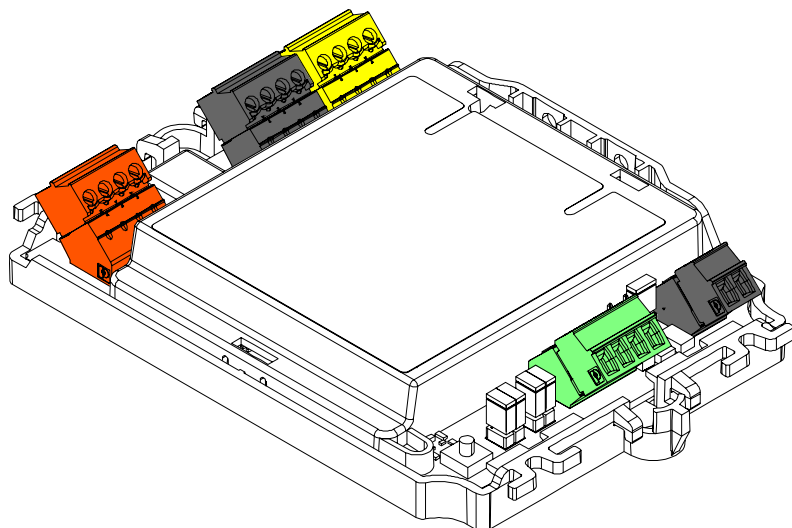


SIEMENS



FDCIO223

Input/Output Module (Transponder)

Technical Manual

Valid for product Version ES \geq 50

Legal notice

Technical specifications and availability subject to change without notice.

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1 About this document



- Specialist electrical engineering knowledge is required for installation.
 - Only an expert is permitted to carry out installation work.
- Incorrect installation can take safety devices out of operation unbeknown to a layperson.

Goal and purpose

This document contains all information on the input/output module (transponder) FDCIO223 with a product version ES ≥ 50 . Following the instructions consistently will ensure that the product can be used safely and without any problems.



You can request the data sheet, mounting instructions, and technical manual for FDCIO223 with a product version ES < 50 via the Customer Support Center (CSC).

Contact the CSC by phone on +49 89 9221-8000.

You will find information on how to ascertain the product version of your device in chapter 'Product version ES [→ 19]' of the technical manual.

Intended use

The input/output module FDCIO223 may only be operated on an FDnet/C-NET detector line in an AlgoRex, SIGMASYS or FS20/FS720 fire detection system.

Target groups

The information in this document is intended for the following target groups:

Target group	Activity	Qualification
Product Manager	<ul style="list-style-type: none"> Is responsible for information passing between the manufacturer and regional company. Coordinates the flow of information between the individual groups of people involved in a project. 	<ul style="list-style-type: none"> Has obtained suitable specialist training for the function and for the products. Has attended the training courses for Product Managers.
Project Manager	<ul style="list-style-type: none"> Coordinates the deployment of all persons and resources involved in the project according to schedule. Provides the information required to run the project. 	<ul style="list-style-type: none"> Has obtained suitable specialist training for the function and for the products. Has attended the training courses for Project Managers.
Installation personnel	<ul style="list-style-type: none"> Assembles and installs the product components at the place of installation. Carries out a performance check following installation. 	<ul style="list-style-type: none"> Has received specialist training in the area of building installation technology or electrical installations.
Commissioning personnel	<ul style="list-style-type: none"> Configure the product at the place of installation according to customer-specific requirements. Check the product operability and release the product for use by the operator. Searches for and corrects malfunctions. 	<ul style="list-style-type: none"> Has obtained suitable specialist training for the function and for the products. Has attended the training courses for commissioning personnel.
Maintenance personnel	<ul style="list-style-type: none"> Carries out all maintenance work. Checks that the products are in perfect working order. Searches for and corrects malfunctions. 	<ul style="list-style-type: none"> Has obtained suitable specialist training for the function and for the products.

Source language and reference document

- The source/original language of this document is German (de).
- The reference version of this document is the international version in English. The international version is not localized.

Document identification

The document ID is structured as follows:

ID code	Examples
ID_ModificationIndex_Language_COUNTRY -- = multilingual or international	A6V10215123_a_de_DE A6V10215123_a_en_-- A6V10315123_a_--_--

Date format

The date format in the document corresponds to the recommendation of international standard ISO 8601 (format YYYY-MM-DD).

Conventions for text marking

Markups

Special markups are shown in this document as follows:

▷	Requirement for a behavior instruction
1. 2.	Behavior instruction with at least two operation sequences
–	Version, option, or detailed information for a behavior instruction
⇒	Intermediate result of a behavior instruction
⇒	End result of a behavior instruction
•	Numbered lists and behavior instructions with an operation sequence
[→ X]	Reference to a page number
'Text'	Quotation, reproduced identically
<Key>	Identification of keys
>	Relation sign and for identification between steps in a sequence, e.g., 'Menu bar' > 'Help' > 'Help topics'
↑ Text	Identification of a glossary entry

Supplementary information and tips



The 'i' symbol identifies supplementary information and tips for an easier way of working.

1.1 Applicable documents

Document ID	Title
001204	Principles, applications, installation, maintenance Fire alarm signal in areas at risk of explosion
007227	Technical manual Detector exchanger and tester FDUD292
007904	Installation Housing FDMH291, Call point unit FDME221, MTE320C, DMA1101, DMA1131, DMA1151
008331	List of compatibility (for 'Sinteso™' product line)
009052	FS20 Fire detection system - Commissioning, Maintenance, Troubleshooting
009078	FS20 Fire detection system - Configuration
009124	Installation Input/output module (Transponder) FDCIO223, Housing FDCH221
009168	Data sheet Transponder FDCIO223
009718	Technical Manual Intelligent detector tester FDUD293
A6V10201154	Installation manual call point FDM1101-Rx, FDM1101-Rx (F), FDM1101A-Rx
A6V10210416	FS720 Fire detection system - Commissioning, Maintenance, Troubleshooting
A6V10210424	FS720 Fire detection system - Configuration
A6V10229261	List of compatibility (for 'Cerberus™ PRO' product line)

Please also observe the documentation for your fire detection system.

1.2 Download center

You can download various types of documents, such as data sheets, installation instructions, and license texts via the following Internet address:

<http://siemens.com/bt/download>

- Enter the document ID in the 'Find by keyword' input box.



You will also find information about search variants and links to mobile applications (apps) for various systems on the home page.

1.3 Technical terms and abbreviations

Term	Explanation
ABS	Acrylonitrile-butadiene-styrene (plastic)
ASA	Acrylic ester-styrene-acrylonitrile (plastic)
EOL	Line termination element (end of line)
ES	Product version
FDnet/C-NET	Addressed detector line
FC20xx	Fire control panel in 'Sinteso' fire detection system
FC72x	Fire control panel in 'Cerberus PRO' fire detection system
FS20	'Sinteso' fire detection system
FS720	'Cerberus PRO' fire detection system
I/O1	Input/output 1
I/O2	Input/output 2
KMK	Load factor for collective and conventional devices (1 KMK \triangleq 100 μ A)
Collective detector line	Non-addressed detector line (Siemens / GMT)
Conventional detector line	Non-addressed detector line (industry standard)
LED	Light-emitting diode
MC link	Maintenance and Commissioning Link; interface to the detector exchanger and tester
PC	Polycarbonate (plastic)
SynoLINE300	Fire detection system for conventional detectors
SynoLINE600	Fire detection system for collective detectors
Synova300	Conventional fire detector
Synova600	Collective fire detector

1.4 Revision history

The reference document's version applies to all languages into which the reference document is translated.



The first edition of a language version or a country variant may, for example, be version 'd' instead of 'a' if the reference document is already this version.

The table below shows this document's revision history:

Modification index	Edition date	Brief description
h	2016-05-04	<ul style="list-style-type: none"> • 'Overview' chapter added • 'Printed circuit board view' chapter added • 'Input/output module status display' chapter added • 'Status display for the lines' chapter added • 'Adjustment elements' chapter added • 'Conventional detectors which can be connected' chapter added • 'Operation modes' chapter added • 'Configuration as a detector line' chapter added • 'Detector line design' chapter added • 'Power supply' chapter added • 'Control with confirmation': SIGMASYS chapter removed • 'Control without confirmation' chapter corrected • 'Identical-polarity monitoring' chapter added • 'Reverse-polarity monitoring' chapter corrected • 'Technical data' chapter added • Graphic in 'Dimensions' chapter adapted • Editorial changes
g	2015-09-25	<ul style="list-style-type: none"> • Editorial changes • Term 'transzorb diode' replaced by 'voltage reference diode' • Changes/additions in the following chapters: <ul style="list-style-type: none"> – 'Technical terms and abbreviations' – 'Status display for the lines' – Power supply – Operation modes – Input/output configuration options (secondary side) – Configuration as a detector line – Collective detectors which can be connected – Conventional detectors which can be connected – Detector line design – Configuration as a contact input – Configuration as a control line – Overview – Control without confirmation – Control with confirmation – Compatibility – Defining the mounting site of the module and configuration of the lines – Planning the detector line – Planning the control line – Planning contact input – Connecting input/output module – Calibrating the control line • Technical data

Modification index	Edition date	Brief description
f	2015-06-17	<ul style="list-style-type: none"> Document applies to devices with ES \geq50 Change to date format in line with ISO 8601 specifications (yyyy-mm-dd format); editorial adjustments made; data sheet added to 'Applicable documents' chapter; 'Download center' chapter added Printed circuit board layout adapted in all graphics 'Mounting / Installation' chapter adapted 'Compatibility' chapter adapted Editing Status display tables re-created 'Applicable documents' adapted Terminology adapted
e	11.2009	Housing FDCH29x replaced with FDCH221 Editorial adjustments made.
d	07.2009	Editorial changes made. New 'Index' chapter.
c	09.2007	Descriptions of 'Control with confirmation' removed. 'Alarm verification' chap. corrected; new 'Diagnosis levels' and 'Degraded mode in FDnet' chap. Corrections in 'Technical data': <ul style="list-style-type: none"> Line separator added Humidity changed Protection category IP changed (short name for housing)
b	10.2006	Naming: "Synova 820" and "SynoNet" omitted New: Chapter 9, annex (collective compatibility)
a	05.2006	First edition

The table below shows the published language versions with the corresponding modification index:

Modification index	en_--	de_--	fr_--	it_--	es_--
h	X	X	X	X	X
g	–	X	–	–	–
f	–	X	–	–	–
e	X	X	X	X	X
d	X	X	X	X	X
c	X	X	X	X	X
b	X	X	–	–	–
a	X	X	–	–	–

X = published

– = no publication with this modification index

2 Safety

2.1 Safety instructions

The safety notices must be observed in order to protect people and property.

The safety notices in this document contain the following elements:

- Symbol for danger
- Signal word
- Nature and origin of the danger
- Consequences if the danger occurs
- Measures or prohibitions for danger avoidance

Symbol for danger



This is the symbol for danger. It warns of **risks of injury**.
Follow all measures identified by this symbol to avoid injury or death.

Additional danger symbols

These symbols indicate general dangers, the type of danger or possible consequences, measures and prohibitions, examples of which are shown in the following table:



General danger



Explosive atmosphere



Voltage/electric shock



Laser light



Battery



Heat


Signal word

The signal word classifies the danger as defined in the following table:

Signal word	Danger level
DANGER	DANGER identifies a dangerous situation, which will result directly in death or serious injury if you do not avoid this situation.
WARNING	WARNING identifies a dangerous situation, which may result in death or serious injury if you do not avoid this situation.
CAUTION	CAUTION identifies a dangerous situation, which could result in slight to moderately serious injury if you do not avoid this situation.
<i>NOTICE</i>	<i>NOTICE</i> identifies possible damage to property that may result from non-observance.


How risk of injury is presented

Information about the risk of injury is shown as follows:

	⚠ WARNING
	Nature and origin of the danger Consequences if the danger occurs <ul style="list-style-type: none"> • Measures / prohibitions for danger avoidance

How possible damage to property is presented

Information about possible damage to property is shown as follows:




	<i>NOTICE</i>
	Nature and origin of the danger Consequences if the danger occurs <ul style="list-style-type: none"> • Measures / prohibitions for danger avoidance

2.2 Safety regulations for the method of operation

National standards, regulations and legislation

Siemens products are developed and produced in compliance with the relevant European and international safety standards. Should additional national or local safety standards or legislation concerning the planning, mounting, installation, operation or disposal of the product apply at the place of operation, then these must also be taken into account together with the safety regulations in the product documentation.

Electrical installations

	<p>⚠ WARNING</p>
	<p>Electrical voltage Electric shock</p> <ul style="list-style-type: none"> • Work on electrical installations may only be carried out by qualified electricians or by instructed persons working under the guidance and supervision of a qualified electrician, in accordance with the electrotechnical regulations.
<ul style="list-style-type: none"> • Wherever possible disconnect products from the power supply when carrying out commissioning, maintenance or repair work on them. • Lock volt-free areas to prevent them being switched back on again by mistake. • Label the connection terminals with external voltage using a 'DANGER External voltage' sign. • Route mains connections to products separately and fuse them with their own, clearly marked fuse. • Fit an easily accessible disconnecting device in accordance with IEC 60950-1 outside the installation. • Produce earthing as stated in local safety regulations. 	
	<p>⚠ CAUTION</p>
	<p>Noncompliance with the following safety regulations Risk of injury to persons and damage to property</p> <ul style="list-style-type: none"> • Compliance with the following regulations is required.
	<ul style="list-style-type: none"> • Specialist electrical engineering knowledge is required for installation. • Only an expert is permitted to carry out installation work. <p>Incorrect installation can take safety devices out of operation unbeknown to a layperson.</p>

Mounting, installation, commissioning and maintenance

- If you require tools such as a ladder, these must be safe and must be intended for the work in hand.
- When starting the fire control panel ensure that unstable conditions cannot arise.
- Ensure that all points listed in the 'Testing the product operability' section below are observed.
- You may only set controls to normal function when the product operability has been completely tested and the system has been handed over to the customer.

Testing the product operability

- Prevent the remote transmission from triggering erroneously.
- If testing building installations or activating devices from third-party companies, you must collaborate with the people appointed.
- The activation of fire control installations for test purposes must not cause injury to anyone or damage to the building installations. The following instructions must be observed:
 - Use the correct potential for activation; this is generally the potential of the building installation.
 - Only check controls up to the interface (relay with blocking option).
 - Make sure that only the controls to be tested are activated.
- Inform people before testing the alarm devices and allow for possible panic responses.
- Inform people about any noise or mist which may be produced.
- Before testing the remote transmission, inform the corresponding alarm and fault signal receiving stations.

Modifications to the system design and the products

Modifications to the system and to individual products may lead to faults, malfunctioning and safety risks. Written confirmation must be obtained from Siemens and the corresponding safety bodies for modifications or additions.

Modules and spare parts

- Components and spare parts must comply with the technical specifications defined by Siemens. Only use products specified or recommended by Siemens.
- Only use fuses with the specified fuse characteristics.
- Wrong battery types and improper battery changing lead to a risk of explosion. Only use the same battery type or an equivalent battery type recommended by Siemens.
- Batteries must be disposed of in an environmentally friendly manner. Observe national guidelines and regulations.

Disregard of the safety regulations

Before they are delivered, Siemens products are tested to ensure they function correctly when used properly. Siemens disclaims all liability for damage or injuries caused by the incorrect application of the instructions or the disregard of danger warnings contained in the documentation. This applies in particular to the following damage:


- Personal injuries or damage to property caused by improper use and incorrect application
- Personal injuries or damage to property caused by disregarding safety instructions in the documentation or on the product
- Personal injury or damage to property caused by poor maintenance or lack of maintenance


2.3 Standards and directives complied with

A list of the standards and directives complied with is available from your Siemens contact.

2.4 Release Notes

Limitations to the configuration or use of devices in a fire detection installation with a particular firmware version are possible.

	⚠ WARNING
	<p>Limited or non-existent fire detection</p> <p>Personal injury and damage to property in the event of a fire.</p> <ul style="list-style-type: none"> • Read the 'Release Notes' before you plan and/or configure a fire detection installation. • Read the 'Release Notes' before you carry out a firmware update to a fire detection installation.

	NOTICE
	<p>Incorrect planning and/or configuration</p> <p>Important standards and specifications are not satisfied. Fire detection installation is not accepted for commissioning. Additional expense resulting from necessary new planning and/or configuration.</p> <ul style="list-style-type: none"> • Read the 'Release Notes' before you plan and/or configure a fire detection installation. • Read the 'Release Notes' before you carry out a firmware update to a fire detection installation.

3 Structure and function

3.1 Overview

The input/output module FDCIO223 is operated on the FDnet/C-NET and has two inputs/outputs. These can be configured as follows:

- Collective detector line and conventional detector line
- Control line
- Contact input

The graphic below shows the integration of the module in the fire detection system.

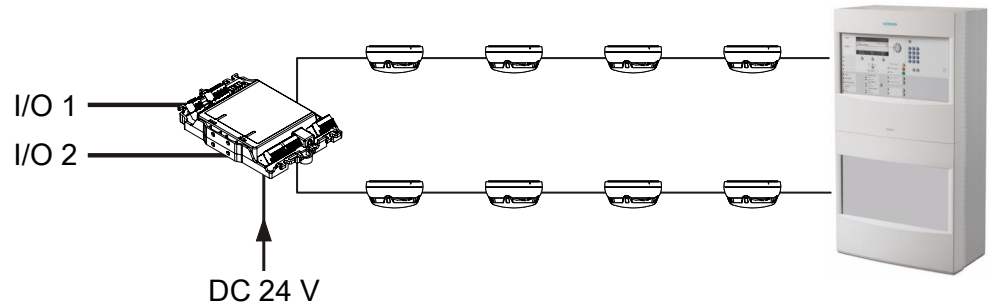


Figure 1: Input/output module in the FS20 or FS720 fire detection system

Properties

- Connection of two collective detector lines or conventional detector lines to the FDnet/C-NET
- Connection of monitored or non-monitored contacts
- Monitored control of equipment
- Built-in line separator for the FDnet/C-NET
- Compatible with AlgoRex, SIGMASYS, and FS20/FS720 fire detection systems
- With safety barrier SB3, it is also possible to connect intrinsically safe collective detectors (ex-zones 1 and 2)
- Electrical isolation of primary and secondary sides:
FDnet/C-NET from I/O 1 and I/O 2



Not all fire detection systems support the functions named above. Please observe the documentation for your fire detection system accordingly.

3.1.1 Details for ordering

Type	Order number	Designation
FDCIO223	S24218-B102-A1	Input / output module (transponder)

Scope of delivery

- 1x input/output module FDCIO223
- 2x resistors 560 Ω , 0.25 W
- 2x resistors 680 Ω , 0.25 W
- 2x resistors 2.7 k Ω , 0.25 W
- 2x resistors 3.3 k Ω , 0.25 W
- 2x bidirectional voltage reference diodes (transzorb diodes) for terminating the collective detector lines
- 2x mounting feet FDCM291 for installing the input/output module on a U-rail TS35
- 2x jumpers for bridging the internal fuses

3.1.2 Product version ES

The product version ES provides the technical status of a device in terms of software and hardware. The product version is provided as a two-digit number.

You will find the details of your device's product version:

- On the packaging label
- On the product label or the type plate

Product version on the packaging label

Details of the product version can be found directly on the packaging label in the barcode:

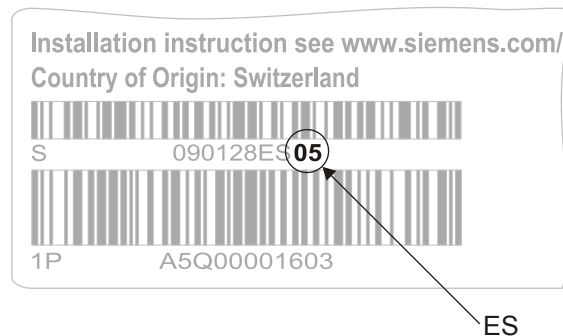


Figure 2: Example of a packaging label with details of the product version

Product version on the product label and the type plate

Details of the product version can be found after the device order number:

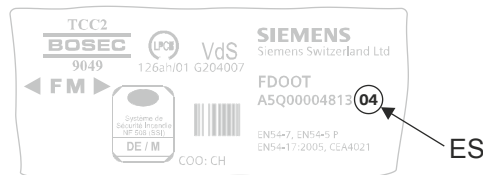


Figure 3: Example of a product label with details of the product version



Depending on the product and various approvals, the product labels may differ in terms of the information type and layout.

Look for your device's order number on the product label.

You will find the product version after the order number.

3.2 Setup

The modules consist of the module carrier, the printed circuit board and the cover cap. The printed circuit board includes several LEDs. The LEDs indicate the status of the inputs and outputs and the operating condition of the modules.

The cover cap of the printed circuit board is transparent such that the statuses of the LEDs are visible even when the housing is closed.

To protect the modules from environmental influences, they can be mounted in housing FDCH221 (accessories).

3.2.1 Overview

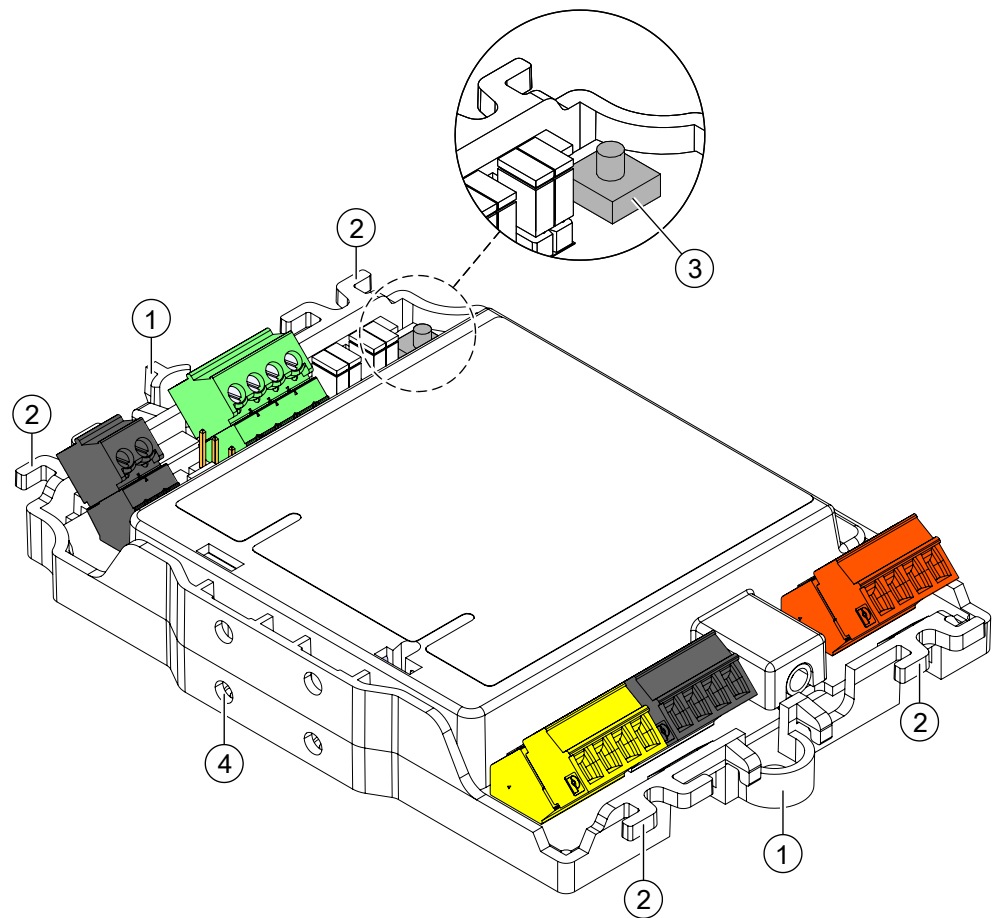


Figure 4: Overview

- | | |
|---------------------------------|---|
| 1 Holes for securing the module | 3 Push button for calibrating control lines |
| 2 Holders for cable ties | 4 Holes for mounting feet FDCM291 |

See also

- 📄 [Housing FDCH221 \[→ 47\]](#)

3.2.2 Printed circuit board view

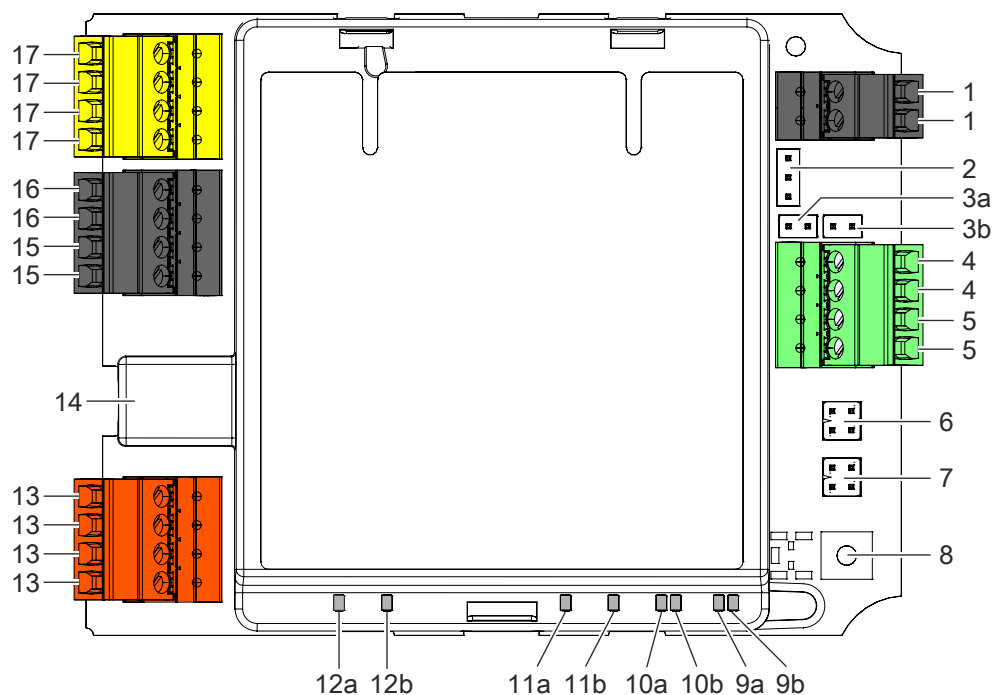


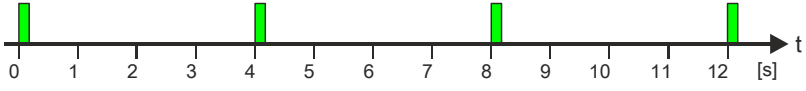

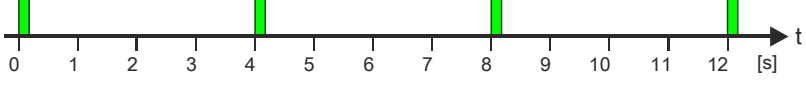
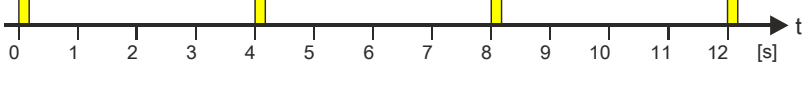
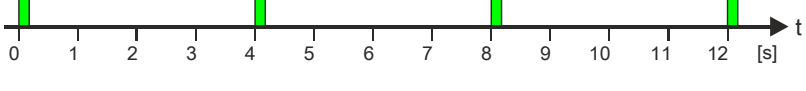
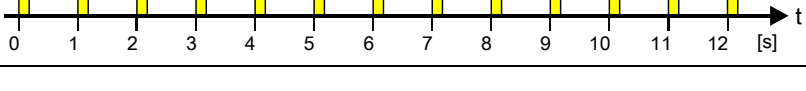
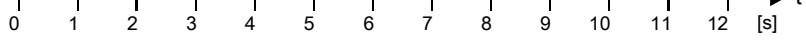
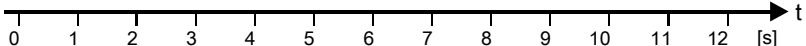
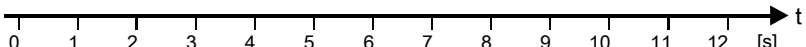
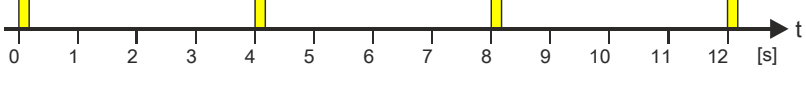
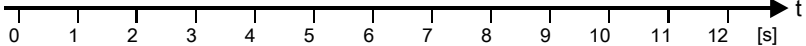
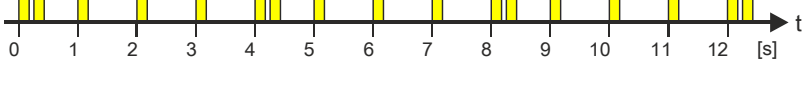
Figure 5: Printed circuit board view

- 1 Terminals for ground connection of the module and for shielding of inputs/outputs 'I/O 1' and 'I/O 2' (black)
- 2 Jumper for ground fault monitoring of inputs/outputs 'I/O 1' and 'I/O 2'
- 3a Jumper for bridging the internal fuses: 'I/O 2'
- 3b Jumper for bridging the internal fuses: 'I/O 1'
- 4 Terminals for input/output 'I/O 2' (green)
- 5 Terminals for input/output 'I/O 1' (green)
- 6 Jumper for polarization of monitoring for input/output 'I/O 2'
- 7 Jumper for polarization of monitoring for input/output 'I/O 1'
- 8 Push button for monitoring the calibration of control lines
- 9a LED for indicating the status of input/output 'I/O 2' (green)
- 9b LED for indicating the status of input/output 'I/O 2' (red)
- 10a LED for indicating the status of input/output 'I/O 1' (green)
- 10b LED for indicating the status of input/output 'I/O 1' (red)
- 11a 'PWR SEC' LED for indicating the status of the input/output module's secondary side
- 11b 'FAULT SEC' LED for indicating the status of the input/output module's secondary side
- 12a 'PWR PRIM' LED for indicating the status of the input/output module's primary side
- 12b 'FAULT PRIM' LED for indicating the status of the input/output module's primary side
- 13 Terminals for the FDnet/C-NET detector line (orange)
- 14 Socket for the detector exchanger and tester (MC link)
- 15 Terminals for the FDnet/C-NET detector line shielding (black)
- 16 Terminals for the 24 V power supply shielding (black)
- 17 Terminals for the 24 V secondary side power supply (yellow)

3.2.3 Indication elements

The position numbers in the following chapters relate to the graphic in chapter 'Printed circuit board view [→ 21]'.
 3.2.3.1 Input/output module status display

Primary side LEDs – Position number 12

Operating condition	Flashing mode	Graphic
Normal	'PWR PRIM' flashes green every four seconds	
	'FAULT PRIM' off	
Test mode ¹	'PWR PRIM' flashes green every four seconds	
	'FAULT PRIM' flashes yellow every four seconds	
Localization mode	'PWR PRIM' flashes green every four seconds	
	'FAULT PRIM' flashes yellow every second	
Fault <ul style="list-style-type: none"> No FDnet/C-NET supply voltage Input/output module defective 	'PWR PRIM' off	
	'FAULT PRIM' off	
Fault <ul style="list-style-type: none"> No supply voltage (24 V) Fault on input/output line, e.g., short-circuit or open line Activation of inputs in degraded mode operation 	'PWR PRIM' off	
	'FAULT PRIM' flashes yellow every four seconds	
Fault in localization mode	'PWR PRIM' off	
	'FAULT PRIM' flashes yellow every second and flashes yellow twice every four seconds	

¹ The 'PWR PRIM' and 'FAULT PRIM' LEDs do not flash in sync in test mode

Secondary side LEDs – Position number 11

Operating condition	Flashing mode	Graphic
Normal	'PWR SEC' flashes green every second	
	'FAULT SEC' off	
Fault: <ul style="list-style-type: none"> No supply voltage (24 V) Input/output module defective 	'PWR SEC' off	
	'FAULT SEC' off	
Fault: <ul style="list-style-type: none"> Input/output module defective Ground fault Error on FDnet/C-NET detector line 	'PWR SEC' flashes green every second	
	'FAULT SEC' lights up yellow continuously	

See also

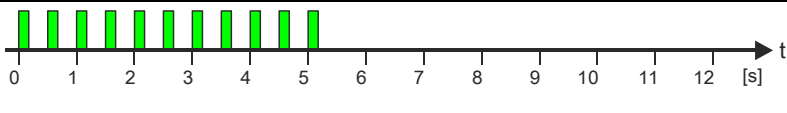
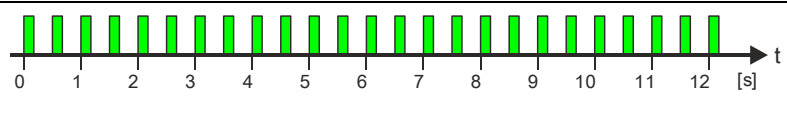
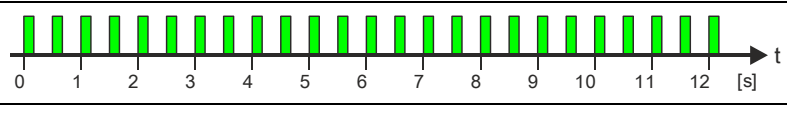
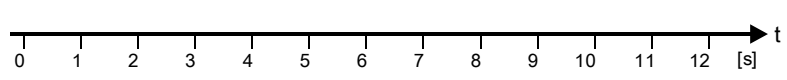
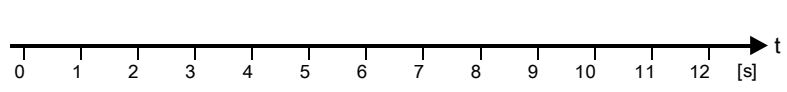
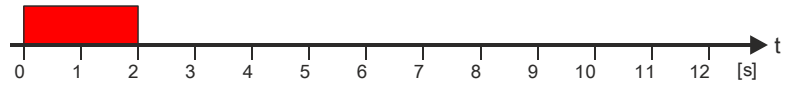
Printed circuit board view [→ 21]

3.2.3.2 Status display for the lines

One green (a) and one red (b) LED indicates the status of each input/output (LEDs with position numbers 9a, 9b and 10a, 10b). Their meaning depends on how the input/output is configured.

**Input/output is configured as an input (detector line or contact input)
– Position numbers 9 and 10**

Operating condition	Flashing mode	Graphic
<ul style="list-style-type: none"> Not active No supply Incorrectly configured 	Both LEDs off	<p>A horizontal timeline from 0 to 12 seconds. The LED status is represented by a solid black line at the 0 level, indicating both LEDs are off.</p>
		<p>A horizontal timeline from 0 to 12 seconds. The LED status is represented by a solid black line at the 0 level, indicating both LEDs are off.</p>
Standby	LED(a) lights up green continuously	<p>A horizontal timeline from 0 to 12 seconds. A solid green bar is present from 0 to 12 seconds, indicating LED(a) is on.</p>
	LED(b) off	<p>A horizontal timeline from 0 to 12 seconds. The LED status is represented by a solid black line at the 0 level, indicating LED(b) is off.</p>
Alarm / Active	LED(a) off	<p>A horizontal timeline from 0 to 12 seconds. The LED status is represented by a solid black line at the 0 level, indicating LED(a) is off.</p>
	LED(b) lights up red continuously	<p>A horizontal timeline from 0 to 12 seconds. A solid red bar is present from 0 to 12 seconds, indicating LED(b) is on.</p>
Fault: <ul style="list-style-type: none"> Open line Short-circuit Deviation in terms of monitoring resistances (only in the case of a contact input) 	LED(a) lights up green continuously	<p>A horizontal timeline from 0 to 12 seconds. A solid green bar is present from 0 to 12 seconds, indicating LED(a) is on.</p>
	LED(b) lights up red continuously	<p>A horizontal timeline from 0 to 12 seconds. A solid red bar is present from 0 to 12 seconds, indicating LED(b) is on.</p>
Triggered / Activated in inspection mode/test mode	LED(a) off	<p>A horizontal timeline from 0 to 12 seconds. The LED status is represented by a solid black line at the 0 level, indicating LED(a) is off.</p>
	LED(b) flashes red every second	<p>A horizontal timeline from 0 to 12 seconds. Red vertical bars appear at every integer second from 0 to 12, indicating LED(b) flashes every second.</p>

Operating condition	Flashing mode	Graphic
Input not monitored, e.g., during line startup or while there is an open line or an error on the FDnet/C-NET detector line	LED(a) flashes green twice a second for five seconds (contact input)	
	LED(a) flashes green twice a second for 12 seconds (detector line)	
The input/output is deactivated due to a fault on the primary side	LED(a) flashes green twice a second (FDnet/C-NET failure)	
	LED(b) off	
Calibration of load resistances not possible	LED(a) off	
	LED(b) lights up red for two seconds (applies to both inputs/outputs)	

Input/output is configured as an output (control line) – Position numbers 9 and 10

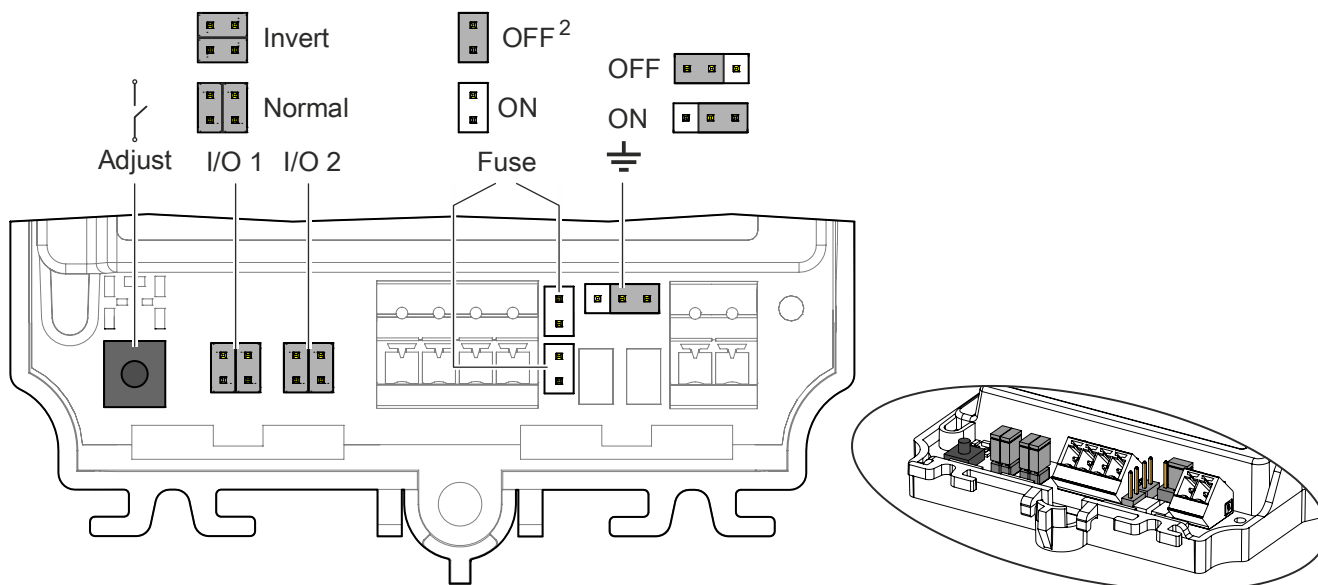
Operating condition	Flashing mode	Graphic
<ul style="list-style-type: none"> Not active No supply Incorrectly configured 	Both LEDs off	
	Standby	<p>LED(a) lights up green continuously</p> <p>LED(b) off</p>
Output activated	LED(a) off	
	LED(b) lights up red continuously	
Fault: <ul style="list-style-type: none"> Open line Short-circuit Control line not calibrated 	LED(a) lights up green continuously	
	LED(b) lights up red continuously	
Calibration of load resistances ¹ The input/output is deactivated due to a fault on the primary side	LED(a) flashes green twice a second for 4.5 seconds	
	LED(b) off	
Calibration of load resistances not possible	LED(a) off	
	LED(b) lights up red for two seconds (applies to both inputs/outputs)	

¹ The calibration procedure takes approx. four seconds.

See also

Printed circuit board view [→ 21]

3.2.4 Adjustment elements



Adjustment element	Function	Position	Meaning
Adjust push button	Control line calibration	ON / OFF	The internal resistance of the control lines is measured
I/O 1 Monitoring	Input/output 1: Polarity during monitoring	norm ¹	Setting for: <ul style="list-style-type: none"> Control line featuring identical-polarity monitoring Detector line Contact input
		invert	Setting for: <ul style="list-style-type: none"> Control line featuring reverse-polarity monitoring
I/O 2 Monitoring	Input/output 2: Polarity during monitoring	norm ¹	Setting for: <ul style="list-style-type: none"> Control line featuring identical-polarity monitoring Detector line Contact input
		invert	Setting for: <ul style="list-style-type: none"> Control line featuring reverse-polarity monitoring
Fuse	Bridging of the internal fuse	ON ¹	The internal fuse is active
		OFF ²	The internal fuse is bridged
⊕	Earth fault monitoring	ON ¹	Activated
		OFF	Deactivated

¹ Jumper setting shown in the figure (corresponds to factory setting)

² OFF = internal fuse bridged



Jumper plugged in: The internal fuse of the input/output module is bridged
Jumper not plugged in: The internal fuse is active

- Only the settings detailed above are permitted.
- If the 'Fuse' jumper is activated, fuses provided by the customer must be used instead of the internal fuses. You will find more information on protecting the control lines in chapter 'Power supply [→ 30]'.
- For monitoring, both of an input/output's jumpers must remain in the same position at all times.
- The jumpers only need to be in the 'invert' (reverse polarity) position in the case of control involving reverse-polarity monitoring. For all other applications, the jumpers must be in the 'norm' (identical polarity) position.
- Connect terminal 1 to a local station ground to be able to use the 'Earth fault monitoring [→ 31]' function.



All other settings are made using the engineering tool.



The control line is not monitored in the connected state.

3.3 Function

3.3.1 Overview

A distinction is made in terms of the function between the primary and secondary sides of the FDCIO223 input/output module. The primary side represents the connection to the FDnet/C-NET. Both inputs/outputs are triggered on the secondary side.

The inputs/outputs can be used as follows:

- Collective detector lines
- Conventional detector lines
- Control lines
- Contact inputs



⚠ WARNING

The FDCIO223 outputs must not be used for extinguishing equipment.

3.3.2 Input/output module primary side

Communication

The communication with the control panel is performed via the FDnet/C-NET detector line. Configuration is performed on the control panel.

Line separator

All FDnet/C-NET devices are equipped with a line separator.

The FDnet/C-NET device is equipped with electronic switches which isolate the defective part in case of a short-circuit on the FDnet/C-NET detector line. The rest of the detector line remains serviceable. On a loop line, all FDnet/C-NET devices remain fully functional after a single short-circuit.

3.3.3 Power supply

The primary side (FDnet/C-NET) is always supplied with power via the FDnet/C-NET detector line.

The secondary side must always be supplied with power via an external DC 24 V power supply. The primary and secondary sides are electrically isolated. In addition, any inputs/outputs that are configured as contact inputs are electrically isolated from the 24 V power supply.

External power supply DC 24 V

!	<p>NOTICE</p> <p>No fusing of the 24 V power supply on the input/output module</p> <p>Damage to the device due to nominal currents >2 A</p> <ul style="list-style-type: none"> • To safeguard the device, the 24 V power supply must be protected with a fuse of max. 2 AT. • The currents for both control lines are provided by the 24 V supply directly. The control lines can be operated either with 2x 1 A or 1x 1.5 A. Therefore, each control line must be protected with a fuse of max. 1 AT or 1.5 AT, depending on its configuration (internal fuses up to max. 0.7 AT).
----------	--

- The external power supply for the input/output module FDCIO223 must be ungrounded and should feature short-circuit monitoring.
- The external power supply must be monitored.
- It is not necessary to use electrically isolated power units, as the supply is already electrically isolated in the input/output module FDCIO223.
- The fire control panel's power supply can be used.

Also observe the information in chapter 'Using two detector lines simultaneously [→ 32]'.

3.3.4 Operation modes

The input/output module FDCIO223 has the following operation modes:

- Normal operation
- Test/inspection
- Localization

Normal operation

The input/output module FDCIO223 is running in intended operation. The inputs are monitored and evaluated. The outputs can be triggered.

Test/inspection

With test mode/inspection mode, the input/output module functions according to how the input/output and fire control panel are configured.

Activation of the outputs in test mode/inspection mode will merely be signaled by means of LEDs on the input/output module.

If the input/output module FDCIO223 is operated with a control panel FC20xx or FC72x, no control outputs will be triggered in the event of activation of these control panels in test mode/inspection mode. The input/output module FDCIO223 itself does not switch to test mode/inspection mode in this case. LEDs 12a and 12b do not indicate any status.

The input/output module is meant to respond quickly in test mode/inspection mode. Consequently, the lines are operated as follows in test mode:

- With detector lines, the alarm verification is deactivated
- With contact inputs, the filter time is deactivated
- Error messages are transmitted immediately and are not filtered

Depending on the version of the market package of the fire control panels FC20xx and FC72x, the procedures described are carried out either on the device or on the control panel.

Localization

To enable clear identification, the input/output module FDCIO223 can be set to localization mode from the control panel. Localization mode is signaled by the yellow LED (12b) for the primary side status display.

See also

- 📄 Input/output module status display [→ 22]
- 📄 Printed circuit board view [→ 21]

3.3.5 Earth fault monitoring

The secondary side is monitored for ground faults regardless of mode. Ground fault monitoring can be deactivated with a jumper. The setting for ground fault monitoring always applies to both inputs/outputs.

Switch off ground fault monitoring if a safety barrier SB3 with intrinsically safe detectors for potentially explosive atmospheres is connected.

!	<i>NOTICE</i>
	Ground fault monitoring is switched off with outputs activated.

See also

- 📄 Adjustment elements [→ 27]
- 📄 Connection of intrinsically safe detectors in ex-zone 1 [→ 36]

3.4 Input/output configuration options (secondary side)

Both inputs/outputs can be configured independently of one another. The table below shows which configurations are possible for input/output 1 and input/output 2.


Configuration	Input/output 1	Input/output 2
Collective detector lines	X	X
Conventional detector lines	X	X
Contact input	X	X
Control line (monitored/non-monitored)	X	X
Control with confirmation	X ¹⁾	Not possible ¹⁾

¹⁾ Input/output 1 works as a contact output. Input/output 2 is required as a contact input.

You will find information on configuring the input/output module with the software for the fire detection system in document 009078 for fire control panels FC20xx and document A6V10210424 for fire control panels FC72x.

You will find more detailed information in the fire detection system documentation.

See also

 Applicable documents [→ 8]

3.4.1 Using two detector lines simultaneously

The following conditions apply when using two detector lines at input/output 1 and 2 simultaneously:

- Without a safety barrier SB3, a maximum of 32 devices may be connected per detector line and the DC 24 V secondary side power supply has to comply with standard EN 54-4.
- With a safety barrier SB3, a maximum of 32 devices may be connected in total and the DC 24 V secondary side power supply does not have to comply with standard EN 54-4.

3.4.2 Configuration as a detector line

The information in this chapter applies to the following types of detector line:

- Collective detector lines
- Collective detector lines for areas at risk of explosion
- Conventional detector lines



A short-circuit on the detector line is never evaluated as an alarm. The functionality 'short-circuit = alarm' is not supported.



It is not possible to operate collective detectors and conventional detectors simultaneously on the same detector line.

3.4.2.1 Collective detectors which can be connected

Different generations of detector can be connected to the input/output module:

- Detectors on the collective detector line:
 - Cerberus FIT 110 series
 - MS9 fire detection system
 - SIGMACON fire detection system
 - AlgoRex fire detection system
 - Synova 600 series fire detector
- Special detectors on the collective detector line:
 - MS24, AlgoRex, and Sinteso/Cerberus PRO flame detector
 - AlgoRex and Sinteso/Cerberus PRO linear detector
 - Sinteso/Cerberus PRO neural fire detector
 - Titanus ProSens smoke extraction system (only with new resetting board type E548/c, order number 09-20-5481)
 - AlgoRex and Sinteso/Cerberus PRO point detector and manual call point for potentially explosive atmospheres

Not all detectors are always supported by the fire detection systems mentioned. The information in the 'List of compatibility' is key to ascertaining compatibility:

For fire detection systems FS20: Document 008331

For fire detection systems FS720: Document A6V10229261

3.4.2.2 Conventional detectors which can be connected

- Conventional detector line configured as SynoLINE300:
 - Synova 300 series fire detector
- Third-party products in accordance with 'Industrial conventional', e.g.:
 - Apollo Series 65
 - Apollo Orbis

You will find an overview of the detectors that can be connected in the 'List of compatibility':

For fire detection systems FS20: Document 008331

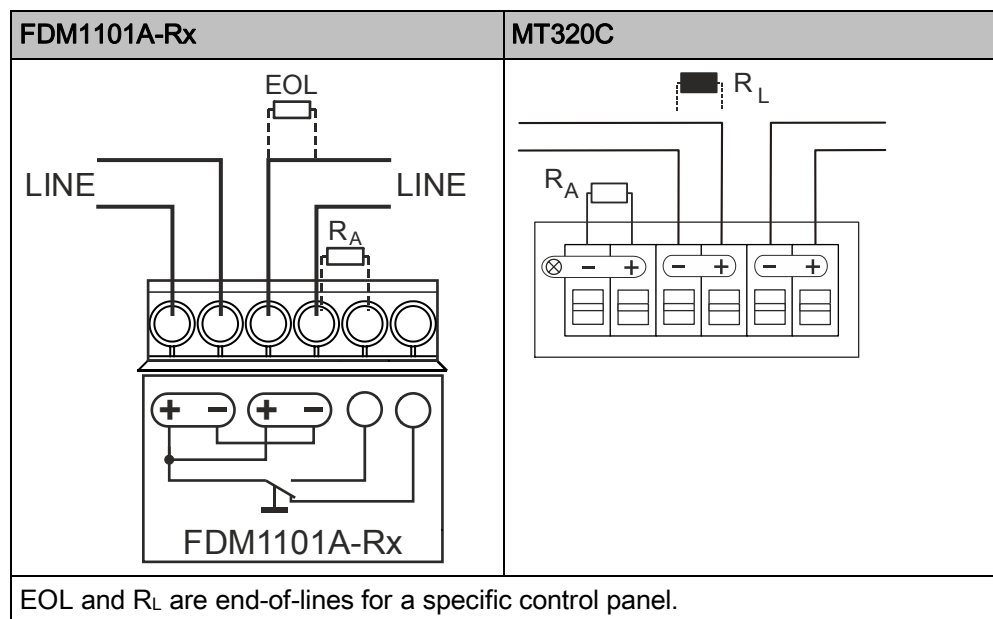
For fire detection systems FS720: Document A6V10229261

Using manual call points

Some manual call points, such as the MT320C and FDM1101A-Rx, are supplied without an alarm resistor. These manual call points only contain a switching contact.

In order to ensure that these manual call points function correctly, you must connect an alarm resistor R_A with the following values to the manual call point:

- $R_A = 620 \Omega \pm 5 \%$, $P = 1 W$
- The following table shows how to connect alarm resistor R_A correctly:



You will find more specific information on using manual call points FDM1101A-Rx and MT320 in documents A6V10201154 and 007904.

3.4.2.3 Detector line design

Permissible cable types

The detector line is compatible with the following cables:

- Shielded cables
- Unshielded cables

The table below shows the permissible cable values:

Cable value	Detector line without safety barrier SB3	Detector line with safety barrier SB3
Inductance	Max. 5 mH	Max. 1.6 mH
Capacitance	Max. 4 μ F	Max. 83 nF
Resistance	Max. 150 Ω	Max. 50 Ω

End-of-line (EOL)

One of the following must be used to terminate the detector line:

- Bidirectional 20 V voltage reference diode (max. tolerance ± 5 %); 1.5 kW pulse power
- EOL22(Ex); absolutely essential with intrinsically safe ex detectors on ex lines above safety barrier SB3!

Non-assigned inputs/outputs do not require an end-of-line (EOL).

Monitoring of detector lines

The input/output module monitors the line resistance of the detector line during operation.

The line resistance is adjusted precisely in each of the following cases:

- On initial start-up
- When an alarm has been reset
- Whenever the detector line is switched on

Circuit

A maximum of 32 detectors can be connected (KMK = 32).

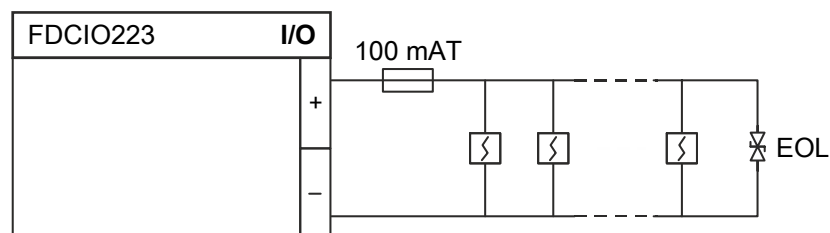


Figure 6: Detector line circuit



Recommendation: Install a 100 mAT fuse as shown in the graphic on collective and conventional detector lines to protect the EOL element from commissioning errors.

De-energization of the detector line

With product version ES ≥ 41 , the collective detector lines are de-energized as soon as the FDnet/C-NET is current-free.

With all ES versions, the collective detector lines can also be de-energized individually (control panel-specific).

You will find more detailed information in the fire detection system documentation.

3.4.2.4 Connection of intrinsically safe detectors in ex-zone 1

Safety barrier SB3 can also be connected to the input/output module FDCIO223. This allows intrinsically safe detectors to be operated in ex-zones 1 and 2. If you operate the FDCIO223 in conjunction with a safety barrier SB3, the following points must be observed in particular:

- The line resistance must not exceed 50 Ω (excluding the safety barrier resistance).
- If a safety barrier is connected to both inputs/outputs, both barriers must be connected to the same grounding point.
- Specific national requirements always apply when creating installations in areas at risk of explosion.



If two safety barriers SB3 are used, a maximum of 32 devices may be connected in total.



NOTICE

Activated ground fault monitoring

Input/output module malfunction

- If you are using safety barrier SB3, deactivate ground fault monitoring on the input/output module.

Circuit

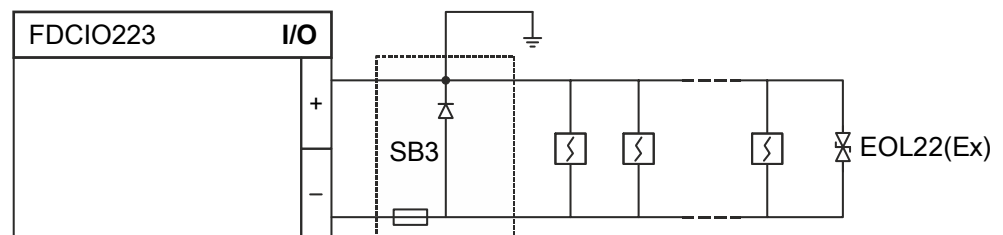


Figure 7: Detector line circuit with intrinsically safe detectors in ex-zone 1+2

- Safety barrier SB3 is always required when connecting intrinsically safe ex detectors for zones 1 and 2.
- An EOL22(Ex) end-of-line must always be used to terminate detector lines in ex-zones 1 and 2.

You will find more information in document 001204.

See also

Applicable documents [→ 8]

3.4.2.5 Alarm verification

To help prevent false alarms, the input/output module FDCIO223 features a form of alarm verification that can be activated as required.

When alarm verification is activated, any alarm (1) that occurs will first be stored by the input/output module. Then the detector line will be reset and powered up again. Once the detector line has finished powering up, the input/output module will continue monitoring the detector line as normal (2). If the alarm recurs within t_V (70 s), it will be forwarded to the control panel. Once the monitoring window of t_V (4) has elapsed, any new instance of the alarm will be treated as if it were occurring for the first time.

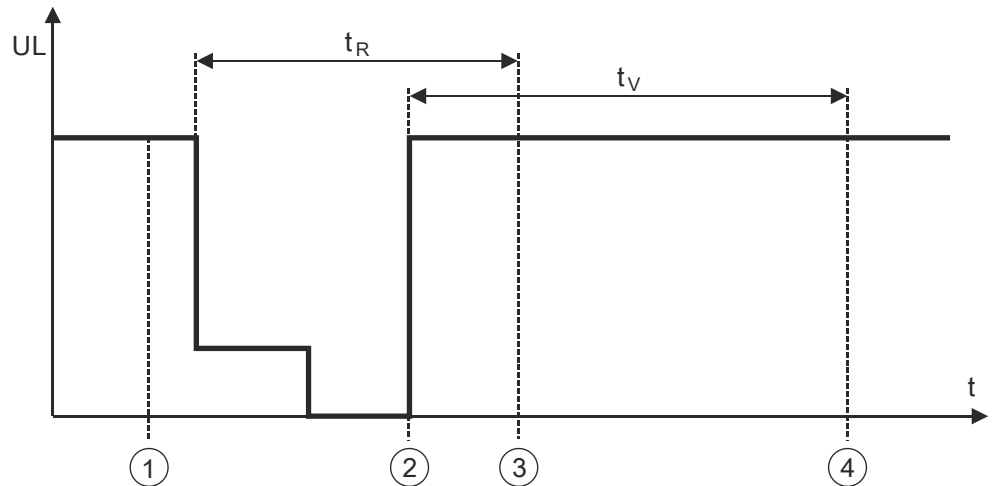


Figure 8: Alarm verification

UL	Detector line voltage	1	First alarm occurs
t_R	Alarm response time	2	Time when the input/output module starts monitoring the detector line again
t_V	Alarm verification time	3	If the alarm remains active, it is sent to the control panel
		4	End of monitoring window

The input/output module supports alarm response times (t_R) of 0...255 seconds.

To avoid false alarms, transfer to the control panel can be delayed by means of a setting. In theory, a delay time of 10...250 seconds can be set. However, in practice the actual setting range will depend on the control panel and the alarm response time. The permissible combinations should be selected when configuring the system.



The permissible alarm response time may be limited by local regulations.

3.4.2.6 Monitoring

The input/output module monitors the detector line for the following criteria:

- Alarm
- Open line
- Short-circuit
- Ground fault (only both inputs/outputs jointly, no line-specific fault message)

3.4.3 Configuration as a contact input

The inputs/outputs of the input/output module can be configured as contact inputs. The following configurations are possible:

Status inputs

Status inputs trigger a status change as soon as they are activated.

Danger inputs

Danger inputs trigger an alarm as soon as the input is activated.

Filter time

The statuses of the inputs are polled several times a second. The following conditions apply to detecting a change in status:

- The activation signal must be present for at least as long as the filter time (can be set from 0.5...240 seconds).
- The deactivation signal must be present for at least as long as the filter time but for no more than 5 seconds.

The filter time is used to suppress interfering pulses.

Line monitoring

The input lines can be monitored for the following criteria:

- Open line
- Open line and short circuit
- No monitoring

To facilitate this, resistors must be connected to the lines of the inputs. When a short-circuit or open line occurs on one of the input lines, a fault message is transmitted to the control panel.

Circuit

The graphic below shows the various circuit options available for contact inputs:

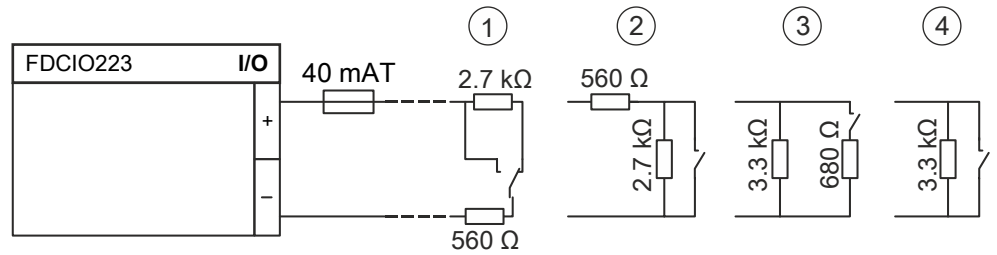


Figure 9: Circuit for contact inputs

1...3 Monitoring for open line and short circuit

4 Monitoring for open line only



Recommendation: Install a 40 mAT fuse as shown in the graphic to protect the monitoring resistors from commissioning errors.



The contact inputs must be potential-free.

3.4.4 Configuration as a control line

3.4.4.1 Overview

Current limiting

Within the context of control, the secondary side external supply voltage (DC 24 V) is applied directly to the relevant output for the control lines via a relay. In the input/output module FDCIO223, internal fuses (0.7 AT self-resetting fuses: PTCs) are present on the control lines.

Protect the contacts either with the internal fuses (max. 0.7 AT) or with fuses provided by the customer (1 AT or 1.5 AT), coupled with bridging the internal fuses to jumper 3 (see chapter 'Printed circuit board view [→ 21]'). The jumper configuration is described in chapter 'Adjustment elements [→ 27]'.

The maximum current load of the outputs is 1 A if two outputs are used (2x 1 A) or 1.5 A (1x 1.5 A) if one output is used. These values apply to a maximum operating temperature of 60 °C.

Monitoring

You have the option of monitoring the control line. Monitored control lines are monitored for the following criteria:

- Open line
- Short-circuit
- Ground fault (only both inputs/outputs jointly, no line-specific fault message)



Recommendation: Always operate the control line in monitored mode.



The control line is not monitored in the triggered state.



To avoid false alarms, transfer to the control panel can be delayed by means of a setting. In theory, a delay time of 0.5...240 seconds can be set. However, in practice the actual setting range will depend on the control panel.

Monitoring can be configured in accordance with the following types:

- Identical-polarity monitoring
- Reverse-polarity monitoring

The monitoring voltage is set by means of jumpers.

Control

Control is possible with or without confirmation. The various configuration options are described in the next two sections.

See also

- 📖 Calibrating the control line [→ 57]
- 📖 Control without confirmation [→ 43]
- 📖 Control with confirmation [→ 44]

3.4.4.2 Identical-polarity monitoring

With this type of monitoring, the connected load's internal resistance is monitored. As a result, no monitoring resistors need to be installed. Calibration is only possible with the push button.

Circuit featuring identical-polarity monitoring

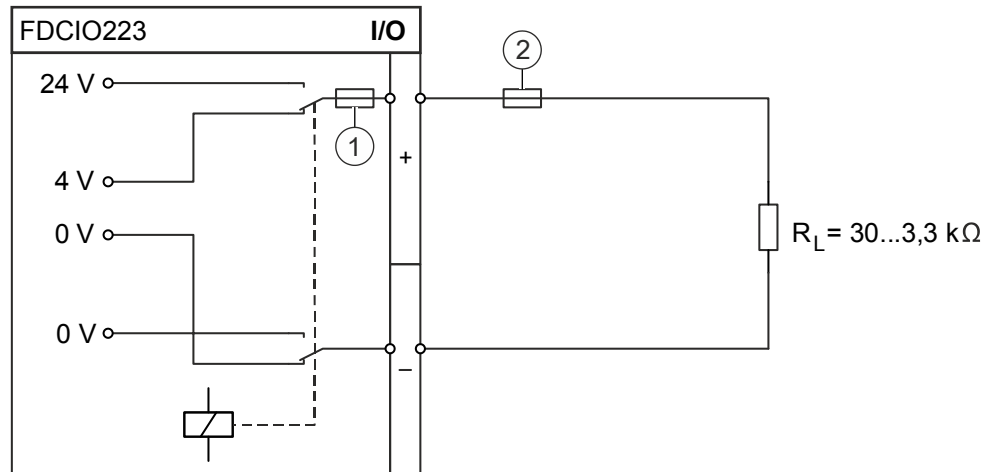


Figure 10: Circuit for control lines with identical-polarity monitoring

- 1 Internal fuse (0.7 AT)
- 2 External fuse on the output (1 AT or 1.5 AT)



The maximum monitoring voltage is 4 V. Use reverse-polarity monitoring if the load to be monitored responds at 4 V.

Calibration of load resistances

To ensure that any load resistances (particularly those associated with coils) can be monitored without any problems, the connected line must be calibrated during commissioning. During calibration, the load resistance and the line resistance are measured and stored as reference values.

The calibration process is initiated by pressing the push button on the input/output module. Once calibration has been successfully completed, the input/output module adopts the operating mode. This is indicated by the input/output LEDs. The LEDs also indicate if the calibration process has failed.

With identical-polarity inverse control, the calibration process can only be performed if the relays have dropped out. Therefore, control must be activated following configuration so that the relay will drop out.

See also

- 📖 [Calibrating the control line \[→ 57\]](#)
- 📖 [Control without confirmation \[→ 43\]](#)
- 📖 [Control with confirmation \[→ 44\]](#)
- 📖 [Printed circuit board view \[→ 21\]](#)
- 📖 [Adjustment elements \[→ 27\]](#)

3.4.4.3 Reverse-polarity monitoring

With this type of monitoring, the control voltage polarity is reversed in relation to that of the monitoring voltage. The monitoring resistor is $3.3\text{ k}\Omega$ and parallel with the load. The load must be isolated from the monitoring voltage by means of a diode.

Reverse-polarity monitoring must always be used in the case of electronic loads.

Circuit featuring reverse-polarity monitoring

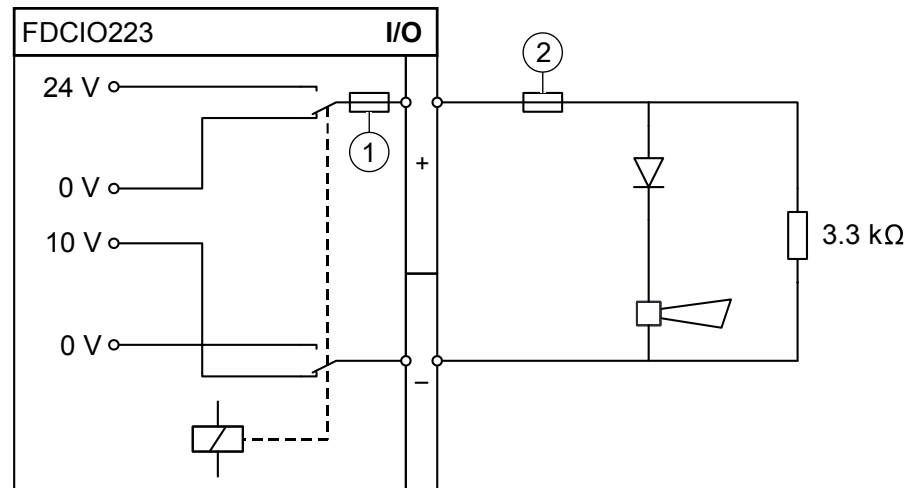


Figure 11: Circuit for control lines with reverse-polarity monitoring

- 1 Internal fuse (0.7 AT)
- 2 External fuse on the output (1 AT or 1.5 AT)

The figure shows the relay in the dropped-out state, i.e., the monitored state.

See also

- 📄 [Calibrating the control line \[→ 57\]](#)
- 📄 [Control without confirmation \[→ 43\]](#)
- 📄 [Control with confirmation \[→ 44\]](#)
- 📄 [Printed circuit board view \[→ 21\]](#)
- 📄 [Adjustment elements \[→ 27\]](#)

3.4.4.4 Control without confirmation

Configuration

The following configurations are supported in the case of control without confirmation:

- Once activated, the control remains permanently active
- Once activated, the control only remains active for a certain time. How long the contact remains active can be configured (pulse duration).
- Once activated, the control remains stable (symmetrical pulse pattern of 1 s). **NOTICE! This configuration is not designed for continuous operation.**
- With line monitoring
- Without line monitoring
- Behavior in the event of an error

If used as a monitored output (FC20xx/FC72x: 'Fire Control Group'):

- Failsafe behavior when the detector line is current-free or in degraded mode operation (e.g., in case of a failure of the processor in the control panel).

The error behavior defines the position of the output in the event of an error:

- Output remains in the same position as before the error
- Output is activated in case of an error
- Output is deactivated in case of an error
- Output is deactivated in case of an error or remains in the previously defined state and responds to the 'Degraded mode horn' signal like other sounders on the detector line

Observe the behavior for different product versions of the device:

Devices with ES ≤45: The output is deactivated and follows the horn command

Devices with ES ≥50: The output remains in the previously defined state ('freeze') and follows the horn command

If the output was activated before the detector line (FDnet/C-NET) was lost and no horn command is received because the detector line is current-free, the output is deactivated after 60 minutes.

If used as a sounder line (FC20xx/FC72x: 'Evac Control Group'):

- Failsafe behavior when the detector line is current-free or in degraded mode operation (e.g., in case of a failure of the processor in the control panel).

The error behavior defines the position of the output in the event of an error:

- Output is deactivated in case of an error or remains in the previously defined state and responds to the 'Degraded mode horn' signal like other sounders on the detector line

Observe the behavior for different product versions of the device:

Devices with ES ≤45: The output is deactivated and follows the horn command

Devices with ES ≥50: The output remains in the previously defined state ('freeze') and follows the horn command

If the output was activated before the detector line (FDnet/C-NET) was lost and no horn command is received because the detector line is current-free, the output is deactivated after 60 minutes.

The statuses of the outputs (active/not active) cannot be polled on the control panel, only switched.

Control methods involving pulse patterns

Control methods involving pulse patterns reduce the service life of the relay contacts on the input/output module. Contact wear is also dependent on the load. Up to 300,000 switching cycles are permitted.



At one switching cycle per second, 300,000 switching cycles are reached after approx. 3.5 days.

Behavior in the event of an error (control panel-specific)

Error	Configuration option
Failure of 24 V power supply	Open (configuration not possible)
Error involving control panel (e.g., communication with control panel interrupted)	<ul style="list-style-type: none"> • Relay remains unchanged • Relay deactivated • Relay activated • Degraded mode horn function (only possible with control panels FC20xx and FC72x)

- In the case of the 'Degraded mode horn' function, the input/output module accepts the 'Sounder ON' command. This function can only be configured on control panels FC20xx and FC72x.
- The monitoring of monitored control systems will only be resumed 30 seconds after deactivation.

3.4.4.5 Control with confirmation

Control with confirmation is not supported by the following control panels or the confirmation is not configured or processed on the control panel:

- FC20xx
- FC72x
- AlgoRex

3.5 Diagnosis levels

The FDCIO223 input/output module monitors its operation largely autonomously. The following diagnosis levels are derived from the different control measurements:

- Normal
- Observe information
- Replacement recommended
- Replacement necessary
- Fault

For details, see table below.

When an error occurs which impairs the correct functionality of the module, a module fault message is reported. The module contains additional information for addressing the cause. This can be displayed by the FDUD292 detector exchanger and tester or FDUD293 intelligent detector tester for example.

You will find more information in documents 007227 and 009718.

Information displayed on the detector exchanger and tester	Meaning	Measures
'No deviation'	Normal, no fault is present Input/output module is fully functional	None
'maybe excha.' ¹	Observe information -	-
'advice excha.' ¹	Replacement recommended -	-
'needed excha.' ¹	Replacement necessary -	-
Any fault message ²	Fault present Input monitoring error (open line, short circuit, deviation)	Check input circuit (parameter settings, resistances, short circuit, open line)
	Invalid parameter settings	Make valid parameter settings or use push button to calibrate output/control line
	Supply error on secondary side	<ul style="list-style-type: none"> • Check voltage • Replace the module
	Software error (Watchdog error)	Replace the module
	Memory error	Replace the module
	Communication error between module and control panel	Remedy cause

¹ The information displayed on the detector exchanger and tester is always in English; no translation into the corresponding language.

² This status can be displayed together with other statuses, e.g. 'needed excha.' (replacement necessary).



Status queries with detector exchanger and tester FDUD292 or intelligent detector tester FDUD293 are only possible with devices of the 'Sinteso' product line on the FDnet.

3.6 Behavior in degraded mode

Applicable for the FDnet/C-NET:

When the main processor of the fire control panel fails, the control panel works in degraded mode operation. Depending on the control panel type, the fire control panel can continue to perform the most important alarming and signaling functions in degraded mode operation.

Behavior of control panels that support degraded mode operation:

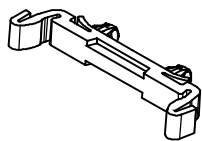
- Alarming is still ensured in degraded mode operation. However, in degraded mode only collective alarming is possible. This means that in the event of an alarm, it is possible to identify the FDnet/C-NET detector line but not the exact location of the detector triggering the alarm.

When the outputs are used for control systems (e.g. fire controls), the outputs adopt the configured default position in the event of a communication failure or de-energized FDnet/C-NET.

Degraded mode operation on the FDnet/C-NET is not supported in the same way by all control panels. The information in the 'List of compatibility' and in the corresponding control panel documentation must be taken into account during project planning.

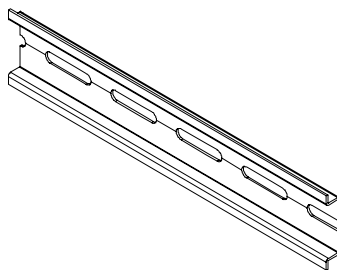
3.7 Accessories

3.7.1 Mounting foot FDCM291



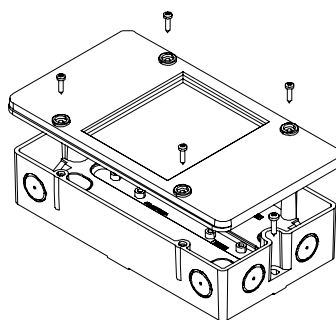
- For device mounting on a DIN rail TS35
- Two mounting feet must always be used
- Compatible with:
 - Input module FDCI22x(-CN)
 - Input/output module FDCIO22x(-CN)
 - Multi line separator module FDCL221-M
 - Zone module, external powered FDCI223, FDCI723
- Order number: A5Q00003855

3.7.2 U-rail TS35



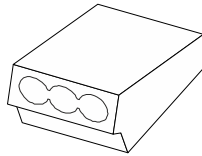
- Standard DIN rail for installing devices
- Width: 35 mm
- Length: 122 mm or 288 mm
- Compatible with:
 - Various input/output modules
 - FDCL221 line separator
 - Mounting foot FDCM291
 - Line adapter (Ex) FDCL221-Ex
- Order number (length 122 mm): BPZ:5644780001
- Order number (length 288 mm): BPZ:5644230001

3.7.3 Housing FDCH221



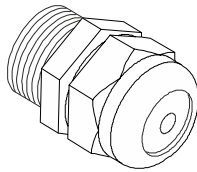
- To protect against dust and wetness
- Compatible with:
 - Multi line separator module FDCL221-M
 - Input module FDCI22x(-CN)
 - Input/output module FDCIO22x(-CN)
 - Radio gateway FDCW241
 - Zone module, external powered FDCI223, FDCI723
- Order number: S54312-F3-A1

3.7.4 Connection terminal DBZ1190-AB



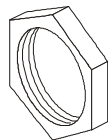
- Auxiliary terminal for connecting cables
- For T-branches of additional cabling, e.g., for cable shielding, detector heating units, sounder base, external alarm indicators, etc.
- For conductor cross-sections of 1...2.5 mm²
- 3 poles
- Order number: BPZ:4942340001

3.7.5 M20 x 1.5 metal cable gland



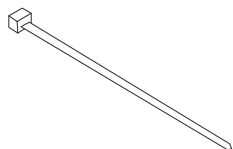
- For introducing a cable into a housing
- For cable diameters of 3.5...5.5 mm
- Temperature range: -40...+100 °C
- Allows for increased IP protection
- Compatible with:
 - M20 x 1.5 metal counter nut
 - Housing FDMH231-S-R
 - Housing FDMH292-x
 - Housing FDMH293-x
 - Housing FDMH297-R
 - Housing FDCH221
 - Manual call point FDM243H
 - Air sampling smoke detection kit FDBZ290
- Order number: A5Q00004478

3.7.6 M20 x 1.5 metal counter nut



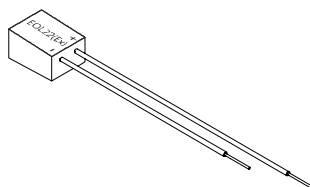
- For use with metal cable gland M20 x 1.5
- Order number: A5Q00004479

3.7.7 Cable ties 2.4 x 137



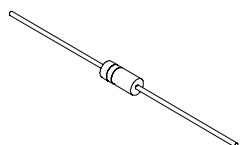
- For strain relief on the connection wires or generally for attachment
- Made from polyamide
- Compatible with:
 - Input module FDCI22x(-CN)
 - Input/output module FDCIO22x(-CN)
 - FDCL221 line separator
 - Multi line separator module FDCL221-M
 - Radio gateway FDCW221 and FDCW241
 - Zone module, external powered FDCI223, FDCI723
- Order number: BPZ:1825330001

3.7.8 End-of-line EOL22(Ex)



- End-of-line for detector lines
- Absolutely essential for collective detector lines for areas at risk of explosion (zone 1 and zone 2)
- Order number: BPZ:5162220001

3.7.9 Voltage reference diode (transzorb diode) 1.5KE20CA (EOL)



- Bidirectional voltage reference diode for the end-of-line of a detector line such as SynoLINE300 or SynoLINE600.
- Technical data: 20 V \pm 5 %, impulse power 1.5 kW
- Order number: A5Q00015836

4 Planning

When planning a project, proceed as follows:

1. Define the mounting site and configuration of the lines
2. Plan the various line types:
 - Collective detector line
 - Collective detector line for areas at risk of explosion (zone 1 and zone 2)
 - Conventional detector line
 - Control lines
 - Contact inputs

4.1 Compatibility

The input/output module FDCIO223 is compatible with the following fire detection systems:

- Sinteso FS20
- Cerberus PRO FS720
- SIGMASYS
- AlgoRex

Detector line	Control panel			
	FC20xx	FC72x	SIGMASYS	AlgoRex
FDnet	X	-	X	X
C-NET	-	X	-	-

X = compatible


- = not compatible

You will find detailed information in the 'List of compatibility'.

Limitations

- Maximum of 32 devices per collective detector line if each device has a KMK = 1
- If devices have a KMK >1, the maximum number of devices per collective detector line decreases accordingly.

See also

 [Applicable documents \[→ 8\]](#)

4.2 Defining the mounting site of the module and configuration of the lines

- Define the type of application for the input/output module.
See annex 'Planning the type of application, configuration overview [→ 68]'.

Using housing FDCH221

- Use housing FDCH221 to protect the input/output module against unauthorized access.

!	NOTICE
	The input/output module must be mounted either in housing FDCH221 or on a U-rail TS35 in a cabinet or in a control panel housing; it must not be installed without protection.

4.3 Planning the detector line

Define the values of the individual parameters for the relevant inputs/outputs.
See annex 'Planning the detector line, configuration overview [→ 68]'.

4.4 Planning the control line

Define the values of the individual parameters for the inputs/outputs.
See annex 'Configuring the control line, configuration overview [→ 69]'.

4.5 Planning contact input

Define the values of the individual parameters for the inputs/outputs.
See annex 'Configuring the contact input, configuration overview [→ 69]'.

- The resistors must be connected at the end of the lines.
- If the inputs/outputs are configured as contact inputs, no automatic detectors or manual call points can be connected to them.

4.6 Environmental influences

If the devices are used in industrial applications, consultation with the project manager is required, since plastics do not withstand certain environmental conditions.

The following factors must be taken into consideration:

- Chemicals
- Temperature
- Moisture

4.7 Filling out the configuration sheet


1. Copy out the configuration sheet. You will find the configuration sheet in the attachment.
2. Fill out the configuration sheet.
3. Hand over copies of the completed configuration sheet to the installer and the service technician.


See also

- 📄 Configuration sheets [→ 68]

5 Mounting / Installation

The mounting procedure depends on whether the input/output module FDCIO223 is installed on a U-rail TS35 in a fire control panel or with housing FDCH221.

	⚠ WARNING
	<p>Electrical voltage on output cables! Mortal danger due to electric shock!</p> <ul style="list-style-type: none"> • Ensure that the cables are not supplied with voltage during installation.

	NOTICE
	<p>High temperatures in the module's environment Module overheating and damage</p> <ul style="list-style-type: none"> • A minimum clearance of 1 cm must be observed between two modules or between the module and any other boundary.



Shock pulse loading according to EN 54-17:
In the event of a shock pulse (application of force) on the input/output module FDCIO223, the duration of the maximum rebound behavior of the built-in relays is 10 ms. The shock does not negatively affect the function of the input/output module.

5.1 Mounting with housing

The module can be installed at any location, along with the separate FDCH221 housing.

When installing the module in the housing FDCH221, proceed as follows:

1. Open the housing.
2. Break out the required cable entries.
3. Install the housing on a flat surface.
4. Insert cables. If necessary, fix the cables using M20 x 1.5 metal cable glands (accessories) or use a different cable entry.
5. If you are using shielded cable, join the shielding to the DBZ1190-AB connection terminal. The shielding must not touch any extrinsic ground potentials or metal parts in the housing.
6. Install the module in the housing using the M3 x 12 fixing screws supplied.
7. Connect the cables to the corresponding terminals.
8. Close housing using supplied screws.

You will find more information on installing the module in chapter 'Connecting input/output module [→ 55]'.

Cable with diameter $>1.5 \text{ mm}^2$

If the cable diameters on the inputs/outputs are greater than 1.5 mm^2 , auxiliary terminals must be used:

- In the case of cables with a diameter of $1.5 \dots 2.5 \text{ mm}^2$, the connection terminal DBZ1190-AB (accessories) can be used.
- In the case of cables with a diameter of $>2.5 \text{ mm}^2$, an appropriate terminal must be provided by the customer.

The terminal can be positioned inside the housing.

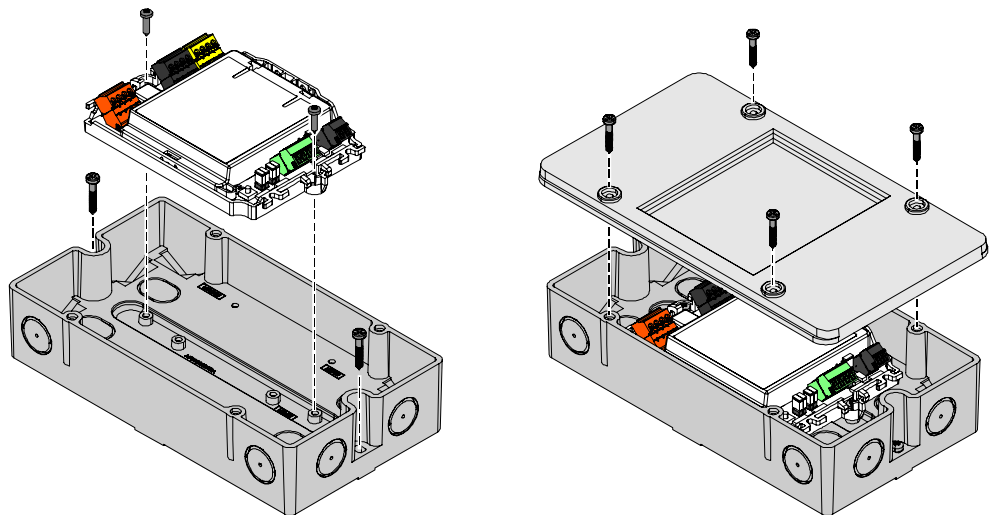


Figure 12: Installing the module in the FDCH221 housing

See also

- 📄 Connection terminal DBZ1190-AB [→ 48]
- 📄 Master gauge for recesses [→ 65]

5.2 Mounting in a fire control panel



To make sure that the LEDs on the module remain visible at all times, the cover cap is transparent. Pick a suitable mounting position, ensuring that the LEDs will remain visible at all times during operation.

When installing the module on a DIN rail, proceed as follows:

1. Insert the two mounting feet FDCM291 supplied into the side of the module.
2. Press the module's two mounting feet against a U-rail TS35 until the mounting feet engage (see figure).
3. Connect cables to corresponding terminals (see connection diagram).
4. Secure cables on module with cable ties.

You will find more information on installing the module in chapter 'Connecting input/output module [→ 55]'.

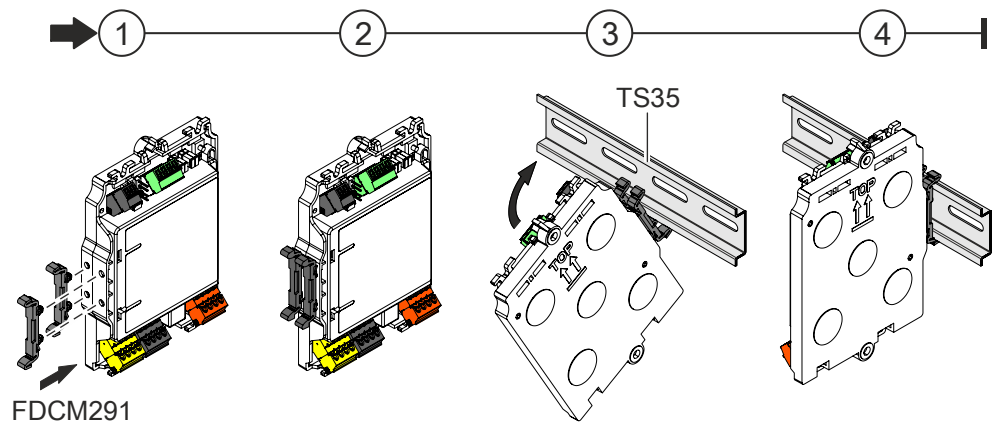


Figure 13: Installing the module on a DIN rail TS35

5.3 Connecting input/output module

Connect the module in accordance with the corresponding connection diagrams.

!	<p>NOTICE</p> <p>Incorrectly connected input/output module Damage to the device</p> <ul style="list-style-type: none"> • Never connect the external DC 24 V power supply or the FDnet/C-NET detector line to the green terminals of input/output 'I/O 1' or input/output 'I/O 2'. • Observe the assignment of terminals as per chapter 'Printed circuit board view [→ 21]'.
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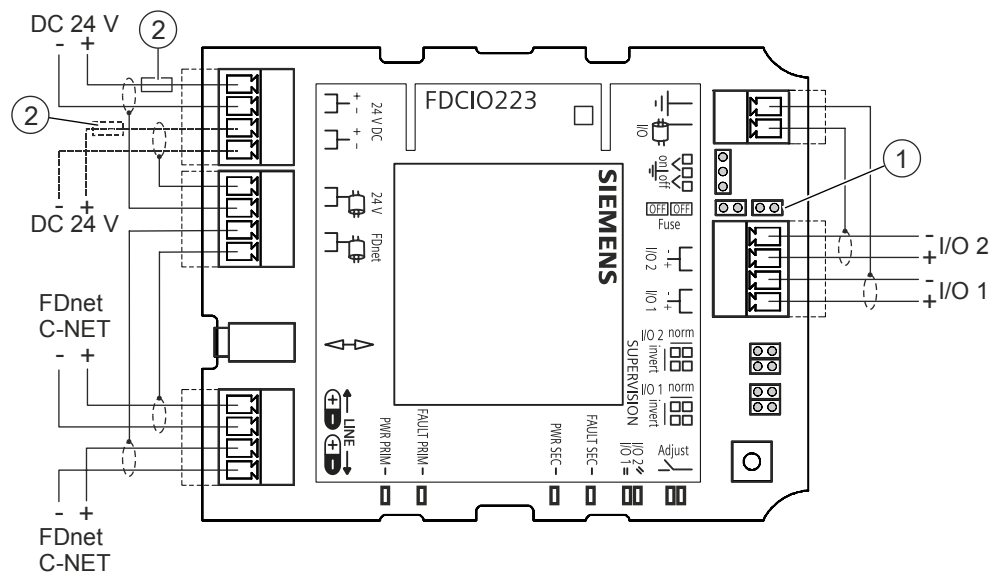


Do not connect the external DC 24 V power supply until you have configured the input/output module FDCIO223.



Note the positive and negative poles.

Only connect one wire per terminal. This is the only way to ensure the connection is failure-free for the entire service life of the device.



1 Internal fuse max. 0.7 AT

2 External fuse power supply max. 2 AT

Note the following with regard to the device connections. You will find an overview of the terminal assignments in chapter 'Printed circuit board view [→ 21]'.

- The shielding of the FDnet/C-NET detector line must be connected to terminal 15.
- The shielding of the 24 V secondary side power supply must be connected to terminal 16.
- The grounding for the shielding on the secondary side must be connected to terminal 1, as must the secondary side ground fault monitoring.
- The shielding for the lines on the secondary side should be connected to terminal 1.
- In the case of shielding on the secondary side, the secondary-side grounding must be connected. If there is no local station ground available, the shielding for the secondary-side supply can be used as a ground instead.



The shielding of the FDnet/C-NET detector line must never be used as a secondary-side ground potential or connected to other shields. If shields are connected, this can result in faults on the FDnet/C-NET detector line. Terminals 15 and 16 are used exclusively for looping through the shields.

See also

- 📄 Configuration as a detector line [→ 33]
- 📄 Configuration as a contact input [→ 38]
- 📄 Configuration as a control line [→ 40]
- 📄 Printed circuit board view [→ 21]

6 Commissioning

The device is commissioned via the control panel. The exact procedure is described in the control panel documentation.

!	NOTICE
	Before commissioning the device, check that the configuration of the inputs/outputs corresponds to the circuit.

Conduct a performance check once commissioning is complete.

Measure the current at the activated outputs.

If the input/output module is to be used for control purposes, the control lines will need to be calibrated during commissioning.

6.1 Calibrating the control line

- ▷ The input/output module must be connected correctly (inputs/outputs and power supply).
 - ▷ The detector line must have been commissioned.
 - ▷ The input/output module must be correctly configured.
 - ▷ The relay must not be triggered during calibration. This is especially important in the case of inverse controls (normal position = triggered)! Consequently, control must be activated for calibration in the case of inverse controls!
1. Press the push button (3) on the input/output module. See the chapter 'Overview [→ 20]'.
 - ⇒ The control lines will then be calibrated. Duration: approx. 4 s.
 2. Check that calibration has been performed successfully.
 - ⇒ Once calibration has been successfully completed, the input/output module runs in normal operation.

If the calibrated resistance is outside the tolerance range, an error is indicated.



The control line will be recalibrated whenever the push button is pressed.



The line must be recalibrated with each new configuration.

7 Maintenance / Repair

7.1 Status query

Status query on the detector exchanger and tester

The FDCIO223 input/output module is equipped with the MC link (Maintenance and Commissioning Link).

You will find more information in documents 007227 and 009718.



Status queries with detector exchanger and tester FDUD292 or intelligent detector tester FDUD293 are only possible with devices of the 'Sinteso' product line on the FDnet.

Status query on the control panel

Depending on the authorization level of the user and the control panel type, different actions can be performed from the control panel.

Observe the notices in the control panel documentation.

Document 009052 applies to fire control panels FC20xx.

Document A6V10333448 applies to fire control panels FC72x.

7.2 Performance check

The devices are automatically subjected to a performance check during the self-test. Nevertheless, it is necessary to check the devices on site at regular intervals.

Recommendation:

- Check the devices every year.
- Replace heavily soiled or damaged devices.

No other special maintenance work is necessary.

You will find more detailed information in the fire detection system documentation.

8 Specifications

8.1 Technical data

You will find information on approvals, CE marking, and the relevant EU directives for this device (these devices) in the following document(s); see 'Applicable documents' chapter:

- Document 009168

FDnet/C-NET detector line	Operating voltage	DC 12...33 V
	Operating current	Max. 0.75 mA
	Maximum current connection factor	3
	Quiescent current connection factor	3
	Address connection factor	1
	Separator connector factor	1
	Protocol	FDnet/C-NET
	Design	<ul style="list-style-type: none"> • Inherently short-circuit-proof • Protected against polarity reversal • Protected against overvoltage
	Compatibility	See 'List of compatibility'
Line separator	Line voltage:	
	<ul style="list-style-type: none"> • Nominal 	DC 32 V (= V_{nom})
	<ul style="list-style-type: none"> • Minimum 	DC 12 V (= V_{min})
	<ul style="list-style-type: none"> • Maximum 	DC 33 V (= V_{max})
	Voltage at which the line separator opens:	
	<ul style="list-style-type: none"> • Minimum 	DC 7.5 V (= $V_{SO min}$)
	<ul style="list-style-type: none"> • Maximum 	DC 10.5 V (= $V_{SO max}$)
	Permanent current when line separator is closed	Max. 1.5 A (= $I_{C max}$)
	Switching current (e.g., in the event of a short-circuit)	Max. 2 A (= $I_S max$)
	Leakage current when line separator is open	Max. 1 mA (= $I_L max$)
Serial impedance when switches are closed	Max. 0.4 Ω (= $Z_C max$)	
The line separator is closed via an actuation signal from the control panel. Required line voltage: DC 12...33 V (normal range)		
Secondary-side supply	Operating voltage	DC 18...32 V
	Operating current without secondary load at 24 V	<ul style="list-style-type: none"> • 26 mA (typ.) • 60 mA (max.)
	Operating current with secondary load	Max. 2 A

Detector lines at I/O1, I/O2	Can be configured as:	<ul style="list-style-type: none"> • Collective detector line • Collective detector line for areas at risk of explosion • Conventional detector line
	Number of detectors per detector line	Max. 32
	Collective detector key figures KMK	32
	Max. number of devices in total when using one or two safety barriers SB3	32
	Operating voltage / quiescent current:	
	<ul style="list-style-type: none"> • Collective / collective Ex • Conventional 	20 V / 6.25 mA 20 V / 17 mA
	Line resistance / line capacitance / line inductance:	
	<ul style="list-style-type: none"> • Without safety barrier SB3 • With safety barrier SB3 	≤150 Ω / ≤4 μF / ≤5 mH ≤50 Ω / 83 nF / ≤1.6 mH
	Alarm activation:	
	<ul style="list-style-type: none"> • Collective / collective Ex • Conventional 	Z-diode 5.6 V Nominal resistance 450...620 Ω
	Alarm current / alarm voltage	
	<ul style="list-style-type: none"> • Collective / collective Ex • Conventional 	Min. 4 mA / 4.5...12 V Min. 23 mA / ≥6 V
	Reset voltage	<1 V
	Reset time	>3 s
	Settling time following a reset	10 s
	Flashing current / cycle / duration	Approx. 80 mA / every second / 60 ms
	End-of-line (EOL)	<ul style="list-style-type: none"> • Voltage reference diode (20 V ±5 %; 1.5 kW pulse power) • EOL22(Ex) end-of-line; obligatory for ex lines
	Monitored for:	<ul style="list-style-type: none"> • Open line (creeping) • Short circuit (creeping) • Ground fault (both inputs/outputs jointly)

	Message evaluation for:	
	<ul style="list-style-type: none"> • Alarms • Faults • Ground fault 	<p>1 s (can be increased by the alarm response time)</p> <p>1 s (can be increased by the filter time)</p> <p>60 s</p>
	Compatibility	<ul style="list-style-type: none"> • Collective • Collective detector line for areas at risk of explosion • Conventional detector line <p>For details, see 'List of compatibility' and 'Annex' chapter</p>
Contact input	Measurement voltage	
	<ul style="list-style-type: none"> • With effective terminating resistance 560 Ω • With effective terminating resistance 3.3 kΩ • Open 	<p>Approx. 1.7 V</p> <p>Approx. 10 V</p> <p>Approx. 24 V</p>
	Measurement current	Typ. 3.2 mA
	Effective terminating resistances	<ul style="list-style-type: none"> • 3.3 kΩ; ± 1 %; 0.25 W • 560 Ω; ± 1 %; 0.25 W
	Line resistance	Max. 150 Ω
	Line capacitance	Max. 1 μ F
	Monitored for:	<ul style="list-style-type: none"> • Short circuit (if configured) • Closed • Deviation in terms of monitoring resistances • Open • Open line • Ground fault (both inputs/outputs jointly)
	Suppression of erroneous information	Continuous analysis
	Message evaluation for:	
	<ul style="list-style-type: none"> • Faults • Ground fault 	<p>1 s (can be increased by the filter time)</p> <p>60 s</p>
	Message types	<ul style="list-style-type: none"> • Danger input • Status input

Control line	Output voltage in active state	24 V nominal (= secondary-side supply voltage)
	Output current per control line in active state	<ul style="list-style-type: none"> Max. 2 x 1 A or 1x 1.5 A in housing FDCH221 and an operating temperature of max. 60° C
	Monitored for:	<ul style="list-style-type: none"> Open line Short-circuit Ground fault monitoring (both inputs/outputs jointly)
	Reverse-polarity monitoring voltage	
	<ul style="list-style-type: none"> With effective terminating resistance 3.3 kΩ 	Approx. 10 V
	<ul style="list-style-type: none"> Open 	Approx. 24 V
	Monitoring current	Typ. 3.2 mA
	Monitoring functions	<ul style="list-style-type: none"> 3.3 kΩ; ±1 %; 0.25 W (reverse polarity) 30 Ω...3.3 kΩ manual calibration (identical polarity)
	Identical-polarity monitoring voltage (calibration)	Min. 0.6 V / max. 5.3 V
	Identical-polarity monitoring current (calibration)	Min. 1 mA / max. 20 mA
	Monitoring polarity	<ul style="list-style-type: none"> Identical polarity Reverse polarity
	Suppression of erroneous information	Continuous analysis
	Message evaluation for:	
	<ul style="list-style-type: none"> Faults Ground fault 	1 s (can be increased by the filter time) 60 s
Control line resistance	10 % of load resistance; but only up to max. 150 Ω	
Fusing of control line	Max. 2 AT (to be provided by customer)	
Connections	FDnet/C-NET detector line, inputs and outputs, shielding, external DC 24 V:	
	<ul style="list-style-type: none"> Design Cable cross section 	Screw terminals on plug 0.2...1.5 mm ²
	MC link	3.5 mm jack socket

Ambient conditions	Operating temperature/permissible ambient temperature	-25...+60 °C	
	Storage temperature	-30...+65 °C	
	Air humidity	≤85 % rel. (no freezing or condensing at low temperature)	
	Protection categories (IEC 60529):		
	<ul style="list-style-type: none"> • When mounted on a U-rail in a fire control panel • With housing FDCH221 	IP30 IP65	
	Electromagnetic compatibility	EN 50130-4: 2011	
Mechanical data	Material:		
	<ul style="list-style-type: none"> • Input/output module rack • Cover cap, housing cover • Back box 	ABS PC ASA	
	Color:		
	<ul style="list-style-type: none"> • Input/output module rack, back box • Cover cap, housing cover 	~RAL 9010 pure white Transparent	
	Dimensions (W x H x D):		
	<ul style="list-style-type: none"> • Input/output module • Housing 	132 x 90 x 24 mm 207 x 119 x 48 mm	
	Weight:		
	<ul style="list-style-type: none"> • Input/output module • Housing FDCH221 	0.126 kg 0.282 kg	
	Standards	European standards:	<ul style="list-style-type: none"> • CEA GEI I084 • EN 54-13 • EN 54-17 • EN 54-18
		International standards:	<ul style="list-style-type: none"> • IEC 60068-1 25/070/42 (test class) • IEC 60721-3 3K8H (application class)

8.2 Dimensions

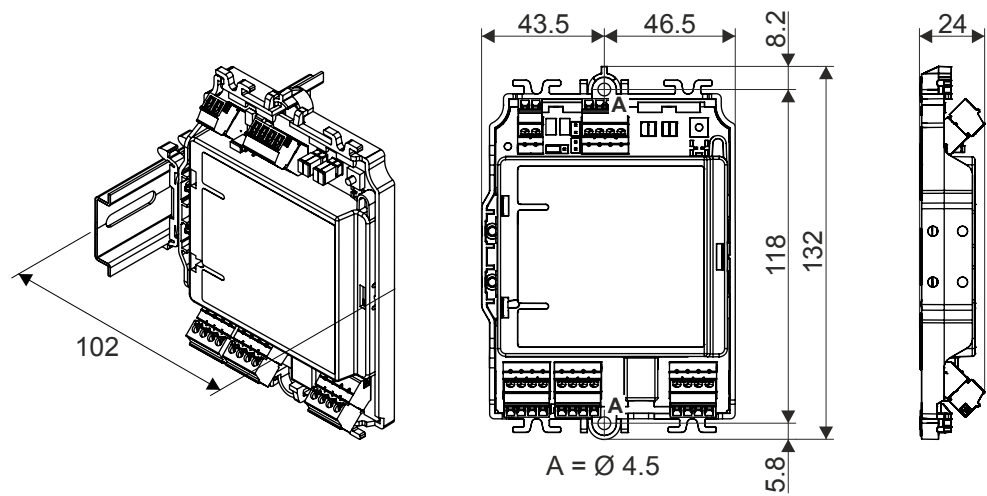


Figure 14: Module dimensions

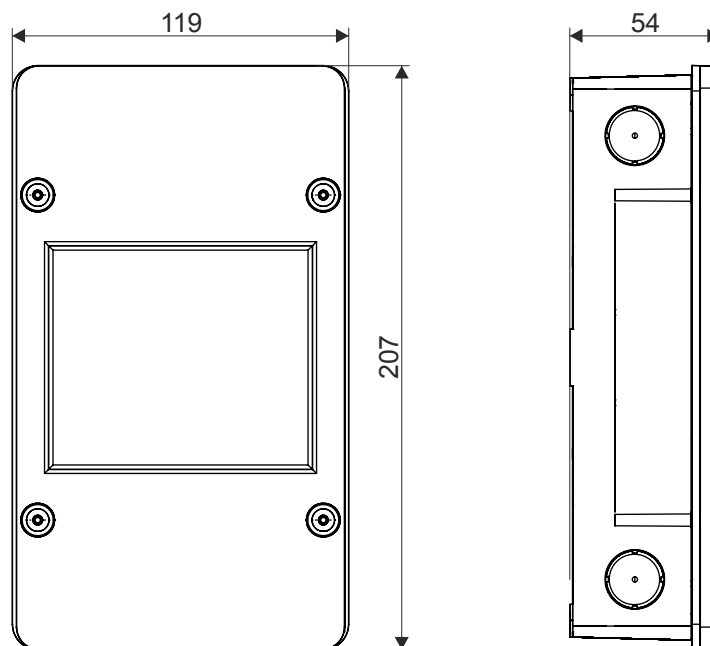


Figure 15: Dimensions for housing FDCH221

8.3 Master gauge for recesses

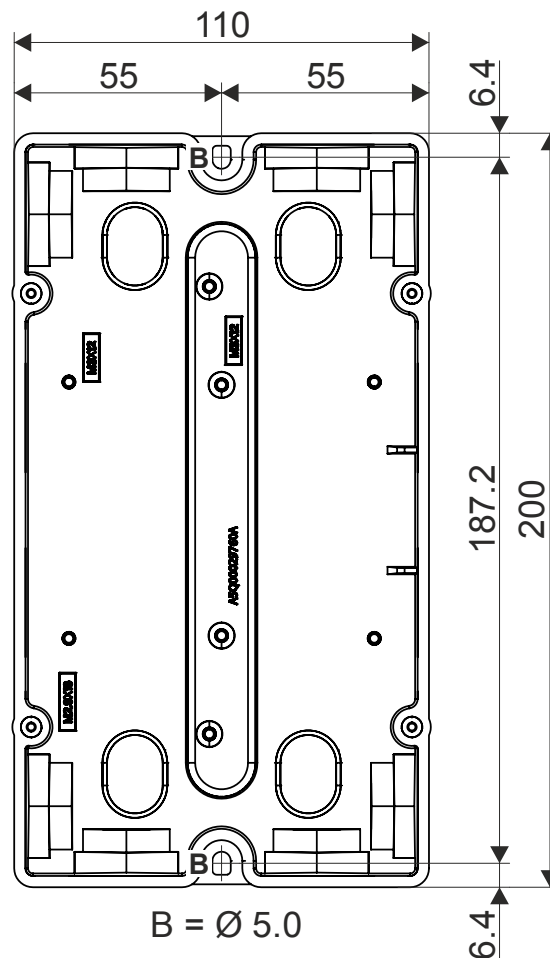


Figure 16: Master gage for recesses of housing FDCH221

8.4 Environmental compatibility and disposal



This equipment is manufactured using materials and procedures which comply with current environmental protection standards as best as possible. More specifically, the following measures have been undertaken:

- Use of reusable materials
- Use of halogen-free plastics
- Electronic parts and synthetic materials can be separated

Larger plastic parts are labeled according to ISO 11469 and ISO 1043. The plastics can be separated and recycled on this basis.



Electronic parts and batteries must not be disposed of with domestic waste.

- Take electronic parts and batteries to local collection points or recycling centers.
- Contact local authorities for more information.
- Observe national requirements for disposing of electronic parts and batteries.

9 Annex

9.1 Compatibility

The table below shows the devices which, together with the FDCIO223, are approved according to EN 54-13. It is possible to connect additional devices as per the 'List of compatibility'. However, these devices have not been tested according to EN 54-13.

Detector type	VdS approvals
AlgoRex smoke detectors	
DO1101 / DO1101A	G294005
DO1102 / DO1102A	-
DO1103A	-
DO1104A	G2940181
AlgoRex heat detectors	
DT1101 / DT1101A	G294017
DT1102 / DT1102A	G294018
'Sinteso' point detectors	
FDOOT241-9	G204007
FDOOT241-A9	G212036
Collective devices and point detectors for potentially explosive atmospheres	
Safety barrier SB3	-
DF1101-Ex	G299085
DO1101A-Ex	G296052
DT1101A-Ex	G296019
DT1102A-Ex	G296019
FDOOT241-A9-Ex	G213106
OOH740-A9-Ex	G214047
Synova 300 series conventional point detectors	
OP320C	G298039
OH320C	G200109
HI320C	G298040
HI322C	G299024

'Cerberus' point detectors

OOH740	G211070
--------	---------

110 series collective and conventional point detectors

OP110	G212033
-------	---------

OH110	G212059
-------	---------

HI110	G212004
-------	---------

HI112	G212015
-------	---------

Manual call points (collective)

DM1101	-
--------	---

DM1103	G295036
--------	---------

DM1104	G299068
--------	---------

FDM1101	G209148
---------	---------

Manual call points (conventional)

MT320C	-
--------	---

FDM1101A	G209149
----------	---------

Collective devices and manual call points for potentially explosive atmospheres

Safety barrier SB3	-
--------------------	---

DM1101	-
--------	---

DM1103	G295036
--------	---------

DM1104	G299068
--------	---------

Special detectors

FDF241-9	G204010
----------	---------

FDL241-9	G204063
----------	---------

9.2 Configuration sheets

9.2.1 Planning the type of application, configuration overview

Mounting site	_____
Mode of mounting	<input type="checkbox"/> On DIN rail TS35 in a cabinet / control panel housing <input type="checkbox"/> With housing FDCH221
Configuration of input/output 'I/O 1'	<input type="checkbox"/> Collective detector line <input type="checkbox"/> Collective detector line for areas at risk of explosion <input type="checkbox"/> Conventional detector line <input type="checkbox"/> Contact input <input type="checkbox"/> Control line with confirmation <input type="checkbox"/> Control line without confirmation <input type="checkbox"/> Reverse-polarity monitoring of control <input type="checkbox"/> Identical-polarity monitoring of control
Configuration of input/output 'I/O 2'	<input type="checkbox"/> Collective detector line <input type="checkbox"/> Collective detector line for areas at risk of explosion <input type="checkbox"/> Conventional detector line <input type="checkbox"/> Contact input <input type="checkbox"/> Control line with confirmation <input type="checkbox"/> Control line without confirmation <input type="checkbox"/> Reverse-polarity monitoring of control <input type="checkbox"/> Identical-polarity monitoring of control
Ground fault monitoring for both inputs/outputs (jointly)	<input type="checkbox"/> Yes <input type="checkbox"/> No

9.2.2 Planning the detector line, configuration overview

Parameters	Input/output 'I/O 1'	Input/output 'I/O 2'
Detector line type	<input type="checkbox"/> Collective detector line <input type="checkbox"/> Collective detector line for potentially explosive atmospheres <input type="checkbox"/> Conventional detector line	<input type="checkbox"/> Collective detector line <input type="checkbox"/> Collective detector line for potentially explosive atmospheres <input type="checkbox"/> Conventional detector line
Alarm verification	<input type="checkbox"/> No <input type="checkbox"/> Yes => alarm verification time = ____s	<input type="checkbox"/> No <input type="checkbox"/> Yes => alarm verification time = ____s
End-of-line	<input type="checkbox"/> EOL22(Ex); obligatory in Ex area <input type="checkbox"/> Transzorb diode 20 V ± 5 %, 1.5 kW pulse power	<input type="checkbox"/> EOL22(Ex); obligatory in Ex area <input type="checkbox"/> Transzorb diode 20 V ± 5 %, 1.5 kW pulse power

9.2.3 Configuring the control line, configuration overview

Parameters	Input/output 'I/O 1'	Input/output 'I/O 2'
Polarity of control and monitoring systems in relation to one another	<input type="checkbox"/> Same polarity <input type="checkbox"/> Reverse polarity, for electronic load	<input type="checkbox"/> Same polarity <input type="checkbox"/> Reverse polarity, for electronic load
Activation period/behavior	<input type="checkbox"/> Permanent <input type="checkbox"/> Only for the period of: ___ s (1...20 s) <input type="checkbox"/> Symmetrical pulse pattern	<input type="checkbox"/> Permanent <input type="checkbox"/> Only for the period of: ___ s (1...20 s) <input type="checkbox"/> Symmetrical pulse pattern
Behavior in the event of a communication problem involving the control panel	<input type="checkbox"/> Control remains the same as before the error <input type="checkbox"/> Control is activated <input type="checkbox"/> Control is deactivated <input type="checkbox"/> 'Degraded mode horn' function (only possible with FS20/FS720)	<input type="checkbox"/> Control remains the same as before the error <input type="checkbox"/> Control is activated <input type="checkbox"/> Control is deactivated <input type="checkbox"/> 'Degraded mode horn' function (only possible with FS20/FS720)

9.2.4 Configuring the contact input, configuration overview

Parameters	Input/output 'I/O 1'	Input/output 'I/O 2'
Type of input	<input type="checkbox"/> Danger input <input type="checkbox"/> Status input	<input type="checkbox"/> Danger input <input type="checkbox"/> Status input
Monitored for	<input type="checkbox"/> Open line <input type="checkbox"/> Short circuit and open line <input type="checkbox"/> No monitoring	<input type="checkbox"/> Open line <input type="checkbox"/> Short circuit and open line <input type="checkbox"/> No monitoring
Input active, when contact is	<input type="checkbox"/> Open <input type="checkbox"/> Closed	<input type="checkbox"/> Open <input type="checkbox"/> Closed
Filter time	Duration: ___ s (0.5...240 s)	Duration: ___ s (0.5...240 s)

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