

BILFINGER MAUELL GMBH

ANNUNCIATOR RELAYS MR 11 AND MRE 11 MR 21 AND MRE 21

THE ANNUNCIATOR RELAYS ARE USED FOR THE INDICATION OF OPERATIONAL STATES, ALARM AND DANGER OR GROUND-FAULT SITUATIONS.



Subject to change without notice.

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Annunciator Relay MR 11

Application

The MR 11 annunciator relay is used for the indication of danger and alarm situations and operational states. Its miniature size (39 mm × 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 MR 11 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 customer.

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. 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 8 and 9

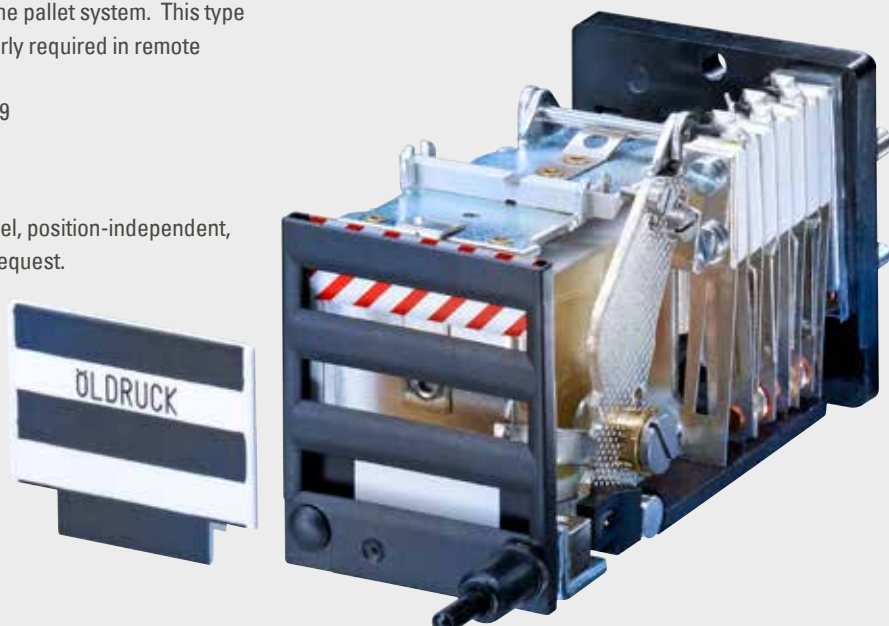
Characteristics

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



Single Relay Installation

- DIN rail mounting (35 mm)
including connector plate with bracket
Dimensional drawing: see page 12
- Control panel surface mounting, plug-in
including connector plate
Dimensional drawing: see page 12
- Control panel flush mounting,
Accessories: strap retainer, mounting frame, contact protection cover acc. to BGV A3
Dimensional drawing: see page 12



Relay Assemblies

- Installation in DIN 43700 instrument casing designed for flush mounting in control panels
Size of casing: 96 mm x 96 mm for 4 relays
Size of casing: 144 mm x 144 mm for 9 relays
Dimensional drawing: see page 16
- Mounting in combi-enclosures for flush mounting in control panels with 150 annunciator relays max.
Dimensional drawing: see page 14
- Mounting of relay assemblies in enclosures for surface mounting in control panels, wall mounting or installation in control cubicles, with 4 relays or 9 relays
Dimensional drawing: see page 17
- 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 BGV A3 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 10

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 mm 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 signaling 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 11

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 10

Installation

identical to MR 11



Technical Characteristics

Excitation side

Type of current	Direct or alternating current
Frequency	50 Hz or 60 Hz
Rated voltage (V_{rated} or U_N)	Up to 150 V dc or 230 V ac
Rated voltage with integrated resistor	Up to 220 V dc
Continuous overload capacity	$1.2 \times V_{\text{rated}}$
Pick-up voltage	$\leq 0.8 V_{\text{rated}}$ Advice: Due to electromechanical effects a scattering of the operating range is possible.

Rated current (I_N or I_{rated})
(current winding) Up to 6 A dc or ac

Pick-up delay 12 ms to 25 ms
Pick-up delay with RC elements 12 ms to 40 ms

Power consumption at (V_{rated})
for dc 0.5 W to 1.5 W
with integrated protective resistor 1 W to 2.5 W

For ac 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 dc or ac
Continuous current	4 A dc or ac
Current at disconnect for 220 V d.c., $L/R = 40$ ms	0.2 A
for 220 V a.c., $\cos \varphi = 0.4$	4 A
Permissible switching voltage	220 V dc or 230 V ac
Wiping time of fleeting contacts	60 ms approx.





General Characteristics

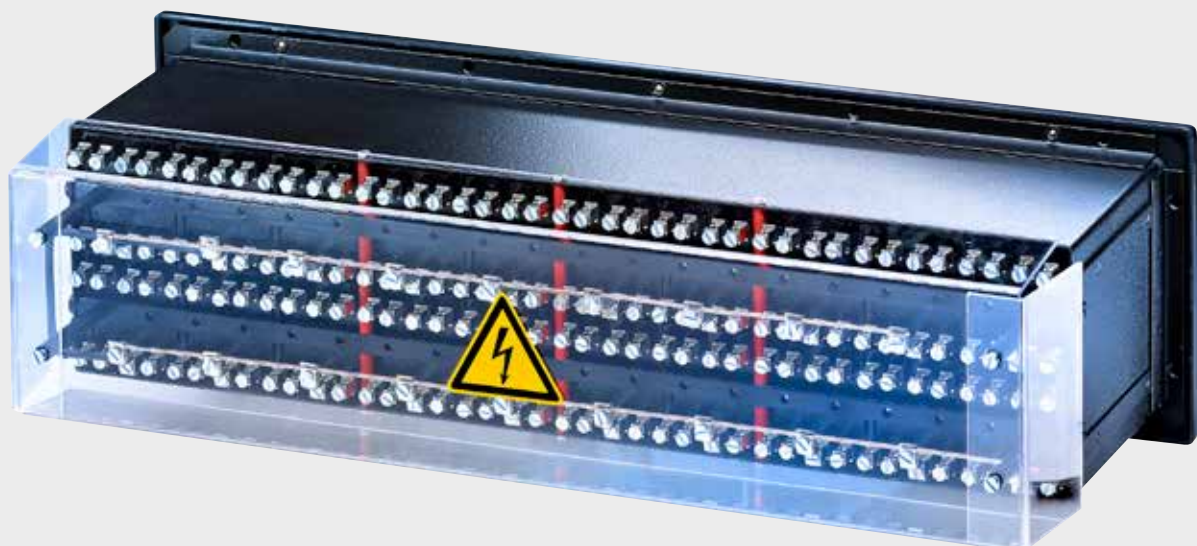
Protection class acc. to DIN 40050	IP 40, connections IP 00
Isolation group and series voltage acc. to VDE 0110/11.72	Group C, 250 V ac/dc
Test voltage acc. to DIN 0435, IEC 255-5	2 kV, 50 Hz
Permissible ambient temperature range	- 5 °C to + 40 °C
Labelling	1 or 2 lines, 15 characters max. per line
Weight approx. standard design/with connector plate	310 g/370 g,

The front frames and front panels of relay assemblies are black varnish coated to have the same appearance as the relay screen.

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 MR 11

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

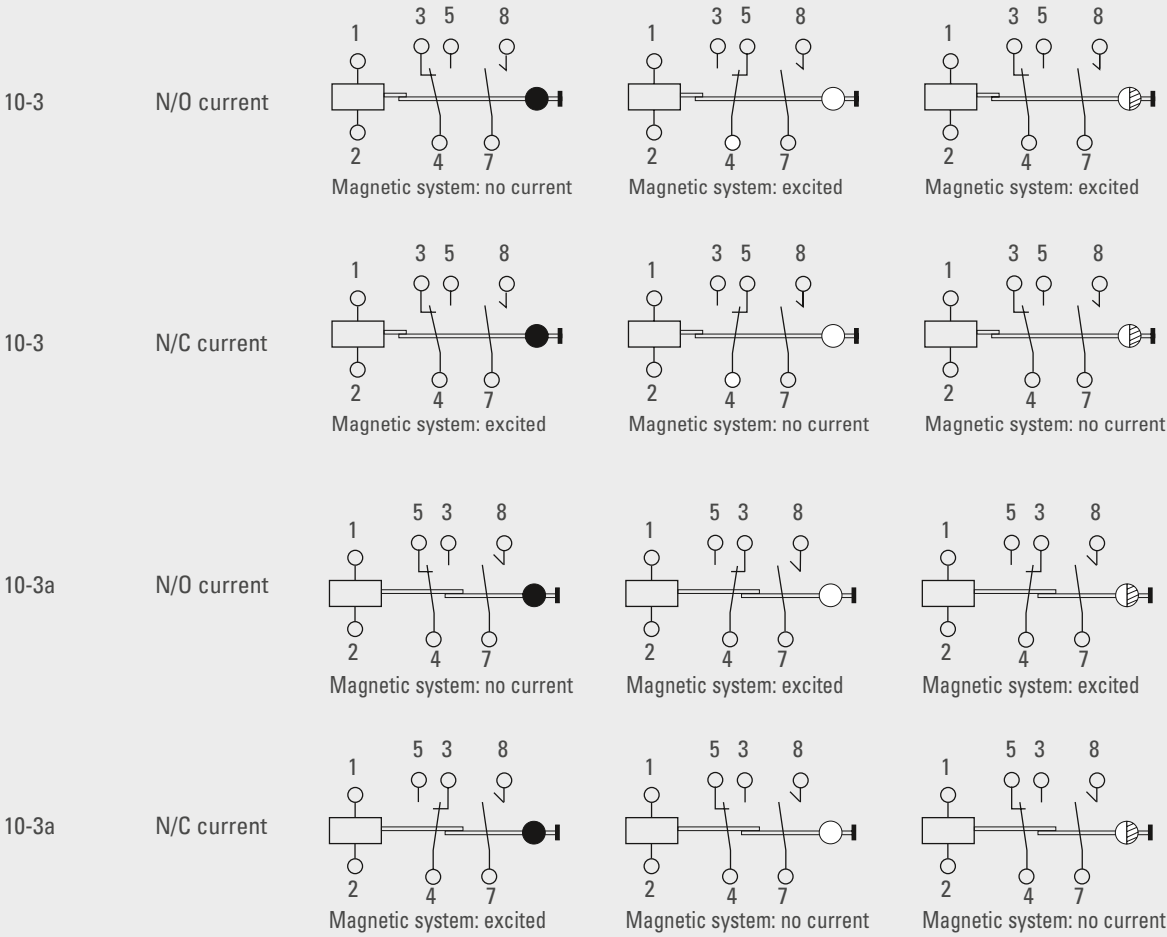
Diagram reference

Relay status

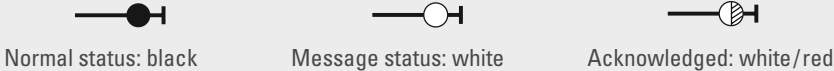
Normal

Message

Acknowledged

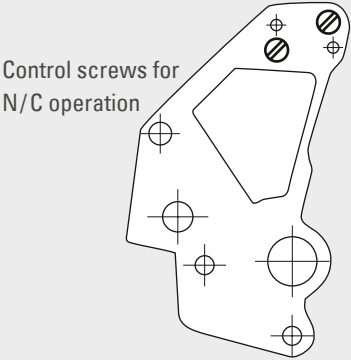
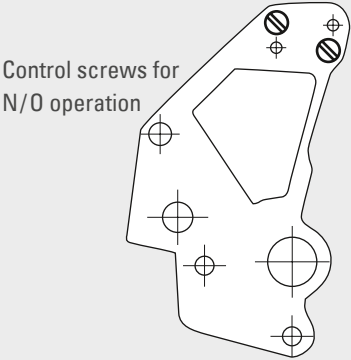


Mechanical indicator flag



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. Subsequent modifications can be carried out by the customer.



Contact Diagrams MRE 11 and MRE 21

Contact Diagram MRE 11

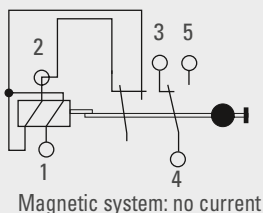
Diagram reference

10-1a

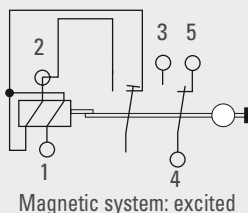
N/O current

Relay status

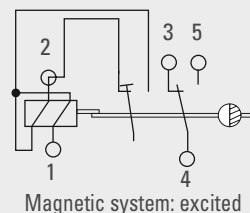
Normal



Message



Acknowledged



Mechanical indicator flag



Normal status: black



Message status: white



Acknowledged: white/red

Contact Diagram MRE 21

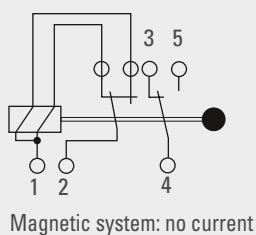
Diagram reference

20-1a

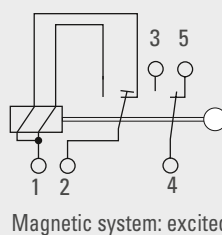
N/O current

Relay status

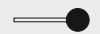
Normal



Message



Mechanical indicator flag



Normal status: black



Message status: white




Contact Diagrams MR 21

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

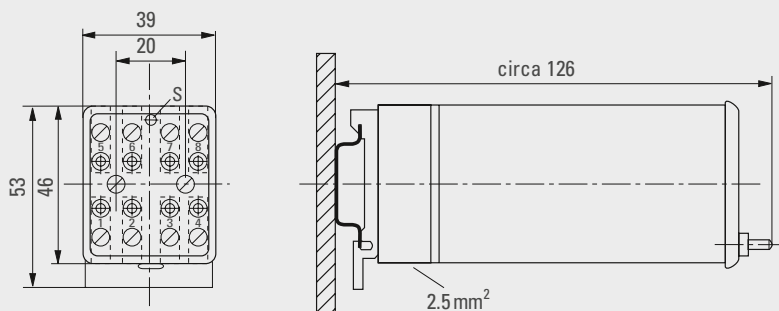
Mechanical indicator flag

 Normal status: black

 Message status: white

Dimensional Drawings of the Single Relays

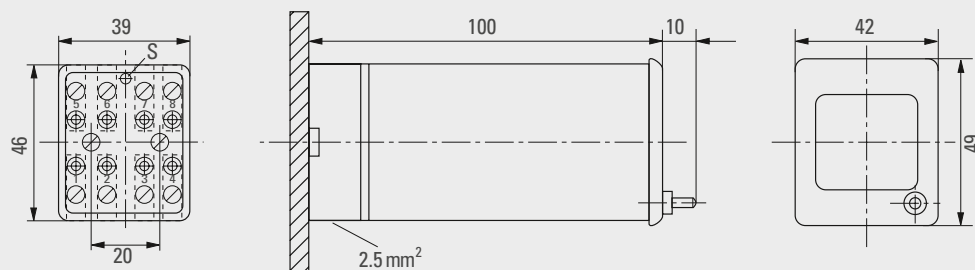
DIN Rail Surface Mounting (35 mm)



Connector plate with DIN rail fixing

When wiring is complete, relay is plugged in and tightened with screw „S“ (inside of the relay).

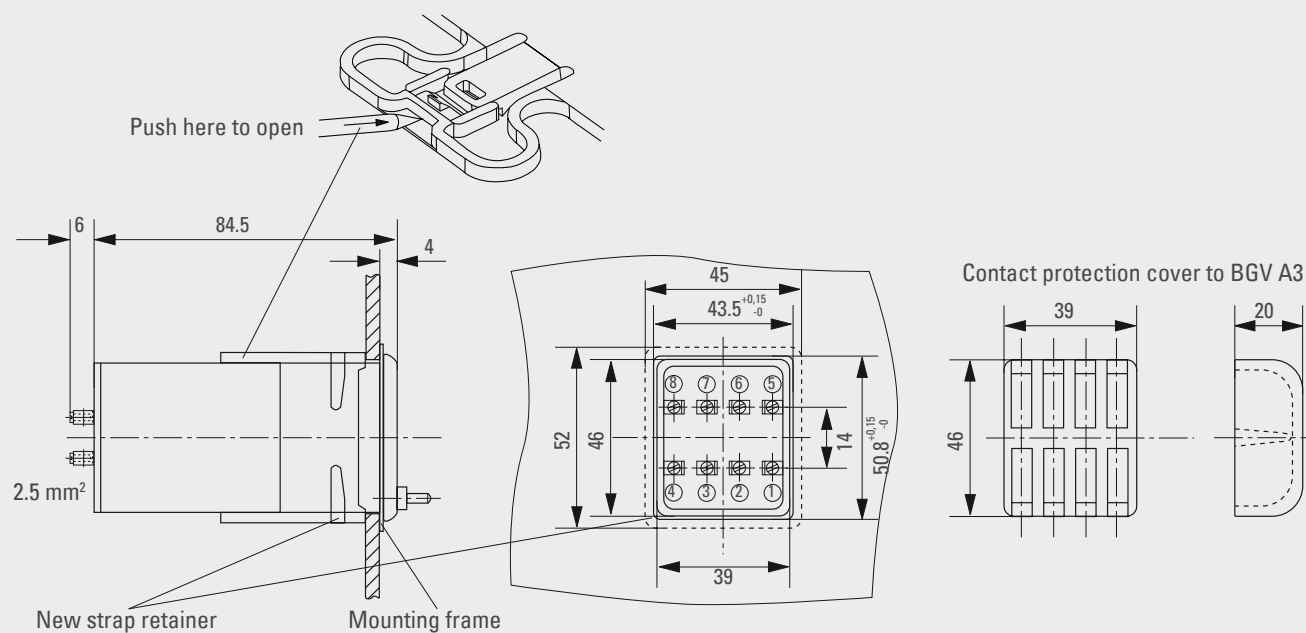
Plug-in Surface Mounting for Supporting Plates



Connector plate (DIN rail fixing unscrewed and removed)

When wiring is complete, relay is plugged in and tightened with screw „S“ (inside of the relay).

Flush Mounting with Screw-Clamping Terminals



Panel cutout 40 mm x 47 mm, new strap retainer 45 mm x 52 mm

Changing the Indicator Flag Label

Removing a single relay

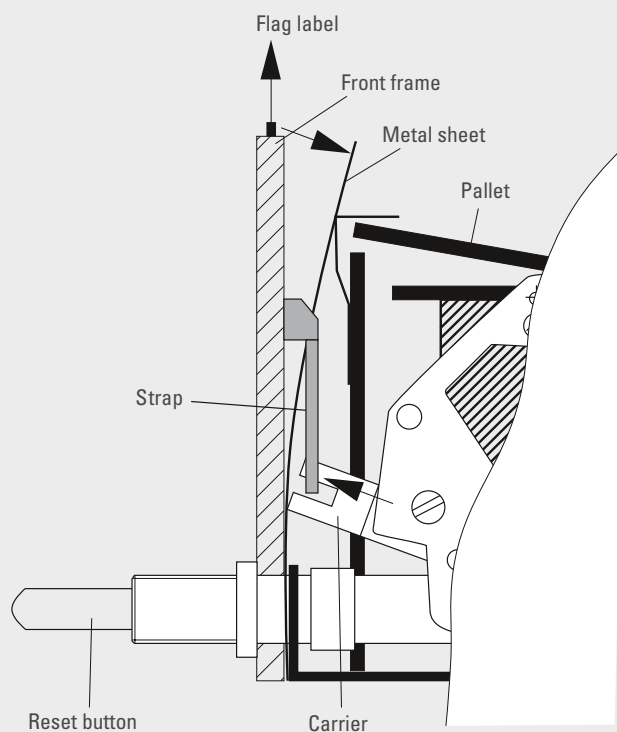
- Untighten the nut of the reset button situated on the front plate and pull the relay casing towards you.

Removing an annunciator relay from a combi-enclosure

- Remove the screw-type or plugged-in front frame.
- Remove frame with the glass cover.
- On the relay whose label you wish to change, pull the relay towards you using the pull-out handle.

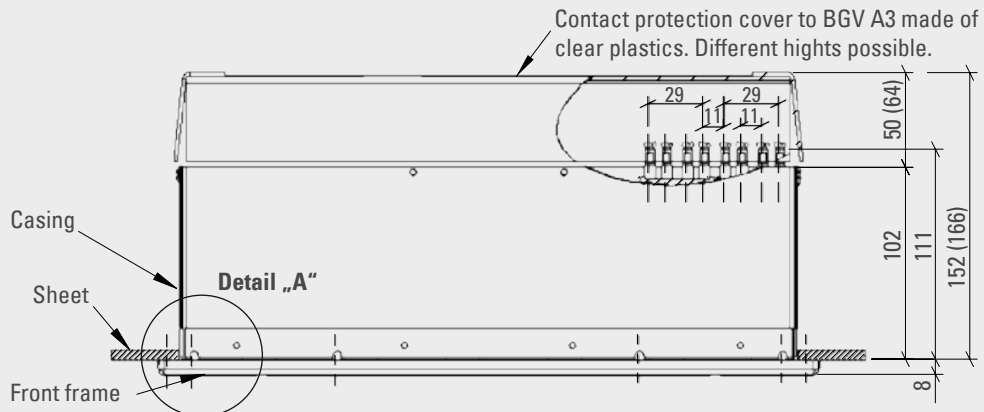
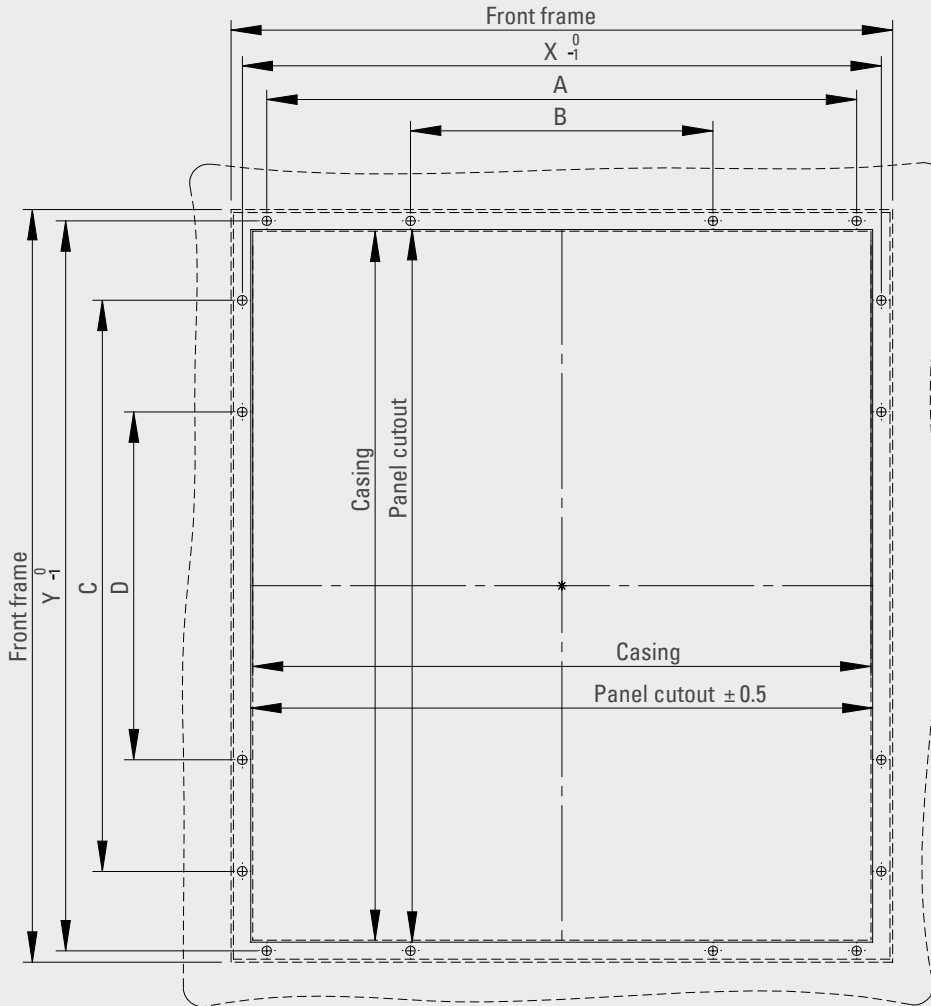
Changing the label

- Flip the pallet until the carrier reaches the top position.
- Take the strap carefully a little bit out of the carrier and bend the metal sheet until it reaches the pallet. Pull the flag label out of the front frame.
- Insert the new label carefully.
- Please make sure that the strap holding the label is properly inserted in the carrier.



Dimensional Drawings of the Relay Assemblies

Casing for Flush Mounting in Control Panel



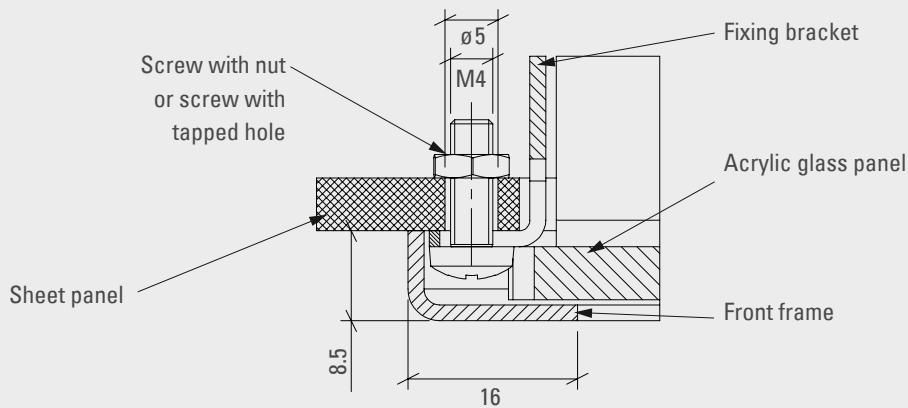
Casing for Flush Mounting in Control Panel for MR 11 and MR 21

Maximum size of 150 relay slots

Relays vertical	Relays horizontal						W01	W02	W03	W04	W05	W06	W07	W08	W09	W10	W11	W12	W13	W14	W15
	Front frame	76	53	55	-	-	64	70	110	150	190	230	270	310	350	390	430	470	510	550	590
Casing	47	87	127	167	207	247	287	327	367	407	447	487	527	567	607	-	-	-	-	-	-
Panel cutout	46	89	129	169	209	249	289	329	369	409	449	489	529	569	609	-	-	-	-	-	-
A	32	72	112	152	192	232	272	312	352	392	432	472	512	552	592	-	-	-	-	-	-
B	-	-	-	-	-	-	-	160	160	160	160	160	160	160	160	-	-	-	-	-	-
C	58	98	138	178	218	258	298	338	378	418	458	498	538	578	618	-	-	-	-	-	-
D																					
Y																					
X																					
S01	76	53	55	-	-	64															
S02	122	99	101	26	-	110															
S03	168	145	147	72	-	156															
S04	214	191	193	118	-	202															
S05	260	237	239	164	-	248															
S06	306	283	285	210	-	294															
S07	352	329	331	256	-	340															
S08	398	375	377	302	184	386															
S09	444	421	423	348	184	432															
S10	490	467	469	394	184	478															
S11	536	513	515	440	184	524															
S12	582	559	561	486	184	570															
S13	628	605	607	532	184	616															
S14	674	651	653	578	184	662															
S15	720	697	699	624	184	708															

"- " = Bore hole not existing

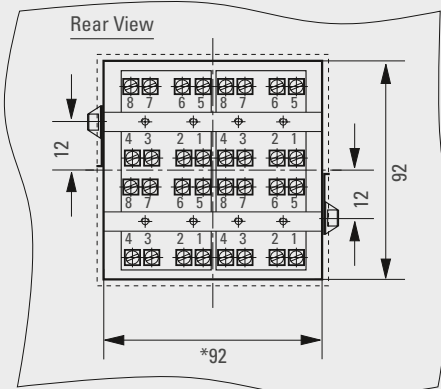
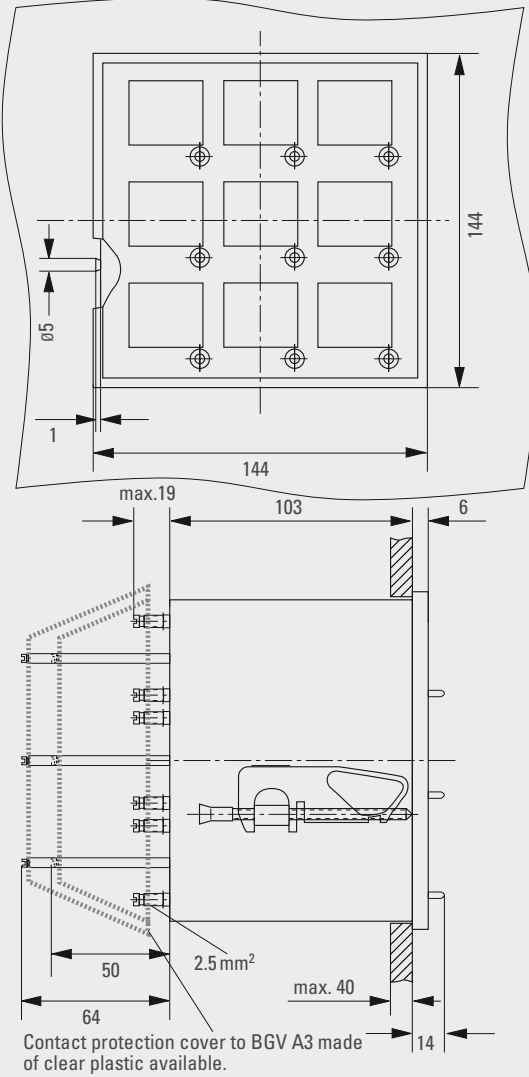
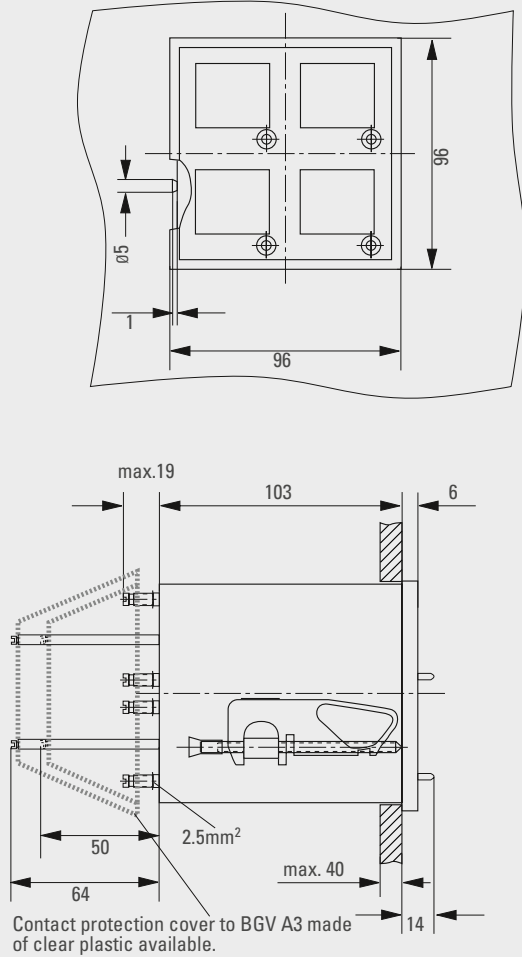
Detail „A“



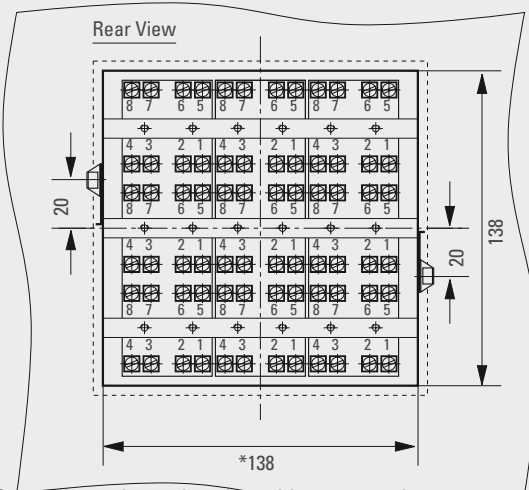
Dimensions of Flush-mounted Casings in acc. to DIN 43700

Flush-mounted casing for 4 annunciator relays MR 11 or MR 21

Flush-mounted casing for 9 annunciator relays MR 11 or MR 21



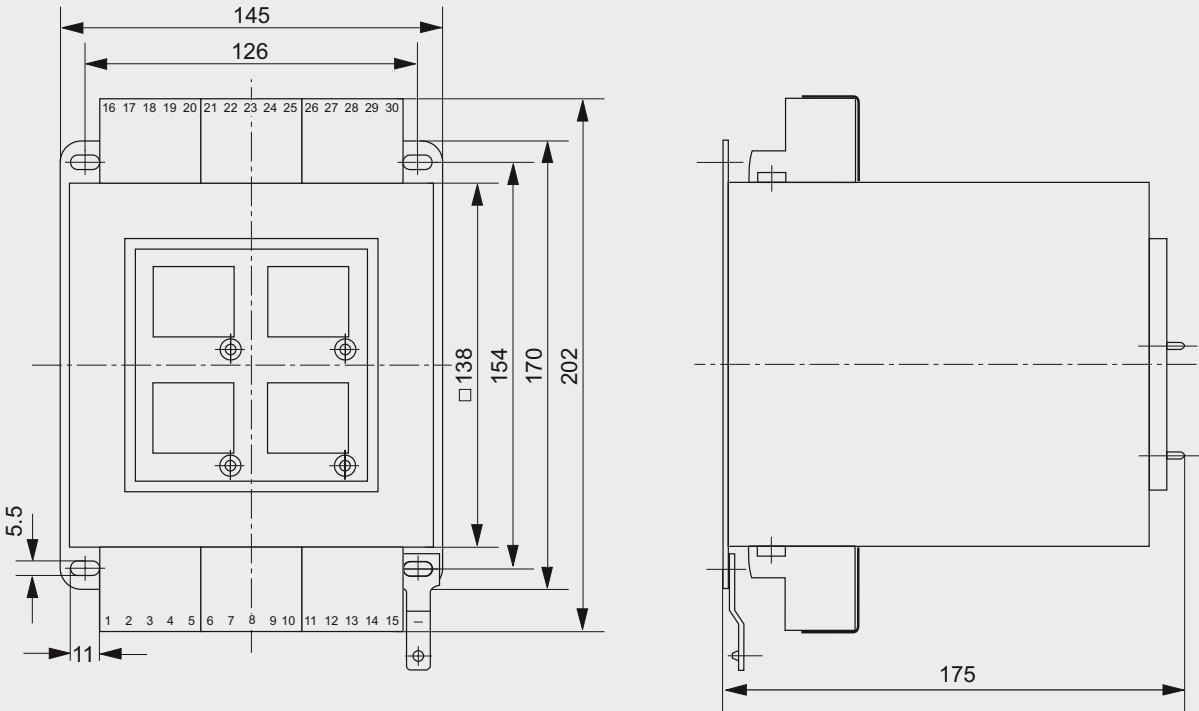
* Outer dimensions of casing without taper rivets;
 panel cutout 92^{+0,8} × 92^{+0,8}



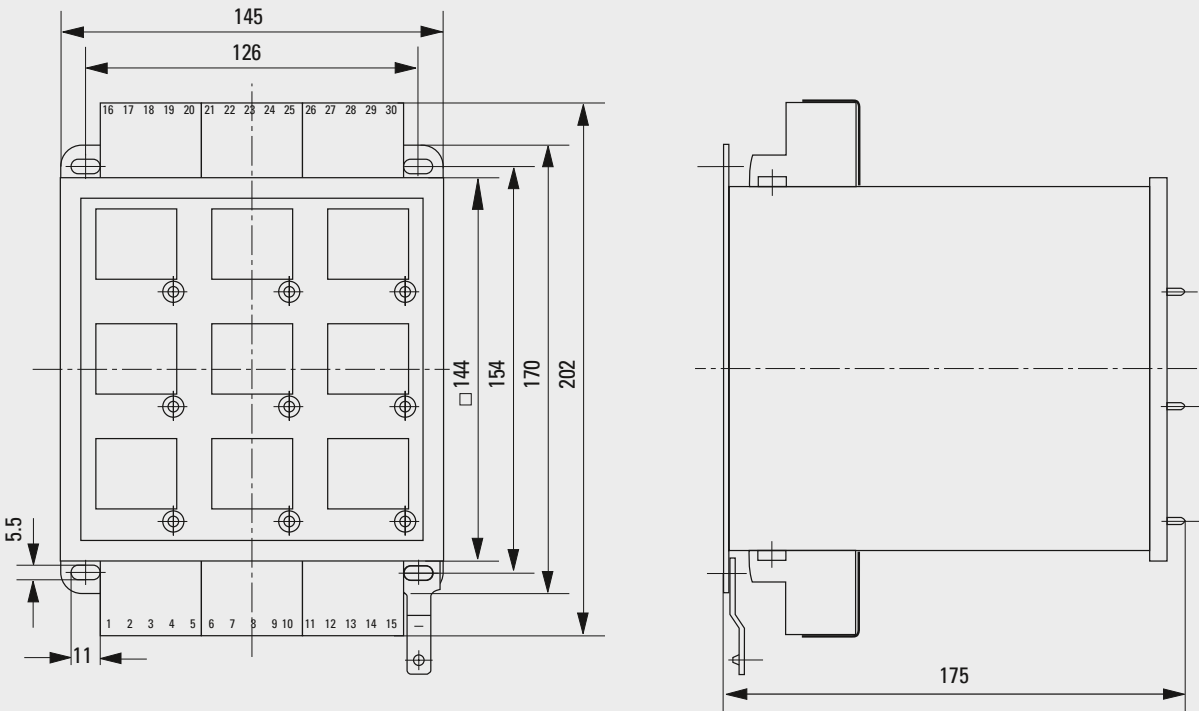
* Outer dimensions of casing without taper rivets;
 panel cutout 138^{+0,8} × 138^{+0,8}

Surface-Mounted Casings for MR 11 and MR 21

Surface-mounted casing for 4 annunciator relays



Surface-mounted casing for 9 annunciator relays



Annunciator Relays and Relay Assemblies



*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*

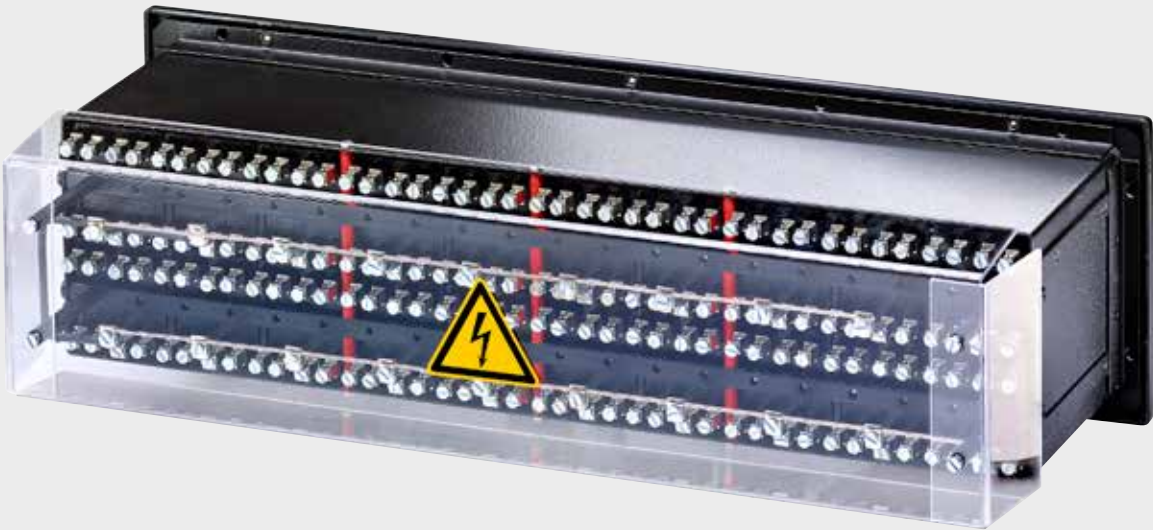


*Annunciator relay assembly 96 mm x 96 mm
with remove frame and 1 relay removed,
using the pull-out handle*





Annunciator relays assembly 122 mm × 430 mm including 2 × 10 annunciator relays



Power Systems

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