

Operating instruction

Gas monitoring device

DGM-SK02/SK04/SK06/SK10

Version 2.0 - 05/2005

Gas monitoring device

1. Safety indication

The gas monitoring device is a controlling system, which is designed for controlling individual gas cylinders and multiple cylinder bundles. The gas monitoring device is constructed to be reliable in service according to the technical standard and takes the standardised rules and EC-guidelines into consideration. Improper installation or use can lead to malfunction and safety risks, for example no signalling of the minimum level caused by wrong connection of the signalling terminals.

Installation, electrical connection, start-up, service and upkeep of the controlling equipment should only be carried out by trained persons, who are authorised to do so.

These service instructions must be read completely before installation. If sign devices are used for an Ex range than the corresponding national norms have to be observed.

Especially, we point out the following rules, supplementing documentations that are required or used to a limited degree.

- ATEX 100
- DIN / VDE0100
- DIN / VDE0165
- EX-RL
- TRG
- UVV-gas

2. Safety relevant indication

Safety relevant activities and processes are stressed by symbols, although each indication is marked through a corresponding pictogram.

symbol meaning



Indication!

This relates to an activity or processes, which can have a direct influence on the operation of the unit if carried out in correctly (i.e. will cause the instrument to malfunction).



Warning!

This relates to an activity or process which can lead to a hazardous situation with danger of personal injury, to a safety risk or to the destruction of the instrument, if carried out incorrectly.

3. Right use

The gas monitoring device is used for checking the minimum level of the gas cylinder station. If a fall below of the minimum level of the gas cylinder is recognized, this will be indicated to the user by optical and acoustic signals at the instrument. Signalling contact manometers with reed or inductive contacts are used.

4. Wrong use

All applications out of the described application possibilities in point 3 are not recommended and can lead to risks and damages.

5. General operating indications

The gas monitoring device processes two input channels, which allows the connection two contact manometers.

The connected sensors have to signal the fall below of the desired operating pressure by opening the contact.

The contact voltage, delivered from the signal box is 6V/DC at a maximum current of 10mA
a "emergency response" is shown as follows:

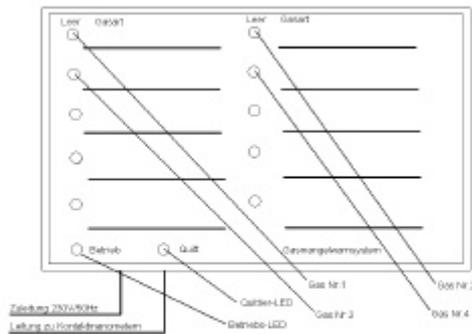
- a) If minimum pressure falls below:
- corresponding display flashes and the alarm sounds
 - After acknowledgement with the quit-key the alarm goes off.

And the signal-LED turns from the flashing mode to the continuous mode
The signal-LED only goes out if the fault has been removed
(i.e. gas cylinder has been changed)

- b) A report comes up (already accepted) and a second report will be added:
- The already accepted error will be shown by a steady light emission of the corresponding LED
 - After activation of the quit-key the horn sound goes out and the flashing frequency will switch off.
 - (permanent on or permanent off, according to the condition of the gas pressure)

Additional to the optical displays on the signal box two potential relay contacts are available

- The first relay contact is closed as long as the horn sound is existing (alarm is acceptable)
- The second relay contact closes, as soon as there is a fault and will only open if all fault responses are removed. (collected alarm not acceptable)



Warning!

Both contacts are only suitable for a maximum voltage of < 1A.
The maximum mains lead is running at 250VA / 65W

6. Installation of the gas monitoring device

The housing of the gas monitoring device is designed for wall installation. For this purpose four fastening holes are positioned in the back housing part. These are accessed by removing the cover. Removal is as follows:

1. with the help of a small screwdriver the cover strip has to strip from the cap to the front.
2. open the reachable screws (4 items) with the help of a cross screwdriver.
3. the cap is loose now and the under part is connected with a flat ribbon cable.
4. pull out the flat ribbon from the plug connection.
5. the fastening holes are now freely accessible.

After mounting it is important to pay attention that the plug connection will re-plug the right way. The assembly of the instrument is the reverse of the above instructions.



Indication!

Indication, the pull out of the plug connection is only allowed in the dead condition.



Warning!

The instrument is only allowed to be opened in a non-live condition by special trained staff.

7. Start-up of the gas monitoring device

- The inputs of the gas monitoring device can be accessed over the terminal strip in the instrument (see enclosed diagram).
- The electrical connection of the gas monitoring device requires a direct supply 230 V / 110 V - 50Hz (see diagram).
- The instrument is ready for operation after connection of the lead and contact manometers.
- After offering the working voltage 230 V / 110 V - 50Hz, a lamp check needs to be executed.
- All LED's are driven one after the other.
- The lamp check will be finished with the acoustical horn sound of the alarm buzzer.
- If there are no empty reports at the instrument, a new lamp check or instrument check can be executed by activity of the quit-key (as described before)



Warning!

Work on electrical connections must only be made by special trained staff. According to VDE the instrument has to be disconnected before opening

8. Taking out of operation

For taking out the gas monitoring device the following points have to be observed.

- Before opening it is important to disconnect the instrument from the mains voltage
- clamp the lines of the signal instrument
- now, the instrument can be taken down



Warning!

Work on electrical connections are only allowed to be made by special trained staff. According to VDE the instrument has to be disconnected before opening.



Dimension: width x height x depth
200 x 120 x 60



Warning!

The signal box is not allowed to be positioned in the hazardous area (Ex-range!)

Contact manometers which are in the Ex-range have to be decoupled with the help of a disconnecting switch amplifier from the gas defect signal device! (inherent safety).look for VDE 0165 and point 11 in this operating instruction

9. Cable introduction

The cables required for the connection of the gas monitoring device can be introduced in the back part with the help of cable adapters.

For this, in the back part of the housing break out openings are positioned in which a maximum of four cable adapters PG11 can be fixed on.

10. Terminal strip layout

The instrument will be connected over the fixed terminal strip in the under part of the housing.

Example DGM-SK 10:

terminal	function
1	phase (lead)
2	neutral (lead)
3	protective conductor (lead)
4	+ 6 VDC
5	channel 1
6	channel 2
7	channel 3
8	channel 4
9	channel 5
10	channel 6
11	channel 7
12	channel 8
13	channel 9
14	channel 10
15	screen
16	potential free contact (acceptable) closer
17	potential free contact (acceptable) root
18	potential free contact (acceptable) opener
19	potential free contact (not acceptable) closer
20	potential free contact (not acceptable) root
21	potential free contact (not acceptable) opener

DGM-SK 02: channel 1 and 2, terminal 7 – 14: NC

DGM-SK 04: channel 1 – 4, terminal 9 – 14: NC

DGM-SK 06: channel 1 – 6, terminal 11 – 14: NC

11. Connection of contact manometers in the ex-range

If contact manometers shall be connected in the ex-range, the inputs of the signal box have to be decoupled with the help of a disconnecting switch amplifier. According to TRG 280 the indoor of a bottle box or a cone shaped protective range of a pressure gas cylinder, inflammable or toxic contents, is defined as zone 2 §2 paragraph 4 No. 1 letter C ElexV. After VDE 0165 paragraph 4.1 is the contact manometer defined as zone 1.

The disconnecting switch amplifier transfers digital signals of the explosion-endangered range. The inputs are put out for the connection of a sensor after NAMUR or DIN 19234 or a mechanical contact.

Inputs, outputs and supply voltage are galvanic separated from each other according to DIN VDE0160 for a rated insulation voltage of 250V AC.

Suitable disconnecting switch amplifier: The technical department of the company DruVa will find the suitable version for you telephone 06221-7921-0



Warning!

If contact manometers in the ex-range are operated without disconnecting switch amplifier, this could lead to hazardous and explosion risks.

12. Connection of inductive contact manometers



Indication!

If you connect an inductive contact manometer you have to pay attention to the right polarity.

Connection DGM-SK02:

terminal 4	plus at the contact manometer (gas type 1 u. 2)
terminal 5	minus at the contact manometer (gas type 1)
terminal 6	minus at the contact manometer (gas type 2)

Connection DGM-SK04:

terminal 4	plus at the contact manometer (gas type 1 u. 2)
terminal 5	minus at the contact manometer (gas type 1)
terminal 6	minus at the contact manometer (gas type 2)
terminal 7	minus at the contact manometer (gas type 3)
terminal 8	minus at the contact manometer (gas type 4)

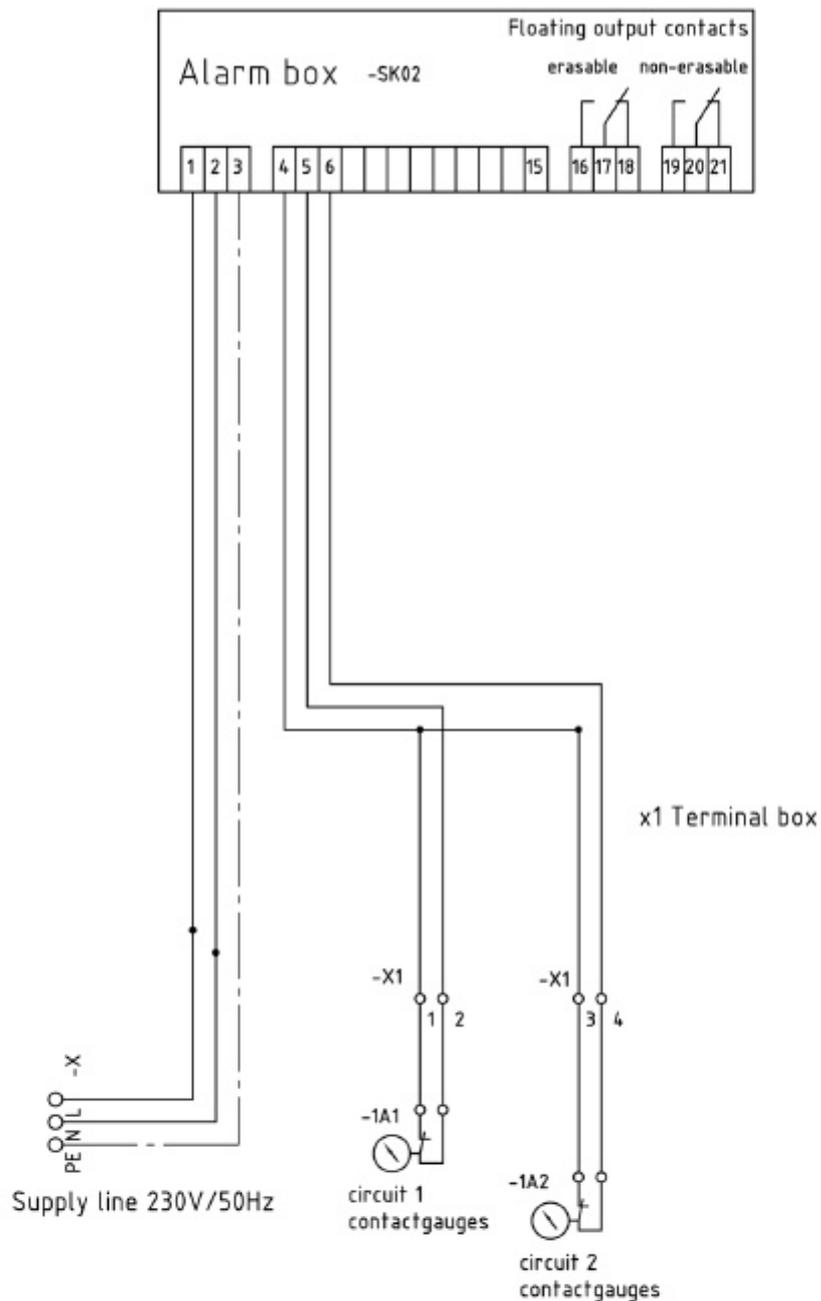
Connection DGM-SK06:

terminal 4	plus at the contact manometer (gas type 1 u. 2)
terminal 5	minus at the contact manometer (gas type 1)
terminal 6	minus at the contact manometer (gas type 2)
terminal 7	minus at the contact manometer (gas type 3)
terminal 8	minus at the contact manometer (gas type 4)
terminal 9	minus at the contact manometer (gas type 5)
terminal 10	minus at the contact manometer (gas type 6)

Connection DGM-SK06:

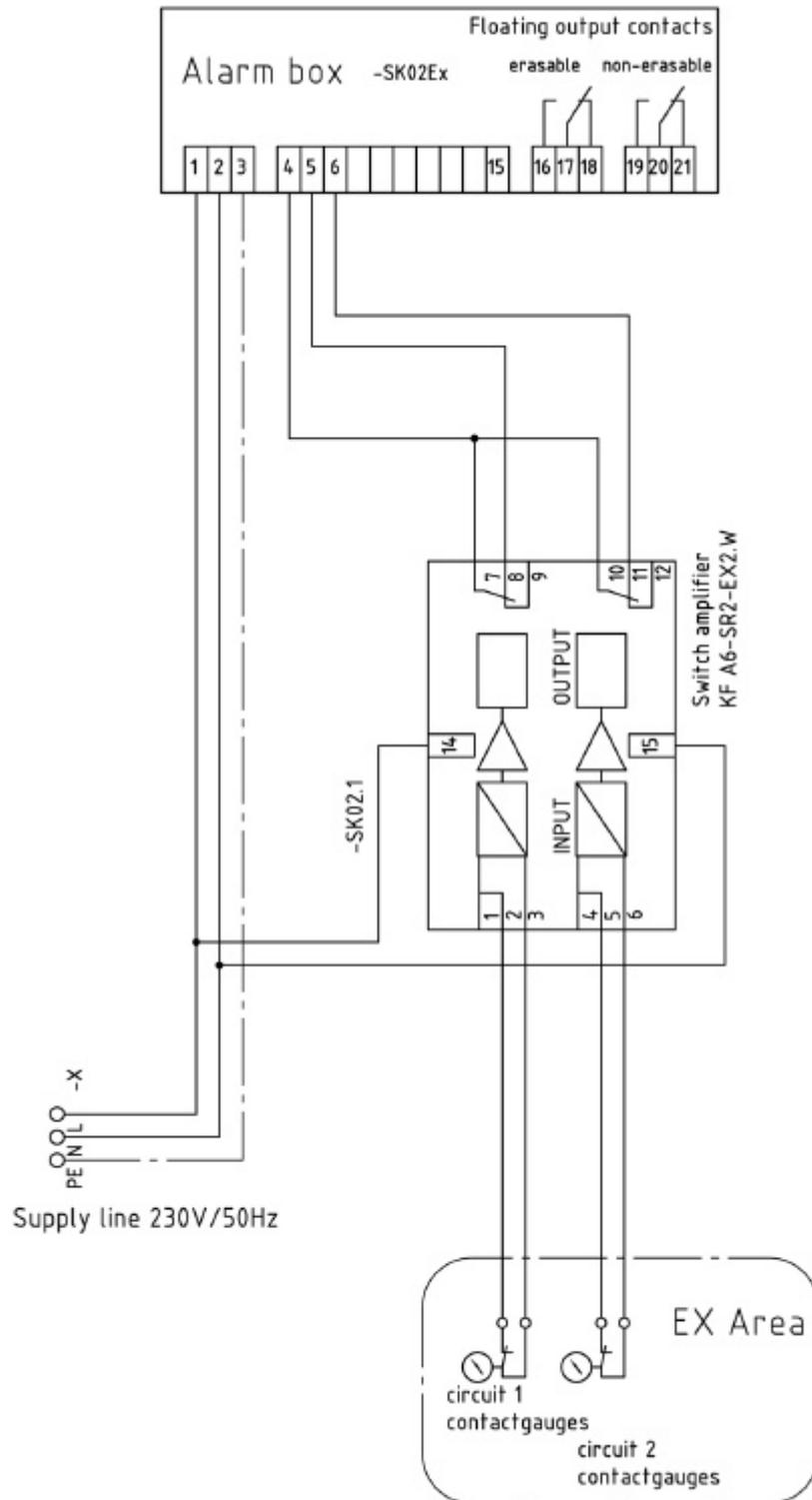
terminal 4	plus at the contact manometer (gas type 1 u. 2)
terminal 5	minus at the contact manometer (gas type 1)
terminal 6	minus at the contact manometer (gas type 2)
terminal 7	minus at the contact manometer (gas type 3)
terminal 8	minus at the contact manometer (gas type 4)
terminal 9	minus at the contact manometer (gas type 5)
terminal 10	minus at the contact manometer (gas type 6)
terminal 11	minus at the contact manometer (gas type 7)
terminal 12	minus at the contact manometer (gas type 8)
terminal 13	minus at the contact manometer (gas type 9)
terminal 14	minus at the contact manometer (gas type 10)

13. Circuit Diagram
Circuit diagram DGM SK- 02



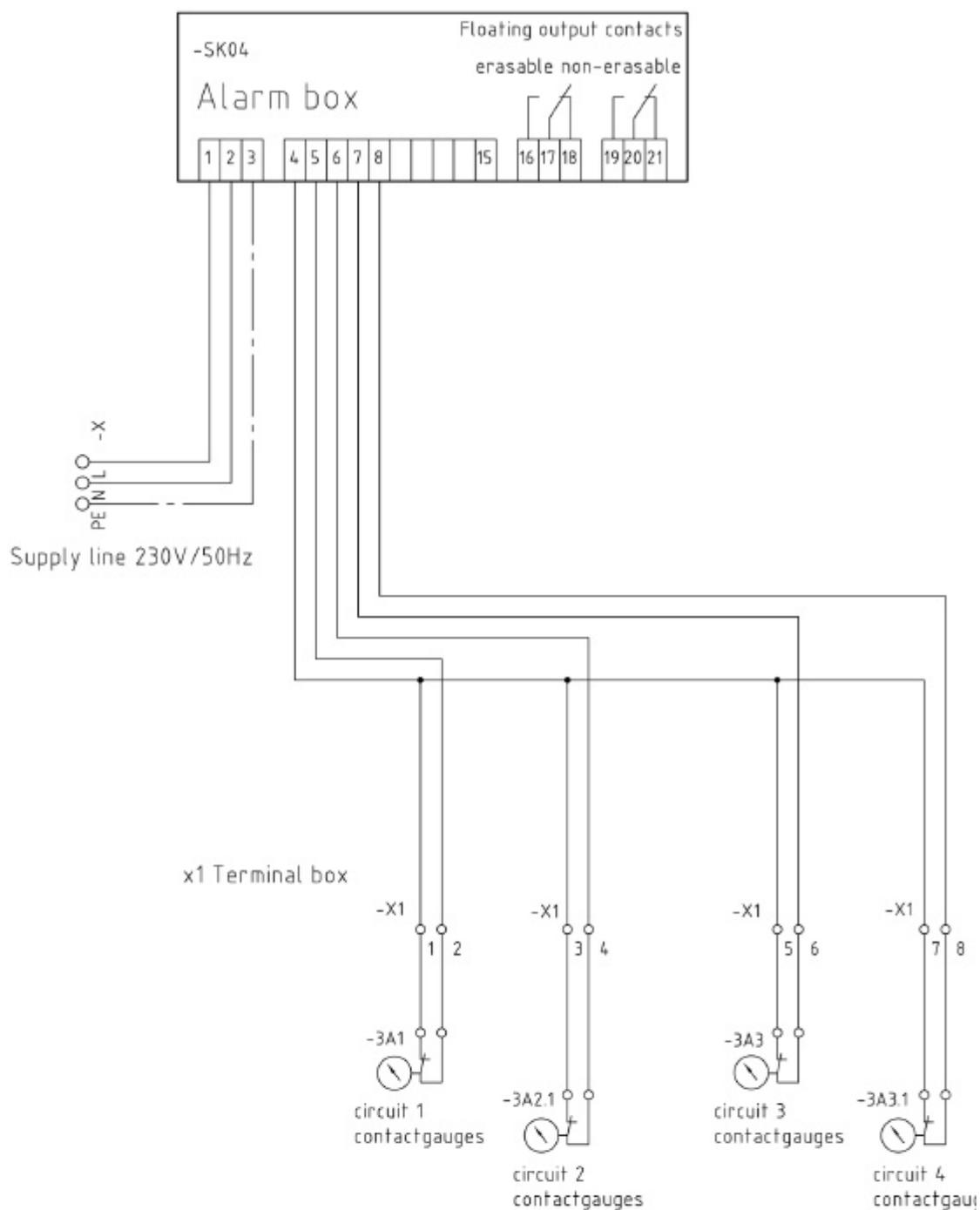
Please respect right polarity in case of using inductive contactgauges. All brown wires to be connected to clamp 4 (+), blue wires to be connected to clamp 5,6 etc. (-).

Circuit diagram DGM SK-02 EX



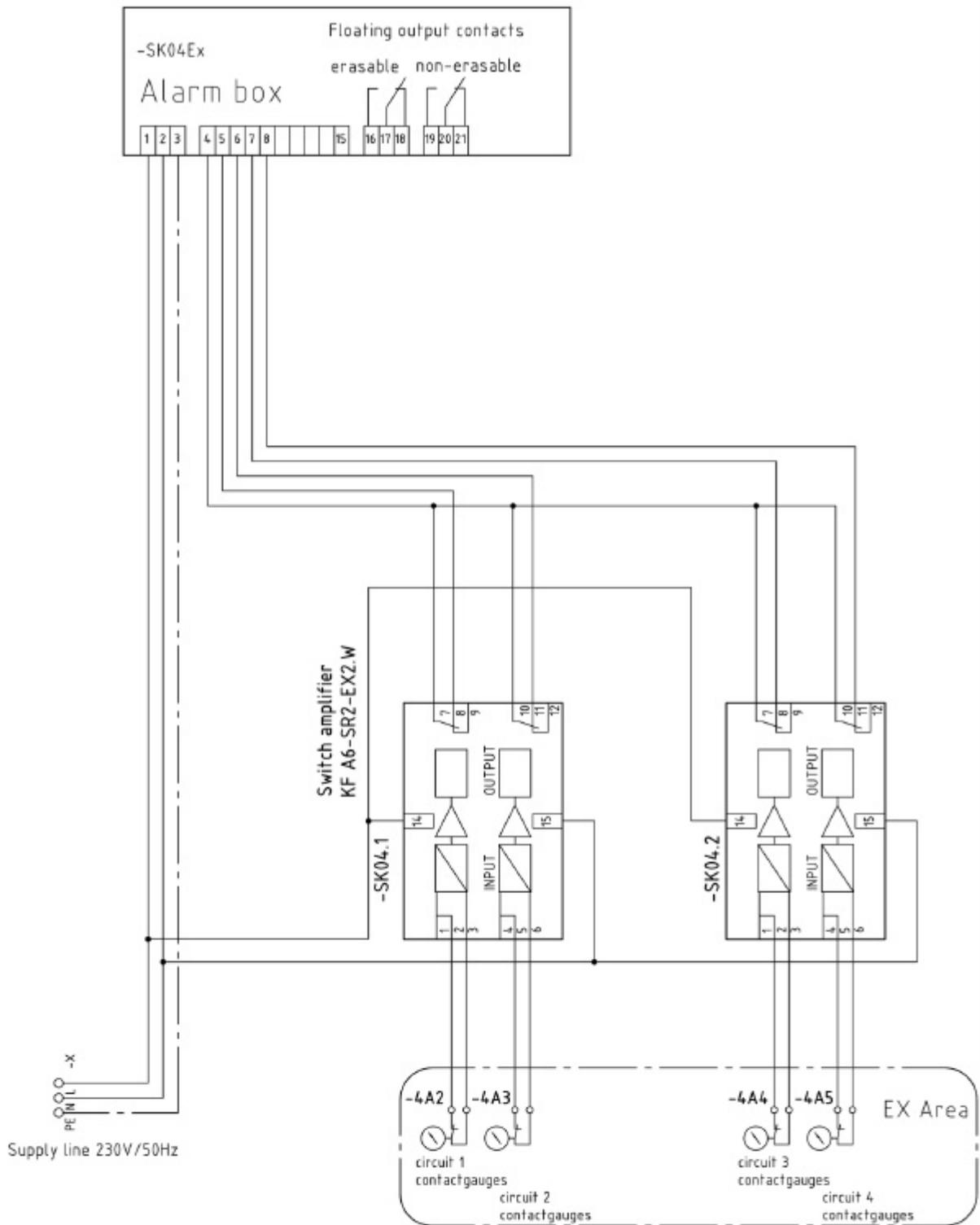
Please respect right polarity in case of using inductive contactgauges. All brown wires to be connected to clamp 4 (+), blue wires to be connected to clamp 5,6 etc. (-).

Circuit diagram DGM SK-04



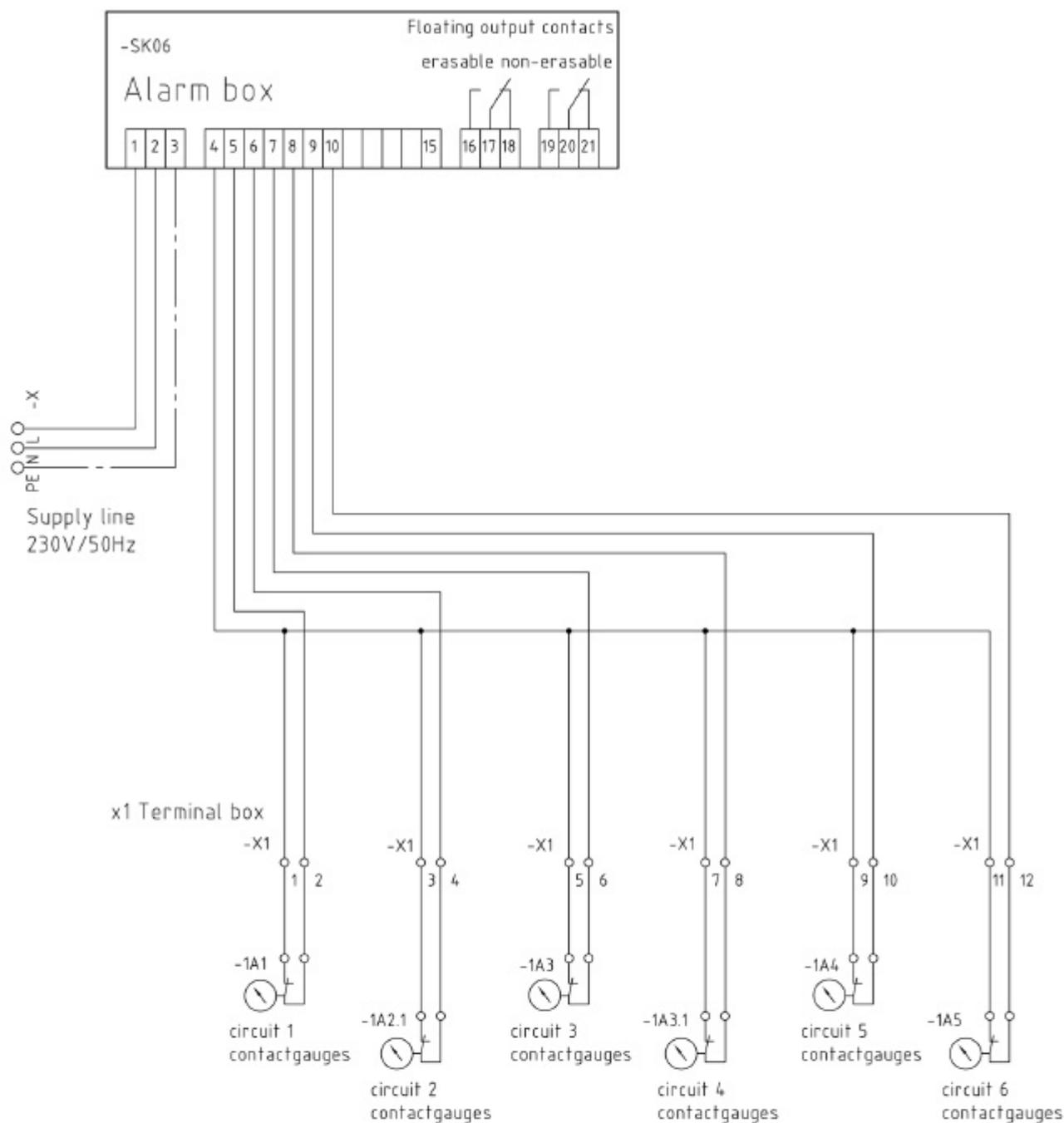
Please respect right polarity in case of using inductive contactgauges. All brown wires to be connected to clamp 4 (+), blue wires to be connected to clamp 5,6 etc. (-).

Circuit diagram DGM SK-04 EX



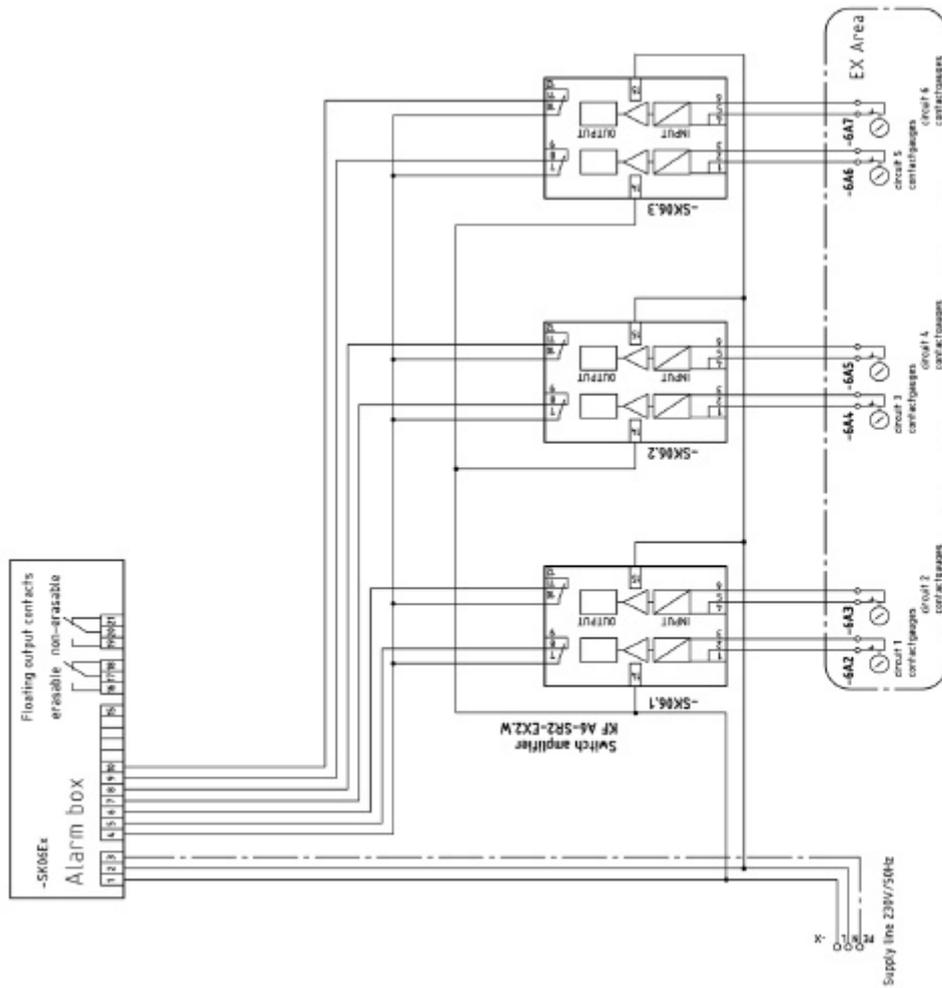
Please respect right polarity in case of using inductive contactgauges. All brown wires to be connected to clamp 4 (+), blue wires to be connected to clamp 5,6 etc. (-).

Circuit diagram DGM SK-06



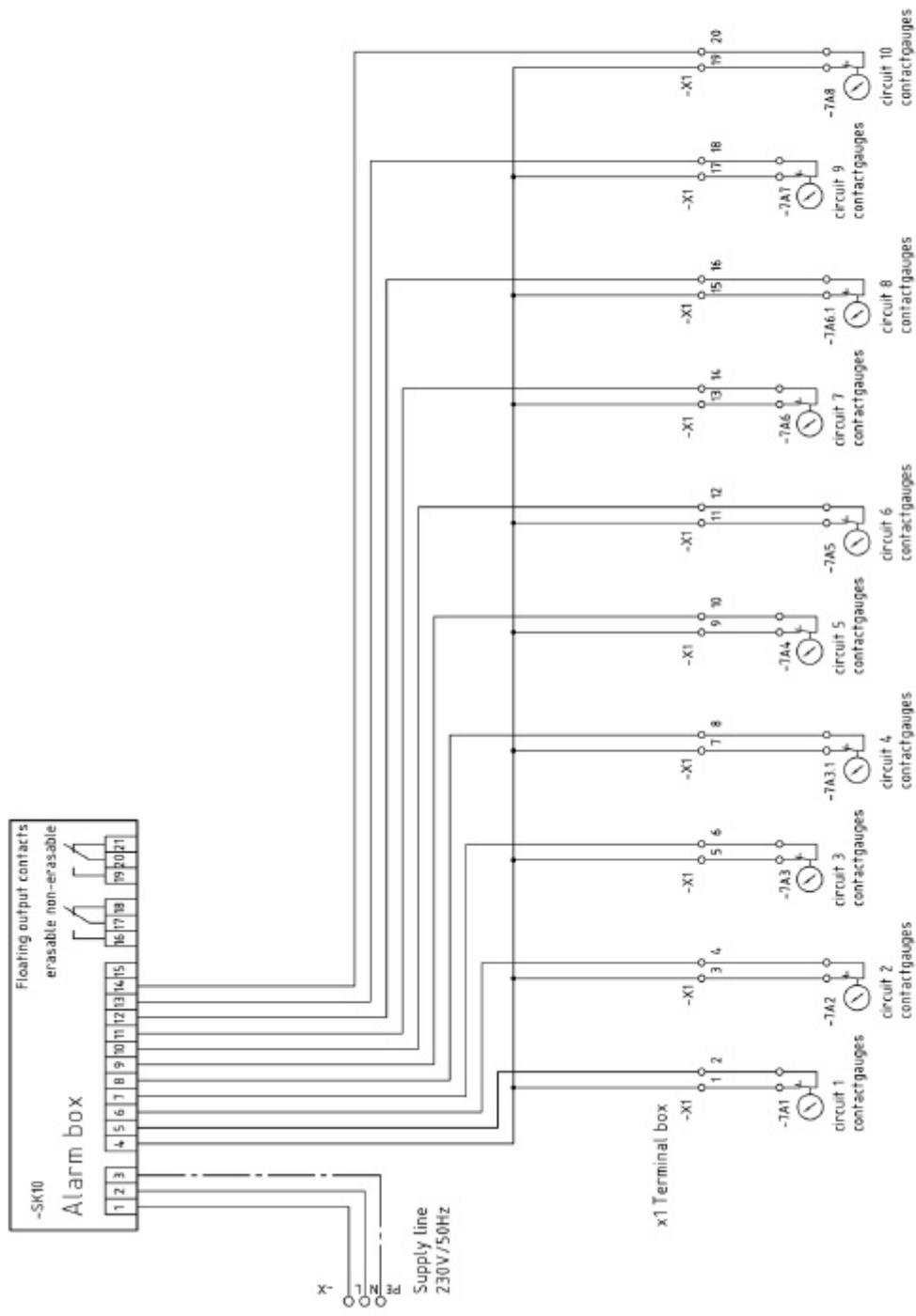
Please respect right polarity in case of using inductive contactgauges. All brown wires to be connected to clamp 4 (+), blue wires to be connected to clamp 5,6 etc. (-).

Circuit diagram DGM SK-06 EX



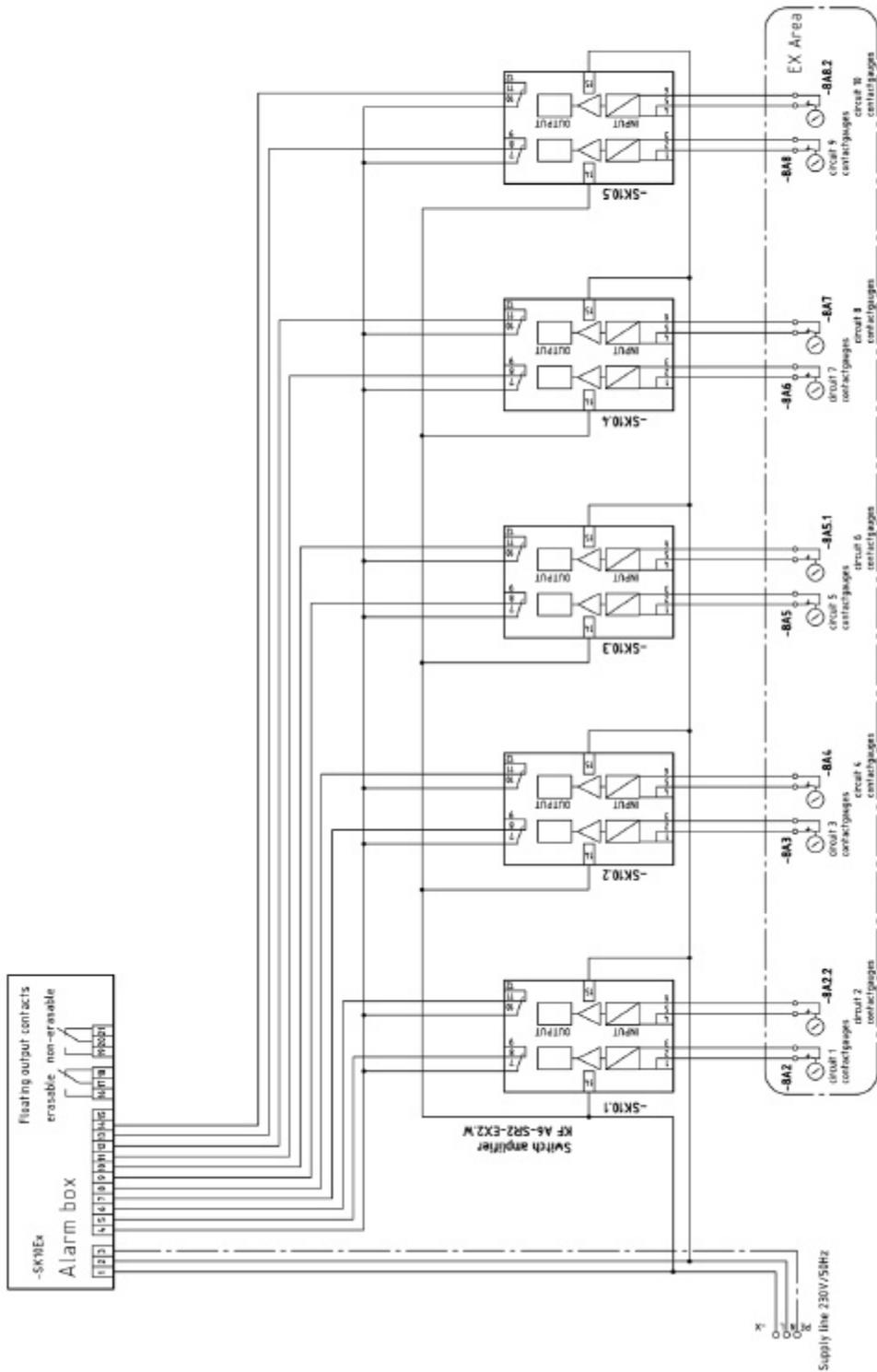
Please respect right polarity in case of using inductive contact gauges. All brown wires to be connected to clamp 4 (+), blue wires to be connected to clamp 5, 6 etc. (-).

Circuit diagram DGM SK-10



Please respect right polarity in case of using inductive contactgauges. All brown wires to be connected to clamp 4 (+), blue wires to be connected to clamp 5,6 etc. (-).

Circuit diagram DGM SK-10 EX



Please respect right polarity in case of using inductive contactgauges. All brown wires to be connected to clamp 4 (+), blue wires to be connected to clamp 5,6 etc. (-).

14. Service and repair

In principle, the instrument is free of service. If you develop instrument defects, send the instrument for repair to the manufacturer.

For this purpose observe the points in paragraph „taking out of operation“



Warning!

Electrical connection works are only allowed to be made by special trained staff. According to VDE the instrument has to be disconnected before opening.

15. Technical data

Connection value:

power supply 230 V / 110 V AC. 50 Hz, 5 VA

fuse 315 mA carrier

indication: defect fuses are only allowed to be replaced by the manufacturer

Inputs

signalling potential free, mechanic contacts Initiatoren nach DIN 19234 (NAMUR)

effective direction NC (siehe Kap. 3)

connection technic 2-wire

supply of the signalling 10 V Max. through the instrument, 10 mA Max. (short-circuit-proof)

Output (collected alarm)

alarm output 2 * relay output (1 changeing contact)

maximum contact load AC 230 V ~, 50 Hz, 100 VA

maximum contact load DC 48 V , 1A

buzzer 85 dB / 0.1 m, 2.3 khz

Intern alarm equipment

luminous alarm: LED red, green 5 mm Ø

acoustic alarm: signalling device, f = 3,3 kHz

Environment conditions

environment temperature 40°-C Max.

humidity 0 – 95 % relativ humidity, not condensated

Execution

housing polytyrene, colour similar to RAL 7035 (grey)

protection type IP 54

dimension 200 x 160 x 60 mm (w x h x d)

installation position upright, out of ex-range

connection cross-section 2,5 mm² Max.

cable screws 4 items PG11

16. Appendix

- CE-conformity explanation
- PTB-certificate for disconnecting switch amplifier

17. This document

We reserve the right to make technical alterations which improve the product.

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