

FDCIO221-CN Input/output module Product Manual

Characteristic

- Fulfill Chinese Standard of GB16806-2006 "Interlocking Control System"
- 1 monitored input, 1 monitored output(excluding output activated)
- Status indication by LED
- Integrated line separator
- Switching-on of monitored or unmonitored contacts
- Control output for equipment 24 VDC, max. 2 A
- Microprocessor-controlled signal evaluation
- Power supply via C-NET
- Communication via C-NET (detector line, individual addressing)
- Applicable in dry, dusty and humid areas

Application

Input

With the input the status of a potential-free contact can be monitored e.g. whether a door is closed. The input can be configured as follows:

- Status input or danger input
- Lead monitoring for open line or open line and short circuit
- Active, when contact is:
 - open (normally closed NC)
 - closed (normally open NO)

Status inputs and danger inputs

Danger inputs trigger an alarm as soon as the input is activated. Status inputs trigger a status change as soon as they are activated.

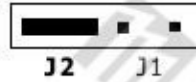
Line monitoring and circuitry

The input lines are monitored for open line or open line and short circuit. To make this possible, resistors must be connected to the lines of the input. When an open line or a short circuit occurs on the input lines, a fault message is transmitted to the control panel. The input must be potential-free.

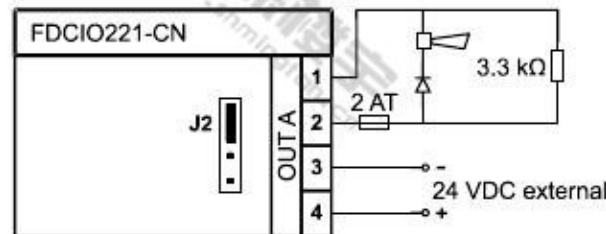
Output

Normal operation (output lines monitored)

- Be used for controlling (e.g. operating a signal sensor).
- The module switches the externally supplied 24 V DC voltage in active status on the output.
- In inactive status the output line is monitored for open line and short circuit. This can be configured and can also be switched off by the control panel.
- The jumper on the input/output module must be plugged onto J2.



Input/output module jumper position J2



Connection diagram for normal operation with output line monitored for short circuit and open line

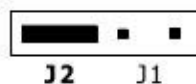
Configuration

The following configurations are possible:

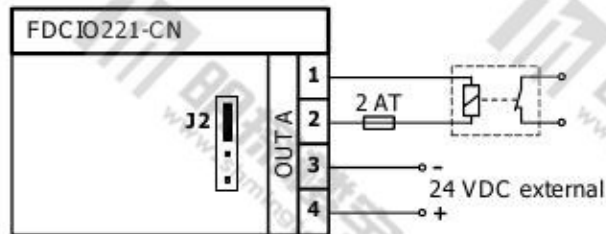
- After activating the output remains:
 - Permanently active
 - Active only for a certain period of time. How long the contact remains active can also be configured (pulse duration).
- Failsafe behavior when the C-NET detector line is current-free or in degraded mode (e.g. in case of a failure of the processor in the control panel).
The error behavior defines the position of the output in case 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
 - Responds to signal 'Degraded mode horn' like other sounders on the C-NET
- Monitoring of output on or off.

Inverted operation (output lines not monitored)

- Be used for controlling (e.g. closing a door).
- The module switches the externally supplied 24 V DC voltage in active status on the output.
- There is no monitoring for open line and short circuit.
- The jumper on the input/output module must be plugged onto J2.



Input/output module jumper position J2



Connection diagram for inverted operation, e.g. when used as door retainer.

In inactive status the 24 V DC are permanently applied to the output and may keep a door open, for example. When the output is switched to active, the output goes into "open" status (= no 24 V DC voltage) and the door is closed.

Comment:

In this example, the door would also close if the 24 V DC supply were to fail, e.g. due to a line problem (short circuit, open line).

Configuration

The following configurations are possible:

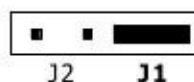
- Monitoring of output off
- After activating the output remains:
 - Permanently active
 - Active only for a certain period of time. How long the contact remains active can also be configured (pulse duration).
- Failsafe behavior when the C-NET detector line is current-free or in degraded mode (e.g. in case of a failure of the processor in the control panel).

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

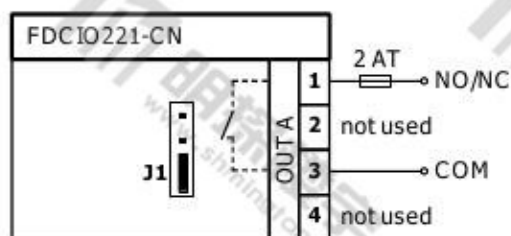
- Output remains in the same position as before the error
- Output is activated in case of an error
- Output is deactivated in case of an error
- Responds to signal 'Degraded mode horn' like other sounders on the C-NET

Potential-free contact (Output not monitored)

- Be used for controlling (e.g. closing a door).
- Output control is not monitored.
- An externally supplied 24 V DC voltage is not needed.
- The jumper on the input/output module must be plugged onto J1.



Input/output module jumper position J1



Connection diagram for output which is not monitored

Configuration

The following configurations are possible:

- The contact is active, when:
 - It is closed (normally open NO)
 - It is open (normally closed NC)
- After activating the contact remains:
 - Permanently active
 - Active only for a certain period of time. How long the contact remains active can also be configured (pulse duration).
- Failsafe behavior when the C-NET detector line is current-free or in degraded mode (e.g. in case of a failure of the processor in the control panel).

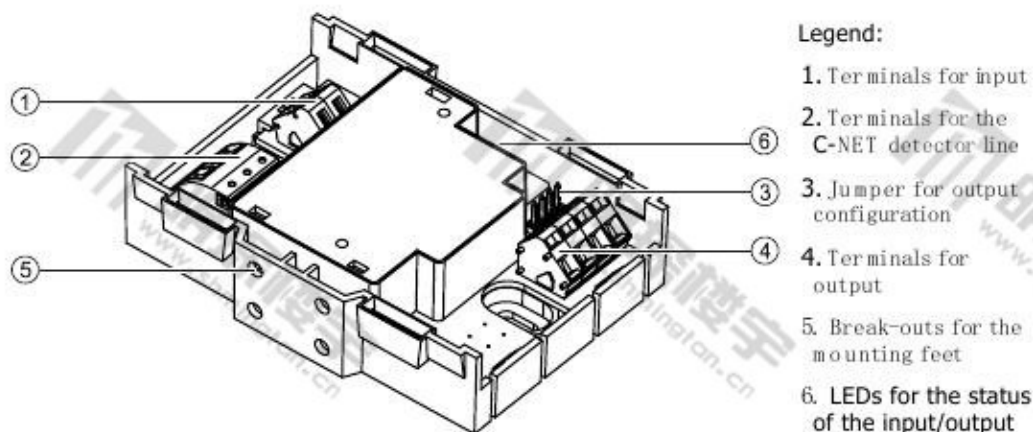
The error behavior defines the position of the contact in case of an error.

- Contact remains in the same position as before the error
- Contact is activated in case of an error
- Contact is deactivated in case of an error
- Responds to signal 'Degraded mode horn' like other sounders on the C-NET

Structure

The module consists of the module carrier, the printed circuit board and the cover. The printed circuit board includes the LEDs. The LEDs indicate the states of the input/output. The cover of the printed circuit board is transparent, so that the state of the LEDs is visible even when the housing is closed.

To protect the modules from environmental influences, the FDCH221 housing is available.



LED indicator

The tables below show the meaning of the LED states.

Red LED for the input status and for localization mode



Status LED	Meaning
LED off	Normal operation
LED flashing every 1 s (250 ms ON)	Input activated
LED flashing every 1 s (short flashes)	Localization mode

Red LED for the output status (for input/output module only)

Status LED	Meaning
LED off	Output not active
LED flashing every 1 s (250 ms ON)	Output active

The LED displays can be deactivated if necessary (e.g. in a cinema).

Jumper

Jumper position	Signification
 J2 J1	Potential-free contact (Output not monitored)
 J2 J1	<ul style="list-style-type: none"> ● Normal operation, switched voltage (Output line monitored) ● Invert operation, switched voltage (output line not monitored)

If the configurations on the control panel and jumper don't match, this is recognized and an error message is triggered.

Installation

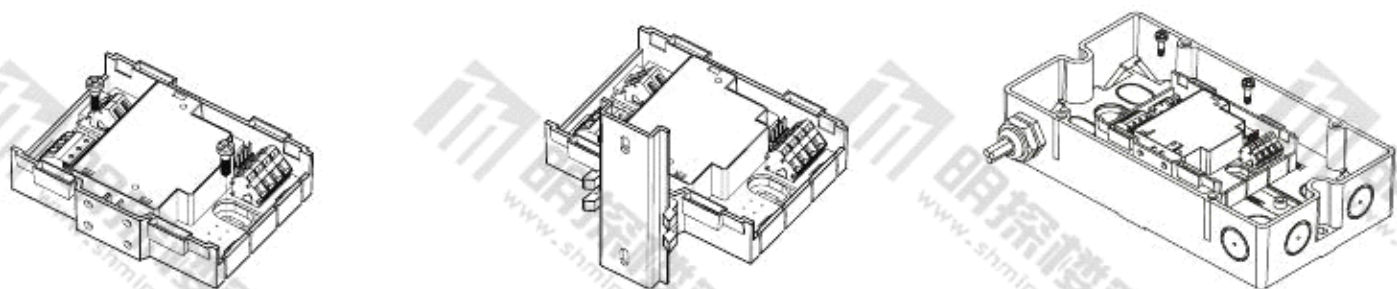


Fig. 1

Fig. 2

Fig. 3

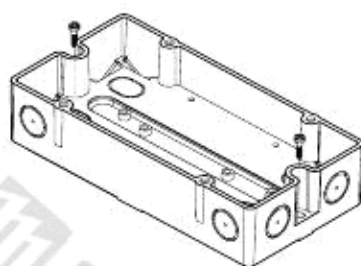


Fig. 4

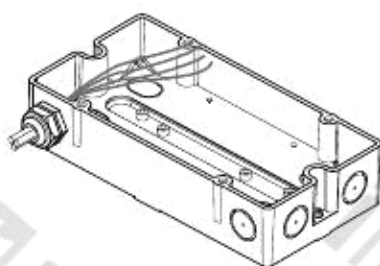


Fig. 5

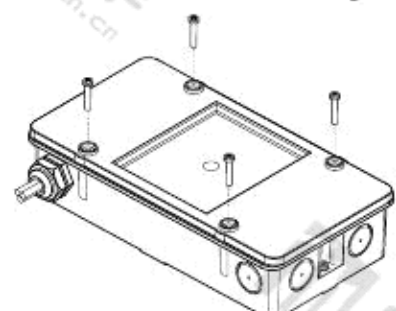


Fig. 6

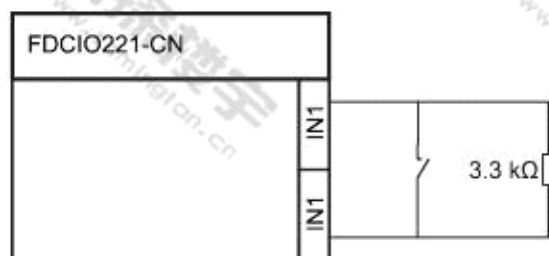


Fig. 7

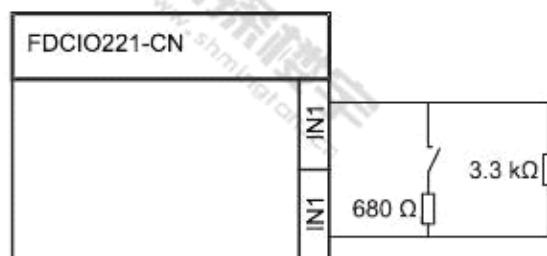


Fig. 8

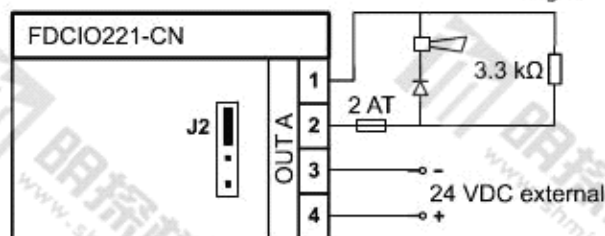


Fig. 9

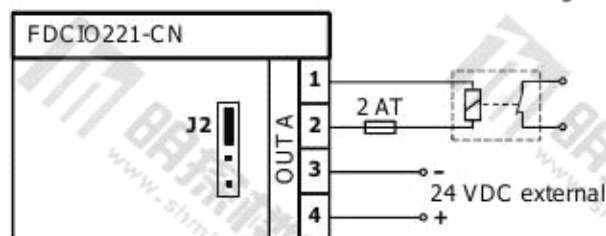


Fig. 10

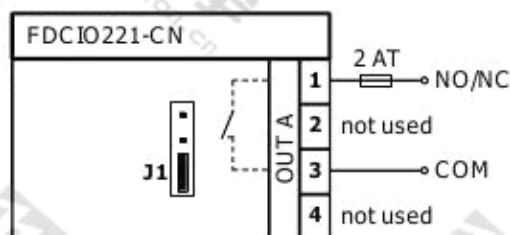


Fig. 11

Preparation

The installation procedure depends on the module's place of use and type of installation.



Electric shock!

During installation work, voltage must not be applied to the cables.

1. Define the place of use.
 - Installation outside an electric cabinet or control panel (module **always** in FDCH221 housing)
 - Installation in electric cabinet or in control panel (any type of module installation)
2. Define the type of installation.
 - on a plane surface (Fig. 1)
 - on a top hat rail (Fig. 2)
 - in FDCH221 housing (Fig. 3)

Installation on a plane surface

1. Position the module on a plane surface (Fig. 1).
2. Use two screws to secure the module. Distance between holes: 63.5 ± 1.0 mm.

Installation on a top hat rail

1. Insert two installation feet in the module.
2. Press the module and the installation feet against the top hat rail until the feet snap in (Fig. 2).

Installation in housing

1. Open the housing (Fig. 6).
2. Determine the cable entries in the housing and break these open.
3. Use two screws to fit the housing on a plane surface (Fig. 4). Distance between holes: 182.0 ± 1.0 mm.
4. Secure the M20 cable glands on the housing and guide in the cables (Fig. 5).
5. Use two M3 x 12 screws to fit the module in the housing (Fig. 3).
6. Close the housing with the lid and screws provided (Fig. 6).

Dimension

In: mm

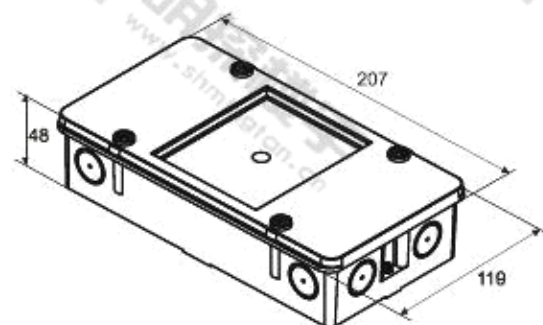
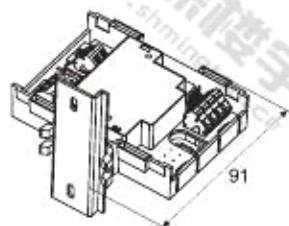
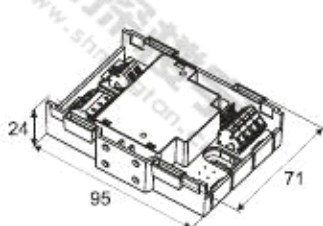


Fig. 12

Electric connection



Electrical voltage!

When connecting up the C-NET, note the positive and negative connections.
Connect only one wire to each terminal.

1. Connect the cables to the terminals as shown in the connection diagram (Fig. 13).
Refer to the following figures for connection details:
 - Detector line: Fig. 12
 - Input monitored for open line: Fig. 7
 - Input monitored for open line and short circuit: Fig. 8
 - 'Normal operation' output: Fig. 9
 - 'Inverted operation' output: Fig. 10
 - Output not monitored: Fig. 11
 - External 24 V DC supply: Fig. 9/Fig. 10
2. If you are using shielded cables for the detector line, connect the shielding to the DBZ1190-AB connection terminal. The shielding must not touch any extrinsic earthing potentials or metal parts in the housing.
3. Connect the resistors to the end of the input line (Fig. 7 and Fig. 8).
4. Connect the jumper to J1/J2 depending on how the output is being used (Fig. 9, Fig. 10 and Fig. 11).

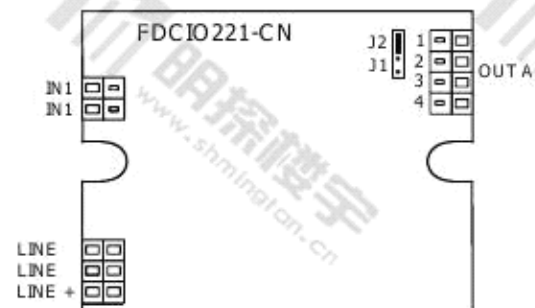


Fig. 13

Specification

Operating voltage	12 ... 32 VDC
Operating current (quiescent)	0.32 mA
Activation current	0.60 mA
Output	
- Capacity	2 A @ 24 VDC
- Resistor	3.3k Ω
- Diode	1N5404
Input	
- Resistor	3.3k Ω / 680 Ω
Operating temperature	-25 ... +70 °C
Storage temperature	-30 ... +75 °C
Humidity	\leq 95 % rel.
Communication protocol	C-NET
Connection terminals	0.2 ... 2.5 mm ²
Color	
- Housing	white, RAL 9010
- Cover	transparent
Protection category EN60529 / IEC529	
- Without auxiliary housing	IP30
- With auxiliary housing	IP65

Details for ordering

Type	Material No.	Part No.	Designation	Weight
FDCIO221-CN	S54312-F2-A101	100680553	Input/Output module	0.061 Kg
FDCH221	S54312-F3-A1	100686595	Housing	0.250 Kg
FDCM291	A5Q00003855		Mounting foot (25 pcs. per pack)	
	A5Q00004478		Metal cable gland M20 x 1.5 (10 pcs. per pack)	
	A5Q00004479		Counter nut M20 x 1.5 (100 pcs. per pack)	
DBZ1190-AB	4942340001		Connection terminal 1 ... 2.5 mm ² (50 pcs. per pack)	

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