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Important instructions for Your Safety! Please read and observe!

Correct and safe operation of the apparatus calls for appropriate transportation and storage, expert installation and commissioning as well as correct operation and meticulous maintenance.

Only those persons conversant with the installation, commissioning, operation and maintenance of similar apparatuses and who possess the necessary qualifications are allowed to work on the apparatus.

Please take note of

- the contents of these Operating Instructions,
- the safety regulations affixed to the apparatus and
- safety regulations pertaining to the installation and operation of electrical systems.

The directives, norms and guidelines mentioned in these Operating Instructions are applicable in the Federal Republic of Germany. When using the apparatus in other countries, please observe the national regulations prevailing in the respective country.

This apparatus has been designed and tested in accordance with DIN EN 61 010-1 "Safety requirements for electrical and laboratory measuring apparatuses" and has been supplied in a safe condition. In order to retain this condition and to ensure safe operation, the safety instructions in these Operating Instructions bearing the headline "Attention" must be observed! Otherwise, persons can be endangered and the apparatus itself as well as other equipment and facilities can be damaged.

If the information in these Operating Instructions should prove to be insufficient in any point, the Service Department will be delighted to give you more information.

Application and description

The IO Converter is used to extend the binary inputs and contact outputs of recorders.

Installation and commissioning

1. Mounting

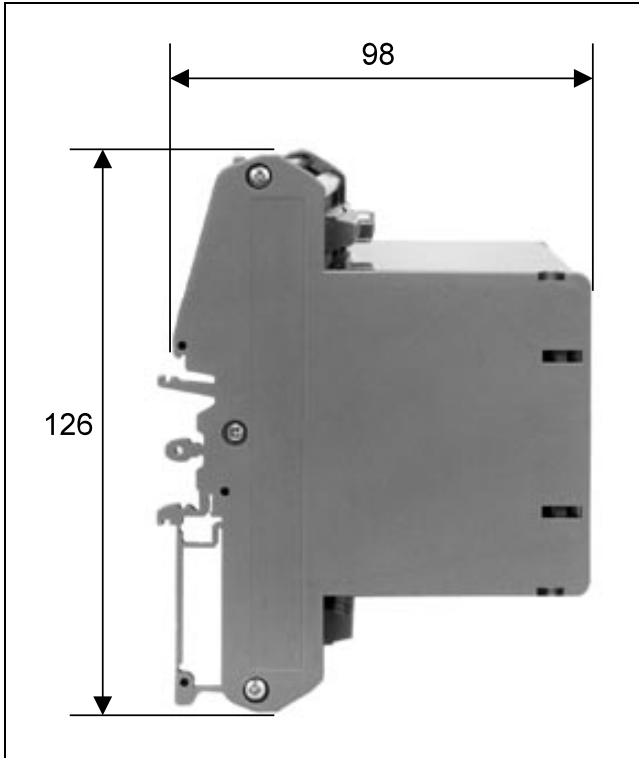


Fig. 1 Dimensional diagram (in mm)
Z-18677 W × H × D: 215 mm × 126 mm × 98 mm

- The IO converter is mounted on a top-hat rail (DIN EN 50 022) or G rail (DIN EN 50 035-G32).

2. Connection

⚠ Attention

Before all other connections are made, the protective ground terminal must be connected to a protective conductor.

The apparatus can be dangerous if the protective conductor is interrupted inside or outside the apparatus or if the protective ground terminal is disconnected.

The cross-section of the protective conductor must conform at least to the cross-section of the power supply cable.

The apparatus may only be operated when fully installed.

Connecting signals

1. Match the IO converter with the DIL switch to the type of recorder (see also fig. 3):

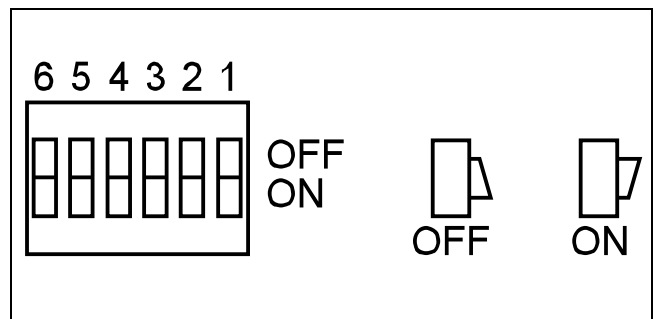


Fig. 2 DIL switch
Z-18966* Switches 1, 2 and 3 must always be switched to "OFF"
Switch 4 "ON" for continuous-line recorder
"OFF" for multipoint recorder
Switches 5 and 6 must always be switched to "ON"

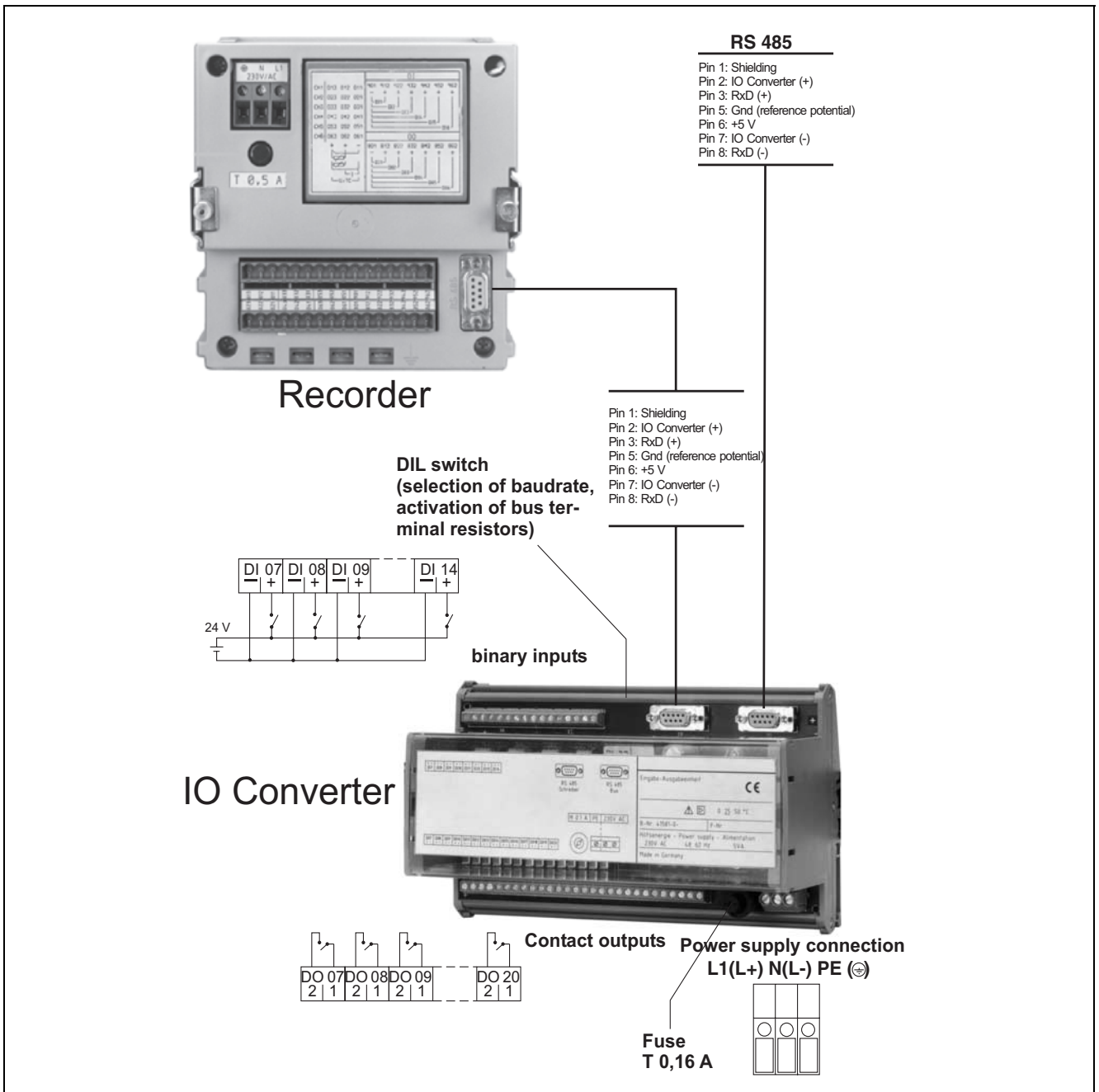


Fig. 3 Connecting an IO converter
Z-18966

2. Connect the recorder with the standardised cable (see also fig. 3).
3. Connect signals to the screw terminals (maximum cross-section $2 \times 1 \text{ mm}^2$) (see also fig. 3).

Connecting the power supply

Provide an on/off switch within reach powerful enough to disconnect the apparatus completely from the power supply. This should not nullify the protective function of the grounding conductor.

- Connect the power supply to the screw terminals by wire (maximum cross-section $1 \times 4 \text{ mm}^2$ or $2 \times 1.5 \text{ mm}^2$) (see also fig. 2). The cross-section of the protective conductor must conform at least to the cross-section of the power supply cable.

Maintenance

⚠ Attention

When the apparatus is connected to its supply, terminals may be live, and the opening of covers or removal of parts except those to which access can be gained by hand is likely to expose live parts.

The apparatus shall be disconnected from all voltage sources before it is opened for any operations. Operations on the opened apparatus under voltage must only be performed by an expert who is aware of the hazard involved.

Capacitors inside the apparatus may still be charged even if the apparatus has been disconnected from all voltage sources.

Only fuses of the specified type and rated current may be used as replacements. Makeshift fuses may not be used. The fuse-holder may not be short-circuited.

Whenever it is likely that protection has been impaired, the apparatus shall be made inoperative and be secured against any unintended operation.

It must be assumed that the protection has been impaired when

- the apparatus has visible signs of damage,
- the apparatus no longer functions,
- the apparatus has been stored in unfavorable conditions for a long time,
- the apparatus has been subjected to adverse transport conditions.

Technical Features

Binary inputs

Number
8

Electrical isolation
through optocouplers

Excitation voltage
24 V DC
 $U_{Lo} = 0...1.9 \text{ V}$
 $U_{Hi} = 17.7...28 \text{ V}$

Current drain
approx. 6 mA

Minimum contact duration
> 300 ms

Contact outputs

Number
14 relay contacts, electrically isolated and ungrounded

Contact position
NO contact

Functional principle
NC or NO contact operation, parameter definable

Contact load
 $U_{max} = 30 \text{ V}$
 $I_{max} = 100 \text{ mA}$
 $P_{max} = 3 \text{ W}, \cos\phi = 1$

Power supply

AC/DC power supply unit
24 V DC $\pm 20\%$, 24 V AC $+10\text{--}15\%$
Current drain: approx. 4 W / 5 VA

AC power supply unit
24/115/230 V AC $+10\text{--}15\%$
Current drain: approx. 4 W / 5 VA

Frequency range
47.5...63 Hz

Interface RS 485

- for parameter definition
- for coupling to higher-level systems for bidirectional data transmission. The data protocol is designed to suit the PRO-FIBUS standard.

The interface can only be used if connection to the recorder has been established.

General and safety data

Environmental capabilities

Climatic category
3K3 to DIN IEC 721-3-3

Ambient temperature
0...25...50 °C

Transportation and storage temperature
–40...+70 °C

Mechanical capabilities

Tested
to DIN IEC 68-2-27 and to DIN IEC 68-2-6

During transportation
shock 30g / 18 ms
vibration 2g / 5...150 Hz

In function
vibration 0.5g / $\pm 0.04 \text{ mm}$ / 5...150 Hz / 3 x 2 cycles

Electrical safety

Tested to DIN EN 61 010-1 (classification VDE 0411) or IEC 1010-1

Class of protection
I

Overvoltage category
III at mains input for AC power supply unit
II at mains input for UC power supply unit
II for inputs and outputs

Degree of pollution
2 within unit and at the terminals

Test voltage
3.75 kV binary inputs and contact outputs against power supply
2.2 kV protective conductor against power supply

Functional extra-low voltage with safe isolation (PELV)
between mains input, control and input cables
to VDE 0100 Part 410 and VDE 0106 Part 101

Electromagnetic compatibility

The protection objectives of the EMC guidelines 89/336/EEG on parasitic interference suppression to EN 55 011 and on interference immunity to EN 50 082-2 are met.

Parasitic interference suppression

Alarm value class B to EN 55 011 or Postal Ordinance 243/92

Interference immunity

Tested to EN 61 000-4

Type of test	Intensity	Effect	Degree
Burst (5/50 ns) on power supply line control line	2 kV	none	3
	1 kV	none	3
Surge (1,2/50 µs) on power supply line common power supply line differential	4 kV	none	3
	2 kV	none	2
HF field radiated 80 MHz...1 GHz cable-fed 0.15 ...80 MHz	10 V/m	none	3
	10 V	none	3
1-MHz pulse on power supply line common power supply line differential	2 kV	none	3
	1 kV	none	3
ESD (1/30 ns)	6 kV	none	3

The NAMUR industrial standard on EMC is met (interface leads are shielded)

Connection, case and mounting

Electrical connections

Type of protection IP 20

Screw terminals for binary inputs and contact outputs:
maximum cross-section $2 \times 1 \text{ mm}^2$

Screw terminals for mains connection:
maximum cross-section $1 \times 4 \text{ mm}^2$ or $2 \times 1.5 \text{ mm}^2$

RS 485 interface with 9-pin SUB-D connector

RS 485 recorder interface with 9-pin SUB-D connector

Case

Moulded material

Top-hat rail mounting (DIN EN 50 022) or

G-rail mounting (DIN EN 50 035-G32)

Dimensions (W × H × D)

215 mm × 126 mm × 98 mm

Packaging for transport or for return to manufacturer

If the original packing is no longer available, the apparatus must be wrapped in an insulating air foil or corrugated board and packed in a sufficiently large crate lined with shock absorbing material (e.g. foamed material or similar) for the transportation. The amount of cushioning must be adapted to the weight and to the mode of transport. The crate must be labelled "Fragile".

For overseas shipment the unit must additionally be sealed airtight in 0.2 mm thick polyethylene together with a desiccant (e.g. silica gel). The quantity of the desiccant must correspond to the packing volume and the probable duration of transportation (at least 3 months). Furthermore, for this type of shipment the crate should be lined with a double layer of kraft paper.

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Printed in the Fed. Rep. of Germany (10.03)

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