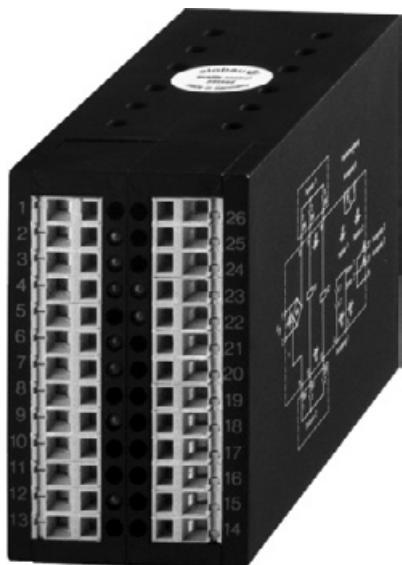
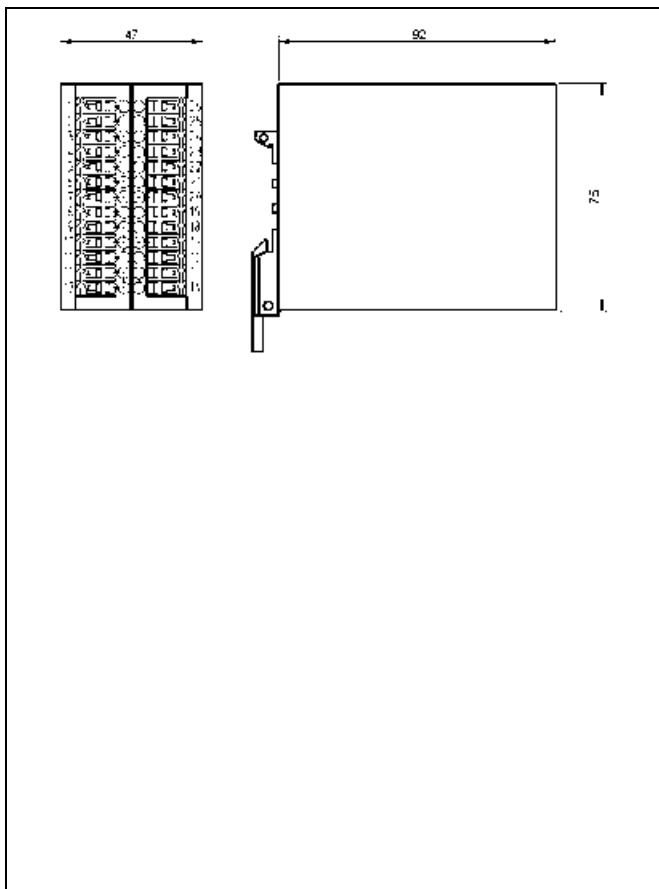


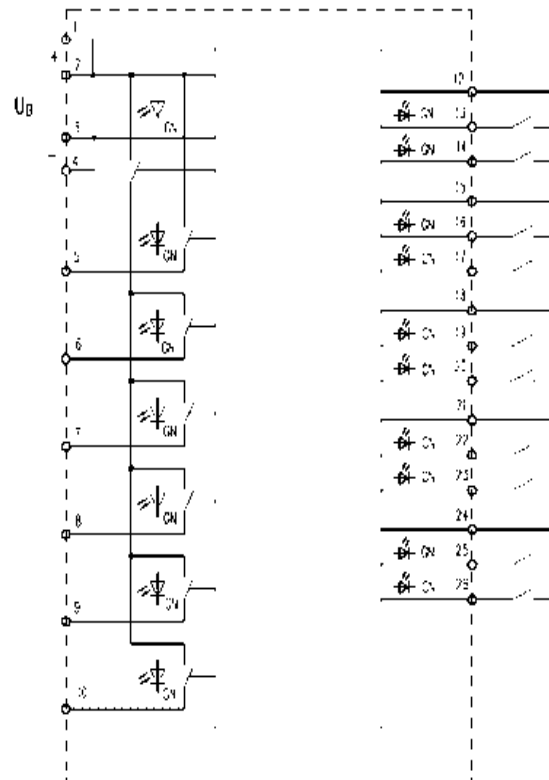
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- D** Betriebsanleitung
Auswerteeinheit
- GB** Operating instructions
Control unit
- F** Notice d'utilisation
Unité de contrôle
- I** Istruzioni d'impiego
Unità di controllo



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1 Technical data

1.1 Terminal assignment

Up to five sensors can be connected directly to the control unit.

If more sensors are to be connected, elobau recommends using interface 363 V98 or interface 364 097.

Terminal	Assignment
1,2	Operating voltage (+)
3, 4	Operating voltage (-)
5	Control output
6	Safety output 1
7	Safety output 2
8	Safety output 3
9	Safety output 4
10	Safety output 5
11	n.c.
12, 13, 14	Sensor 1
15, 16, 17	Sensor 2
18, 19, 20	Sensor 3
21, 22, 23	Sensor 4
24, 25, 26	Sensor 5

1.2 Type denomination/Variants

The following example and table are given to explain the type denomination of the control units.

Example:

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4ab cde fgh

Placeholder	Characteristic		Meaning
4ab	Housing type and housing width	462	Housing width 47 mm
c	Version	M	Microcontroller version
d	Number of inputs	5	5 inputs
e	Operating voltage	1	24 V
f	Other	H	Category 4 according to EN 954-1
g	Safety output	1	PNP
h	Switching voltage	1	24 V

1.3 Electrical and mechanical data

The control unit in a deenergized state is depicted on the circuit diagram of the fold-out page.

General

Operating voltage fuse	3 A
Operating voltage	24 V DC \pm 10 %
Power consumption	200 mA
Max. switching voltage Control output	30 V AC/DC
Max. switching current Control output	1.0 A AC/DC
Max. switching capacity Control output	30 VA
Connection Safety output	PNP
Max. switching voltage Safety outputs	30 V DC
Max. switching current Safety outputs	0.5 A/channel (short-circuit proof)
Max. switching power Safety outputs	12 W
Operating temperature	0 ... +55 °C
Transport and storage temperature	-25 ... +85 °C
Vibration and shock resistance	Vibration: 10 ... 55 Hz, 1 mm Shock: 30 g / 11 ms Continuous shock: 10 g / 16 ms
International protection - housing	IP 20
International protection - terminals	IP 20

Cooling-off period

The cooling-off period is the maximum time permitted on a sensor between the actuation of the first and second contact in the sensor.

The cooling-off period is 3 s.

LED displays

LED at terminal	Color	Meaning
2	Green	Operating voltage is applied
5	Green	Operational standby
6	Green	Safety output 1 is switched through
7	Green	Safety output 2 is switched through
8	Green	Safety output 3 is switched through
9	Green	Safety output 4 is switched through
10	Green	Safety output 5 is switched through
13	Green	Sensor 1, first contact closed
14	Green	Sensor 1, second contact closed
16	Green	Sensor 2, first contact closed
17	Green	Sensor 2, second contact closed
19	Green	Sensor 3, first contact closed
20	Green	Sensor 3, second contact closed
22	Green	Sensor 4, first contact closed
23	Green	Sensor 4, second contact closed
25	Green	Sensor 5, first contact closed
26	Green	Sensor 5, second contact closed

2 Appropriate use

The control unit is intended for use exclusively to protect against hazards.

2.1 Norms and guidelines

The control unit complies with the following European guidelines:

- 73/23/EEC (low voltage guideline)
- 89/336/EEC (electromagnetic compatibility guideline)
- 98/37/EC (machinery guideline)

The control unit underwent an EU prototype test at TÜV/IQSE in Munich, Germany.

The construction of the control unit conforms to the norms listed below.

Norm	Content
EN 954-1 / category 4	Safety of machines and parts of control systems
EN 60 204	Electrical equipment of industrial machines
DIN V 19250	Basic safety overview of protective equipment, category 5
DIN V 19251	Protective equipment: requirements and measures for safety function
Draft IEC 61508	Functional safety - safety relevant systems SIL3 (application during test intervals)
EN 50178	Electronic equipment for use in power installations
IEC 664-1	Insulation co-ordinates in low-voltage switch gear
DIN EN 60068	Basic environmental test procedures
EN 55011	Interference suppression of electrical equipment and systems

2.2 Safety/Dangers

- Ensure that the control unit is only installed and put into operation by specially-trained authorised personnel.
- Ensure that the appropriate corresponding fuses (see siehe Technical data) are used. Never bridge or repair fuses.
- Only operate the control unit when it's in an undamaged condition.
- Ensure that the control unit is only used for protection against dangers.
- Ensure that all safety requirements applying for the machine in question are observed.
- Ensure that all European guidelines and national laws/guidelines applying are observed.
- Ensure that the control output is only used for displaying the operational status of the control unit.

3 Function

The control unit monitors connected sensors which are equipped with two contact makers. The control unit switches its safety outputs according to the status of the sensors connected. Each sensor controls its respective safety output (e. g. sensor 1 controls safety output 1).

The control unit switches off individual safety outputs in the following situations:

- A contact maker of the respective sensor is opened.
- A fault has been detected (control unit or connected sensor is defective).

The control unit switches all safety outputs and the operational standby LED off in the following situations:

- A different switched state of both contact makers was present at the sensor input for more than 3 seconds.
- A fault has been detected (control unit or connected sensor is defective).

4 Installation



Danger

▶ **Danger of electrocution!**

Ensure that the control unit is only installed and put into operation by specially-trained authorised personnel.

- Snap the control unit onto a mounting rail (DIN 50 022) in the switch cabinet. The control unit is attached.
- Connect control unit, see siehe Technical data.
- Ensure that the prescribed fuses are used, see siehe Technical data.

5 Putting into operation



Danger

▶ **Danger of electrocution!**

Ensure that the control unit is only installed and put into operation by specially-trained authorised personnel.

- Apply operating voltage.

The control unit will perform an internal test (duration: > 10 s).

After successful completion of the test:

The control unit closes the safety outputs.

The operational standby LED is lit.

The control unit is ready for operation.

6 Troubleshooting

6.1 Restoring device to a state of readiness for operation

Both contact makers of a sensor open

If a safety output switches off because both contact makers of the respective sensor open:

- Close both contact makers on the respective sensor.

The control unit switches through the respective safety output.

The respective LEDs illuminate.

Contacts in different switched states

If a different switched state of both contact makers was present for more than 3 seconds on a sensor:

- Ensure that both contact makers are opened on the respective sensor.

The operational standby LED is lit. The control unit is ready for operation.

The control unit switches all other safety outputs through. The respective LEDs illuminate.

- Close both contacts on the affected sensor.

The control unit switches through the respective safety output.

6.2 Safety output remains switched off

- Check connections at inputs and outputs:
 - Operating voltage
 - Sensors connected
- Connections at inputs and outputs are OK:
 - Replace control unit.

7 Maintenance

Self test of the control unit

To ensure operational safety, start the self-test of the control unit every three months at the latest.

- Switch operating voltage off and on again.

The control unit will perform the self test (duration: > 10 s).

After successful completion of the self test:

The control unit closes the safety outputs.

The operational standby LED is lit.

The control unit is ready for operation.

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