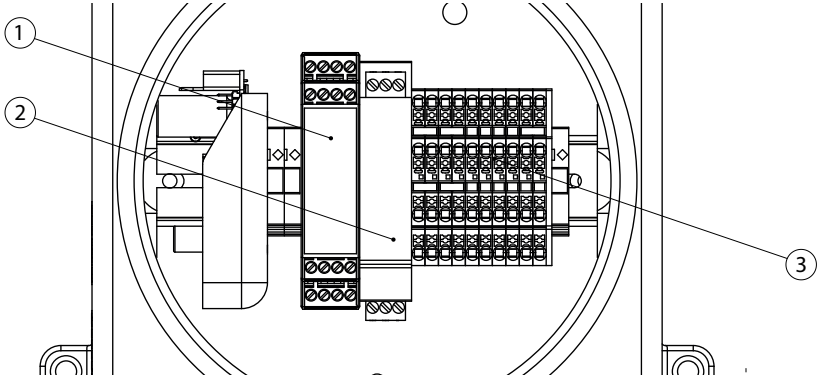


No.	Description
①	Flameproof enclosure
②	Top-hat rail with explosion protection barriers, connection terminals and interface circuit board
③	Thread for enclosure lid
④	Enclosure lid
⑤	Locking screw
⑥	Mounting place for additional cable glands
⑦	Cable gland (2 x)
⑧	Mounting bracket (4 x)

5 Connection Terminal of HOTSPOT-X0 Interface-X1

5.6.1 Connection terminals

The connection terminals are located inside the enclosure on the top-hat rail.



No.	Description
①	Explosion protection barrier 1: sensor communication (intrinsically safe circuit 1)
②	Explosion protection barrier 2: sensor power supply (intrinsically safe circuit 2)
③	System connection

5.6.2 Sensor communication (intrinsically safe circuit 1)

No.	Occupation
9	Cabinet shielding
10	Shield for intrinsically safe cable
11	-/-
12	-/-
13	Sensor communication B (green)
14	Sensor communication A (yellow)
15	-/-
16	-/-

5.6.3 Sensor power supply (intrinsically safe circuit 2)

No.	Occupation
1	Sensor power supply + (brown)
2	Sensor power supply – (white)
3	-/-

5.6.4 System connection terminal

No.	Occupation
1	0 V
2	0 V
3	M-Bus A
4	M-Bus A
5	Alarm A
6	Error A
7	LOOP A in
8	LOOP A out
9	Shield
10	Shield
11	+24 V
12	+24 V
13	M-Bus B
14	M-Bus B
15	Alarm B
16	Error B
17	LOOP B in
18	LOOP B out
19	Shield
20	Shield

6 Installation

DANGER!
Explosion!
Installation work may only be performed, if the potentially explosive area is released for work via a risk assessment.

- **De-energize the entire detector system and secure against unintentional reactivation!**
- **Installation work may only be performed by specialist personnel! (–› Chap. 2.3, Personnel qualification)**

Explosion Protection!
Risk of explosion
In contrast to the ADICOS HOTSPOT-X0 Sensor Unit, the ADICOS HOTSPOT-X0 Interface X1 is not approved for installation within ATEX zone 0.

- **Interface-X1 may only be installed outside of ATEX zone 0.**

6.1 Mounting

WARNING!
Danger of malfunction and failure of the detector system
Incorrect installation of ADICOS detectors can lead to faults and failures of the detector system.
- **Installation work may only be performed by specialist personnel! (→ Chap. 2.3, Personnel Qualification)**

6.2 Selecting the Mounting Location of HOTSPOT-X0 Interface-X1

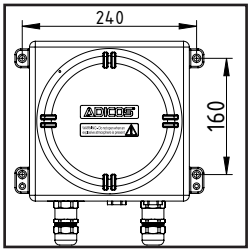
WARNING!
Explosion danger!
Unlike the ADICOS HOTSPOT-X0 sensor unit, the ADICOS HOTSPOT-X0 interface-X1 is not approved for installation within ATEX zone 0, but only for zones 1 and 2.
- **Only install ADICOS HOTSPOT-X0 Interface X1 outside ATEX zone 0!**

The following aspects have to be considered when choosing the mounting location.

- Install device easily accessible and in direct vicinity to the connected sensor – but outside of ATEX zone 0.
- The mounting location must satisfy all environmental requirements specified in Chap. 10, »Specifications«.
- The mounting spot must be solid and free of vibrations.

6.3 Wall Mounting of HOTSPOT-X0 Interface-X1

1 At the mounting location drill four holes in a pattern of 240 x 160 mm
2 If requirew press in suitable dowels
3 Using the mounting brackets firmly bolt the enclosure to the wall using four suitable screws and washers



7 Wiring

WARNING!
Explosion!
Installation work may only be performed, if the potentially explosive area is released for work via a risk assessment.
- **De-energize the entire detector system and secure against unintentionally reactivation for all wiring work!**
- **Wiring may only be performed by specialist personnel! (–› Chap. 2.3)**

WARNING!
Risk of explosion
The connection cable must be chosen and routed per DIN EN 60079-14!
- **Consider minimum bending radius!**

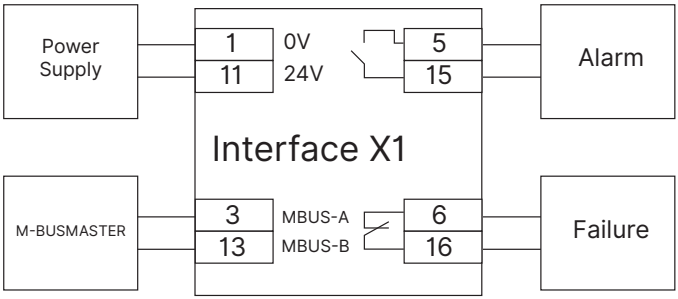
WARNING!
Risk of explosion
The ADICOS HOTSPOT-X0 Sensor Unit is subject to the protection principle and/or the ignition protection type **equipment protection by intrinsic safety "i"**.
- **Explosion protection barriers must be used!**
- **Only wire to the ADICOS HOTSPOT-X0 Interface X1!**

Explosion protection!
Risk of explosion
The ADICOS HOTSPOT-X0 Interface-X1 is subject to the protection principle and/or the ignition protection type **equipment protection by flameproof enclosures "d"**.
- **Only use approved cable glands!**
- **Firmly close enclosure lid after wiring!**

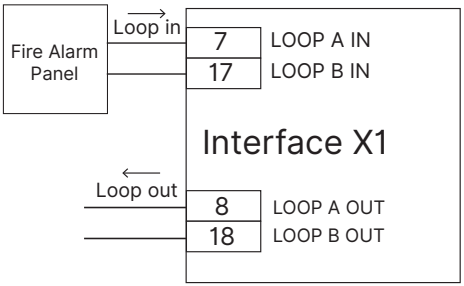
7.1 Wiring of the Fire Detection System

Depending on the system configuration connect the fire detection system to terminals 1 ... 20 of the system connection terminal (–› Chap. 3.2.3).
Also consult ADICOS manual No. 430-2410-001 (ADICOS AAB Operating manual).

Power Supply / Alarm and Failure

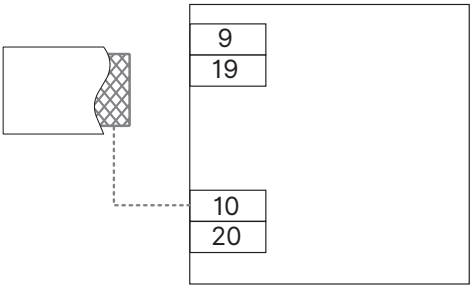


Firedetector LOOP with...



Connection with interface module Siemens / BOSCH

Primary cable shield



Shield

8 Commissioning

DANGER!
Property damage due to electrical voltage!
ADICOS systems work with electrical current, which can cause equipment damage and fire if not installed properly.
- **Before switching on the system, verify that all detectors are properly mounted and wired.**
- **Startup may be performed only by properly trained personnel.**

WARNING!
Risk of false alarms and device failure
The degree of protection of ADICOS detectors specified in the technical data is only guaranteed when the enclosure cover is completely closed. Otherwise a false alarm can be triggered or the detector can fail.
- **Before startup, check that all of the detector enclosure covers are completely closed, ohterwise the ADICOS system will not work properly.**

WARNING!
Risk of explosion
The ADICOS HOTSPOT-X0 sensor unit is subject to the protection principle and/or the ignition protection type **equipment protection by intrinsic safety "i"**.
- **Explosion protection barriers must be used!**
- **Only wire to the ADICOS HOTSPOT-X0 Interface X1!**

WARNING!
Risk of explosion
The ADICOS HOTSPOT-X0 Interface-X1 unit is subject to the protection principle and/or the ignition protection type equipment protection by flameproof enclosures "d".
- **Firmly close enclosure lid after wiring!**

9 Disposal

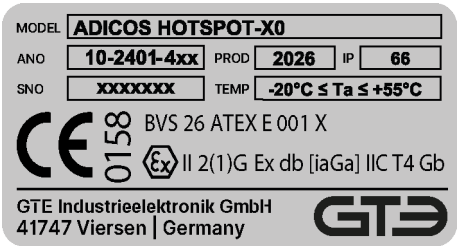
Return device to the manufacturer after the end of the useful life. The manufacturer ensures environmental-friendly disposal of all components.

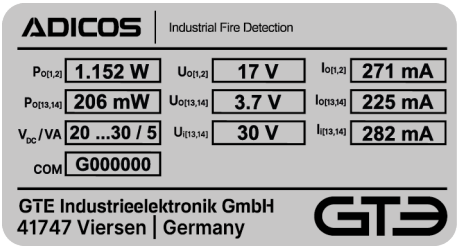
10 Technical Data

General information			
Model:		HOTSPOT-X0 Interface-X1	
Article number		410-2401-410	
Enclosure dimensions:	mm	220 x 220 x 180 (Length L x Width W x Depth D)	
Full dimensions:	mm	225 x 264 x 180 (L x W x D) (Length: cable gland excl., Width: mounting brackets incl.)	
Degree of protection:	IP	66	
Weight:	kg	8	20
Enclosure:		Aluminum	Stainless steel
Information regarding explosion protection			
Explosion protection:		II 2(1)G Ex db [iaGa] IIC T4 Gb	
Temperature class:		T4	
Device group:		II, category 2G	
Type approval:		Certificate according to 2014/34/EU	
ATEX certificate:		BVS 26 ATEX E 001 X	
Electrical Data			
Supply voltage:	V	DC 20 ... 30	
$U_{o[1,2]}$	V	≥ 17	
$I_{o[1,2]}$	mA	≥ 271	
$P_{o[1,2]}$	W	≥ 1,152	
$U_{o[13,14]}$	V	≥ 3,7	
$I_{o[13,14]}$	mA	≥ 225	
$P_{o[13,14]}$	mW	≥ 206	
$U_{i[13,14]}$	V	≤ 30	
$I_{i[13,14]}$	mA	≤ 282	
$C_{o[1,2]}$	µF	0,375	
$L_{o[1,2]}$	mH	0,48	
$L_o/R_{o[1,2]}$	µH/Ω	30	
$C_{o[13,14]}$	µF	100	
$L_{o[13,14]}$	mH	0,7	
$L_o/R_{o[13,14]}$	µH/Ω	173	

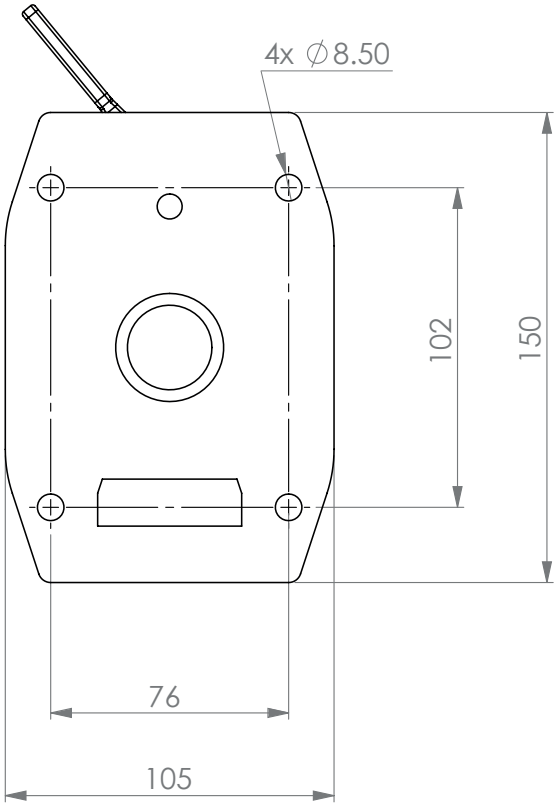
Thermal, phyical data		
Ambient temperature	°C	–20 ... +55
Relative humidity:	%	≤ 95 (non-condensing)
Other:		
Bending radius connection cable:	mm	> 38

10.1.1 ID Plate





MODEL	Device Model					Electrical data		
ANO	Article number	PROD	Production year	IP	Degree of protection	$P_{o[1,2]}$ $P_{o[13,14]}$	$U_{0[1,2]}$ $U_{i[13,14]}$ $U_{o[13,14]}$	$I_{o[1,2]}$ $I_{o[13,14]}$ $I_{i[13,14]}$
SNO	Commu-nication number (variable)	TEMP	Ambient temperature			V_{DC}/VA	Supply voltage / Power consumption	
CE marking		Information on explosion protection				COM	Serial number (variable)	

11 Appendix

11.1 ADICOS Mounting Bracket