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Modular devices

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SUMMARY OF MODELS

Installation contactors and relays, impulse relays
switch depending on applied voltage or impulse


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Type	RSI	RPI	MIG	MIR
I_{th}, I_e	20, 25, 32, 40, 63 A	8, 16 A	20, 32, 63 A	16 A
Arrangement of contacts	10, 11, 20, 02, 40, 31, 04	001, 002, 003	10, 11, 20, 40, 31	001
Design	mechanical	electronic	mechanical	electronic
Control	electrical + manual	electrical	electrical + manual	electrical
Noise	standard/quiet	extra quiet	quiet	extra quiet
Max. switched power*) of each contact for devices with highest value of I_{th}:				
AC-1 (e.g. boilers, accumulator stoves and tanks)	13.3 kW / 230 V	3.7 kW / 230 V	13.8 kW / 230 V	3.7 kW / 230 V
AC-5a (e.g. parallel compensated fluorescent tubes)	5 kVA / 230 V	0.4 kVA / 230 V	5 kVA / 230 V	0.4 kVA / 230 V
AC-5b (e.g. incandescent lamps)	5 kW / 230 V	1 kW / 230 V	7 kW / 230 V	0.5 kW / 230 V

*) For complete information look at specific products.

Multiple-function time relays
switch according to set function and time


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Type	MCR-MA	MCR-MB	MCR-TK	MQD
Rated voltage U_c	AC/DC 12 ÷ 230 V	AC/DC 12 ÷ 230 V	AC/DC 12 ÷ 230 V	AC 230 V
Arrangement of contacts	001, 003	001, 003	001	100
Operating voltage of contact	AC 250 V	AC 250 V	AC 250 V	AC 250 V
Operating current of contact	8 A	8 A	8 A	16 A
Time setting	0.1 s ÷ 100 hr	0.1 s ÷ 100 hr	0.1 s ÷ 10 day	0.5 ÷ 10 min
Function	**Time relay**	**Time relay**	**Timing relays**	**Stair switches**
	- 9 functions	- 18 functions	- adjustable duty cycle	- extension of the set time (at start of timing) - subsequent extension of make time (during timing) - premature switching off

IMPULSE MEMORY RELAYS MIG

MIG-20-10-A230

MIG-32-11-A230

MIG-63-31-A230

Impulse relay - mechanical

- For switching of electric circuits by impulse command from more points in a corridor, on stairs, in the whole house etc.
- Power impulse relay with I_{th} up to 63 A and control voltage AC 24 V and AC 230 V.
- Mainly for control of high power lighting circuits, see the tables below.
- The lighting circuits can be controlled by push-buttons instead of a combination of crossbar and three-way switches.
- Saving on the cost of wires - it is possible to use smaller cross-sections for the control circuit than for power circuit.
- It brings higher comfort of control - for example it is possible to switch off all lights by one push-button when leaving the house (by means of OD-MIG-C01 central control block and OD-MIG-C02 multi-level central control block).
- Possibility of manual switching from the front of the device (I-0). The switch lever indicates contact state.
- Possibility of permanent manual switching off the relay coil from the front of the device. If the switch is in OFF position, it is not possible to control the relay electrically. This can be used in maintenance or similar activity.
- High number of contacts; the version with up to four contacts is sufficient for switching most circuits. Further increase in the number of contacts can be performed by installation of the auxiliary switch PS-MIG-1100 on the side of the relay.

Impulse relay 20 A

Arrangement of contacts [1]	Rated control voltage U_c	Type	Order code	Number of modules	Weight [kg]	Package [pcs]
10	AC 230 V	**MIG-20-10-A230**	OEZ:43184	1	0.135	1
11	AC 230 V	**MIG-20-11-A230**	OEZ:43185	1	0.135	1
20	AC 230 V	**MIG-20-20-A230**	OEZ:43186	1	0.135	1

[1] Each digit indicates successively the number of make and break contacts.

Impulse relay 32 A

Arrangement of contacts [1]	Rated control voltage U_c	Type	Order code	Number of modules	Weight [kg]	Package [pcs]
11	AC 230 V	**MIG-32-11-A230**	OEZ:43190	1	0.135	1
	AC 24 V	**MIG-32-11-A024**	OEZ:43257	1	0.135	1
20	AC 230 V	**MIG-32-20-A230**	OEZ:43191	1	0.135	1
	AC 24 V	**MIG-32-20-A024**	OEZ:43258	1	0.135	1
31	AC 230 V	**MIG-32-31-A230**	OEZ:43256	2	0.195	1
	AC 24 V	**MIG-32-31-A024**	OEZ:43259	2	0.195	1
40	AC 230 V	**MIG-32-40-A230**	OEZ:43193	2	0.195	1
	AC 24 V	**MIG-32-40-A024**	OEZ:43260	2	0.195	1

[1] Each digit indicates successively the number of make and break contacts.

Impulse relay 63 A

Arrangement of contacts [1]	Rated control voltage U_c	Type	Order code	Number of modules	Weight [kg]	Package [pcs]
31	AC 230 V	**MIG-63-31-A230**	OEZ:43269	4	0.400	1
	AC 24 V	**MIG-63-31-A024**	OEZ:43271	4	0.400	1
40	AC 230 V	**MIG-63-40-A230**	OEZ:43270	4	0.400	1
	AC 24 V	**MIG-63-40-A024**	OEZ:43272	4	0.400	1

[1] Each digit indicates successively the number of make and break contacts.

IMPULSE MEMORY RELAYS MIG

PS-MIG-1100

OD-MIG-C01

OD-MIG-C02

OD-MIG-BK

Accessories

Auxiliary switch PS-MIG-1100

- Mainly for the indication of position of main contacts.
- Contacts: 1 make + 1 break.
- Installation: by means of plastic latches, and tightening the screw on the right side of the impulse relay.
- It is possible to mount one auxiliary switch on one impulse relay.
- They are suitable for application in SELV and PELV circuits - sufficient insulation is provided between the circuit breaker and the auxiliary switch.
- Width: 9 mm.
- AC-15, AC-21: $I_e = 6$ A, $U_e = 250$ V.

Type	Order code	Number of modules	Weight [kg]	Package [pcs]
PS-MIG-1100	OEZ:43208	0.5	0.030	1

Central control block OD-MIG-C01

- It enables central control of relays.
- It contains a switch and diodes, which ensure correct transfer of the signal to the impulse relays - see the diagram and connection examples.
- Installation: by means of plastic latches, and tightening the screw on the right side of the impulse relay.
- Description: each impulse memory relay is locally controlled by push-buttons (local control); each level or set of impulse memory relays is controlled simultaneously from relevant point (central control).
- Rated operating voltage: AC 250 V.
- Central control block OD-MIG-C01 cannot be used together with auxiliary switch PS-MIG-1100.

Type	Order code	Number of modules	Weight [kg]	Package [pcs]
OD-MIG-C01	OEZ:43210	0.5	0.030	1

Multi-level central control block OD-MIG-C02

- It enables multi-level central control of relays.
- It contains diodes, which ensure correct transfer of the signal to the impulse relays - see the diagram and connection examples.
- Max. number of MIG impulse relays in a group controlled by 1 piece of OD-MIG-C02:
  - 20 pcs (for MIG with U_c = AC 230 V)
  - 2 pcs (for MIG with U_c = AC 24 V).
- Mounting: on "U" rail.
- Description: each impulse memory relay is locally controlled by push-buttons (local control); each level or set of impulse memory relays is controlled simultaneously from relevant point (central control); all levels are jointly controlled by a single command from a point (multi-level central control).
- Rated operating voltage: AC 250 V.

Type	Order code	Number of modules	Weight [kg]	Package [pcs]
OD-MIG-C02	OEZ:43211	0.5	0.030	1

Compensation block OD-MIR-BK

- It enables control of the MIG relay up to 50 control push-buttons with glow lamp / LED. With 0.5 mA / / push- button, max. consumption is 50 x 0.5 = 25 mA.
- Connection: parallel with MIG (compensation block OD-MIR-BK is a common accessory with impulse relay MIR), see page F27.
- Rated voltage: AC 230 V.
- Max. voltage: AC 400 V.
- Capacity: 3x 1 µF.

Type	Order code	Number of modules	Weight [kg]	Package [pcs]
OD-MIR-BK	OEZ:35676	1	0.055	1

IMPULSE MEMORY RELAYS MIG

Specifications

Type				MIG-20	MIG-32	MIG-63
Standards				EN 60669-2-2	EN 60669-2-2	EN 61095 EN 60947-4-1
Approval marks				CE EAC	CE EAC	CE EAC
Main circuit (contact)						
Arrangement of contacts [1]				10, 11, 20	11, 20, 31, 40	31, 40
Rated thermal current	I_{th}			20 A	32 A	63 A
Rated operating voltage	U_e			440 V	440 V	440 V
Rated operating current	I_e	AC-1/AC-7a		20 A	32 A	63 A
		AC-2		10 A	16 A	32 A
		AC-3/AC-7b		7 A	10 A	30 A
Switched power [2]	P_e	AC-1/AC-7a	1-phase AC 230 V	4.4 kW	7 kW	13.8 kW
			3-phase AC 400 V	-	21 kW	41.5 kW
		AC-2	1-phase AC 230 V	1.5 kW	2.4 kW	4.8 kW
			3-phase AC 400 V	-	7.2 kW	14.4 kW
		AC-3/AC-7b	1-phase AC 230 V	0.5 kW	1.1 kW	3.7 kW
			3-phase AC 400 V	-	5.5 kW	15 kW
Min. switched voltage/current				10 V / 100 mA	10 V / 100 mA	10 V / 100 mA
Max. switching frequency		AC-1, AC-7a		600 operating cycles / hr	450 operating cycles / hr	360 operating cycles / hr
		AC-2		120 operating cycles / hr	120 operating cycles / hr	120 operating cycles / hr
		AC-3, AC-7b		600 operating cycles / hr	450 operating cycles / hr	360 operating cycles / hr
		DC-1		300 operating cycles / hr	300 operating cycles / hr	300 operating cycles / hr
		no load		900 operating cycles / hr	450 operating cycles / hr	450 operating cycles / hr
Power loss at I_e (1 pole)				1.5 W	3 W	3.5 W
Mechanical endurance				10 000 000 operating cycles	10 000 000 operating cycles	10 000 000 operating cycles
Electrical endurance				100 000 operating cycles	100 000 operating cycles	100 000 operating cycles
Maximum backup fuse gL/gG against short-circuit, coordination type 1				20 A	32 A	63 A
Connection – Cu conductor rigid and flexible				1 ÷ 10 mm^2	1 ÷ 10 mm^2	2.5 ÷ 25 mm^2
Torque				1.2 Nm	1.2 Nm	2 Nm
Screw head type				PZ2	PZ2	PZ2
Control circuit (coil)						
Rated control voltage	U_c			AC 230 V	AC 24; 230 V	AC 24; 230 V
Operating range U_c				90 ÷ 110 %	90 ÷ 110 %	90 ÷ 110 %
Impulse length				min. 50 ms and max. 1 hr	min. 50 ms and max. 1 hr	min. 50 ms and max. 1 hr
Dwell between two impulses				min. 150 ms	min. 150 ms	min. 150 ms
Power loss for longer impulse [3]				4 W	4 W	4 W
Rated frequency	f_c			50/60 Hz	50/60 Hz	50/60 Hz
Max. total load of push-buttons with orientation lighting (glow lamps, LEDs etc.)[4]				2.5 mA	2.5 mA	2.5 mA
Connection – Cu conductor rigid and flexible				1 ÷ 4 mm^2	1 ÷ 4 mm^2	1÷ 4 mm^2
Torque				0.6 Nm	0.6 Nm	0.6 Nm
Screw head type				PZ1	PZ1	PZ1
Other data						
Rated insulation voltage	U_i			440 V	440 V	440 V
Rated impulse withstand voltage	U_{imp}			4 kV	4 kV	4 kV
Mounting on "U" rail according to EN 60715 – type				TH35	TH35	TH35
Degree of protection				IP20	IP20	IP20
Ambient temperature				-25 ÷ + 55 °C	-25 ÷ + 55 °C	-25 ÷ + 55 °C
Separation of coil-contact circuits for application of SELV/PELV				✓	✓	✓
Central control				✓	✓	✓
Multi-level central control [5]				✓	✓	✓

[1] Each digit indicates successively the number of make and break contacts.

[2] Switched power is shown for categories AC-5a and AC-5b in tables on pages F22 and F23.

[3] Information for the case when the relay is excited by a long impulse, although a short impulse is sufficient for the change of the contact condition; in case of the short impulse, the power loss is not applied.

[4] Common orientation lighting (glow lamp/LED) on one push-button takes 0.5 mA, altogether it is possible to connect 5 push-buttons with orientation lighting (5 x 0.5 = 2.5 mA). To increase the number of push-buttons use the OD-MIR-BK compensation block.

[5] The OD-MIG-CO2 block for multi-level central control is necessary to use for multi-level central control. Max. number of MIG impulse relays in a group controlled by 1 piece of OD-MIG-CO2: 20 pcs (for MIG with U_c = 230 V) and 2 pcs (for MIG with U_c = 24 V).

IMPULSE MEMORY RELAYS MIG

Switching of lights - maximum number of light fittings per one contact at AC 230 V, 50 Hz (utilization category AC-5a, AC-5b)

Maximum number of light bulbs

Impulse memory relay	Lighting fitting										
Type	15 W 0.07 A	25 W 0.11 A	40 W 0.17 A	60 W 0.26 A	75 W 0.33 A	100 W 0.44 A	150 W 0.65 A	200 W 0.87 A	300 W 1.3 A	500 W 2.17 A	1 000 W 4.35 A
MIG-20	133	80	50	33	27	20	13	10	7	4	2
MIG-32	233	140	88	58	47	35	23	18	12	7	4
MIG-63	467	280	175	117	93	70	47	35	23	14	7

Maximum peak current of sources for LED (max. 300 µs)

Impulse memory relay	Max. peak current
Type	
MIG-20	200 A
MIG-32	300 A
MIG-63	1 500 A

Maximum number of fluorescent tubes

Impulse memory relay	Uncompensated			Compensated in parallel			DUO connection		
Type	18 W 0.37 A	36 W 0.43 A	58 W 0.67 A	18 W (4.5 µF) 0.19 A	36 W (4.5 µF) 0.29 A	58 W (7 µF) 0.46 A	2x 18 W 0.26 A	2x 36 W 0.48 A	2x 58 W 0.78 A
MIG-20	43	37	24	22	22	14	62	33	21
MIG-32	43	37	24	33	33	21	62	33	21
MIG-63	86	74	48	73	73	47	123	67	41

Maximum number of fluorescent tubes with electronic ballast

Impulse memory relay	With electronic ballast							
Type	18 W 0.09 A	36 W 0.16 A	58 W 0.25 A	80 W 0.40 A	2x 18 W 0.17 A	2x 36 W 0.31 A	2x 58 W 0.48 A	2x 80 W 0.76 A
MIG-20	67	38	24	15	35	19	13	8
MIG-32	133	75	48	30	71	39	25	16
MIG-63	278	156	100	63	147	81	52	33

Maximum number of high-pressure mercury discharge lamps

Impulse memory relay	Uncompensated							Compensated in parallel						
Type	50 W 0.6 A	80 W 0.8 A	125 W 1.2 A	250 W 2.2 A	400 W 3.3 A	700 W 5.4 A	1 000 W 7.5 A	50 W (7 µF) 0.3 A	80 W (8 µF) 0.4 A	125 W (10 µF) 0.6 A	250 W (18 µF) 1.2 A	400 W (25 µF) 1.8 A	700 W (40 µF) 3.4 A	1 000 W (60 µF) 4.8 A
MIG-20	27	20	13	7	5	3	2	14	13	10	6	4	3	2
MIG-32	27	20	13	7	5	3	2	21	19	15	8	6	4	3
MIG-63	53	40	27	15	10	6	4	47	41	33	18	13	8	6

IMPULSE MEMORY RELAYS MIG

Maximum number of metal halide discharge lamps

Impulse memory relay	Uncompensated							Compensated in parallel						
Type	35 W	70 W	150 W	250 W	400 W	1 000 W	2 000 W	35 W (6 µF)	70 W (12 µF)	150 W (20 µF)	250 W (32 µF)	400 W (45 µF)	1 000 W (85 µF)	2 000 W (125 µF)
	0.5 A	1.0 A	1.8 A	3.0 A	4.6 A	9.7 A	12.2 A	0.23 A	0.42 A	0.77 A	1.26 A	2.0 A	5.0 A	10.5 A
MIG-20	32	16	9	5	3	2	1	17	8	5	3	2	1	-
MIG-32	32	16	9	5	3	2	1	25	13	8	5	3	2	1
MIG-63	64	32	18	11	7	3	3	55	28	17	10	7	4	3

Maximum number of high-pressure sodium discharge lamps

Impulse memory relay	Uncompensated				Compensated in parallel				With electronic ballast			
Type	150 W	250 W	400 W	1 000 W	150 W (20 µF)	250 W (32 µF)	400 W (45 µF)	1 000 W (100 µF)	150 W	250 W	400 W	1 000 W
	1.8 A	3 A	4.4 A	10.3 A	0.77 A	1.26 A	2 A	5.1 A	0.72 A	1.3 A	2 A	5 A
MIG-20	13	5	4	1	5	3	2	-	8	5	3	1
MIG-32	13	5	4	1	8	5	3	1	17	9	6	2
MIG-63	27	11	7	3	17	10	7	3	35	19	13	5

Maximum number of low-pressure sodium discharge lamps

Impulse memory relay	Uncompensated						Compensated in parallel					
Type	18 W	35 W	55 W	90 W	135 W	180 W	18 W (5 µF)	35 W (20 µF)	55 W (20 µF)	90 W (26 µF)	135 W (40 µF)	180 W (40 µF)
	0.4 A	0.6 A	0.6 A	0.9 A	0.9 A	0.9 A	0.35 A	0.28 A	0.35 A	0.55 A	0.8 A	1 A
MIG-20	40	27	27	18	18	18	20	5	5	4	3	3
MIG-32	40	27	27	18	18	18	30	8	8	6	4	4
MIG-63	80	53	53	36	36	36	66	17	17	13	8	8

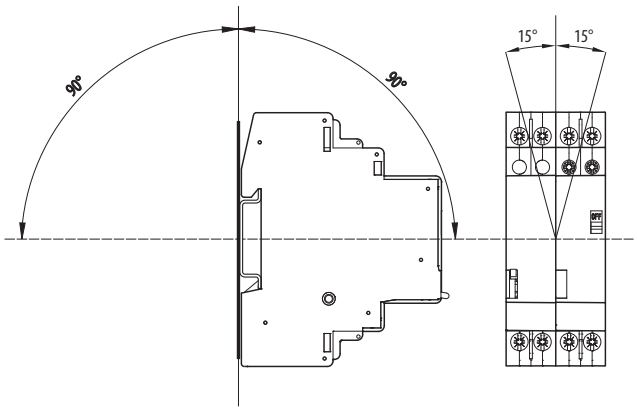
Switching of resistance or slightly inductive load in DC circuits (utilization category DC-1 (L/R ≤ 1 ms))

Impulse memory relay		Contact load			
Type	Operating voltage U_e	1 contact	2 contacts in series	3 contacts in series	4 contacts in series
MIG-20	DC 24 V	20 A	20 A	-	-
	DC 48 V	15 A	18 A	-	-
	DC 60 V	10 A	15 A	-	-
	DC 110 V	5 A	8 A	-	-
	DC 220 V	0.5 A	4 A	-	-
MIG-32	DC 24 V	32 A	32 A	32 A	32 A
	DC 48 V	25 A	28 A	32 A	32 A
	DC 60 V	20 A	22 A	28 A	32 A
	DC 110 V	7 A	12 A	22 A	25 A
	DC 220 V	0.7 A	6 A	18 A	20 A
MIG-63	DC 24 V	63 A	63 A	63 A	63 A
	DC 48 V	35 A	42 A	63 A	63 A
	DC 60 V	30 A	34 A	60 A	63 A
	DC 110 V	10 A	16 A	35 A	63 A
	DC 220 V	1.2 A	10 A	30 A	63 A

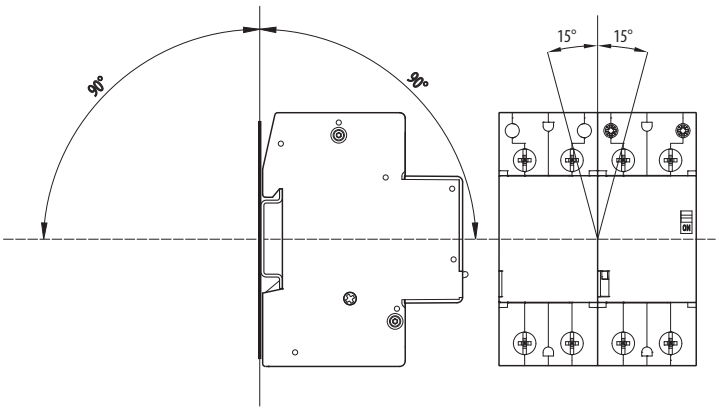
IMPULSE MEMORY RELAYS MIG

Working position

MIG-20
MIG-32



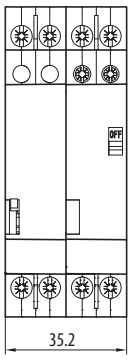
MIG-63

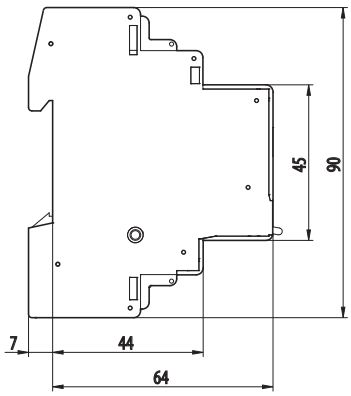


Dimensions

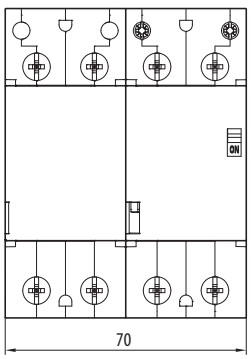
MIG-20 (10, 11, 20)*
MIG-32 (11, 20)*

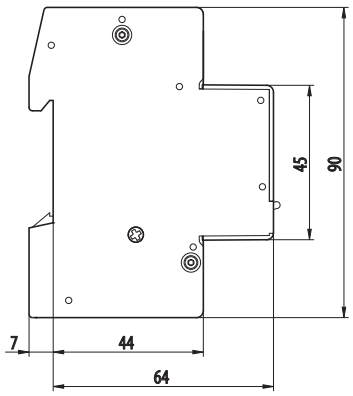
MIG-32 (31, 40)*





MIG-63

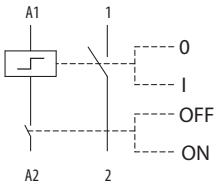




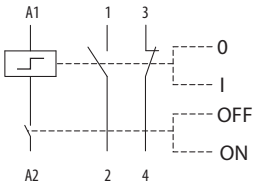
* Arrangement of contacts

Diagram

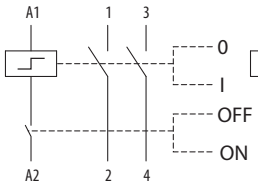
MIG-..-10-....



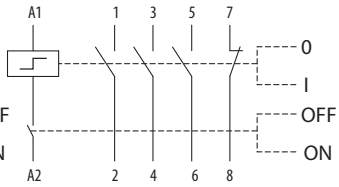
MIG-..-11-....



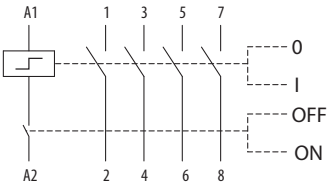
MIG-..-20-....



MIG-..-31-....



MIG-..-40-....

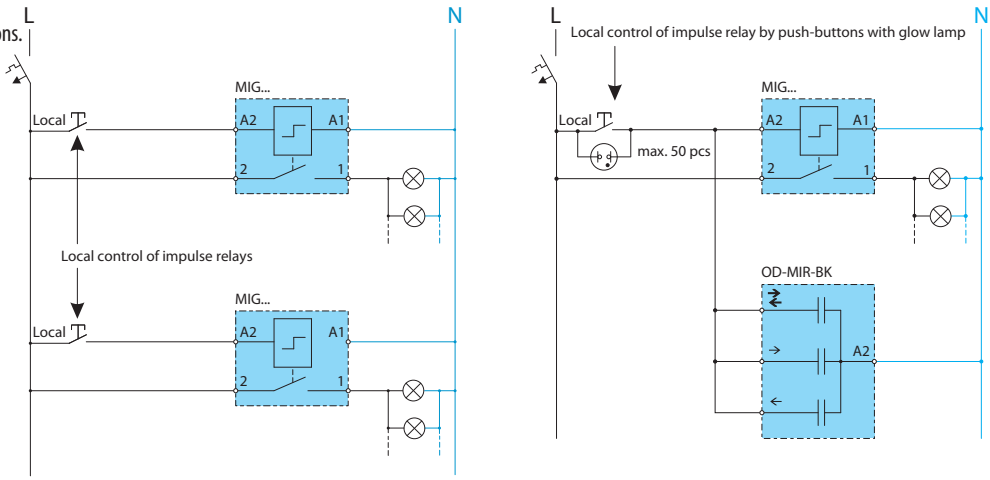


IMPULSE MEMORY RELAYS MIG

Connection examples

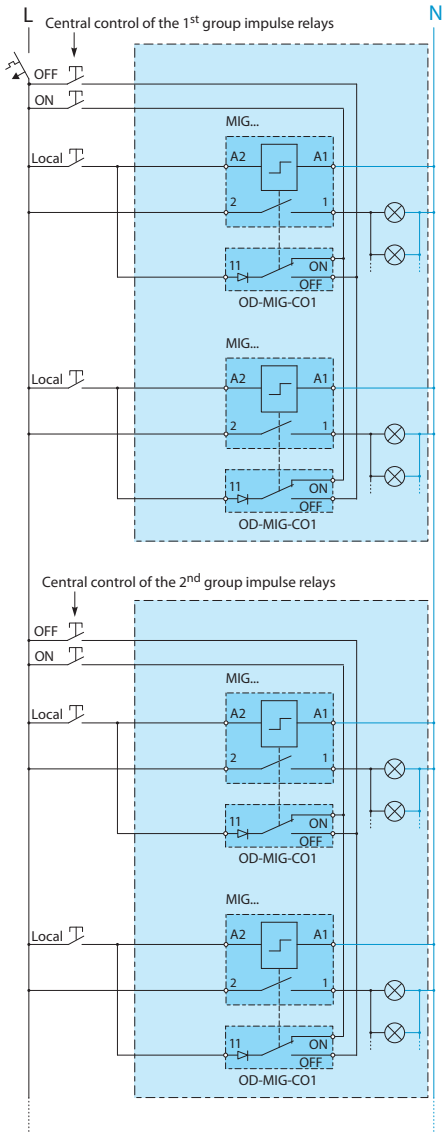
Local control

Each impulse relay is locally controlled by push-buttons.



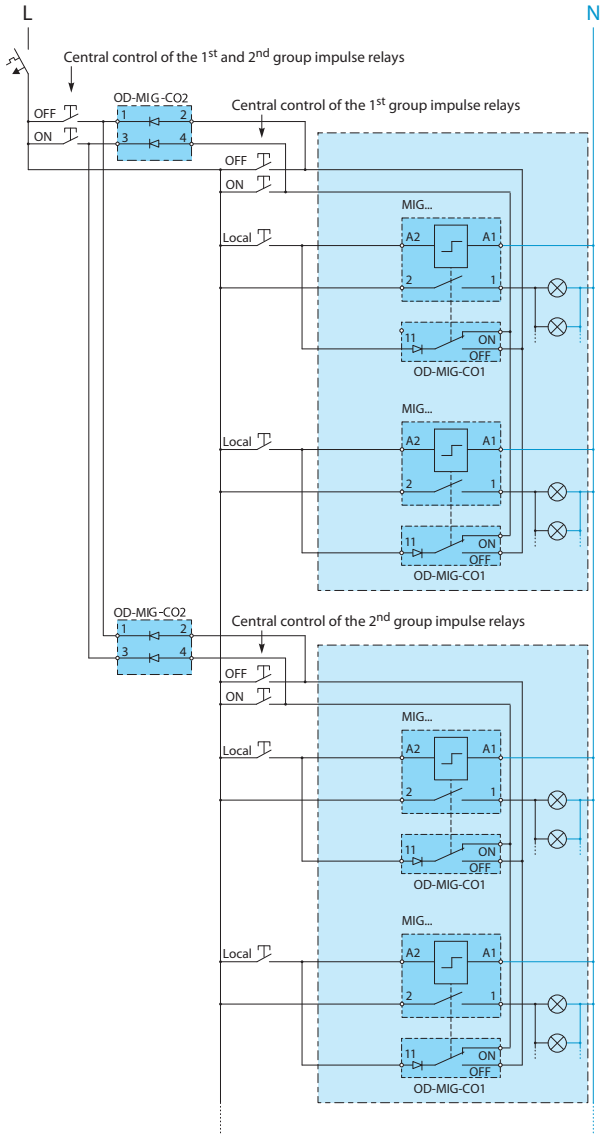
Local + central control

Each impulse relay is locally controlled by push-buttons (local control); each level or set of impulse relays is controlled simultaneously from relevant point (central control).



Local + central + multi-level central control

Each impulse relay is locally controlled by push-buttons (local control); each level or set of impulse relays is controlled simultaneously from relevant point (central control); all levels are jointly controlled by a single command from a point (multi-level central control).



IMPULSE MEMORY RELAYS MIG

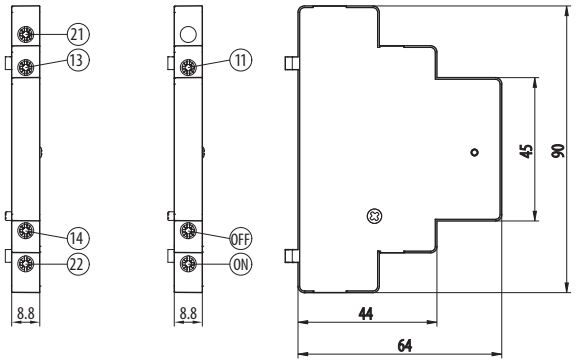
Specifications

Type				PS-MIG-1100	OD-MIG-C01	OD-MIG-C02
Standards				EN 60947-5-1	EN 60947-5-1	EN 60947-5-1
Approval marks				CE EAC	CE EAC	CE EAC
Contacts						
Arrangement of contacts [1]				11	001	-
Rated thermal current	I_{th}			6 A	-	-
Rated operating voltage	U_e			AC 250 V	AC 250 V	AC 250 V
Rated operating current	I_e	AC-15	1-phase AC 230 V	4 A	-	-
Rated frequency	f_n			50/60 Hz	50/60 Hz	50/60 Hz
Min. switched voltage/current				12 V / 5 mA	-	-
Max. switching frequency		AC-15		360 operating cycles / hr	-	-
Electrical endurance at I_e				100 000 operating cycles	-	-
Mechanical endurance				1 000 000 operating cycles	1 000 000 operating cycles	-
Power loss at I_e				0.3 W	-	-
Maximum backup fuse gL/gG against short-circuit (expected short-circuit current 3 kA)			coordination type 1	6 A	-	-
Min. distance between open contacts				> 3 mm	-	-
Connection - Cu conductor rigid				1 ÷ 4 mm²	1 ÷ 4 mm²	1 ÷ 4 mm²
Connection - Cu conductor flexible				1 ÷ 4 mm²	1 ÷ 4 mm²	1 ÷ 4 mm²
Torque				0.8 Nm	0.8 Nm	0.8 Nm
Screw type				PZ1	PZ1	PZ1
Other data						
Rated insulation voltage	U_i			AC 440 V	AC 440 V	AC 440 V
Rated impulse withstand voltage	U_{imp}			4 kV	-	-
Degree of protection				IP20	IP20	IP20
Ambient temperature				-25 ÷ 70 °C	-25 ÷ 70 °C	-25 ÷ 70 °C
Max. sea level				2 000 m	2 000 m	2 000 m
Shocks (EN 60068-2-27)		Z-axis		15 g	15 g	-
Resistance to sinusoidal vibration (EN 60068-2-6)		Z-axis		3 g	3 g	-

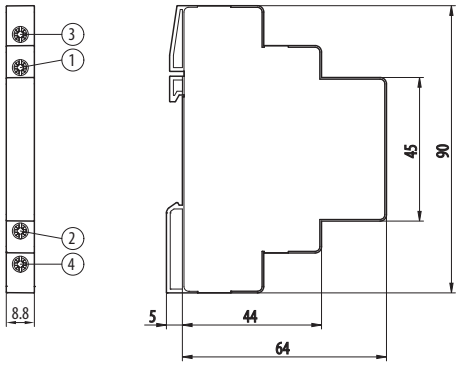
[1] Each digit indicates successively the number of make, break and break-make contacts.

Dimensions

PS-MIG-1100 **OD-MIG-C01**

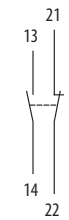


OD-MIG-C02



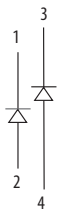
Diagram

PS-MIG-1100



OD-MIG-C01

OD-MIG-C02



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