

# Annunciator Relay



**MR 11 and MRE 11**  
**MR 21 and MRE 21**



The products described in this brochure are intended for industrial use and meet the requirements laid down by the EU directive 73/23/EU (issued by the Council for Coordination of the Regulations of EU Member Countries regarding the electrical equipment for use within certain voltage limits, revised by directive 93/68/EU issued by the Council)

The contents may be subject to modification for the purpose of technical improvement.  
The general regulations applicable to installation and commissioning must be observed.  
No warranty can be accepted.

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## Annunciator Relay MR 11

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### Application

The MR11 annunciator relay is used for the indication of danger and alarm situations and operational states. Its miniature size (39 x 46 mm ground surface) makes it suitable to be combined in large numbers so that the entire relay assembly can be used for alarm and status signalling in control rooms, control panels and mimic diagrams.

### Design

The MR11 is a semi-automatic relay which can be switched in N/C or N/O mode. The required switch action - N/C or N/O - is set in the factory prior to delivery, according to customer order specifications. Subsequent modifications can be carried out by the manufacturer.

Apart from the coil excitation voltage, no other auxiliary voltage is required for visual signal indication. This is a valuable feature particularly in those applications where the relay has the task of monitoring voltages.

### Principle of Operation

The entire indicator flag area is black when the relay is in its normal mode and ready for operation (optional: grey RAL 7037 indicator flag for relay assemblies). As soon as the relay picks up, the indicator flag becomes visible (white field with written characters). At the same time, the contacts move into their working position. Operating the reset button situated immediately below the indicator flag panel acknowledges the message. The indicator remains visible, but now an additional flag with red-white shaded lines appears. At the same time, the contacts return to their normal position. The relay's flag area automatically returns to its normal status upon elimination of the fault situation.

Apart from the operation described above, it is also possible to actuate the contacts directly from the pallet system. This type of contact configuration is particularly required in remote controlled plants.

Contact diagrams: see pages 6 and 7

### Characteristics

Easily replaceable indicator flag label, position-independent, tropicalized protection class upon request.

### Installation

#### Single relay

- Control panel surface mounting, plug-in  
Accessories: connector plate, fixing screws with nuts  
Dimensional drawing: see page 9
- DIN rail mounting (35 mm)  
Accessories: connector plate with bracket  
Dimensional drawing: see page 9
- Control panel flush mounting,  
Accessories: strap retainer, mounting frame,  
contact protection cover acc. to BGV A2  
Dimensional drawing: see page 9
- Control panel flush mounting, plug-in  
Accessories: connector plate, fastening bow, mounting frame  
Dimensional drawing: see page 10

### Relay Assemblies

- Installation in DIN 43700 instrument casing designed for flush mounting in control panels  
Size of casing: 96 x 96 mm for 4 relays  
Size of casing: 144 x 144 mm for 9 relays  
Dimensional drawings: see page 11
- Mounting in combi-enclosures for flush mounting in control panels with 150 annunciator relays max.  
Dimensional drawing: see page 12
- Mounting of relay assemblies in enclosures for surface mounting in control panels, wall mounting or installation in control cubicles, with 9 relays or 4 relays  
Dimensional drawings: see page 13
- Upon request, relay assemblies are delivered together with rail wires and connection angles of different heights, or these can be mounted in the factory prior to delivery. They bridge the connection points of identical potential. Upon request, relay assemblies with surface mounting enclosures are wired directly in the factory prior to delivery.
- Upon request, the relay connections are protected by a plastic cover in order to meet the VBG4 standard for protection against accidental contact.

## Ground-fault Annunciator Relay MRE 11

### Application

The MRE 11 annunciator relay is a semi-automatic relay used for the indication of earth leakage faults in three-phase networks.

### Principle of Operation

The relay is equipped with two windings and must be connected to the open delta winding of a displacement transducer. The relay picks up at 30 V a.c. This has the effect of adding the second winding into the relay circuit which protects the relay against overload at a voltage increase up to 100 V a.c. The MRE 11 ground-fault annunciator relay is also available for other voltage ranges. Operation and indication method of the MRE 11 relay are the same as for the MR 11 relay described opposite.

Contact diagram: see page 7

### Installation

identical to MR 11

## Annunciator Relay MR 21

### Application

Just like the MR 11, the MR 21 annunciator relay is used for the indication of danger and alarm situations and operational states. Its miniature size (39 x 46 mm ground surface) makes it suitable to be combined in large numbers so that the entire relay assembly can be used for alarm and status signalling in control rooms, control panels and mimic diagrams.

### Principle of Operation

Unlike the MR 11 relay, the MR 21 annunciator relay is fully automatic. It has no manual reset button and no NO/NC change-over facility. Depending on the preset contact mode (N/O or N/C operation) the relay picks up either at energization or at de-energization. The contacts operate and the mechanical indicator flag is set. Upon return to normal of the fault situation the indicator flag is automatically acknowledged and the contacts return to their normal position.

Contact diagram: see page 8

### Installation

identical to MR 11

### Ground-fault Annunciator Relay MRE 21

#### Application

The MRE 21 is a fully-automatic annunciator relay for the indication of ground leakage faults in three-phase networks.

#### Principle of Operation

The MRE 21 is based on the same principle of operation as the MRE 11 relay. Only difference: as the MRE 21 is fully-automatic it has no manual reset button, nor is it equipped with a change-over facility for N/O or N/C operation.

Contact diagram: see page 8

#### Installation

identical to MR 11

### Technical Characteristics

#### Excitation side

Type of current	Direct or alternating current
Frequency	50Hz or 60 Hz
Rated voltage ( $V_{rated}$ or $U_N$ )	Up to 150 V d.c. or 230 V a.c.
Rated voltage with integrated resistor	Up to 220 V d.c.
Continuous overload capacity	$1.2 \times V_{rated}$
Pick-up voltage	$\geq 0.8 V_{rated}$

Rated current ( $I_N$  or  $I_{rated}$ )  
(current winding) Up to 6A d.c. or a.c.

Pick-up delay 12 ms to 25 ms

#### Power consumption at ( $V_{rated}$ )

For d.c. 0.5 W to 1.5 W  
with integrated protective resistor 1 W to 2.5 W

For a.c. and  
closed magnetic circuit 1.4 VA to 1.8 VA  
open magnetic circuit 2.8 VA to 3.6 VA

#### Contact side

Current at make 6 A d.c. or a.c.

Continuous current 4 A d.c. or a.c.

Current at disconnect  
for 220 V d.c.,  $\frac{I}{R} = 40$  ms 0.2 A  
for 220 V a.c.,  $\cos \varphi = 0.4$  4 A

Permissible switching voltage 220 V d.c. or 230 V a.c.

Wiping time of fleeting contacts 60 ms approx.

#### General Characteristics

Protection class IP 40, connections IP 00  
acc. to DIN 40050

Isolation group and series voltage acc. to VDE 0110/11.72 Group C, 250 V a.c./d.c.

Test voltage acc. to VDE 0435a/9.72 2kV, 50 Hz

Permissible ambient temperature range -5 °C to +40 °C

Labelling 1 or 2 lines,  
15 characters max. per line

Weight 310 g / 370 g standard design /  
with connector plate

The front frames and front panels of relay assemblies are black varnish coated to have the same appearance as the relay screen. Upon request and at an additional charge, these parts are also available in RAL 7037 grey.

#### Special Designs

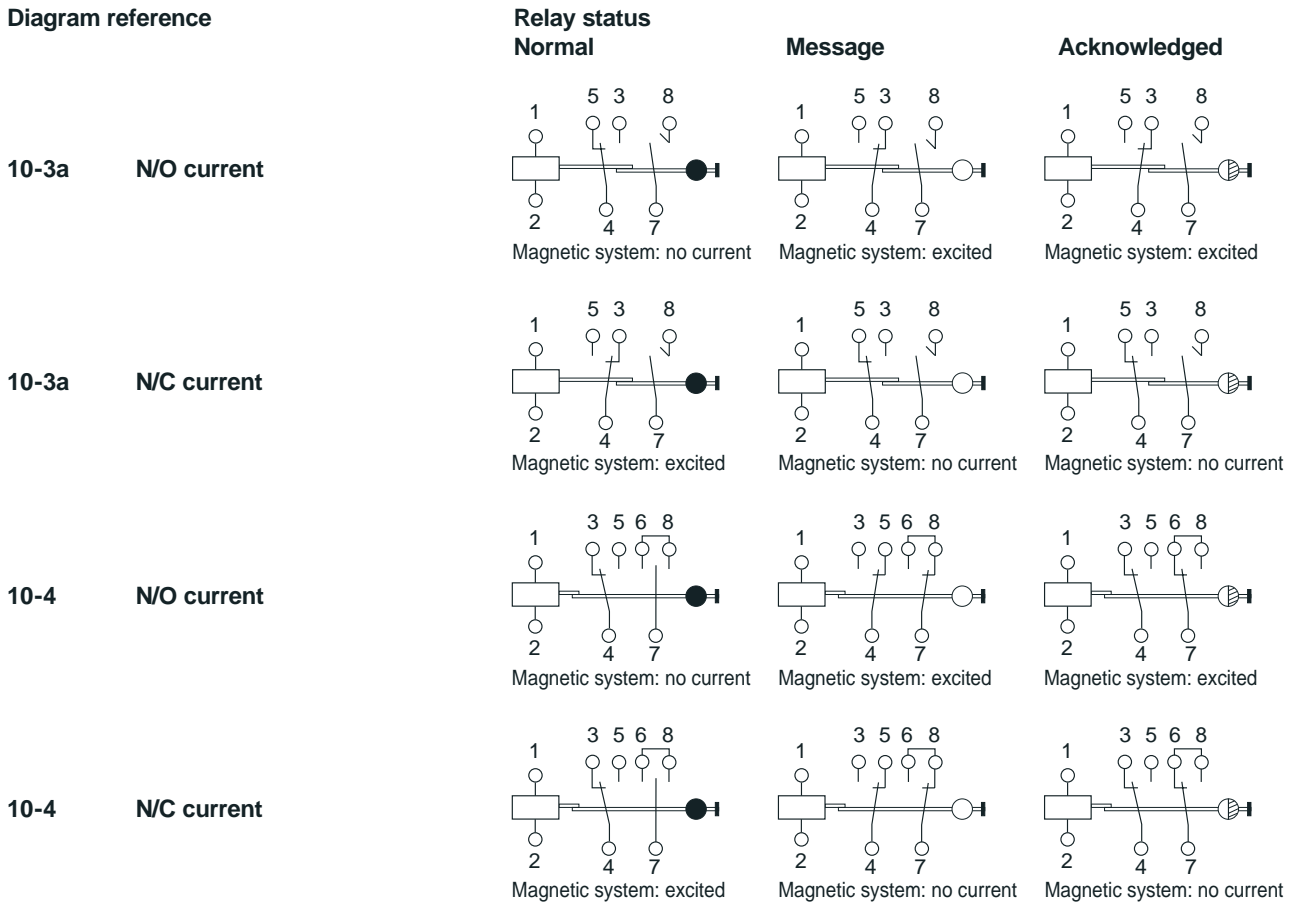
All annunciator relays of the MR series are also available in shock-proof design. In this case, their designation is MRS 11 and MRS 21. In addition to the standard contact diagrams shown in this brochure, a large number of special contact arrangements is available upon request, such as combinations of N/O - N/C and fleeting contacts.

Delivery range, availability and prices: on request

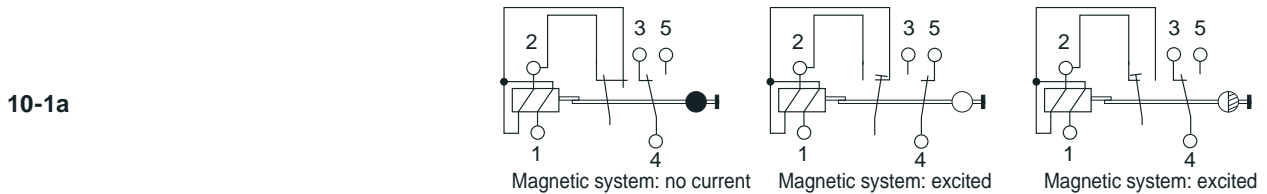
# Contact Diagrams for MR 11 and MRE 11

Diagram reference		Relay status Normal	Message	Acknowledged
10-1	N/O current	 Magnetic system: no current	 Magnetic system: excited	 Magnetic system: excited
	N/C current	 Magnetic system: excited	 Magnetic system: no current	 Magnetic system: no current
10-2	N/O current	 Magnetic system: no current	 Magnetic system: excited	 Magnetic system: excited
	N/C current	 Magnetic system: excited	 Magnetic system: no current	 Magnetic system: no current
10-2a	N/o current	 Magnetic system: no current	 Magnetic system: excited	 Magnetic system: excited
	N/c current	 Magnetic system: excited	 Magnetic system: no current	 Magnetic system: no current
10-3	N/o current	 Magnetic system: no current	 Magnetic system: excited	 Magnetic system: excited
	N/c current	 Magnetic system: excited	 Magnetic system: no current	 Magnetic system: no current
Mechanical indicator flag		 Normal status: black	 Message status: white	 Acknowledged: white/red

**Diagram reference**



**Contact Diagram MRE 11**

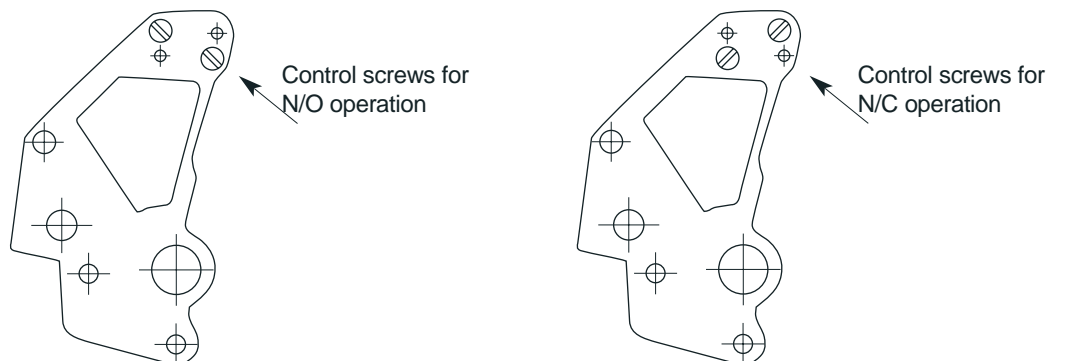


**Mechanical indicator flag**



**Setting N/O current or N/C Operation**

The operation mode of the relay - N/O or N/C operation - is set in the factory according to customer order specifications. This setting can be modified.



## Contact Diagrams for MR 21 and MRE 21

Diagram reference		Relay status	
		Normal	Message
20-1	N/O current	<p>Magnetic system: no current</p>	<p>Magnetic system: excited</p>
20-1	N/C current	<p>Magnetic system: excited</p>	<p>Magnetic system: no current</p>
20-2	N/O current	<p>Magnetic system: no current</p>	<p>Magnetic system: excited</p>
20-2	N/C current	<p>Magnetic system: excited</p>	<p>Magnetic system: no current</p>
20-3	N/O current	<p>Magnetic system: no current</p>	<p>Magnetic system: excited</p>
20-3	N/C current	<p>Magnetic system: excited</p>	<p>Magnetic system: no current</p>

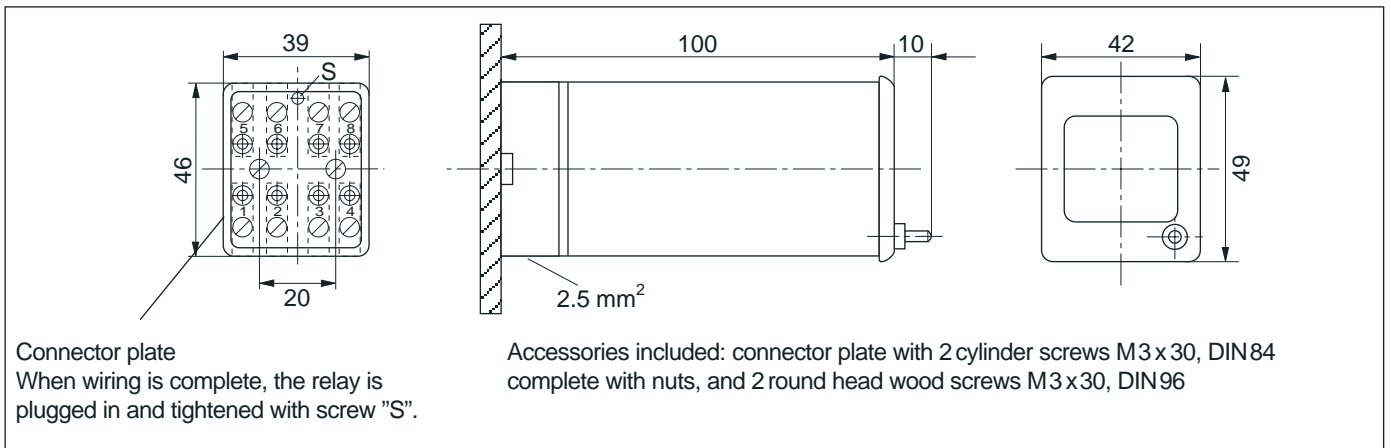
### Contact Diagram MRE 21

20-1a	<p>Magnetic system: no current</p>	<p>Magnetic system: excited</p>
<b>Mechanical indicator flag</b>	<p><b>Normal status: black</b></p>	<p><b>Message status: white</b></p>

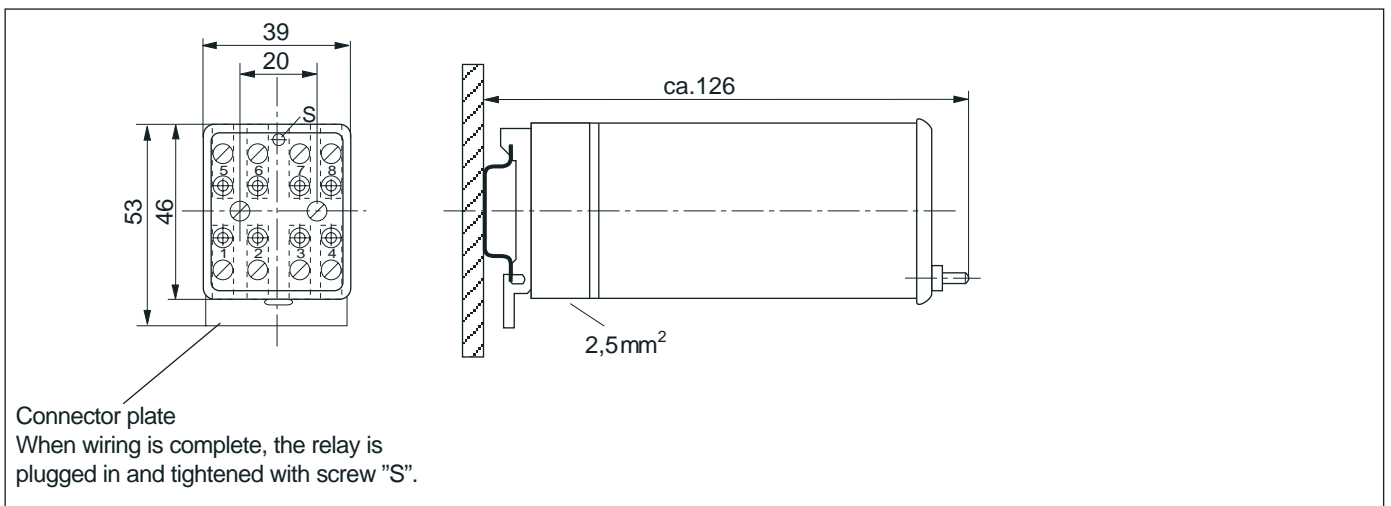
### Setting the N/C or N/O Operating Mode

The required operating mode of the relay is set in the factory prior to delivery and must therefore be stated on the order. It is not possible to modify this setting on site!

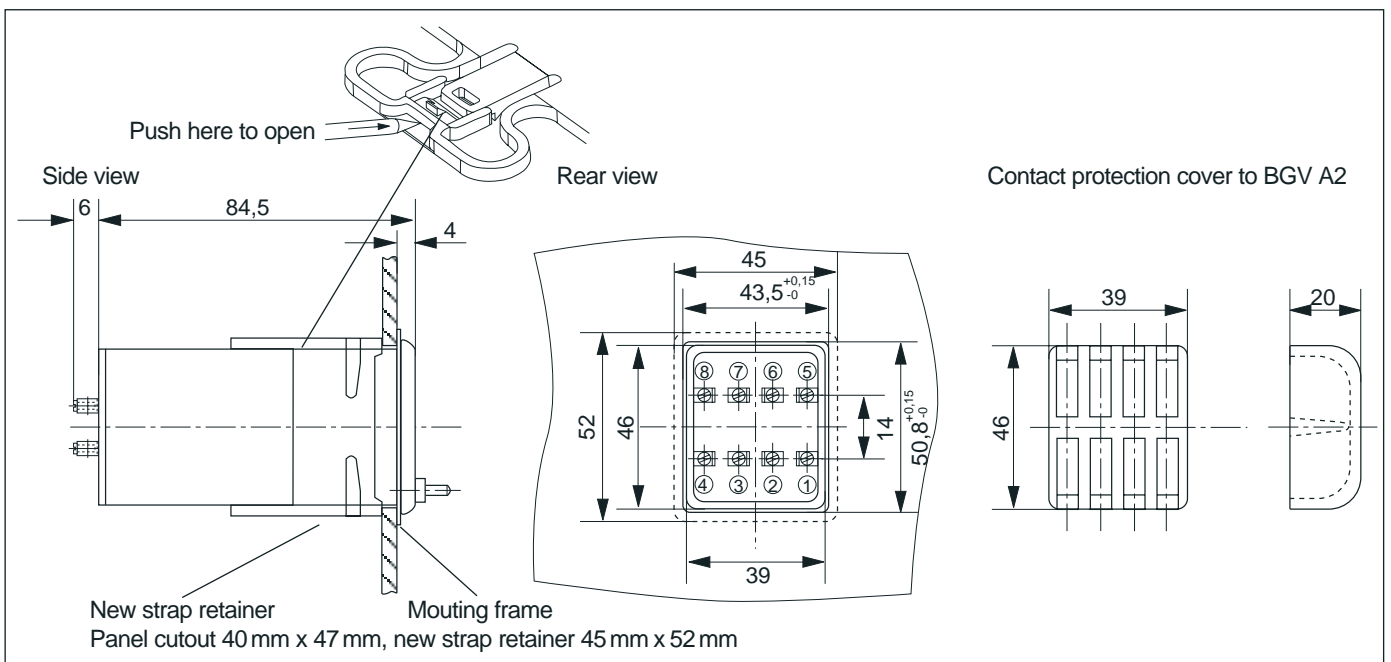
Plug-in Surface Mounting



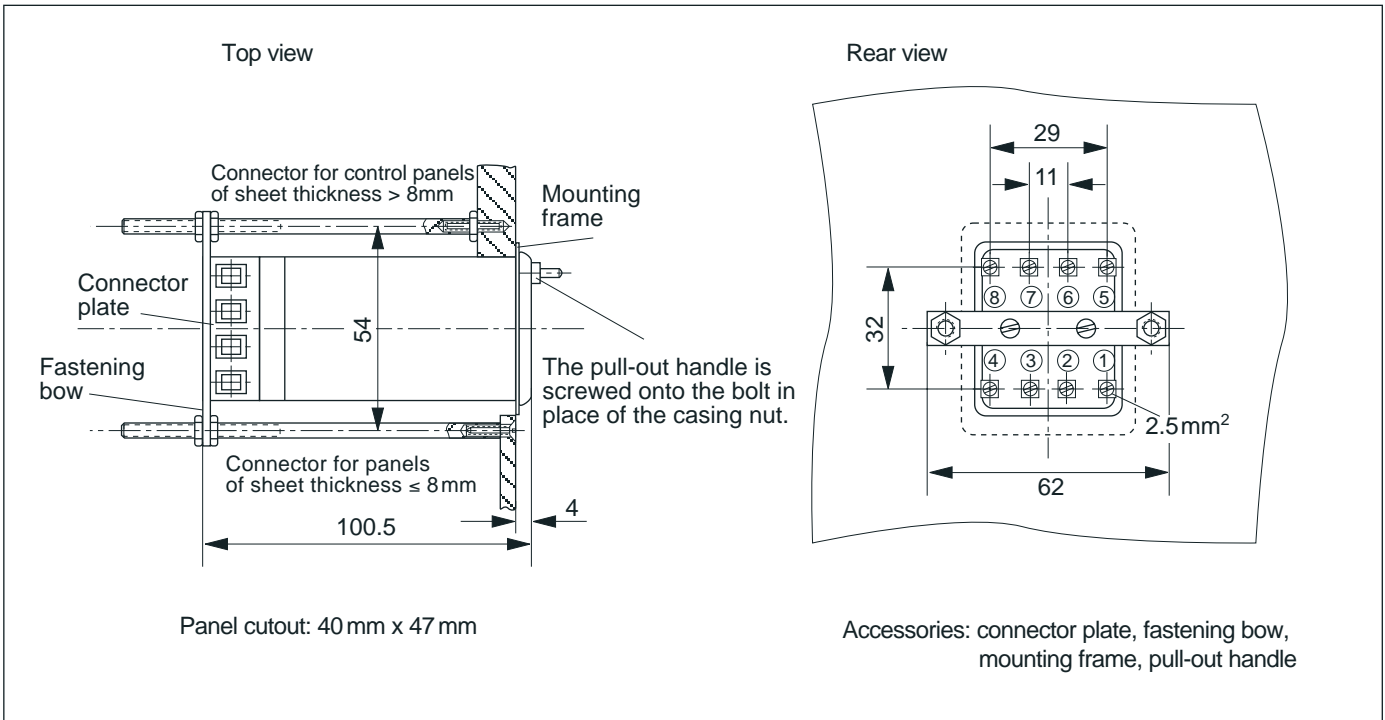
DIN Rail Mounting (35 mm)



Flush Mounting



## Plug-in Flush Mounting



## Changing the Indicator Flag Label

### Removing a single relay

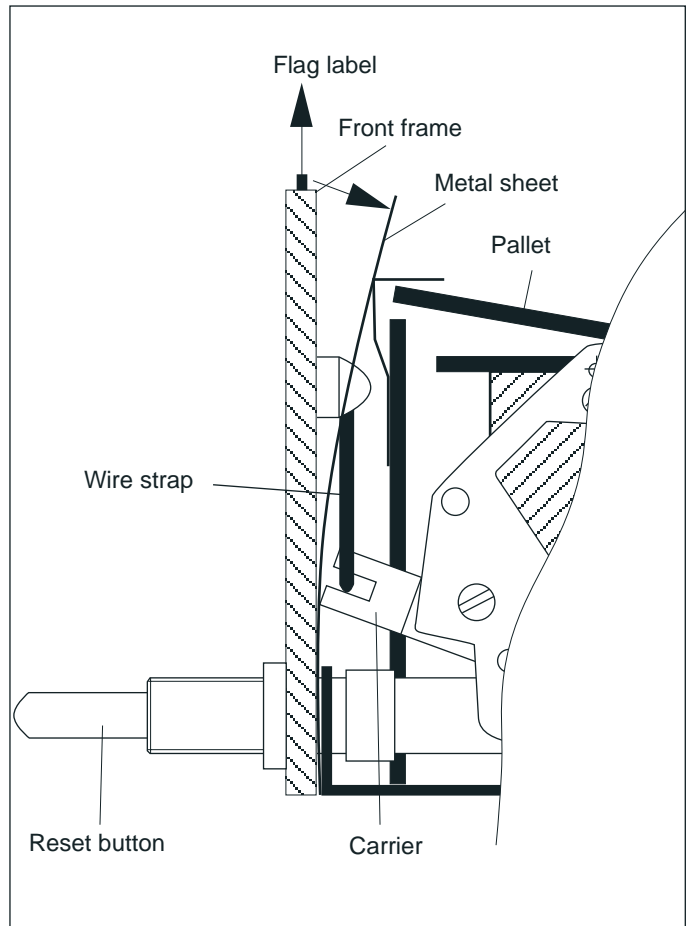
- Untighten the nut of the reset button situated on the front plate and pull the relay casing towards you.

### Removing an annunciator relay from a combi-enclosure

- Remove the screw-type or plugged-in front frame.
- On all relays, remove the nuts of the reset buttons.
- Remove the glass cover.
- On the relay whose label you wish to change, pull the relay towards you using the pull-out handle.

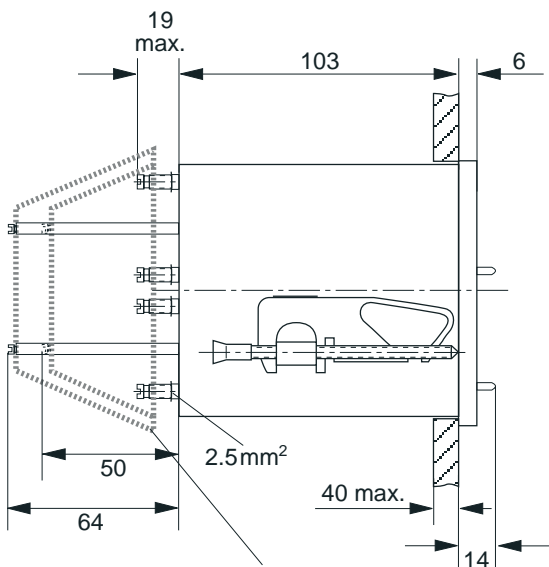
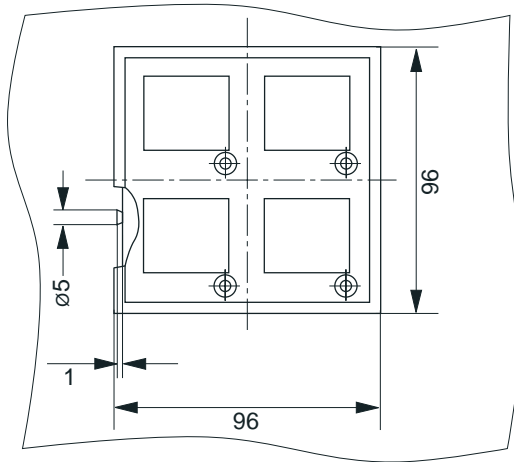
### Changing the label

- Flip the pallet and bend the metal sheet situated just behind the front frame until it reaches the pallet.
- Take the label out of the front frame and insert the new label.
- Please make sure that the wire strap holding the label is properly inserted in the carrier.

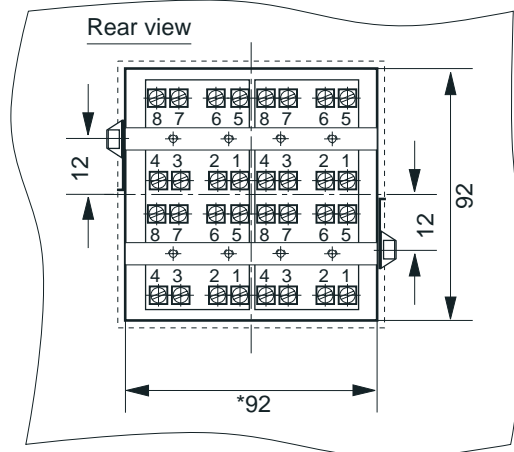


Changing the label of the mechanical indicator flag

4 annunciator relays of type MR 11 or MR 21

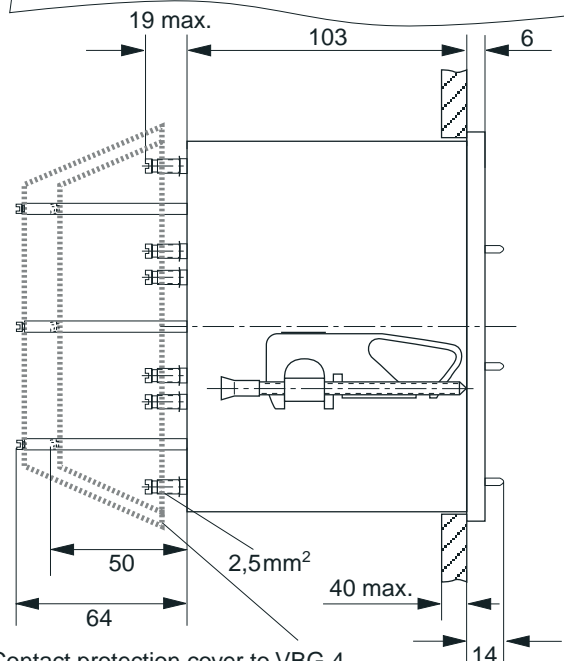
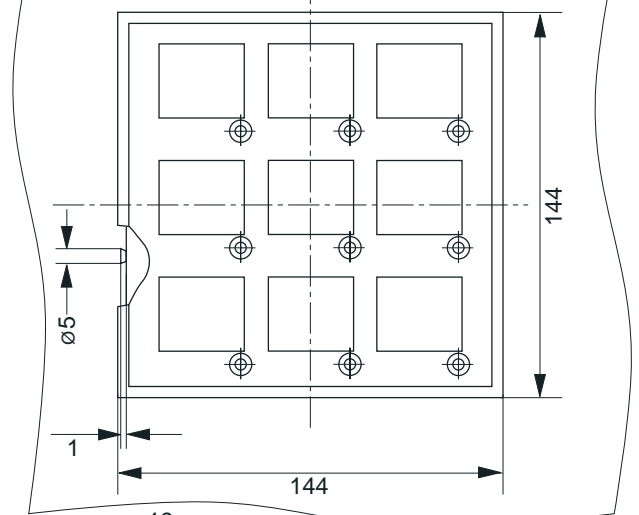


Contact protection cover to VBG 4, made of clear plastics, if required

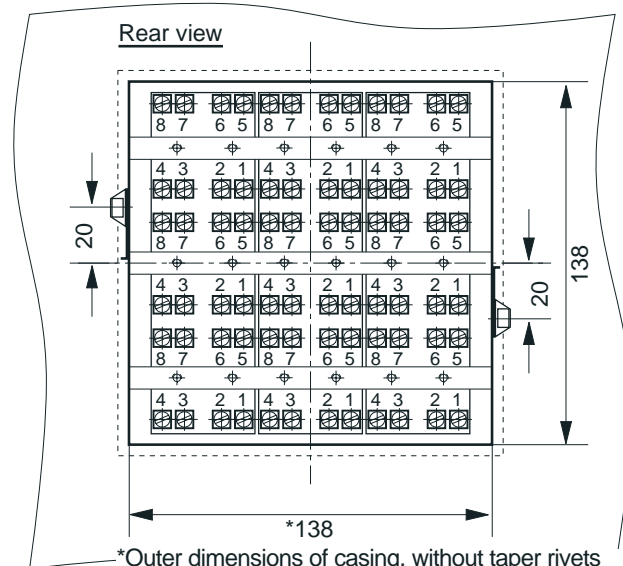


\*Outer dimensions of casing, without taper rivets  
Panel cutout  $92^{+0,8} \times 92^{+0,8}$

9 annunciator relays of type MR 11 or MR 21



Contact protection cover to VBG 4, made of clear plastics, if required



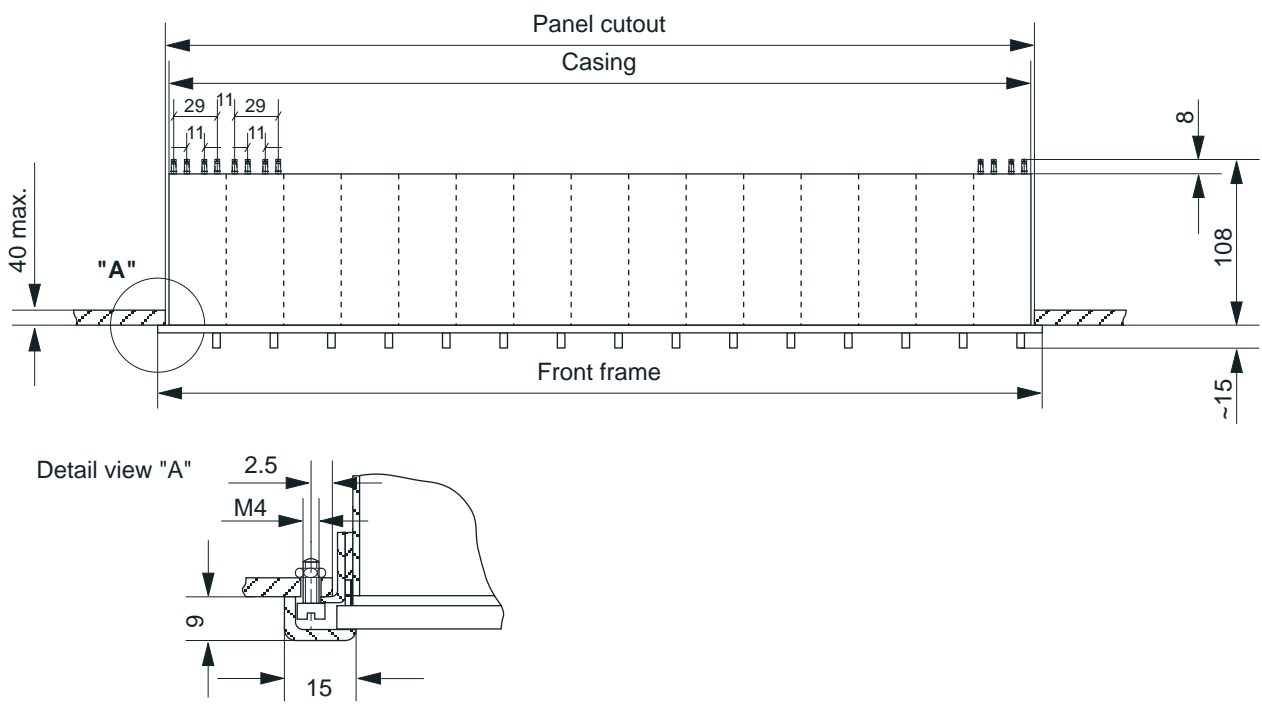
\*Outer dimensions of casing, without taper rivets  
Panel cutout  $138^{+1} \times 138^{+1}$

# Dimensions of the Relay Assemblies

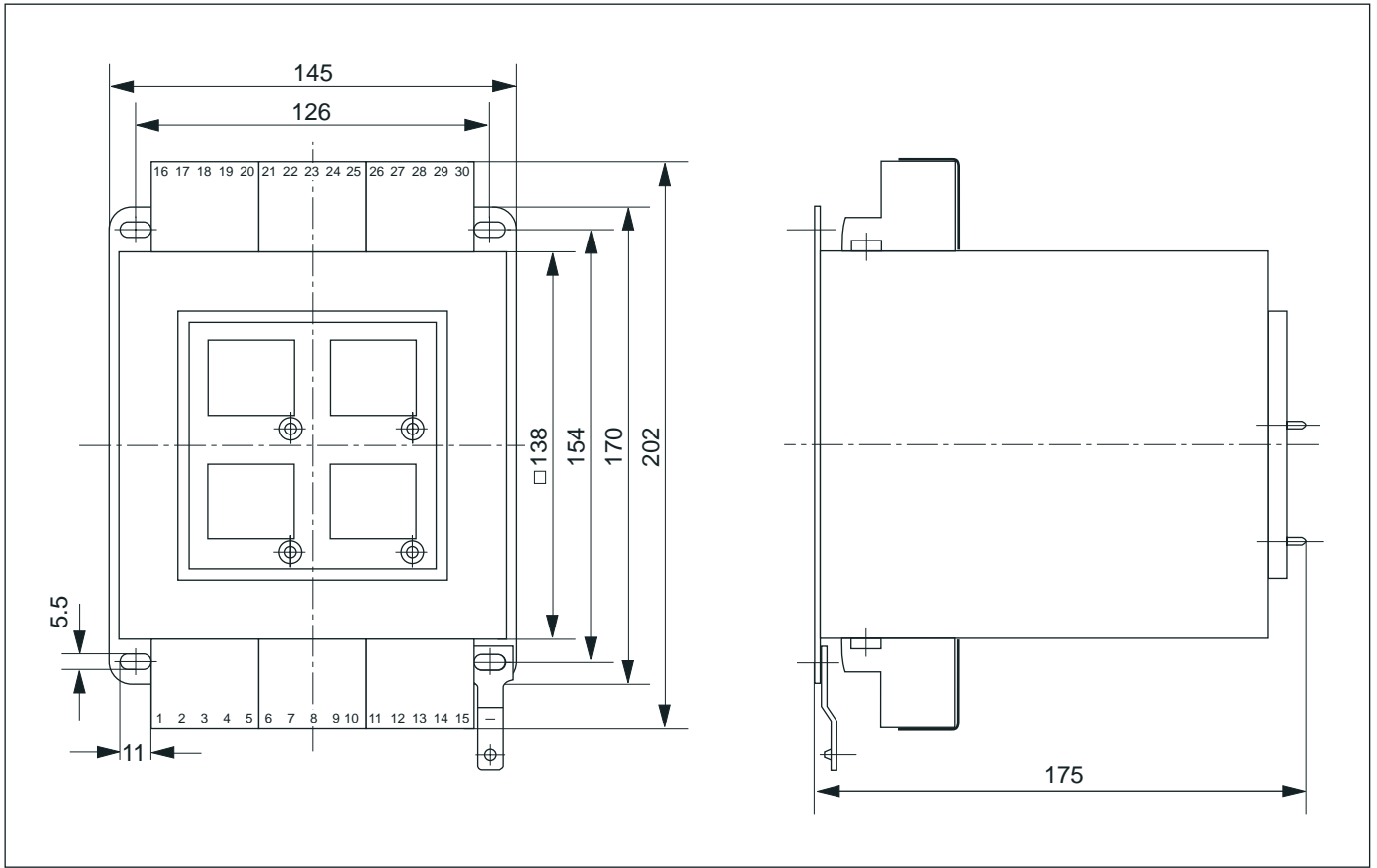
## Casing for Flush Mounting in Control Panel for MR 11 and MR 21

Maximum size: 150 relay slots

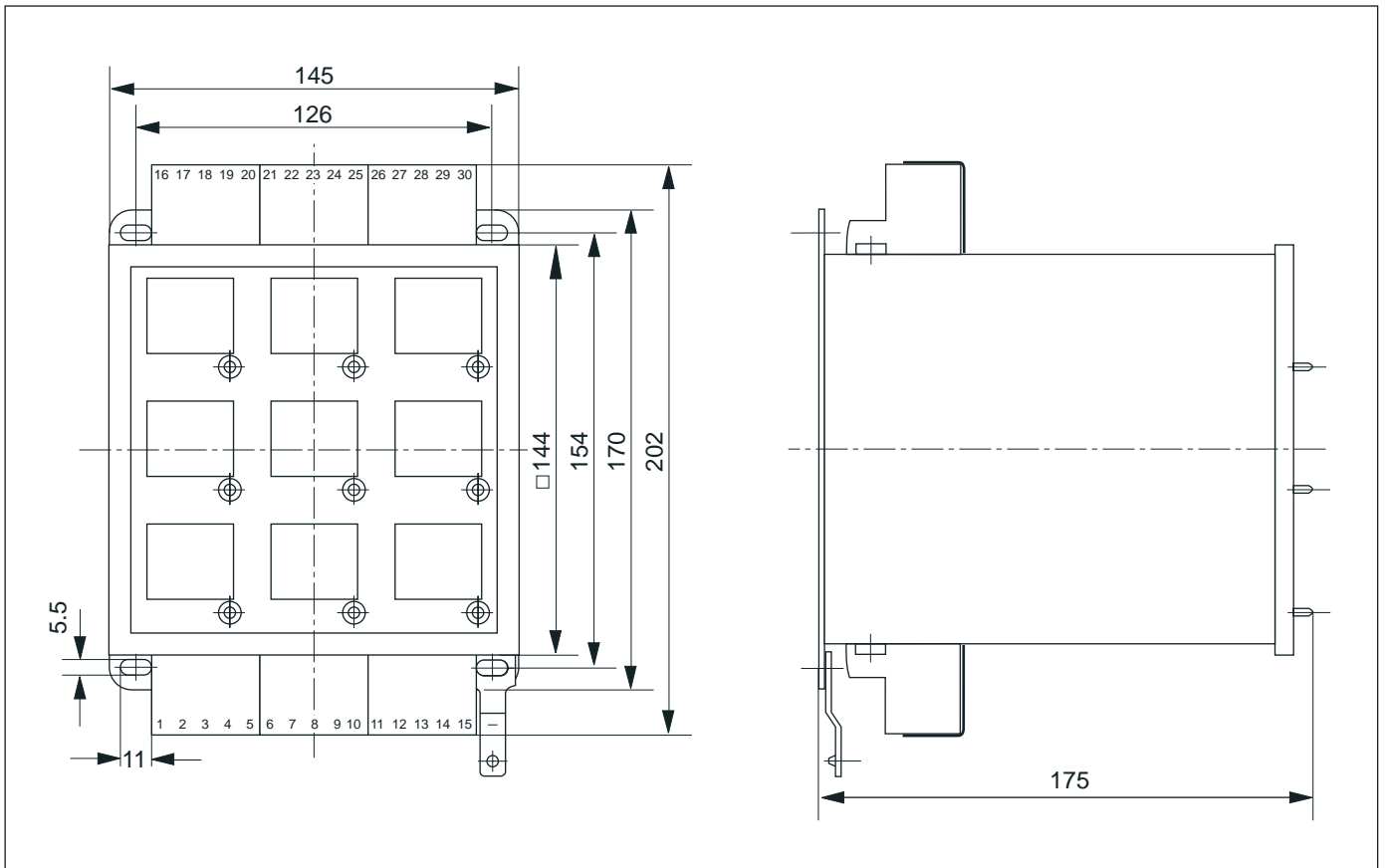
		Casing														
		1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Front frame	Panel cutout	70	110	150	190	230	270	310	350	390	430	470	510	550	590	630
		50	90	130	170	210	250	290	330	370	410	450	490	530	570	610
		48	88	128	168	208	248	288	328	368	408	448	488	528	568	608
76	56	54	1													
122	102	100	2													
168	148	146	3													
214	194	192	4													
260	240	238	5													
306	286	284	6													
352	332	330	7													
398	378	376	8													
444	424	422	9													
490	470	468	10													
536	516	514	11													
582	562	560	12													
628	608	606	13													
674	654	652	14													
720	700	698	15													



Casing for surface mounting for 4 annunciator relays



Casing for surface mounting for 9 annunciator relays



## Order References and Ordering Examples

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Please state the following details and requirements so that we can process your order as thorough as possible:

1. Which type of annunciator relay?
2. Which type of coil voltage and current? (d.c. or a.c.?)
3. Reference of applicable contact diagram  
(please select the required contact arrangement and switching mode)
4. Required installation method:
  - Surface mounting, plug-in type
  - Flush mounting
  - Flush mounting, plug-in type
  - Relay assembly, complete with annunciator relays (please state size and relay configuration)
  - Annunciator relay for insertion in already existing assembly
5. Accessories
6. Label texts, if required (message texts)
7. Other special requirements, if applicable  
(e.g., tropicalized protection class)

**2. Relay assembly for 40 annunciator relays, equipped with 24 relays with different message texts, inclusive of rail wiring for coil outputs, non-acknowledgeable group message (N/O contact) and excitation of an external acoustic relay (fleeting contact)**

- 1 Combi-enclosure MR 11-05s x 08w for flush mounting in control panels
- 40 Connector plates MR 11-combi (for all relay slots, free slots included)
- 24 MR 11 annunciator relays for 60V d.c  
Contact diagram reference: 10-3a combi
- 6 Indicator flag labels, 1 text line (supply drawing and list of texts)
- 18 Indicator flag labels, 2 text lines (supply drawing and list of texts)
- 16 Blind plates (for free relay slots)
- 200 Connection angles (for all slots, free slots included)
- 200 Mounting of connection angles, inclusive of rail wiring of relay contacts no. 2 (coil), no. 3 and 4 (N/O contact for group message), and no. 7 and 8 (fleeting contact for generation of acoustic alarm)
- 1 Pull-out handle

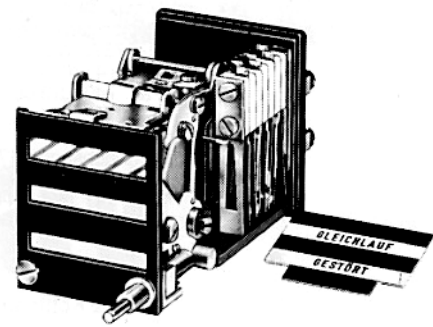
### Ordering Examples

**1. Flush mounting relay (single) with 2 acknowledgeable change-over contacts**

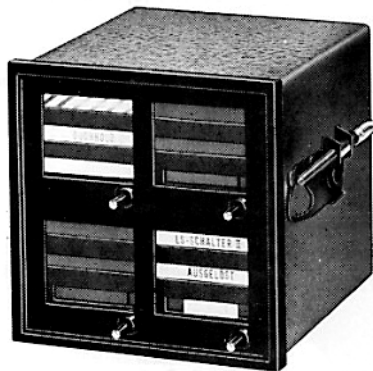
- ..... Annunciator relay MR 11 for 220 V a.c.  
Contact diagram ref. 10-2  
flush mounting without (or with) prepared labels
- ..... Contact protection acc. to VBG 4 (not always required)



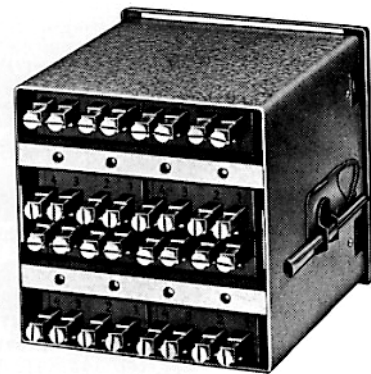
Annunciator relay MR 11  
for flush mounting



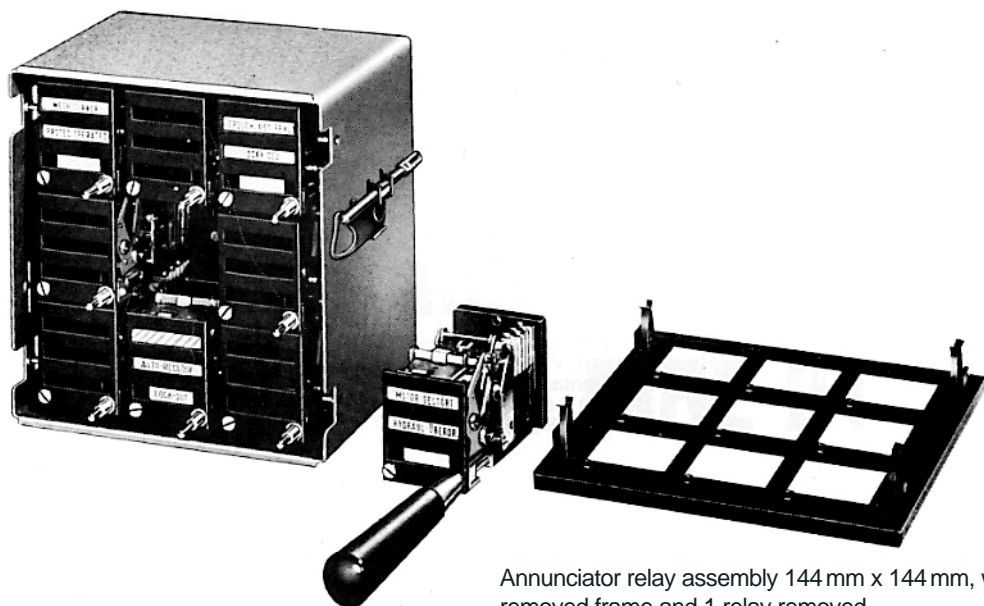
Annunciator relay MR 11  
with removed label



Annunciator relay assembly  
96 mm x 96 mm with 4 relays



Annunciator relay assembly  
96 mm x 96 mm, rear view



Annunciator relay assembly 144 mm x 144 mm, with  
removed frame and 1 relay removed  
using the pull-out handle

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