реле Relpol r4, r15, rm84, ruc, ry2, r4n, **тел +375447584780 Минск**
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email minsk17@tut.by тел +375297584780 мтс
подробно смотрите ниже: каталог, описание, технические, характеристики, datasheet, параметры, маркировка, габариты, фото
QR код

48x05
EC32
EC35
EC50
ES32
faston
G2M
G4
G4/2
GD35
GD50
GOP11
GOP14
GOP8
GS4
GUC11
GZ11
GZ14
GZ14U
GZ14Z
GZ2
GZ4
GZ8
GZM2
GZM3
GZM4
GZM80
GZM92
GZMB2
GZMB4
GZMB80

GZP11
GZP8
GZS11
GZS8
GZS80
GZS92
GZT2
GZT3
GZT4
GZT80
GZT92
GZU11
GZU8
GZY2G
inrush
MT-PI-
MT-T..-
MT-TSD-
MT-TUA-
MT-TUB-
PI6-1P
PI6-1T
PI6W-1P
PI84,GZM80
PI84,GZT80
PI85,GZM80
PI85,GZT80
PIR15
PIR2,GZM2
PIR2M,GZ2
PIR3,GZM3
PIR4,GZM4
PIR6W-1P-
PIR6W-1PS
PIR6WB-1PS
PIR6WBT-1Z-
PIR6WT-1Z
PS11
PW80
PZ11
PZ8
R15-2CO
R15-3CO
R15-4CO
R2
R20
R2M
R3
R30

R4
R4T-R4
RA2
RG25
RM40
RM50
RM699B
RM83
RM84
RM84SMT
RM85
RM85faston
RM85inrush
RM85SMT
RM87
RM87L
RM87N
RM87NSMT
RM87P
RM92
RM94
RM96
RM961CO
RMB841
RMB851
RS35,RS50
RSM822
RSM954
RSM957
RUC
RUC-M
RY2
S2M
SU4/2D
SU4/2L
SU4D
SU4L
T-R4
TR4N1CO,2CO
TR4N4CO
TR-EI1P-UNI
TR-EI2P-UNI
TR-EM1P-UNI
TR-EM2P-UNI
TR-ES2P-UNI

Relays

- subminiature
- miniature
- industrial
- interface
- installation
- programmable
- time
- monitoring
- plug-in sockets

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2016–2017

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Automation is our passion

The leading position of the manufacturer of electromagnetic relays in Europe provides for Relpol's presence in markets worldwide.

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Applications, certifications

- **Areas of relay applications:**
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  - for industry – page 6
  - for photovoltaic systems – page 8
  - for railroad industry – page 9
- Programmable relays – page 10
- Time relays – page 11
- Monitoring relays – page 12


POLSKIE CENTRUM BADAŃ I CERTYFIKACJI S.A.
02-699 Warszawa, ul. Kłobucka 23A

CERTIFICATE OF INTEGRATED MANAGEMENT SYSTEM
QUALITY • ENVIRONMENT
No. JS - 174/4/2016

Relpol S.A.
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Branch - ul. Browarna 11, 65-849 Zielona Góra

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THE INTERNATIONAL CERTIFICATION NETWORK
CERTIFICATE

IQNet and PCBC
hereby certify that the organization

Relpol S.A.
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for the following field of activities:

• designing, manufacturing and trading of electromagnetic relays, relay sockets, stationary monitors for control of gamma and neutron radiation, digital protection, measurements, automatics, controls, communication and registration for power distribution stations,
• trading of electrotechnical components

has implemented and maintains an

Integrated Management System

which fulfills the requirements of the following standards

PN-EN ISO 9001:2009 and PN-EN ISO 14001:2005

Issued on: 2016-02-15
Validity date: 2019-09-15
PCBC certified since: 2007-02-20
Registration Number: PL - JS - 174/4/2016

Michael Grenkart
President of IQNet

Michał Piechowski, Ph.D.
President of PCBC

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Relays
for electronics

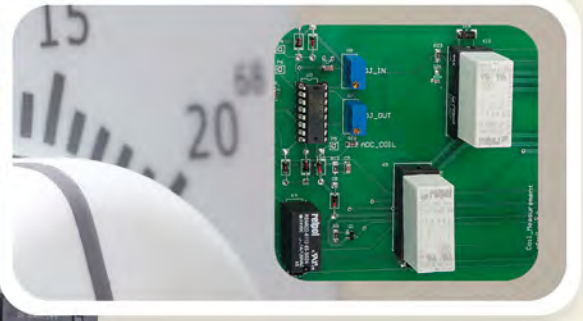
Subminiature signal relays

- I_n currents of contacts: 0,5 ... 3 A.
- Methods of mounting: PCB, SMT - depending on the type of relay.

Applications:

- telecommunication equipment,
- office equipment,
- measurement equipment and devices,
- medical apparatus and medical monitoring equipment,
- audiovisual equipment,
- driving simulators, flight simulators,
- slot machines,
- protection, monitoring and alarm equipment,
- industrial and consumer electronic goods.

❶ **RSM850B** - bistable relays



Miniature relays

- I_n currents of contacts: 5 ... 20 A.
- Methods of mounting: PCB, SMT, in plug-in sockets - depending on the type of relay.

Applications:

- general control of electrical equipment,
- equipment for air-conditioning, refrigeration products, heating, ventilation, lighting,
- protection, monitoring and alarm equipment,
- control systems and devices for household equipment,
- time relays and time switches,
- monitoring relays,
- temperature controllers,
- PLCs,
- electrical automation systems - industrial and power-engineering automation,
- equipment for smart buildings and equipment for automation of buildings,
- other.

❷ **RM85** for switching higher voltages
❸ **RA2** - automotive relays

Bistable relays - subminiature

- I_n currents of contacts: 0,5 A.
- Method of mounting: PCB.

Applications:

- for energy-saving control of electrical devices which are switched on and off with a change of the state of bistable relays via short supply of their coils,
- in electrical systems of battery-powered equipment,
- applications specified in description of subminiature relays.

Relays
for industry

Miniature industrial relays

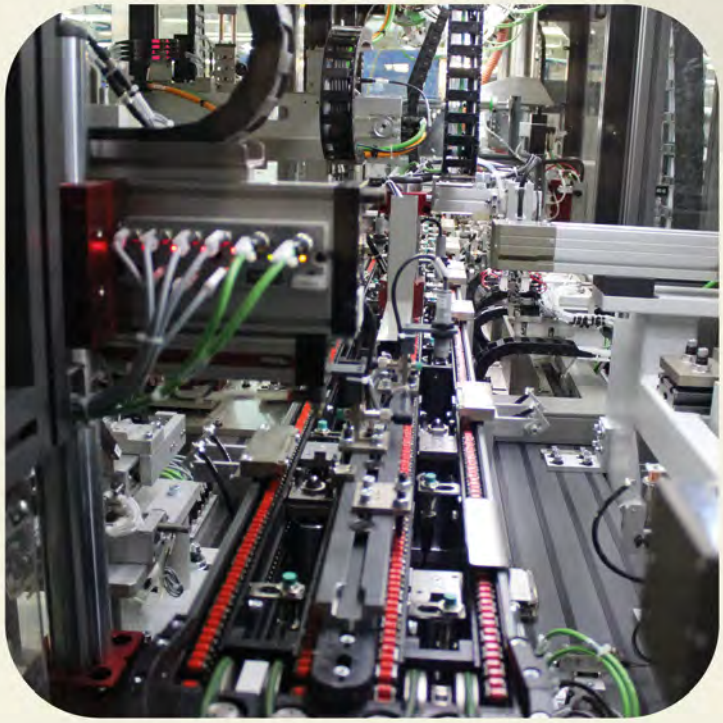
- I_n currents of contacts: 5 ... 12 A.
- Methods of mounting:
  in plug-in sockets,
  direct on panel mounting, PCB
  - depending on the type of relay.

Industrial relays of small dimensions

- I_n currents of contacts: 10 ... 40 A.
- MT-PI-...: relays in modular covers.
- Methods of mounting:
  in plug-in sockets,
  direct on 35 mm rail mount,
  direct on panel mounting, PCB
  - depending on the type of relay.

Applications:

- general control of electrical equipment,
- industrial control systems,
- equipment for air-conditioning, refrigeration products, heating, ventilation, lighting,
- protection, monitoring and alarm equipment,
- control systems and devices for household equipment,
- electrical automation systems - industrial and power-engineering automation,
- building automation equipment (BMS),
- other.



Interface relays (relay coupling modules)

- I_n currents of contacts: 1 ... 16 A.
- Connections of wiring: screw terminals, spring terminals - depending on the type of relay.
- Methods of mounting:
  - PI84, PI85, PIR2, PIR3, PIR4: on 35 mm rail mount or on panel mounting,
  - PI6, PIR6W, PIR6WB: on 35 mm rail mount.

Applications:

- in applications with PLCs as input / output [I/O] separators,
- in industrial automation applications for isolation of input signals from output circuits,
- in electrical applications as universal interfaces between control and load, for medium load switching,
- applications specified in descriptions of relays - miniature industrial and industrial of small dimensions.

Relays for photovoltaic systems

- I_n currents of contacts: 16 ... 48 A.
- Methods of mounting: PCB, direct on 35 mm rail mount, in plug-in sockets, direct on panel mounting - depending on the type of relay.

Applications:

- there are two major applications of electromagnetic relays in solar systems, i.e. at the DC side they connect/disconnect the DC voltage generated by photovoltaic cells; at the AC side they connect/disconnect the entire system to/from power network,
- delivery of power to a public network is subject to special requirements as for the relays applied - the major ones are: contact clearance of min. 1,5 mm and resistance of the contact clearance to surge voltage of 2 500 V; all the requitrements are set out by the Standard DIN VDE 0126-1-1,
- for safety reasons solar systems must be equipped with an automatic system to disconnect the generator section from the AC network; the protection system is usually built in the DC/AC inverter and double-break disconnected - thus, these must be relays of the 2 NO contact configuration (each contact disconnects one line - one the phase line and the other the neutral line); two contacts connected in series are required for each line - thus, the circuit separation is performed by two two-contact electromagnetic relays,
- the RUC-M relays are designed for connecting high DC currents.

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Relays for railroad industry

Interface relays

- I_n currents of contacts: 6 ... 16 A.
- Compliance with standards: PN-EN 50155, PN-EN 61373, PN-EN 60068.
- Method of mounting: on 35 mm rail mount.

Electromagnetic relays

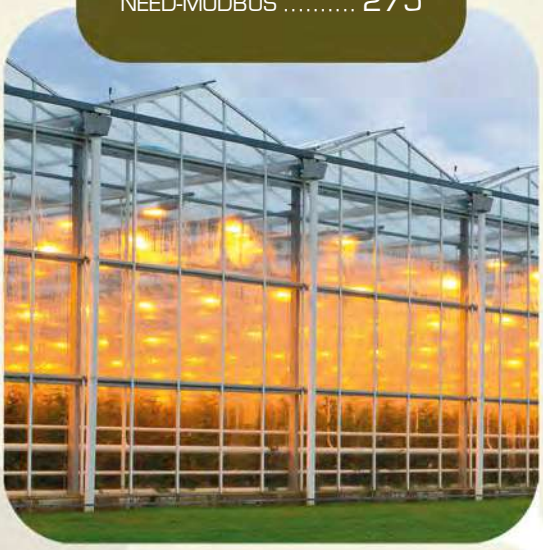
- I_n currents of contacts: 6 ... 16 A.
- Compliance with standards: PN-EN 50155, PN-EN 61373, PN-EN 60068.
- Methods of mounting: on 35 mm rail mount or on panel mounting.

Applications:

- electrical control systems,
- signalling systems,
- lighting systems,
- air-conditioning systems.

Programmable relays

- I_n currents of outputs: 0,5 ... 10 A.
- Available versions of NEED relays:
  - with LCD display:
    8 inputs / 4 outputs, 16 inputs / 8 outputs,
  - without display:
    8 inputs / 4 outputs, 16 inputs / 8 outputs,
  - with relay outputs,
  - with transistor outputs:
    I_n = 0,5 A (version 24 V DC),
  - with supply voltage:
    230 V AC, 12 V DC, 24 V DC, 220 V DC.
- NEED-MODBUS: communication modules NEED Master / ModBus RTU Slave.
- Methods of mounting:
  - NEED: on 35 mm rail mount or on panel mounting,
  - NEED-MODBUS: on 35 mm rail mount.



Applications:

- in industrial automation (device and process control),
- in ARC automation
- in BMS automation,
- in production management systems,
- in water systems,
- in air-conditioning, ventilation, heating systems,
- in lighting systems,
- various other applications.

Time relays

- I_n currents of outputs: 6 ... 16 A.
- Available versions:
  - in modular covers:
    MT-W...M (with LED display), MT series, TR series,
  - in industrial covers:
    TR4N series, T-R4, PIR15...T.
- Design features:
  - multifunctions,
  - single-functions,
  - with settings of T interval,
  - with independent settings of T1 and T2 intervals,
  - with independent settings of T1, T2 and T3 intervals (MT-W...M),
  - contacts / outputs: 1 CO, 2 CO, 3 CO, 4 CO - depending on the type of relay,
  - supply: universal AC/DC; specified voltage - depending on the type of relay.
- Methods of mounting: on 35 mm rail mount, on panel mounting, in plug-in sockets - depending on the type of relay.

Applications in low voltage systems:

- in industrial automation,
- in BMS automation,
- in air-conditioning, ventilation, heating systems,
- in protection, signalling, alarm systems,
- in lighting systems,
- various other applications.

❹ **PIR15...T** with time module COM3

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Monitoring relays

- I_n currents of outputs: 5 A.
- Available versions:
  - in modular covers: MR-E series,
  - in industrial covers: MR-G series.
- Method of mounting: on 35 mm rail mount.

Applications in low voltage systems:

- DC voltage monitoring,
- AC voltage monitoring in 1- and 3-phase network,
- DC current monitoring,
- AC current monitoring in 1- and 3-phase network,
- motor temperature monitoring.

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❶ **RSM850B** - bistable relays

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Electrical terminals						Coil / input				Type of relay	Number and type of contacts / outputs	Rated current
PCB	SMT	for sockets	connectors	screw terminals	spring terminals	AC	DC	AC/DC	bistable DC		CO - changeover NO - normally open NC - normally closed	[A] 5 / 10 / 15 / 20 / 50
Subminiature signal relays												
										RSM850	2 CO	2 A
										RSM850B	2 CO	2 A
										RSM822N	2 CO	3 A / 2 A (NO/NC)
										RSM954N	1 CO	3 A
										RSM957N	1 CO	1 A
Miniature relays												
										RM12	1 CO, 1 NO, 1 NC	8 A
										RM12N	1 CO, 1 NO	1 CO: 8 A, 1 NO: 10 A
										RM32N	1 CO, 1 NO	1 CO: 5 A / 5 A (NO/NC); 1 NO: 5 A, 10 A ❸
										RM45N	1 CO, 1 NO	1 CO: 5 A / 5 A (NO/NC); 1 NO: 5 A, 10 A ❸
										RM50N	1 CO, 1 NO	12 A
										RM51	1 CO, 1 NO	1 CO: 10 A / 7 A (NO/NC), 20 A ❸, 1 NO: 10 A, 20 A ❸
										RM699B	1 CO, 1 NO	$AgSnO_2$, AgNi: 6 A
										RM84	2 CO, 2 NO	8 A
										RM84 SMT	2 CO, 2 NO	8 A
										RM85	1 CO, 1 NO	16 A
										RM85 ❶	1 NO	16 A
										RM85 inrush	1 NO	16 A
										RM85 105 °C sensitive	1 NO	16 A
										RM85 SMT	1 CO, 1 NO	16 A
										RM85 faston	1 NO	20 A
										RM87	1 CO, 1 NO	12 A
										RM87 sensitive	1 NO	10 A
										RM87N SMT	1 CO, 1 NO	12 A
										RM96	1 CO, 1 NO, 1 NC	8 A
										RM83	1 CO, 1 NO, 1 NC	16 A
										RMP84	2 CO	8 A
										RMP85	1 CO	16 A
										RA2 ❷	1 CO, 1 NO, 2 NO	1 CO: 20 A / 12 A (NO/NC), 1 NO: 20 A

❶ **RM85** for switching higher voltages ❷ **RA2** - automotive relays (2 NO: 2 x 12,5 A) ❸ At lowered voltage

How to use the table:
Select the number and type of contacts, please. Then, select a relay depending on its rated current, type of terminals and coil voltage.

The ordering code structure provides for formulation of **numerous variants**. Not all of them are defined as standard ones and, thus, not all of them are included in the product line. However, **deliveries of special versions according to the customer's specification are possible**. Please, contact with Relpol S.A. or our local representatives for details.The data of the devices may be changed with no prior notice.

Electrical terminals						Coil / input				Type of relay	Number and type of contacts / outputs	Rated current					
PCB	SMT	for sockets	connectors	screw terminals	spring terminals	AC	DC	AC/DC	bistable DC		CO - changeover NO - normally open NC - normally closed	[A]	5	10	15	20	50
Industrial relays																	
										R2N	2 CO			12 A			
										R3N	3 CO			10 A			
										R4N	4 CO			7 A			
										RY2	2 CO			12 A			
										R2M	2 CO		5 A				
										R15 - 2 CO	2 CO			10 A			
										R15 - 3 CO	3 CO			10 A			
										R15 - 4 CO	4 CO			10 A			
										RUC	2 CO, 3 CO, 2 NO, 3 NO				16 A		
										RUC-M	1 NO, 2 NO				16 A		
										RG25	2 NO					25 A	
										R20	1 NO, 2 NO				2 NO: 25 A, 1 NO: 30 A		
										R30N	1 CO, 1 NO				1 CO: 30 A / 20 A (NO/NC), 1 NO: 30 A		
										R40N	1 CO, 1 NO				1 CO: 40 A / 30 A (NO/NC), 1 NO: 40 A		
										RS35	2 NO					35 A	
										RS50	2 NO						48 A
Interface relays																	
										PI84 with socket GZT80	2 CO			8 A			
										PI84 with socket GZM80	2 CO			8 A			
										PI84 with socket GZMB80	2 CO			8 A			
										PI85 with socket GZT80	1 CO				16 A ❺		
										PI85 with socket GZM80	1 CO				16 A ❺		
										PI85 with socket GZMB80	1 CO				10 A, 16 A ❺		
										PI85 inrush with socket GZT80	1 NO				16 A ❺		
										PIR2 with socket GZM2	2 CO				12 A		
										PIR3 with socket GZM3	3 CO			10 A			
										PIR4 with socket GZM4	4 CO			6 A			
										PI6-1P	1 CO			AgSnO2: 6 A			
										PI6-1T	1 NO			1,2 A			
										PIR6W-1P-...	1 CO			AgSnO2: 6 A			
										PIR6W-1PS-... ❹	1 CO, 1 NO				T, C: 1 A, O: 2 A, R (AgSnO2): 6 A		
										PIR6WB-1PS-... ❹	1 CO, 1 NO				T, C: 1 A, O: 2 A, R (AgSnO2): 6 A		

❹ **R** - operational electromagnetic relay type **RM699BV** in PIR6W.-1PS-...-R. **T/C/O** - operational solid state relays type **RSR30** in PIR6W.-1PS-...-T (or C or O) - see pages 77-81 and www.relpol.com.pl ❺ See pages 215-230.

How to use the table:
Select the number and type of contacts, please. Then, select a relay depending on its rated current, type of terminals and coil voltage.

The ordering code structure provides for formulation of **numerous variants**. Not all of them are defined as standard ones and, thus, not all of them are included in the product line. However, **deliveries of special versions according to the customer's specification are possible**. Please, contact with Relpol S.A. or our local representatives for details.The data of the devices may be changed with no prior notice.

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Electrical terminals						Coil / input				Type of relay	Number and type of contacts / outputs	Rated current					
PCB	SMT	for sockets	connectors	screw terminals	spring terminals	AC	DC	AC/DC	bistable DC		CO - changeover NO - normally open NC - normally closed	[A]	5	10	15	20	50
Installation relays																	
										MT-PI-...	1 CO, 2 CO, 1 NO, 2 NO	2 CO, 2 NO: 8 A, 1 CO, 1 NO: 16 A					
Programmable relays																	
										NEED-...-08-4R-.	4 NO	10 A					
										NEED-...-08-4T-.	4 NO	0,5 A					
										NEED-...-16-8R-.	8 NO	10 A					
										NEED-...-16-8T-.	8 NO	0,5 A					
										NEED-MODBUS							
Monitoring relays																	
										MR-EU1W1P	1 CO	5 A					
										MR-EU31UW1P	1 CO	5 A					
										MR-EU3M1P	1 CO	5 A					
										MR-EI1W1P	1 CO	5 A					
										MR-ET1P	1 CO	5 A					
										MR-GU1M2P-TR2	2 CO	3 A / 5 A ❻					
										MR-GU32P-TR2	2 CO	3 A / 5 A ❻					
										MR-GU3M2P-TR2	2 CO	3 A / 5 A ❻					
										MR-GU3M2P	2 CO	3 A / 5 A ❻					
										MR-GI1M2P-TR2	2 CO	3 A / 5 A ❻					
										MR-GI3M2P-TR2	2 CO	3 A / 5 A ❻					
										MR-GT2P-TR2	2 CO	3 A / 5 A ❻					

❻ 3 A - if the distance between the mounting relays is less than 5 mm; 5 A - if the distance between the mounting relays is greater than 5 mm.

How to use the table:
Select the number and type of contacts, please. Then, select a relay depending on its rated current, type of terminals and coil voltage.

The ordering code structure provides for formulation of **numerous variants**. Not all of them are defined as standard ones and, thus, not all of them are included in the product line. However, **deliveries of special versions according to the customer's specification are possible**. Please, contact with Relpol S.A. or our local representatives for details.The data of the devices may be changed with no prior notice.

Electrical terminals						Coil / input				Type of relay	Number and type of contacts / outputs	Rated current				
PCB	SMT	for sockets	connectors	screw terminals	spring terminals	AC	DC	AC/DC	bistable DC		CO - changeover NO - normally open NC - normally closed	[A] 5	10	15	20	50
Time relays																
										MT-W...M	1 CO		10 A			
										MT-TUA-...	1 CO		10 A			
										MT-TUB-...	1 CO		10 A			
										MT-TE-...	1 CO		10 A			
										MT-TWU-...	1 CO		10 A			
										MT-TBP-...	1 CO		10 A			
										MT-TER-…	1 CO		10 A			
										MT-TEA-…	1 CO		10 A			
										MT-TES-…	1 CO		10 A			
										MT-TEU-…	1 CO		10 A			
										MT-TIP-…	1 CO		10 A			
										MT-TSA-…	1 CO		10 A			
										MT-TWT-…	1 CO		10 A			
										MT-TSD-...	2 x 1 CO		10 A			
										TR-EM1P-UNI	1 CO		8 A			
										TR-EM2P-UNI	2 CO		8 A			
										TR-EI1P-UNI	1 CO		8 A			
										TR-EI2P-UNI	2 CO		8 A			
										TR-ES2P-UNI	2 x 1 CO		8 A			
										TR4N 1 CO	1 CO			16 A		
										TR4N 2 CO	2 CO		8 A			
										TR4N 4 CO	4 CO	6 A				
										T-R4	4 CO	6 A				
										PIR15...T with time module COM3	2 CO, 3 CO		10 A			
										COM3						

How to use the table:
Select the number and type of contacts, please. Then, select a relay depending on its rated current, type of terminals and coil voltage.

The ordering code structure provides for formulation of **numerous variants**. Not all of them are defined as standard ones and, thus, not all of them are included in the product line. However, **deliveries of special versions according to the customer's specification are possible**. Please, contact with Relpol S.A. or our local representatives for details.The data of the devices may be changed with no prior notice.

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Type of relay	Method of mounting				
	For PCB mounting	On panel mounting	35 mm rail mount (PN-EN 60715)	Cover with mounting flange - on panel mounting	Flat insert - faston (connectors)
Subminiature signal relays					
RSM850	direct	–	–	–	–
RSM850B	direct	–	–	–	–
RSM822N	direct	–	–	–	–
RSM954N	direct	–	–	–	–
RSM957N	direct	–	–	–	–
Miniature relays					
RM12	direct	–	–	–	–
RM12N	direct	–	–	–	–
RM32N	direct	–	–	–	–
RM45N	direct	–	–	–	–
RM50N	direct	–	–	–	–
RM51	direct	–	–	–	–
RM699BV, RSR30 ❶	direct	–	with socket	–	–
RM699BH	direct	–	–	–	–
RM84	direct, with socket	with socket	with socket	–	–
RM84 SMT	direct	–	–	–	–
RM85	direct, with socket	with socket	with socket	–	–
RM85 ❷	direct	–	–	–	–
RM85 inrush	direct, with socket	with socket	with socket	–	–
RM85 105 °C sensitive	direct, with socket	with socket	with socket	–	–
RM85 SMT	direct	–	–	–	–
RM85 faston	direct	–	–	–	6,3 x 0,8 mm
RM87	direct, with socket	with socket	with socket	–	–
RM87 sensitive	direct, with socket	with socket	with socket	–	–
RM87N SMT	direct	–	–	–	–
RM96 1 CO	direct	with socket	with socket	–	–
RM96 1 NO, 1 NC	direct	–	–	–	–
RM83	direct, with socket	–	–	–	–
RMP84	with socket	with socket	with socket	–	–
RMP85	with socket	with socket	with socket	–	–
RA2 ❸	direct	–	–	–	–

❶ Solid state relays type **RSR30** - see www.relpol.com.pl ❷ **RM85** for switching higher voltages ❸ **RA2** - automotive relays

Type of relay	Method of mounting				
	For PCB mounting	On panel mounting	35 mm rail mount (PN-EN 60715)	Cover with mounting flange - on panel mounting	Flat insert - faston (connectors)
Industrial relays					
R2N	with socket	with socket	with socket	–	–
R3N	–	with socket	with socket	–	–
R4N	direct, with socket	with socket	with socket	–	–
RY2	–	with socket	with socket	on request	4,8 x 0,5 mm
R2M	direct, with socket	with socket	with socket	–	–
R15 - 2 CO	direct	with socket	with socket	–	–
R15 - 3 CO	direct	with socket	with socket	–	–
R15 - 4 CO	–	with socket ❹	with socket	–	–
RUC faston 4,8x0,5	direct	with socket ❺ direct	with socket ❺ direct ❻	on request	4,8 x 0,5 mm
RUC faston 6,3x0,8	–	direct	direct ❻	on request	6,3 x 0,8 mm
RUC-M	direct	with socket ❺ direct	with socket ❺ direct ❻	on request	4,8 x 0,5 mm
RG25	–	–	direct	–	–
R20	–	direct	–	standard	6,3 x 0,8 mm
R30N	direct	–	–	–	–
R40N	direct	–	–	–	–
RS35	direct	–	–	–	–
RS50	direct	–	–	–	–
Interface relays					
PI84 with socket GZT80	–	direct	direct	–	–
PI84 with socket GZM80	–	direct	direct	–	–
PI84 with socket GZMB80	–	–	direct	–	–
PI85 with socket GZT80	–	direct	direct	–	–
PI85 with socket GZM80	–	direct	direct	–	–
PI85 with socket GZMB80	–	–	direct	–	–
PI85 inrush with socket GZT80	–	direct	direct	–	–
PIR2 with socket GZM2	–	direct	direct	–	–
PIR3 with socket GZM3	–	direct	direct	–	–
PIR4 with socket GZM4	–	direct	direct	–	–
PI6-1P	–	–	direct	–	–
PI6-1T	–	–	direct	–	–
PIR6W-1P-...	–	–	direct	–	–
PIR6W-1PS-...-❼	–	–	direct	–	–
PIR6WB-1PS-...-❼	–	–	direct	–	–

❹ Available socket to be mounted behind the assembly panel - **GZ14Z** ❺ For RUC faston 4,8 x 0,5 and RUC-M, with GUC11 or GUC11S socket, max. switching voltages and coil voltages of relays are limited to 250 V AC / DC ❻ Version with adaptor (V) or (H) ❼ **R** - operational electromagnetic relay type **RM699BV** in PIR6W.-1PS-...-R. **T/C/O** - operational solid state relays type **RSR30** in PIR6W.-1PS-...-T (or C or O) - see pages 77-81 and www.relpol.com.pl

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Type of relay	Method of mounting				
	For PCB mounting	On panel mounting	35 mm rail mount (PN-EN 60715)	Cover with mounting flange - on panel mounting	Flat insert - faston (connectors)
Installation relays					
MT-PI-...	–	–	direct	–	–
Programmable relays					
NEED-...-08-4…	–	direct	direct	–	–
NEED-...-16-8…	–	direct	direct	–	–
NEED-MODBUS	–	–	direct	–	–
Monitoring relays					
MR-EU1W1P	–	–	direct	–	–
MR-EU31UW1P	–	–	direct	–	–
MR-EU3M1P	–	–	direct	–	–
MR-EI1W1P	–	–	direct	–	–
MR-ET1P	–	–	direct	–	–
MR-GU1M2P-TR2	–	–	direct	–	–
MR-GU32P-TR2	–	–	direct	–	–
MR-GU3M2P-TR2	–	–	direct	–	–
MR-GU3M2P	–	–	direct	–	–
MR-GI1M2P-TR2	–	–	direct	–	–
MR-GI3M2P-TR2	–	–	direct	–	–
MR-GT2P-TR2	–	–	direct	–	–

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Type of relay	Method of mounting				
	For PCB mounting	On panel mounting	35 mm rail mount (PN-EN 60715)	Cover with mounting flange - on panel mounting	Flat insert - faston (connectors)
Time relays					
MT-W...M	–	–	direct	–	–
MT-TUA-...	–	–	direct	–	–
MT-TUB-...	–	–	direct	–	–
MT-TE-...	–	–	direct	–	–
MT-TWU-...	–	–	direct	–	–
MT-TBP-...	–	–	direct	–	–
MT-TER-…	–	–	direct	–	–
MT-TEA-…	–	–	direct	–	–
MT-TES-…	–	–	direct	–	–
MT-TEU-…	–	–	direct	–	–
MT-TIP-…	–	–	direct	–	–
MT-TSA-…	–	–	direct	–	–
MT-TWT-…	–	–	direct	–	–
MT-TSD-...	–	–	direct	–	–
TR-EM1P-UNI	–	–	direct	–	–
TR-EM2P-UNI	–	–	direct	–	–
TR-EI1P-UNI	–	–	direct	–	–
TR-EI2P-UNI	–	–	direct	–	–
TR-ES2P-UNI	–	–	direct	–	–
TR4N 1 CO	–	–	direct	–	–
TR4N 2 CO	–	–	direct	–	–
TR4N 4 CO	–	–	direct	–	–
T-R4	–	with socket	with socket	–	–
PIR15...T with time module COM3	–	direct	direct	–	–
COM3	–	–	with socket	–	–

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RSM850 **version PCB**	Subminiature relays - electromagnetic
 **page 46**	Contacts: 2 CO Rated load: **AC1 - 0,5 A / 125 V AC; DC1 - 2 A / 30 V DC** Coils: DC - 3 ... 24 V Mounting: for PCB
RSM850 **version SMT**	Subminiature relays - electromagnetic
 **page 46**	Contacts: 2 CO Rated load: **AC1 - 0,5 A / 125 V AC; DC1 - 2 A / 30 V DC** Coils: DC - 3 ... 24 V Mounting: for surface mounting SMT
RSM850B	Subminiature relays - electromagnetic; bistable with one coil
 **page 49**	Contacts: 2 CO Rated load: **AC1 - 0,5 A / 125 V AC; DC1 - 2 A / 30 V DC** Coils: DC - 3 ... 24 V Mounting: for PCB
RSM822N	Subminiature relays - electromagnetic
 **page 51**	Contacts: 2 CO Rated load: **AC1 - 0,6 A / 125 V AC; DC1 - 3 A / 2 A** (NO/NC) **/ 30 V DC** Coils: DC - 3 ... 24 V (sensitive), 48 V (standard) Mounting: for PCB
RSM954N	Subminiature relays - electromagnetic
 **page 54**	Contacts: 1 CO Rated load: **AC1 - 3 A / 125 V AC; DC1 - 3 A / 30 V DC** Coils: DC - 3 ... 24 V Mounting: for PCB

RSM957N

Subminiature relays - electromagnetic

page 56

Contacts: 1 CO

Rated load: **AC1 - 0,5 A / 125 V AC; DC1 - 1 A / 30 V DC**

Coils: DC - 3 ... 24 V (sensitive)

Mounting: for PCB

RM12

Miniature relays - electromagnetic

page 59

Contacts: 1 CO, 1 NO, 1 NC

Rated load: **AC1 - 8 A / 250 V AC; DC1 - 8 A / 24 V DC**

Coils: DC - 5 ... 60 V

Mounting: for PCB

RM12N

Miniature relays - electromagnetic

page 62

Contacts: 1 CO, 1 NO

Rated load:
1 CO - **AC1 - 8 A / 250 V AC; DC1 - 8 A / 30 V DC**
1 NO - **AC1 - 10 A / 250 V AC; DC1 - 10 A / 30 V DC**

Coils: DC - 5 ... 24 V

Mounting: for PCB

RM32N

Miniature relays - electromagnetic

page 65

Contacts: 1 CO, 1 NO

Rated load:
1 CO (NO/NC) - **AC1 - 5 A / 5 A / 250 V AC; DC1 - 5 A / 5 A / 28 V DC**
1 NO - **AC1 - 5 A / 250 V AC, 10 A / 125 V AC; DC1 - 5 A / 28 V DC**

Coils: DC - 5 ... 24 V (sensitive, standard)

Mounting: for PCB

RM45N

Miniature relays - electromagnetic

page 68

Contacts: 1 CO, 1 NO

Rated load:
1 CO (NO/NC) - **AC1 - 5 A / 5 A / 250 V AC; DC1 - 5 A / 5 A / 28 V DC**
1 NO - **AC1 - 5 A / 250 V AC, 10 A / 125 V AC; DC1 - 5 A / 28 V DC**

Coils: DC - 5 ... 24 V (sensitive, standard)

Mounting: for PCB

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RM50N

Miniature relays - electromagnetic

page 71

Contacts: 1 CO, 1 NO

Rated load: **AC1 - 12 A / 125 V AC; DC1 - 12 A / 28 V DC**

Coils: DC - 5 ... 48 V

Mounting: for PCB

RM51

Miniature relays - electromagnetic

page 74

Contacts: 1 CO, 1 NO

Rated load:
1 CO (NO/NC) - **AC1 - 10 A / 7 A / 250 V AC; DC1 - 10 A / 7 A / 30 V DC**
1 NO - **AC1 - 10 A / 250 V AC, 20 A / 125 V AC; DC1 - 10 A / 30 V DC**

Coils: DC - 5 ... 48 V

Mounting: for PCB

RM699B

Miniature relays - electromagnetic

page 77

Contacts: 1 CO, 1 NO

Rated load: **AC1 - 6 A / 250 V AC; DC1 - 6 A / 30 V DC**

Coils: DC - 5 ... 60 V

Mounting: RM699BV - for PCB, for plug-in sockets
RM699BH - for PCB

Accessories: sockets - PI6W-1P **(page 410)**

RM84

Miniature relays - electromagnetic

page 82

Contacts: 2 CO, 2 NO

Rated load: **AC1 - 8 A / 250 V AC; DC1 - 8 A / 24 V DC**

Coils: DC - 3 ... 110 V; AC - 12 ... 240 V

Available special versions: with increased contact gap, in transparent cover

Mounting: for PCB, for plug-in sockets

Accessories: screw terminals sockets - GZT80, GZM80, GZS80, GZF80; spring terminals sockets - GZMB80; sockets for PCB - EC 50, PW80, GD50 **(pages 396-398)**;
signalling / protecting modules type M... for sockets: GZT80, GZM80, GZS80, GZMB80

RM84 SMT

Miniature relays - electromagnetic

page 87

Contacts: 2 CO, 2 NO

Rated load: **AC1 - 8 A / 250 V AC; DC1 - 8 A / 24 V DC**

Coils: DC - 3 ... 110 V; AC - 12 ... 240 V

Mounting: for surface mounting SMT

RM85

Miniature relays - electromagnetic

page 91

Contacts: 1 CO, 1 NO

Rated load: **AC1 - 16 A / 250 V AC; DC1 - 16 A / 24 V DC**

Coils: DC - 3 ... 110 V; AC - 12 ... 240 V

Available special versions: with increased contact gap, in transparent cover

Mounting: for PCB, for plug-in sockets

Accessories: screw terminals sockets - GZT80, GZM80, GZS80, GZF80; spring terminals sockets - GZMB80; sockets for PCB - EC 50, PW80, GD50 **(pages 396-398)**; signalling / protecting modules type M... for sockets: GZT80, GZM80, GZS80, GZMB80

RM85 special version

Miniature relays - electromagnetic, for switching higher voltages - up to 480 V AC

page 96

Contacts: 1 NO

Rated load: **AC1 - 5 A / 480 V AC; DC1 - 16 A / 24 V DC**

Coils: DC - 3 ... 110 V

Mounting: for PCB

RM85 inrush

Miniature relays - electromagnetic

page 99

Contacts: 1 NO

Rated load: **AC1 - 16 A / 250 V AC; DC1 - 16 A / 24 V DC**

Coils: DC - 3 ... 110 V

Mounting: for PCB, for plug-in sockets

Accessories: screw terminals sockets - GZT80, GZM80, GZS80, GZF80; spring terminals sockets - GZMB80; sockets for PCB - EC 50, PW80, GD50 **(pages 396-398)**; signalling / protecting modules type M... for sockets: GZT80, GZM80, GZS80, GZMB80

RM85 105 ºC sensitive

Miniature relays - electromagnetic, ambient temperature up to 105 ºC

page 103

Contacts: 1 NO

Rated load: **AC1 - 16 A / 250 V AC; DC1 - 16 A / 24 V DC**

Coils: DC - 5 ... 48 V (sensitive)

Mounting: for PCB, for plug-in sockets

Accessories: screw terminals sockets - GZT80, GZM80, GZS80, GZF80; spring terminals sockets - GZMB80; sockets for PCB - EC 50, PW80, GD50 **(pages 396-398)**; signalling / protecting modules type M... for sockets: GZT80, GZM80, GZS80, GZMB80

RM85 SMT

Miniature relays - electromagnetic

page 107

Contacts: 1 CO, 1 NO

Rated load: **AC1 - 16 A / 250 V AC; DC1 - 16 A / 24 V DC**

Coils: DC - 3 ... 110 V; AC - 12 ... 240 V

Mounting: for surface mounting SMT

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RM85 faston

Miniature relays - electromagnetic

page 111

Contacts: 1 NO

Rated load: **AC1 - 20 A / 250 V AC; DC1 - 20 A / 24 V DC**

Coils: DC - 5 ... 48 V (sensitive)

Mounting: for PCB, for flat insert connectors - faston 250 (6,3 x 0,8 mm)

RM87

Miniature relays - electromagnetic

page 114

Contacts: 1 CO, 1 NO

Rated load: **AC1 - 12 A / 250 V AC; DC1 - 12 A / 24 V DC**

Coils: DC - 3 ... 110 V; AC - 12 ... 240 V

Available special versions: with increased contact gap, in transparent cover

Mounting: for PCB, for plug-in sockets

Accessories: screw terminals sockets - GZT80, GZM80, GZS80, GZF80, GZT92, GZM92, GZS92; spring terminals sockets - GZMB80; sockets for PCB - EC 50, PW80, GD50, EC 35, GD35 **(pages 396-399)**; signalling / protecting modules type M... for sockets: GZT80, GZM80, GZS80, GZT92, GZM92, GZS92, GZMB80

RM87 sensitive

Miniature relays - electromagnetic

page 114

Contacts: 1 NO

Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**

Coils: DC - 5 ... 48 V (sensitive)

Mounting: for PCB, for plug-in sockets

Accessories: screw terminals sockets - GZT80, GZM80, GZS80, GZF80, GZT92, GZM92, GZS92; spring terminals sockets - GZMB80; sockets for PCB - EC 50, PW80, GD50, EC 35, GD35 **(pages 396-399)**; signalling / protecting modules type M... for sockets: GZT80, GZM80, GZS80, GZT92, GZM92, GZS92, GZMB80

RM87N SMT

Miniature relays - electromagnetic

page 120

Contacts: 1 CO, 1 NO

Rated load: **AC1 - 12 A / 250 V AC; DC1 - 12 A / 24 V DC**

Coils: DC - 3 ... 110 V; AC - 12 ... 240 V

Mounting: for surface mounting SMT

RM96

Miniature relays - electromagnetic

page 124

Contacts: 1 CO, 1 NO, 1 NC

Rated load: **AC1 - 8 A / 250 V AC; DC1 - 8 A / 24 V DC**

Coils: DC - 5 ... 48 V

Mounting: 1 CO - for PCB, for plug-in sockets
1 NO, 1 NC - for PCB

Accessories: screw terminals sockets - ES 32 **(page 400)**;
signalling / protecting modules type M... for sockets ES 32

RM83

Miniature relays - electromagnetic

page 128

Contacts: 1 CO, 1 NO, 1 NC

Rated load: **AC1 - 16 A / 250 V AC; DC1 - 16 A / 24 V DC**

Coils: DC - 5 ... 110 V (standard), 110 V (sensitive)

Available special versions: in transparent cover

Mounting: for PCB, for plug-in sockets

Accessories: sockets for PCB - EC 50, PW80, GD50 **(page 398)**

RMP84

Miniature relays - electromagnetic

page 132

Contacts: 2 CO

Rated load: **AC1 - 8 A / 250 V AC**

Coils: DC - 12 ... 110 V; AC - 24 ... 230 V

Additional features: standard - mechanical indicator (W), lockable front test button (T) option - light indicator - LED diode (L)
Mounting: for PCB, for plug-in sockets

Accessories: screw terminals sockets - GZF80; spring terminals sockets - GZMB80; sockets for PCB - EC 50, GD50 **(pages 397-398)**; signalling / protecting modules type M... for sockets: GZMB80

RMP85

Miniature relays - electromagnetic

page 136

Contacts: 1 CO

Rated load: **AC1 - 16 A / 250 V AC**

Coils: DC - 12 ... 110 V; AC - 24 ... 230 V

Additional features: standard - mechanical indicator (W), lockable front test button (T) option - light indicator - LED diode (L)
Mounting: for PCB, for plug-in sockets

Accessories: screw terminals sockets - GZF80; spring terminals sockets - GZMB80; sockets for PCB - EC 50, GD50 **(pages 397-398)**; signalling / protecting modules type M... for sockets: GZMB80

RA2

Miniature relays - automotive relays

page 140

Contacts: 1 CO, 1 NO, 2 NO

Rated current: 1 CO (NO/NC) - **20 A / 12 A;** 1 NO - **20 A;** 2 NO - **2 x 12,5 A**

Coils: DC - 5 ... 48 V

Mounting: for PCB

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R2N - contacts 2 CO

Industrial relays - electromagnetic

page 144

R3N - contacts 3 CO

page 149

R4N - contacts 4 CO

page 154

Contacts: 2 CO, 3 CO, 4 CO

Rated load:
2 CO - **AC1 - 12 A / 250 V AC; DC1 - 12 A / 24 V DC**
3 CO - **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**
4 CO - **AC1 - 7 A / 230 V AC (VDE), 6 A / 250 V AC; DC1 - 6 A / 24 V DC**

Coils: DC - 5 ... 220 V; AC - 6 ... 240 V

Additional features:
standard - mechanical indicator (W), lockable front test button (T)
option - light indicator - LED diode (L), surge suppression element - diode (D)

Mounting:
R2N, **R3N** - for plug-in sockets
R4N - for plug-in sockets, for PCB

Accessories:
R2N - screw terminals sockets - GZT2, GZM2;
spring terminals sockets - GZMB2;
sockets for PCB - SU4/2D;
solder terminals sockets - SU4/2L, G4/2 **(pages 400-402)**

R3N - screw terminals sockets - GZT3, GZM3 **(page 402)**

R4N - screw terminals sockets - GZT4, GZM4, GZ4, GS4;
spring terminals sockets - GZMB4;
sockets for PCB - SU4D;
solder terminals sockets - SU4L, G4 **(pages 402-404)**

signalling / protecting modules type M... for sockets:
GZT2, GZM2, GZMB2, GZT3, GZM3, GZT4, GZM4, GZMB4

RY2

Industrial relays - electromagnetic

page 159

Contacts: 2 CO

Rated load: **AC1 - 12 A / 250 V AC; DC1 - 12 A / 30 V DC**

Coils: DC - 5 ... 220 V; AC - 6 ... 240 V

Additional features: option - light indicator - LED diode (L),
surge suppression element - diode (D)

Mounting: for plug-in sockets, for flat insert connectors - faston 187 (4,8 x 0,5 mm)
- direct on panel (cover with mounting flange)

Accessories: screw terminals sockets - GZY2G **(page 405)**

R2M

Industrial relays - electromagnetic

page 163

Contacts: 2 CO

Rated load: **AC1 - 5 A / 250 V AC; DC1 - 5 A / 24 V DC**

Coils: DC - 6 ... 110 V; AC - 6 ... 240 V

Mounting: for plug-in sockets, for PCB

Accessories: screw terminals sockets - GZ2; sockets for PCB - S2M;
solder terminals sockets - G2M **(page 405)**

R15 - contacts 2 CO

page 167

R15 - contacts 3 CO

page 167

R15 - contacts 4 CO

page 172

Industrial relays - electromagnetic

Contacts: 2 CO, 3 CO, 4 CO

Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**

Coils: DC - 6 ... 220 V; AC - 6 ... 240 V; DC - 0,1 ... 2,5 A; AC - 0,1 ... 4,5 A

Additional features:
R15 - 2 CO, 3 CO standard - mechanical indicator (W), lockable front test button (T)
R15 - 2 CO, 3 CO option - light indicator - LED diode (L),
surge suppression element - diode (D), varistor (V)
R15 - 4 CO option - test button without block functions (K),
light indicator - LED diode (L), surge suppression element - diode (D)

Mounting: for plug-in sockets

Accessories:
R15 - 2 CO - screw terminals sockets, for mounting: on 35 mm rail mount
or on panel - PZ8, GZP8; on 35 mm rail mount - GZU8; on panel - GZ8;
solder terminals sockets - GOP8 **(pages 406-407)**

R15 - 3 CO - screw terminals sockets, for mounting: on 35 mm rail mount
or on panel - PS11, PZ11, GZP11; on 35 mm rail mount - GZU11; on panel - GZ11;
solder terminals sockets - GOP11 **(pages 407-408)**

R15 - 4 CO - screw terminals sockets, for mounting: on 35 mm rail mount - GZ14U;
on panel - GZ14; on panel, behind: GZ14Z;
solder terminals sockets - GOP14 **(pages 408-409)**

RUC faston 4,8 x 0,5

page 176

RUC faston 6,3 x 0,8

page 176

Industrial relays - electromagnetic

Contacts: 2 CO, 3 CO, 2 NO, 3 NO
(available special versions 2 NO, 3 NO with contact gap ≥ 3 mm)

Rated load: **AC1 - 16 A / 250 V AC; DC1 - 16 A / 24 V DC**

Coils: DC - 6 ... 220 V (standard), 12 ... 220 V (reinforced); AC - 6 … 400 V

Additional features: option - test button without block functions (K),
light indicator - LED diode (L)

Mounting:
RUC faston 4,8 x 0,5 - for plug-in sockets, direct on panel (cover with mounting flange),
direct on 35 mm rail mount (cover with adaptors: vertical V, horizontal H)
RUC faston 6,3 x 0,8 - direct on panel (cover with mounting flange),
direct on 35 mm rail mount (cover with adaptors: vertical V, horizontal H)
RUC - for PCB

Accessories: screw terminals sockets - GUC11, GUC11S **(page 410)**

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RUC-M
faston 4,8 x 0,5

Industrial relays - electromagnetic; with permanent magnet whose magnetic field blows the electric arc between the contacts; **for high DC loads**

page 182

Contacts: 1 NO (double-break), 2 NO

Rated load: **AC1 - 16 A / 250 V AC; DC1 - 12 A** (1 NO); **4,5 A** (2 NO) **/ 220 V DC**

Coils: DC - 12 ... 220 V (reinforced); AC - 12 ... 240 V

Additional features: option - light indicator - LED diode (L)

Mounting: for plug-in sockets, direct on panel (cover with mounting flange), direct on 35 mm rail mount (cover with adaptors: vertical V, horizontal H), for PCB

Accessories: screw terminals sockets - GUC11, GUC11S **(page 410)**

RG25

Industrial relays - electromagnetic

page 187

Contacts: 2 NO

Rated load: **AC1 - 25 A / 400 V AC; DC1 - 25 A / 24 V DC**

Coils: DC - 12 ... 220 V; AC - 12 ... 400 V

Mounting: direct on 35 mm rail mount

R20

Industrial relays - electromagnetic

page 190

Contacts: 1 NO, 2 NO

Rated load:
1 NO - **AC1 - 30 A / 250 V AC**
2 NO - **AC1 - 25 A / 250 V AC**

Coils: DC - 12 ... 110 V; AC - 24 ... 230 V

Mounting: for flat insert connectors - faston 250 (6,3 x 0,8 mm)
- direct on panel (cover with mounting flange)

R30N

Industrial relays - electromagnetic

page 193

Contacts: 1 CO, 1 NO

Rated load:
1 CO (NO/NC) - **AC1 - 30 A / 20 A / 240 V AC; DC1 - 30 A / 20 A / 14 V DC**
1 NO - **AC1 - 30 A / 240 V AC; DC1 - 30 A / 14 V DC**

Coils: DC - 5 ... 110 V

Mounting: for PCB

R40N

Industrial relays - electromagnetic

page 196

Contacts: 1 CO, 1 NO

Rated load:
1 CO (NO/NC) - **AC1 - 40 A / 30 A / 240 V AC; DC1 - 40 A / 30 A / 30 V DC**
1 NO - **AC1 - 40 A / 240 V AC; DC1 - 40 A / 30 V DC**

Coils: DC - 5 ... 110 V; AC - 12 ... 220 V

Mounting: for PCB

RS35, RS50

Industrial relays - electromagnetic; to control power in photovoltaic systems which generate electric energy

page 199

Contacts: 2 NO

Rated load:
RS35 - **AC1 - 35 A / 250 V AC; DC1 - 35 A / 24 V DC**
RS50 - **AC1 - 48 A / 250 V AC; DC1 - 48 A / 24 V DC**

Coils: DC - 5 ... 110 V

Mounting: for PCB

PI84 - GZT80

Interface relays; with plug-in socket GZT80

page 203

Contacts: 2 CO

Rated load: **AC1 - 8 A / 250 V AC; DC1 - 8 A / 24 V DC**

Coils: DC - 12 ... 110 V; AC - 12 ... 240 V

Set: electromagnetic relay RM84, plug-in socket GZT80, module type M..., clip GZT80-0040, description plate GZT80-0035

Mounting: direct on 35 mm rail mount or on panel

Accessories: interconnection strip ZGGZ80

PI84 - GZM80

Interface relays; with plug-in socket GZM80

page 207

Contacts: 2 CO

Rated load: **AC1 - 8 A / 250 V AC; DC1 - 8 A / 24 V DC**

Coils: DC - 12 ... 110 V; AC - 12 ... 240 V

Set: electromagnetic relay RM84, plug-in socket GZM80, module type M..., clip GZT80-0040, description plate GZT80-0035

Mounting: direct on 35 mm rail mount or on panel

Accessories: interconnection strip ZGGZ80

PI84 - GZMB80

Interface relays; with plug-in socket GZMB80; spring terminals

page 211

Contacts: 2 CO

Rated load: **AC1 - 8 A / 250 V AC; DC1 - 8 A / 24 V DC**

Coils: DC - 12 ... 110 V; AC - 12 ... 230 V

Set: electromagnetic relay RM84, plug-in socket GZMB80, module type M..., clip GZMB80-0040, description plate TR

Mounting: direct on 35 mm rail mount

PI85 - GZT80

Interface relays; with plug-in socket GZT80

page 215

Contacts: 1 CO

Rated load: **AC1 - 16 A / 250 V AC; DC1 - 16 A / 24 V DC**

Coils: DC - 12 ... 110 V; AC - 12 ... 240 V

Set: electromagnetic relay RM85, plug-in socket GZT80, module type M..., clip GZT80-0040, description plate GZT80-0035

Mounting: direct on 35 mm rail mount or on panel

Accessories: interconnection strip ZGGZ80

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PI85 - GZM80	Interface relays; with plug-in socket GZM80
 **page 219**	Contacts: 1 CO Rated load: **AC1 - 16 A / 250 V AC; DC1 - 16 A / 24 V DC** Coils: DC - 12 ... 110 V; AC - 12 ... 240 V Set: electromagnetic relay RM85, plug-in socket GZM80, module type M..., clip GZT80-0040, description plate GZT80-0035 Mounting: direct on 35 mm rail mount or on panel Accessories: interconnection strip ZGGZ80
PI85 - GZMB80	Interface relays; with plug-in socket GZMB80; spring terminals
 **page 223**	Contacts: 1 CO Rated load: **AC1 - 10 A, 16 A / 250 V AC; DC1 - 16 A / 24 V DC** Coils: DC - 12 ... 110 V; AC - 12 ... 230 V Set: electromagnetic relay RM85, plug-in socket GZMB80, module type M..., clip GZMB80-0040, description plate TR Mounting: direct on 35 mm rail mount
PI85 inrush - GZT80	Interface relays; with plug-in socket GZT80
 **page 227**	Contacts: 1 NO Rated load: **AC1 - 16 A / 250 V AC; DC1 - 16 A / 24 V DC** Coils: DC - 12 ... 110 V Set: electromagnetic relay RM85 inrush, plug-in socket GZT80, module type M..., clip GZT80-0040, description plate GZT80-0035 Mounting: direct on 35 mm rail mount or on panel Accessories: interconnection strip ZGGZ80
PIR2 - GZM2	Interface relays; with plug-in socket GZM2
 **page 231**	Contacts: 2 CO Rated load: **AC1 - 12 A / 250 V AC; DC1 - 12 A / 24 V DC** Coils: DC - 12 ... 110 V; AC - 12 ... 230 V Set: electromagnetic relay R2N, plug-in socket GZM2, module type M..., clip GZT4-0040, description plate GZT4-0035 Mounting: direct on 35 mm rail mount or on panel Accessories: interconnection strip ZGGZ4
PIR3 - GZM3	Interface relays; with plug-in socket GZM3
 **page 235**	Contacts: 3 CO Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC** Coils: DC - 12 ... 110 V; AC - 12 ... 230 V Set: electromagnetic relay R3N, plug-in socket GZM3, module type M..., clip GZT4-0040, description plate GZT4-0035 Mounting: direct on 35 mm rail mount or on panel Accessories: interconnection strip ZGGZ4

PIR4 - GZM4	Interface relays; with plug-in socket GZM4
 **page 239**	Contacts: 4 CO Rated load: **AC1 - 6 A / 250 V AC; DC1 - 6 A / 24 V DC** Coils: DC - 12 ... 110 V; AC - 12 ... 230 V Set: electromagnetic relay R4N, plug-in socket GZM4, module type M..., clip GZT4-0040, description plate GZT4-0035 Mounting: direct on 35 mm rail mount or on panel Accessories: interconnection strip ZGGZ4
PI6-1P	Interface relays
 **page 243**	Output circuit - contacts: 1 CO ($AgSnO_2$) Rated load: **AC1 - 6 A / 250 V AC; DC1 - 6 A / 30 V DC** Input circuit: DC - 12 ... 36 V; AC/DC - 24 ... 230 V Indicator: LED diode Mounting: direct on 35 mm rail mount Accessories: interconnection strip ZG20
PI6-1T	Interface relays
 **page 246**	Output circuit - triac: 1 NO Rated load: **AC1 - 1,2 A / 400 V AC** Input circuit: DC - 5..32 V; AC/DC - 24 ... 230 V Indicator: LED diode Mounting: direct on 35 mm rail mount Accessories: interconnection strip ZG20
PIR6W-1P	Interface relays; with socket PI6W-1P -...
 **page 248**	Output circuit - contacts: 1 CO (RM699BV - $AgSnO_2$) Rated load: **AC1 - 6 A / 250 V AC; DC1 - 6 A / 30 V DC** Input circuit: AC - 230 V; DC - 12 ... 36 V; AC/DC - 24 ... 230 V Indicator: LED diode Mounting: direct on 35 mm rail mount Accessories: interconnection strip ZG20
PIR6W-1PS	Interface relays; with universal socket PI6W-1PS -...
 **page 252**	Output circuit - contacts: 1 CO (RM699BV - $AgSnO_2$); triac, transistor: 1 NO (RSR30) Rated load: 1 CO - **AC1 - 6 A / 250 V AC; DC1 - 6 A / 30 V DC** 1 NO (triac) - **AC1 - 1 A / 240 V AC;** 1 NO (transistor) - **DC1 - 1 A / 48 V DC, 2 A / 24 V DC** Input circuit: AC - 230 V; DC - 6 ... 60 V; AC/DC - 24 ... 230 V Indicator: LED diode Mounting: direct on 35 mm rail mount Accessories: interconnection strip ZG20

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PIR6WB-1PS

Interface relays; with universal socket PI6WB-1PS -…; spring terminals

CAGE CLAMP®

page 256

Output circuit - contacts: 1 CO (RM699BV - $AgSnO_2$); triac, transistor: 1 NO (RSR30)

Rated load:
1 CO - **AC1 - 6 A / 250 V AC; DC1 - 6 A / 30 V DC**
1 NO (triac) - **AC1 - 1 A / 240 V AC;** 1 NO (transistor) - **DC1 - 1 A / 48 V DC, 2 A / 24 V DC**

Input circuit: AC - 230 V; DC - 6 ... 60 V; AC/DC - 24 ... 230 V

Indicator: LED diode

Mounting: direct on 35 mm rail mount

Accessories: interconnection strip ZG20

MT-PI

Installation relays; modular cover

page 261

Contacts: 1 CO, 2 CO, 1 NO, 2 NO

Rated load:
1 CO, 1 NO - **AC1 - 16 A / 250 V AC; DC1 - 16 A / 24 V DC**
2 CO, 2 NO - **AC1 - 8 A / 250 V AC; DC1 - 8 A / 24 V DC**

Coils: 1 CO, 2 CO - DC - 12 ... 48 V; AC - 115 ... 230 V
1 NO, 2 NO - AC - 230 V; AC/DC - 12 ... 115 V

Indicator: LED diode

Mounting: direct on 35 mm rail mount

NEED-…-08-4…

Programmable relays

page 265

Outputs: 4 NO, relay or transistor

Rated load: contacts - **AC1 - 10 A / 250 V AC;** transistor - **DC1 - 0,5 A / 24 V DC**

Inputs: 6 digital + 2 analog-digital

Supply: DC - 12 V, 24 V, 220 V; AC - 230 V

Indicator: LCD display, LED diode

Mounting: direct on 35 mm rail mount or on panel

Accessories: cable NEED-PC-15B (or 15C), memory card NEED-M-4KB, software PC NEED (language LAD and STL)

NEED-…-16-8…

Programmable relays

page 269

Outputs: 8 NO, relay or transistor

Rated load: contacts - **AC1 - 10 A / 250 V AC;** transistor - **DC1 - 0,5 A / 24 V DC**

Inputs: 13 digital + 3 analog-digital

Supply: DC - 12 V, 24 V, 220 V; AC - 230 V

Indicator: LCD display, LED diode

Mounting: direct on 35 mm rail mount or on panel

Accessories: cable NEED-PC-15B (or 15C), memory card NEED-M-4KB, software PC NEED (language LAD and STL)

NEED-MODBUS

Communication modules NEED Master / ModBus RTU Slave

page 275

Input circuit: DC - 7…35 V; AC - 7....26 V

Mounting: direct on 35 mm rail mount

Appropriation: cooperation with NEED-... relays (reading and availability of the data, transmission of control commands, RTC clock setting)

MT-W...M

Time relays; modular cover; programming with two buttons only

page 277

Multifunctions - 25 time functions (Es, E, E(S), E(r), R, Wu, Wu(S), Wu(r), Ws, Wa, B, Wi, ER, EWs, EWa, EWu, WsWa, EWf, Wt, Pi, Pi(S), Pp, Pp(S), Est, Esp) + functions ON, OFF
Independent settings of T1, T2, T3 intervals (0,1 s ... 99 h 59 min. 59,9 s)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**
Input circuit: AC/DC - 12...240 V; external control contact
Indicator: two digit LED display, LED diode
Mounting: direct on 35 mm rail mount

MT-TUA

Time relays; modular cover

page 284

Multifunctions - 7 time functions (E, Wu, Bp, T, R, Ws, Wa) + function ON / OFF
8 time ranges - settings of T interval (0,1 s ... 10 d)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**
Input circuit: AC/DC - 12...240 V; external control contact
Indicator: LED diode
Mounting: direct on 35 mm rail mount

MT-TUB

Time relays; modular cover

page 287

Multifunctions - 7 time functions (B, Ra, Esf, Wi, Wst, Est, Esp) + function ON / OFF
8 time ranges - settings of T interval (0,1 s ... 10 d)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**
Input circuit: AC/DC - 12...240 V; external control contact
Indicator: LED diode
Mounting: direct on 35 mm rail mount

MT-TE

Time relays; modular cover

page 290

Single-functions (E) + function ON / OFF
8 time ranges - settings of T interval (0,1 s ... 10 d)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**
Input circuit: AC/DC - 12...240 V
Indicator: LED diode
Mounting: direct on 35 mm rail mount

MT-TWU

Time relays; modular cover

page 293

Single-functions (Wu) + function ON / OFF
8 time ranges - settings of T interval (0,1 s ... 10 d)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**
Input circuit: AC/DC - 12...240 V
Indicator: LED diode
Mounting: direct on 35 mm rail mount

MT-TBP

Time relays; modular cover

page 296

Single-functions (Bp) + function ON / OFF
8 time ranges - settings of T interval (0,1 s ... 10 d)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**
Input circuit: AC/DC - 12...240 V
Indicator: LED diode
Mounting: direct on 35 mm rail mount

MT-TER

Time relays; modular cover

page 299

Single-functions (ER)
7 time ranges - independent settings of T1 and T2 intervals (0,1 s ... 100 h)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**
Input circuit: AC/DC - 12...240 V; external control contact
Indicator: LED diode
Mounting: direct on 35 mm rail mount

MT-TEA

Time relays; modular cover

page 302

Single-functions (EWa)
7 time ranges - independent settings of T1 and T2 intervals (0,1 s ... 100 h)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**
Input circuit: AC/DC - 12...240 V; external control contact
Indicator: LED diode
Mounting: direct on 35 mm rail mount

MT-TES

Time relays; modular cover

page 305

Single-functions (EWs)
7 time ranges - independent settings of T1 and T2 intervals (0,1 s ... 100 h)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**
Input circuit: AC/DC - 12...240 V; external control contact
Indicator: LED diode
Mounting: direct on 35 mm rail mount

MT-TEU

Time relays; modular cover

page 308

Single-functions (EWu + NWu)
7 time ranges - independent settings of T1 and T2 intervals (0,1 s ... 100 h)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**
Input circuit: AC/DC - 12...240 V; external control contact
Indicator: LED diode
Mounting: direct on 35 mm rail mount

MT-TIP	Time relays; modular cover
 **page 311**	Single-functions (Ii + Ip) 7 time ranges - independent settings of T1 and T2 intervals (0,1 s ... 100 h) Output circuit - contacts: 1 CO Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC** Input circuit: AC/DC - 12...240 V; external control contact Indicator: LED diode Mounting: direct on 35 mm rail mount
MT-TSA	Time relays; modular cover
 **page 314**	Single-functions (WsWa) 7 time ranges - independent settings of T1 and T2 intervals (0,1 s ... 100 h) Output circuit - contacts: 1 CO Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC** Input circuit: AC/DC - 12...240 V; external control contact Indicator: LED diode Mounting: direct on 35 mm rail mount
MT-TWT	Time relays; modular cover
 **page 317**	Single-functions (Wt) 7 time ranges - independent settings of T1 and T2 intervals (0,1 s ... 100 h) Output circuit - contacts: 1 CO Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC** Input circuit: AC/DC - 12...240 V; external control contact Indicator: LED diode Mounting: direct on 35 mm rail mount
MT-TSD	Time relays; modular cover
 **page 320**	Star-Delta start-up 7 time ranges - settings of T1 interval: 0,05 s ... 1 h; T2 interval: 0,05 s ... 1 s Output circuit - contacts: 2 x 1 CO Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC** Input circuit: AC/DC - 12...240 V Indicator: LED diode Mounting: direct on 35 mm rail mount
TR-EM1P-UNI	Time relays; modular cover
 **page 323**	Multifunctions - 7 time functions (E, Wu, Bp, R, Ws, Wa, Es) 7 time ranges - settings of T interval (0,1 s ... 100 h) Output circuit - contacts: 1 CO Rated load: **AC1 - 8 A / 250 V AC** Input circuit: AC/DC - 12...240 V; external control contact Indicator: LED diode Mounting: direct on 35 mm rail mount

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TR-EM2P-UNI

Time relays; modular cover

page 326

Multifunctions - 7 time functions (E, Wu, Bp, R, Ws, Wa, Es)
7 time ranges - settings of T interval (0,1 s ... 100 h)
Output circuit - contacts: 2 CO
Rated load: **AC1 - 8 A / 250 V AC**
Input circuit: AC/DC - 12...240 V; external control contact
Indicator: LED diode
Mounting: direct on 35 mm rail mount

TR-EI1P-UNI

Time relays; modular cover

page 329

Single-functions - 2 settings (time functions: Ii, Ip)
7 time ranges - independent settings of T1 and T2 intervals (0,1 s ... 100 h)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 8 A / 250 V AC**
Input circuit: AC/DC - 12...240 V
Indicator: LED diode
Mounting: direct on 35 mm rail mount

TR-EI2P-UNI

Time relays; modular cover

page 332

Multifunctions - 7 time functions (ER, EWs, EWu, Ip, Ii, WsWa, Wt)
7 time ranges - independent settings of T1 and T2 intervals (0,1 s ... 100 h)
Output circuit - contacts: 2 CO
Rated load: **AC1 - 8 A / 250 V AC**
Input circuit: AC/DC - 12...240 V; external control contact
Indicator: LED diode
Mounting: direct on 35 mm rail mount

TR-ES2P-UNI

Time relays; modular cover

page 335

Star-Delta start-up; 4 time ranges - settings of T1 interval: 0,5 s ... 3 min.;
T2 interval: 40 ms, 60 ms, 80 ms, 100 ms
Output circuit - contacts: 2 x 1 CO
Rated load: **AC1 - 8 A / 250 V AC**
Input circuit: AC/DC - 12...240 V
Indicator: LED diode
Mounting: direct on 35 mm rail mount

TR4N - 1 CO

Time relays; compact cover

page 337

Multifunctions - 10 time functions (E, Wu, Bp, Bi, PWM, R, Ws, Wa, Esa, B)
+ function ON / OFF; 8 time ranges - settings of T interval (0,1 s ... 10 d)
Output circuit - contacts: 1 CO
Rated load: **AC1 - 16 A / 250 V AC; DC1 - 16 A / 24 V DC**
Input circuit: AC - 115 ... 230 V; AC/DC - 12 ... 24 V; external control contact
Indicator: LED diode
Mounting: direct on 35 mm rail mount

TR4N - 2 CO

Time relays; compact cover

page 337

Multifunctions - 10 time functions (E, Wu, Bp, Bi, PWM, R, Ws, Wa, Esa, B)
+ function ON / OFF; 8 time ranges - settings of T interval (0,1 s ... 10 d)

Output circuit - contacts: 2 CO

Rated load: **AC1 - 8 A / 250 V AC; DC1 - 8 A / 24 V DC**

Input circuit: AC - 115 ... 230 V; AC/DC - 12 ... 24 V; external control contact

Indicator: LED diode

Mounting: direct on 35 mm rail mount

TR4N - 4 CO

Time relays; compact cover

page 341

Multifunctions - 10 time functions (E, Wu, Bp, Bi, PWM, R, Ws, Wa, Esa, B)
+ function ON / OFF; 8 time ranges - settings of T interval (0,1 s ... 10 d)

Output circuit - contacts: 4 CO

Rated load: **AC1 - 6 A / 250 V AC; DC1 - 6 A / 24 V DC**

Input circuit: AC - 115 ... 230 V; AC/DC - 12 ... 24 V; external control contact

Indicator: LED diode

Mounting: direct on 35 mm rail mount

T-R4 - GZM4

Time relays; with plug-in socket GZM4 or GZT4 or GZMB4

page 345

Single-functions - 4 versions (time functions: E, Wu, Bp, Bi)
7 time ranges - settings of T interval (0,1 s ... 100 h)

Output circuit - contacts: 4 CO

Rated load: **AC1 - 6 A / 230 V AC**

Input circuit: DC - 12 ... 24 V; AC - 24 ... 230 V

Indicator: LED diode; Mounting: for plug-in sockets

Accessories: screw terminals sockets, for mounting on 35 mm rail mount or on panel - GZM4, GZT4; spring terminals sockets, for mounting on 35 mm rail mount - GZMB4 **(pages 402-403)**

PIR15...T

Time relays; with time module COM3

page 349

Multifunctions - 8 time functions (E, Wu, Bp, Bi, R, Ws, Wa, Es)
8 time ranges - settings of T interval (0,1 s ... 10 d)

Output circuit - contacts: 2 CO, 3 CO

Rated load: **AC1 - 10 A / 250 V AC; DC1 - 10 A / 24 V DC**

Input circuit: DC - 24 ... 220 V; AC - 24 ... 240 V; external control contact

Set: electromagnetic relay R15 - 3 CO (2 CO), plug-in socket GZP11 (GZP8), time module COM3, clip GZP-0054, description plate GZP-0035

Indicator: LED diode; Mounting: direct on 35 mm rail mount or on panel

COM3

Universal time modules

page 354

Multifunctions - 8 time functions (E, Wu, Bp, Bi, R, Ws, Wa, Es)
8 time ranges - settings of T interval (0,1 s ... 10 d)

Output circuit - contacts: according to relays R15 - 3 CO (2 CO)

Input circuit: AC/DC - 12...240 V; external control contact

Indicator: LED diode

Mounting: combinable to relay R15 - 3 CO (2 CO) with plug-in socket GZP11 (GZP8)

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MR-EU1W1P	Monitoring relays; modular cover
 **page 358**	Multifunctions (DC and AC voltage monitoring in 1-phase network, with adjustable thresholds) - 2 functions (UNDER, WIN) Output circuit - contacts: 1 CO Rated load: **AC1 - 5 A / 250 V AC** Measuring circuits: AC - 230 V, 24 V; DC - 24 V Input circuit (supply) = Measuring circuits (monitoring voltages) Indicator: LED diode Mounting: direct on 35 mm rail mount
MR-EU31UW1P	Monitoring relays; modular cover
 **page 361**	Multifunctions (AC voltage monitoring in 1-phase network and 3-phase - 3(N)~ 400/230 V, with adjustable thresholds) - 5 functions (UNDER, UNDER+SEQ, WIN, WIN+SEQ, SEQ) Output circuit - contacts: 1 CO Rated load: **AC1 - 5 A / 250 V AC** Measuring circuits: AC - 230 V, 3(N)~ 400/230 V Input circuit (supply) = Measuring circuits (monitoring voltages) Indicator: LED diode Mounting: direct on 35 mm rail mount
MR-EU3M1P	Monitoring relays; modular cover
 **page 364**	Multifunctions (AC voltage monitoring in 3-phase network - 3(N)~ 400/230 V) - 2 functions (SEQ, ASYM) Output circuit - contacts: 1 CO Rated load: **AC1 - 5 A / 250 V AC** Measuring circuits: AC - 3(N)~ 400/230 V Input circuit (supply) = Measuring circuits (monitoring voltages) Indicator: LED diode Mounting: direct on 35 mm rail mount
MR-EI1W1P	Monitoring relays; modular cover
 **page 367**	Multifunctions (AC current monitoring in 1-phase network, with adjustable thresholds and adjustable hysteresis) - 6 functions (OVER, OVER+LATCH, UNDER, UNDER+LATCH, WIN, WIN+LATCH) Output circuit - contacts: 1 CO Rated load: **AC1 - 5 A / 250 V AC** Measuring circuit: AC - 230 V; Monitoring current: max. 10 A / 230 V AC Input circuit (supply) = Measuring circuit Indicator: LED diode; Mounting: direct on 35 mm rail mount
MR-ET1P	Monitoring relays; modular cover
 **page 370**	Single-functions (motor temperature monitoring) Output circuit - contacts: 1 CO Rated load: **AC1 - 5 A / 250 V AC** Measuring circuit: accompanied by motor PTC sensors or thermal switch Input circuit (supply): AC - 230 V Indicator: LED diode Mounting: direct on 35 mm rail mount

MR-GU1M2P-TR2	Monitoring relays; industrial cover
 **page 373**	Multifunctions (DC and AC voltage monitoring in 1-phase network, with adjustable thresholds) - 6 functions (OVER, OVER+LATCH, UNDER, UNDER+LATCH, WIN, WIN+LATCH) Output circuit - contacts: 2 CO Rated load: **AC1 - 3 A, 5 A / 250 V AC** Measuring circuits: AC/DC - 30 V, 60 V, 300 V Input circuit: AC - 12 ... 400 V AC (supply via TR2 transformer) Indicator: LED diode; Mounting: direct on 35 mm rail mount
MR-GU32P-TR2	Monitoring relays; industrial cover
 **page 376**	Multifunctions (AC voltages monitoring in phases - 230 V, 3-phase network 3(N)~ 400/230 V, with adjustable thresholds) - 6 functions (OVER, OVER+LATCH, UNDER, UNDER+LATCH, WIN, WIN+LATCH) Output circuit - contacts: 2 CO Rated load: **AC1 - 3 A, 5 A / 250 V AC** Measuring circuit: AC - 230 V Input circuit: AC - 12 ... 400 V AC (supply via TR2 transformer) Indicator: LED diode; Mounting: direct on 35 mm rail mount
MR-GU3M2P-TR2	Monitoring relays; industrial cover
 **page 379**	Multifunctions (AC voltage monitoring in 3-phase network, with adjustable thresholds) - 6 functions (UNDER, UNDER+SEQ, WIN, WIN+SEQ, SEQ, ASYM) Output circuit - contacts: 2 CO Rated load: **AC1 - 3 A, 5 A / 250 V AC** Measuring circuits: AC - 3(N)~ 400/230 V Input circuit: AC - 12 ... 400 V AC (supply via TR2 transformer) Indicator: LED diode Mounting: direct on 35 mm rail mount
MR-GU3M2P	Monitoring relays; industrial cover
 **page 382**	Multifunctions (AC voltage monitoring in 3-phase network) - 2 functions (SEQ, ASYM) Output circuit - contacts: 2 CO Rated load: **AC1 - 3 A, 5 A / 250 V AC** Measuring circuits: AC - 3(N)~ 400/230 V Input circuit (supply) = Measuring circuits (monitoring voltage) Indicator: LED diode Mounting: direct on 35 mm rail mount
MR-GI1M2P-TR2	Monitoring relays; industrial cover
 **page 385**	Multifunctions (DC and AC current monitoring in 1-phase network, with adjustable thresholds) - 6 functions (OVER, OVER+LATCH, UNDER, UNDER+LATCH, WIN, WIN+LATCH) Output circuit - contacts: 2 CO Rated load: **AC1 - 3 A, 5 A / 250 V AC** Measuring circuits: AC/DC - 0,1 A, 1 A, 10 A Input circuit: AC - 12 ... 400 V AC (supply via TR2 transformer) Indicator: LED diode; Mounting: direct on 35 mm rail mount

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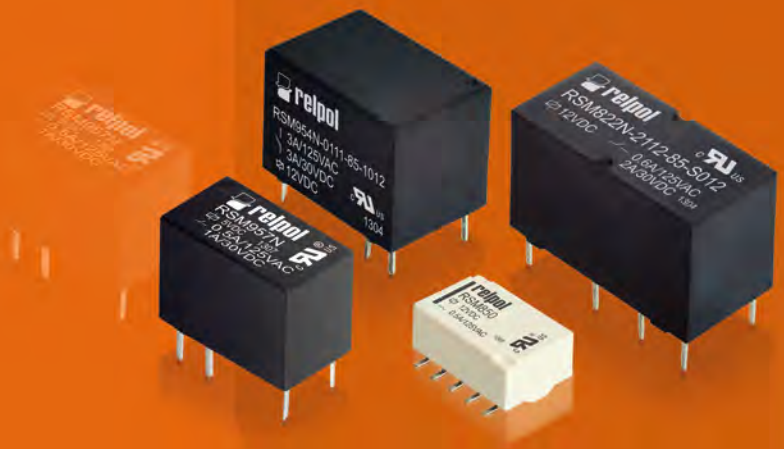
MR-GI3M2P-TR2	Monitoring relays; industrial cover
 page 388	Multifunctions (AC current monitoring in 3-phase network, with adjustable thresholds) - 6 functions (OVER, OVER+LATCH, UNDER, UNDER+LATCH, WIN, WIN+LATCH) Output circuit - contacts: 2 CO Rated load: **AC1 - 3 A, 5 A / 250 V AC** Measuring circuit: AC - 5 A Input circuit: AC - 12 ... 400 V AC (supply via TR2 transformer) Indicator: LED diode Mounting: direct on 35 mm rail mount
MR-GT2P-TR2	Monitoring relays; industrial cover
 page 391	Single-functions (motor temperature monitoring) Output circuit - contacts: 2 CO Rated load: **AC1 - 3 A, 5 A / 250 V AC** Measuring circuit: accompanied by motor PTC sensors Input circuit: AC - 12 ... 400 V AC (supply via TR2 transformer) Indicator: LED diode Mounting: direct on 35 mm rail mount

Relays
subminiature signal



relpol® S.A.

Subminiature relays are applied in e.g. telecommunication devices, office equipment, alarm systems, measurement devices, medical monitoring devices, AV devices, control sensors.

Their major features which provide for their applications in electronic circuits as interface-control units are: miniature dimensions, high switching capacity, high resistance of the cover to difficult operating conditions, wide range of control voltages.

Space-saving of the electronic plates, low power consumption of the control circuits, a few applicable mounting technologies are only few of the advantages offered by the aforementioned features.

They meet the requirements of RoHS Directive.
The relays are recognized and certified by:

version PCB ❷

version SMT ❸

- Polarized, monostable relays
- DC coils of up to 24 V DC, low coil power 0,14 ... 0,20 W
- For PCB • Sealed, for wave soldering and cleaning
- Dielectric strength 1000 Vrms
- Applications: for telecommunication devices, office equipment, alarm systems, measuring instruments, medical monitoring devices, AV devices, control sensors
- Conforms to FCC Part 68 - 1500 V - lightning surge
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		2 CO
Contact material		**AgPd/Au flash gold plating**
Rated / max. switching voltage	AC	125 V / 250 V
Min. switching voltage		10 mV ❶
Rated load	AC1	0,5 A / 125 V AC
	DC1	2 A / 30 V DC
Min. switching current		0,01 mA ❶
Rated current		2 A
Max. breaking capacity	AC1	62,5 VA
Contact resistance		≤ 50 mΩ

Coil data

Rated voltage	DC	3 ... 24 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1
Rated power consumption	DC	0,14 W 3 ... 12 V 0,20 W 24 V

Insulation according to PN-EN 60664-1

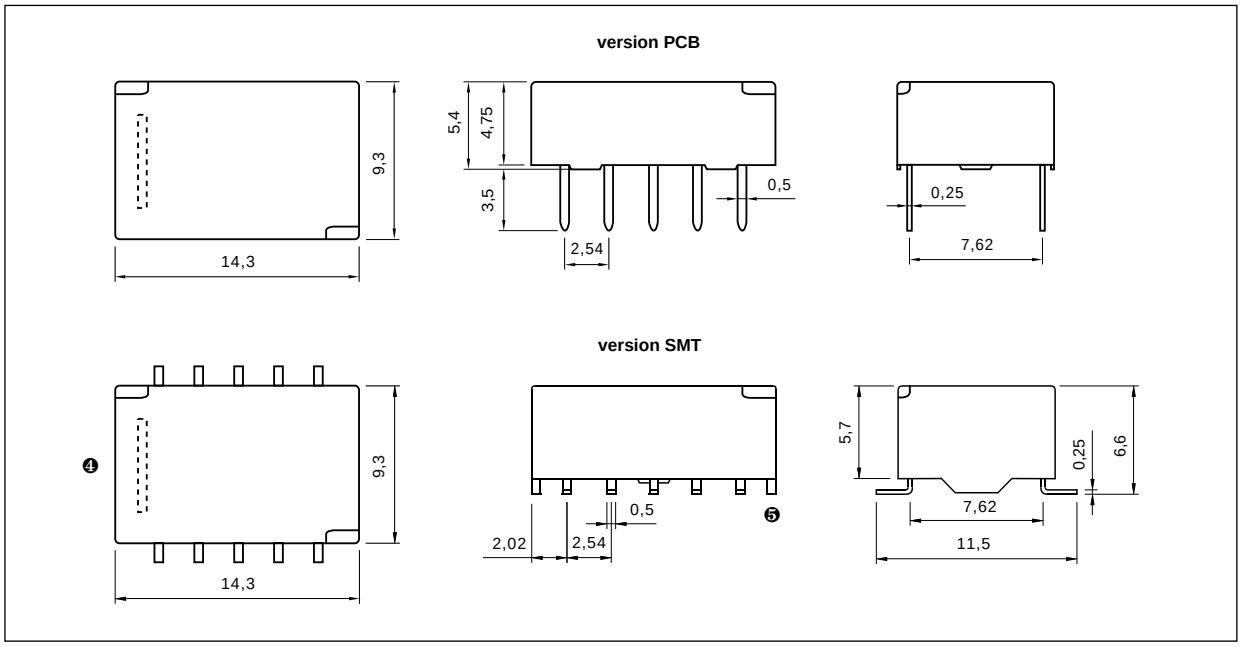
Insulation resistance		1 000 MΩ 500 V DC, 60 s
Dielectric strength		
• between coil and contacts		1 000 V AC type of insulation: basic
• contact clearance		1 000 V AC type of clearance: micro-disconnection
• pole - pole		1 000 V AC type of insulation: basic
Contact - coil distance		
• clearance		≥ 0,5 mm
• creepage		≥ 0,9 mm

General data

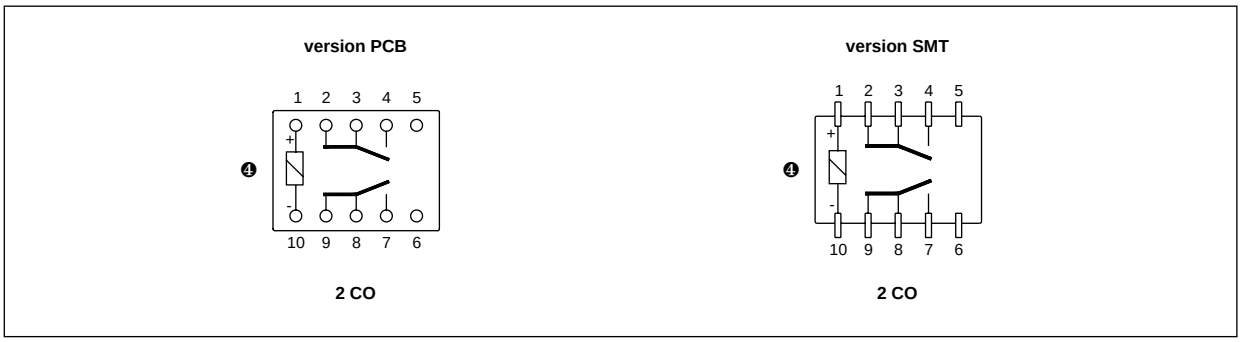
Operating / release time (typical values)		3 ms / 3 ms
Electrical life		
• resistive AC1	1 200 cycles/hour	10^5 0,5 A, 125 V AC
• resistive DC1	1 200 cycles/hour	2×10^5 1 A, 30 V DC
Mechanical life	10 800 cycles/hour	10^8
Dimensions (L x W x H)		PCB: 14,3 x 9,3 x 5,4 mm ❷ SMT: 14,3 x 9,3 x 6,6 mm ❸
Weight		1,5 g
Ambient temperature	• operating	PCB: -40...+70 °C SMT: -40...+85 °C
Cover protection category		IP 64 PN-EN 60529
Shock resistance		10 g
Vibration resistance		3 mm DA (constant amplitude) 10...55 Hz
Solder bath temperature		PCB: max. 235 °C SMT: max. 215 °C
Soldering time		max. 3 s

The data in bold type relate to the standard versions of the relays. ❶ Values refer to new relays, which have not been used for signals exceeding the maximum 10 mA and/or 6 V (DC or AC). After the current exceeds 10 mA and/or 6 V (DC or AC) relay can not be used for signals with the minimum values indicated in the technical data sheet. ❷ For version PCB: cover - black colour. ❸ For version SMT: cover - white colour.

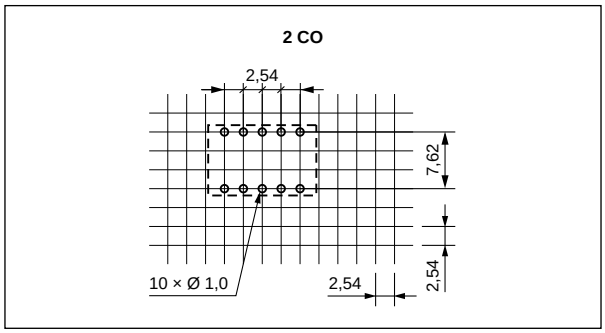
Dimensions



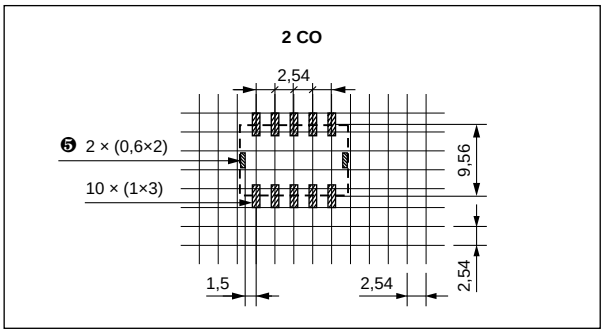
Connection diagrams (pin side view)



Pinout - version PCB (solder side view)



Soldering areas - version SMT (solder side view)



❹ Coil terminals position is indicated by the vertical strip on the relay cover. ❺ Temporary glue pad on PCB.

Mounting

Relays **RSM850** are designed for: • direct PCB mounting • surface mounting SMT.

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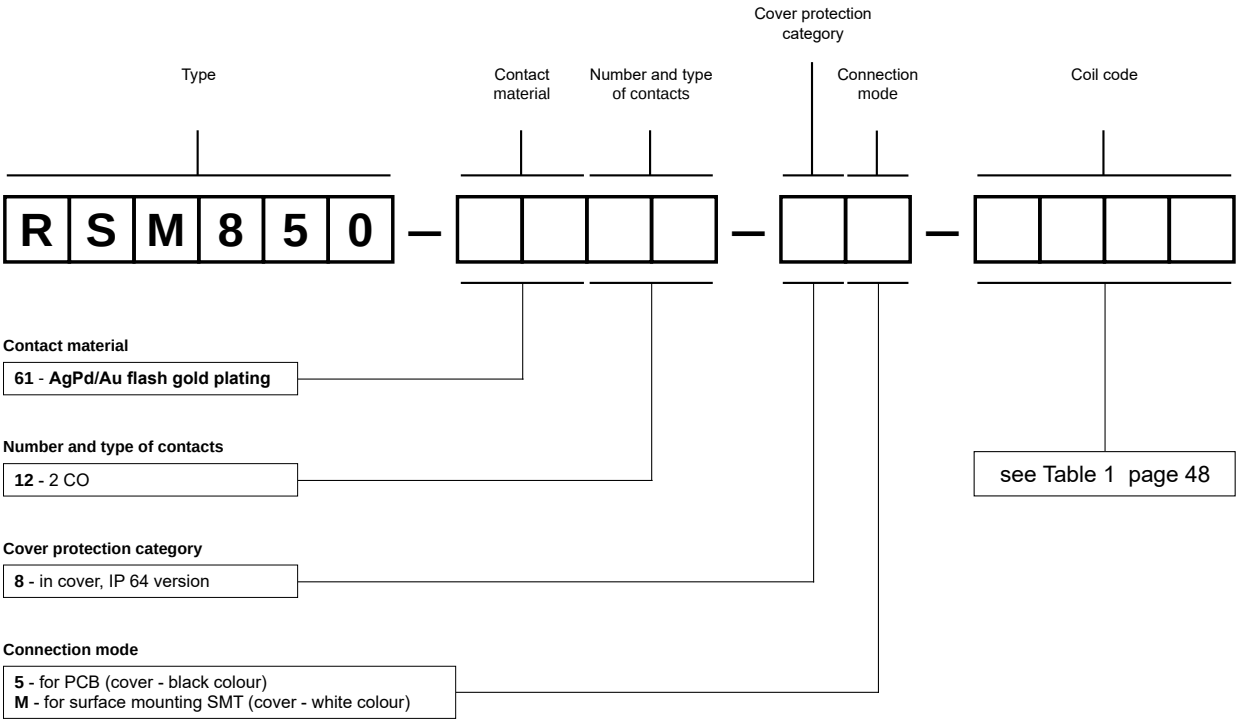
Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1003	3	64,3	± 10%	2,25	7,5
1005	5	178	± 10%	3,75	12,5
1006	6	257	± 10%	4,50	15,0
1009	9	579	± 10%	6,75	22,5
1012	12	1 028	± 10%	9,00	30,0
1024	24	2 880	± 10%	18,00	48,0

Ordering codes



Examples of ordering codes:

RSM850-6112-85-1012 relay **RSM850**, for PCB, two changeover contacts, contact material AgPd/Au flash gold plating, coil voltage 12 V DC, in cover (black colour) IP 64

RSM850-6112-8M-1048 relay **RSM850**, for surface mounting SMT, two changeover contacts, contact material AgPd/Au flash gold plating, coil voltage 48 V DC, in cover (white colour) IP 64

BISTABLE
1-COIL

- Polarized, bistable relays with one coil
- DC coils of up to 24 V DC, low coil power 0,10 ... 0,15 W
- For PCB • Sealed, for wave soldering and cleaning
- Dielectric strength 1000 Vrms
- Applications: for telecommunication devices, office equipment, alarm systems, measuring instruments, medical monitoring devices, AV devices, control sensors
- Conforms to FCC Part 68 - 1500 V - lightning surge
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		2 CO
Contact material		**AgPd/Au flash gold plating**
Rated / max. switching voltage	AC	125 V / 250 V
Min. switching voltage		10 mV ❶
Rated load	AC1	0,5 A / 125 V AC
	DC1	2 A / 30 V DC
Min. switching current		0,01 mA ❶
Rated current		2 A
Max. breaking capacity	AC1	62,5 VA
Contact resistance		≤ 50 mΩ

Coil data

Rated voltage	DC	3 ... 24 V
Must release voltage		-0,75 U_n ... -$U_{max.}$ ❷
Operating range of supply voltage		see Table 1
Rated power consumption	DC	0,10 W 3 ... 12 V 0,15 W 24 V

Insulation according to PN-EN 60664-1

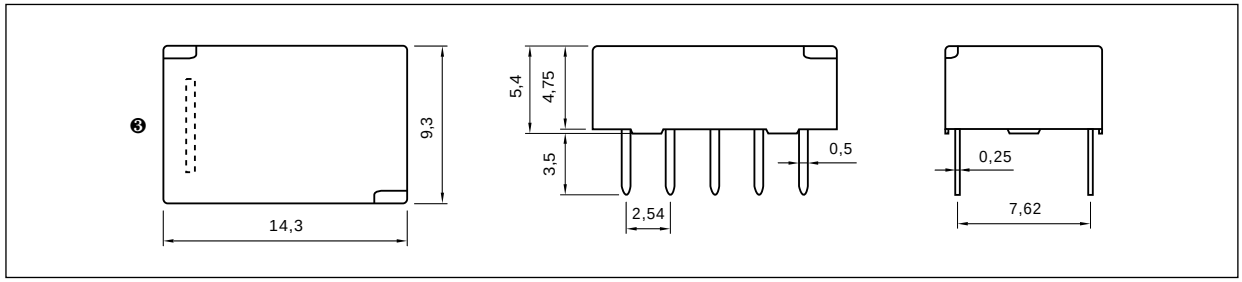
Insulation resistance	1 000 MΩ 500 V DC, 60 s
Dielectric strength	
• between coil and contacts	1 000 V AC type of insulation: basic
• contact clearance	1 000 V AC type of clearance: micro-disconnection
• pole - pole	1 000 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 0,5 mm
• creepage	≥ 0,9 mm

General data

Operating / release time (typical values)		3 ms / 3 ms
Electrical life		
• resistive AC1	1 200 cycles/hour	10^5 0,5 A, 125 V AC
• resistive DC1	1 200 cycles/hour	2×10^5 1 A, 30 V DC
Mechanical life	10 800 cycles/hour	10^8
Dimensions (L x W x H)		14,3 x 9,3 x 5,4 mm
Weight		1,5 g
Ambient temperature	• operating	-40...+70 °C
Cover protection category		IP 64 PN-EN 60529
Shock resistance		10 g
Vibration resistance		3 mm DA (constant amplitude) 10...55 Hz
Solder bath temperature		max. 235 °C
Soldering time		max. 3 s

The data in bold type relate to the standard versions of the relays. ❶ Values refer to new relays, which have not been used for signals exceeding the maximum 10 mA and/or 6 V (DC or AC). After the current exceeds 10 mA and/or 6 V (DC or AC) relay can not be used for signals with the minimum values indicated in the technical data sheet. ❷ Must release voltage are the values of the operating supply voltage range of opposite polarization, specified in Table 1. ❸ Coil terminals position is indicated by the vertical strip on the relay cover.

Dimensions



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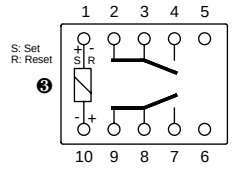
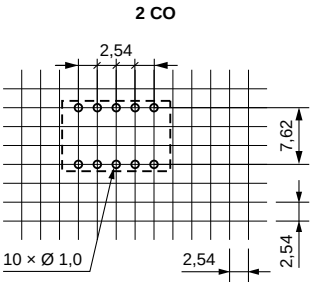
Connection diagram (pin side view)



2 CO

❸ Coil terminals position is indicated by the vertical strip on the relay cover.

Pinout (solder side view)



2 CO

Mounting

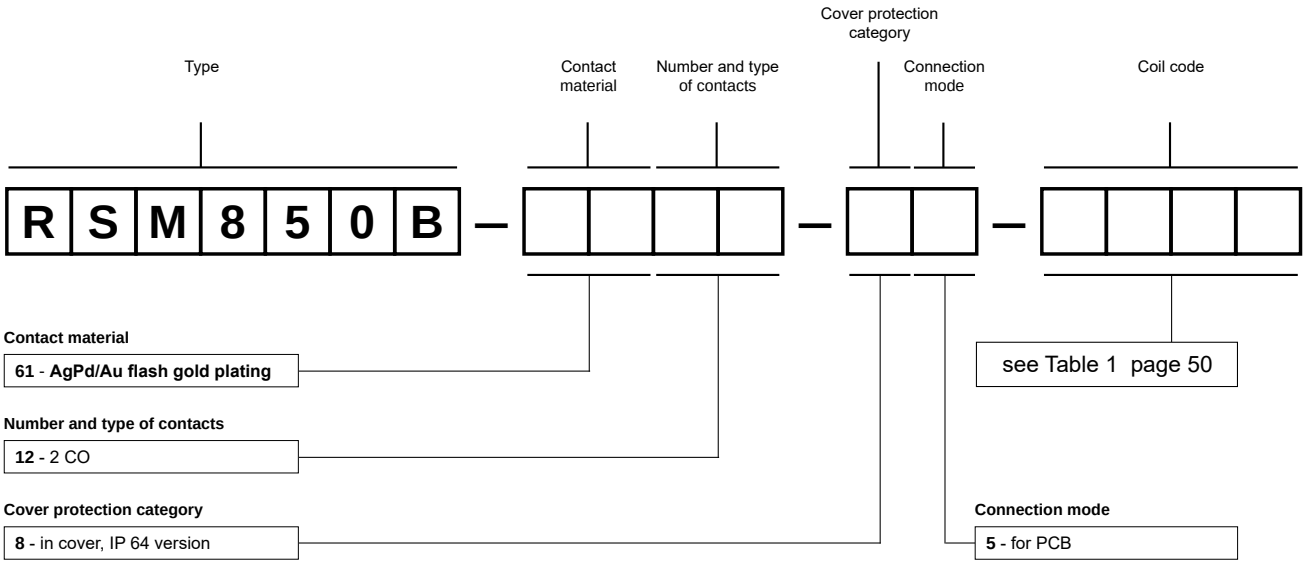
Relays **RSM850B** are designed for direct PCB mounting.

Coil data - DC voltage version

Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1003	3	90	± 10%	2,25	8,7
1005	5	250	± 10%	3,75	14,5
1006	6	360	± 10%	4,50	17,4
1009	9	810	± 10%	6,75	26,1
1012	12	1 440	± 10%	9,00	34,8
1024	24	3 840	± 10%	18,00	57,6

Ordering codes



Example of ordering code:

RSM850B-6112-85-1012 bistable relay **RSM850B** with one coil, for PCB, two changeover contacts, contact material AgPd/Au flash gold plating, coil voltage 12 V DC, in cover IP 64

- Subminiature monostable relays for switching low loads
- DC coils - standard and sensitive of up to 48 V DC, low coil power 0,20 W (sensitive version) or 0,30 W (standard version) • For PCB
- Sealed, for wave soldering and cleaning • Double bifurcated contact
- Applications: for telecommunication devices, office equipment, alarm systems, measuring instruments, medical monitoring devices, AV devices, control sensors
- Conforms to FCC Part 68 - 1500 V - lightning surge
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		2 CO
Contact material		**AgNi/Au flash gold plating**
Rated / max. switching voltage	AC	125 V / 250 V
Min. switching voltage		10 mV ❶
Rated load	AC1	0,6 A / 125 V AC
	DC1	3 A / 2 A (NO/NC) / 30 V DC
Min. switching current		1 mA ❶
Rated current		0,6 A / 125 V AC 2 A / 30 V DC
Max. breaking capacity	AC1	125 VA
Contact resistance		≤ 100 mΩ

Coil data

Rated voltage	DC	3 ... 24 V sensitive version	48 V standard version
Must release voltage		DC: ≥ 0,1 U_n	
Operating range of supply voltage		see Tables 1, 2	
Rated power consumption	DC	0,20 W sensitive version	0,30 W standard version

Insulation according to PN-EN 60664-1

Insulation resistance	> 1 000 MΩ	500 V DC, 60 s
Dielectric strength		
• between coil and contacts	1 000 V AC	type of insulation: basic (1500 V AC; 1,2 / 50 µs)
• contact clearance	1 000 V AC	type of clearance: micro-disconnection (1500 V AC; 1,2 / 50 µs)
• pole - pole	1 000 V AC	type of insulation: basic (1500 V AC; 1,2 / 50 µs)
Contact - coil distance		
• clearance	≥ 1,3 mm	
• creepage	≥ 1,5 mm	

General data

Operating / release time (typical values)		4,5 ms / 1,5 ms	
Electrical life (number of cycles)			
• resistive AC1	1 800 cycles/hour	10^5	0,6 A, 125 V AC
• resistive DC1	1 800 cycles/hour	10^5	2 A, 30 V DC
Mechanical life	18 000 cycles/hour	10^8	
Dimensions (L x W x H)		20,5 x 10,2 x 12,5 mm	
Weight		4,5 g	
Ambient temperature	• operating	-30...+90 °C sensitive version	-30...+80 °C standard version
Cover protection category		IP 64	PN-EN 60529
Shock resistance		10 g	
Vibration resistance		1,5 mm DA (constant amplitude)	10...55 Hz
Solder bath temperature		max. 235 °C	
Soldering time		max. 3,5 s	

The data in bold type relate to the standard versions of the relays.
❶ Reference value, relays previously tested and used at the resistance load of more than 10 mA / 6 V DC or at the peak AC voltage are not recommended for later switching of low level signals.

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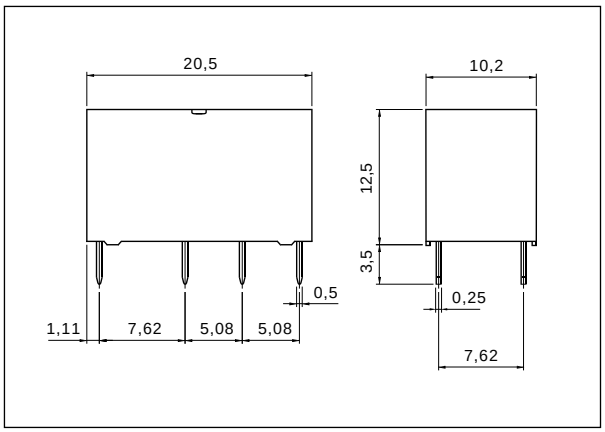
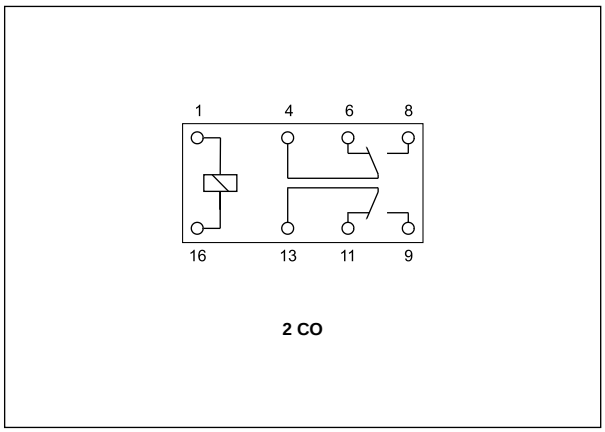
Dimensions

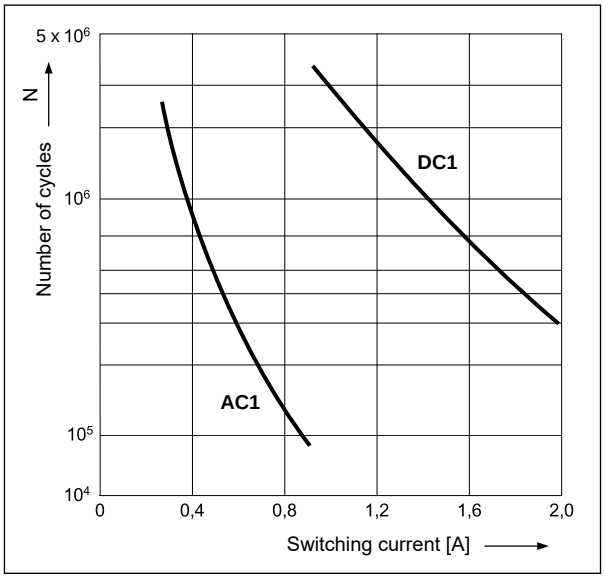


Connection diagram (pin side view)



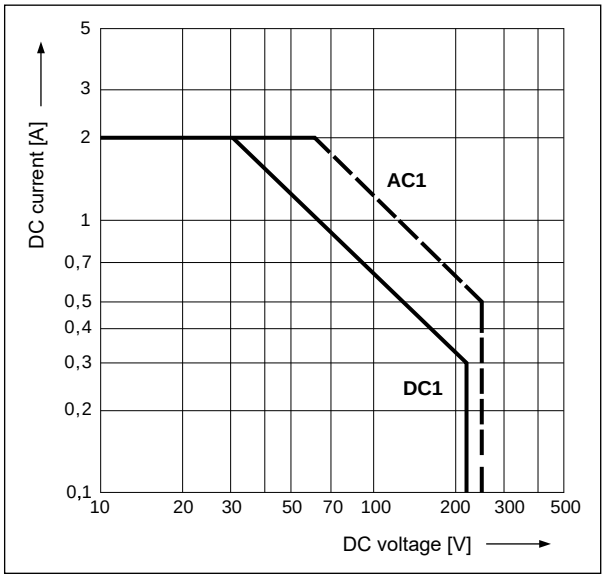
Electrical life at AC resistive current. Switching frequency: 1 800 cycles/hour

Fig. 1

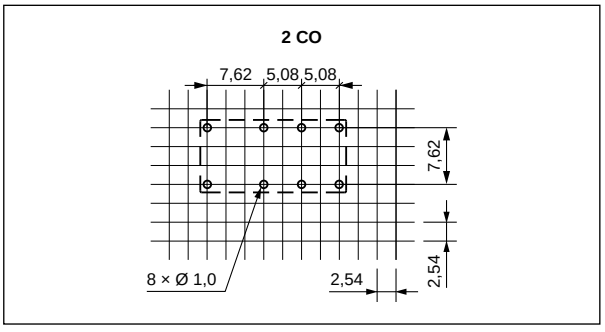


Max. DC resistive load breaking capacity

Fig. 2



Pinout (solder side view)



Mounting

Relays **RSM822N** are designed for direct PCB mounting.

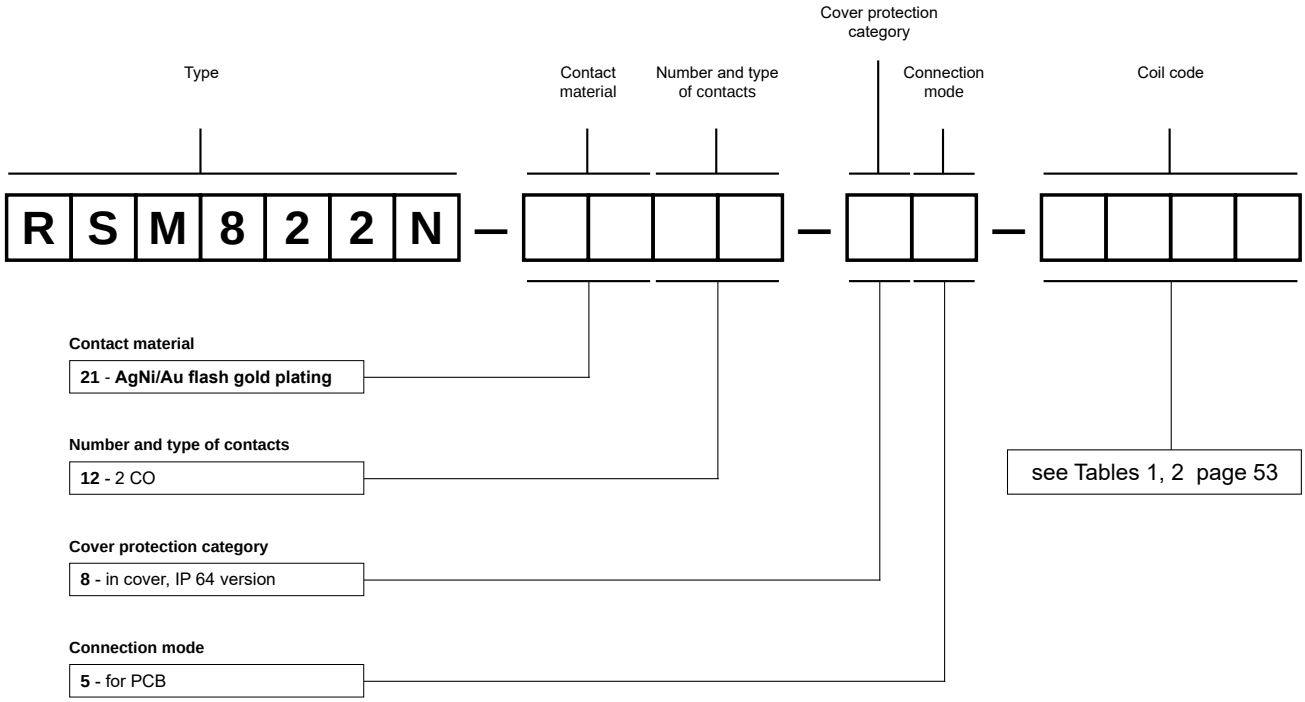
Coil data - DC voltage version, sensitive — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
S003	3	45	± 10%	2,1	6,5
S005	5	125	± 10%	3,5	10,8
S006	6	180	± 10%	4,2	13,0
S009	9	405	± 10%	6,3	19,5
S012	12	720	± 10%	8,4	26,5
S024	24	2 880	± 10%	16,8	52,9

Coil data - DC voltage version, standard — Table 2

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1048	48	7 680	± 10%	33,6	84,9

Ordering codes



Examples of ordering codes:

RSM822N-2112-85-S005 relay **RSM822N**, for PCB, two changeover contacts, contact material AgNi/Au flash gold plating, sensitive coil voltage 5 V DC, in cover IP 64

RSM822N-2112-85-1048 relay **RSM822N**, for PCB, two changeover contacts, contact material AgNi/Au flash gold plating, standard coil voltage 48 V DC, in cover IP 64

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- Subminiature monostable relays
- DC coils of up to 24 V DC, low coil power 0,36 W
- For PCB
- Sealed, for wave soldering and cleaning
- Small dimensions, light weight
- Applications: for telecommunication devices, household electrical appliance, office equipment, etc.
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO
Contact material		**Ag/Au flash gold plating**
Rated / max. switching voltage	AC	125 V / 220 V
Min. switching voltage		6 V
Rated load	AC1	3 A / 125 V AC
	DC1	3 A / 30 V DC
Min. switching current		50 mA
Rated current		3 A
Max. breaking capacity	AC1	375 VA
Contact resistance		≤ 50 mΩ

Coil data

Rated voltage	DC	3 ... 24 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1
Rated power consumption	DC	0,36 W

Insulation according to PN-EN 60664-1

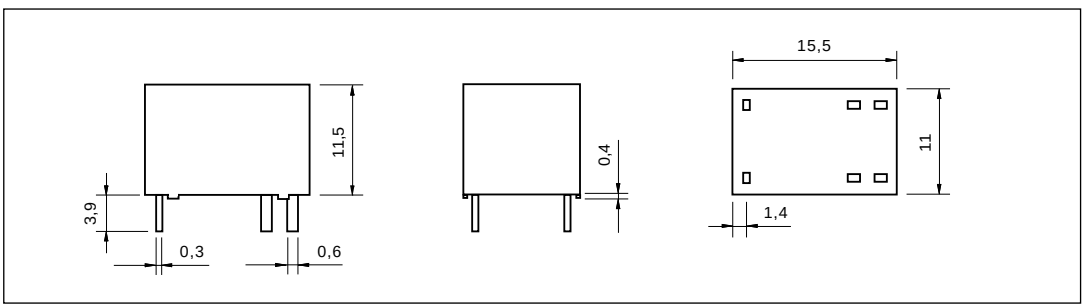
Insulation resistance	100 MΩ	500 V DC, 60 s
Dielectric strength		
• between coil and contacts	1 000 V AC	type of insulation: basic
• contact clearance	500 V AC	type of clearance: micro-disconnection
Contact - coil distance		
• clearance	≥ 1,2 mm	
• creepage	≥ 2 mm	

General data

Operating / release time (typical values)		5 ms / 5 ms	
Electrical life (number of cycles)			
• resistive AC1	1 800 cycles/hour	10^5	3 A, 125 V AC
• resistive DC1	1 800 cycles/hour	10^5	3 A, 30 V DC
Mechanical life	18 000 cycles/hour	10^7	
Dimensions (L x W x H)		15,5 x 11 x 11,5 mm	
Weight		3,5 g	
Ambient temperature	• operating	-25...+55 °C	
Cover protection category		IP 64	PN-EN 60529
Shock resistance		10 g	
Vibration resistance		1,5 mm DA (constant amplitude)	10...55 Hz
Solder bath temperature		max. 235 °C	
Soldering time		max. 3,5 s	

The data in bold type relate to the standard versions of the relays.

Dimensions



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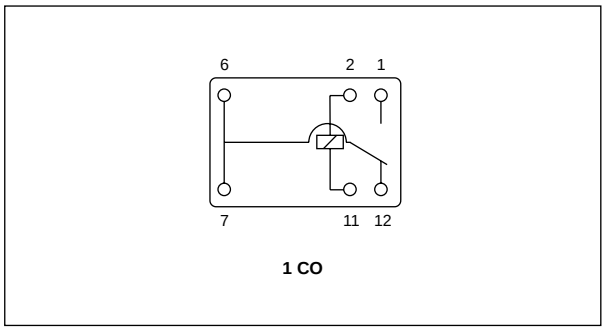
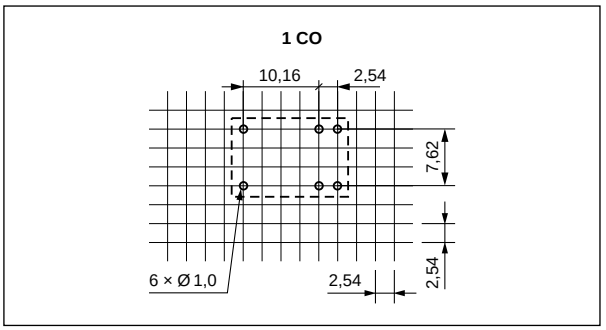
Connection diagram (pin side view)



Pinout (solder side view)



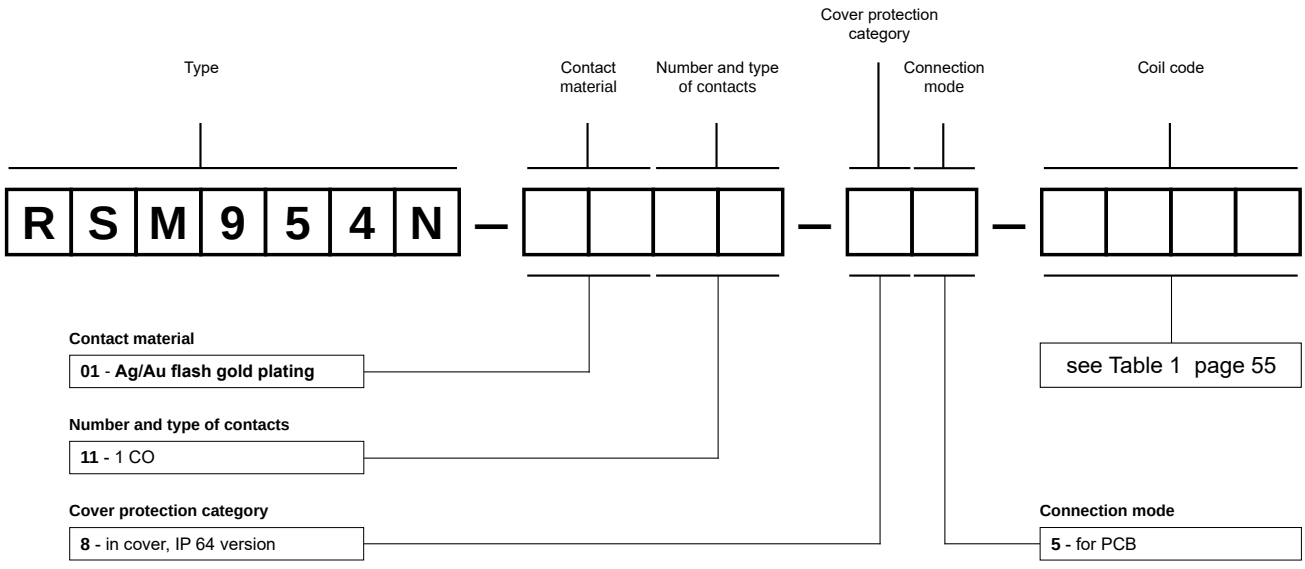
Mounting

Relays **RSM954N** are designed for direct PCB mounting.

Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1003	3	25	± 10%	2,25	3,3
1005	5	75	± 10%	3,75	5,5
1006	6	100	± 10%	4,50	6,6
1009	9	225	± 10%	6,75	9,9
1012	12	400	± 10%	9,00	13,2
1024	24	1 600	± 10%	18,00	26,5

Ordering codes



Example of ordering code:

RSM954N-0111-85-1005 relay **RSM954N**, for PCB, one changeover contact, contact material Ag/Au flash gold plating, coil voltage 5 V DC, in cover IP 64

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- Subminiature monostable relays
- DC coils - sensitive of up to 24 V DC, low coil power 0,15 W
- For PCB
- Sealed, for wave soldering and cleaning
- Small dimensions, light weight
- Applications: for telecommunication devices, household electrical appliance, office equipment, etc.
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO
Contact material		**Ag/Au flash gold plating**
Rated / max. switching voltage	AC	125 V / 220 V
Min. switching voltage		6 V
Rated load	AC1	0,5 A / 125 V AC
	DC1	1 A / 30 V DC
Min. switching current		50 mA
Rated current		1 A
Max. breaking capacity	AC1	62,5 VA
Contact resistance		≤ 100 mΩ

Coil data

Rated voltage	DC	3 ... 24 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1
Rated power consumption	DC	0,15 W

Insulation according to PN-EN 60664-1

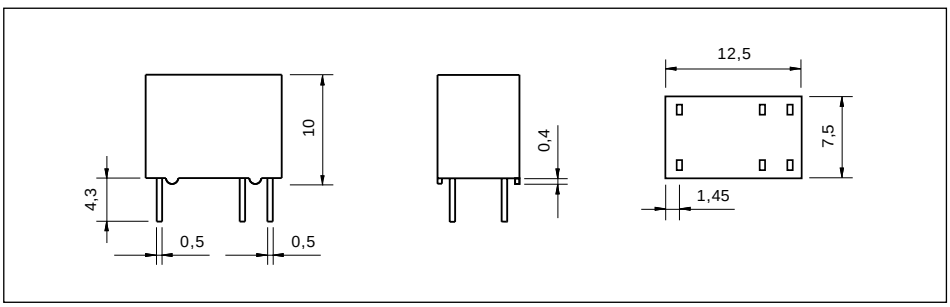
Insulation resistance	> 1 000 MΩ	500 V DC, 60 s
Dielectric strength		
• between coil and contacts	1 000 V AC	type of insulation: basic
• contact clearance	400 V AC	type of clearance: micro-disconnection
Contact - coil distance		
• clearance	≥ 0,6 mm	
• creepage	≥ 0,6 mm	

General data

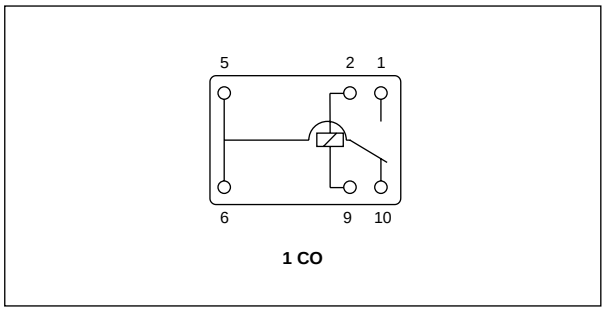
Operating / release time (typical values)		5 ms / 5 ms
Electrical life (number of cycles)		
• resistive AC1	1 800 cycles/hour	10^5 0,5 A, 125 V AC
• resistive DC1	1 800 cycles/hour	10^5 1 A, 30 V DC
Mechanical life	18 000 cycles/hour	5 x 10^6
Dimensions (L x W x H)		12,5 x 7,5 x 10 mm
Weight		2,2 g
Ambient temperature	• operating	-30...+70 °C
Cover protection category		IP 64 PN-EN 60529
Shock resistance		10 g
Vibration resistance		3,3 mm DA (constant amplitude) 10...55 Hz
Solder bath temperature		max. 235 °C
Soldering time		max. 3,5 s

The data in bold type relate to the standard versions of the relays.

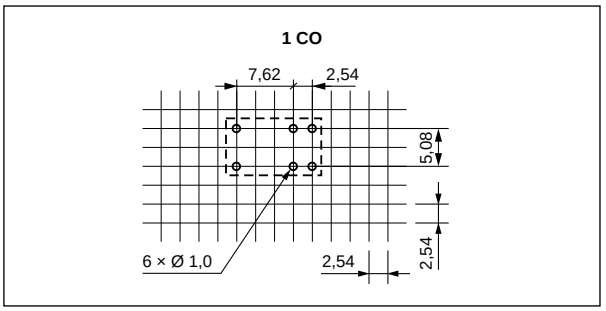
Dimensions



Connection diagram (pin side view)



Pinout (solder side view)



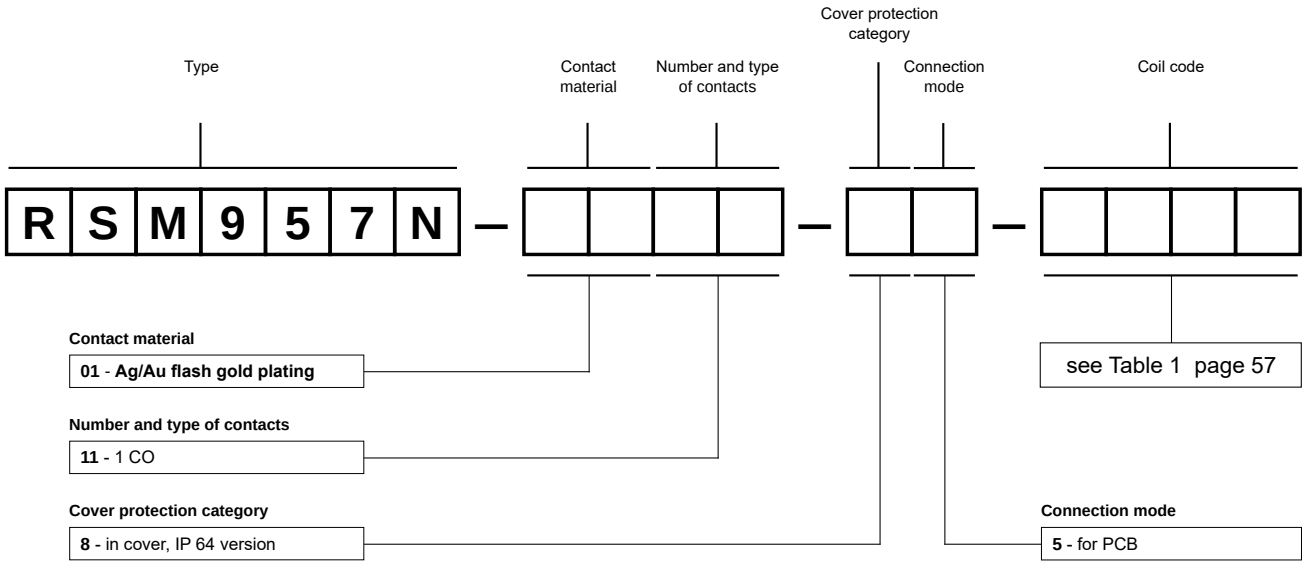
Mounting

Relays **RSM957N** are designed for direct PCB mounting.

Coil data - DC voltage version, sensitive — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
S003	3	60	± 10%	2,4	6
S005	5	166,7	± 10%	4,0	10
S006	6	240	± 10%	4,8	12
S009	9	540	± 10%	7,2	18
S012	12	960	± 10%	9,6	24
S024	24	3 840	± 10%	19,2	48

Ordering codes



Example of ordering code:

RSM957N-0111-85-S005 relay **RSM957N**, for PCB, one changeover contact, contact material Ag/Au flash gold plating, sensitive coil voltage 5 V DC, in cover IP 64

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Relays
miniature

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Owing to their universality, miniature relays may be applied in alarm systems, as interface systems in industrial automation, power-electric systems, lighting control systems (e.g. in daylight-saving switches), staircase lighting control systems, emergency lighting control systems, time relays as their output terminals, control systems of household and catering industry equipment, and in numerous electric systems.
This type of relay is of high quality and reliability.

The basic features of the miniature relays are: wide range of coil voltages, AC and DC coils, rated contact switching currents up to 20 A (depending on the relay type), height from 10,5 to 26 mm (depending on the relay type), high electric strength of the insulation, possibility of mounting on PCB, SMT and in plug-in sockets. RM84 and RM85 relays are the basis for the interface relays of PI84 and PI85 types which are described in the section of ”Interface relays”.

They meet the requirements of RoHS Directive.
The relays are recognized and certified by:

RM12 1 CO

RM12 1 NO / 1 NC

NEW

- DC coils - of up to 60 V DC
- 5000 V / 8 mm reinforced insulation
- For PCB
- Terminals: 3,2 mm for version 1 CO,
  5,04 mm for version 1 NO and 1 NC
- Compliance with standards: PN-EN 61810-1, PN-EN 60730-1, PN-EN 60335-1, UL 508, CSA 22.2 No.14-95
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO, 1 NC
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$, $AgSnO_2$/Au hard gold plating
Rated / max. switching voltage	AC	250 V / 400 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating 10 V $AgSnO_2$, 5 V $AgSnO_2$/Au hard gold plating
Rated load	AC1 DC1	8 A / 250 V AC 8 A / 24 V DC
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating 10 mA $AgSnO_2$, 2 mA $AgSnO_2$/Au hard gold plating
Max. inrush current		10 A
Rated current		8 A
Max. breaking capacity	AC1	2000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating 1 W $AgSnO_2$, 0,05 W $AgSnO_2$/Au hard gold plating
Contact resistance		≤ 100 mΩ 100 mA, 24 V
Max. operating frequency • at rated load • no load	 AC1	 600 cycles/hour 18 000 cycles/hour

Coil data

Rated voltage	DC	5 ... 60 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1
Must operate voltage		≤ 0,7 U_n
Rated power consumption	DC	0,25 W

Insulation according to PN-EN 60664-1

Insulation rated voltage		400 V AC
Rated surge voltage		4 000 V 1,2 / 50 µs
Overvoltage category		III IEC 61810-5
Insulation pollution degree		3
Flammability class		V-0 UL94
Insulation group (contact plate)		IIIa
Tracking resistance category		2 UL508
Dielectric strength	• between coil and contacts • contact clearance	5 000 V AC 1 min., type of insulation: reinforced 1 000 V AC 1 min., type of clearance: micro-disconnection
Contact - coil distance	• clearance • creepage	≥ 8 mm ≥ 8 mm

General data

Operating / release time (typical values)		10 ms / 5 ms
Electrical life (number of cycles)	• resistive AC1 • resistive DC1	> 4 x 10^4 1 NO, 8 A, 250 V AC, 70 °C > 2,5 x 10^4 1 CO, 8 A, 250 V AC, 85 °C > 10^4 1 NO, 10 A, 250 V AC, 85 °C > 10^5 8 A, 24 V DC
Mechanical life	18 000 cycles/hour	10^7
Load according to UL 508		10 A 277 V AC, general purpose 0,5 HP 240 V AC, single-phase motor B300 inductive load (Pilot Duty)
Dimensions (L x W x H)		28,5 x 10,1 x 12,5 mm
Weight		8 g
Ambient temperature	• storage • operating	-40...+85 °C -40...+85 °C
Cover protection category		IP 40 or **IP 67** PN-EN 60529
Environmental protection		RTII PN-EN 116000-3
Shock resistance	(NO/NC)	10 g / 5 g
Vibration resistance	(NO/NC)	10 g / 5 g

The data in bold type relate to the standard versions of the relays.

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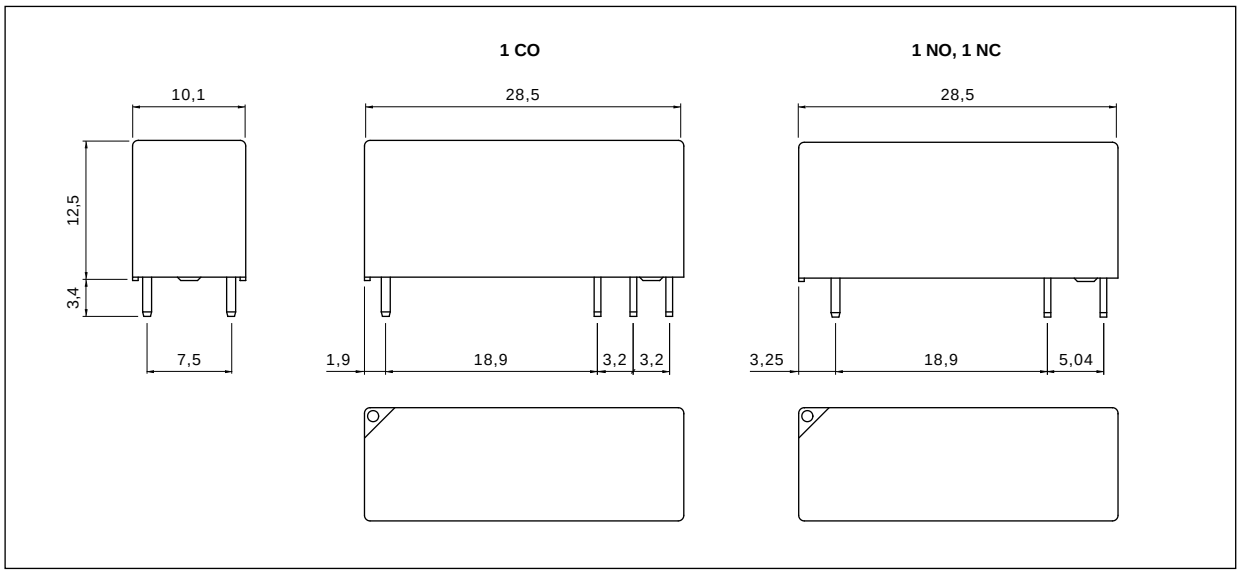
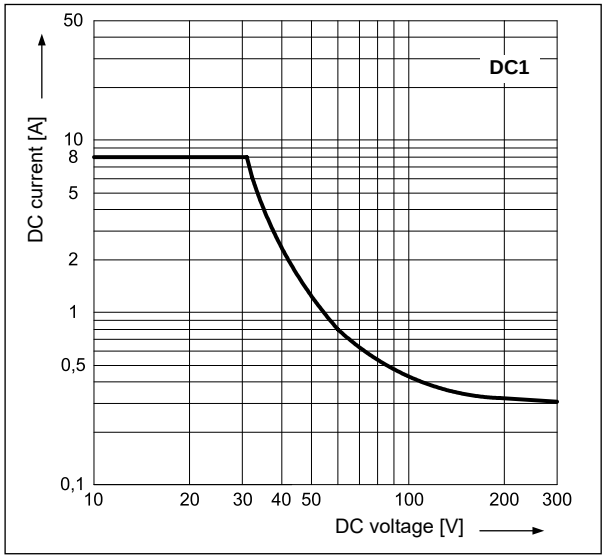
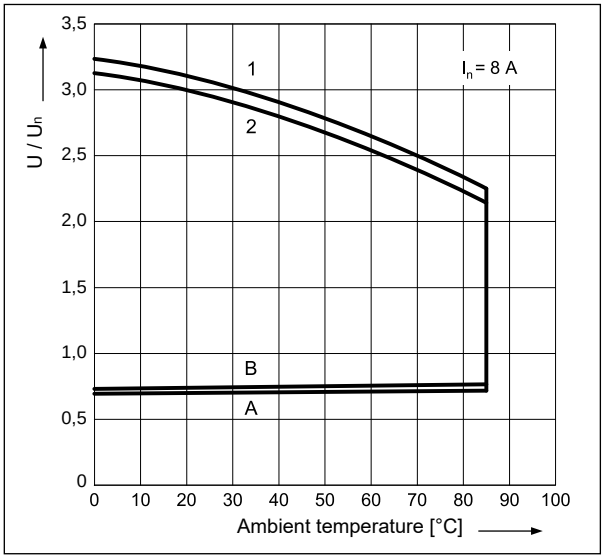
Dimensions



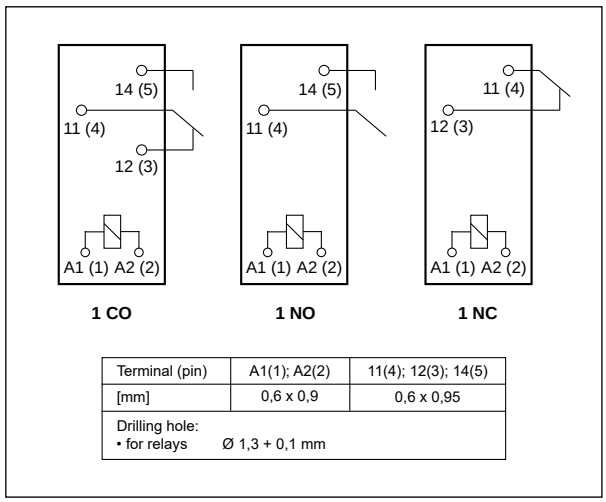
Max. DC resistive load breaking capacity Fig. 1



Coil operating range - DC Fig. 2



Connection diagrams (pin side view)

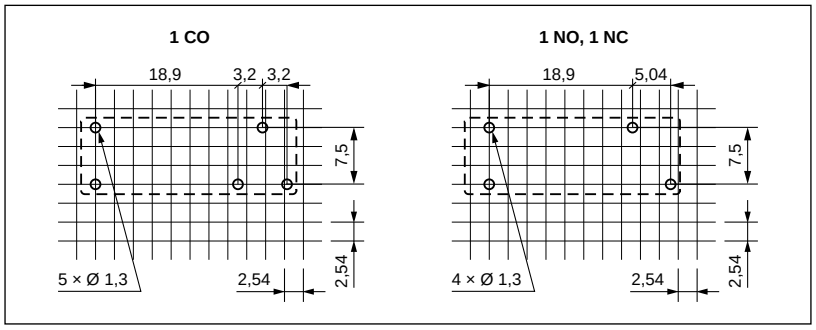


Terminal (pin)	A1(1); A2(2)	11(4); 12(3); 14(5)
[mm]	0,6 x 0,9	0,6 x 0,95
Drilling hole: • for relays	Ø 1,3 + 0,1 mm	

Description of Fig. 2

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - rated load

Pinout (solder side view)



Mounting

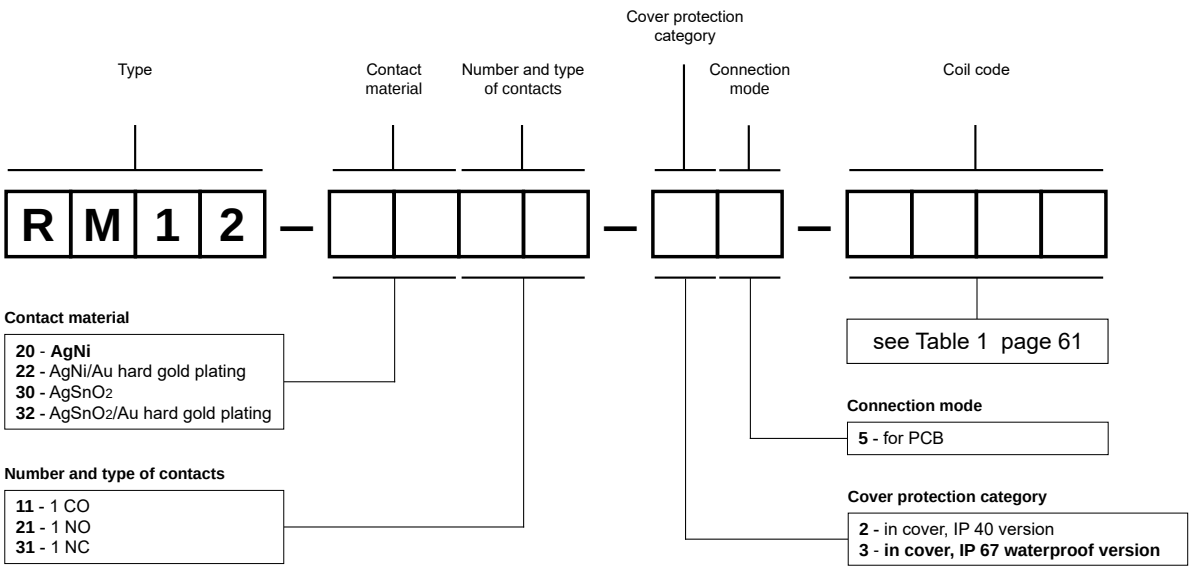
Relays **RM12** are designed for direct PCB mounting.

Coil data - DC voltage version

Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	5	102	± 10%	3,5	15,0
1006	6	144	± 10%	4,2	18,0
1009	9	330	± 10%	6,3	27,0
1012	12	580	± 10%	8,4	36,0
1018	18	1 300	± 10%	12,6	54,0
1024	24	2 300	± 10%	16,8	72,0
1048	48	9 340	± 10%	33,6	144,0
1060	60	14 000	± 10%	42,0	180,0

Ordering codes



Examples of ordering codes:

RM12-2011-35-1012 relay **RM12**, for PCB, one changeover contact, contact material AgNi, coil voltage 12 V DC, in cover IP 67

RM12-3031-25-1024 relay **RM12**, for PCB, one normally closed contact, contact material $AgSnO_2$, coil voltage 24 V DC, in cover IP 40

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- DC coils - of up to 24 V DC, low coil power 0,22 ... 0,25 W
- For PCB
- Small dimensions, light weight
- Applications: for household electrical appliance, automation systems, electrical equipment, instrument and meter, telecommunication devices, remote control facilities
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO	
Contact material		**AgNi**, $AgSnO_2$	
Rated / max. switching voltage	AC	250 V / 440 V	
Min. switching voltage		6 V	
Rated load	AC1	1 CO: 8 A / 250 V AC	1 NO: 10 A / 250 V AC
	DC1	1 CO: 8 A / 30 V DC	1 NO: 10 A / 30 V DC
Min. switching current		100 mA	
Rated current		10 A	
Max. breaking capacity	AC1	2 500 VA	
Contact resistance		≤ 100 mΩ	

Coil data

Rated voltage	DC	5 ... 24 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1
Rated power consumption	DC	0,22 ... 0,25 W

Insulation according to PN-EN 60664-1

Insulation resistance	> 1 000 MΩ	500 V DC, 60 s
Dielectric strength		
• between coil and contacts	5 000 V AC	type of insulation: reinforced
• contact clearance	1 000 V AC	type of clearance: micro-disconnection
Contact - coil distance		
• clearance	≥ 8 mm	
• creepage	≥ 8 mm	

General data

Operating / release time (typical values)		10 ms / 5 ms	
Electrical life (number of cycles)			
• resistive AC1	1 800 cycles/hour	10^5	10 A, 250 V AC
• resistive DC1	1 800 cycles/hour	10^5	10 A, 30 V DC
Mechanical life	18 000 cycles/hour	10^7	
Dimensions (L x W x H)		28,7 x 10,3 x 12,7 mm	
Weight		8 g	
Ambient temperature	• operating	-40...+85 °C	
Cover protection category		IP 40 or **IP 67**	PN-EN 60529
Environmental protection		RTII or **RTIII**	PN-EN 116000-3
Shock resistance		10 g	
Vibration resistance		1 NO: 0,80 mm DA (without coil voltage)	10...55 Hz
		1 NC: 1,65 mm DA (constant amplitude)	10...55 Hz
Solder bath temperature		max. 260 °C	
Soldering time		max. 3 s	

The data in bold type relate to the standard versions of the relays.

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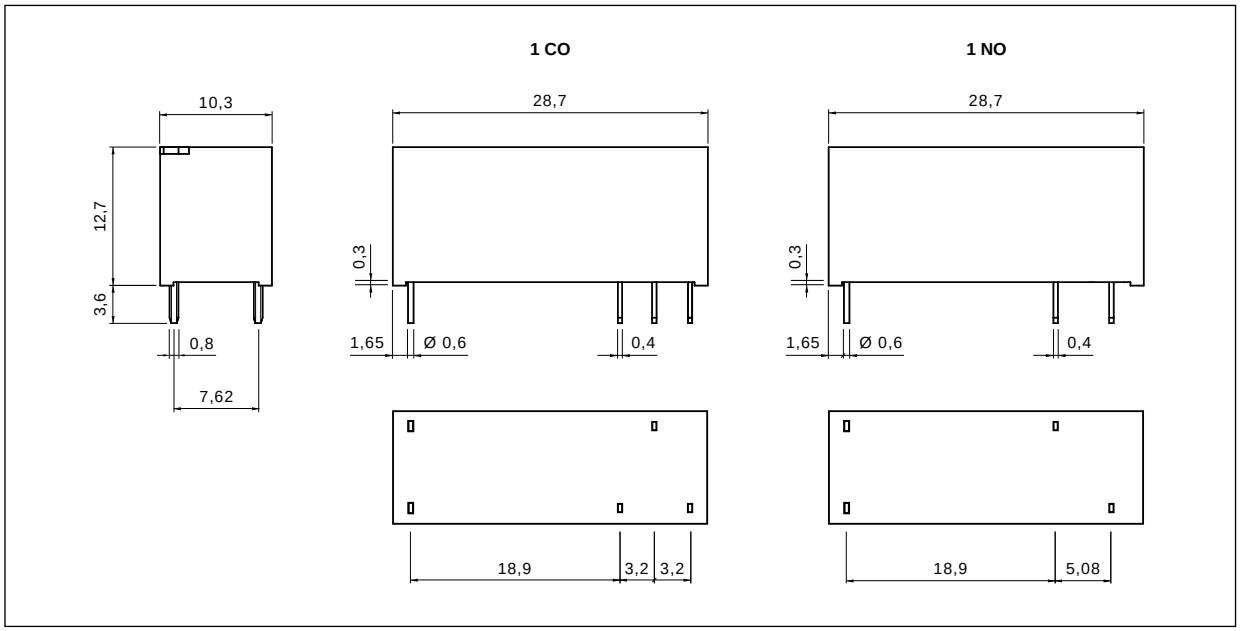
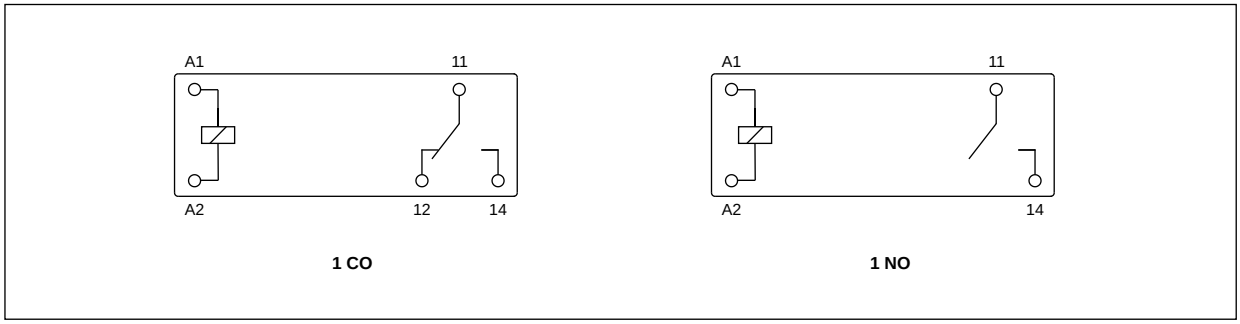
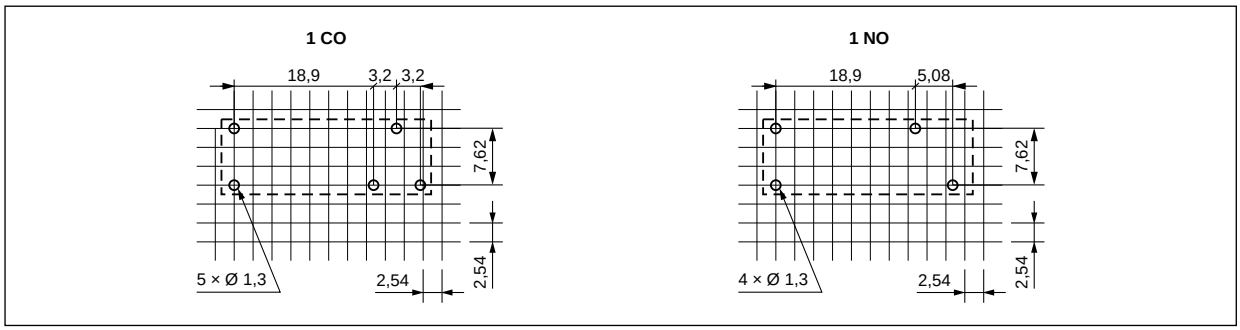
Dimensions



Connection diagrams (pin side view)



Pinout (solder side view)



Mounting

Relays **RM12N** are designed for direct PCB mounting.

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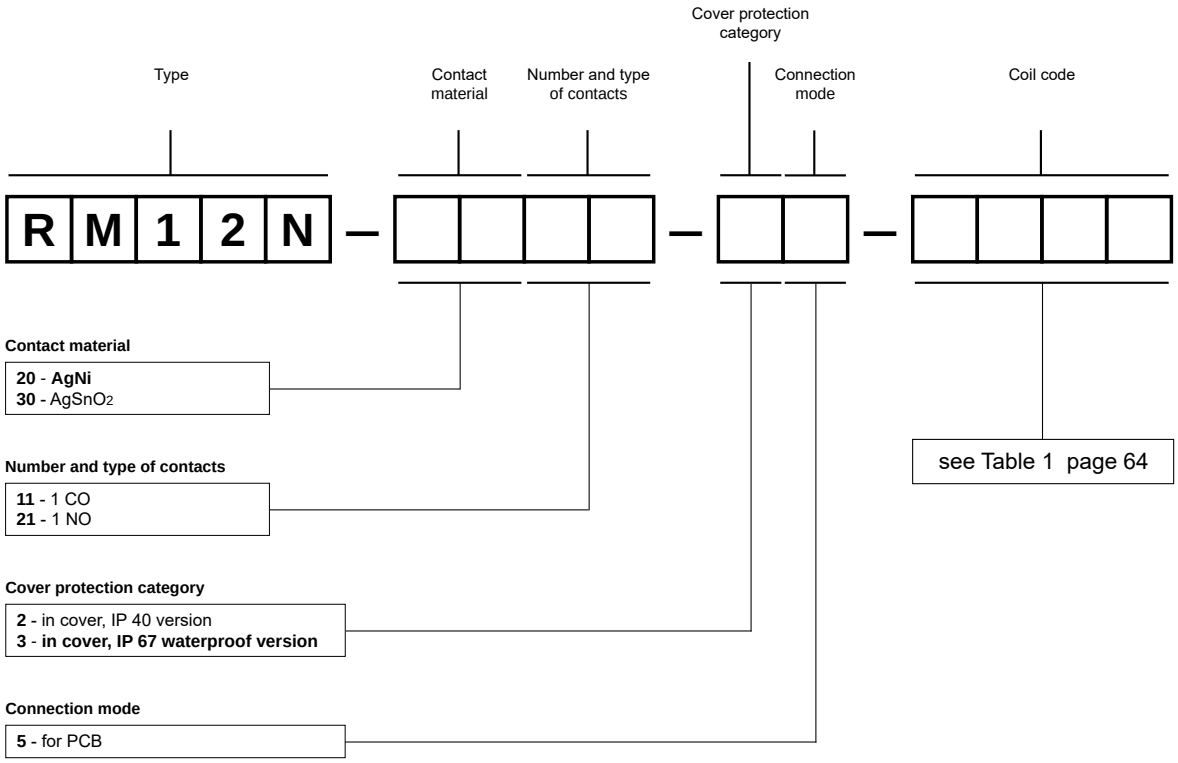
Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	5	113	± 10%	3,5	6,5
1009	9	360	± 10%	6,3	11,7
1012	12	620	± 10%	8,4	15,6
1018	18	1 295	± 10%	12,7	23,4
1024	24	2 350	± 10%	16,8	31,2

Ordering codes



Examples of ordering codes:

RM12N-2011-35-1012 relay **RM12N**, for PCB, one changeover contact, contact material AgNi, coil voltage 12 V DC, in cover IP 67

RM12N-3021-25-1024 relay **RM12N**, for PCB, one normally open contact, contact material $AgSnO_2$, coil voltage 24 V DC, in cover IP 40

- DC coils - of up to 24 V DC, low coil power 0,20 W (sensitive version) or 0,45 W (standard version)
- For PCB • Very small dimensions, light weight
- High load up to 10 A / 125 V AC ❶
- Applications: for household electrical appliance, automation systems, electrical equipment, instrument and meter, telecommunication devices, remote control facilities, light controllers, etc.
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO	
Contact material		**$AgSnO_2$**	
Rated / max. switching voltage	AC	250 V / 277 V	
Min. switching voltage		5 V	
Rated load	AC1	1 CO: 5 A / 5 A (NO/NC) / 250 V AC	1 NO: 5 A / 250 V AC
		1 CO: 10 A / 125 V AC ❶	1 NO: 10 A / 125 V AC
	DC1	1 CO: 5 A / 5 A (NO/NC) / 28 V DC	1 NO: 5 A / 28 V DC
Rated current		5 A	
Max. breaking capacity	AC1	1 250 VA	
	AC3	186 W 0,25 HP UL 508 (single-phase motor)	
Contact resistance		≤ 100 mΩ	

Coil data

Rated voltage	DC	5 ... 24 V
Must release voltage		DC: ≥ 0,05 U_n
Operating range of supply voltage		see Tables 1, 2
Rated power consumption	DC	0,20 W sensitive version ❶ 0,45 W standard version

Insulation according to PN-EN 60664-1

Insulation resistance	100 MΩ 500 V DC, 60 s
Dielectric strength	
• between coil and contacts	2 500 V AC type of insulation: basic
• contact clearance	1 000 V AC type of clearance: micro-disconnection

General data

Operating / release time (typical values)		8 ms / 5 ms	
Electrical life (number of cycles)			
• resistive AC1	1 800 cycles/hour	10^5 1 CO: 5 A / 5 A (NO/NC), 250 V AC	1 NO: 5 A, 250 V AC
• resistive DC1	1 800 cycles/hour	10^5 1 CO: 5 A / 5 A (NO/NC), 28 V DC	1 NO: 5 A, 28 V DC
Mechanical life	18 000 cycles/hour	10^7	
Dimensions (L x W x H)		18,8 x 10,6 x 15,3 mm	
Weight		6 g	
Ambient temperature	• operating	-40...+70 °C	
Cover protection category		IP 64 PN-EN 60529	
Shock resistance		10 g	
Vibration resistance		1,5 mm DA (constant amplitude) 10...55 Hz	
Solder bath temperature		max. 235 °C	
Soldering time		max. 3 s	

The data in bold type relate to the standard versions of the relays.
❶ Only for contacts 1 NO

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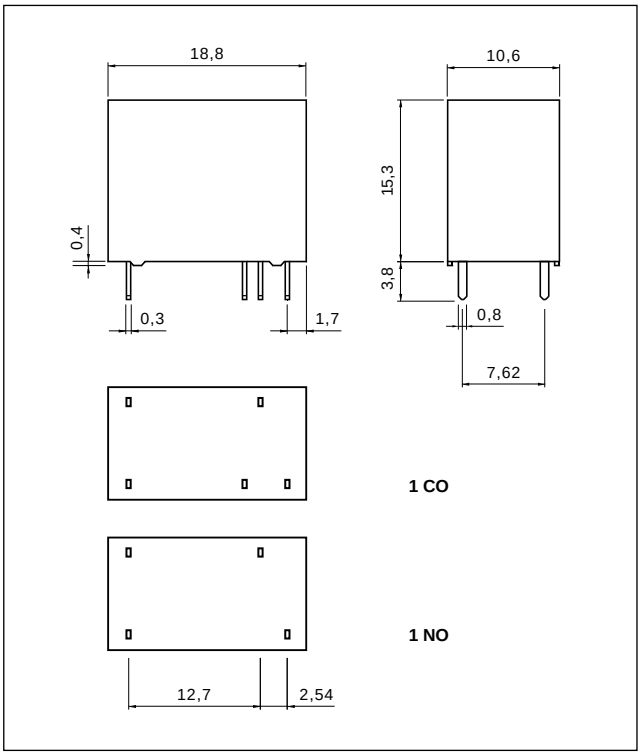
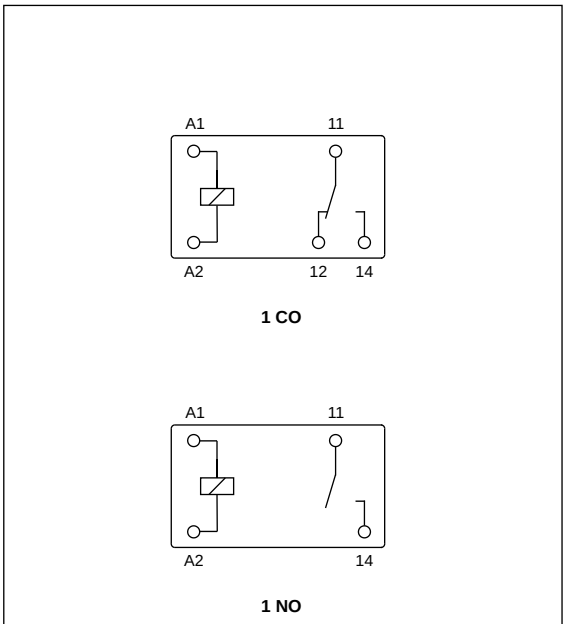
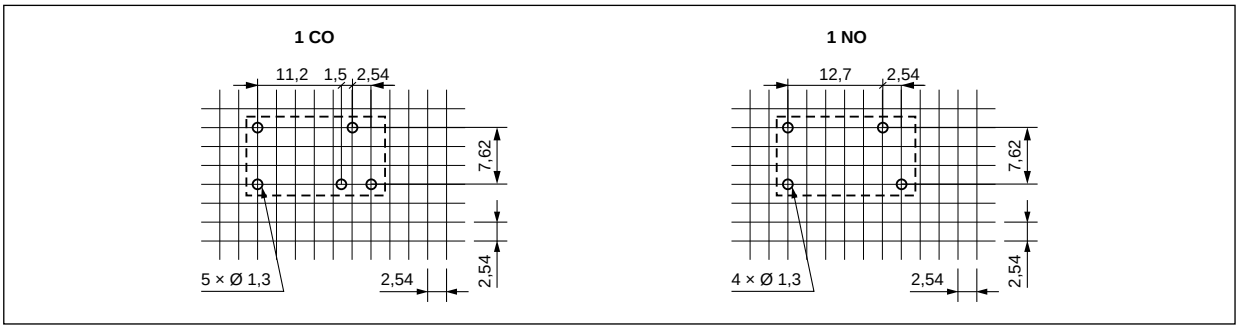
Dimensions



Connection diagrams (pin side view)



Pinout (solder side view)



Mounting

Relays **RM32N** are designed for direct PCB mounting.

Coil data - DC voltage version, sensitive — Table 1

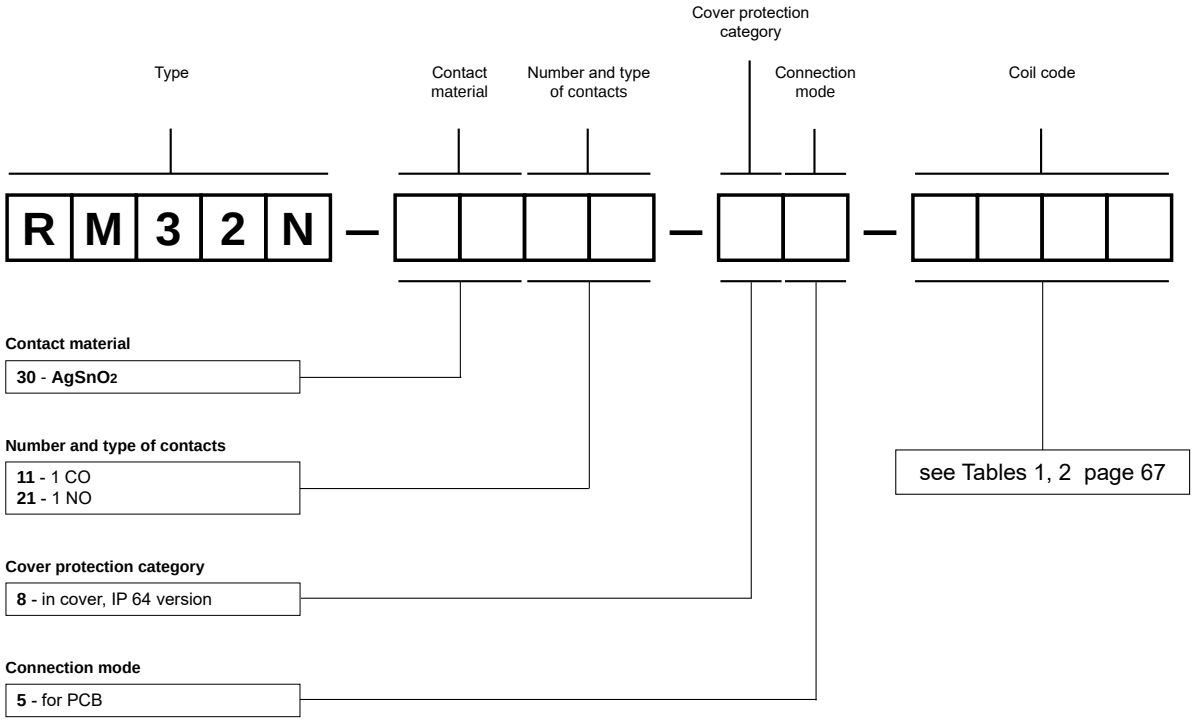
Coil code ❶	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
S005	5	125	± 10%	3,75	6,5
S009	9	405	± 10%	6,75	11,7
S012	12	720	± 10%	9,00	15,6
S018	18	1 620	± 10%	13,50	23,4
S024	24	2 880	± 10%	18,00	31,2

❶ Only for contacts 1 NO

Coil data - DC voltage version, standard — Table 2

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	5	56	± 10%	3,75	6,5
1009	9	180	± 10%	6,75	11,7
1012	12	320	± 10%	9,00	15,6
1018	18	720	± 10%	13,50	23,4
1024	24	1 280	± 10%	18,00	31,2

Ordering codes



Examples of ordering codes:

RM32N-3021-85-S018 relay **RM32N**, for PCB, one normally open contact, contact material $AgSnO_2$, sensitive coil voltage 18 V DC, in cover IP 64

RM32N-3011-85-1024 relay **RM32N**, for PCB, one changeover contact, contact material $AgSnO_2$, standard coil voltage 24 V DC, in cover IP 64

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- DC coils - of up to 24 V DC, low coil power 0,20 W (sensitive version) or 0,45 W (standard version)
- For PCB • Very small dimensions, light weight
- High load up to 10 A / 125 V AC ❶
- Applications: for household electrical appliance, automation systems, electrical equipment, instrument and meter, telecommunication devices, remote control facilities, light controllers, etc.
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO	
Contact material		**$AgSnO_2$**	
Rated / max. switching voltage	AC	250 V / 277 V	
Min. switching voltage		5 V	
Rated load	AC1	1 CO: 5 A / 5 A (NO/NC) / 250 V AC	1 NO: 5 A / 250 V AC
		1 CO: 10 A / 125 V AC ❶	1 NO: 10 A / 125 V AC
	DC1	1 CO: 5 A / 5 A (NO/NC) / 28 V DC	1 NO: 5 A / 28 V DC
Rated current		5 A	
Max. breaking capacity	AC1	1 250 VA	
	AC3	186 W 0,25 HP UL 508 (single-phase motor)	
Contact resistance		≤ 100 mΩ	

Coil data

Rated voltage	DC	5 ... 24 V	
Must release voltage		DC: ≥ 0,05 U_n	
Operating range of supply voltage		see Tables 1, 2	
Rated power consumption	DC	0,20 W sensitive version ❶	0,45 W standard version

Insulation according to PN-EN 60664-1

Insulation resistance	100 MΩ	500 V DC, 60 s
Dielectric strength		
• between coil and contacts	4 000 V AC	type of insulation: reinforced
• contact clearance	1 000 V AC	type of clearance: micro-disconnection

General data

Operating / release time (typical values)		8 ms / 5 ms	
Electrical life (number of cycles)			
• resistive AC1	1 800 cycles/hour	10^5 1 CO: 5 A / 5 A (NO/NC), 250 V AC	1 NO: 5 A, 250 V AC
• resistive DC1	1 800 cycles/hour	10^5 1 CO: 5 A / 5 A (NO/NC), 28 V DC	1 NO: 5 A, 28 V DC
Mechanical life	18 000 cycles/hour	10^7	
Dimensions (L x W x H)		20,5 x 10,6 x 15,6 mm	
Weight		7 g	
Ambient temperature	• operating	-40...+70 °C	
Cover protection category		IP 64 PN-EN 60529	
Shock resistance		10 g	
Vibration resistance		1,5 mm DA (constant amplitude) 10...55 Hz	
Solder bath temperature		max. 235 °C	
Soldering time		max. 3 s	

The data in bold type relate to the standard versions of the relays.
❶ Only for contacts 1 NO

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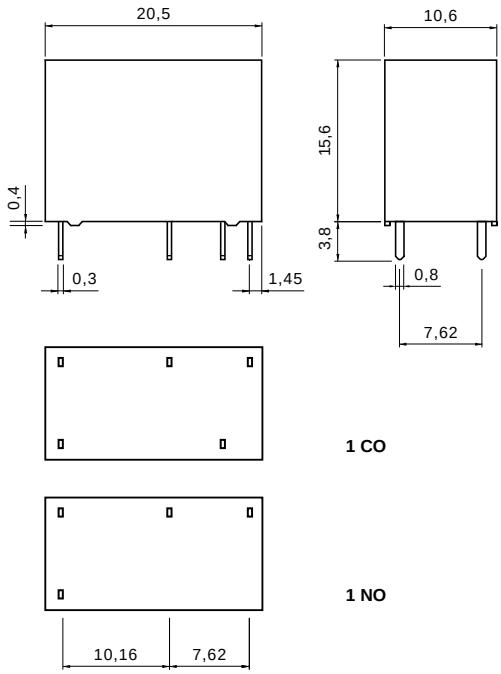
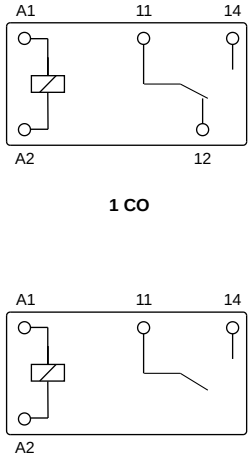
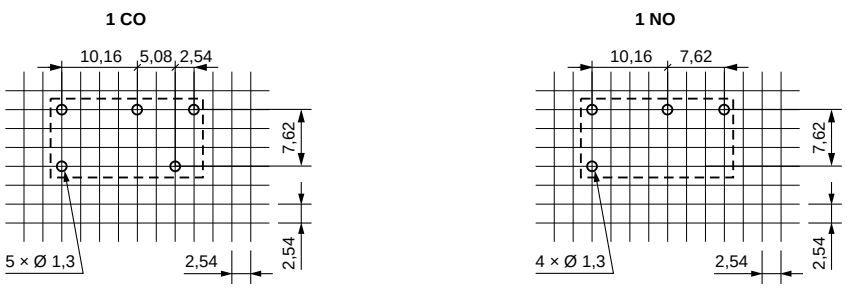
Dimensions



Connection diagrams (pin side view)



Pinout (solder side view)



Mounting

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Coil data - DC voltage version, sensitive — Table 1

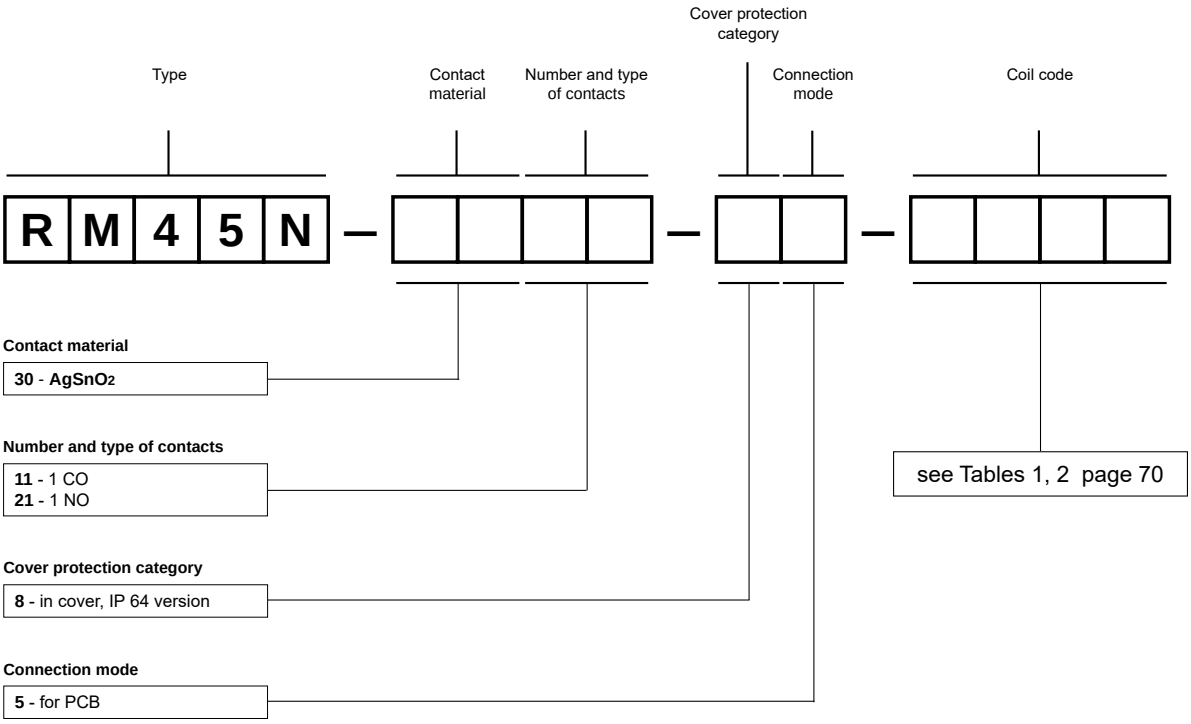
Coil code ❶	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
S005	5	125	± 10%	3,75	5,5
S009	9	405	± 10%	6,75	9,9
S012	12	720	± 10%	9,00	13,2
S024	24	2 880	± 10%	18,00	26,4

❶ Only for contacts 1 NO

Coil data - DC voltage version, standard — Table 2

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	5	56	± 10%	3,75	5,5
1009	9	180	± 10%	6,75	9,9
1012	12	320	± 10%	9,00	13,2
1024	24	1 280	± 10%	18,00	26,4

Ordering codes



Examples of ordering codes:

RM45N-3021-85-S012 relay **RM45N**, for PCB, one normally open contact, contact material $AgSnO_2$, sensitive coil voltage 12 V DC, in cover IP 64

RM45N-3011-85-1024 relay **RM45N**, for PCB, one changeover contact, contact material $AgSnO_2$, standard coil voltage 24 V DC, in cover IP 64

- DC coils - of up to 48 V DC, low coil power 0,36 W
- For PCB
- Small dimensions, light weight
- Switching current up to 12 A
- Applications: for household electrical appliance, automation control, telecommunication devices, machinery electrical equipment
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO
Contact material		**$AgSnO_2$**, AgCdO ❶
Rated / max. switching voltage	AC	125 V / 277 V
	DC	110 V / 110 V
Min. switching voltage		5 V
Rated load	AC1	12 A / 125 V AC
	DC1	12 A / 28 V DC
Min. switching current		15 mA
Rated current		12 A
Max. breaking capacity	AC1	1 500 VA
	AC3	250 W 0,33 HP UL 508 (single-phase motor)
Contact resistance		≤ 100 mΩ

Coil data

Rated voltage	DC	5 ... 48 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1
Rated power consumption	DC	0,36 W

Insulation according to PN-EN 60664-1

Insulation resistance		250 MΩ 500 V DC, 60 s
Dielectric strength		
• between coil and contacts		1 500 V AC type of insulation: basic
• contact clearance		750 V AC type of clearance: micro-disconnection
Contact - coil distance		
• clearance		≥ 1,9 mm
• creepage		≥ 1,9 mm

General data

Operating / release time (typical values)		10 ms / 5 ms
Electrical life (number of cycles)		
• resistive AC1	1 800 cycles/hour	10^5 12 A, 125 V AC
• resistive DC1	1 800 cycles/hour	10^5 12 A, 28 V DC
Mechanical life	18 000 cycles/hour	10^7
Dimensions (L x W x H)		19,5 x 15,6 x 15,3 mm
Weight		9,5 g
Ambient temperature	• operating	-55...+85 °C
Cover protection category		IP 64 PN-EN 60529
Shock resistance		10 g
Vibration resistance		1,5 mm DA (constant amplitude) 10...55 Hz
Solder bath temperature		max. 235 °C
Soldering time		max. 3 s

The data in bold type relate to the standard versions of the relays. ❶ AgCdO contact material in electrical contacts is only for use in electrical and electronic equipment (EEE) in compliance with directive RoHS2 2011/65/EU in restricted categories of EEE covered by this directive. Relpol S.A. is not responsible for usage relays with AgCdO contact material in categories of EEE where it is prohibited by the directive RoHS2 2011/65/EU.

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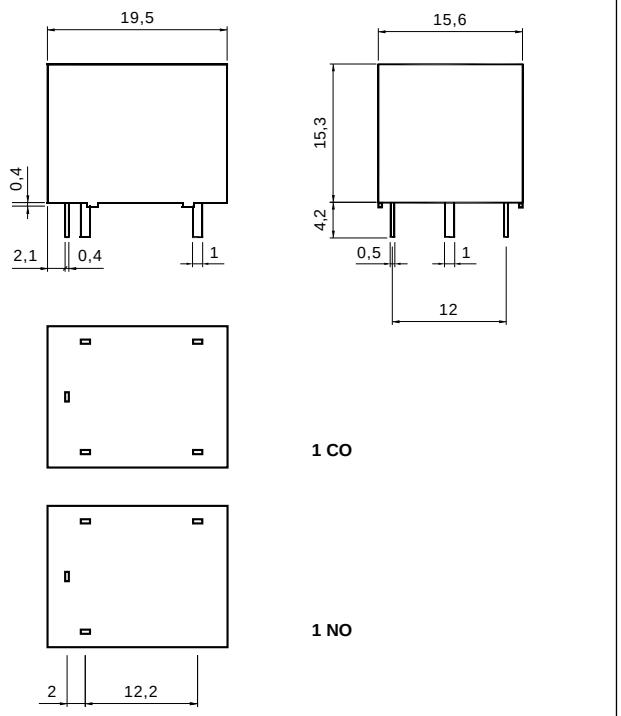
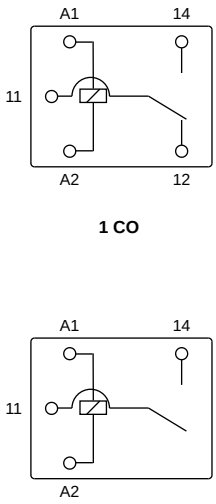
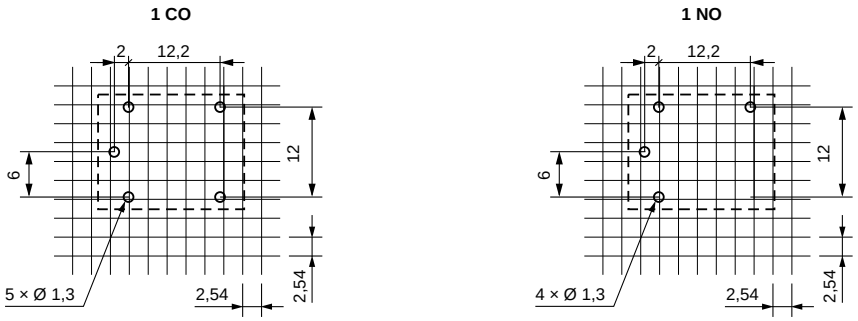
Dimensions



Connection diagrams (pin side view)



Pinout (solder side view)



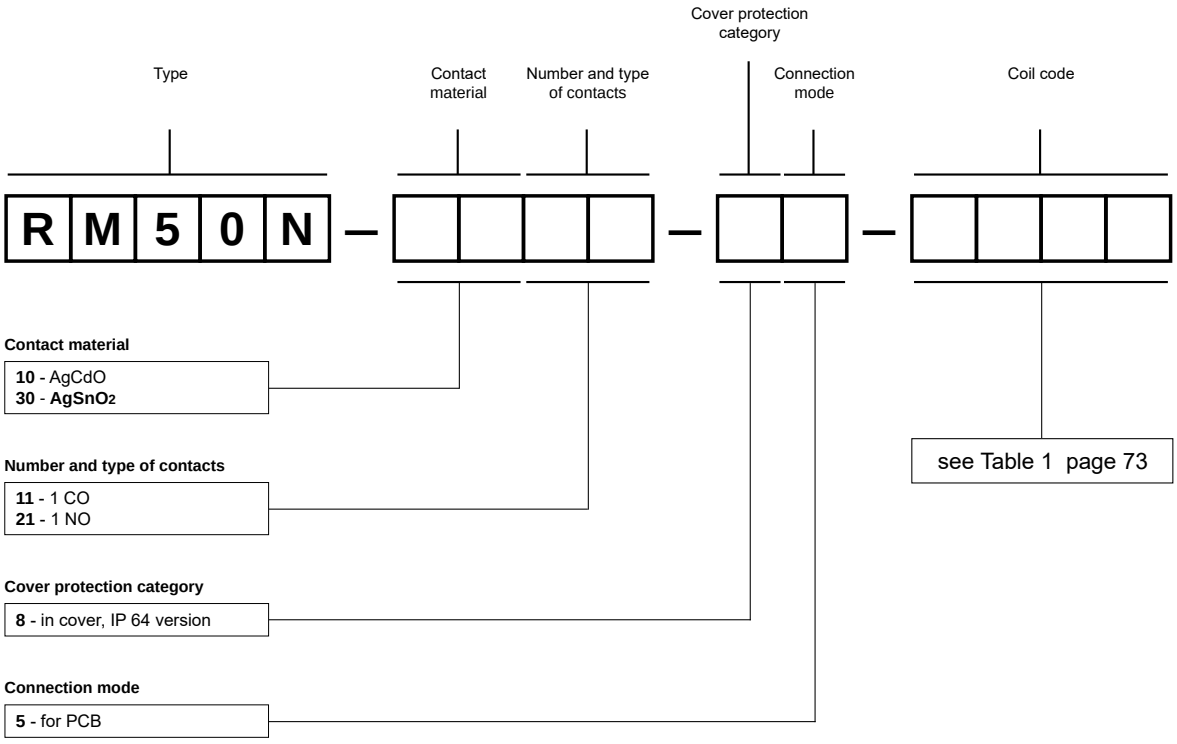
Mounting

Relays **RM50N** are designed for direct PCB mounting.

Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	5	70	± 10%	3,75	6,5
1009	9	225	± 10%	6,75	11,7
1012	12	400	± 10%	9,00	15,6
1024	24	1 600	± 10%	18,00	31,2
1048	48	6 400	± 10%	36,00	62,4

Ordering codes



Examples of ordering codes:

RM50N-3011-85-1012 relay **RM50N**, for PCB, one changeover contact, contact material $AgSnO_2$, coil voltage 12 V DC, in cover IP 64

RM50N-1021-85-1024 relay **RM50N**, for PCB, one normally open contact, contact material AgCdO, coil voltage 24 V DC, in cover IP 64

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- DC coils - of up to 48 V DC, insulation class F: 155 °C
- For PCB
- Small dimensions
- High switching capacity
- Applications: for household electrical appliance, automation systems, electronic equipment, instrument and meter, telecommunication devices, remote control facilities
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO	
Contact material		**$AgSnO_2$**	
Rated / max. switching voltage	AC	250 V / 277 V	
Min. switching voltage		5 V	
Rated load	AC1	1 CO: 10 A / 7 A (NO/NC) / 250 V AC	1 NO: 10 A / 250 V AC
		1 CO: 20 A / 20 A (NO/NC) / 125 V AC	1 NO: 20 A / 125 V AC
	DC1	1 CO: 10 A / 7 A (NO/NC) / 30 V DC	1 NO: 10 A / 30 V DC
Min. switching current		15 mA	
Rated current		10 A	
Max. breaking capacity	AC1	3 000 VA	
	AC3	1 CO: 750 W / 375 W (NO/NC)	1 NO: 750 W
		1 CO: 1,0 HP / 0,5 HP (NO/NC) UL 508 (single-phase motor)	1 NO: 1,0 HP UL 508 (single-phase motor)
Contact resistance		≤ 100 mΩ	

Coil data

Rated voltage	DC	5 ... 48 V
Must release voltage		DC: ≥ 0,05 U_n
Operating range of supply voltage		see Table 1
Rated power consumption	DC	0,36 W

Insulation according to PN-EN 60664-1

Rated surge voltage	4 000 V	1,2 / 50 µs
Insulation resistance	250 MΩ	500 V DC, 60 s
Dielectric strength		
• between coil and contacts	2 500 V AC	type of insulation: basic
• contact clearance	1 000 V AC	type of clearance: micro-disconnection
Contact - coil distance		
• clearance	≥ 1,9 mm	
• creepage	≥ 1,9 mm	

General data

Operating / release time (typical values)		15 ms / 10 ms	
Electrical life (number of cycles)			
• resistive AC1	1 800 cycles/hour	10^5 1 CO: 10 A / 7 A (NO/NC), 250 V AC	1 NO: 10 A, 250 V AC
• resistive DC1	1 800 cycles/hour	10^5 1 CO: 10 A / 7 A (NO/NC), 30 V DC	1 NO: 10 A, 30 V DC
Mechanical life	18 000 cycles/hour	10^7	
Dimensions (L x W x H)		19,5 x 16 x 17,1 mm	
Weight		10 g	
Ambient temperature	• operating	-40...+85 °C	
Cover protection category		IP 64 PN-EN 60529	
Shock resistance		10 g	
Vibration resistance		1,0 mm DA (constant amplitude) 10...55 Hz	
Solder bath temperature		max. 235 °C	
Soldering time		max. 3 s	

The data in bold type relate to the standard versions of the relays.

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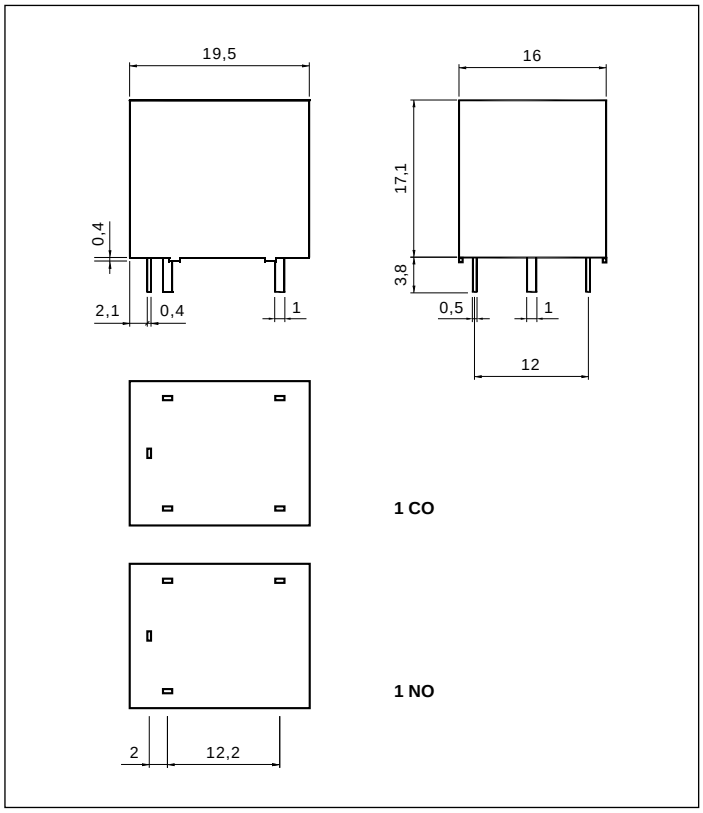
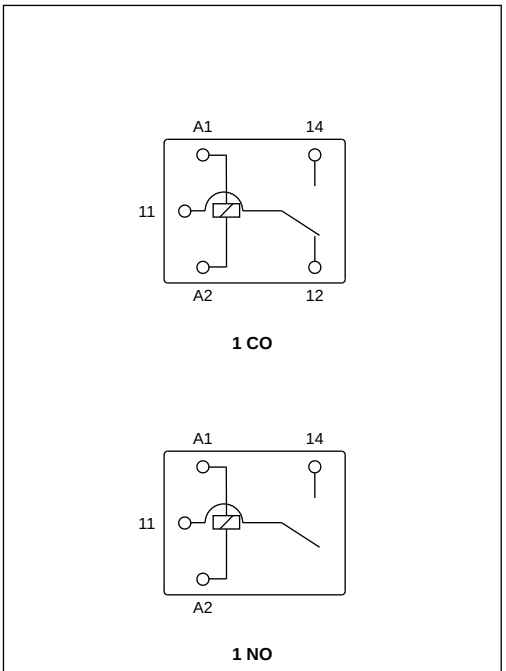
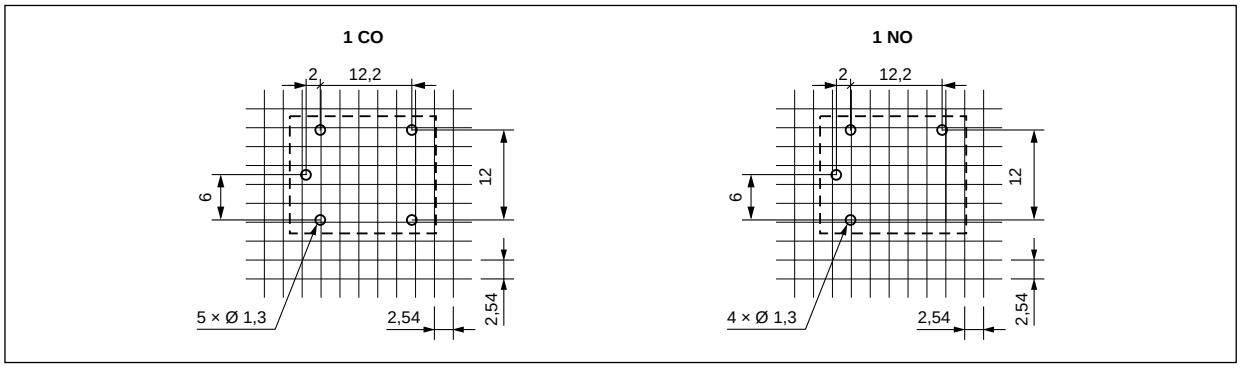
Dimensions



Connection diagrams (pin side view)



Pinout (solder side view)



Mounting

Relays **RM51** are designed for direct PCB mounting.

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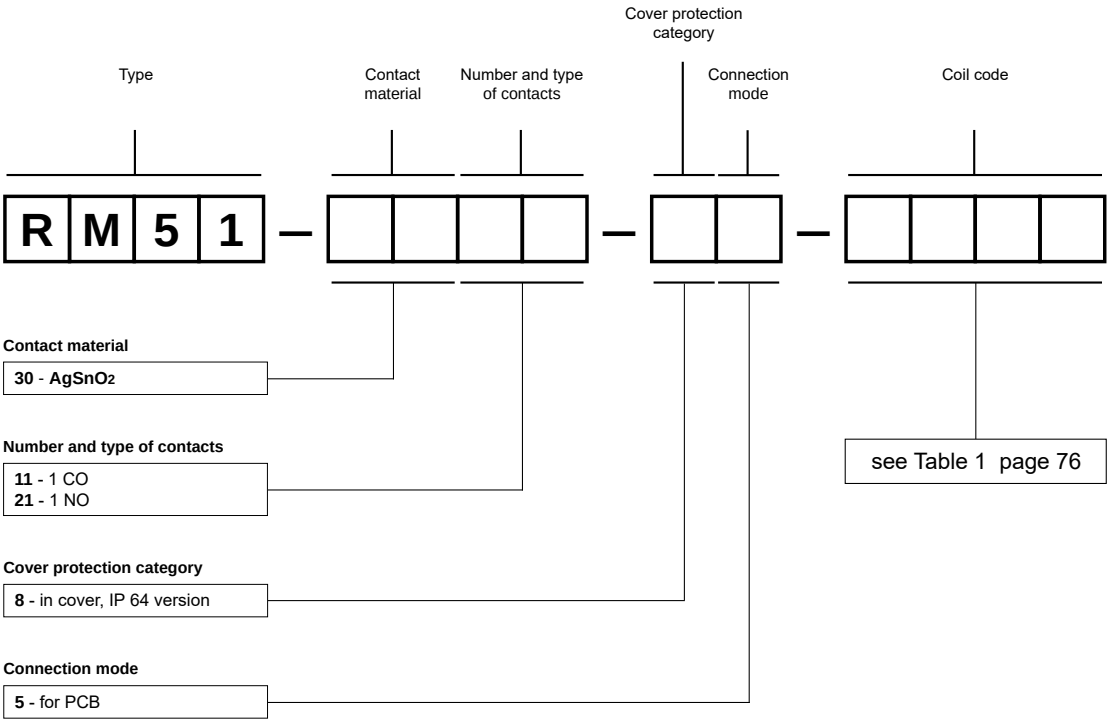
Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	5	69	± 10%	3,75	6,5
1009	9	225	± 10%	6,75	11,7
1012	12	400	± 10%	9,00	15,6
1024	24	1 600	± 10%	18,00	31,2
1048	48	6 400	± 10%	36,00	62,4

Ordering codes

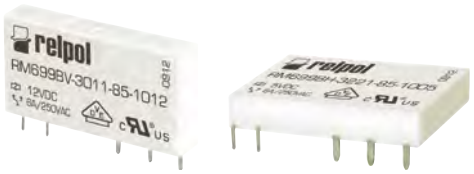


Examples of ordering codes:

RM51-3011-85-1012 relay **RM51**, for PCB, one changeover contact, contact material $AgSnO_2$, coil voltage 12 V DC, in cover IP 64

RM51-3021-85-1048 relay **RM51**, for PCB, one normally open contact, contact material $AgSnO_2$, coil voltage 48 V DC, in cover IP 64

Version (V) Version (H)



- Cover width only 5,0 mm
- Sealed for soldering and cleaning
- **Terminals arrangement: vertical version (V) and horizontal version (H)**
- Applications: for PLC's, industrial machinery, time relays, counters, temperature adjusters, measurement instruments, office equipment, etc.
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO	
Contact material		**$AgSnO_2$**, AgNi	$AgSnO_2$/Au hard gold plating ❶ AgNi/Au hard gold plating ❶
Max. switching voltage		400 V AC / 250 V DC	30 V AC / 36 V DC ❶
Min. switching voltage		10 V	5 V
Rated load	AC1 AC3 DC1	6 A / 250 V AC 186 W (single-phase motor) 6 A / 30 V DC; 0,15 A / 250 V DC	0,05 A / 30 V AC ❶ 186 W (single-phase motor) 0,05 A / 36 V DC ❶
Min. switching current		100 mA	10 mA
Max. inrush current		10 A 20 ms	0,1 A 20 ms ❶
Rated current		6 A	0,05 A ❶
Max. breaking capacity	AC1	1 500 VA	1,2 VA ❶
Min. breaking capacity		1 W	0,05 W
Contact resistance		≤ 100 mΩ 100 mA, 24 V	≤ 30 mΩ 10 mA, 5 V
Max. operating frequency • at rated load • no load	AC1	 360 cycles/hour 72 000 cycles/hour	

Coil data

Rated voltage	DC	5 ... 60 V	
Must release voltage		DC: ≥ 0,05 U_n	
Operating range of supply voltage		see Table 1	
Rated power consumption	DC	0,17 W 5 ... 24 V	0,21 W 48, 60 V

Insulation according to PN-EN 60664-1

Insulation rated voltage	250 V AC	
Rated surge voltage	6 000 V 1,2 / 50 µs	
Overvoltage category	III	
Dielectric strength • between coil and contacts • contact clearance	 4 000 V AC 1 000 V AC	 type of insulation: reinforced type of clearance: micro-disconnection
Contact - coil distance • clearance • creepage	 ≥ 6 mm ≥ 8 mm	

General data

Operating / release time (typical values)	8 ms / 4 ms	
Electrical life (number of cycles) • resistive AC1 • inductive AC3	 the NO and NC contact loaded (bilateral load): see Fig. 1 the NO contact loaded: > 3×10^4 6 A, 250 V AC 6×10^3 186 W (single-phase motor), AgNi	
Mechanical life (cycles)	> 10^7	
Dimensions (L x W x H)	28 x 5 x 15 mm	
Weight	6 g	
Ambient temperature	• storage • operating	-40...+85 °C -40...+85 °C
Cover protection category	IP 64	PN-EN 60529
Environmental protection	RTIII	PN-EN 116000-3
Relative humidity	5...85%	
Shock resistance	5 g	
Vibration resistance	5 g 10...55 Hz	
Solder bath temperature	max. 260 °C	
Soldering time	max. 5 s	

The data in bold type relate to the standard versions of the relays. ❶ For gold-plated contacts - when the maximum values given have been exceeded, the gold layer is destroyed. Then, the advantages of gold-plating disappear and the values are as for $AgSnO_2$, AgNi contacts (see beside), and electrical life of these contacts may be shorter than of normal contacts.

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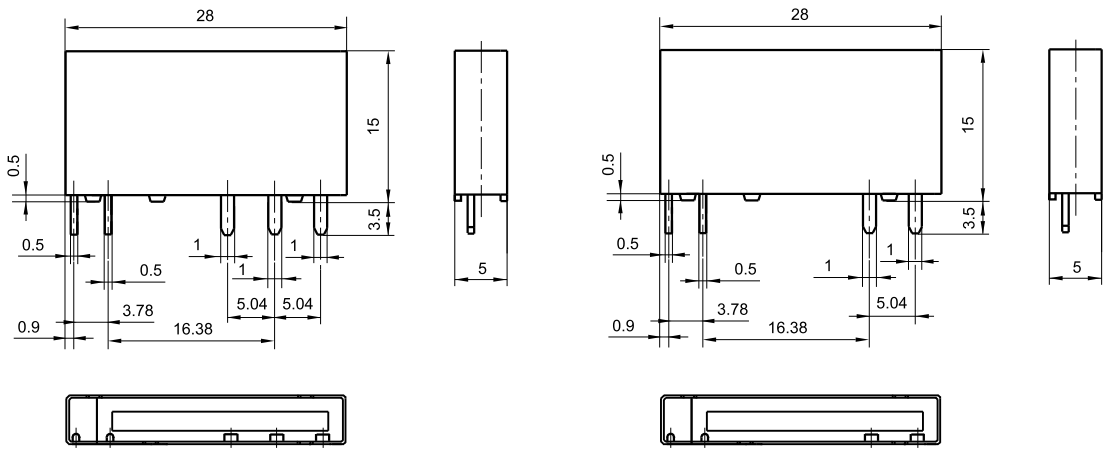
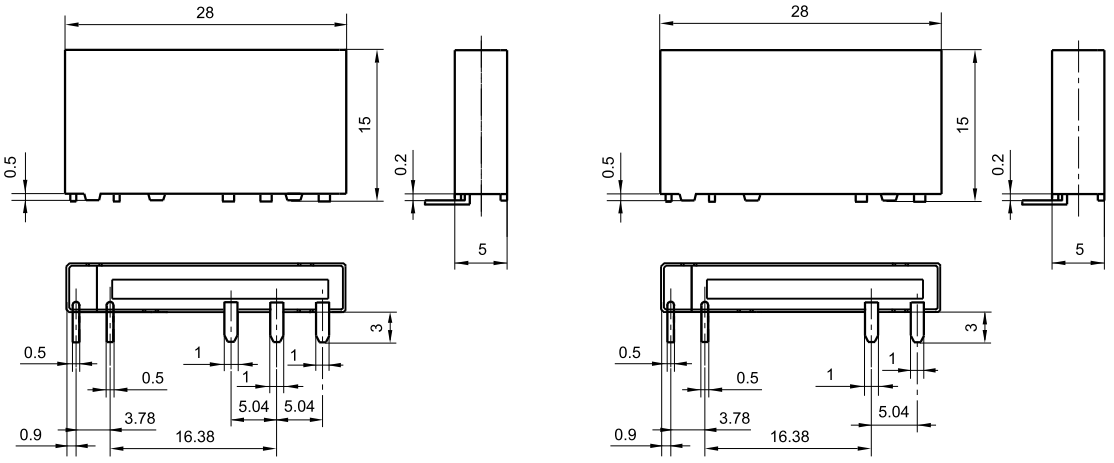
Dimensions

vertical version (V)



1 CO 1 NO

horizontal version (H)



1 CO 1 NO

Mounting

Relays **RM699B vertical version (V)** are designed for: • direct PCB mounting • sockets **PI6W-1P**, 35 mm rail mount acc. to PN-EN 60715 (see page 410).

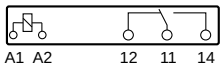
Relays **RM699B horizontal version (H)** are designed for direct PCB mounting.

PI6W-1P

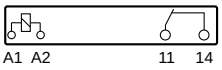
Plug-in sockets
for relays
RM699BV
or RSR30

Connection diagrams (pin side view)

vertical version (V)

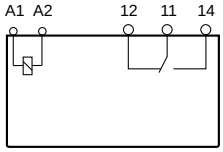


1 CO

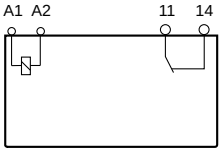


1 NO

horizontal version (H)



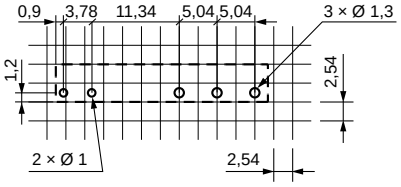
1 CO



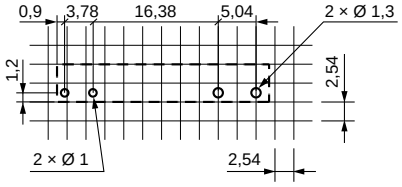
1 NO

Pinout (solder side view)

vertical version (V)

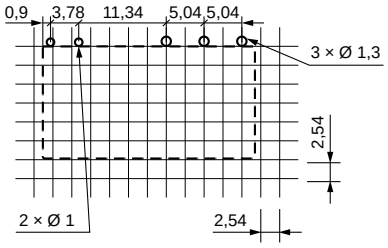


1 CO

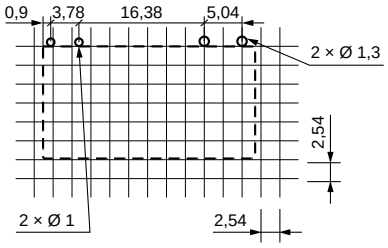


1 NO

horizontal version (H)



1 CO



1 NO

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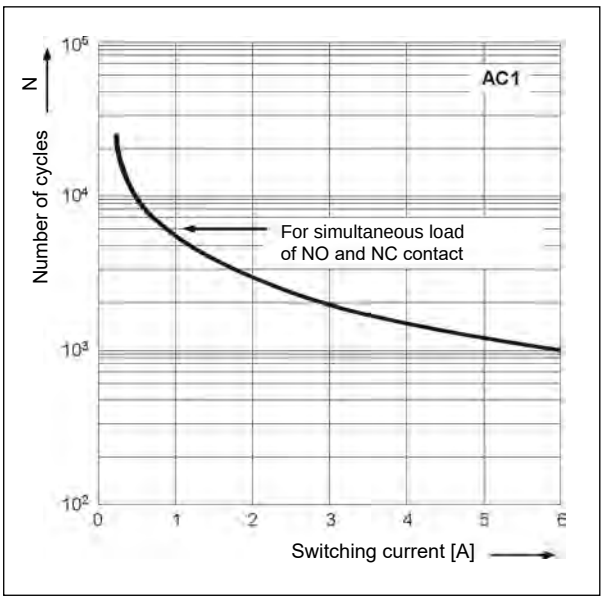
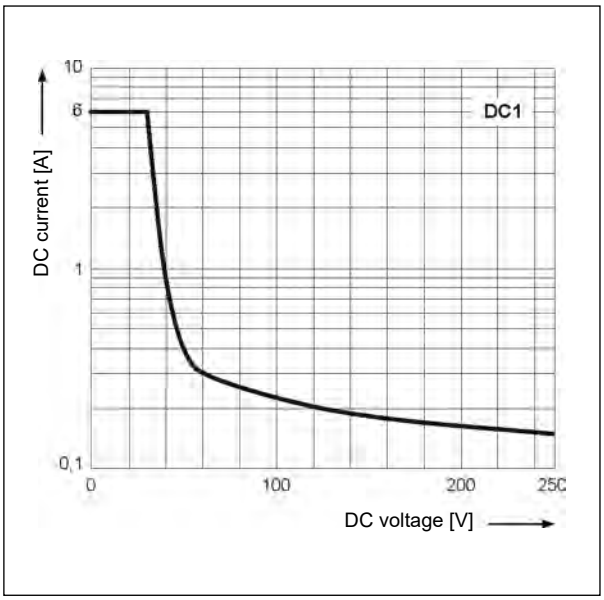
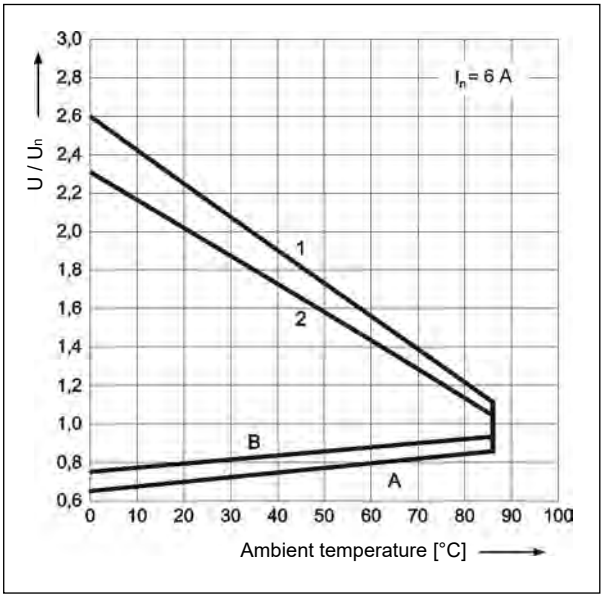
Electrical life at AC resistive current. Switching frequency: 360 cycles/hour Fig. 1



Max. DC resistive load breaking capacity Fig. 2



Coil operating range - DC Fig. 3



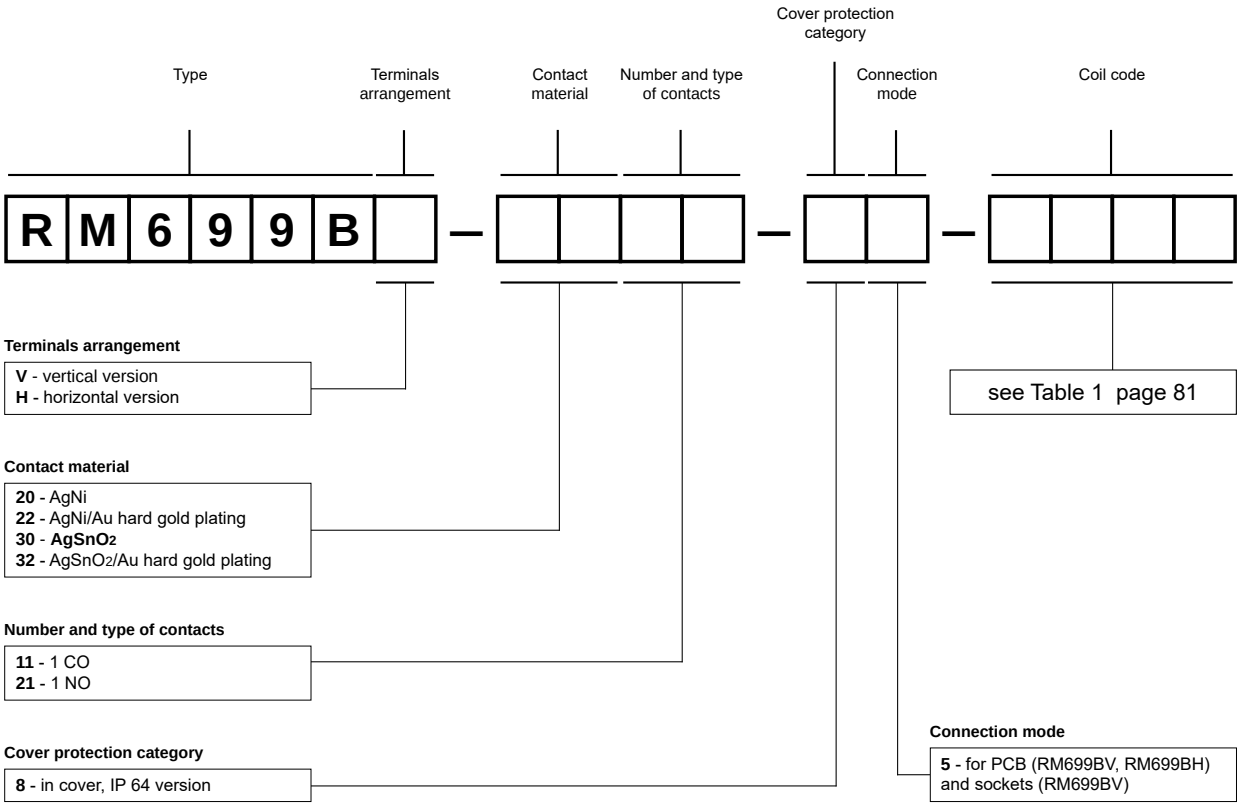
Description of Fig. 3

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - rated load

Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	5	147	± 10%	3,75	7,5
1006	6	212	± 10%	4,5	9,0
1009	9	476	± 10%	6,75	13,0
1012	12	848	± 10%	9,0	18,0
1024	24	3 390	± 15%	18,0	36,0
1048	48	10 600	± 15%	36,0	72,0
1060	60	20 500	± 15%	45,0	90,0

Ordering codes



Examples of ordering code:

RM699BV-3011-85-1012 relay **RM699B**, vertical version, for PCB and sockets, one changeover contact, contact material $AgSnO_2$, coil voltage 12 V DC, in cover IP 64

RM699BH-2021-85-1005 relay **RM699B**, horizontal version, for PCB, one normally open contact, contact material AgNi, coil voltage 5 V DC, in cover IP 64

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RM84

RM84-...-01 ❶

- Cadmium - free contacts • Height 15,7 mm
- 5000 V / 10 mm reinforced insulation
- For PCB and plug-in sockets
- Accessories: sockets and modules • AC and DC coils
- Available special versions: with transparent cover ❶; with the increased dielectric strength of the contact clearance ❷
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		2 CO, 2 NO ❷
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	8 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	550 W (single-phase motor)
	DC1	8 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		15 A $AgSnO_2$
Rated current		8 A
Max. breaking capacity	AC1	2 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 240 V
	DC	3 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 4, 5
Rated power consumption	AC	0,75 VA
	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

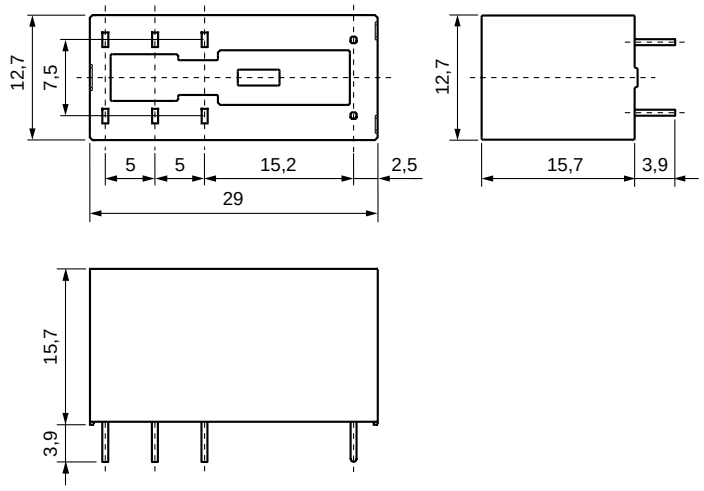
Insulation rated voltage		400 V AC
Rated surge voltage		4 000 V 1,2 / 50 µs
Overvoltage category		III
Insulation pollution degree		3
Dielectric strength	• between coil and contacts	5 000 V AC type of insulation: reinforced
	• contact clearance	1 000 V AC type of clearance: micro-disconnection
		2 000 V AC contacts 2 NO, type of clearance: full-disconnection ❷
	• pole - pole	2 500 V AC type of insulation: basic
Contact - coil distance	• clearance	≥ 10 mm
	• creepage	≥ 10 mm

General data

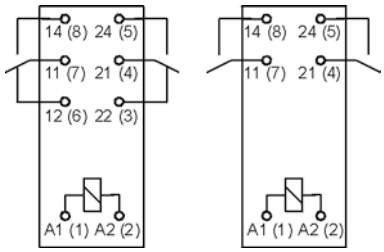
Operating / release time (typical values)		7 ms / 3 ms
Electrical life (number of cycles)		
• resistive AC1		> 10^5 8 A, 250 V AC
• cosφ		see Fig. 2
• DC L/R=40 ms		> 10^5 0,15 A, 220 V DC
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H) / Weight		29 x 12,7 x 15,7 mm / 14 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C DC: -40...+85 °C -20...+70 °C ❶
Cover protection category		IP 40 ❶ or **IP 67** PN-EN 60529
Environmental protection		RTII ❶ or **RTIII** PN-EN 116000-3
Shock resistance		20 g
Vibration resistance	(NO/NC)	10 g / 5 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays. ❶ Relate to the special versions - relays with transparent cover, only available with IP 40 and RTII, operating temperature -20...+70 °C. See "Ordering codes". ❷ Relate to the special versions - relays with two normally open contacts 2 NO, with increased contact gap - dielectric strength 2000 V AC, only available with DC coils. See "Ordering codes".

Dimensions



Connection diagrams (pin side view)



2 CO **2 NO**

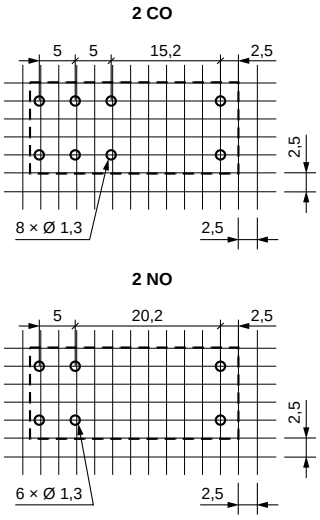
Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
[mm]	Ø 0,6	0,5 x 0,9
Drilling hole: • for relays • for sockets	 Ø 1,3 + 0,1 mm Ø 1,5 + 0,1 mm	

Mounting

Relays **RM84** ❸ are designed for: • direct PCB mounting • screw terminals plug-in sockets **GZT80** ❹ and **GZM80** ❹ with clip **GZT80-0040** or **GZM80-0041**; sockets **GZS80** ❹ with clip **GZS-0040** or **GZM80-0041**; sockets **GZF80** with clip **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw • spring terminals plug-in sockets **GZMB80** ❺ with clip **GZMB80-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715. Signalling / protecting modules **type M...** ❻ are available with sockets (see page 422) • plug-in sockets for PCB mounting **EC 50** with clip **MP16-2**, MH16-2; plug-in sockets **PW80** with clip **MH16-2**; plug-insockets **GD50** with clip **MP16-2**, GD-0016, MH16-2.

❸ Relate to the special versions - relays with transparent cover: the distance of min. 5 mm between the mounting relays. ❹ Plug-in sockets **GZT80**, **GZM80**, **GZS80** may be linked with interconnection strip type **ZGGZ80** (see page 418). ❺ For sockets **GZMB80** - see page 397 (wire connection). ❻ For sockets **GZF80** not applicable modules type **M...**

Pinout (solder side view)



GZF80

Screw terminals plug-in socket for RM84, RM85..., RM87L, RM87P, RMP84, RMP85 - see page 397

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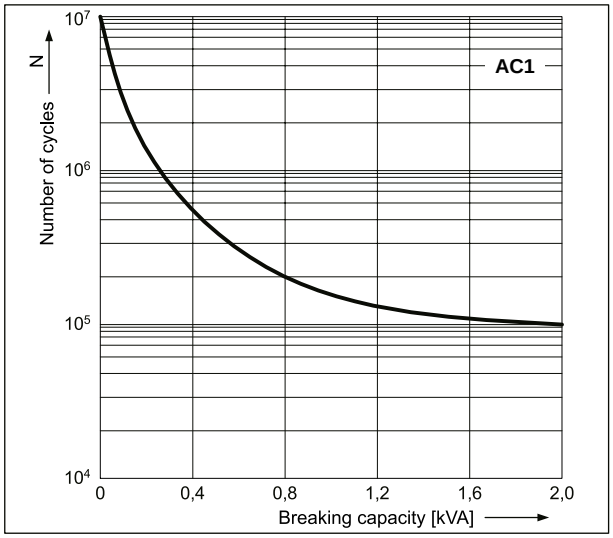
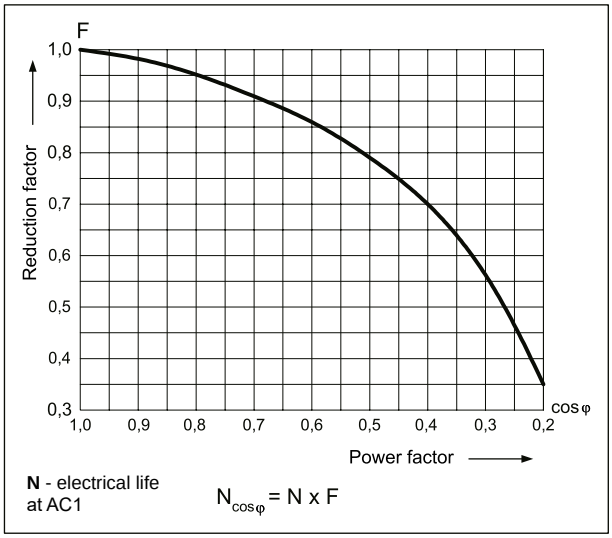
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour

Fig. 1



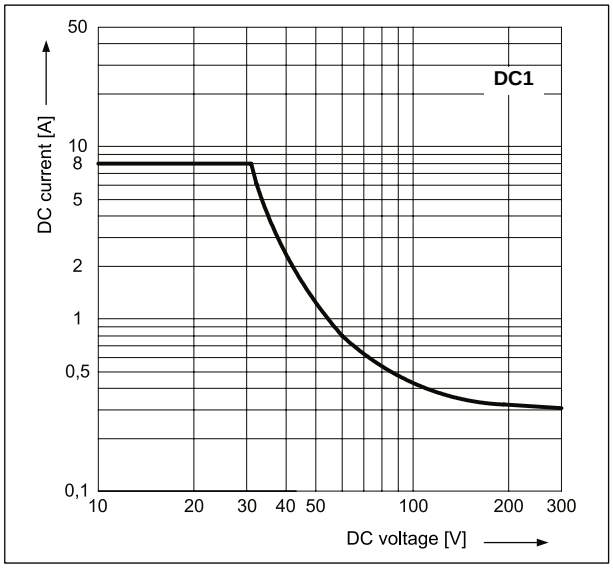
Electrical life reduction factor at AC inductive load

Fig. 2



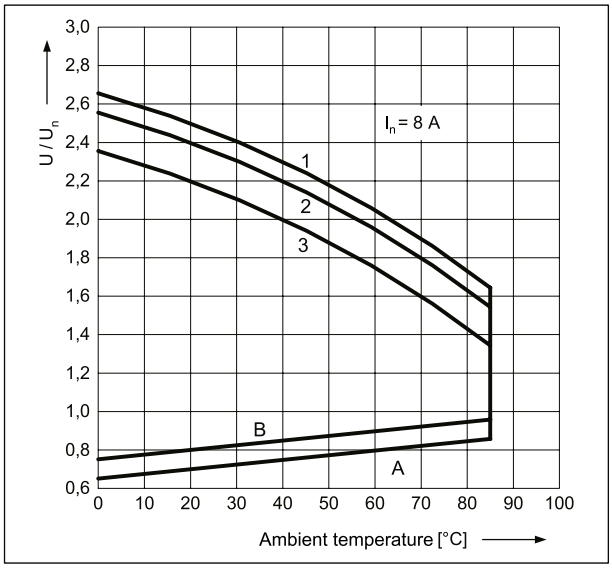
Max. DC resistive load breaking capacity

Fig. 3



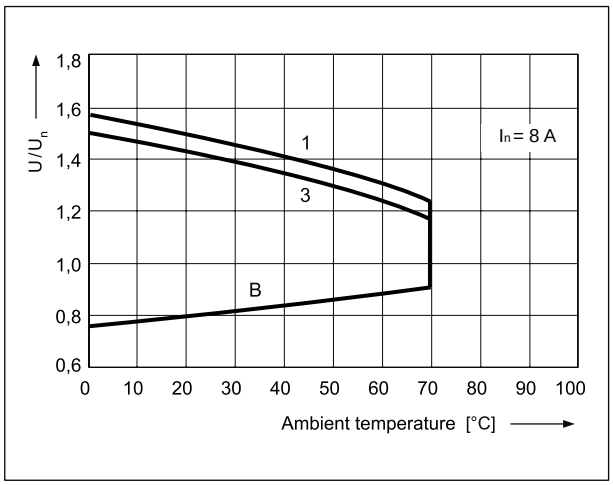
Coil operating range - DC

Fig. 4



Coil operating range - AC 50 Hz

Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1003	3	22	± 10%	2,1	7,6
1005	5	60	± 10%	3,5	12,7
1006	6	90	± 10%	4,2	15,3
1009	9	200	± 10%	6,3	22,9
1012	**12**	**360**	**± 10%**	**8,4**	**30,6**
1018	18	710	± 10%	12,6	45,9
1024	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
1036	36	3 140	± 10%	25,2	91,8
1048	48	5 700	± 10%	33,6	122,4
1060	60	7 500	± 10%	42,0	153,0
1110	110	25 200	± 10%	77,0	280,0

The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
5012	12	100	± 10%	9,6	13,2
5024	**24**	**400**	**± 10%**	**19,2**	**28,8**
5048	48	1 550	± 10%	38,4	57,6
5060	60	2 600	± 10%	48,0	72,0
5110	110	8 900	± 10%	88,0	132,0
5115	115	9 600	± 10%	92,0	138,0
5120	120	10 200	± 10%	96,0	144,0
5220	220	35 500	± 10%	176,0	264,0
5230	**230**	**38 500**	**± 10%**	**184,0**	**276,0**
5240	240	42 500	± 15%	192,0	288,0

The data in bold type relate to the standard versions of the relays.

Interface relays PI84 (PI85)

set: relay RM84 (RM85) + socket GZT80 (GZM80, GZMB80) - see pages 203-230

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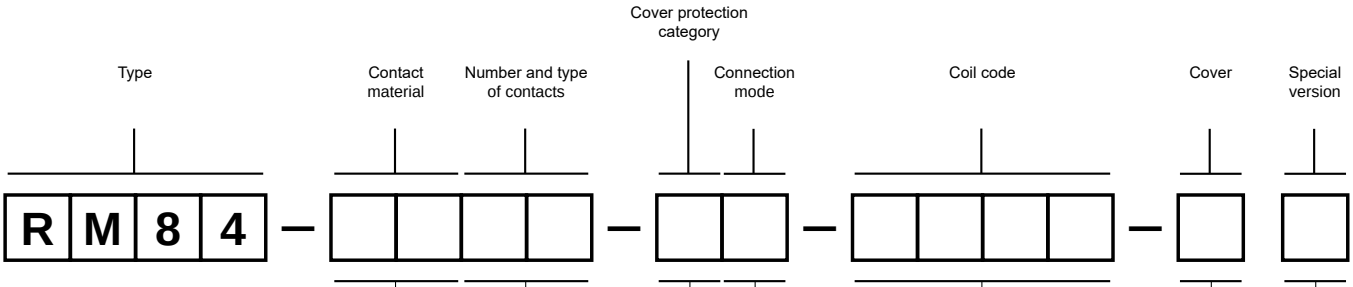
Ordering codes



Contact material

20 - **AgNi**
23 - AgNi/Au hard gold plating
30 - $AgSnO_2$

see Tables 1, 2 page 85

Number and type of contacts

12 - 2 CO
22 - 2 NO

Cover

without marks - standard cover (no transparent, white colour)
01 - transparent cover (special version, without signs recognitions) ❶

Cover protection category

2 - in cover, IP 40 version
3 - **in cover, IP 67 waterproof version**

Special version

without marks - basic version,
dielectric strength of contact clearance 1000 V AC
(51) - contacts 2 NO, increased contact gap
- dielectric strength 2000 V AC ❷

Connection mode

5 - for PCB and sockets

❶ **01**: special version - relay with transparent cover, only available with IP 40 and RTII, operating temperature -20...+70 °C ❷ **(51)**: special version - relay with two normally open contacts 2 NO, with increased contact gap - dielectric strength 2000 V AC, only available with DC coil

Examples of ordering code:

RM84-3012-25-5024 relay **RM84**, for PCB and sockets, two changeover contacts,contact material $AgSnO_2$, coil voltage 24 V AC 50/60 Hz, in standard cover (no transparent, white colour) IP 40

RM84-2012-25-1012-01 relay **RM84**, for PCB and sockets, two changeover contacts, contact material AgNi, coil voltage 12 V DC with transparent cover (special version, without signs recognitions) IP 40

RM84-2322-35-1024 (51) relay **RM84**, special version with increased contact gap, for PCB and sockets, two normally open contacts, contact material AgNi/Au hard gold plating, coil voltage 24 V DC, in standard cover (no transparent, white colour) IP 67

- Cadmium - free contacts
- Height 17,7 mm
- 5000 V / 10 mm reinforced insulation
- **For surface mounting SMT** - for manual soldering
- AC and DC coils
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		2 CO, 2 NO
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	8 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	550 W (single-phase motor)
	DC1	8 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		15 A $AgSnO_2$
Rated current		8 A
Max. breaking capacity	AC1	2 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 240 V
	DC	3 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 4, 5
Rated power consumption	AC	0,75 VA
	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	400 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	1 000 V AC type of clearance: micro-disconnection
• pole - pole	2 500 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

Operating / release time (typical values)		7 ms / 3 ms
Electrical life (number of cycles)		
• resistive AC1		$> 10^5$ 8 A, 250 V AC
• cosφ		see Fig. 2
• DC L/R=40 ms		$> 10^5$ 0,15 A, 220 V DC
Mechanical life (cycles)		$> 3 \times 10^7$
Dimensions (L x W x H)		29 x 13,2 x 17,7 mm
Weight		14 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C DC: -40...+85 °C
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTII PN-EN 116000-3
Shock resistance		20 g
Vibration resistance	(NO/NC)	10 g / 5 g 10...150 Hz
Soldering temperature		max. 350 °C
Soldering time		max. 3 s

The data in bold type relate to the standard versions of the relays.

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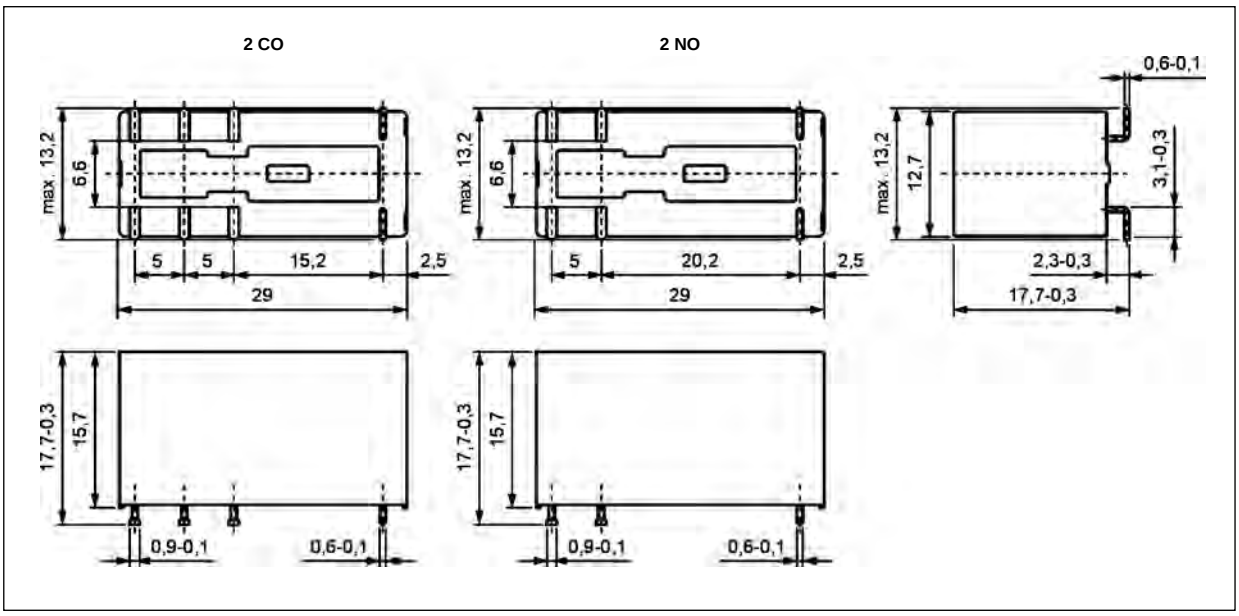
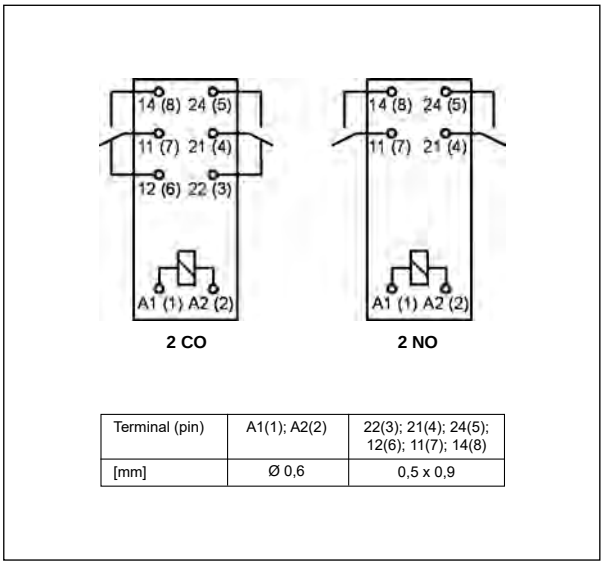
Dimensions

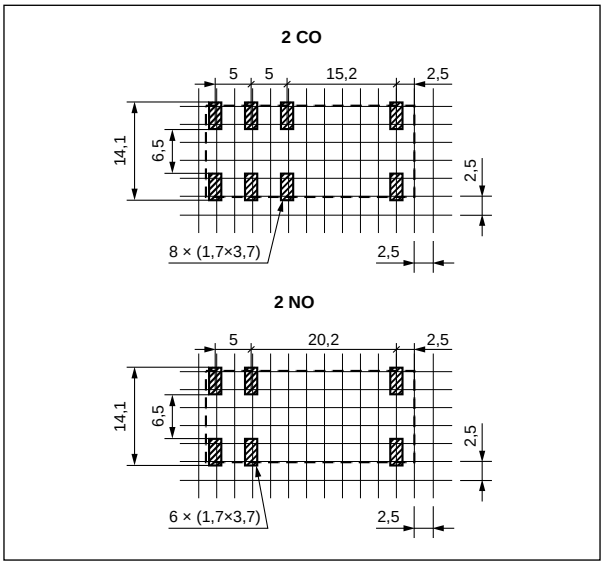


Connection diagrams (pin side view)



Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
[mm]	Ø 0,6	0,5 x 0,9

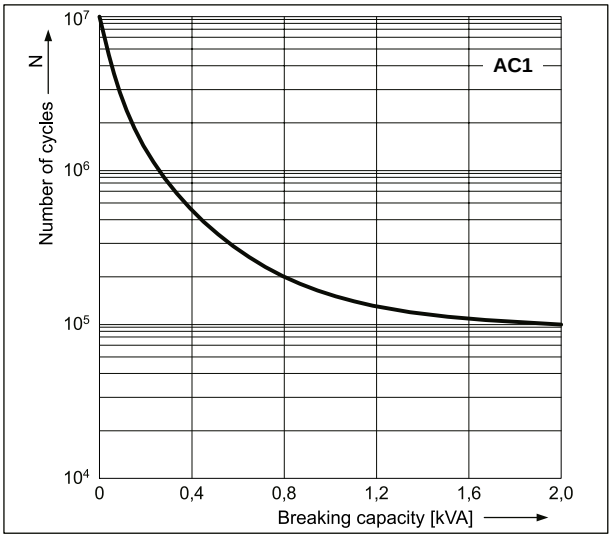
Soldering areas (solder side view)



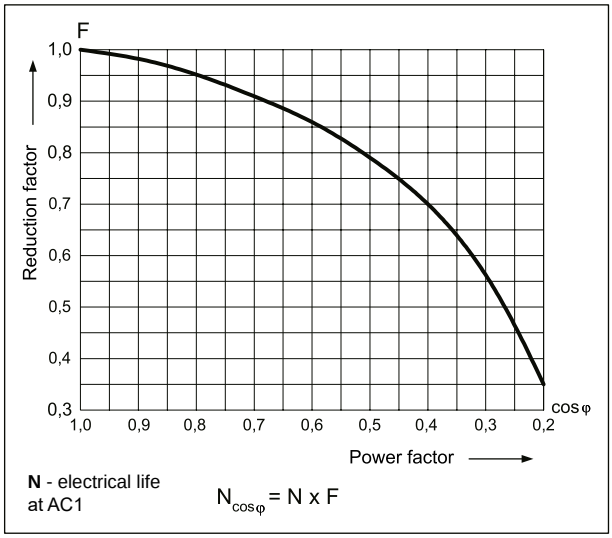
Mounting

Relays **RM84 SMT** are designed for surface mounting SMT - for manual soldering.

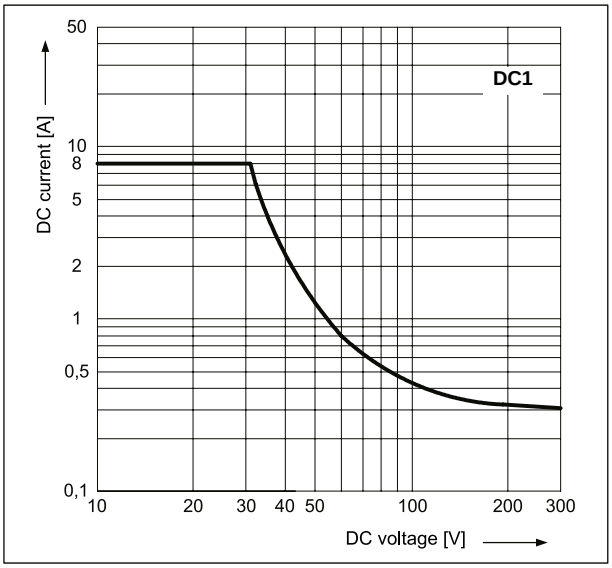
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



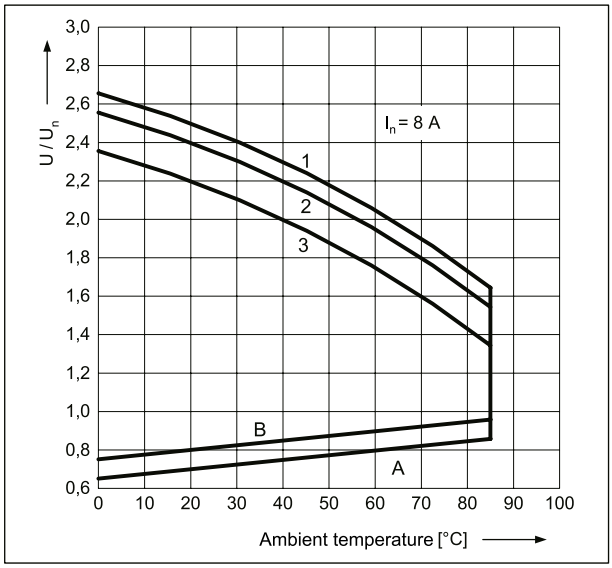
Electrical life reduction factor at AC inductive load Fig. 2



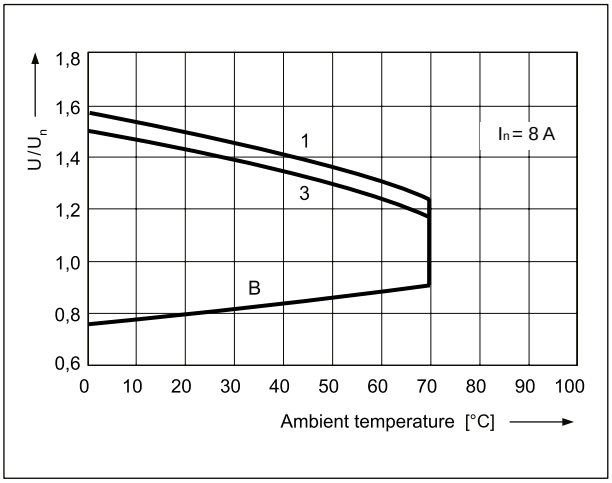
Max. DC resistive load breaking capacity Fig. 3



Coil operating range - DC Fig. 4



Coil operating range - AC 50 Hz Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

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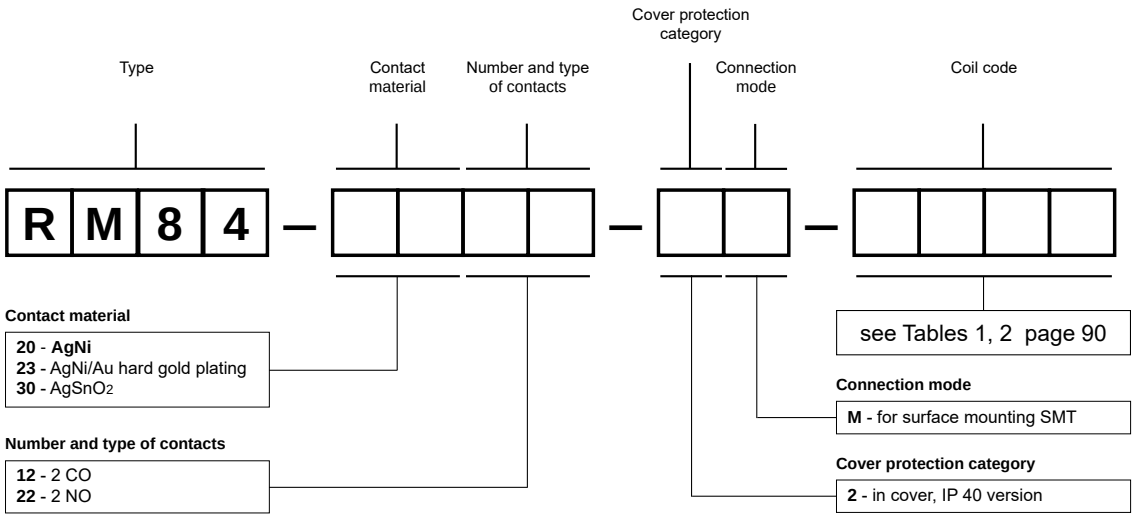
Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1003	3	22	± 10%	2,1	7,6
1005	5	60	± 10%	3,5	12,7
1006	6	90	± 10%	4,2	15,3
1009	9	200	± 10%	6,3	22,9
1012	12	360	± 10%	8,4	30,6
1018	18	710	± 10%	12,6	45,9
1024	24	1 440	± 10%	16,8	61,2
1036	36	3 140	± 10%	25,2	91,8
1048	48	5 700	± 10%	33,6	122,4
1060	60	7 500	± 10%	42,0	153,0
1110	110	25 200	± 10%	77,0	280,0

Coil data - AC 50/60 Hz voltage version Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
5012	12	100	± 10%	9,6	13,2
5024	24	400	± 10%	19,2	28,8
5048	48	1 550	± 10%	38,4	57,6
5060	60	2 600	± 10%	48,0	72,0
5110	110	8 900	± 10%	88,0	132,0
5115	115	9 600	± 10%	92,0	138,0
5120	120	10 200	± 10%	96,0	144,0
5220	220	35 500	± 10%	176,0	264,0
5230	230	38 500	± 10%	184,0	276,0
5240	240	42 500	± 15%	192,0	288,0

Ordering codes



Examples of ordering code:

RM84-2012-2M-1024 relay **RM84 SMT**, for surface mounting SMT, two changeover contacts, contact material AgNi, coil voltage 24 V DC, in cover IP 40

RM84-2322-2M-5012 relay **RM84 SMT**, for surface mounting SMT, two normally open contacts, contact material AgNi/Au hard gold plating, coil voltage 12 V AC 50/60 Hz, in cover IP 40

RM85

RM85-...-01 ❶

- Cadmium - free contacts • Height 15,7 mm
- 5000 V / 10 mm reinforced insulation
- For PCB and plug-in sockets
- Accessories: sockets and modules • AC and DC coils
- Available special versions: with transparent cover ❶; with the increased dielectric strength of the contact clearance ❷
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO ❷
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	16 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	750 W (single-phase motor)
	DC1	16 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		30 A $AgSnO_2$
Rated current		16 A
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 240 V
	DC	3 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 4, 5
Rated power consumption	AC	0,75 VA
	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

Insulation rated voltage		400 V AC
Rated surge voltage		4 000 V 1,2 / 50 µs
Overvoltage category		III
Insulation pollution degree		3
Dielectric strength	• between coil and contacts	5 000 V AC type of insulation: reinforced
	• contact clearance	1 000 V AC type of clearance: micro-disconnection
		2 000 V AC contact 1 NO, type of clearance: full-disconnection ❷
Contact - coil distance	• clearance	≥ 10 mm
	• creepage	≥ 10 mm

General data

Operating / release time (typical values)		7 ms / 3 ms
Electrical life (number of cycles)		
• resistive AC1		> 0,7 x 10^5 16 A, 250 V AC
		> 10^4 20 A, 250 V AC, 85 °C (RM85-3021-25-1...)
• cosφ		see Fig. 2
• DC L/R=40 ms		> 10^5 0,15 A, 220 V DC
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H) / Weight		29 x 12,7 x 15,7 mm / 14 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C DC: -40...+85 °C -20...+70 °C ❶
Cover protection category		IP 40 ❶ or **IP 67** PN-EN 60529
Environmental protection		RTII ❶ or **RTIII** PN-EN 116000-3
Shock resistance		30 g
Vibration resistance		10 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays. ❶ Relate to the special versions - relays with transparent cover, only available with IP 40 and RTII, operating temperature -20...+70 °C. See "Ordering codes". ❷ Relate to the special versions - relays with one normally open contact 1 NO, with increased contact gap - dielectric strength 2000 V AC, only available with DC coils. See "Ordering codes".

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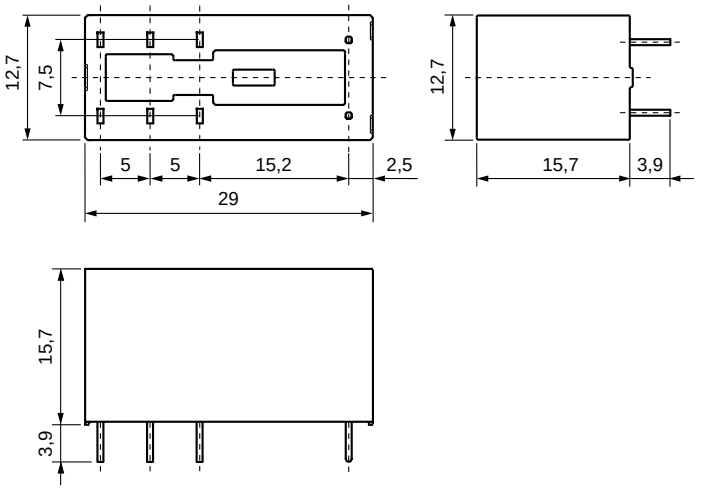
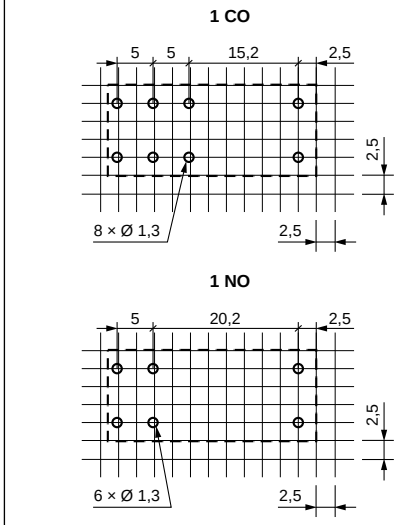
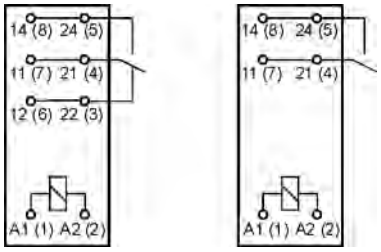
Dimensions



Pinout (solder side view)



Connection diagrams (pin side view)

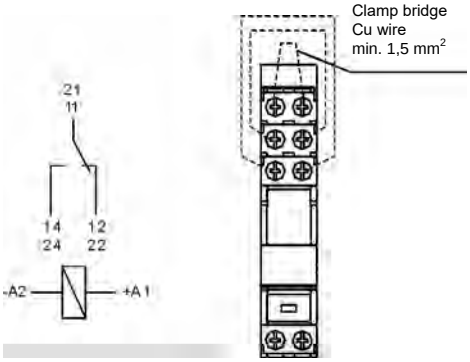


1 CO **1 NO**

Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
[mm]	Ø 0,6	0,5 x 0,9
Drilling hole: • for relays • for sockets	 Ø 1,3 + 0,1 mm Ø 1,5 + 0,1 mm	

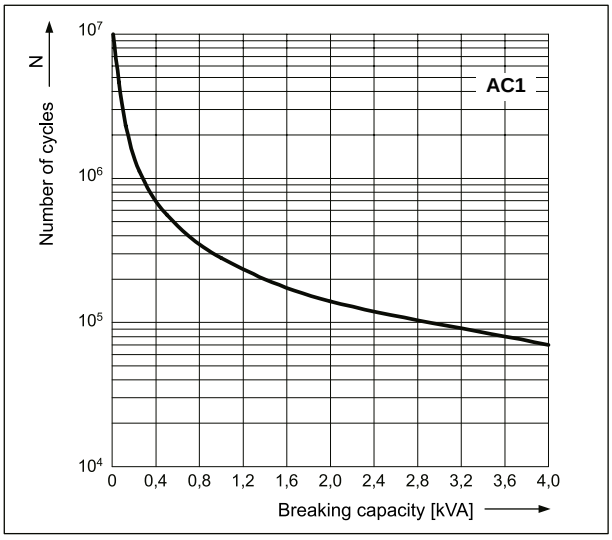
RM85 terminals are doubled for each contact.
Both terminals are to be used while connecting to load.

Connection of GZ... sockets

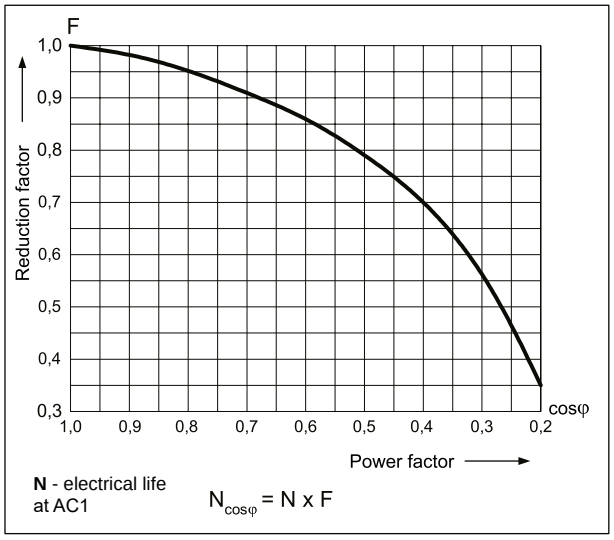


Note: Loads above 12 A (GZT80, GZM80) or 10 A (GZS80, GZF80, GZMB80) require bridging pairs of terminals: 11 with 21, 12 with 22, 14 with 24. Loads up to 12 A or 10 A do not require bridging of common terminals (such bridges may be fixed, however).

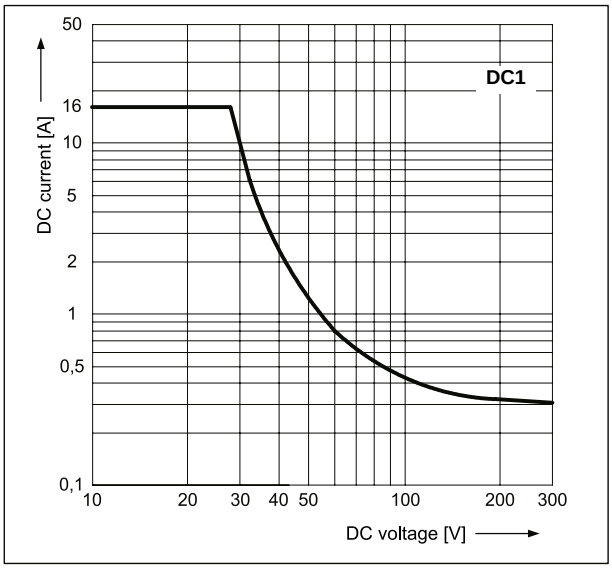
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



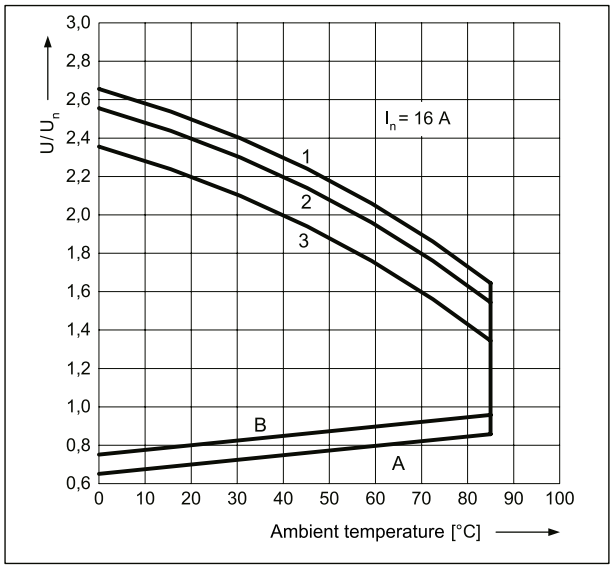
Electrical life reduction factor at AC inductive load Fig. 2



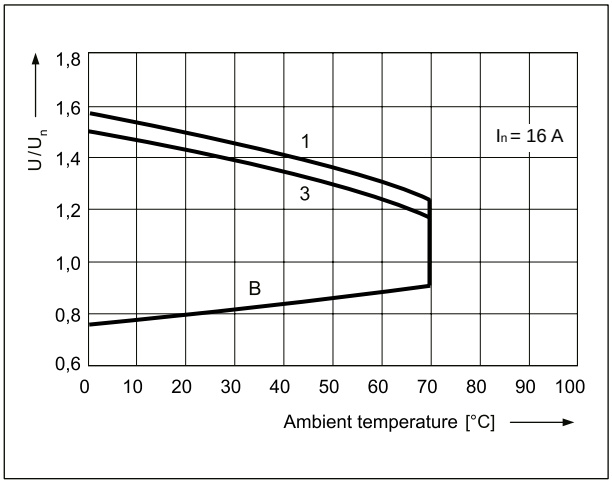
Max. DC resistive load breaking capacity Fig. 3



Coil operating range - DC Fig. 4



Coil operating range - AC 50 Hz Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

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Mounting

Relays **RM85** ❸ are designed for: • direct PCB mounting • screw terminals plug-in sockets **GZT80** ❹ ❺ and **GZM80** ❹ ❺ with clip **GZT80-0040** or **GZM80-0041**; sockets **GZS80** ❹ ❺ with clip **GZS-0040** or **GZM80-0041**; sockets **GZF80** ❹ with clip **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw • spring terminals plug-in sockets **GZMB80** ❹ ❻ with clip **GZMB80-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715. Signalling / protecting modules **type M...** ❼ are available with sockets (see page 422) • plug-in sockets for PCB mounting **EC 50** with clip **MP16-2**, MH16-2; plug-in sockets **PW80** with clip **MH16-2**; plug-in sockets **GD50** with clip **MP16-2**, GD-0016, MH16-2.

❸ Relate to the special versions - relays with transparent cover: the distance of min. 5 mm between the mounting relays. ❹ Loads above 12 A (GZT80, GZM80) or 10 A (GZS80, GZF80, GZMB80) require bridging pairs of terminals: 11 with 21, 12 with 22, 14 with 24 - see page 92. ❺ Plug-in sockets **GZT80**, **GZM80**, **GZS80** may be linked with interconnection strip type **ZGGZ80** (see page 418). ❻ For sockets **GZMB80** - see page 397 (wire connection). ❼ For sockets **GZF80** not applicable modules type **M...**

Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1003	3	22	± 10%	2,1	7,6
1005	5	60	± 10%	3,5	12,7
1006	6	90	± 10%	4,2	15,3
1009	9	200	± 10%	6,3	22,9
1012	**12**	**360**	**± 10%**	**8,4**	**30,6**
1018	18	710	± 10%	12,6	45,9
1024	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
1036	36	3 140	± 10%	25,2	91,8
1048	48	5 700	± 10%	33,6	122,4
1060	60	7 500	± 10%	42,0	153,0
1110	110	25 200	± 10%	77,0	280,0

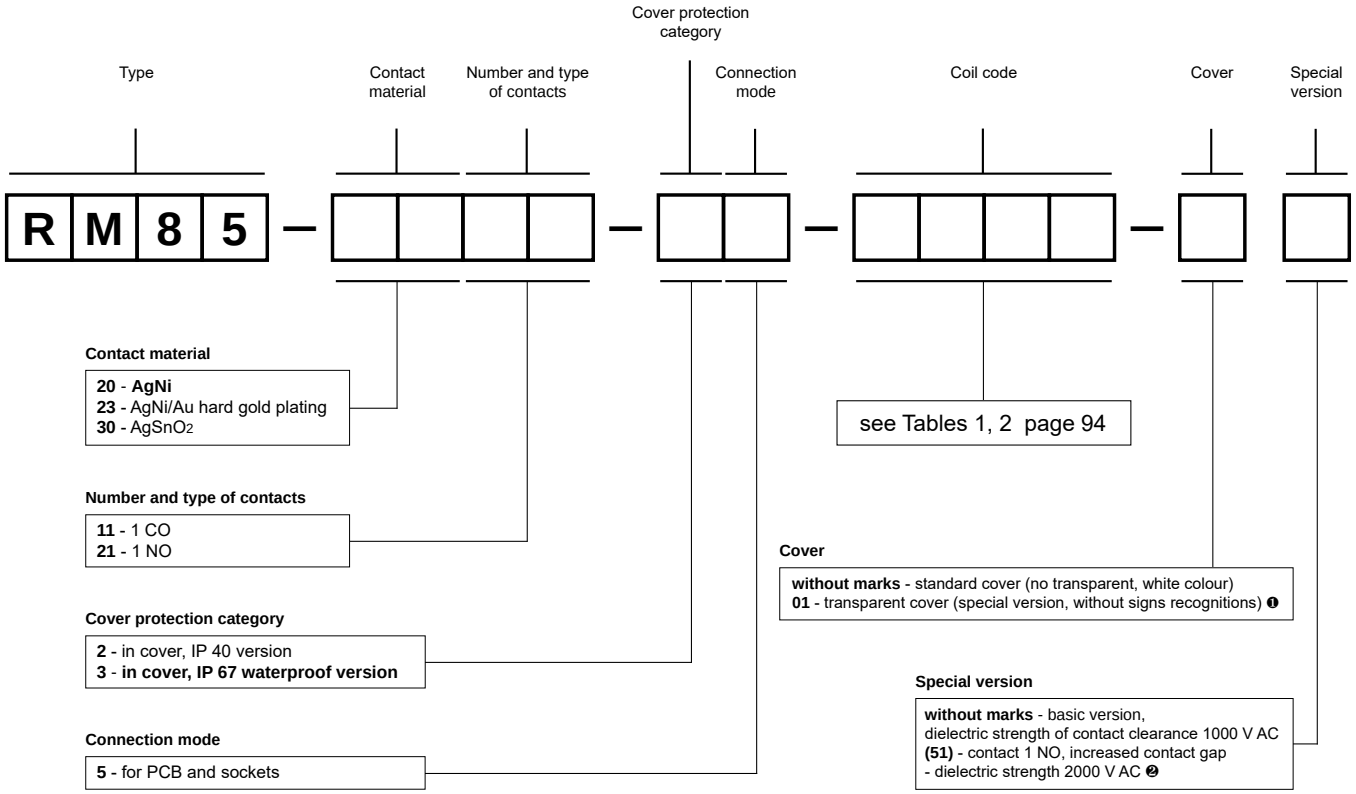
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
5012	12	100	± 10%	9,6	13,2
5024	**24**	**400**	**± 10%**	**19,2**	**28,8**
5048	48	1 550	± 10%	38,4	57,6
5060	60	2 600	± 10%	48,0	72,0
5110	110	8 900	± 10%	88,0	132,0
5115	115	9 600	± 10%	92,0	138,0
5120	120	10 200	± 10%	96,0	144,0
5220	220	35 500	± 10%	176,0	264,0
5230	**230**	**38 500**	**± 10%**	**184,0**	**276,0**
5240	240	42 500	± 15%	192,0	288,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



❶ **01**: special version - relay with transparent cover, only available with IP 40 and RTII, operating temperature -20...+70 °C ❷ **(51)**: special version - relay with one normally open contact 1 NO, with increased contact gap - dielectric strength 2000 V AC, only available with DC coil

Examples of ordering code:

RM85-3011-25-5024 relay **RM85**, for PCB and sockets, one changeover contact, contact material $AgSnO_2$, coil voltage 24 V AC 50/60 Hz, in standard cover (no transparent, white colour) IP 40

RM85-2011-25-1012-01 relay **RM85**, for PCB and sockets, one changeover contact, contact material AgNi, coil voltage 12 V DC, with transparent cover (special version, without signs recognitions) IP 40

RM85-2321-35-1024 (51) relay **RM85**, special version with increased contact gap, for PCB and sockets, one normally open contact, contact material AgNi/Au hard gold plating, coil voltage 24 V DC, in standard cover (no transparent, white colour) IP 67

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- **Switching voltage 480 V AC**
- Contact gap: 0,6 mm
- Cadmium - free contacts
- Height 15,7 mm
- 5000 V / 10 mm reinforced insulation
- For PCB • DC coils
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 NO
Contact material		**$AgSnO_2$**
Rated / max. switching voltage	AC	250 V / 480 V
Min. switching voltage		10 V
Rated load (capacity)	AC1	5 A / 480 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	750 W (single-phase motor)
	DC1	16 A / 24 V DC
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		10 mA
Max. inrush current		30 A
Rated current		16 A / 250 V AC
Max. breaking capacity	AC1	2 400 VA
Min. breaking capacity		1 W
Contact resistance		≤ 100 mΩ 100 mA, 24 V
Max. operating frequency		
• at rated load	AC1	360 cycles/hour
• no load		3 600 cycles/hour

Coil data

Rated voltage	DC	3 ... 110 V
Must release voltage		≥ 0,1 U_n
Operating range of supply voltage		see Table 1
Rated power consumption	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

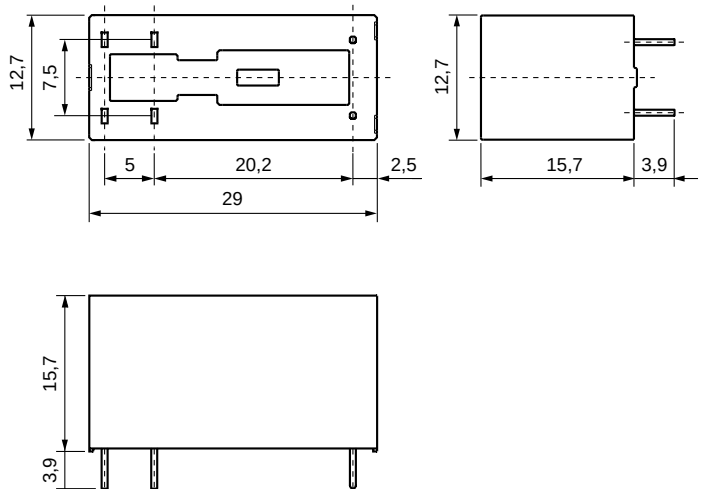
Insulation rated voltage	480 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	2
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	2 000 V AC type of clearance: micro-disconnection
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

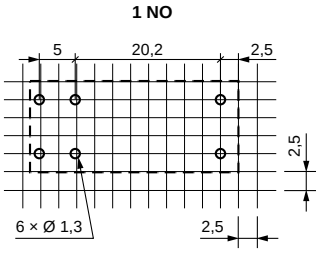
Operating / release time (typical values)		7 ms / 3 ms
Electrical life (number of cycles)		
• resistive AC1		> 4 x 10^4 5 A, 480 V AC
Mechanical life	3 600 cycles/hour	> 3 x 10^7
Electromagnetic load according to UL 508		Heavy Pilot Duty 480 V AC, 15 A make / 1,5 A break
Dimensions (L x W x H)		29 x 12,7 x 15,7 mm
Weight		14 g
Ambient temperature	• storage	-40...+85 °C
	• operating	-40...+85 °C
Cover protection category		IP 40 or **IP 67** PN-EN 60529
Environmental protection		RTII PN-EN 116000-3
Shock resistance		30 g
Vibration resistance		10 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays.

Dimensions



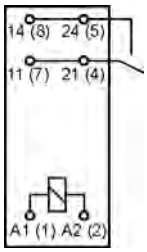
Pinout (solder side view)



Mounting

Relays **RM85 for switching higher voltages** are designed for direct PCB mounting.

Connection diagram (pin side view)



1 NO

Terminal (pin)	A1(1); A2(2)	21(4); 24(5); 11(7); 14(8)
[mm]	Ø 0,6	0,5 x 0,9
Drilling hole: • for relays	Ø 1,3 + 0,1 mm	

RM85 for switching higher voltages terminals are doubled for each contact. Both terminals are to be used while connecting to load.

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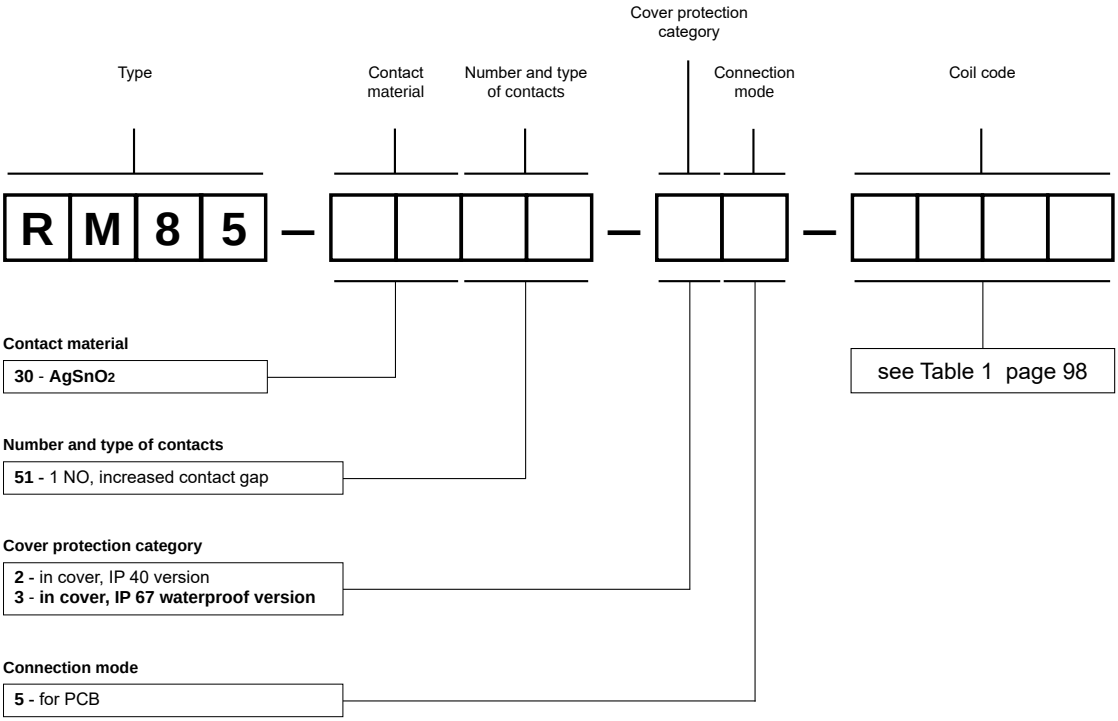
Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1003	3	22	± 10%	2,1	7,6
1005	5	60	± 10%	3,5	12,7
1006	6	90	± 10%	4,2	15,3
1009	9	200	± 10%	6,3	22,9
1012	**12**	**360**	**± 10%**	**8,4**	**30,6**
1018	18	710	± 10%	12,6	45,9
1024	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
1036	36	3 140	± 10%	25,2	91,8
1048	48	5 700	± 10%	33,6	122,4
1060	60	7 500	± 10%	42,0	153,0
1110	110	25 200	± 10%	77,0	280,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Example of ordering code:

RM85-3051-35-1012 relay **RM85**, with increased contact gap, for PCB, one normally open contact, contact material $AgSnO_2$, coil voltage 12 V DC, in cover IP 67

- Cadmium - free contacts • Height 15,7 mm • **Resistance to inrush current 80 A (20 ms)** • 5000 V / 10 mm reinforced insulation
- For PCB and plug-in sockets
- DC coils • Accessories: sockets and modules
- Applications: for motor operation control, lighting, electromagnetic valves, and many other applications
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 NO
Contact material		**$AgSnO_2$**
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		10 V
Rated load (capacity)	AC1	16 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	750 W (single-phase motor)
	DC1	16 A / 24 V DC (see Fig. 2)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		10 mA
Max. inrush current		80 A 20 ms
Rated current		16 A
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		1 W
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	DC	3 ... 110 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1 and Fig. 3
Rated power consumption	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

Insulation rated voltage		400 V AC
Rated surge voltage		4 000 V 1,2 / 50 µs
Overvoltage category		III
Insulation pollution degree		3
Dielectric strength		
• between coil and contacts		5 000 V AC type of insulation: reinforced
• contact clearance		1 000 V AC type of clearance: micro-disconnection
Contact - coil distance		
• clearance		≥ 10 mm
• creepage		≥ 10 mm

General data

Operating / release time (typical values)		8 ms / 3 ms
Electrical life (number of cycles)		
• resistive AC1	600 cycles/hour	> 10^5 16 A, 250 V AC
• cosφ		see Fig. 1
• resistive DC1	600 cycles/hour	> 10^5 16 A, 24 V DC
• inductive AC3, I = 3,5 A		> 2,5 x 10^5
• at incandescent lamp load, 1000 W		> 0,9 x 10^5
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		29 x 12,7 x 15,7 mm
Weight		14 g
Ambient temperature	• storage	-40...+85 °C
	• operating	-40...+85 °C
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTII PN-EN 116000-3
Shock resistance		30 g
Vibration resistance		10 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays.

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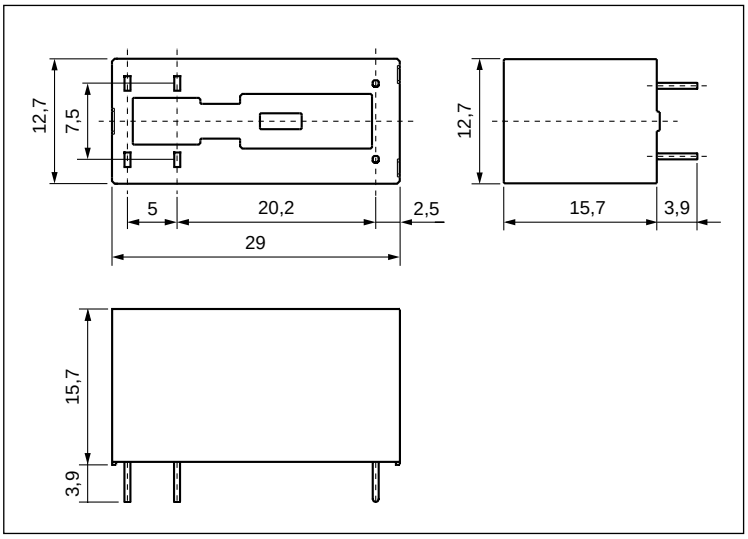
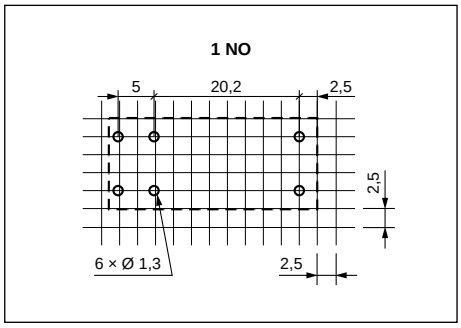
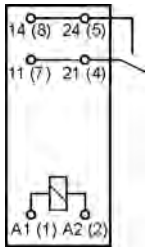
Dimensions



Pinout (solder side view)



Connection diagram (pin side view)

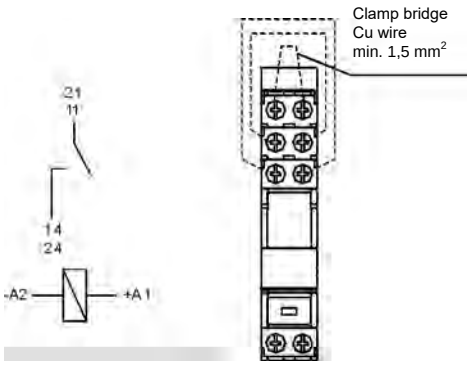


1 NO

Terminal (pin)	A1(1); A2(2)	21(4); 24(5); 11(7); 14(8)
[mm]	Ø 0,6	0,5 x 0,9
Drilling hole: • for relays • for sockets	 Ø 1,3 + 0,1 mm Ø 1,5 + 0,1 mm	

RM85 inrush terminals are doubled for each contact. Both terminals are to be used while connecting to load.

Connection of GZ... sockets



Note: Loads above 12 A (GZT80, GZM80) or 10 A (GZS80, GZF80, GZMB80) require bridging pairs of terminals: 11 with 21, 14 with 24. Loads up to 12 A or 10 A do not require bridging of common terminals (such bridges may be fixed, however).

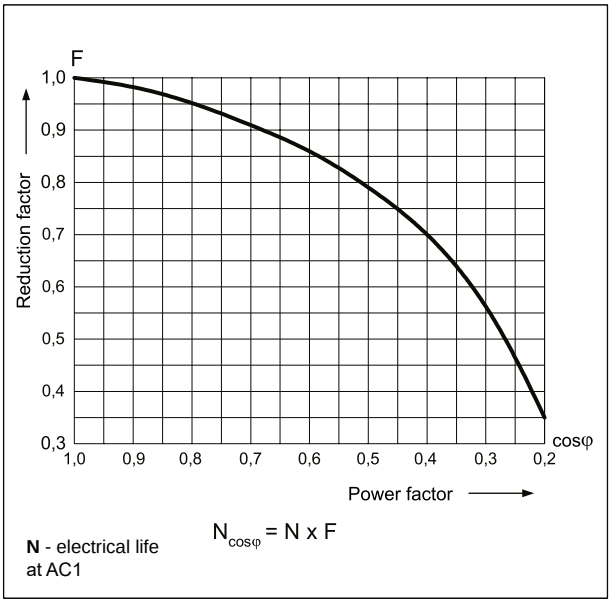
Mounting

Relays **RM85 inrush** are designed for: • direct PCB mounting • screw terminals plug-in sockets **GZT80** ❶ ❷ and **GZM80** ❶ ❷ with clip **GZT80-0040** or **GZM80-0041**; sockets **GZS80** ❶ ❷ with clip **GZS-0040** or **GZM80-0041**; sockets **GZF80** ❶ with clip **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw • spring terminals plug-in sockets **GZMB80** ❶ ❸ with clip **GZMB80-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715. Signalling / protecting modules **type M...** ❹ are available with sockets (see page 422) • plug-in sockets for PCB mounting **EC 50** with clip **MP16-2**, MH16-2; plug-in sockets **PW80** with clip **MH16-2**; plug-in sockets **GD50** with clip **MP16-2**, GD-0016, MH16-2.

❶ Loads above 12 A (GZT80, GZM80) or 10 A (GZS80, GZF80, GZMB80) require bridging pairs of terminals: 11 with 21, 14 with 24 - see page 100. ❷ Plug-in sockets **GZT80**, **GZM80**, **GZS80** may be linked with interconnection strip type **ZGGZ80** (see page 418). ❸ For sockets **GZMB80** - see page 397 (wire connection). ❹ For sockets **GZF80** not applicable modules type **M...**

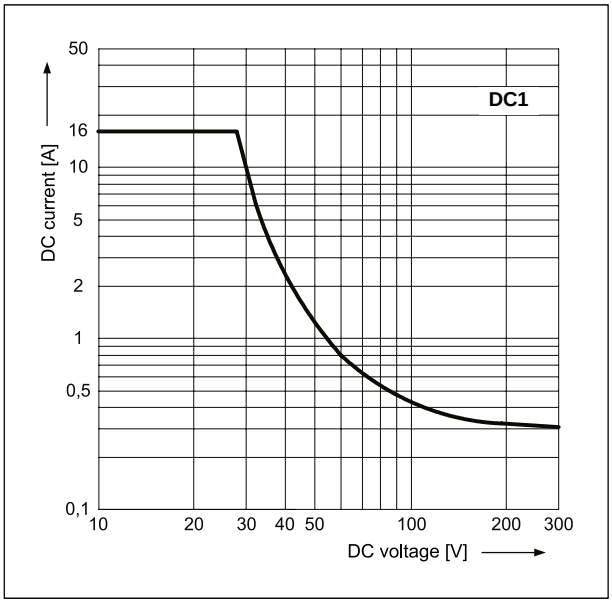
Electrical life reduction factor at AC inductive load

Fig. 1



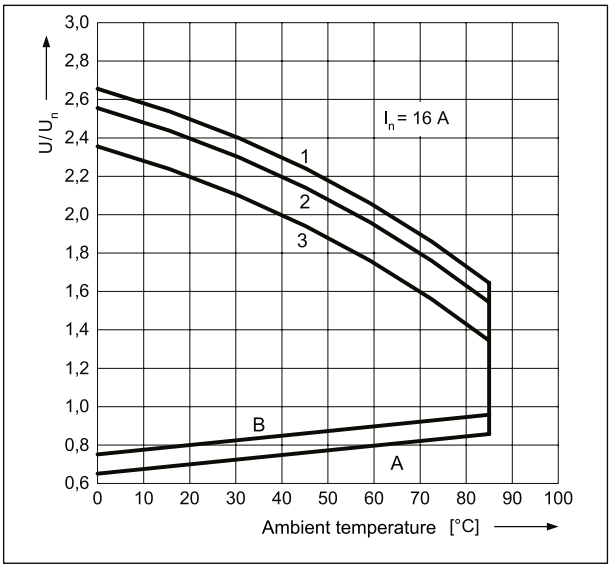
Max. DC resistive load breaking capacity

Fig. 2



Coil operating range - DC

Fig. 3



Description of Fig. 3

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

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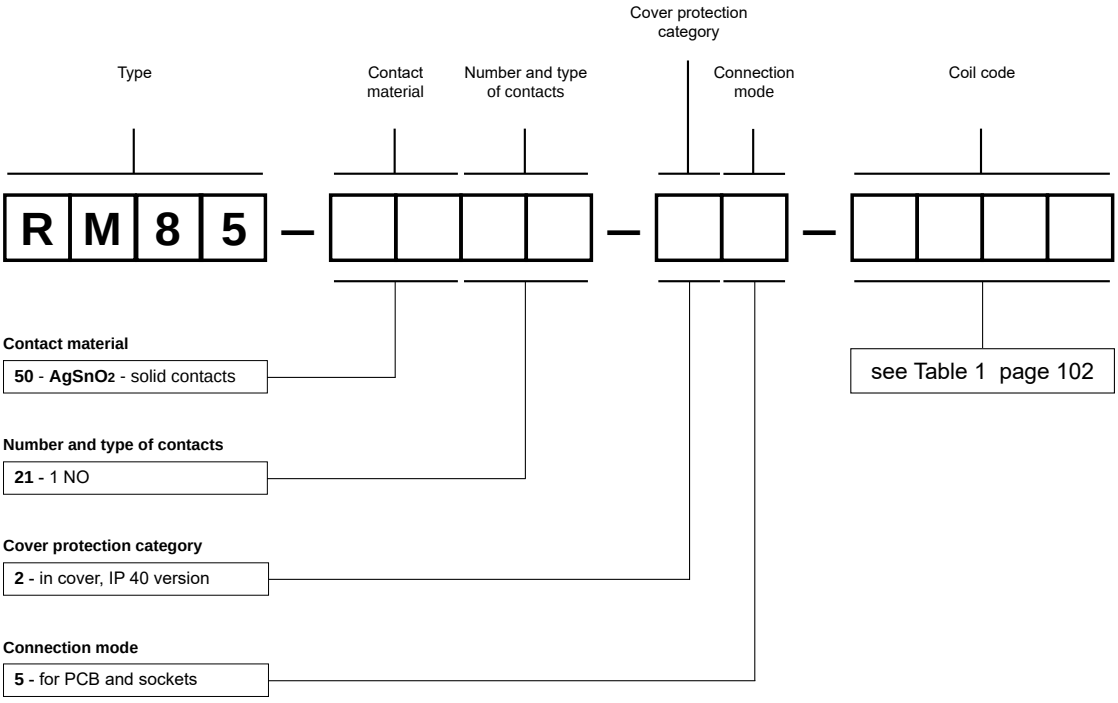
Coil data - DC voltage version

Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1003	3	22	± 10%	2,1	7,6
1005	5	60	± 10%	3,5	12,7
1006	6	90	± 10%	4,2	15,3
1009	9	200	± 10%	6,3	22,9
1012	**12**	**360**	**± 10%**	**8,4**	**30,6**
1018	18	710	± 10%	12,6	45,9
1024	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
1036	36	3 140	± 10%	25,2	91,8
1048	48	5 700	± 10%	33,6	122,4
1060	60	7 500	± 10%	42,0	153,0
1110	110	25 200	± 10%	77,0	280,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Example of ordering code:

RM85-5021-25-1012 relay **RM85 inrush**, for PCB and sockets, one normally open contact, contact material $AgSnO_2$ - solid contacts, coil voltage 12 V DC, in cover IP 40

- For PCB and plug-in sockets
- Accessories: sockets and modules
- DC coils - sensitive
- Ambient temperature up to 105 °C
- Applications: in household equipment, in temperature controlers
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 NO
Contact material		AgNi, AgNi/Au hard gold plating, **$AgSnO_2$**
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	16 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	750 W (single-phase motor)
	DC1	16 A / 24 V DC (see Fig. 2)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		30 A $AgSnO_2$
Rated current		16 A
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	DC	5 ... 48 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1 and Fig. 3
Rated power consumption	DC	0,25 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	400 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	1 000 V AC type of clearance: micro-disconnection
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

Operating / release time (typical values)		8 ms / 3 ms
Electrical life (number of cycles)	• resistive AC1	$> 10^5$ 16 A, 230 V AC, 70 °C
		$> 2 \times 10^4$ 16 A, 230 V AC, 105 °C
		$> 1,7 \times 10^5$ 10 A, 230 V AC, 105 °C
		$> 2,8 \times 10^5$ 8 A, 230 V AC, 105 °C
		$> 3,2 \times 10^5$ 6 A, 230 V AC, 105 °C
	• cosφ	see Fig. 1
	• DC L/R=40 ms	$> 10^5$ 0,15 A, 220 V DC
Mechanical life (cycles)		$> 3 \times 10^7$
Dimensions (L x W x H)		29 x 12,7 x 15,7 mm
Weight		14 g
Ambient temperature	• storage	-40...+105 °C
	• operating	-40...+105 °C
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTII PN-EN 116000-3
Shock resistance		30 g
Vibration resistance		10 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays.

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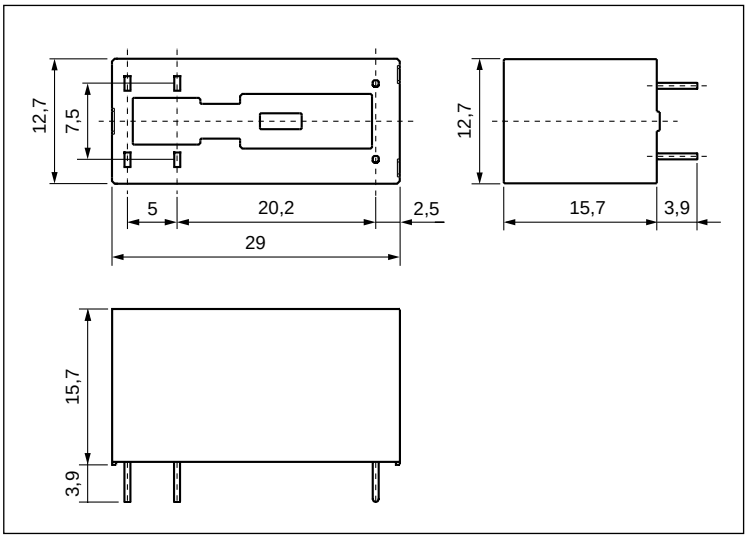
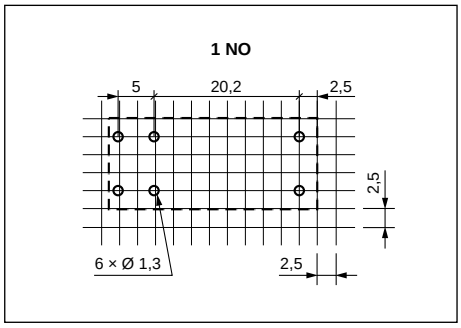
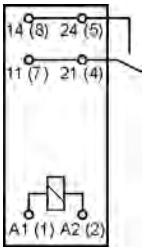
Dimensions



Pinout (solder side view)



Connection diagram (pin side view)

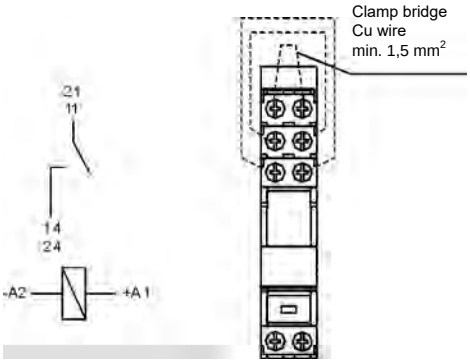


1 NO

Terminal (pin)	A1(1); A2(2)	21(4); 24(5); 11(7); 14(8)
[mm]	Ø 0,6	0,5 x 0,9
Drilling hole: • for relays • for sockets	 Ø 1,3 + 0,1 mm Ø 1,5 + 0,1 mm	

RM85 105 °C sensitive terminals are doubled for each contact. Both terminals are to be used while connecting to load.

Connection of GZ... sockets



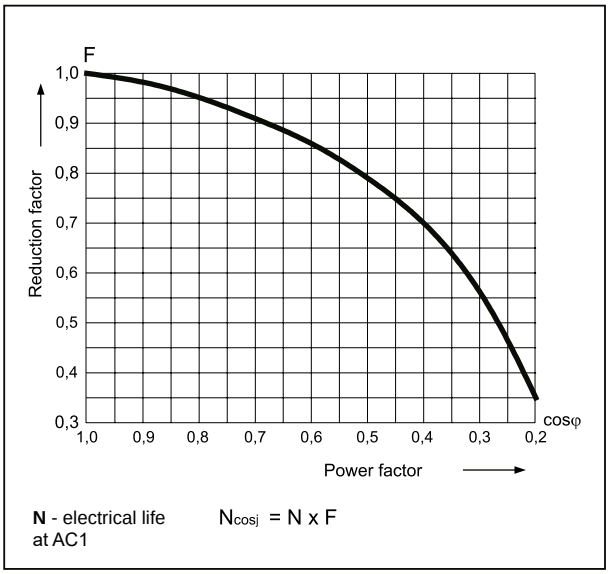
Note: Loads above 12 A (GZT80, GZM80) or 10 A (GZS80, GZF80, GZMB80) require bridging pairs of terminals: 11 with 21, 14 with 24. Loads up to 12 A or 10 A do not require bridging of common terminals (such bridges may be fixed, however).

Mounting

Relays **RM85 105 °C sensitive** are designed for: • direct PCB mounting • screw terminals plug-in sockets **GZT80** ❶ ❷ and **GZM80** ❶ ❷ with clip **GZT80-0040** or **GZM80-0041**; sockets **GZS80** ❶ ❷ with clip **GZS-0040** or **GZM80-0041**; sockets **GZF80** ❶ with clip **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw • spring terminals plug-in sockets **GZMB80** ❶ ❸ with clip **GZMB80-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715. Signalling / protecting modules **type M...** ❹ are available with sockets (see page 422) • plug-in sockets for PCB mounting **EC 50** with clip **MP16-2**, MH16-2; plug-in sockets **PW80** with clip **MH16-2**; plug-in sockets **GD50** with clip **MP16-2**, GD-0016, MH16-2.

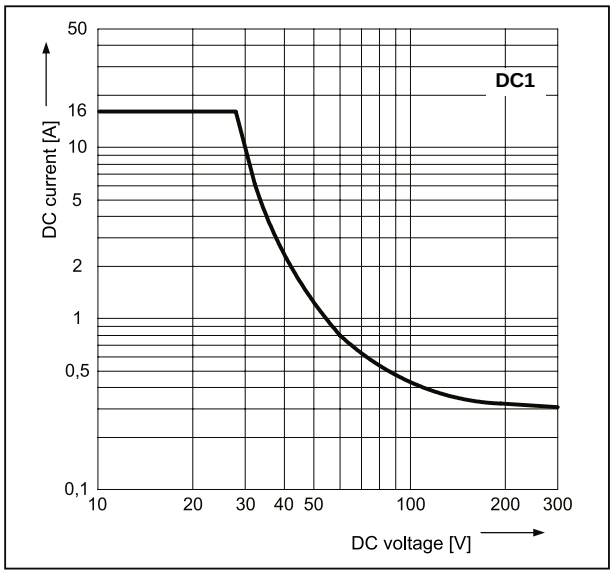
❶ Loads above 12 A (GZT80, GZM80) or 10 A (GZS80, GZF80, GZMB80) require bridging pairs of terminals: 11 with 21, 14 with 24 - see page 104. ❷ Plug-in sockets **GZT80**, **GZM80**, **GZS80** may be linked with interconnection strip type **ZGGZ80** (see page 418). ❸ For sockets **GZMB80** - see page 397 (wire connection). ❹ For sockets **GZF80** not applicable modules type **M...**

Electrical life reduction factor at AC inductive load — Fig. 1

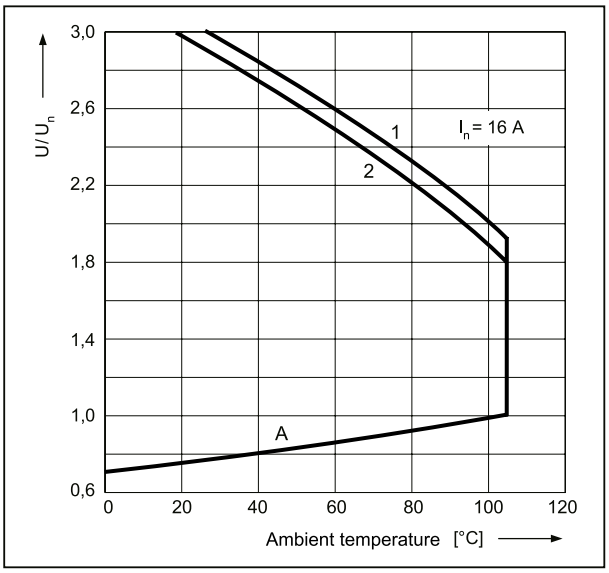


N - electrical life at AC1 $N_{cosj} = N \times F$

Max. DC resistive load breaking capacity — Fig. 2



Coil operating range - DC — Fig. 3



Description of Fig. 3

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - rated load

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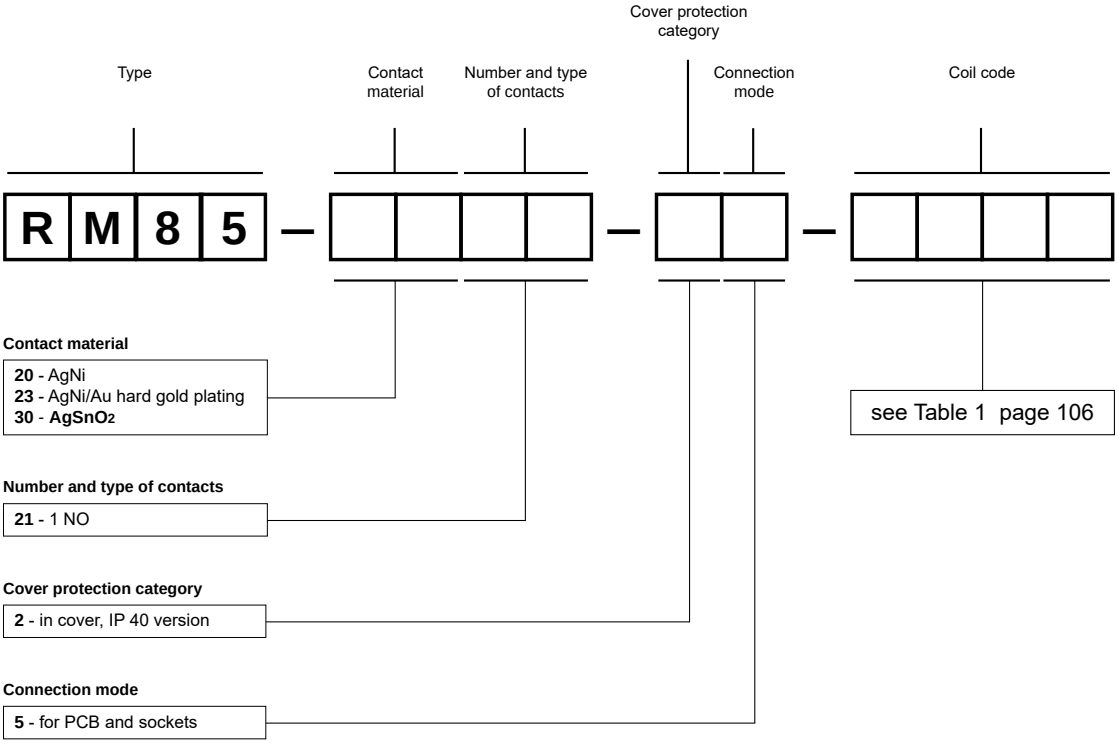
Coil data - DC voltage version, sensitive Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
S005	5	102	± 10%	3,75	15,0
S006	6	144	± 10%	4,50	18,0
S009	9	330	± 10%	6,75	27,0
S010	10	380	± 10%	7,50	30,0
S012	12	580	± 10%	9,00	36,0
S018	18	1 300	± 10%	13,50	54,0
S024	24	2 300	± 10%	18,00	72,0
S048	48	9 340	± 10%	36,00	144,0

Ordering codes



Examples of ordering code:

RM85-3021-25-S012 relay **RM85 105 ºC sensitive**, for PCB and sockets, one normally open contact, contact material $AgSnO_2$, sensitive coil voltage 12 V DC, in cover IP 40

RM85-2321-25-S005 relay **RM85 105 ºC sensitive**, for PCB and sockets, one normally open contact, contact material AgNi/Au hard gold plating, sensitive coil voltage 5 V DC, in cover IP 40

- Cadmium - free contacts
- Height 17,7 mm
- 5000 V / 10 mm reinforced insulation
- **For surface mounting SMT** - for manual soldering
- AC and DC coils
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	16 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	750 W (single-phase motor)
	DC1	16 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		30 A $AgSnO_2$
Rated current		16 A
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 240 V
	DC	3 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 4, 5
Rated power consumption	AC	0,75 VA
	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	400 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	1 000 V AC type of clearance: micro-disconnection
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

Operating / release time (typical values)		7 ms / 3 ms
Electrical life (number of cycles)		
• resistive AC1		> 0,7 x 10^5 16 A, 250 V AC
• cosφ		see Fig. 2
• DC L/R=40 ms		> 10^5 0,15 A, 220 V DC
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		29 x 13,2 x 17,7 mm
Weight		14 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C DC: -40...+85 °C
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTII PN-EN 116000-3
Shock resistance		30 g
Vibration resistance		10 g 10...150 Hz
Soldering temperature		max. 350 °C
Soldering time		max. 3 s

The data in bold type relate to the standard versions of the relays.

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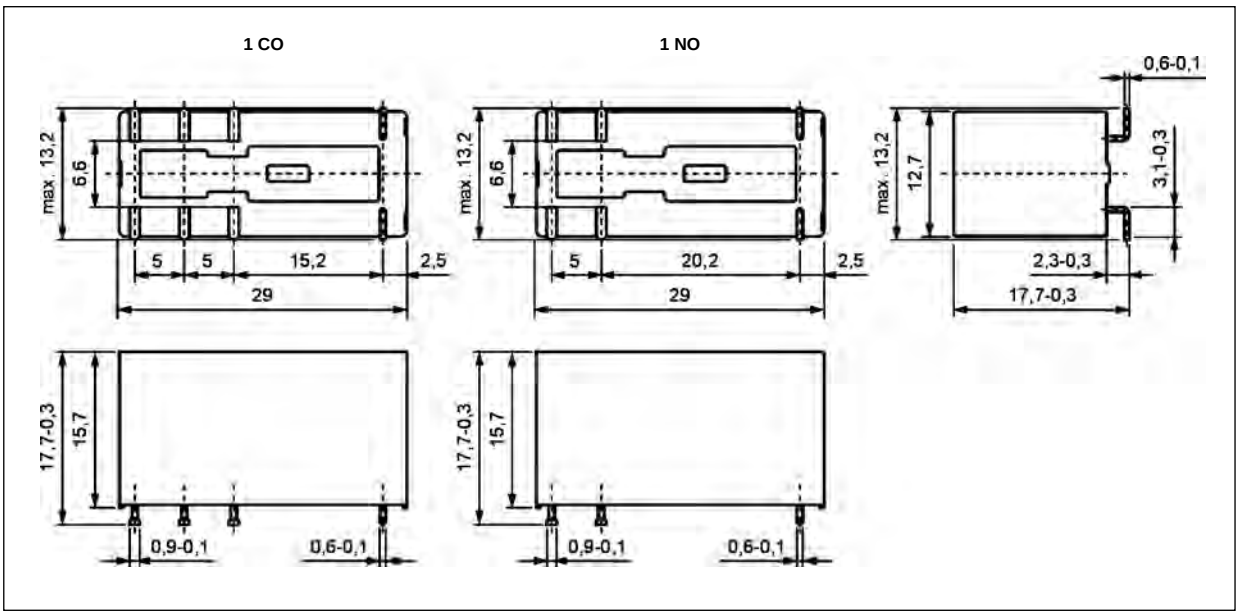
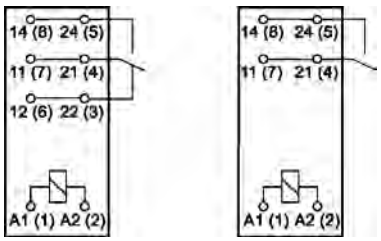
Dimensions



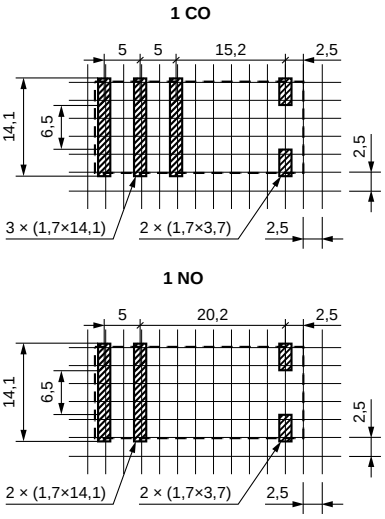
Connection diagrams (pin side view)



Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
[mm]	Ø 0,6	0,5 x 0,9

RM85 SMT terminals are doubled for each contact.
Both terminals are to be used while connecting to load.

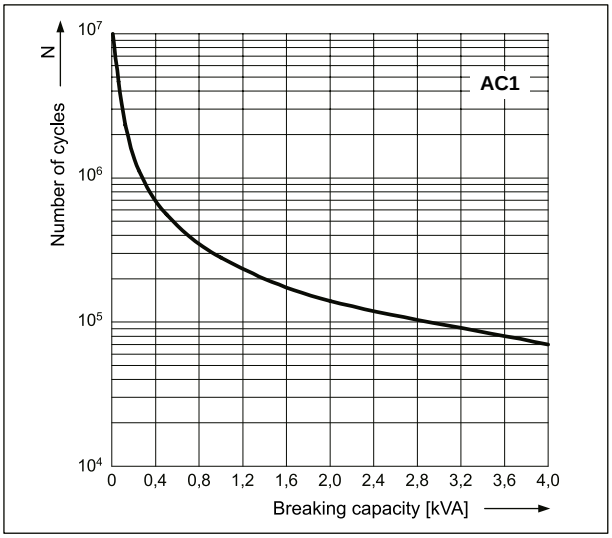
Soldering areas (solder side view)



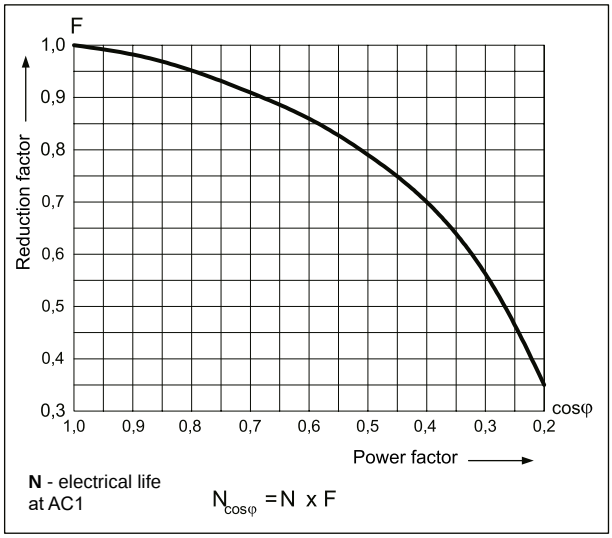
Mounting

Relays **RM85 SMT** are designed for surface mounting SMT - for manual soldering.

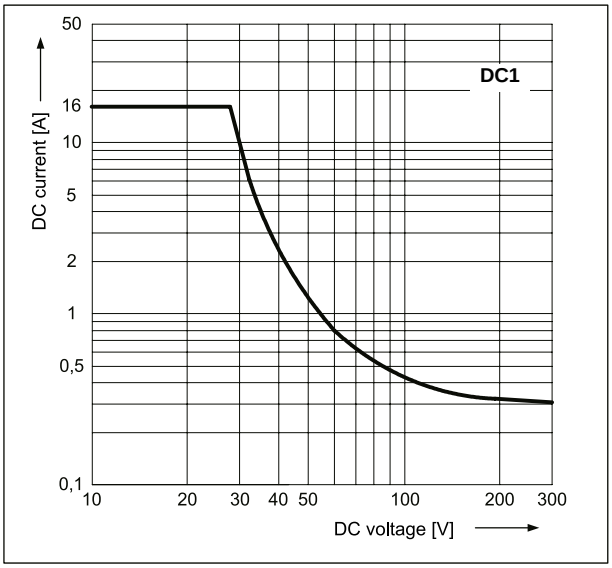
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour — Fig. 1



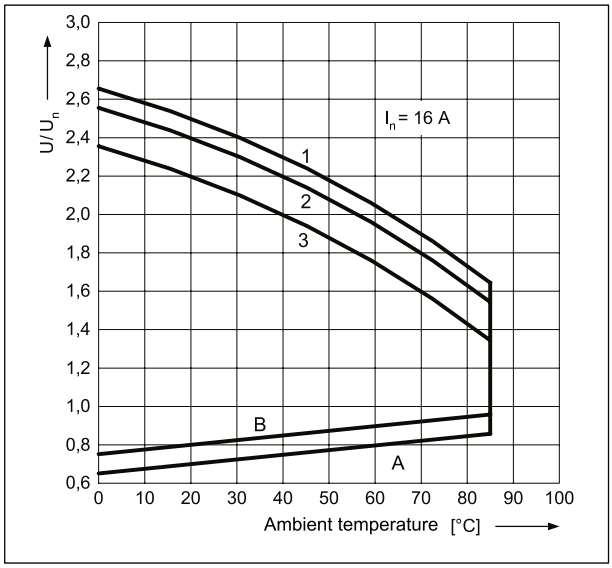
Electrical life reduction factor at AC inductive load — Fig. 2



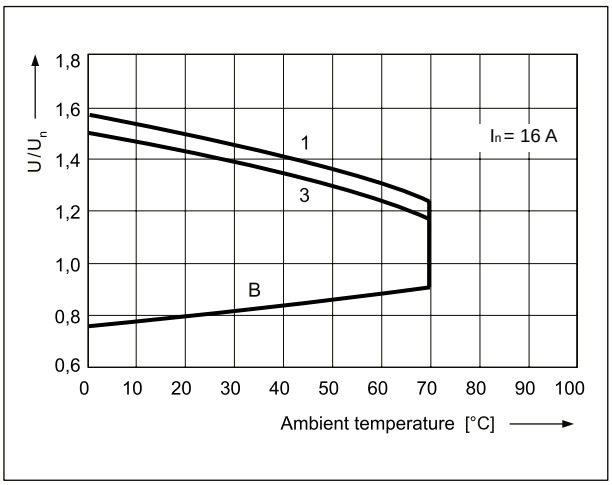
Max. DC resistive load breaking capacity — Fig. 3



Coil operating range - DC — Fig. 4



Coil operating range - AC 50 Hz — Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

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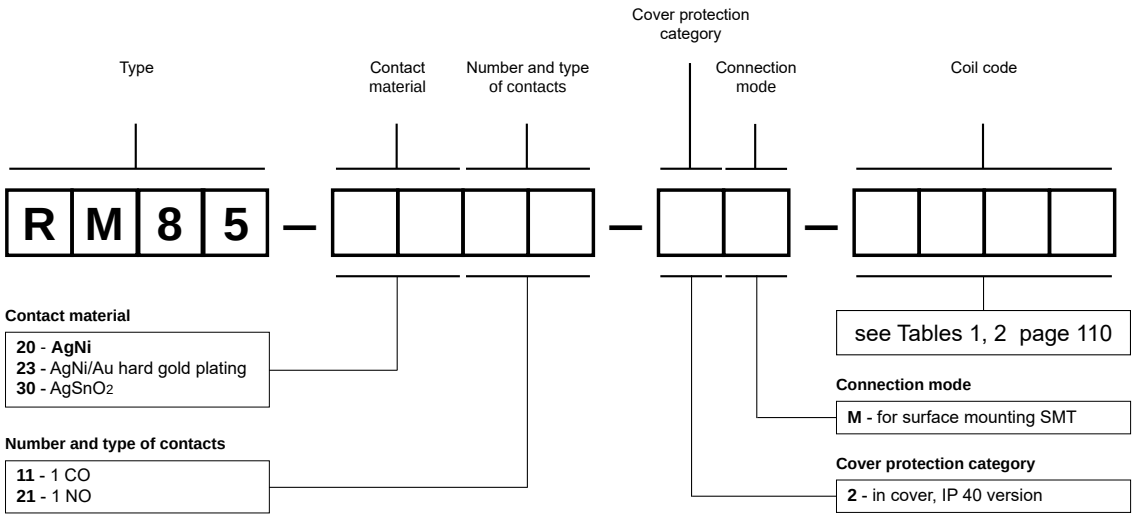
Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1003	3	22	± 10%	2,1	7,6
1005	5	60	± 10%	3,5	12,7
1006	6	90	± 10%	4,2	15,3
1009	9	200	± 10%	6,3	22,9
1012	12	360	± 10%	8,4	30,6
1018	18	710	± 10%	12,6	45,9
1024	24	1 440	± 10%	16,8	61,2
1036	36	3 140	± 10%	25,2	91,8
1048	48	5 700	± 10%	33,6	122,4
1060	60	7 500	± 10%	42,0	153,0
1110	110	25 200	± 10%	77,0	280,0

Coil data - AC 50/60 Hz voltage version Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
5012	12	100	± 10%	9,6	13,2
5024	24	400	± 10%	19,2	28,8
5048	48	1 550	± 10%	38,4	57,6
5060	60	2 600	± 10%	48,0	72,0
5110	110	8 900	± 10%	88,0	132,0
5115	115	9 600	± 10%	92,0	138,0
5120	120	10 200	± 10%	96,0	144,0
5220	220	35 500	± 10%	176,0	264,0
5230	230	38 500	± 10%	184,0	276,0
5240	240	42 500	± 15%	192,0	288,0

Ordering codes

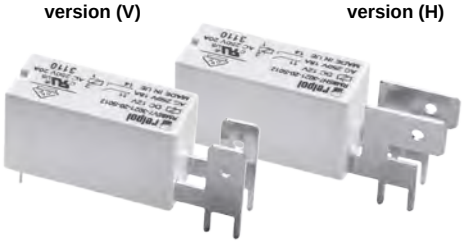


Examples of ordering code:

RM85-2011-2M-1024 relay **RM85 SMT**, for surface mounting SMT, one changeover contact, contact material AgNi, coil voltage 24 V DC, in cover IP 40

RM85-2321-2M-5012 relay **RM85 SMT**, for surface mounting SMT, one normally open contact, contact material AgNi/Au hard gold plating, coil voltage 12 V AC 50/60 Hz, in cover IP 40

version (V) version (H)



• Cadmium - free contacts • Height 15,7 mm • 5000 V / 10 mm reinforced insulation • **Coil terminals for PCB, contacts terminals for PCB and flat insert connectors - faston 250 (6,3 x 0,8 mm), faston arrangement: vertical version (V) and horizontal version (H)** • DC coils - sensitive • Ambient temperature up to 105 °C • Applications: for control of operation of heating elements and motors of household equipment and catering industry devices, for control of electromagnetic valves, in many other applications • Compliance with standard PN-EN 60335-1
• Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 NO
Contact material		**$AgSnO_2$**
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		10 V
Rated load (capacity)	AC1	20 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	750 W (single-phase motor)
	DC1	20 A / 24 V DC
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		10 mA
Max. inrush current		30 A
Rated current		20 A
Max. breaking capacity	AC1	5 000 VA
Min. breaking capacity		1 W
Contact resistance		≤ 100 mΩ 100 mA, 24 V
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	DC	5 ... 48 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1
Rated power consumption	DC	0,25 W

Insulation according to PN-EN 60664-1

Insulation rated voltage		400 V AC
Rated surge voltage		4 000 V 1,2 / 50 µs
Overvoltage category		III
Insulation pollution degree		3
Dielectric strength		
• between coil and contacts		5 000 V AC type of insulation: reinforced
• contact clearance		1 000 V AC type of clearance: micro-disconnection
Contact - coil distance		
• clearance		≥ 10 mm
• creepage		≥ 10 mm

General data

Operating / release time (typical values)		8 ms / 3 ms
Electrical life (number of cycles)		
• resistive AC1		> 2 x 10^4 20 A, 250 V AC, 85 °C
		> 1,5 x 10^5 10 A, 250 V AC, 105 °C
• cosφ		see Fig. 1
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		vertical version (V): 40,5 x 12,7 x 15,7 mm
		horizontal version (H): 44,5 x 12,7 x 15,7 mm
Weight		16 g
Ambient temperature	• storage	-40...+105 °C
	• operating	-40...+105 °C
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTII PN-EN 116000-3
Shock resistance		30 g
Vibration resistance		10 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays.

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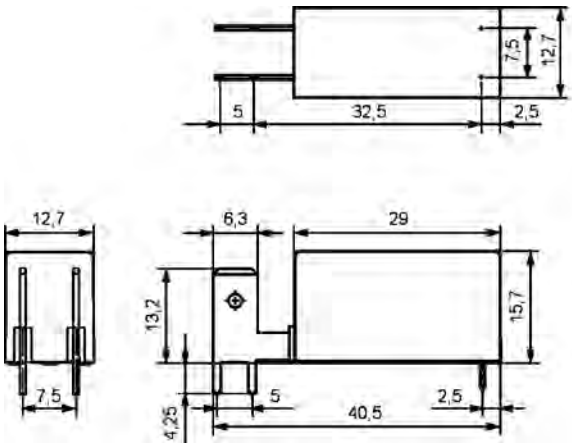
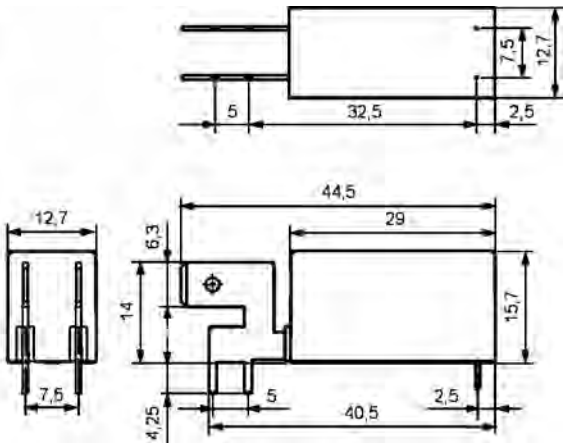
Dimensions

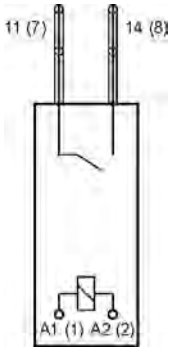
vertical version (V)



horizontal version (H)



Connection diagram (pin side view)

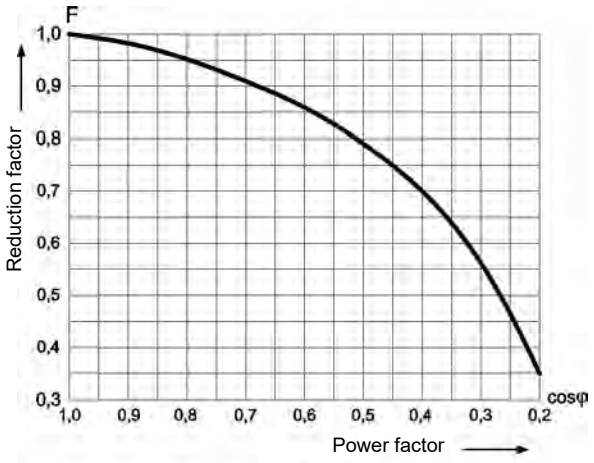


1 NO

Terminal (pin)	A1(1); A2(2)	11(7); 14(8)
[mm]	Ø 0,6	1,2 x 0,8 faston 6,3 x 0,8
Drilling hole: • for relays	Ø 1,3 + 0,1 mm	

Electrical life reduction factor at AC inductive load

Fig. 1

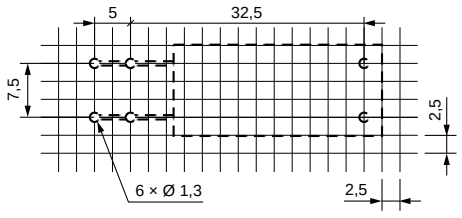


N - electrical life at AC1

$N_{cos\varphi} = N \times F$

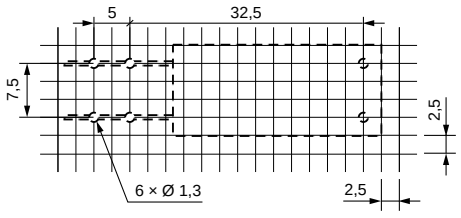
Pinout (solder side view)

vertical version (V)



1 NO

horizontal version (H)



1 NO

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Mounting

Relays **RM85 faston** are designed for: • direct PCB mounting • connection of load with flat insert connectors - faston 250 (6,3 x 0,8 mm).

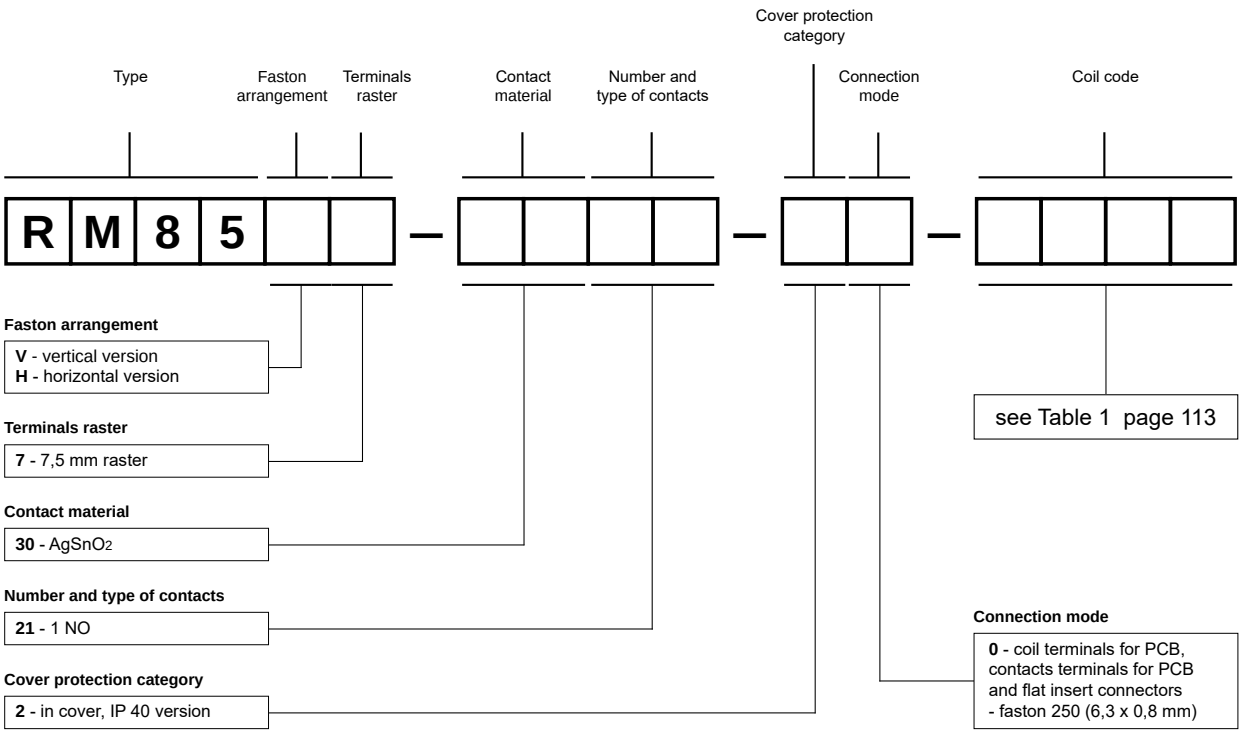
Coil data - DC voltage version, sensitive

Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
S005	5	102	± 10%	3,75	15,0
S006	6	144	± 10%	4,50	18,0
S009	9	330	± 10%	6,75	27,0
S010	10	380	± 10%	7,50	30,0
S012	**12**	**580**	**± 10%**	**9,00**	**36,0**
S018	18	1 300	± 10%	13,50	54,0
S024	**24**	**2 300**	**± 10%**	**18,00**	**72,0**
S048	48	9 340	± 10%	36,00	144,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Example of ordering code:

RM85V7-3021-20-S012 relay **RM85 faston**, vertical version, coil terminals for PCB, contacts terminals for PCB and flat insert connectors - faston 250 (6,3 x 0,8 mm), 7,5 mm terminals raster, one normally open contact, contact material $AgSnO_2$, sensitive coil voltage 12 V DC, in cover IP 40

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RM87N-...-01 ❶ RM87N sensitive

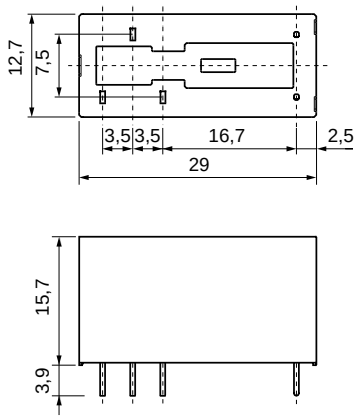
- Cadmium - free contacts • Height 15,7 mm
- 5000 V / 10 mm reinforced insulation • For PCB and plug-in sockets
- Accessories: sockets and modules • **AC and DC coils - standard (RM87), DC coils - sensitive (RM87 sensitive)**
- Available special versions: with transparent cover ❶; with the increased dielectric strength of the contact clearance ❷
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,

Contact data		**RM87** - standard version	**RM87 sensitive** - sensitive version
Number and type of contacts		1 CO, 1 NO ❷	1 NO
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$	
Rated / max. switching voltage	AC	250 V / 440 V	
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$	
Rated load (capacity)	AC1	12 A / 250 V AC	10 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)	
	AC3	750 W (single-phase motor)	
	DC1	12 A / 24 V DC (see Fig. 3)	10 A / 24 V DC (see Fig. 4)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)	
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$	
Max. inrush current		25 A $AgSnO_2$	20 A $AgSnO_2$
Rated current		12 A	10 A
Max. breaking capacity	AC1	3 000 VA	2 500 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$	
Contact resistance		≤ 100 mΩ	
Max. operating frequency			
• at rated load	AC1	600 cycles/hour	
• no load		72 000 cycles/hour	
Coil data			
Rated voltage	50/60 Hz AC	12 ... 240 V	–
	DC	3 ... 110 V	5 ... 48 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n	
Operating range of supply voltage		see Tables 1, 3 and Fig. 5, 7	see Table 2 and Fig. 6
Rated power consumption	AC	0,75 VA	–
	DC	0,4 ... 0,48 W	0,25 W
Insulation according to PN-EN 60664-1			
Insulation rated voltage		400 V AC	
Rated surge voltage		4 000 V 1,2 / 50 µs	
Overvoltage category		III	
Insulation pollution degree		3	
Dielectric strength	• between coil and contacts	5 000 V AC	type of insulation: reinforced
	• contact clearance	1 000 V AC	type of clearance: micro-disconnection
		2 000 V AC	contact 1 NO, type of clearance: full-disconnection ❷
Contact - coil distance	• clearance	≥ 10 mm	
	• creepage	≥ 10 mm	
General data			
Operating / release time (typical values)		7 ms / 3 ms	
Electrical life (number of cycles)			
• resistive AC1		> 10^5 12 A, 250 V AC	> 1,7 x 10^5 10 A, 250 V AC
• cosφ		see Fig. 2	
• DC L/R=40 ms		> 10^5 0,15 A, 220 V DC	
Mechanical life (cycles)		> 3 x 10^7	
Dimensions (L x W x H) / Weight		29 x 12,7 x 15,7 mm / 14 g	
Ambient temperature	• storage	-40...+85 °C	
	• operating	AC: -40...+70 °C DC: -40...+85 °C	-20...+70 °C ❶
Cover protection category		IP 40 ❶ or **IP 67**	PN-EN 60529
Environmental protection		RTII ❶ or **RTIII**	PN-EN 116000-3
Shock resistance		30 g	
Vibration resistance		10 g 10...150 Hz	
Solder bath temperature		max. 270 °C	
Soldering time		max. 5 s	

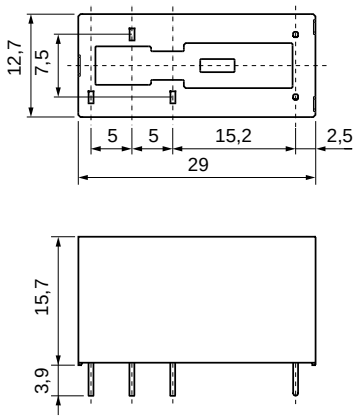
The data in bold type relate to the standard versions of the relays. ❶ Relate to the special versions - relays with transparent cover, only available with IP 40 and RTII, operating temperature -20...+70 °C. See "Ordering codes". ❷ Relate to the special versions - relays with one normally open contact 1 NO, with increased contact gap - dielectric strength 2000 V AC, only available with DC coils. See "Ordering codes".

Dimensions

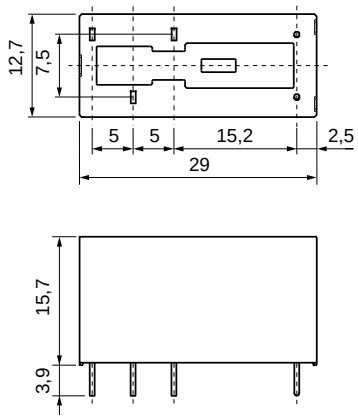
RM87N - 1 CO (standard version)



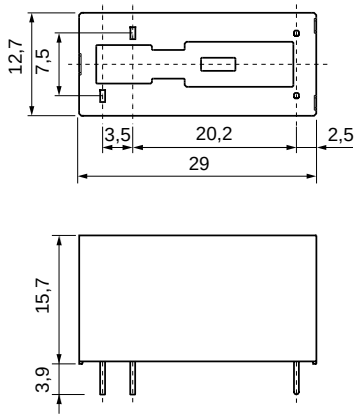
RM87L - 1 CO (standard version)



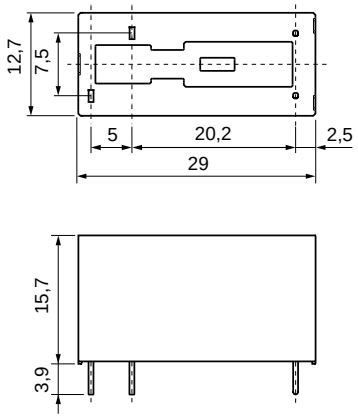
RM87P - 1 CO (standard version)



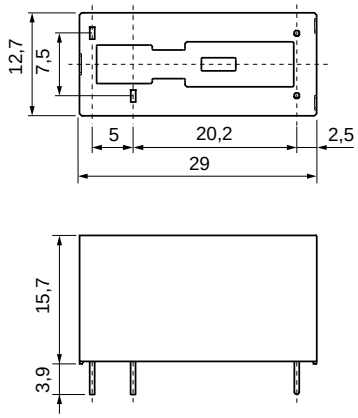
RM87N, RM87N sensitive - 1 NO



RM87L, RM87L sensitive - 1 NO

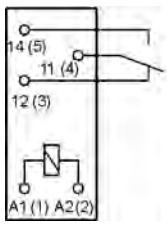


RM87P, RM87P sensitive - 1 NO



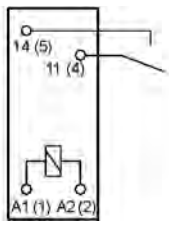
Connection diagrams (pin side view)

RM87N



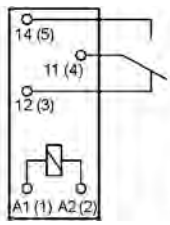
1 CO

RM87N, RM87N sensitive



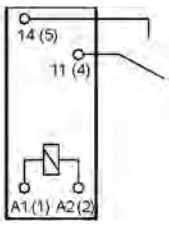
1 NO

RM87L



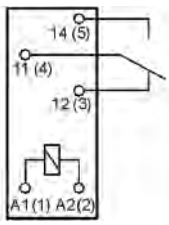
1 CO

RM87L, RM87L sensitive



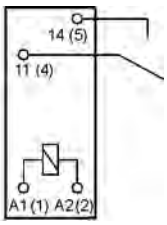
1 NO

RM87P



1 CO

RM87P, RM87P sensitive



1 NO

Terminal (pin)	A1(1); A2(2)	12(3); 11(4); 14(5)
[mm]	Ø 0,6	0,5 x 0,9
Drilling hole: • for relays • for sockets	 Ø 1,3 + 0,1 mm Ø 1,5 + 0,1 mm	

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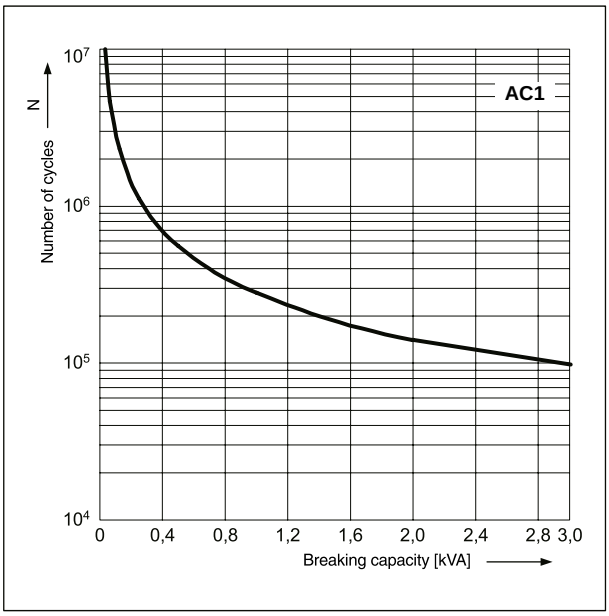
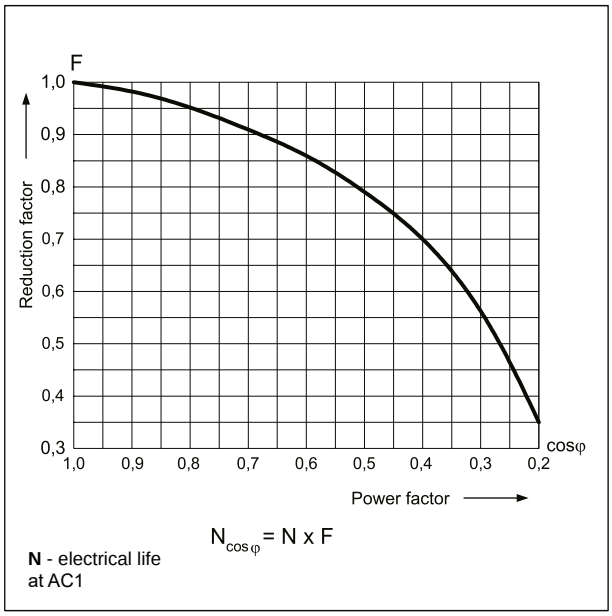
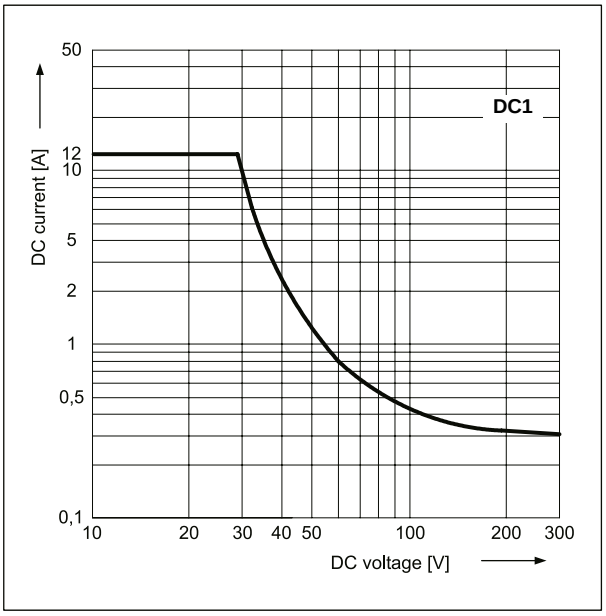
Electrical life at AC resistive load.
Switching frequency: 600 cycles/hour Fig. 1



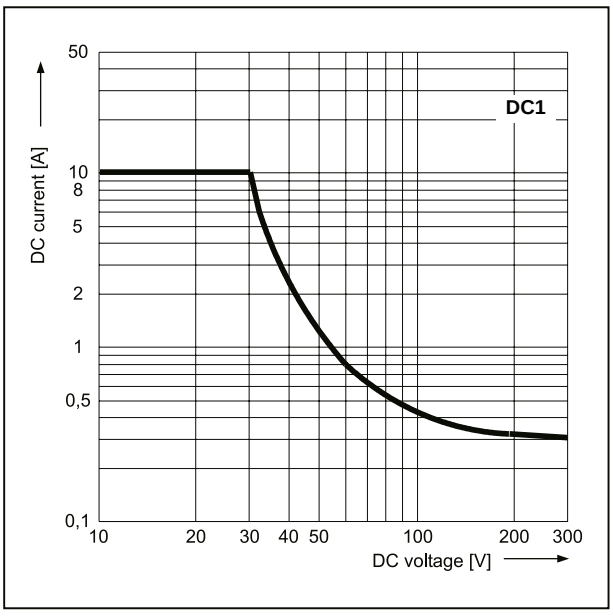
Electrical life reduction factor
at AC inductive load Fig. 2



Max. DC resistive load breaking capacity
- standard version Fig. 3



Max. DC resistive load breaking capacity
- sensitive version Fig. 4

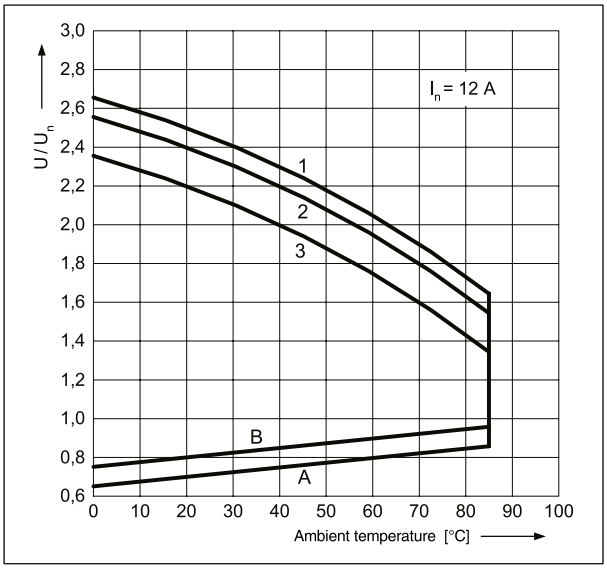


GZMB80

Spring terminals
plug-in socket
for RM84, RM85...,
RM87L, RM87P,
RMP84, RMP85
- see page 397

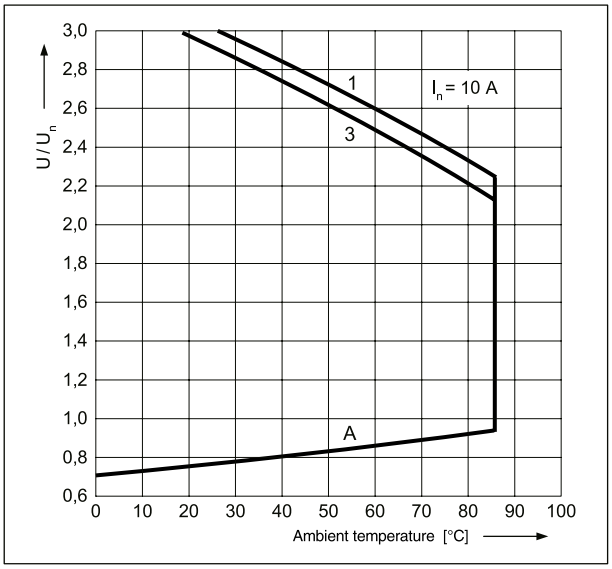
Coil operating range - DC
- standard version

Fig. 5



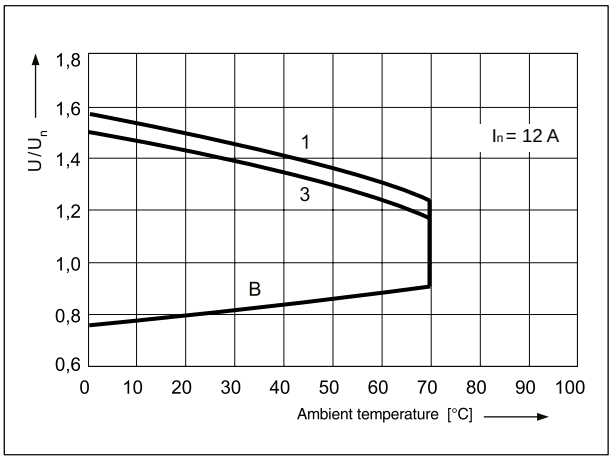
Coil operating range - DC
- sensitive version

Fig. 6



Coil operating range - AC 50 Hz

Fig. 7

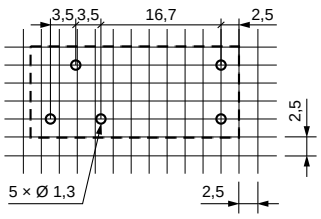


Description of Fig. 5, 6 and 7

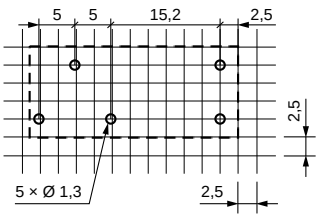
A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

Pinout (solder side view)

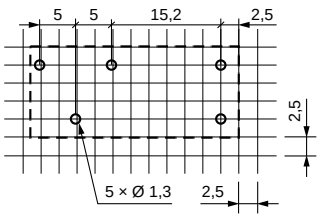
RM87N - 1 CO (standard version)



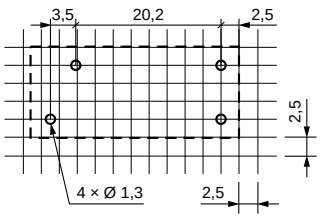
RM87L - 1 CO (standard version)



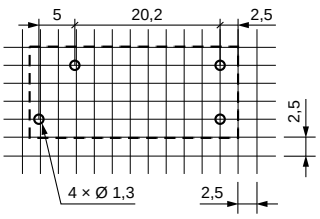
RM87P - 1 CO (standard version)



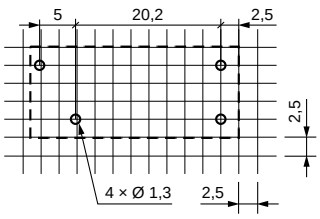
RM87N, RM87N sensitive - 1 NO



RM87L, RM87L sensitive - 1 NO



RM87P, RM87P sensitive - 1 NO



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Coil data - DC voltage version, **RM87** - standard version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1003	3	22	± 10%	2,1	7,6
1005	5	60	± 10%	3,5	12,7
1006	6	90	± 10%	4,2	15,3
1009	9	200	± 10%	6,3	22,9
1012	12	360	± 10%	8,4	30,6
1018	18	710	± 10%	12,6	45,9
1024	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
1036	36	3 140	± 10%	25,2	91,8
1048	48	5 700	± 10%	33,6	122,4
1060	60	7 500	± 10%	42,0	153,0
1110	110	25 200	± 10%	77,0	280,0

The data in bold type relate to the standard versions of the relays.

Coil data - DC voltage version, **RM87 sensitive** - sensitive version — Table 2

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
S005	5	102	± 10%	3,75	15,0
S006	6	144	± 10%	4,50	18,0
S009	9	330	± 10%	6,75	27,0
S010	10	400	± 10%	7,50	30,0
S012	12	580	± 10%	9,00	36,0
S018	18	1 300	± 10%	13,50	54,0
S024	24	2 300	± 10%	18,00	72,0
S048	48	9 340	± 10%	36,00	144,0

Coil data - AC 50/60 Hz voltage version, **RM87** - standard version — Table 3

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
5012	12	100	± 10%	9,6	13,2
5024	**24**	**400**	**± 10%**	**19,2**	**28,8**
5048	48	1 550	± 10%	38,4	57,6
5060	60	2 600	± 10%	48,0	72,0
5110	110	8 900	± 10%	88,0	132,0
5115	115	9 600	± 10%	92,0	138,0
5120	120	10 200	± 10%	96,0	144,0
5220	220	35 500	± 10%	176,0	264,0
5230	**230**	**38 500**	**± 10%**	**184,0**	**276,0**
5240	240	42 500	± 15%	192,0	288,0

The data in bold type relate to the standard versions of the relays.

Mounting

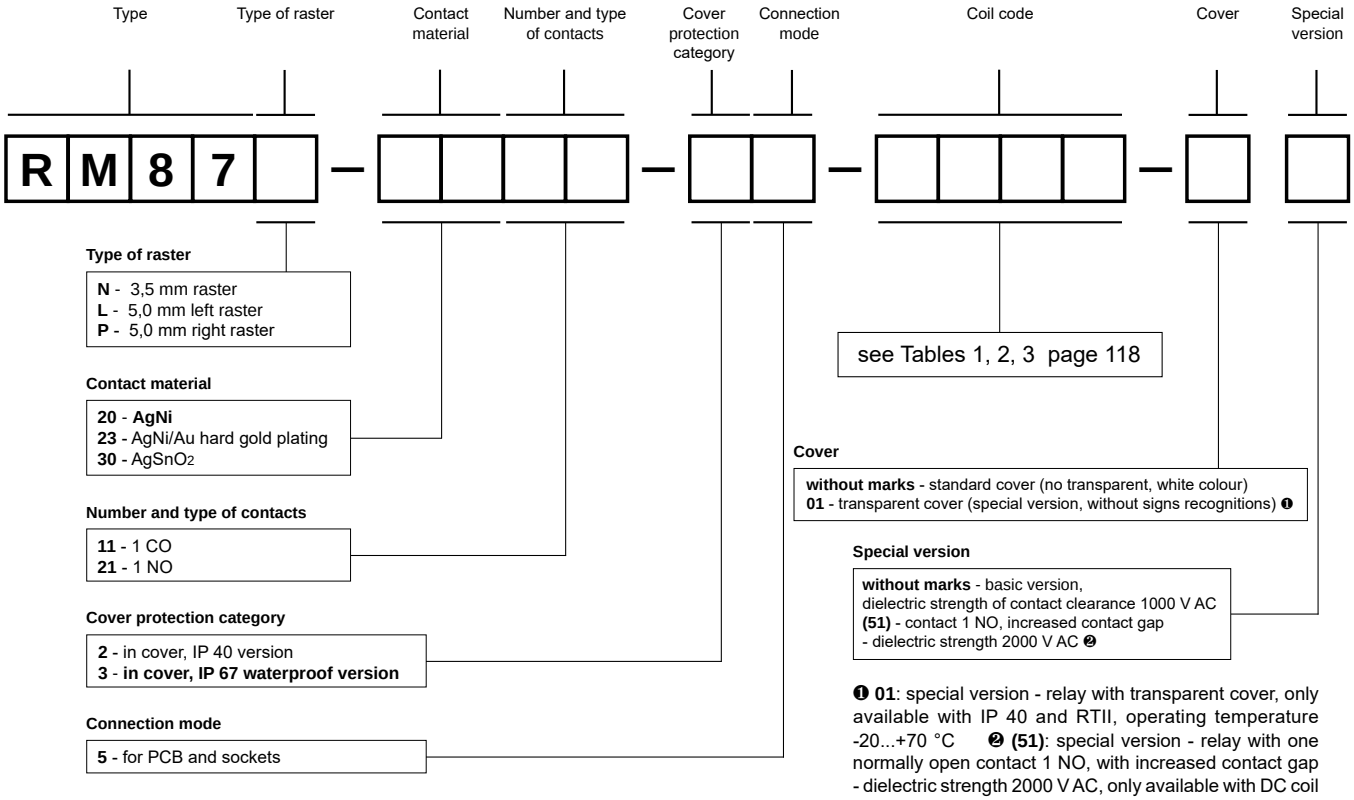
Relays **RM87N** ❸, **RM87N sensitive** are designed for: • direct PCB mounting • screw terminals plug-in sockets **GZT92** ❹ and **GZM92** ❹ with clip **GZT80-0040** or **GZM80-0041**; sockets **GZS92** ❹ with clip **GZS-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. Signalling / protecting modules **type M...** are available with sockets (see page 422) • plug-in sockets for PCB mounting **EC 35** with clip **MP16-2**, MH16-2; plug-in sockets **GD35** with clip **MP16-2**, GD-0016, MH16-2.

Relays **RM87L** ❸, **RM87L sensitive**, **RM87P** ❸, **RM87P sensitive** are designed for: • direct PCB mounting • screw terminals plug-in sockets **GZT80** ❹ and **GZM80** ❹ with clip **GZT80-0040** or **GZM80-0041**; sockets **GZS80** ❹ with clip **GZS-0040** or **GZM80-0041**; sockets **GZF80** with clip **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw • spring terminals plug-in sockets **GZMB80** ❺ with clip **GZMB80-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715. Signalling / protecting modules **type M...** ❻ are available with sockets (see page 422) • plug-in sockets for PCB mounting **EC 50** with clip **MP16-2**, MH16-2; plug-in sockets **PW80** with clip **MH16-2**; plug-in sockets **GD50** with clip **MP16-2**, GD-0016, MH16-2.

❸ Relate to the special versions - relays with transparent cover: the distance of min. 5 mm between the mounting relays. ❹ Plug-in sockets **GZT92**, **GZM92**, **GZS92** and **GZT80**, **GZM80**, **GZS80** may be linked with interconnection strip type **ZGGZ80** (see page 418). ❺ For sockets **GZMB80** - see page 397 (wire connection). ❻ For sockets **GZF80** not applicable modules type **M...**

Ordering codes

RM87 sensitive - sensitive version: relays only available with one normally open contact.



❶ **01**: special version - relay with transparent cover, only available with IP 40 and RTII, operating temperature -20...+70 °C ❷ **(51)**: special version - relay with one normally open contact 1 NO, with increased contact gap - dielectric strength 2000 V AC, only available with DC coil

Examples of ordering code:

RM87N-2011-25-1012-01 relay **RM87N**, 3,5 mm raster, for PCB and sockets, one changeover contact, contact material AgNi, coil voltage 12 V DC, with transparent cover (special version, without signs recognitions) IP 40

RM87N-2021-35-1024 (51) relay **RM87N**, special version with increased contact gap, 3,5 mm raster, for PCB and sockets, one normally open contact, contact material AgNi, coil voltage 24 V DC, in standard cover (no transparent, white colour) IP 67

RM87P-3021-25-S012 relay **RM87P sensitive**, 5 mm right raster, for PCB and sockets, one normally open contact, contact material $AgSnO_2$, sensitive coil voltage 12 V DC, in standard cover (no transparent, white colour) IP 40

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- Cadmium - free contacts
- Height 17,7 mm
- 5000 V / 10 mm reinforced insulation
- **For surface mounting SMT** - for manual soldering
- AC and DC coils
- Compliance with standard PN-EN 60335-1
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	12 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	750 W (single-phase motor)
	DC1	12 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		25 A $AgSnO_2$
Rated current		12 A
Max. breaking capacity	AC1	3 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 240 V
	DC	3 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 4, 5
Rated power consumption	AC	0,75 VA
	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

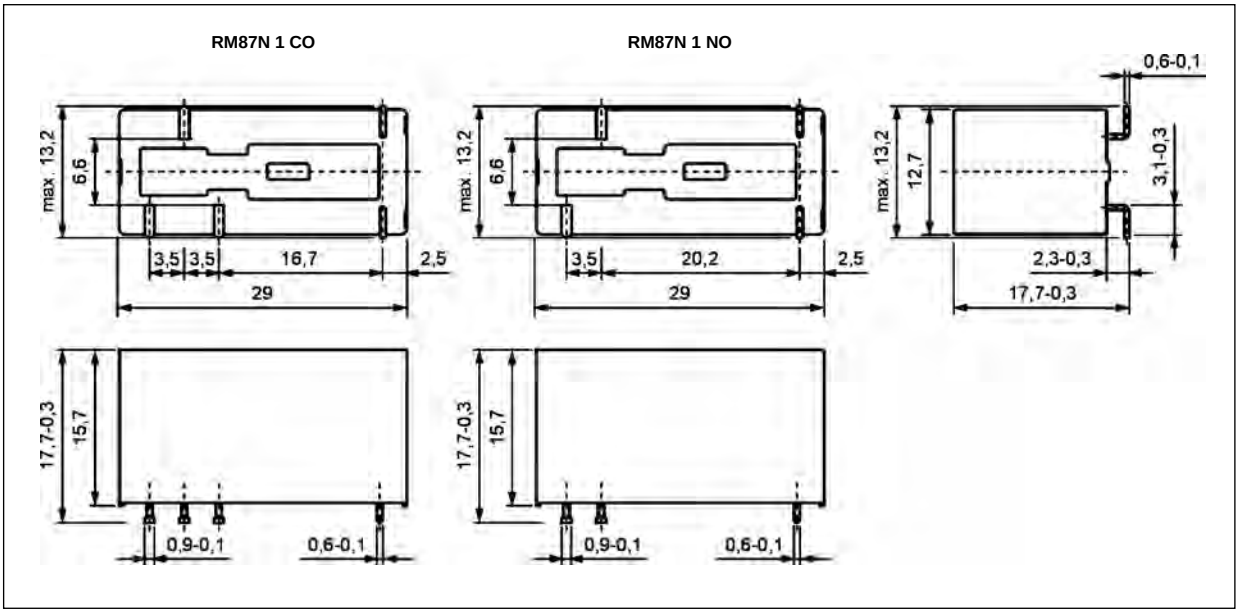
Insulation rated voltage	400 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	1 000 V AC type of clearance: micro-disconnection
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

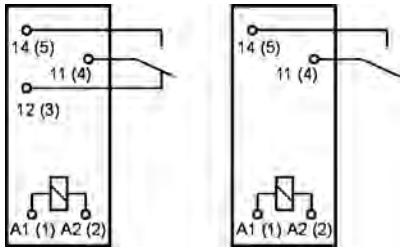
Operating / release time (typical values)		7 ms / 3 ms
Electrical life (number of cycles)		
• resistive AC1		> 10^5 12 A, 250 V AC
• cosφ		see Fig. 2
• DC L/R=40 ms		> 10^5 0,15 A, 220 V DC
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		29 x 13,2 x 17,7 mm
Weight		14 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C DC: -40...+85 °C
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTII PN-EN 116000-3
Shock resistance		30 g
Vibration resistance		10 g 10...150 Hz
Soldering temperature		max. 350 °C
Soldering time		max. 3 s

The data in bold type relate to the standard versions of the relays.

Dimensions



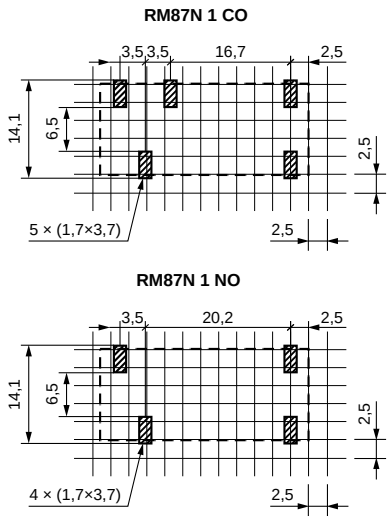
Connection diagrams (pin side view)



RM87N 1 CO **RM87N 1 NO**

Terminal (pin)	A1(1); A2(2)	12(3); 11(4); 14(5)
[mm]	Ø 0,6	0,5 x 0,9

Soldering areas (solder side view)



Mounting

Relays **RM87N SMT** are designed for surface mounting SMT - for manual soldering.

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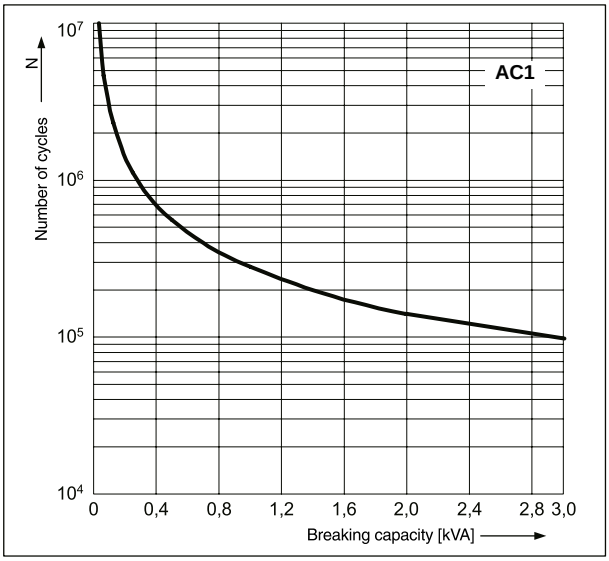
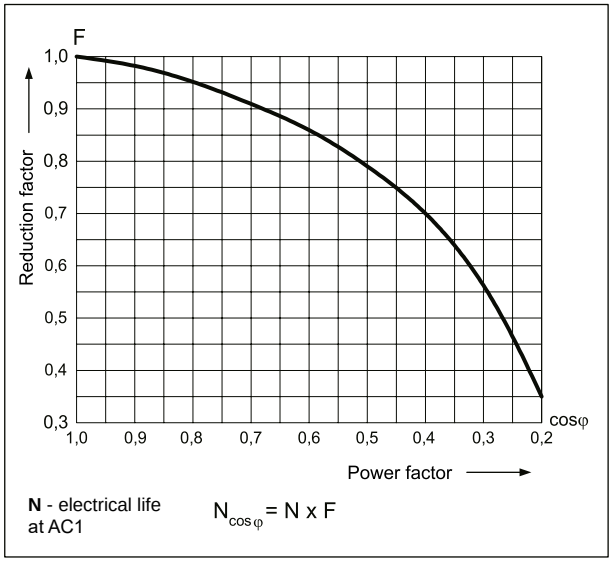
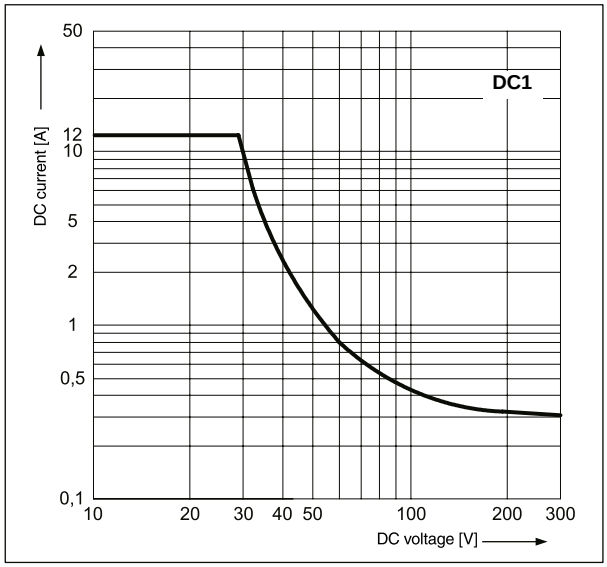
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



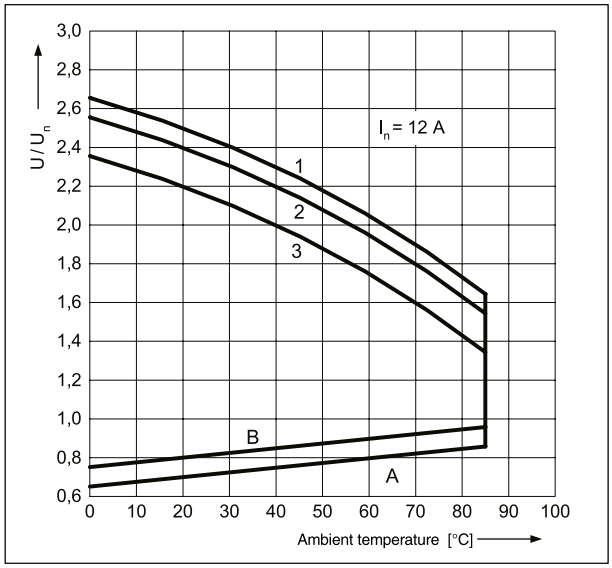
Electrical life reduction factor at AC inductive load Fig. 2



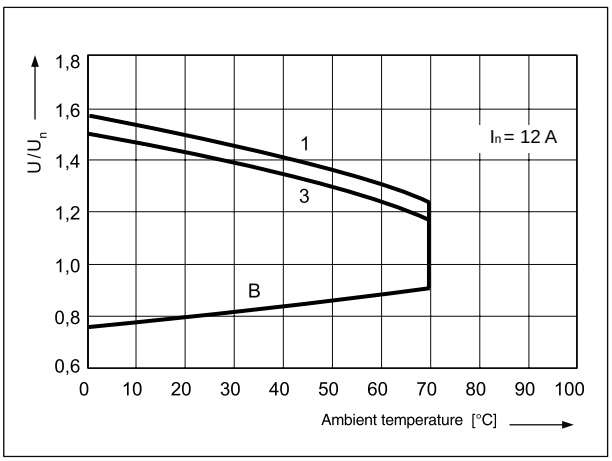
Max. DC resistive load breaking capacity Fig. 3



Coil operating range - DC Fig. 4



Coil operating range - AC 50 Hz Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

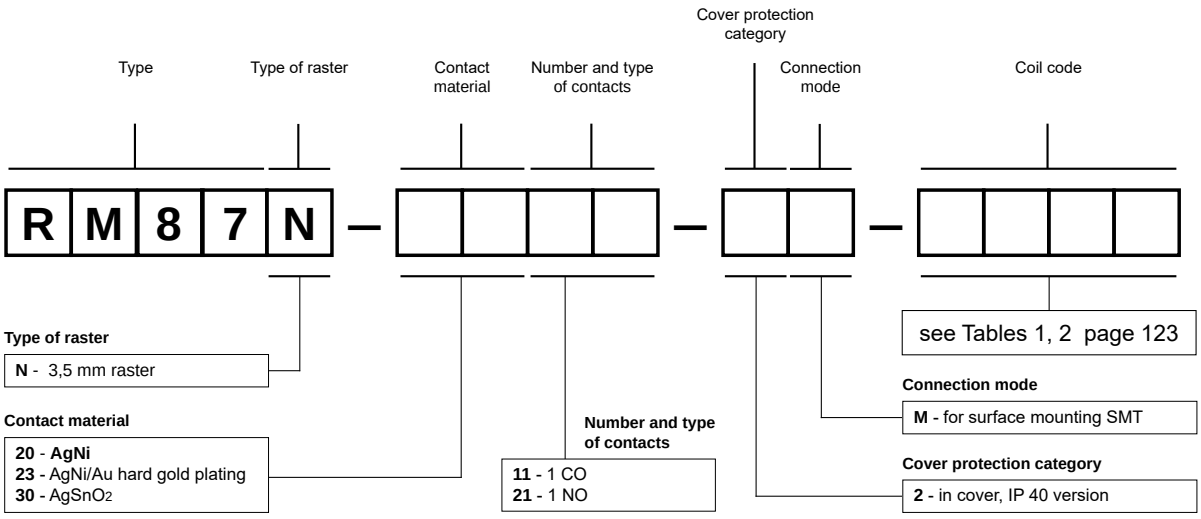
Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1003	3	22	± 10%	2,1	7,6
1005	5	60	± 10%	3,5	12,7
1006	6	90	± 10%	4,2	15,3
1009	9	200	± 10%	6,3	22,9
1012	12	360	± 10%	8,4	30,6
1018	18	710	± 10%	12,6	45,9
1024	24	1 440	± 10%	16,8	61,2
1036	36	3 140	± 10%	25,2	91,8
1048	48	5 700	± 10%	33,6	122,4
1060	60	7 500	± 10%	42,0	153,0
1110	110	25 200	± 10%	77,0	280,0

Coil data - AC 50/60 Hz voltage version Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
5012	12	100	± 10%	9,6	13,2
5024	24	400	± 10%	19,2	28,8
5048	48	1 550	± 10%	38,4	57,6
5060	60	2 600	± 10%	48,0	72,0
5110	110	8 900	± 10%	88,0	132,0
5115	115	9 600	± 10%	92,0	138,0
5120	120	10 200	± 10%	96,0	144,0
5220	220	35 500	± 10%	176,0	264,0
5230	230	38 500	± 10%	184,0	276,0
5240	240	42 500	± 15%	192,0	288,0

Ordering codes



Examples of ordering code:

RM87N-2011-2M-1024 relay **RM87N SMT**, 3,5 mm raster, for surface mounting SMT, one changeover contact, contact material AgNi, coil voltage 24 V DC, in cover IP 40

RM87N-2321-2M-5012 relay **RM87N SMT**, 3,5 mm raster, for surface mounting SMT, one normally open contact, contact material AgNi/Au hard gold plating, coil voltage 12 V AC 50/60 Hz, in cover IP 40

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RM96 1 CO RM96 1 NO / 1 NC

- Height 16,2 mm • IP 40 and IP 67
- For PCB (1 CO, 1 NO, 1 NC) and plug-in sockets (1 CO)
- Accessories: sockets and modules for 1 CO
- DC coils
- Recyclable packing
- Terminals: 3,2 mm for version 1 CO,
  5,0 mm for version 1 NO and 1 NC
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO, 1 NC
Contact material		**$AgSnO_2$**, $AgSnO_2$/Au hard gold plating, AgCdO ❶
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		10 V $AgSnO_2$, 5 V $AgSnO_2$/Au hard gold plating, 10 V AgCdO
Rated load (capacity)	AC1	8 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	370 W (single-phase motor; 0,5 HP / 250 V AC UL 508)
	DC1	8 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		10 mA $AgSnO_2$, 2 mA $AgSnO_2$/Au hard gold plating, 5 mA AgCdO
Max. inrush current		15 A
Rated current		8 A
Max. breaking capacity	AC1	2 000 VA
Min. breaking capacity		1 W $AgSnO_2$, 0,05 W $AgSnO_2$/Au hard gold plating, 0,5 W AgCdO
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	DC	5 ... 48 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1 and Fig. 4
Rated power consumption	DC	0,22...0,3 W

Insulation according to PN-EN 60664-1

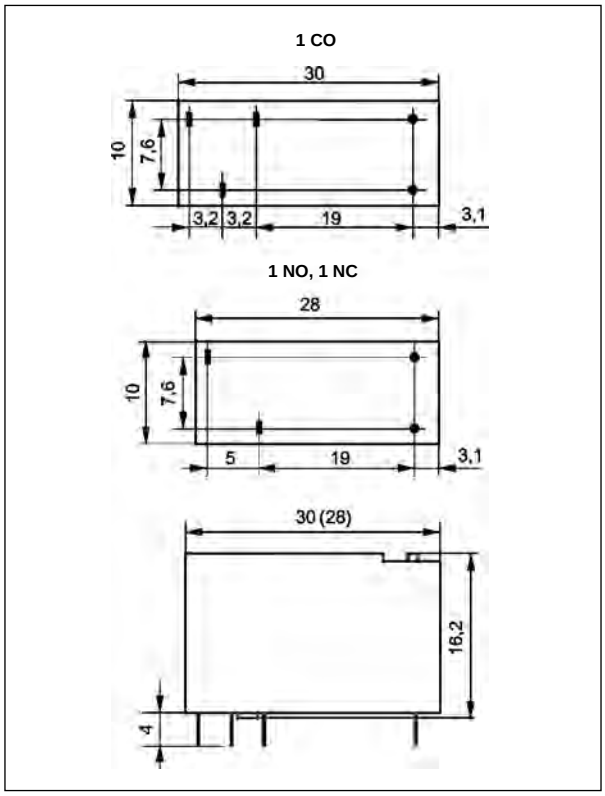
Insulation rated voltage	400 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	4 000 V AC type of insulation: reinforced
• contact clearance	1 000 V AC type of clearance: micro-disconnection
Contact - coil distance	
• clearance	≥ 8 mm
• creepage	≥ 8 mm

General data

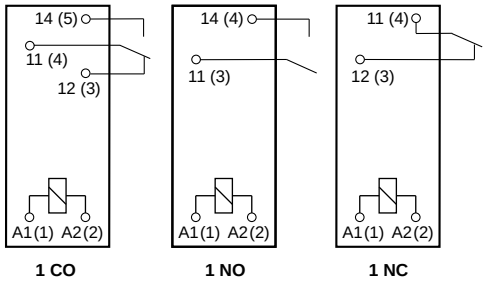
Operating / release time (typical values)		10 ms / 5 ms
Electrical life (number of cycles)		
• resistive AC1		> 10^5 8 A, 250 V AC
• cosφ		see Fig. 2
Mechanical life (cycles)		> 2 x 10^7
Motor load according to UL 508		0,25 HP 120 V AC, single-phase motor
Dimensions (L x W x H)		1 CO: 30 x 10 x 16,2 mm
		1 NO, 1 NC: 28 x 10 x 16,2 mm
Weight		11 g
Ambient temperature	• storage	-40...+85 °C
	• operating	-40...+80 °C
Cover protection category		IP 40 or **IP 67** PN-EN 60529
Environmental protection		RTII PN-EN 116000-3
Shock resistance		20 g
Vibration resistance		10 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays. ❶ AgCdO contact material in electrical contacts is only for use in electrical and electronic equipment (EEE) in compliance with directive RoHS2 2011/65/EU in restricted categories of EEE covered by this directive. Relpol S.A. is not responsible for usage relays with AgCdO contact material in categories of EEE where it is prohibited by the directive RoHS2 2011/65/EU.

Dimensions

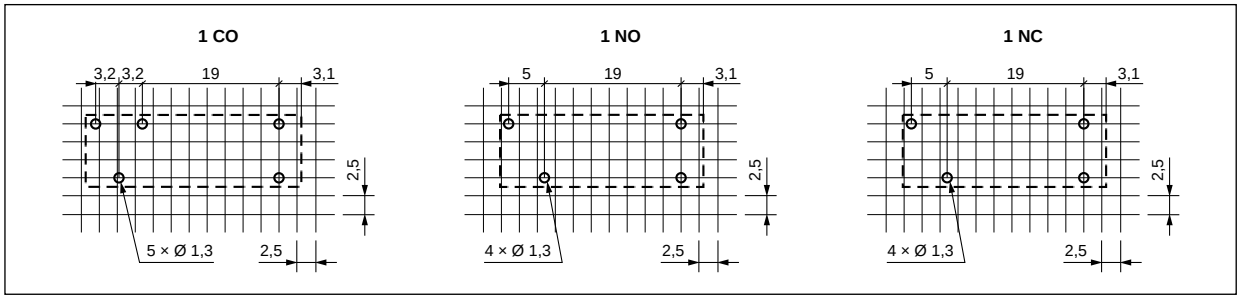


Connection diagrams (pin side view)



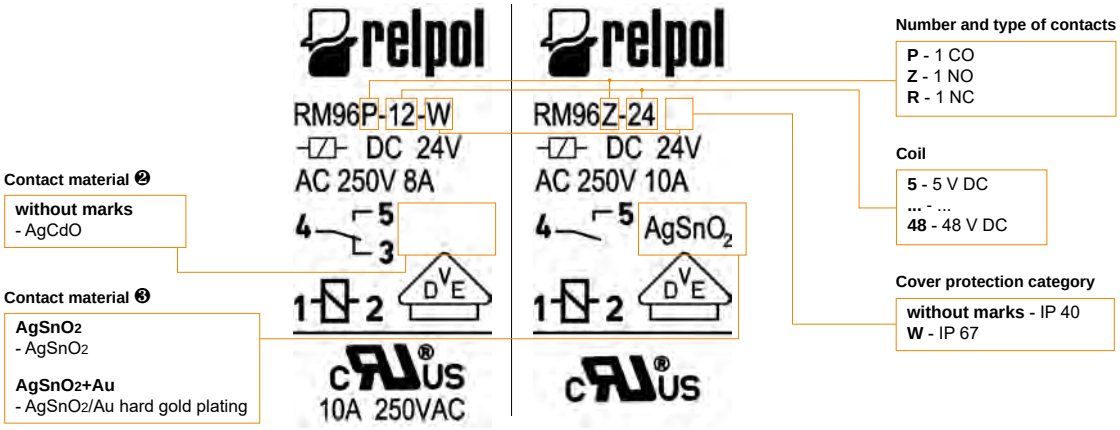
Terminal (pin)	A1(1); A2(2)	12(3); 11(4); 14(5)
[mm]	0,6 x 0,9	0,6 x 0,1
Drilling hole: • for relays	Ø 1,3 + 0,1 mm	

Pinout (solder side view)



Print on relay cover

Type marking on relays cover **RM96** do not match the ordering codes (examples of marking for **RM96-1011-35-1012** ❷ and **RM96-3021-25-1024** ❸).



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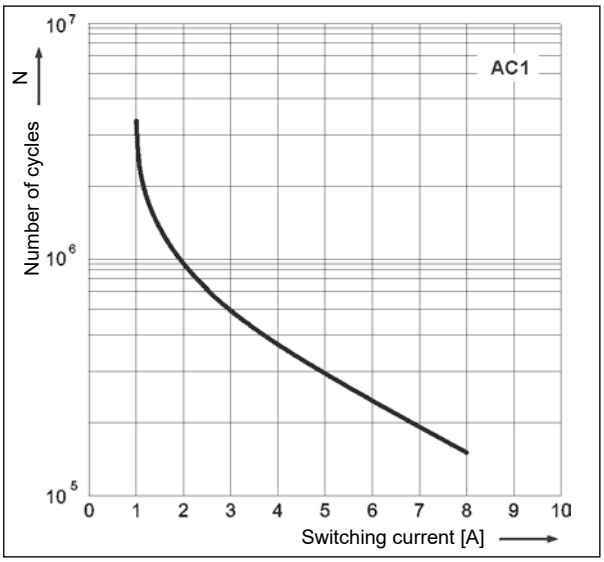
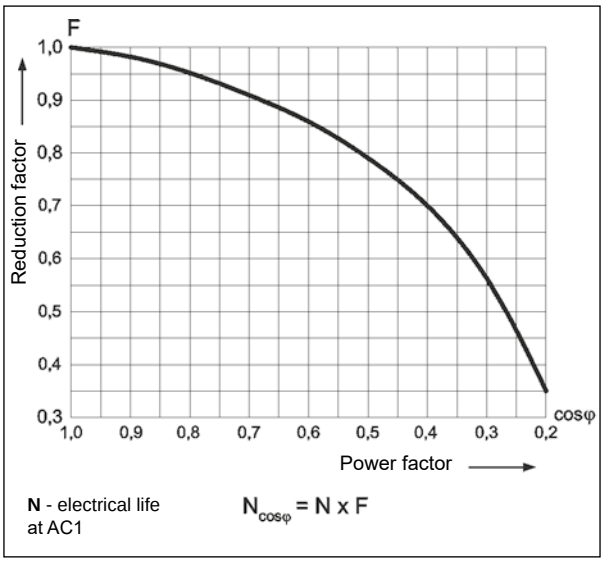
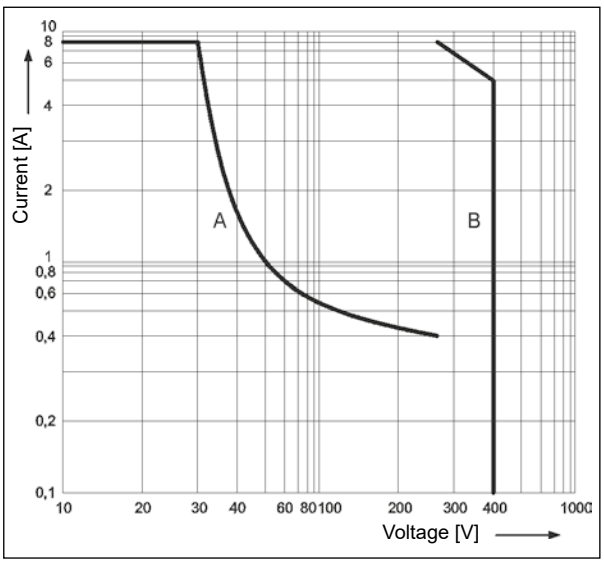
Electrical life at AC resistive current. Fig. 1
U_n = 230 V AC - version 1 NO



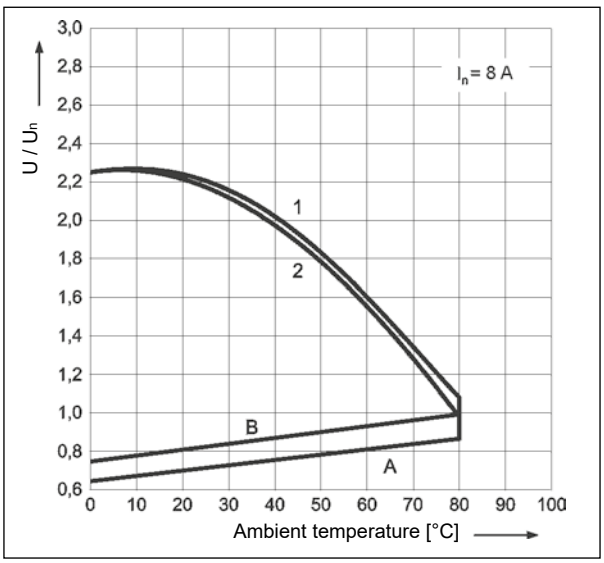
Electrical life reduction factor at AC inductive load Fig. 2



Max. breaking capacity
A - resistive load DC1
B - resistive load AC1 Fig. 3



Coil operating range - DC Fig. 4



Description of Fig. 4

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - rated load

ES 32

Screw terminals plug-in socket for RM96 1 CO
- see page 400

Mounting

Relays **RM96 1 CO** (one changeover contact) are designed for: • direct PCB mounting • screw terminals plug-in sockets **ES 32** ❹ with clip **MS 16** or **GZMB80-0040** or **GZM80-0041**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. Signalling / protecting modules **type M...** are available with sockets (see page 422).

Relays **RM96 1 NO** (one normally open contact) and **RM96 1 NC** (one normally closed contact) are designed for direct PCB mounting.

❹ Plug-in sockets **ES 32** may be linked with interconnection strip type **ZGGZ80** (see page 418).

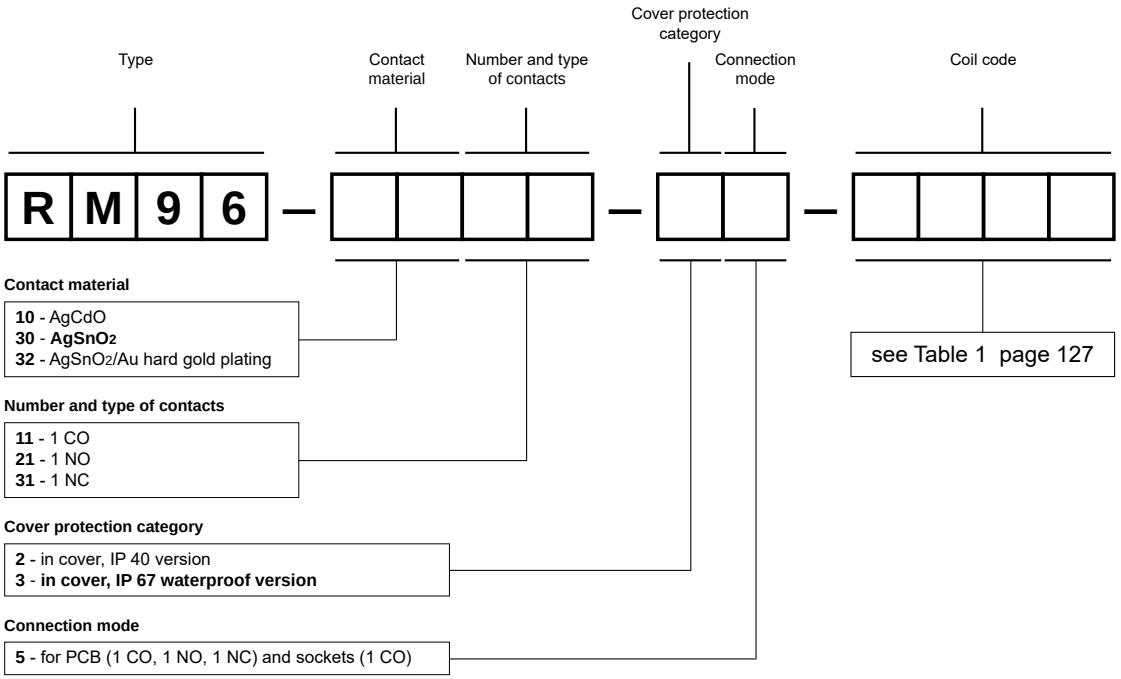
Coil data - DC voltage version

Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	5	110	± 10%	3,5	12,0
1006	6	160	± 10%	4,2	14,5
1009	9	360	± 10%	6,3	22,0
1012	**12**	**660**	**± 10%**	**8,4**	**29,5**
1018	18	1 500	± 10%	12,6	44,0
1024	**24**	**2 200**	**± 10%**	**16,8**	**54,0**
1048	48	8 000	± 10%	33,6	102,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Examples of ordering codes:

RM96-1011-35-1012 relay **RM96**, for PCB and sockets, one changeover contact, contact material AgCdO, coil voltage 12 V DC, in cover IP 67

RM96-3021-25-1024 relay **RM96**, for PCB, one normally open contact, contact material $AgSnO_2$, coil voltage 24 V DC, in cover IP 40

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RM83 RM83-...-01


- Miniature dimensions • General purpose relays
- **Version 1 NO $AgSnO_2$ - for special loads: resistance to inrush current 120 A (20 ms)**
- Protection category IP 40 or IP 67
- For PCB and plug-in sockets
- DC coils - standard and sensitive
- Available special versions: with transparent cover
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO, 1 NC
Contact material		**$AgSnO_2$**, (AgCdO, AgCdO/Au flash gold plating) ❶
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		10 V $AgSnO_2$, 10 V AgCdO, 10 V AgCdO/Au flash gold plating
Rated load (capacity)	AC1	16 A / 250 V AC
	AC15	6 A / 120 V 3 A / 240 V (A300)
	AC3	550 W (single-phase motor)
	DC1	16 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		10 mA $AgSnO_2$, 5 mA AgCdO, 5 mA AgCdO/Au flash gold plating
Max. inrush current		30 A 1 NO, $AgSnO_2$
Rated current		16 A
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		1 W $AgSnO_2$, 0,5 W AgCdO, 0,5 W AgCdO/Au flash gold plating
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	DC	5 ... 110 V standard version 110 V sensitive version
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1
Rated power consumption	DC	0,6 W 5 ... 60 V standard version
		0,6 W 110 V sensitive version
		0,9 W 110 V standard version

Insulation according to PN-EN 60664-1

Insulation rated voltage		400 V AC
Dielectric strength		
• between coil and contacts		4 000 V AC type of insulation: reinforced
• contact clearance		1 000 V AC type of clearance: micro-disconnection
Contact - coil distance	• clearance	≥ 8 mm
	• creepage	≥ 8 mm

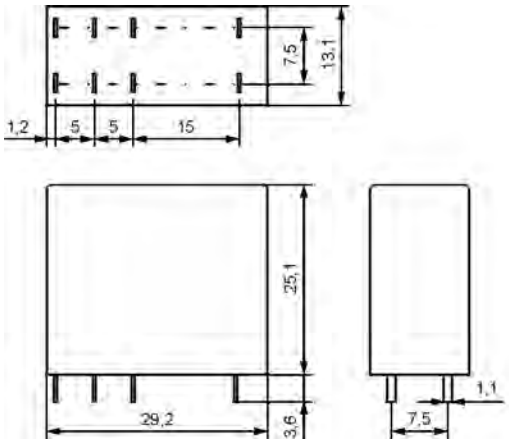
General data

Operating / release time (typical values)		7 ms / 3 ms
Electrical life (number of cycles)		
• resistive AC1		> 10^5 16 A, 250 V AC
• at incandescent lamp load		> 10^5 1000 W, 230 V AC, 1 NO, $AgSnO_2$
		> 3 x 10^4 3000 W, 230 V AC, 1 NO, $AgSnO_2$
• at halogen lamp load		> 10^4 2500 W, 230 V AC, 1 NO, $AgSnO_2$
• cosφ		see Fig. 2
• L/R=40 ms		> 10^5 0,12 A, 220 V DC
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		IP 40: 29,2 x 13,1 x 25,1 mm
		IP 67: 29,2 x 13,1 x 25,6 mm
Weight		18 g
Ambient temperature	• storage	-40...+85 °C
	• operating	-40...+70 °C
Cover protection category		**IP 40** or IP 67 PN-EN 60529
Shock resistance		20 g
Vibration resistance		10 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

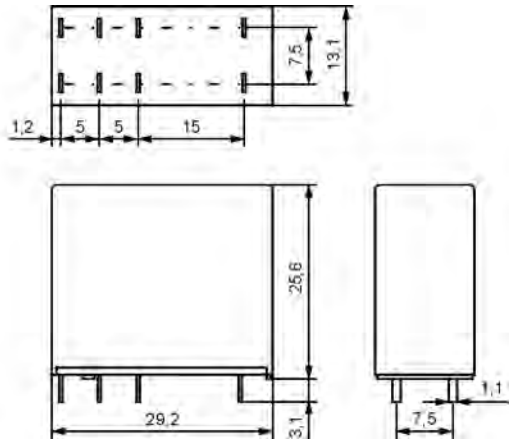
The data in bold type relate to the standard versions of the relays. ❶ AgCdO contact material in electrical contacts is only for use in electrical and electronic equipment (EEE) in compliance with directive RoHS2 2011/65/EU in restricted categories of EEE covered by this directive. Relpol S.A. is not responsible for usage relays with AgCdO contact material in categories of EEE where it is prohibited by the directive RoHS2 2011/65/EU.

Dimensions

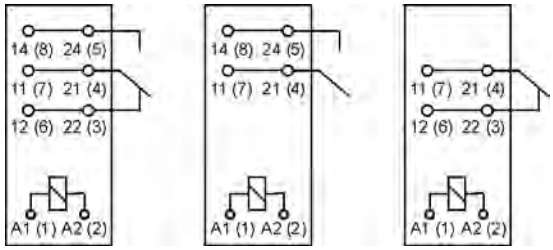
version IP 40



version IP 67



Connection diagrams (pin side view)



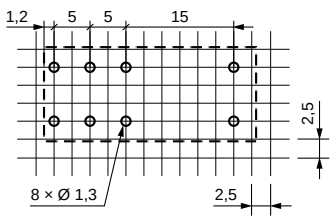
1 CO 1 NO 1 NC

Terminal (pin)	A1(1); A2(2)	21(4); 11(7)	22 (3); 24 (5); 12 (6); 14 (8)
[mm]	0,4 x 1,1	0,2 x 1,1	0,4 x 1,1
Drilling hole: • for relays • for sockets	Ø 1,3 + 0,1 mm Ø 1,5 + 0,1 mm		

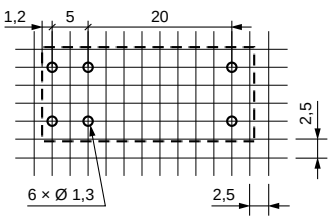
RM83 terminals are doubled for each contact.
Both terminals are to be used while connecting to load.

Pinout (solder side view)

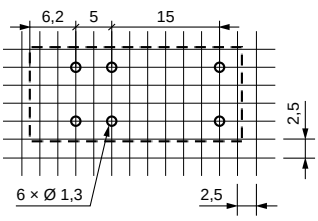
1 CO



1 NO



1 NC



Mounting

Relays **RM83** are designed for: • direct PCB mounting • plug-in sockets for PCB mounting **EC 50** and **GD50** with clip **MP25-2** or **MH25-2**; plug-in sockets **PW80** with clip **MH25-2**.

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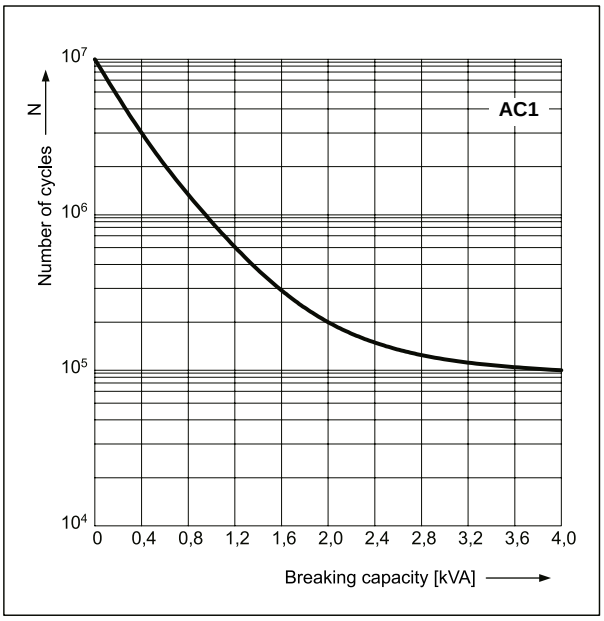
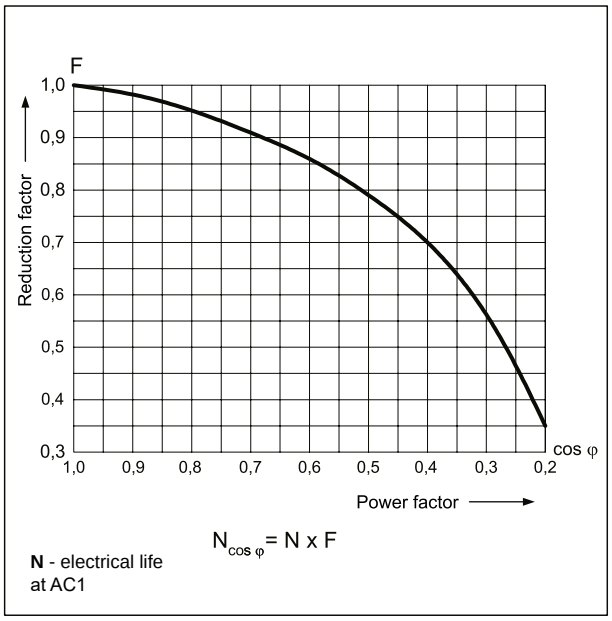
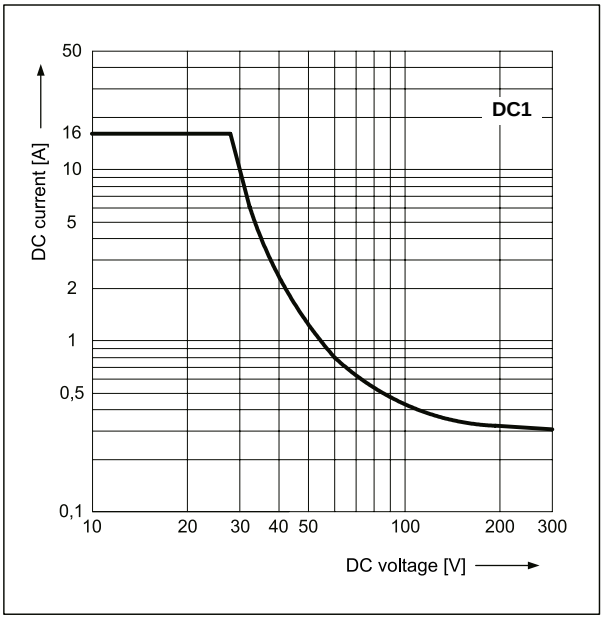
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



Electrical life reduction factor at AC inductive load Fig. 2



Max. DC resistive load breaking capacity Fig. 3



Coil data - DC voltage version, standard — Table 1

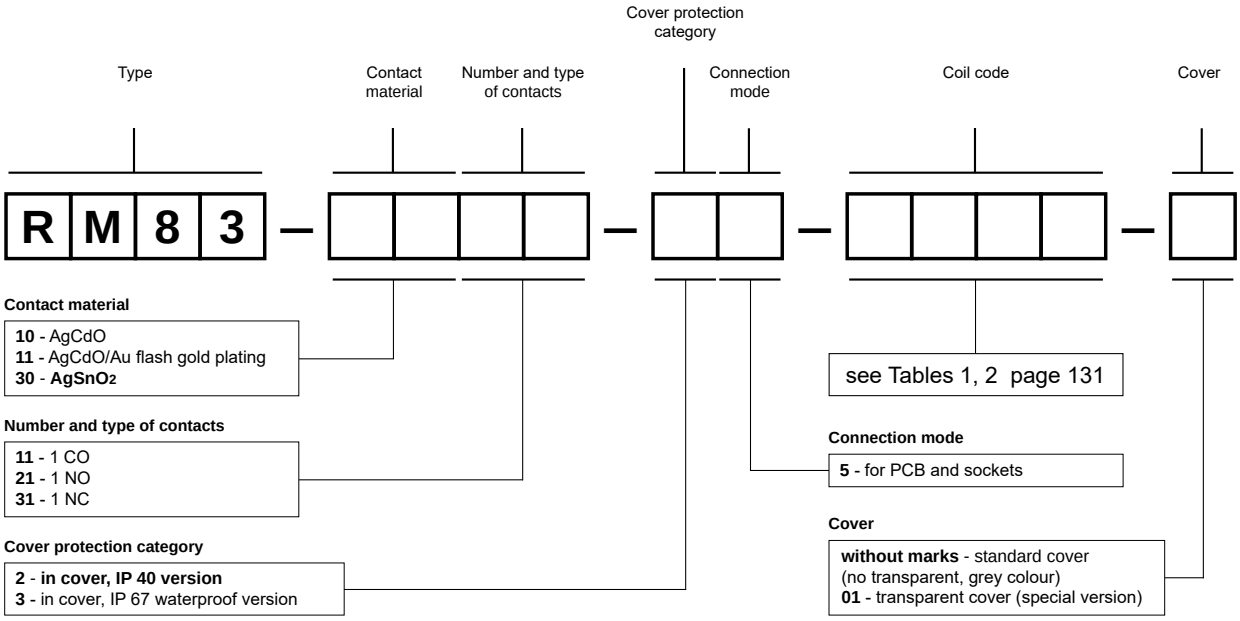
Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	5	49	± 10%	3,5	8,9
1006	6	68	± 10%	4,2	10,6
1009	9	110	± 10%	6,3	15,9
1012	**12**	**260**	**± 10%**	**8,4**	**21,2**
1018	18	550	± 10%	12,6	31,8
1024	**24**	**1 100**	**± 10%**	**16,8**	**42,5**
1036	36	2 100	± 10%	25,2	63,7
1048	48	4 400	± 10%	33,6	85,0
1060	60	7 000	± 10%	42,0	106,2
1110	110	13 000	± 10%	77,0	140,0

The data in bold type relate to the standard versions of the relays.

Coil data - DC voltage version, sensitive — Table 2

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
S110	110	20 500	± 10%	77,0	188,0

Ordering codes



Examples of ordering code:

RM83-3011-25-1024 relay **RM83**, for PCB and sockets, one changeover contact, contact material $AgSnO_2$, coil voltage 24 V DC, in standard cover (no transparent, grey colour) IP 40

RM83-3011-25-S110 relay **RM83**, for PCB and sockets, one changeover contact, contact material $AgSnO_2$, sensitive coil voltage 110 V DC, in standard cover (no transparent, grey colour) IP 40

RM83-3021-35-1012-01 relay **RM83**, for PCB and sockets, one normally open contact, contact material $AgSnO_2$, coil voltage 12 V DC, with transparent cover (special version) IP 67

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version AC

version DC

NEW

- Cadmium - free contacts • Height 25,5 mm
- 5000 V / 8 mm reinforced insulation
- For plug-in sockets
- Accessories: sockets and modules
- AC and DC coils
- WT (mechanical indicator + lockable front test button) - standard features of relays
- Recognitions, certifications, directives: RoHS, CE

Contact data

Number and type of contacts		2 CO
Contact material		**AgNi**
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		12 V 10 mA
Rated load	AC1	8 A / 250 V AC
Min. switching current		10 mA 12 V
Max. inrush current		16 A 20 ms
Rated current		8 A
Max. breaking capacity	AC1	2 000 VA
Min. breaking capacity		0,12 W 10 mA / 12 V
Contact resistance		≤ 100 mΩ 1 A / 6 V DC
Max. operating frequency		
• at rated load	AC1	360 cycles/hour ON for 5 s / OFF for 5 s
• no load		18 000 cycles/hour

Coil data

Rated voltage	50 Hz AC	24 ... 230 V
	DC	12 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 3, 4
Rated power consumption	AC	0,75 VA ❶
	DC	0,4 ... 0,48 W ❶

Insulation according to PN-EN 60664-1

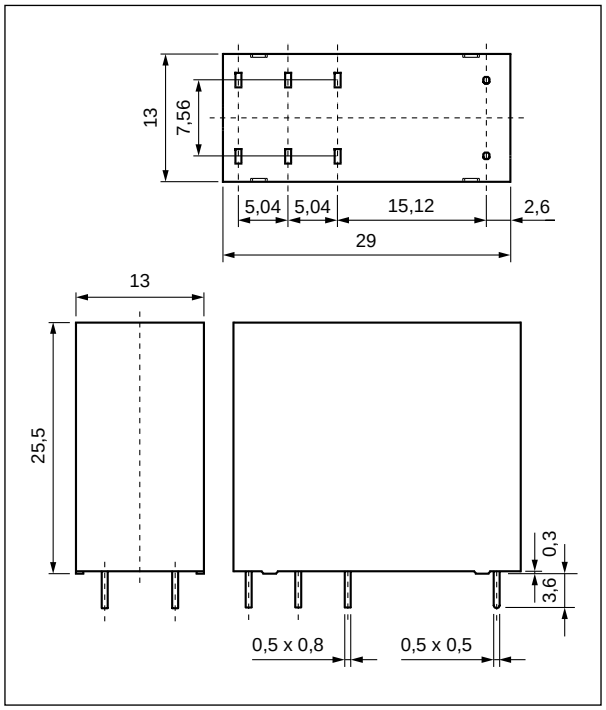
Insulation rated voltage	500 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Insulation resistance	1000 MΩ 500 V DC
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	1 000 V AC type of clearance: micro-disconnection
• pole - pole	2 500 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 8 mm
• creepage	≥ 8 mm

General data

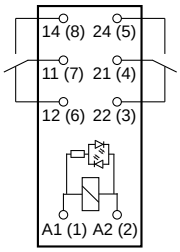
Operating / release time (typical values)		15 ms / 8 ms
Electrical life (number of cycles)		
• resistive AC1		> 3 x 10^4 AC coils, 8 A, 250 V AC
		> 10^4 DC coils, 8 A, 250 V AC
Mechanical life (cycles)		> 5 x 10^6
Dimensions (L x W x H)		29 x 13 x 25,5 mm
Weight		16 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C ❷ ❸ DC: -40...+85 °C ❷ ❸
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTII IEC 61810-7
Relative humidity		5...85%
Shock resistance		10 g
Vibration resistance	(NO/NC)	10 g / 5 g length direction: 10 g / 2 g ❸ 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays. ❶ The data don't include the power of electronic indicating circuit when the relay picks-up. ❷ Operating temperature for relays mounted in sockets on 35 mm rail mount: -40...+55 °C. ❸ The distance between the mounting relays: min. 5 mm for versions AC; min. 1,5 mm for versions DC.

Dimensions



Connection diagram (pin side view)



2 CO

Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
[mm]	0,5 x 0,5	0,5 x 0,8
Drilling hole: • for sockets	Ø 1,5 + 0,1 mm	

Test buttons type T

orange
– AC coils

blue
– DC coils

Note: Normally open contacts may be closed with the blocking function of the test button of the T type (it shall be bent by 90° to vertical position). When the button is drawn back, the normally open contacts are opened.

Mounting

Relays **RMP84** ❸ are designed for: • screw terminals plug-in sockets **GZF80** with clip **GZM80-0025**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw • spring terminals plug-in sockets **GZMB80** ❹ with clip **GZMB80-0025** or **GZM80-0025**, 35 mm rail mount acc. to PN-EN 60715. Signalling / protecting modules **type M...** ❺ are available with sockets (see page 422) • plug-in sockets for PCB mounting **EC 50** and **GD50** with clip **MH25-2**.

❸ The distance between the mounting relays: min. 5 mm for versions AC; min. 1,5 mm for versions DC. ❹ For sockets **GZMB80** - see page 397 (wire connection). ❺ For sockets **GZF80** not applicable modules type **M...**

GZF80, GZMB80, EC 50, GD50

Plug-in sockets
for relays
RMP84, RMP85
- see pages 397-398

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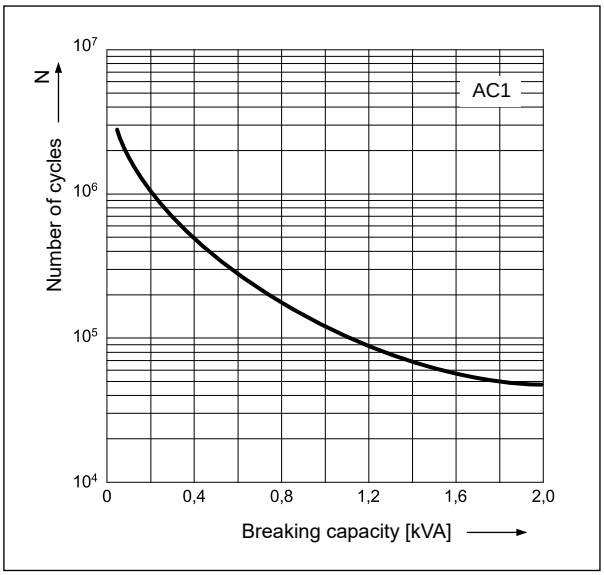
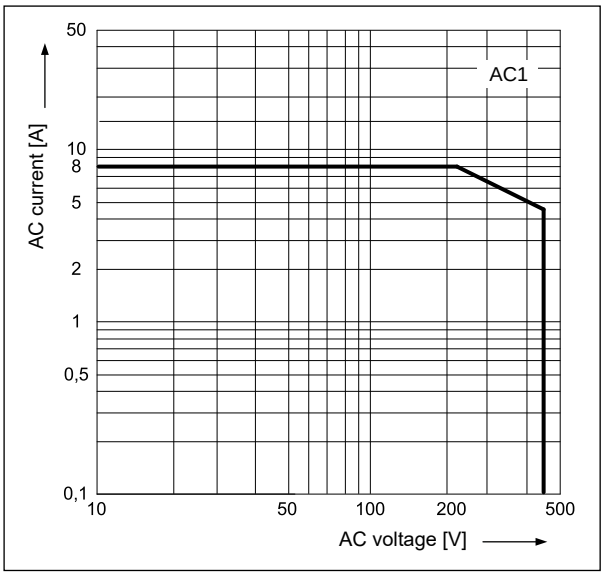
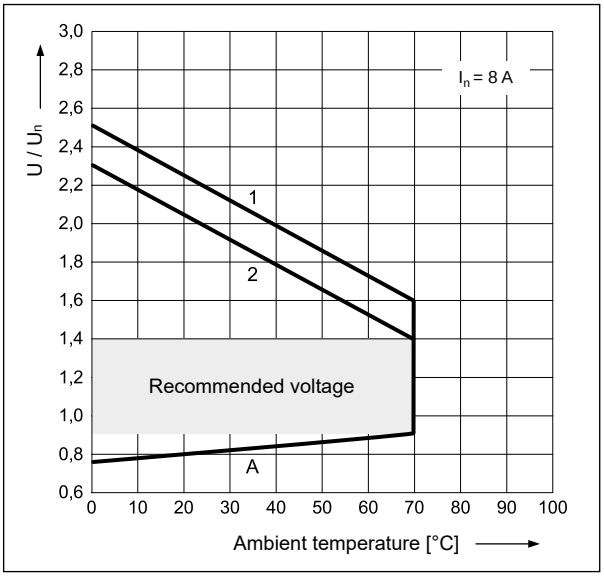
Electrical life at AC resistive load. Switching frequency: 360 cycles/hour Fig. 1



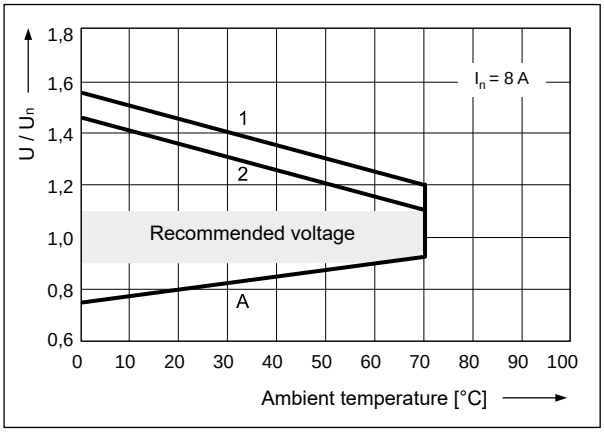
Max. AC 50 Hz resistive load breaking capacity Fig. 2



Coil operating range - DC Fig. 3



Coil operating range - AC 50 Hz Fig. 4



Description of Fig. 3 and 4

A - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

1, 2 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:

1 - no load

2 - rated load

Note: the use of the relay at energizing voltage other than the rated voltage may lead to reduced electrical life. Energizing voltage exceeding the recommended range may damage the insulation of the relay coil.

Coil data - DC voltage version

Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC ❻	
				min. (at 23 °C)	max. (at 23 °C)
1012	**12**	**360**	**± 10%**	**8,4**	**18,0**
1024	**24**	**1 440**	**± 10%**	**16,8**	**36,0**
1048	48	5 760	± 15%	33,6	72,0
1110	110	25 200	± 15%	77,0	165,0

The data in bold type relate to the standard versions of the relays.
❻ The max. allowable voltage is coil overdrive voltage, it is the instantaneous max. voltage which the relay coil could endure in very short time.

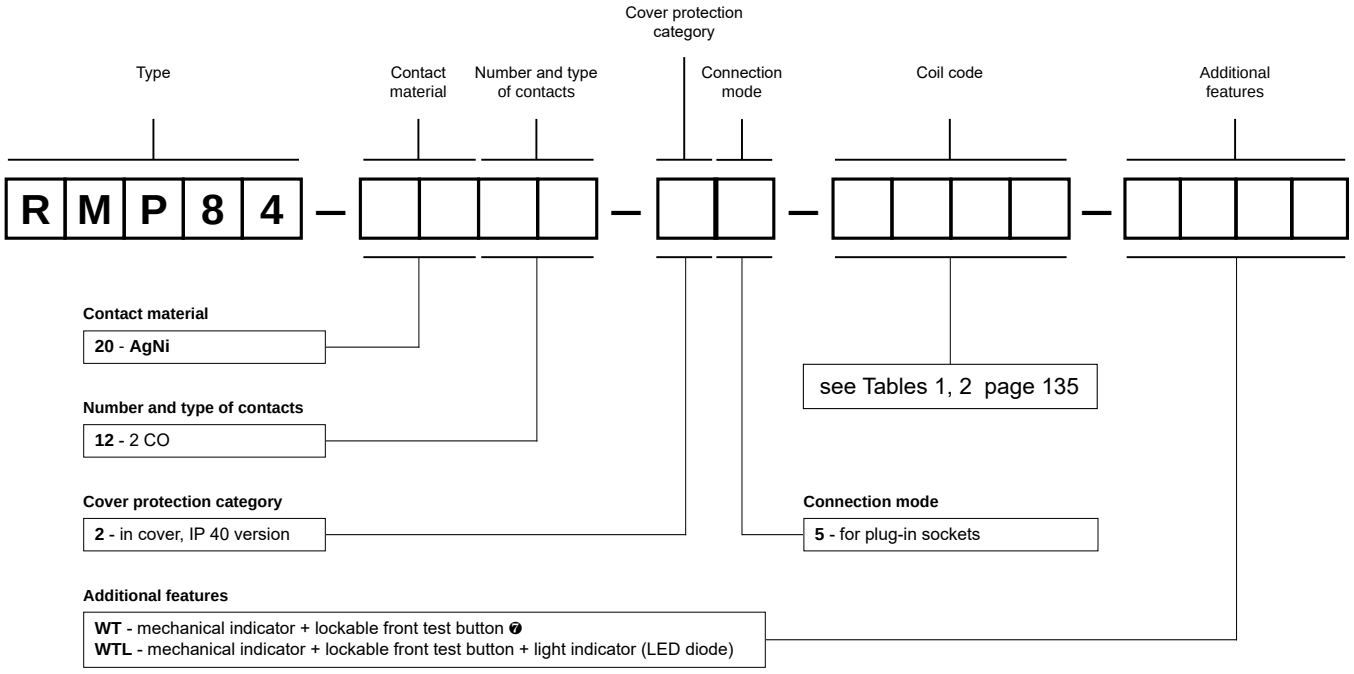
Coil data - AC 50 Hz voltage version

Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 23 °C)	max. (at 23 °C)
5024	**24**	**350**	**± 10%**	**18,0**	**26,4**
5115	115	8 100	± 15%	86,3	126,5
5230	**230**	**32 500**	**± 15%**	**172,5**	**253,0**

The data in bold type relate to the standard versions of the relays.

Ordering codes



❼ **WT** - standard features of relays. Test buttons type T - see page 133.

Examples of ordering code:

RMP84-2012-25-1024-WT relay **RMP84**, for plug-in sockets, two changeover contacts, contact material AgNi, coil voltage 24 V DC, with mechanical indicator and lockable front test button, in cover IP 40

RMP84-2012-25-5230-WTL relay **RMP84**, for plug-in sockets, two changeover contacts, contact material AgNi, coil voltage 230 V AC 50 Hz, with mechanical indicator and lockable front test button and light indicator (LED diode), in cover IP 40

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version AC

version DC

NEW

- Cadmium - free contacts • Height 25,5 mm
- 5000 V / 8 mm reinforced insulation
- For plug-in sockets
- Accessories: sockets and modules
- AC and DC coils
- WT (mechanical indicator + lockable front test button) - standard features of relays
- Recognitions, certifications, directives: RoHS, CE

Contact data

Number and type of contacts		1 CO
Contact material		**AgNi**
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		12 V 10 mA
Rated load	AC1	16 A / 250 V AC
Min. switching current		10 mA 12 V
Max. inrush current		32 A 20 ms
Rated current		16 A
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		0,12 W 10 mA / 12 V
Contact resistance		≤ 100 mΩ 1 A / 6 V DC
Max. operating frequency		
• at rated load	AC1	360 cycles/hour ON for 5 s / OFF for 5 s
• no load		18 000 cycles/hour

Coil data

Rated voltage	50 Hz AC	24 ... 230 V
	DC	12 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 3, 4
Rated power consumption	AC	0,75 VA ❶
	DC	0,4 ... 0,48 W ❶

Insulation according to PN-EN 60664-1

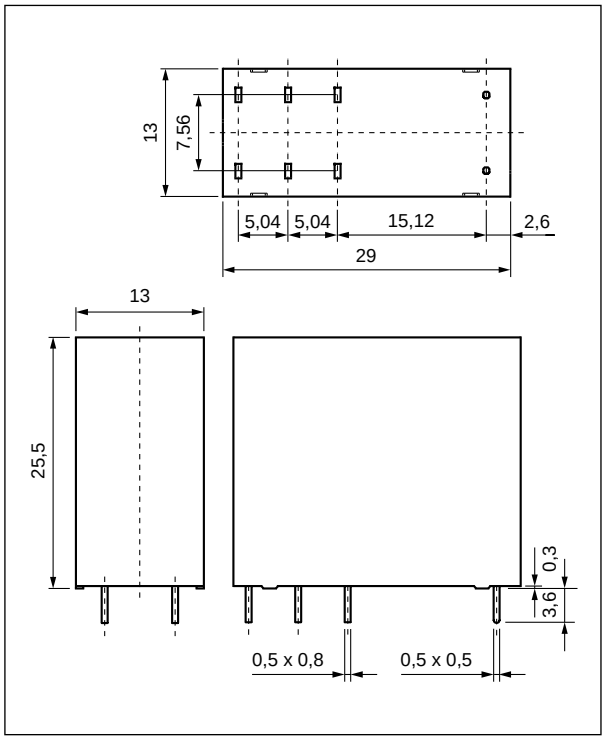
Insulation rated voltage		500 V AC
Rated surge voltage		4 000 V 1,2 / 50 µs
Overvoltage category		III
Insulation pollution degree		3
Insulation resistance		1000 MΩ 500 V DC
Dielectric strength		
• between coil and contacts		5 000 V AC type of insulation: reinforced
• contact clearance		1 000 V AC type of clearance: micro-disconnection
Contact - coil distance		
• clearance		≥ 8 mm
• creepage		≥ 8 mm

General data

Operating / release time (typical values)		15 ms / 8 ms
Electrical life (number of cycles)		
• resistive AC1		$> 3 \times 10^4$ AC coils, 16 A, 250 V AC
		$> 10^4$ DC coils, 16 A, 250 V AC
Mechanical life (cycles)		$> 5 \times 10^6$
Dimensions (L x W x H)		29 x 13 x 25,5 mm
Weight		16 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C ❷ ❸ DC: -40...+85 °C ❷ ❸
Cover protection category		IP 40 wg PN-EN 60529
Environmental protection		RTII wg IEC 61810-7
Relative humidity		5...85%
Shock resistance		10 g
Vibration resistance	(NO/NC)	10 g / 5 g length direction: 10 g / 2 g ❸ 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays. ❶ The data don't include the power of electronic indicating circuit when the relay picks-up. ❷ Operating temperature for relays mounted in sockets on 35 mm rail mount: -40...+55 °C. ❸ The distance between the mounting relays: min. 5 mm for versions AC; min. 1,5 mm for versions DC.

Dimensions

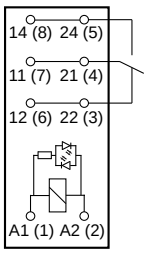


Mounting

Relays **RMP85** ❸ are designed for: • screw terminals plug-in sockets **GZF80** ❹ with clip **GZM80-0025**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw • spring terminals plug-in sockets **GZMB80** ❹ ❺ with clip **GZMB80-0025** or **GZM80-0025**, 35 mm rail mount acc. to PN-EN 60715. Signalling / protecting modules **type M...** ❻ are available with sockets (see page 422) • plug-in sockets for PCB mounting **EC 50** and **GD50** with clip **MH25-2**.

❸ The distance between the mounting relays: min. 5 mm for versions AC; min. 1,5 mm for versions DC. ❹ Loads above 10 A (GZF80, GZMB80) require bridging pairs of terminals: 11 with 21, 12 with 22, 14 with 24 - see page 137. ❺ For sockets **GZMB80** - see page 397 (wire connection). ❻ For sockets **GZF80** not applicable modules type **M...**

Connection diagram (pin side view)

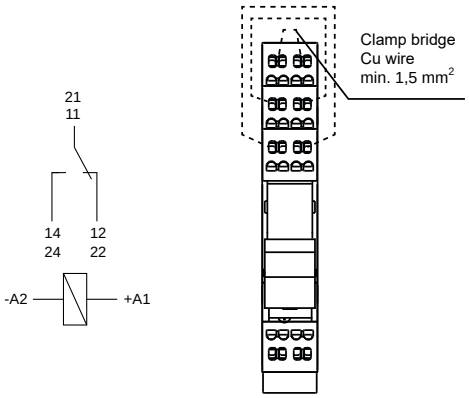


1 CO

Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
[mm]	0,5 x 0,5	0,5 x 0,8
Drilling hole: • for sockets	Ø 1,5 + 0,1 mm	

RMP85 terminals are doubled for each contact.
Both terminals are to be used while connecting to load.

Connection of GZ... sockets



Note: Loads above 10 A (GZF80, GZMB80) require bridging pairs of spring terminals: 11 with 21, 12 with 22, 14 with 24. Loads up to 10 A do not require bridging of common terminals (such bridges may be fixed, however).

Test buttons type T

orange
– AC coils

blue
– DC coils

Note: Normally open contacts may be closed with the blocking function of the test button of the T type (it shall be bent by 90° to vertical position). When the button is drawn back, the normally open contacts are opened.

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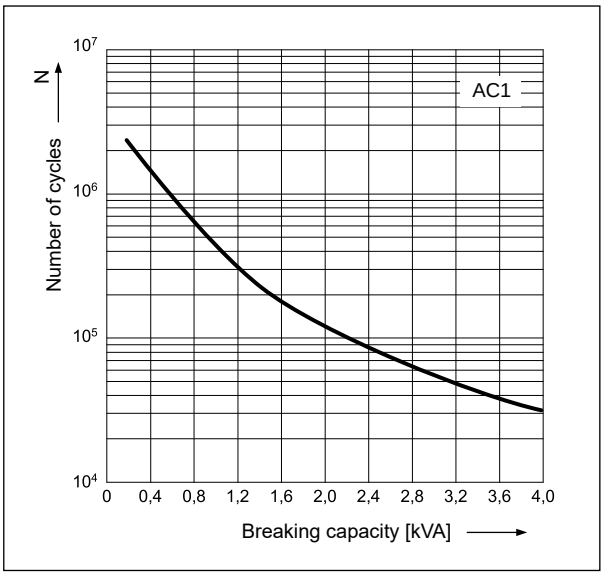
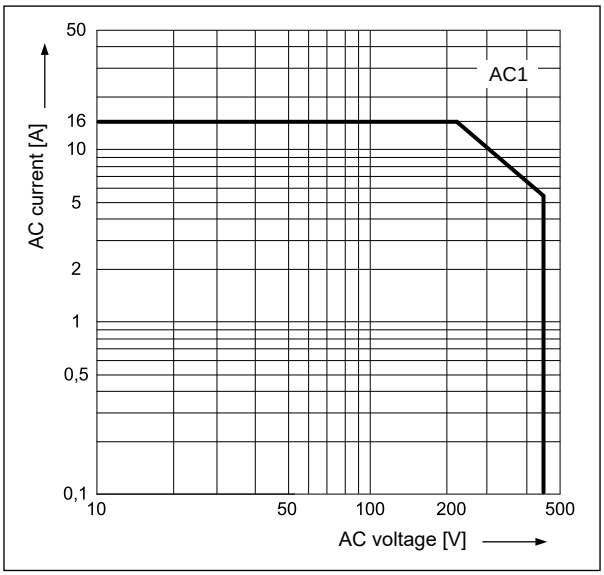
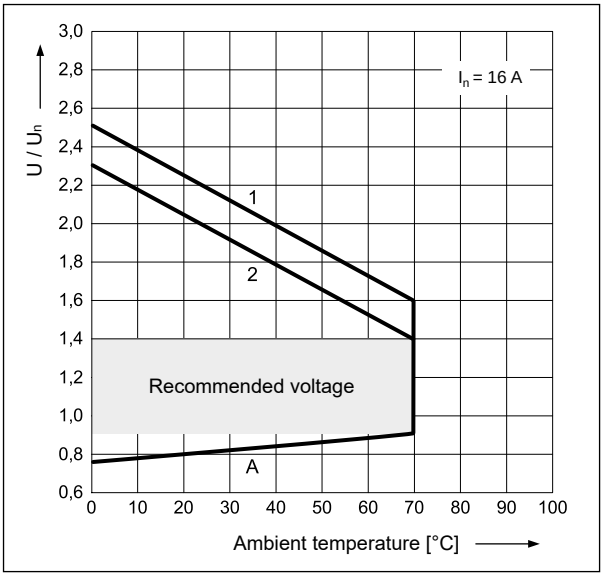
Electrical life at AC resistive load. Switching frequency: 360 cycles/hour Fig. 1



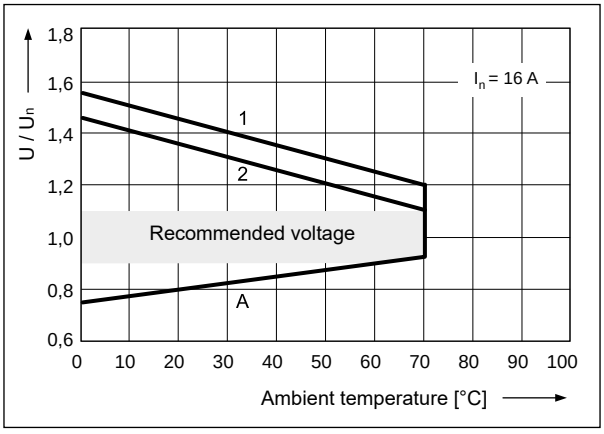
Max. AC 50 Hz resistive load breaking capacity Fig. 2



Coil operating range - DC Fig. 3



Coil operating range - AC 50 Hz Fig. 4



Description of Fig. 3 and 4

A - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).

1, 2 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:

1 - no load

2 - rated load

Note: the use of the relay at energizing voltage other than the rated voltage may lead to reduced electrical life. Energizing voltage exceeding the recommended range may damage the insulation of the relay coil.

Coil data - DC voltage version

Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC ❼	
				min. (at 23 °C)	max. (at 23 °C)
1012	**12**	**360**	**± 10%**	**8,4**	**18,0**
1024	**24**	**1 440**	**± 10%**	**16,8**	**36,0**
1048	48	5 760	± 15%	33,6	72,0
1110	110	25 200	± 15%	77,0	165,0

The data in bold type relate to the standard versions of the relays.
❼ The max. allowable voltage is coil overdrive voltage, it is the instantaneous max. voltage which the relay coil could endure in very short time.

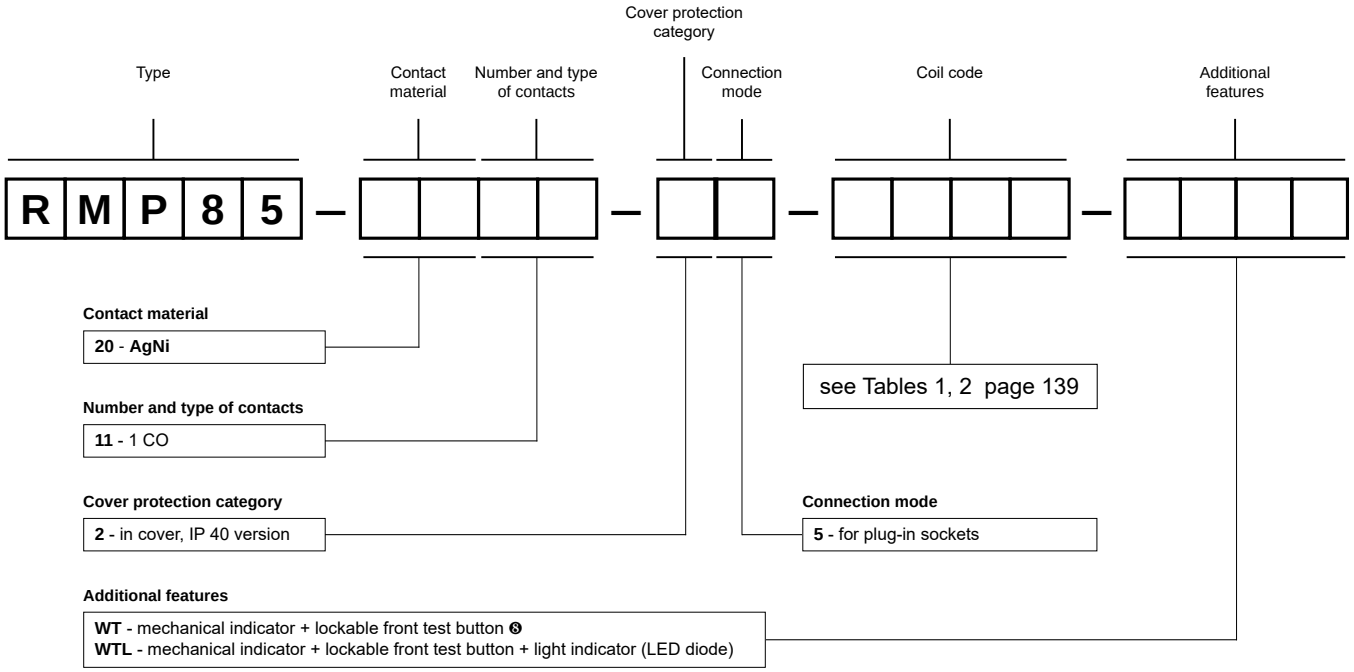
Coil data - AC 50 Hz voltage version

Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 23 °C)	max. (at 23 °C)
5024	**24**	**350**	**± 10%**	**18,0**	**26,4**
5115	115	8 100	± 15%	86,3	126,5
5230	**230**	**32 500**	**± 15%**	**172,5**	**253,0**

The data in bold type relate to the standard versions of the relays.

Ordering codes



❽ **WT** - standard features of relays. Test buttons type T - see page 137.

Examples of ordering code:

RMP85-2011-25-1024-WT relay **RMP85**, for plug-in sockets, one changeover contact, contact material AgNi, coil voltage 24 V DC, with mechanical indicator and lockable front test button, in cover IP 40

RMP85-2011-25-5230-WTL relay **RMP85**, for plug-in sockets, one changeover contact, contact material AgNi, coil voltage 230 V AC 50 Hz, with mechanical indicator and lockable front test button and light indicator (LED diode), in cover IP 40

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- Cadmium - free contacts • Miniature dimensions
- Automotive applications
- High resistance to inrush current
- For PCB
- Following relays versions are available:
  RA2 - standard design
  RAW2 - narrow pin layout design
- Recognitions, certifications, directives: RoHS

Contact data

Number and type of contacts		1 CO, 1 NO, 2 NO
Contact material		**$AgSnO_2$**
Rated / max. switching voltage	DC	60 V / 60 V
Min. switching voltage		1 V
Min. switching current		10 mA
Max. inrush current		1 CO: 110 A / 50 A (NO/NC) 1 NO: 110 A 2 NO: 2 x 110 A
Rated current		1 CO: 20 A / 12 A (NO/NC) 1 NO: 20 A 2 NO: 2 x 12,5 A
Max. breaking capacity		1 CO: 270 W / 162 W (NO/NC) 1 NO: 270 W 2 NO: 2 x 168 W
Min. breaking capacity		1 W
Contact resistance		≤ 3 mΩ
Max. operating frequency		
• at rated load	AC1	900 cycles/hour 2 s ON / 2 s OFF
• at motor load		450 cycles/hour 2 s ON / 6 s OFF
• at incandescent lamp load		120 cycles/hour 2 s ON / 30 s OFF
• no load		36 000 cycles/hour

Coil data

Rated voltage	DC	5 ... 48 V
Must release voltage		DC: ≥ 0,15 U_n
Operating range of supply voltage		see Table 1
Must operate voltage		≤ 0,6 U_n
Rated power consumption	DC	1,44 W

Insulation

Insulation rated voltage		60 V AC
Dielectric strength		
• between coil and contacts		500 V AC
• contact clearance		500 V AC
Contact - coil distance		
• clearance		≥ 1 mm
• creepage		≥ 1 mm

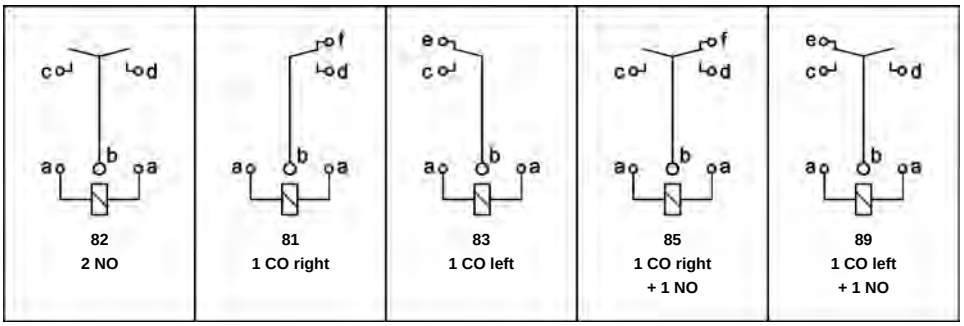
General data

Operating / release time (typical values)		10 ms / 3 ms
Electrical life		
• resistive DC1		1 CO: > 10^5 20 A / 12 A (NO/NC), 13,5 V DC 1 NO: > 10^5 20 A, 13,5 V DC 2 NO: > 10^5 2 x 12,5 A, 13,5 V DC
Mechanical life (cycles)		> 10^7
Dimensions (L x W x H)		IP 00: 18,6 x 13,0 x 18,5 mm IP 40: 20,5 x 15,3 x 19,7 mm
Weight		12 g
Ambient temperature	• storage	-40...+100 °C
	• operating	-40...+85 °C
Cover protection category		IP 40 or **IP 00 (without cover)** PN-EN 60529
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

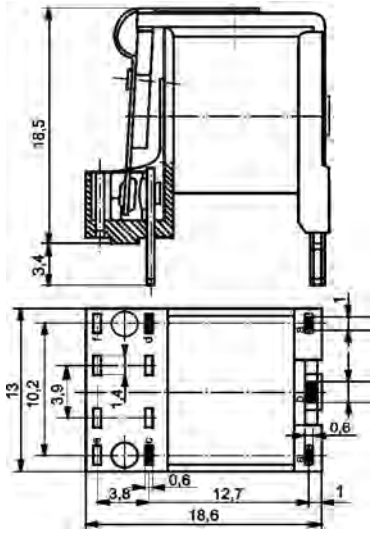
The data in bold type relate to the standard versions of the relays.

Connection diagrams (pin side view)

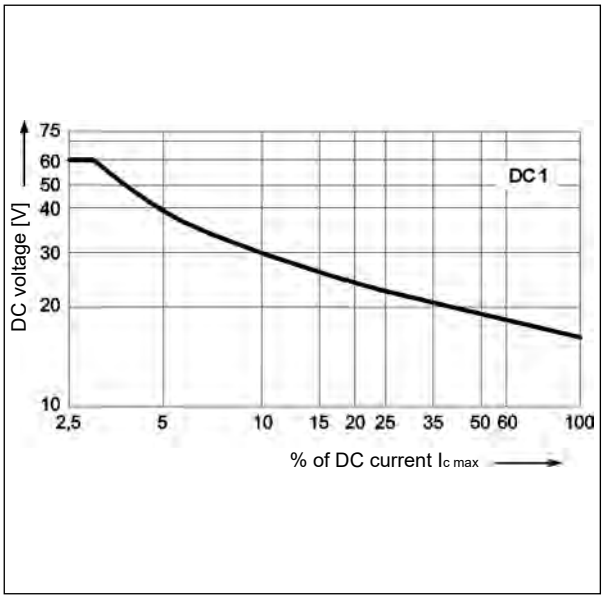
Relay terminals:
c, d, e, f - 0,6 x 1,4 mm **a** - 0,6 x 1,0 mm **b** - 1,0 x 1,5 mm



Dimensions



Max. DC resistive load breaking capacity Fig. 1



Mounting

Relays **RA2** are designed for direct PCB mounting.

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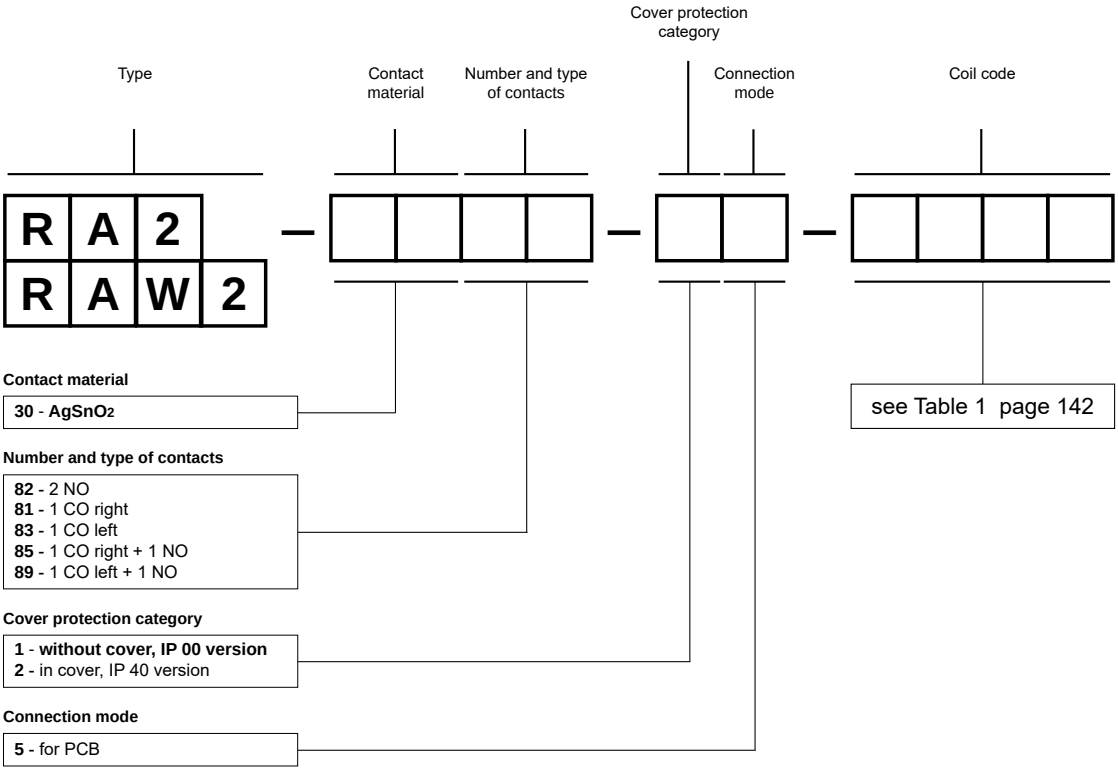
Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	5	18	± 10%	4,0	6,6
1006	6	24	± 10%	4,8	8,0
1009	9	55	± 10%	7,2	12,0
1012	**12**	**100**	**± 10%**	**9,6**	**16,0**
1015	15	152	± 10%	12,0	20,0
1018	18	230	± 10%	14,4	23,9
1024	24	390	± 10%	19,2	31,9
1048	48	1 590	± 10%	38,4	63,8

The data in bold type relate to the standard versions of the relays.

Ordering codes



Examples of ordering codes:

RA2-3081-15-1012 relay **RA2**, for PCB, one right changeover contact, contact material $AgSnO_2$, coil voltage 12 V DC, without cover IP 00

RAW2-3082-25-1024 relay **RAW2** with narrow pin layout design, for PCB, two normally open contacts, contact material $AgSnO_2$, coil voltage 24 V DC, in cover IP 40

Relays
industrial

relpol S.A.

Industrial relays are applied mainly in industrial and power automation systems, in signaling and protection systems, in other control and electric drives systems. The main products of Relpol S.A. have been successfully applied in industrial automation for many years. Their reliability and quality have been acknowledged by numerous prizes and awards, and by the Customers' satisfaction.

The basic features of industrial relays are: contact number: from 1 to 4, rated contact switching currents up to 48 A (depending on the relay type), versions with coil overvoltage suppression, versions with flag indicators and manual relay test pushbuttons with the possibility of latching the normally open contacts closed, mounting on PCB, plug-in sockets, 35 mm rails; screw and spring terminals of plug-in sockets, and via flat connecting inserts. R2N, R3N and R4N relays are the basis for the interface relays of PIR2, PIR3 and PIR4 types which are described in the section of "Interface relays".

They meet the requirements of RoHS Directive.
The relays are recognized and certified by:
AUCOTEAM GmbH Berlin,

12 A / 250 V AC

- Relays of general application • For plug-in sockets: 35 mm rail mount acc. to PN-EN 60715; on panel mounting; PCB mounting
- Miniature dimensions • Cadmium - free contacts • AC and DC coils
- WT (mechanical indicator + lockable front test button) - standard features of relays. Relays may be provided with the test buttons (no latching) and plugs - page 421
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		2 CO
Contact material		**AgNi**, AgNi/Au flash gold plating
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		10 V
Rated load (capacity)	AC1	12 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	370 W (single-phase motor)
	DC1	12 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA
Max. inrush current		24 A
Rated current		12 A
Max. breaking capacity	AC1	3 000 VA
Min. breaking capacity		0,3 W
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		12 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	6 ... 240 V
	DC	5 ... 220 V
Must release voltage		AC: ≥ 0,2 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2
Rated power consumption	AC	1,6 VA
	DC	0,9 W

Insulation according to PN-EN 60664-1

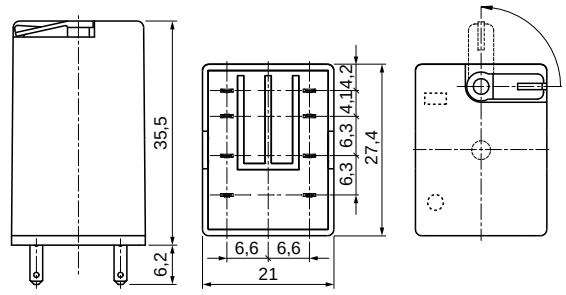
Insulation rated voltage	250 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	2 500 V AC type of insulation: basic
• contact clearance	1 500 V AC type of clearance: micro-disconnection
• pole - pole	2 500 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 2,5 mm
• creepage	≥ 4 mm

General data

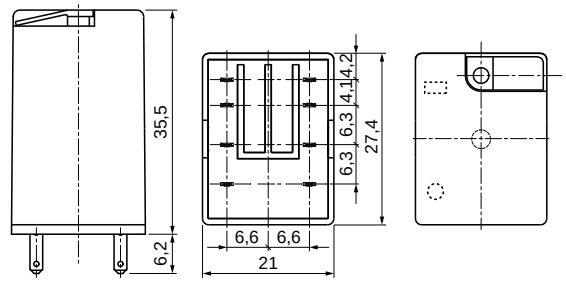
Operating / release time (typical values)		AC: 10 ms / 8 ms DC: 13 ms / 3 ms
Electrical life		
• resistive AC1		> 10^5 12 A, 250 V AC
• cosφ		see Fig. 2
Mechanical life (cycles)		> 2 x 10^7
Dimensions (L x W x H)		27,4 x 21 x 35,5 mm
Weight		35 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+55 °C DC: -40...+70 °C
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTI PN-EN 116000-3
Shock resistance	(NO/NC)	10 g / 5 g
Vibration resistance		5 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.

Dimensions - plug-in version (WT), with lockable front test button type T

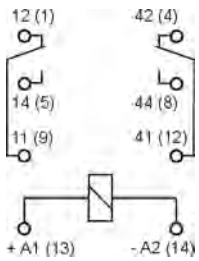


Dimensions - plug-in version, with test button (no latching) or with plug (no manual operation)



Test buttons R4P-0001 and **plugs R4W-0003** need to ordered saparately. They substitute buttons type T. To exchange by Customer themselves. Information on test buttons (no latching) and plugs - page 421.

Connection diagram (pin side view)

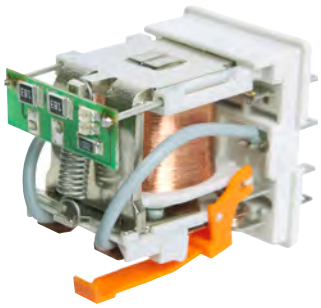


2 CO

Note: the indicated polarity of the supply refers to the relays with extra equipment **D** - surge suppression element (diode) - for DC coils only.

Design

Improvement of the functionality of the mechanical indicator (W): it is mounted on an insulation base of the unit of the movable contacts; the changes provide the appropriate position in the window in the upper side of the housing irrespectively of the number of operations performed by the relay.



Application of electronics made in the SMD technology: additional features L (LED diode) and D (diode) are located on the printed circuit board; the change of the position of the LED diode and optimization of the quality and intensity of its light provide certainty that the relay is in operation status when the LED is on.

Improvement of the efficiency of the electromagnet: an innovational technology of connecting elements has been introduced, which guarantees more reliable operation of the relay.

Strengthening of the insulation in the area of the contact plate: polyamide PA66 has been applied; it has very good mechanical and electrical parameters and best thermal properties.

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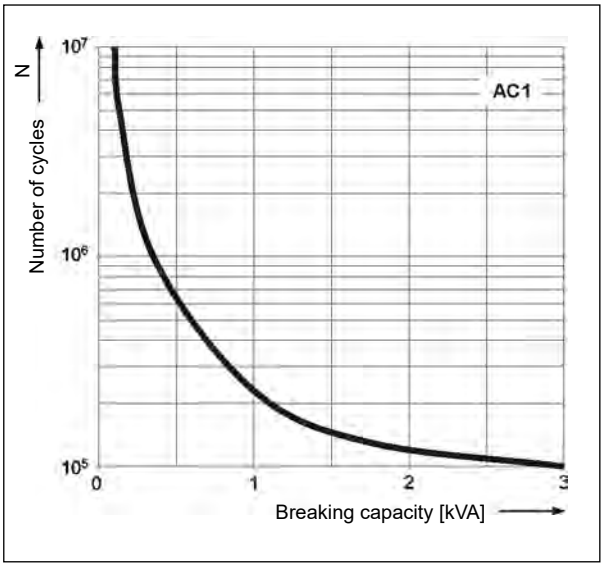
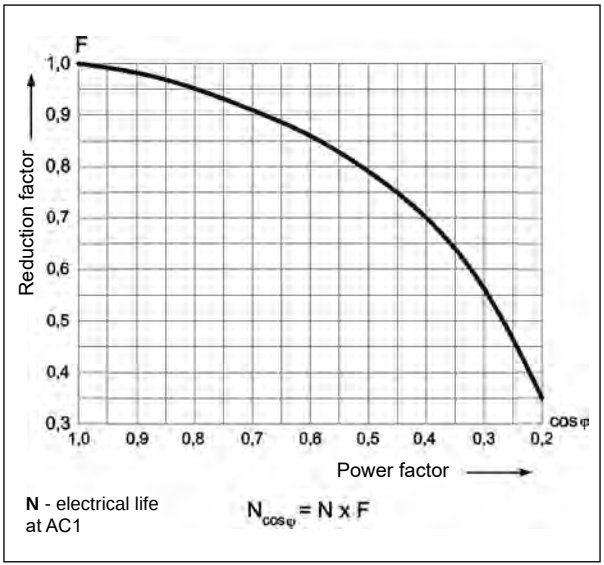
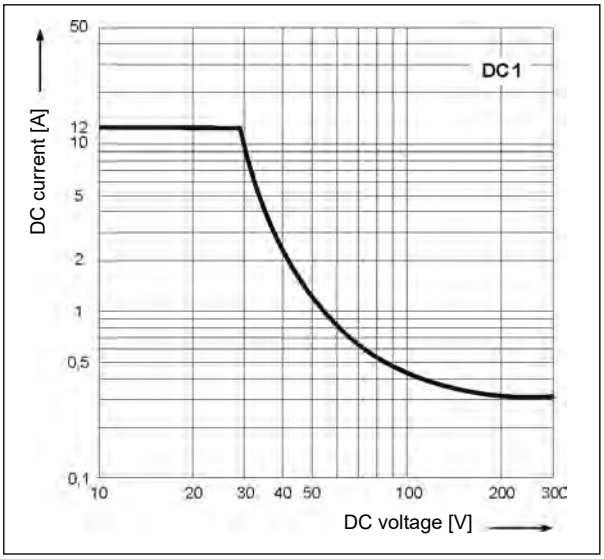
Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour Fig. 1



Electrical life reduction factor at AC inductive load Fig. 2



Max. DC resistive load breaking capacity Fig. 3



Contact material selection for different load types

- **AgNi** - for resistive or inductive loads,
- **AgNi/Au flash gold plating** - Au protects the contact surface during storage.

Mounting

Relays R2N are offered in versions: • for plug-in sockets. **With WT features as standard** (**W** - mechanical indicator + **T** - lockable front test button). In these relays is **possibility self-exchange of button type T for test button R4P-0001** (no latching) **or on plug R4W-0003** (no manual operation). The buttons **R4P-0001** and the plugs **R4W-0003 need to ordered saparately**.

Relays **R2N** are designed for: • screw terminals plug-in sockets **GZT2** ❶ and **GZM2** ❶ with clip **GZT4-0040** or **G4 1052**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • spring terminals plug-in sockets **GZMB2** ❷ with clip **GZMB4-0040** or **G4 1052**, 35 mm rail mount acc. to PN-EN 60715. Signalling / protecting modules **type M...** are available with sockets (see page 422) • plug-in sockets for PCB mounting **SU4/2D** with clip **G4 1053** • solder terminals sockets **SU4/2L** with clip **G4 1053** and spring clamp **G4 1040** • solder terminals sockets **G4/2** with clip **G4 1053**.

❶ Plug-in sockets **GZT2**, **GZM2** may be linked with interconnection strip type **ZGGZ4** (see page 419).
❷ For sockets **GZMB2** - see page 401 (wire connection).

Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 70 °C)
1005	5	28	± 10%	4,0	5,5
1006	6	40	± 10%	4,8	6,6
1012	12	160	± 10%	9,6	13,2
1024	**24**	**640**	**± 10%**	**19,2**	**26,4**
1048	48	2 600	± 10%	38,4	52,8
1060	60	4 000	± 10%	48,0	66,0
1080	80	7 100	± 10%	64,0	88,0
1110	110	13 600	± 10%	88,0	121,0
1125	125	16 000	± 10%	100,0	137,5
1220	**220**	**54 000**	**± 10%**	**176,0**	**242,0**

The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
5006	6	9,8	± 10%	4,8	6,6
5012	12	39,5	± 10%	9,6	13,2
5024	**24**	**158**	**± 10%**	**19,2**	**26,4**
5042	42	470	± 10%	33,6	46,2
5048	48	640	± 10%	38,4	52,8
5060	60	930	± 10%	48,0	66,0
5080	80	1 720	± 10%	64,0	88,0
5110	110	3 450	± 10%	88,0	121,0
5115	115	3 610	± 10%	92,0	127,0
5120	120	3 770	± 10%	96,0	132,0
5127	127	4 000	± 10%	101,6	139,0
5220	220	15 400	± 10%	176,0	242,0
5230	**230**	**16 100**	**± 10%**	**184,0**	**253,0**
5240	240	16 800	± 10%	192,0	264,0

The data in bold type relate to the standard versions of the relays.

NEW TECHNOLOGY

The new R2N, R3N, R4N relays are modernized versions of the R2, R3, R4 relays. The modernization covered the design of the relays and the manufacturing process.

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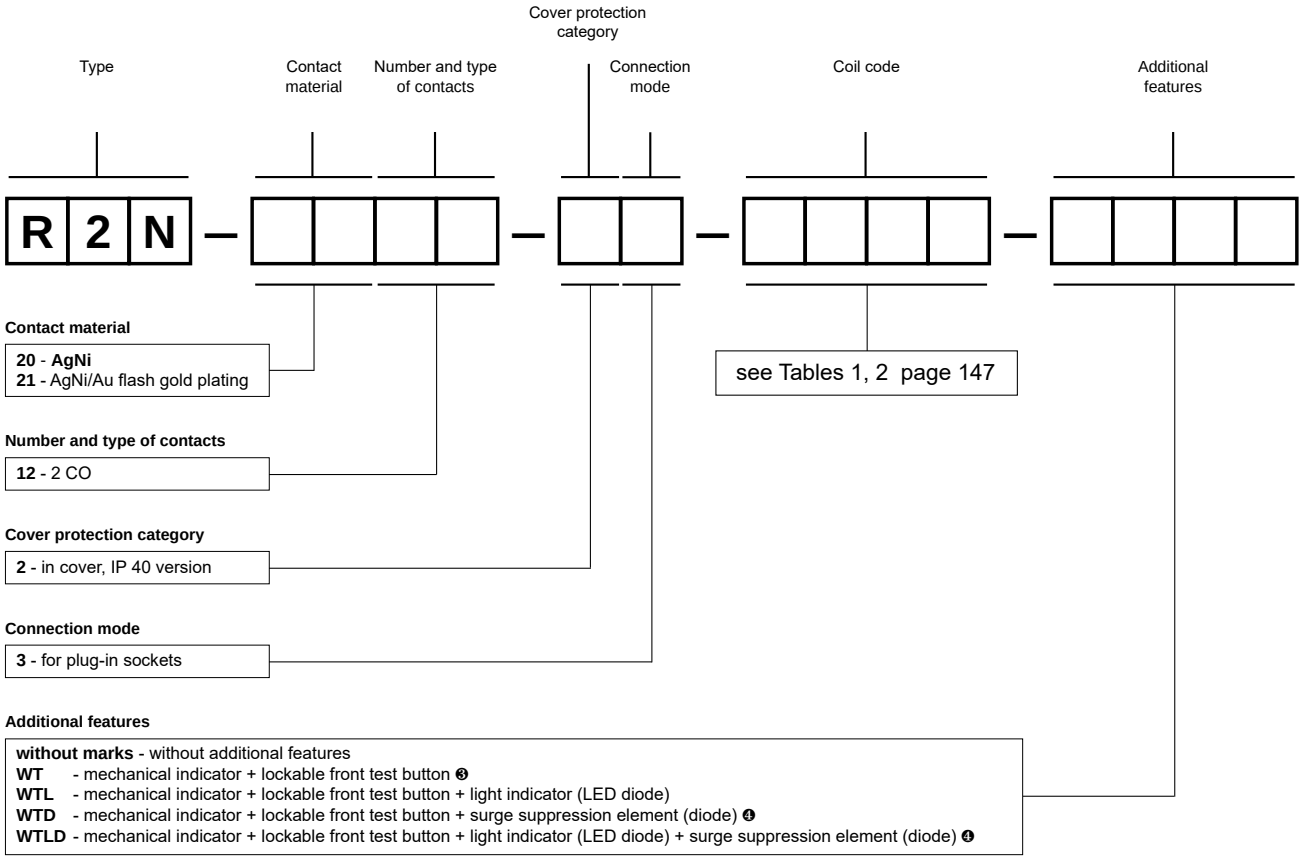
Ordering codes



❸ **WT** - standard features of relays
❹ **WTD, WTLD** - available only in relays with DC coils

Test buttons (no latching) and plugs need to ordered saparately. They substitute buttons type T. To exchange by Customer themselves. Information on test buttons (no latching) and plugs - page 421.

- Button R4P-0001-A - orange colour (AC coils)
- Button R4P-0001-D - green colour (DC coils)
- Plug R4W-0003-A - orange colour (AC coils)
- Plug R4W-0003-D - green colour (DC coils)

Note:

While the relay operates, the test button of the **T** type becomes heated. In order to push the test button manually, you should first turn the supply voltage off, and wait some time until the button becomes colder (or push the button immediately using a protective glove or an insulated tool). The button shall be pushed smoothly and quickly. The normally open contacts are closed with the button for the time during which the button is pushed. Releasing the button opens the normally open contacts. Normally open contacts may be closed with the blocking function of the button (it shall be turned by 90°). When the button is turned back, the normally open contacts are opened.

For relays with additional features **D** - surge suppression element (diode) (versions WTD and WTLD) - fixed supply polarity compulsory for the DC load of coils: +A1(13) / -A2(14). The polarity is indicated on the relay cover. For other versions of the relays with DC coils any polarity is possible.

Example of ordering codes:

R2N-2012-23-1024-WT relay **R2N**, for plug-in sockets, two changeover contacts, contact material AgNi, coil voltage 24 V DC, with mechanical indicator and lockable front test button, in cover IP 40

10 A / 250 V AC

- Relays of general application • For plug-in sockets: 35 mm rail mount acc. to PN-EN 60715; on panel mounting
- Miniature dimensions • Cadmium - free contacts • AC and DC coils
- WT (mechanical indicator + lockable front test button) - standard features of relays. Relays may be provided with the test buttons (no latching) and plugs - page 421
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		3 CO
Contact material		**AgNi**, AgNi/Au flash gold plating
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		10 V
Rated load (capacity)	AC1	10 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	370 W (single-phase motor)
	DC1	10 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA
Max. inrush current		20 A
Rated current		10 A
Max. breaking capacity	AC1	2 500 VA
Min. breaking capacity		0,3 W
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		18 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	6 ... 240 V
	DC	5 ... 220 V
Must release voltage		AC: ≥ 0,2 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2
Rated power consumption	AC	1,6 VA
	DC	0,9 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	250 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	2
Dielectric strength	
• between coil and contacts	2 500 V AC type of insulation: basic
• contact clearance	1 500 V AC type of clearance: micro-disconnection
• pole - pole	2 500 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 2,5 mm
• creepage	≥ 4 mm

General data

Operating / release time (typical values)		AC: 10 ms / 8 ms DC: 13 ms / 3 ms
Electrical life		
• resistive AC1		> 10^5 10 A, 250 V AC
• cosφ		see Fig. 2
Mechanical life (cycles)		> 2 x 10^7
Dimensions (L x W x H)		27,4 x 21 x 35,5 mm
Weight		35 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+55 °C DC: -40...+70 °C
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTI PN-EN 116000-3
Shock resistance	(NO/NC)	10 g / 5 g
Vibration resistance		5 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.

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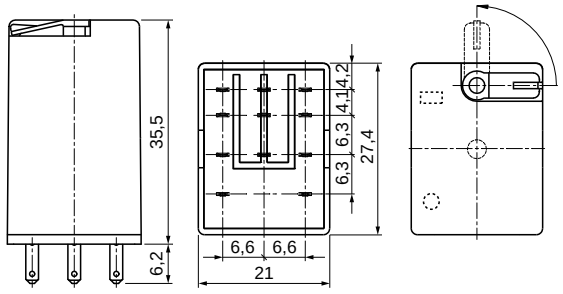
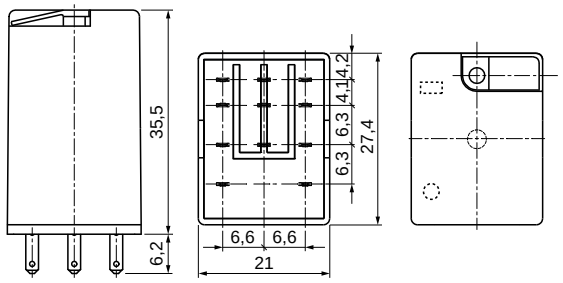
Dimensions - plug-in version (WT), with lockable front test button type T

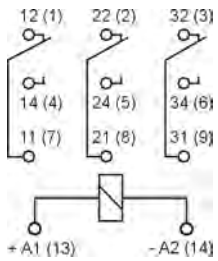


Dimensions - plug-in version, with test button (no latching) or with plug (no manual operation)



Test buttons R4P-0001 and **plugs R4W-0003** need to ordered saparately. They substitute buttons type T. To exchange by Customer themselves. Information on test buttons (no latching) and plugs - page 421.

Connection diagram (pin side view)

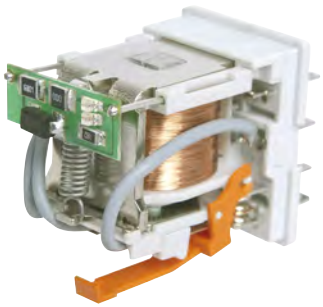


3 CO

Note: the indicated polarity of the supply refers to the relays with extra equipment **D** - surge suppression element (diode) - for DC coils only.

Design

Improvement of the functionality of the mechanical indicator (W): it is mounted on an insulation base of the unit of the movable contacts; the changes provide the appropriate position in the window in the upper side of the housing irrespectively of the number of operations performed by the relay.

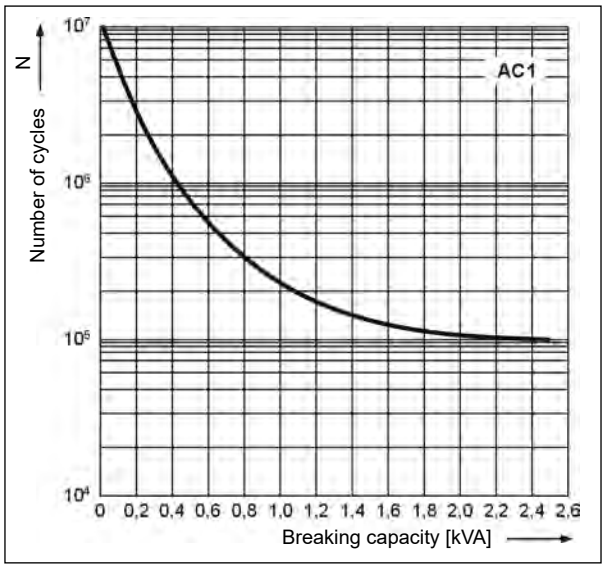


Application of electronics made in the SMD technology: additional features L (LED diode) and D (diode) are located on the printed circuit board; the change of the position of the LED diode and optimization of the quality and intensity of its light provide certainty that the relay is in operation status when the LED is on.

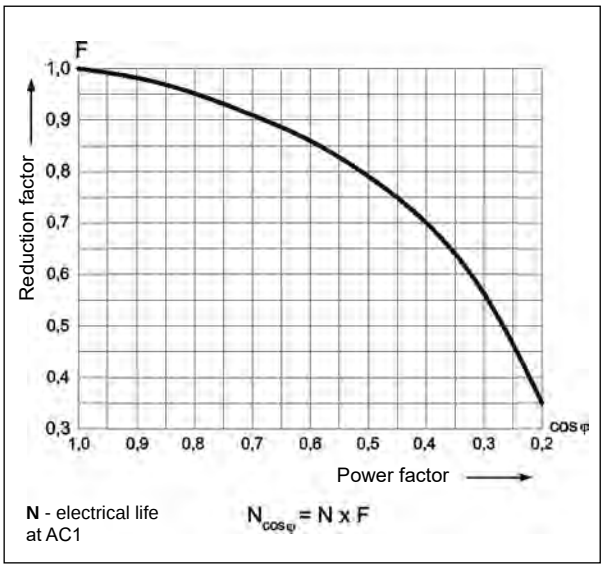
Improvement of the efficiency of the electromagnet: an innovational technology of connecting elements has been introduced, which guarantees more reliable operation of the relay.

Strengthening of the insulation in the area of the contact plate: polyamide PA66 has been applied; it has very good mechanical and electrical parameters and best thermal properties.

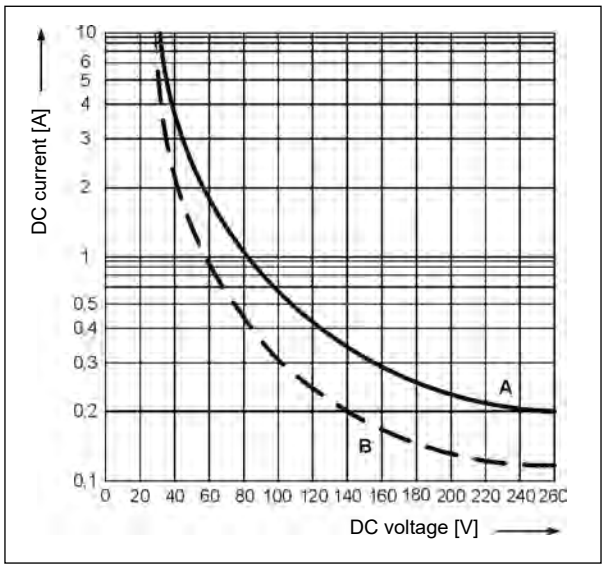
Electrical life at AC resistive load.
Switching frequency: 1 200 cycles/hour Fig. 1



Electrical life reduction factor at AC inductive load Fig. 2



Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms Fig. 3



Mounting

Relays R3N are offered in versions: • for plug-in sockets. **With WT features as standard** (**W** - mechanical indicator + **T** - lockable front test button). In these relays is **possibility self-exchange of button type T for test button R4P-0001** (no latching) **or on plug R4W-0003** (no manual operation). The buttons **R4P-0001** and the plugs **R4W-0003 need to ordered saparately**.

Relays **R3N** are designed for: • screw terminals plug-in sockets **GZT3** ❶ and **GZM3** ❶ with clip **GZT4-0040** or **G4 1052**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws. Signalling / protecting modules **type M...** are available with sockets (see page 422).

❶ Plug-in sockets **GZT3**, **GZM3** may be linked with interconnection strip type **ZGGZ4** (see page 419).

Contact material selection for different load types

- **AgNi** - for resistive or inductive loads,
- **AgNi/Au flash gold plating** - Au protects the contact surface during storage.

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Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 70 °C)
1005	5	28	± 10%	4,0	5,5
1006	6	40	± 10%	4,8	6,6
1012	12	160	± 10%	9,6	13,2
1024	**24**	**640**	**± 10%**	**19,2**	**26,4**
1048	48	2 600	± 10%	38,4	52,8
1060	60	4 000	± 10%	48,0	66,0
1080	80	7 100	± 10%	64,0	88,0
1110	110	13 600	± 10%	88,0	121,0
1125	125	16 000	± 10%	100,0	137,5
1220	**220**	**54 000**	**± 10%**	**176,0**	**242,0**

The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version Table 2

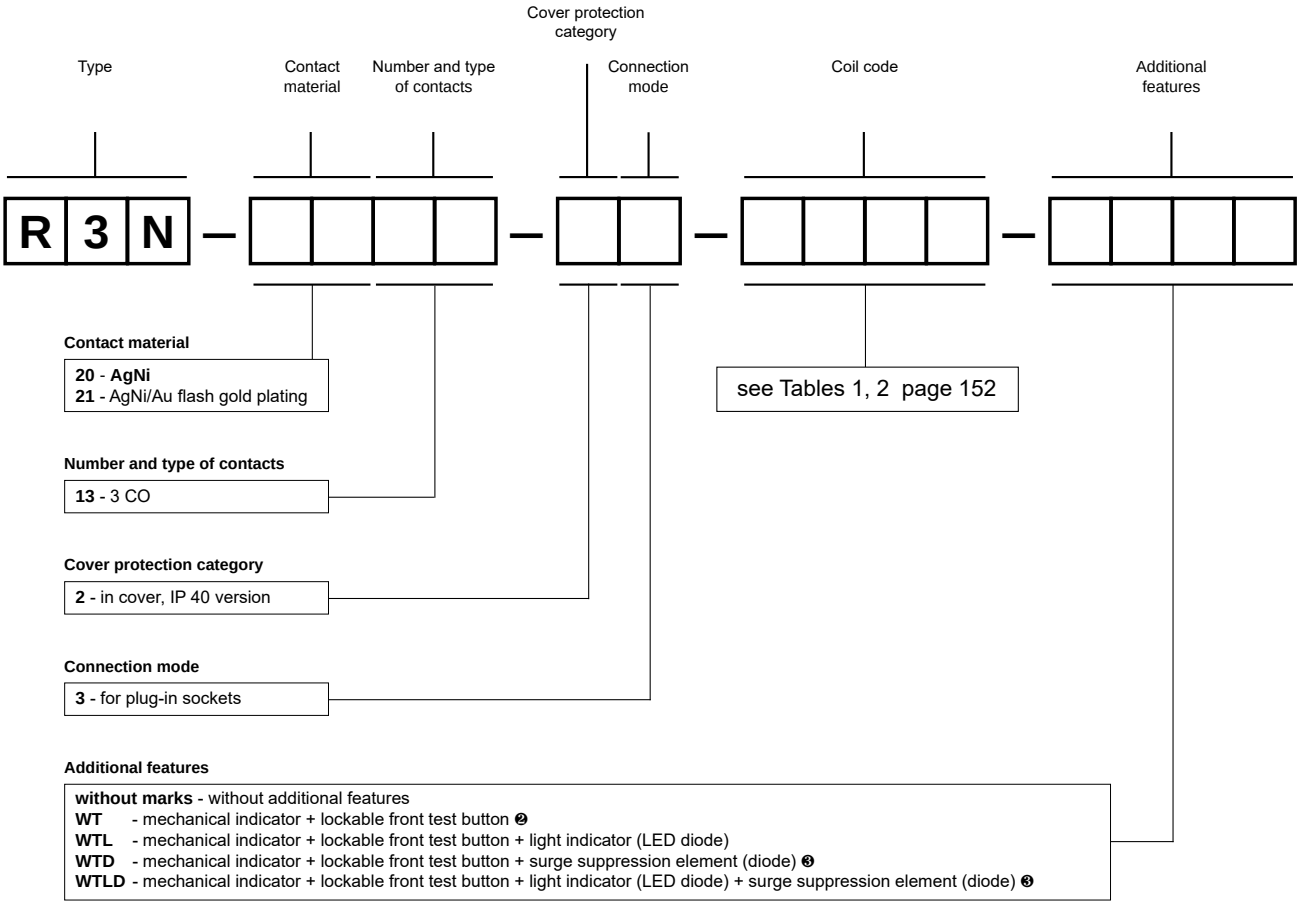
Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
5006	6	9,8	± 10%	4,8	6,6
5012	12	39,5	± 10%	9,6	13,2
5024	**24**	**158**	**± 10%**	**19,2**	**26,4**
5042	42	470	± 10%	33,6	46,2
5048	48	640	± 10%	38,4	52,8
5060	60	930	± 10%	48,0	66,0
5080	80	1 720	± 10%	64,0	88,0
5110	110	3 450	± 10%	88,0	121,0
5115	115	3 610	± 10%	92,0	127,0
5120	120	3 770	± 10%	96,0	132,0
5127	127	4 000	± 10%	101,6	139,0
5220	220	15 400	± 10%	176,0	242,0
5230	**230**	**16 100**	**± 10%**	**184,0**	**253,0**
5240	240	16 800	± 10%	192,0	264,0

The data in bold type relate to the standard versions of the relays.

NEW TECHNOLOGY

The new R2N, R3N, R4N relays are modernized versions of the R2, R3, R4 relays. The modernization covered the design of the relays and the manufacturing process.

Ordering codes



❷ **WT** - standard features of relays
❸ **WTD, WTLD** - available only in relays with DC coils

Test buttons (no latching) and plugs need to ordered saparately. They substitute buttons type T. To exchange by Customer themselves. Information on test buttons (no latching) and plugs - page 421.

- Button R4P-0001-A - orange colour (AC coils)
- Button R4P-0001-D - green colour (DC coils)
- Plug R4W-0003-A - orange colour (AC coils)
- Plug R4W-0003-D - green colour (DC coils)

Note:

While the relay operates, the test button of the **T** type becomes heated. In order to push the test button manually, you should first turn the supply voltage off, and wait some time until the button becomes colder (or push the button immediately using a protective glove or an insulated tool). The button shall be pushed smoothly and quickly. The normally open contacts are closed with the button for the time during which the button is pushed. Releasing the button opens the normally open contacts. Normally open contacts may be closed with the blocking function of the button (it shall be turned by 90°). When the button is turned back, the normally open contacts are opened.

For relays with additional features **D** - surge suppression element (diode) (versions WTD and WTLD) - fixed supply polarity compulsory for the DC load of coils: +A1(13) / -A2(14). The polarity is indicated on the relay cover. For other versions of the relays with DC coils any polarity is possible.

Example of ordering code:

R3N-2013-23-1024-WT relay **R3N**, for plug-in sockets, three changeover contacts, contact material AgNi, coil voltage 24 V DC, with mechanical indicator and lockable front test button, in cover IP 40

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7 A / 230 V AC

- Relays of general application • For plug-in sockets: 35 mm rail mount acc. to PN-EN 60715; on panel mounting; PCB mounting • For PCB and soldering connections - option • Miniature dimensions • Cadmium - free contacts
- AC and DC coils • WT (mechanical indicator + lockable front test button) - standard features of relays. Relays may be provided with the test buttons (no latching) and plugs - page 421
- **Have obtained LR Type Approval Certificate (Lloyd's Register)**
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		4 CO
Contact material		**AgNi**, AgNi/Au flash gold plating, AgNi/Au hard gold plating
Rated / max. switching voltage	AC	250 V / 250 V
Min. switching voltage		10 V AgNi, 10 V AgNi/Au flash gold plating 5 V AgNi/Au hard gold plating
Rated load (capacity)	AC1	7 A / 230 V AC (VDE) 6 A / 250 V AC
	AC15	1,5 A / 120 V 0,75 A / 240 V (C300)
	AC3	125 W (single-phase motor)
	DC1	6 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA
Max. inrush current		12 A
Rated current		7 A
Max. breaking capacity	AC1	1 500 VA
Min. breaking capacity		0,3 W AgNi, 0,3 W AgNi/Au flash gold plating 0,1 W AgNi/Au hard gold plating
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		18 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	6 ... 240 V
	DC	5 ... 220 V
Must release voltage		AC: ≥ 0,2 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2
Rated power consumption	AC	1,6 VA
	DC	0,9 W

Insulation according to PN-EN 60664-1

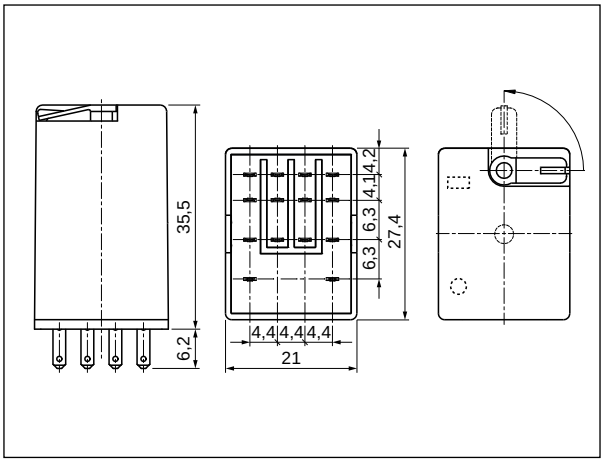
Insulation rated voltage	250 V AC
Rated surge voltage	2 500 V 1,2 / 50 µs
Overvoltage category	II
Insulation pollution degree	2
Dielectric strength	
• between coil and contacts	2 500 V AC type of insulation: basic
• contact clearance	1 500 V AC type of clearance: micro-disconnection
• pole - pole	2 000 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 1,6 mm
• creepage	≥ 3,2 mm

General data

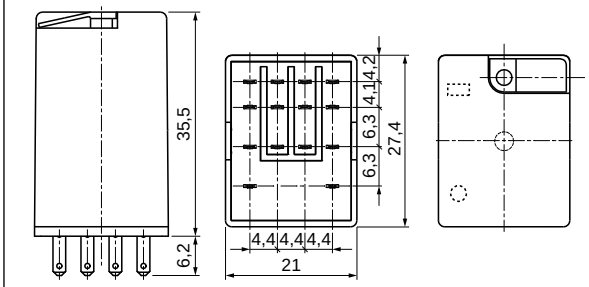
Operating / release time (typical values)		AC: 10 ms / 8 ms DC: 13 ms / 3 ms
Electrical life		
• resistive AC1		> 5 x 10^4 7 A, 230 V AC (VDE) > 10^5 6 A, 250 V AC
• cosφ		see Fig. 2
Mechanical life (cycles)		> 2 x 10^7
Dimensions (L x W x H)		27,4 x 21 x 35,5 mm
Weight		35 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+55 °C DC: -40...+70 °C
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTI PN-EN 116000-3
Shock resistance	(NO/NC)	10 g / 5 g
Vibration resistance		5 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.

Dimensions - plug-in version (WT),
with lockable front test button type T

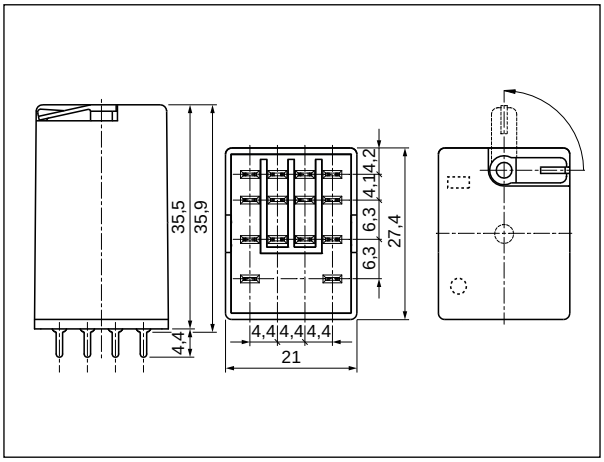


Dimensions - plug-in version, with test button
(no latching) or with plug (no manual operation)



Test buttons R4P-0001 and **plugs R4W-0003** need to ordered saparately. They substitute buttons type T. To exchange by Customer themselves. Information on test buttons (no latching) and plugs - page 421.

Dimensions - PCB version (WT),
with lockable front test button type T



Design

Improvement of the functionality of the mechanical indicator (W): it is mounted on an insulation base of the unit of the movable contacts; the changes provide the appropriate position in the window in the upper side of the housing irrespectively of the number of operations performed by the relay.

Application of electronics made in the SMD technology: additional features L (LED diode) and D (diode) are located on the printed circuit board; the change of the position of the LED diode and optimization of the quality and intensity of its light provide certainty that the relay is in operation status when the LED is on.

Improvement of the efficiency of the electromagnet: an innovational technology of connecting elements has been introduced, which guarantees more reliable operation of the relay.

Strengthening of the insulation in the area of the contact plate: polyamide PA66 has been applied; it has very good mechanical and electrical parameters and best thermal properties.

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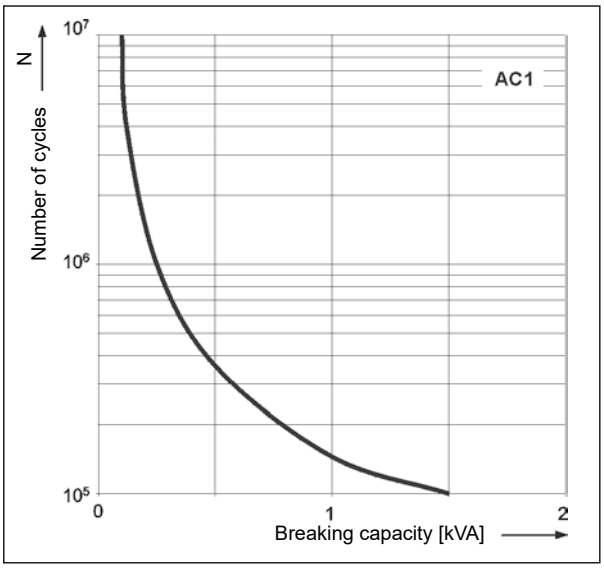
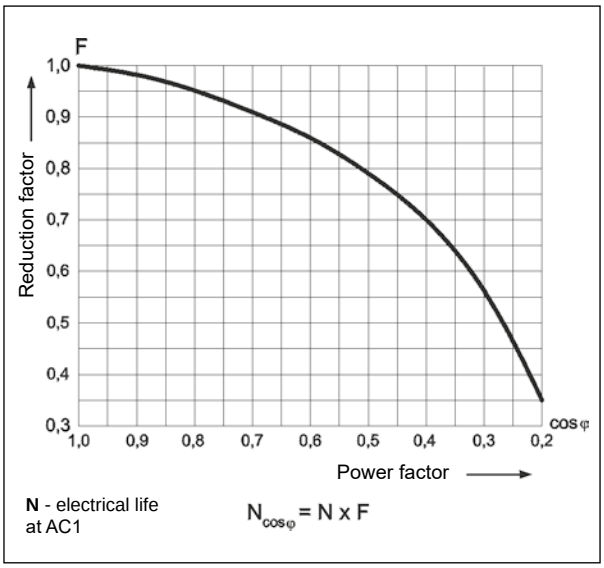
Electrical life at AC resistive load.
Switching frequency: 1 200 cycles/hour Fig. 1



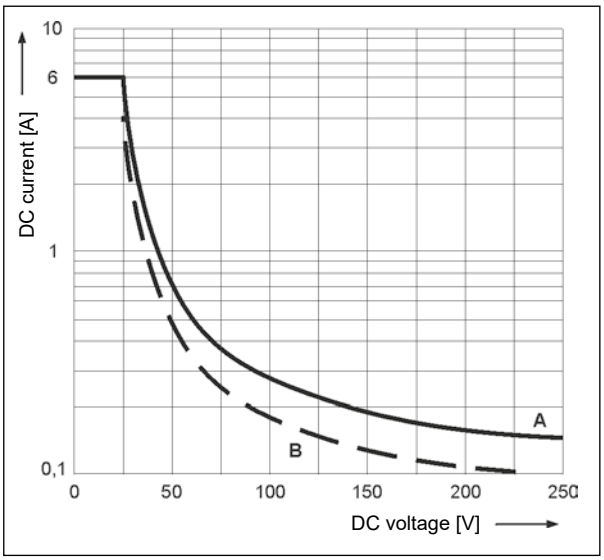
Electrical life reduction factor at AC inductive load Fig. 2



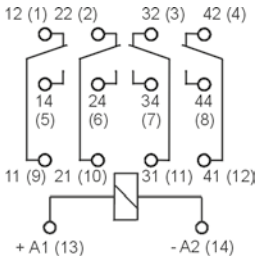
N - electrical life at AC1

$N_{cos\varphi} = N \times F$

Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms Fig. 3



Connection diagram (pin side view)



4 CO

Note: the indicated polarity of the supply refers to the relays with extra equipment **D** - surge suppression element (diode) - for DC coils only.

Contact material selection for different load types

- **AgNi** - for resistive or inductive loads,
- **AgNi/Au flash gold plating** - Au protects the contact surface during storage,
- **AgNi/Au hard gold plating** - for small resistive loads in control circuits.

NEW TECHNOLOGY

The new R2N, R3N, R4N relays are modernized versions of the R2, R3, R4 relays. The modernization covered the design of the relays and the manufacturing process.

Mounting

Relays R4N are offered in versions: • for plug-in sockets • for PCB. **With WT features as standard** (**W** - mechanical indicator + **T** - lockable front test button). In these relays is **possibility self-exchange of button type T for test button R4P-0001** (no latching) **or on plug R4W-0003** (no manual operation). The buttons **R4P-0001** and the plugs **R4W-0003 need to ordered saparately**.

Relays **R4N** are designed for: • screw terminals plug-in sockets **GZT4** ❶ and **GZM4** ❶ with clip **GZT4-0040** or **G4 1052**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • spring terminals plug-in sockets **GZMB4** ❷ with clip **GZMB4-0040** or **G4 1052**, 35 mm rail mount acc. to PN-EN 60715. Signalling / protecting modules **type M...** are available with sockets (see page 422) • screw terminals plug-in sockets **GZ4** with clip **G4 1052** or plug-in sockets **GS4** with clip **GS4-0036**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • plug-in sockets for PCB mounting **SU4D** with clip **G4 1053** • solder terminals sockets **SU4L** with clip **G4 1053** and spring clamp **G4 1040** • solder terminals sockets **G4** with clip **G4 1053** • direct PCB mounting.

❶ Plug-in sockets **GZT4**, **GZM4** may be linked with interconnection strip type **ZGGZ4** (see page 419). ❷ For sockets **GZMB4** - see page 403 (wire connection).

Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 70 °C)
1005	5	28	± 10%	4,0	5,5
1006	6	40	± 10%	4,8	6,6
1012	**12**	**160**	**± 10%**	**9,6**	**13,2**
1024	**24**	**640**	**± 10%**	**19,2**	**26,4**
1048	48	2 600	± 10%	38,4	52,8
1060	60	4 000	± 10%	48,0	66,0
1080	80	7 100	± 10%	64,0	88,0
1110	110	13 600	± 10%	88,0	121,0
1125	125	16 000	± 10%	100,0	137,5
1220	**220**	**54 000**	**± 10%**	**176,0**	**242,0**

The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
5006	6	9,8	± 10%	4,8	6,6
5012	12	39,5	± 10%	9,6	13,2
5024	**24**	**158**	**± 10%**	**19,2**	**26,4**
5042	42	470	± 10%	33,6	46,2
5048	48	640	± 10%	38,4	52,8
5060	60	930	± 10%	48,0	66,0
5080	80	1 720	± 10%	64,0	88,0
5110	110	3 450	± 10%	88,0	121,0
5115	115	3 610	± 10%	92,0	127,0
5120	120	3 770	± 10%	96,0	132,0
5127	127	4 000	± 10%	101,6	139,0
5220	220	15 400	± 10%	176,0	242,0
5230	**230**	**16 100**	**± 10%**	**184,0**	**253,0**
5240	240	16 800	± 10%	192,0	264,0

The data in bold type relate to the standard versions of the relays.

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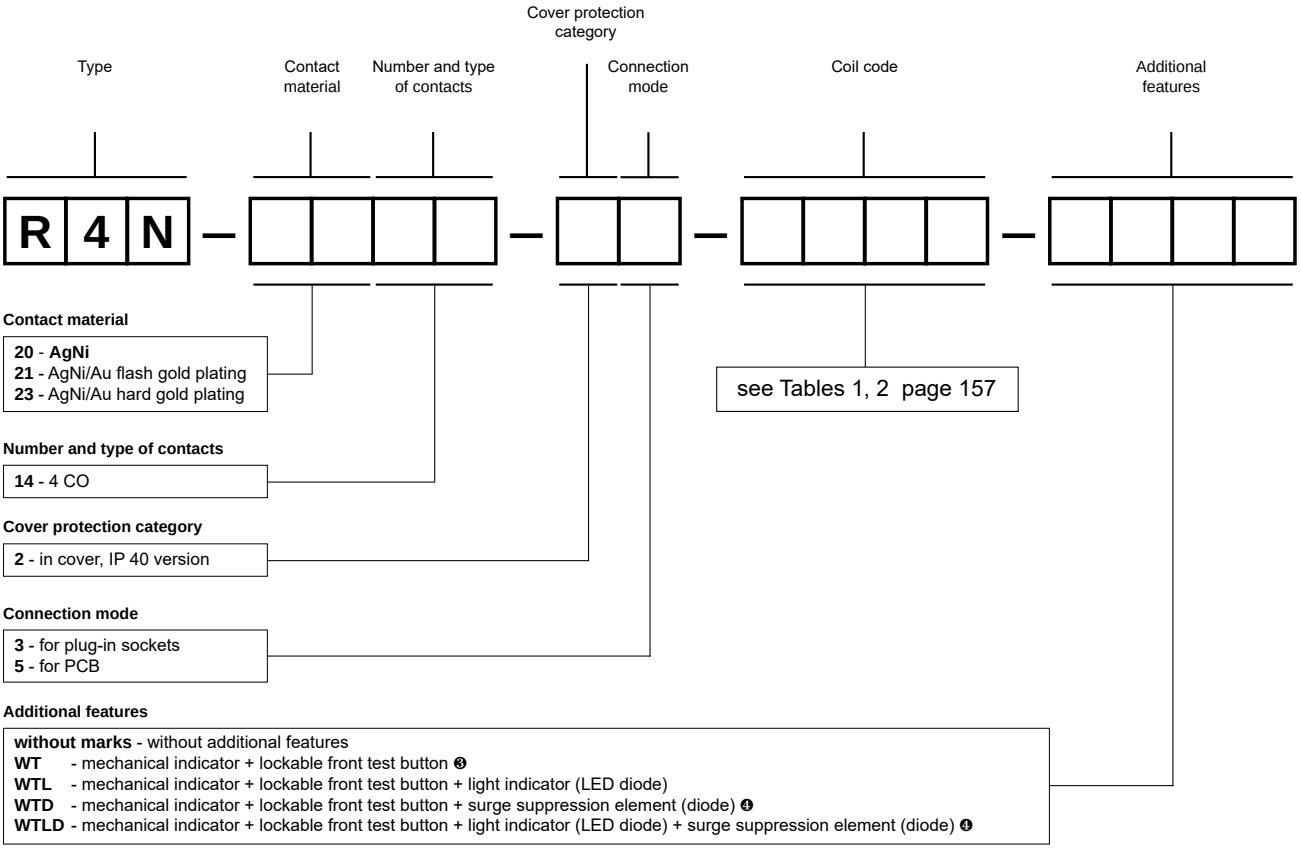
Ordering codes



❸ **WT** - standard features of relays
❹ **WTD, WTLD** - available only in relays with DC coils

Test buttons (no latching) and plugs need to ordered saparately. They substitute buttons type T. To exchange by Customer themselves. Information on test buttons (no latching) and plugs - page 421.

- Button R4P-0001-A - orange colour (AC coils)
- Button R4P-0001-D - green colour (DC coils)
- Plug R4W-0003-A - orange colour (AC coils)
- Plug R4W-0003-D - green colour (DC coils)

Note:

While the relay operates, the test button of the **T** type becomes heated. In order to push the test button manually, you should first turn the supply voltage off, and wait some time until the button becomes colder (or push the button immediately using a protective glove or an insulated tool). The button shall be pushed smoothly and quickly. The normally open contacts are closed with the button for the time during which the button is pushed. Releasing the button opens the normally open contacts. Normally open contacts may be closed with the blocking function of the button (it shall be turned by 90°). When the button is turned back, the normally open contacts are opened.

For relays with additional features **D** - surge suppression element (diode) (versions WTD and WTLD) - fixed supply polarity compulsory for the DC load of coils: +A1(13) / -A2(14). The polarity is indicated on the relay cover. For other versions of the relays with DC coils any polarity is possible.

Examples of ordering codes:

R4N-2014-23-5230-WTL	relay **R4N**, for plug-in sockets, four changeover contacts, contact material AgNi, coil voltage 230 V AC 50/60 Hz, with mechanical indicator and lockable front test button and light indicator (LED diode), in cover IP 40
R4N-2014-25-1024-WT	relay **R4N**, for PCB, four changeover contacts, contact material AgNi, coil voltage 24 V DC, with mechanical indicator and lockable front test button, in cover IP 40

- Relays of general application
- For plug-in sockets: 35 mm rail mount acc. to PN-EN 60715; on panel mounting
- For direct mounting on panel - cover with mounting flange
- Flat insert connectors - faston 187 (4,8 x 0,5 mm)
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		2 CO
Contact material		**AgNi**, AgCdO ❶
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 10 V AgCdO
Rated load	AC1	12 A / 250 V AC
	DC1	12 A / 30 V DC
Min. switching current		5 mA AgNi, 10 mA AgCdO
Max. inrush current		20 A
Rated current		12 A
Max. breaking capacity	AC1	3 000 VA
Min. breaking capacity		0,3 W AgNi, 1 W AgCdO
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		18 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	6 ... 240 V
	DC	5 ... 220 V
Must release voltage		AC: ≥ 0,2 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2
Rated power consumption	AC	1,6 VA
	DC	0,9 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	250 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	2 500 V AC type of insulation: basic
• contact clearance	1 000 V AC type of clearance: micro-disconnection
• pole - pole	2 500 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 2,6 mm
• creepage	≥ 4 mm

General data

Operating / release time (typical values)		15 ms / 10 ms
Electrical life		
• resistive AC1		> 10^5 12 A, 250 V AC
• cosφ		see Fig. 2
Mechanical life (cycles)		> 10^7
Dimensions (L x W x H)		27,5 x 21,1 x 34,5 mm ❷
Weight		35 g
Ambient temperature	• storage	-40...+70 °C
	• operating	-40...+55 °C
Cover protection category		IP 40 PN-EN 60529
Shock resistance		10 g
Vibration resistance		5 g 15...150 Hz

The data in bold type relate to the standard versions of the relays. ❶ AgCdO contact material in electrical contacts is only for use in electrical and electronic equipment (EEE) in compliance with directive RoHS2 2011/65/EU in restricted categories of EEE covered by this directive. Relpol S.A. is not responsible for usage relays with AgCdO contact material in categories of EEE where it is prohibited by the directive RoHS2 2011/65/EU. ❷ For plug-in sockets version: standard

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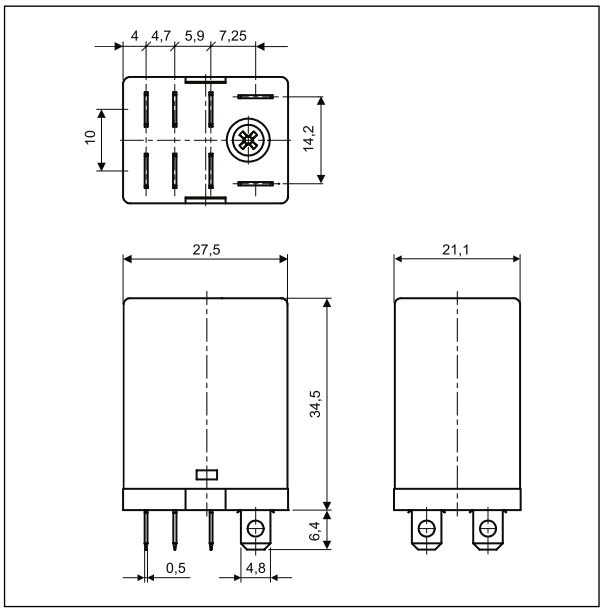
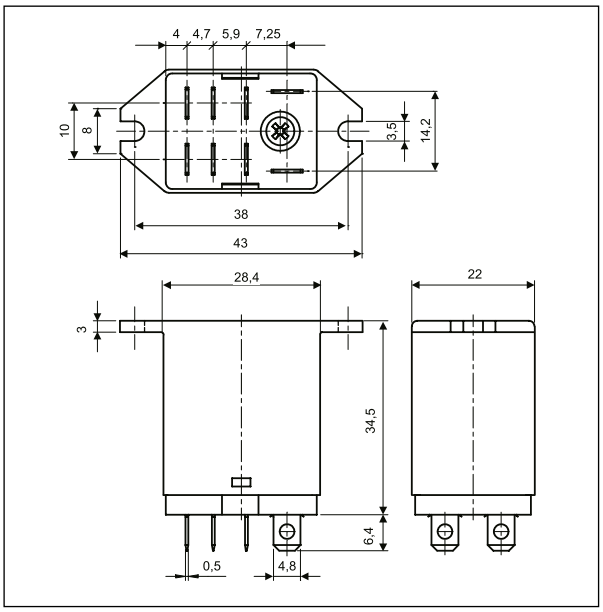
Dimensions - plug-in version (standard)

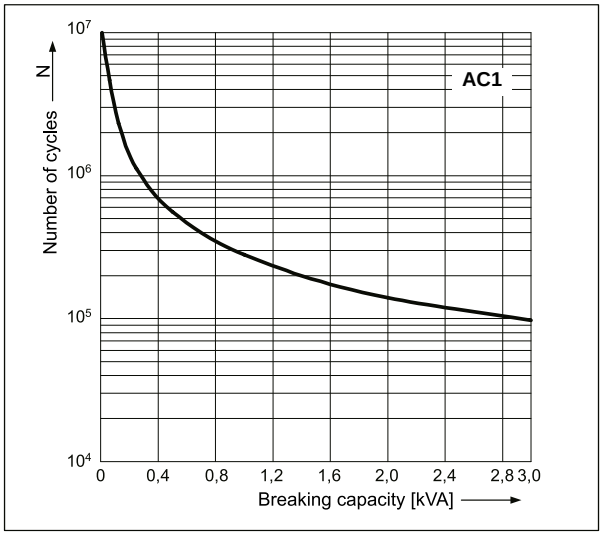


Dimensions - version with mounting flange in the upper wall of the cover



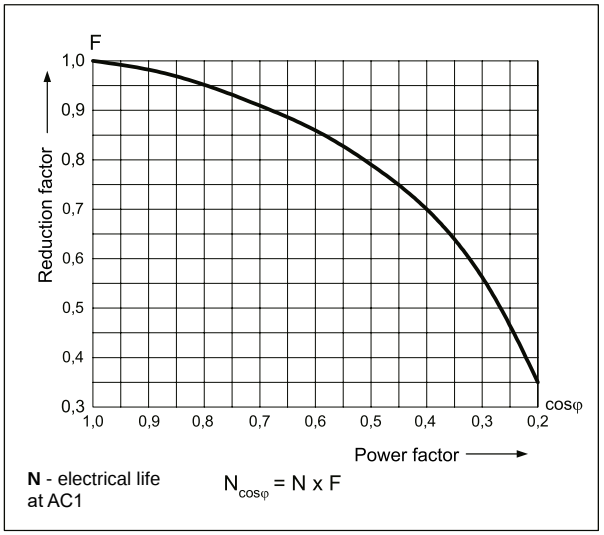
Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour

Fig. 1

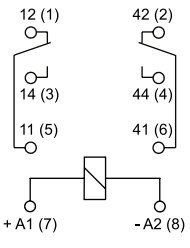


Electrical life reduction factor at AC inductive load

Fig. 2



Connection diagram (pin side view)



2 CO

Note: the indicated polarity of the supply refers to the relays with extra equipment **D** - surge suppression element (diode) - for DC coils only.

Mounting

Relays RY2 are offered in versions: • standard, for plug-in sockets • with mounting flange in the upper wall of the cover.

Relays **RY2** are designed for: • screw terminals plug-in sockets **GZY2G** with clips GZY2G-0041 ❸, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • flat insert connectors - faston 187 (4,8 x 0,5 mm), relays are direct on panel mounting with two M3 screws - cover with mounting flange.

❸ For each GZY2G socket a set of two GZY2G-0041 clips shall be ordered.

Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 55 °C)
1005	5	28	± 10%	4,0	5,5
1006	6	40	± 10%	4,8	6,6
1012	12	160	± 10%	9,6	13,2
1024	24	640	± 10%	19,2	26,4
1048	48	2 600	± 10%	38,4	52,8
1060	60	4 000	± 10%	48,0	66,0
1080	80	7 100	± 10%	64,0	88,0
1110	110	13 600	± 10%	88,0	121,0
1125	125	16 000	± 10%	100,0	137,5
1220	220	54 000	± 10%	176,0	242,0

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
5006	6	9,8	± 10%	4,8	6,6
5012	12	39,5	± 10%	9,6	13,2
5024	24	158	± 10%	19,2	26,4
5042	42	470	± 10%	33,6	46,2
5048	48	640	± 10%	38,4	52,8
5060	60	930	± 10%	48,0	66,0
5080	80	1 720	± 10%	64,0	88,0
5110	110	3 450	± 10%	88,0	121,0
5120	120	3 770	± 10%	96,0	132,0
5127	127	4 000	± 10%	101,6	139,7
5220	220	15 400	± 10%	176,0	242,0
5230	230	16 100	± 10%	184,0	253,0
5240	240	16 800	± 10%	192,0	264,0

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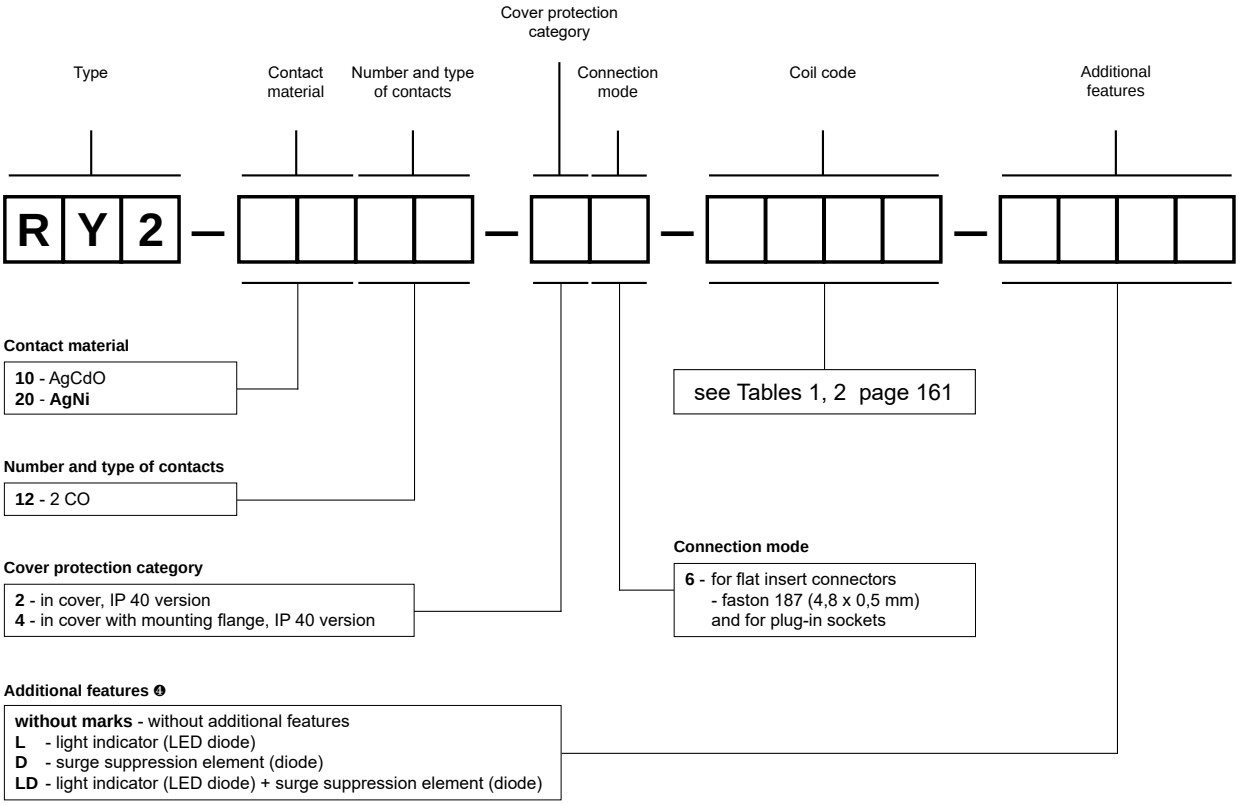
Ordering codes



❹ **D, LD** - only for DC coils

Note:
For relays with additional features **D** - surge suppression element (diode) (versions D and LD) - fixed supply polarity compulsory for the DC load of coils: +A1(7) / -A2(8). The polarity is indicated on the relay cover. For other versions of the relays with DC coils any polarity is possible.

Examples of ordering codes:

RY2-2012-26-1024	relay **RY2**, for plug-in sockets, two changeover contacts, contact material AgNi, coil voltage 24 V DC, in cover IP 40
RY2-2012-26-5230-L	relay **RY2**, for plug-in sockets, two changeover contacts, contact material AgNi, coil voltage 230 V AC 50/60 Hz, with light indicator (LED diode), in cover IP 40

GZY2G

Screw terminals
plug-in sockets
for RY2
- see page 405

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- Relays of general application
- For plug-in sockets: 35 mm rail mount acc. to PN-EN 60715; on panel mounting
- For PCB and for soldering connections
- AC and DC coils
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		2 CO
Contact material		**AgNi**, AgNi/Au flash gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 250 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au flash gold plating, 10 V $AgSnO_2$
Rated load	AC1	5 A / 250 V AC
	DC1	5 A / 24 V DC
Min. switching current		5 mA AgNi, 5 mA AgNi/Au flash gold plating, 10 mA $AgSnO_2$
Rated current		5 A
Max. breaking capacity	AC1	1 250 VA
Min. breaking capacity		0,3 W AgNi, 0,3 W AgNi/Au flash gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		36 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	6 ... 240 V
	DC	6 ... 110 V
Must release voltage		≥ 0,05 U_n
Operating range of supply voltage		see Tables 1, 2
Rated power consumption	AC	1,2 VA
	DC	0,9 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	250 V AC
Rated surge voltage	2 500 V 1,2 / 50 µs
Overvoltage category	II
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	2 000 V AC type of insulation: basic
• contact clearance	1 000 V AC type of clearance: micro-disconnection
• pole - pole	2 000 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 3 mm
• creepage	≥ 4 mm

General data

Operating / release time (typical values)		AC: 8 ms / 7 ms DC: 10 ms / 3 ms
Electrical life		
• resistive AC1		> 2×10^5 5 A, 250 V AC
• cosφ		see Fig. 2
Mechanical life (cycles)		> 10^7
Dimensions (L x W x H)		27,5 x 14 x 32,9 mm
Weight		22 g
Ambient temperature	• storage	-40...+70 °C
	• operating	-40...+55 °C
Cover protection category		IP 40 PN-EN 60529
Shock resistance		10 g
Vibration resistance		5 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays.
Note: relays with AgNi contacts can be used up to 5 A at resistive and inductive load.

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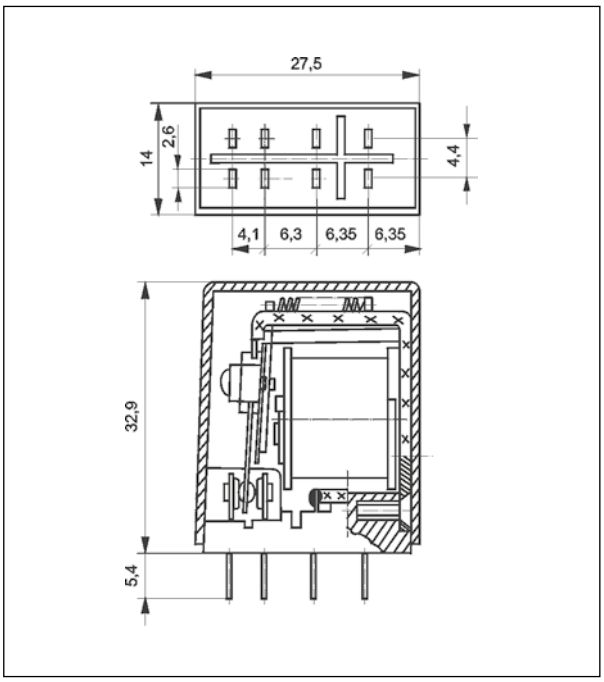
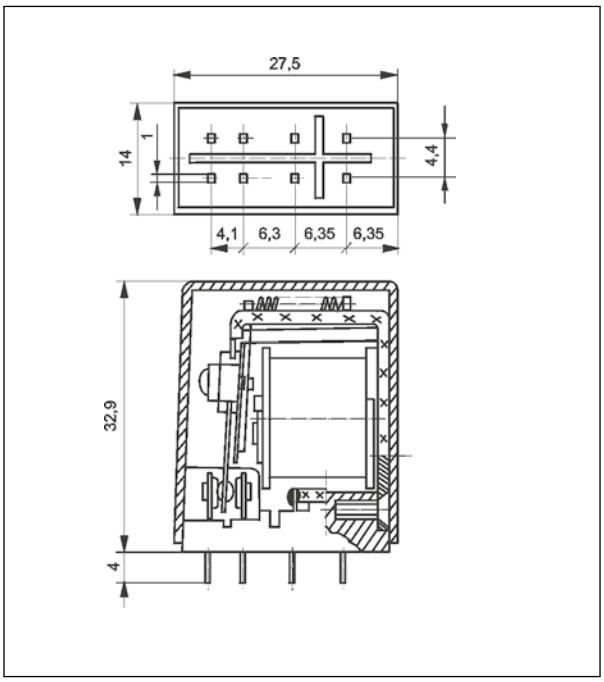
Dimensions - plug-in version



Dimensions - PCB version



Mounting

Relays **R2M** are designed for: • screw terminals plug-in sockets **GZ2** with clip **GZ2 1060** and spring clamp **GZ2 1111**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • plug-in sockets for PCB mounting **S2M** with clip **G4 1050** • solder terminals sockets **G2M** with clip **G4 1050** and spring clamp **G2M 1020** • direct PCB mounting.

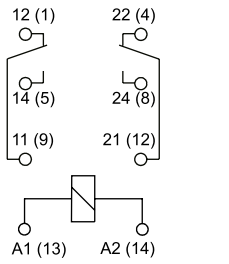
Contact material selection for different load types

- **AgNi** - for resistive or inductive loads,
- **AgNi/Au flash gold plating** - Au protects the contact surface during storage,
- **AgSnO$_2$** - for capacitive loads or incandescent lamp loads.

GZ2

Screw terminals
plug-in sockets
for R2M
- see page 405

Connection diagram (pin side view)

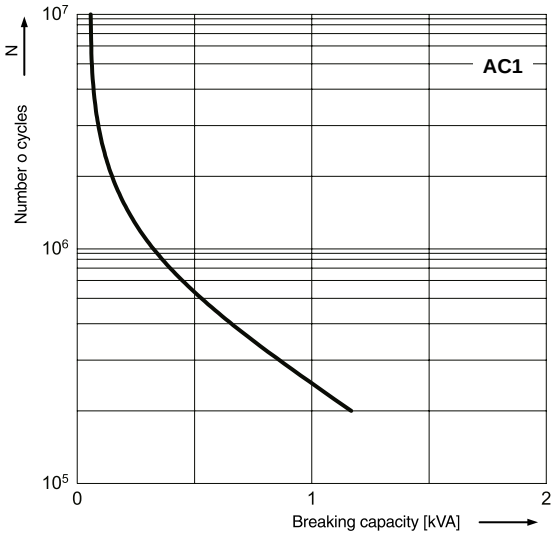


2 CO

Relay terminals for PCB 0,5 x 1 mm
Drilling hole: • for relays Ø 1,3 + 0,1 mm • for sockets Ø 1,5 + 0,1 mm

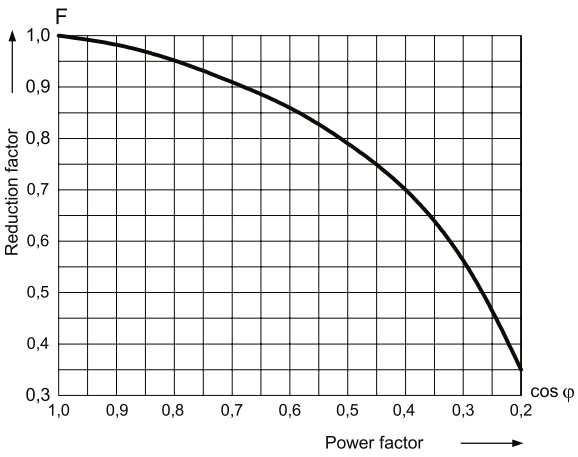
Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour

Fig. 1



Electrical life reduction factor at AC inductive load

Fig. 2

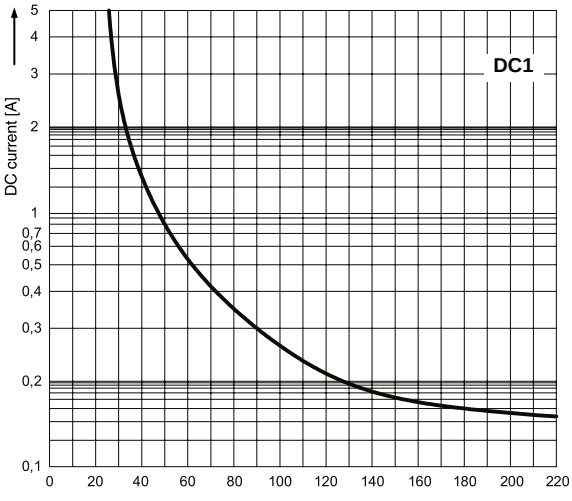


N - electrical life at AC1

$N_{cosj} = N \times F$

Max. DC resistive load breaking capacity

Fig. 3



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Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 55 °C)
1006	6	47	± 10%	4,8	6,6
1012	**12**	**188**	**± 10%**	**9,6**	**13,2**
1024	**24**	**750**	**± 10%**	**19,2**	**26,4**
1048	48	2 660	± 10%	38,4	52,8
1060	60	4 000	± 10%	48,0	66,0
1080	80	7 100	± 10%	64,0	88,0
1110	110	13 480	± 10%	88,0	121,0

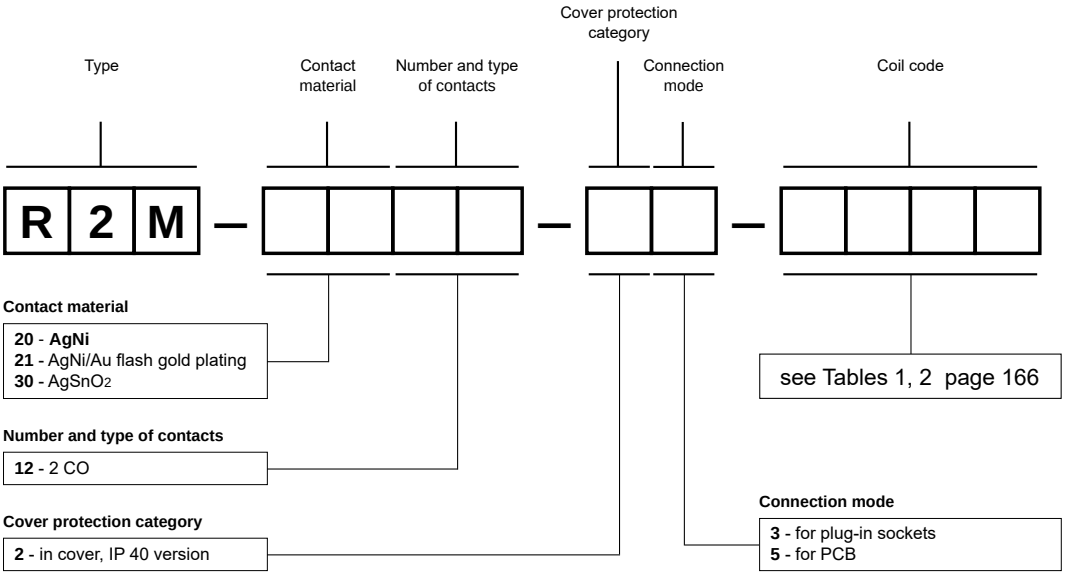
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
5006	6	16	± 10%	4,8	6,6
5012	12	68	± 10%	9,6	13,2
5024	**24**	**270**	**± 10%**	**19,2**	**26,4**
5050	50	1 150	± 10%	40,0	55,0
5100	100	5 590	± 10%	80,0	110,0
5110	110	5 670	± 10%	88,0	121,0
5115	115	5 990	± 10%	92,0	126,0
5120	120	6 390	± 10%	96,0	132,0
5220	220	21 470	± 10%	176,0	242,0
5230	**230**	**21 470**	**± 10%**	**184,0**	**253,0**
5240	240	25 390	± 10%	192,0	264,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Examples of ordering codes:

R2M-2012-23-5230 relay **R2M**, for plug-in sockets, two changeover contacts, contact material AgNi, coil voltage 230 V AC 50/60 Hz, in cover IP 40

R2M-2012-25-1024 relay **R2M**, for PCB, two changeover contacts, contact material AgNi, coil voltage 24 V DC, in cover IP 40


R15 - 2 CO


R15 - 3 CO

• Relays of general application • For plug-in sockets: 35 mm rail mount acc. to PN-EN 60715; on panel mounting; solder terminals • Contacts AgNi • Coils AC and DC • WT (mechanical indicator + lockable front test button) - standard features of relays in cover, for plug-in sockets. Relays may be provided with the test buttons (no latching) and plugs - page 421 • **Have obtained LR Type Approval Certificate (Lloyd's Register)** • Recognitions, certifications, directives: RoHS, AUCOTEAM GmbH Berlin - railroad standard,

Contact data

Number and type of contacts		2 CO, 3 CO
Contact material		**AgNi**, AgNi/Au flash gold plating, AgNi/Au hard gold plating
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		10 V AgNi, 10 V AgNi/Au flash gold plating 5 V AgNi/Au hard gold plating
Rated load (capacity)	AC1	10 A / 250 V AC 10 A / 277 V AC UL 508
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	370 W (single-phase motor; 0,5 HP / 240 V AC UL 508)
	DC1	10 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA
Max. inrush current		20 A
Rated current		10 A
Max. breaking capacity	AC1	2 500 VA
Min. breaking capacity		0,3 W AgNi, 0,3 W AgNi/Au flash gold plating 0,05 W AgNi/Au hard gold plating
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		12 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	6 ... 240 V
	DC	6 ... 220 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2
Rated power consumption	AC	2,8 VA 50 Hz 2,5 VA 60 Hz
	DC	1,5 W

Insulation according to PN-EN 60664-1

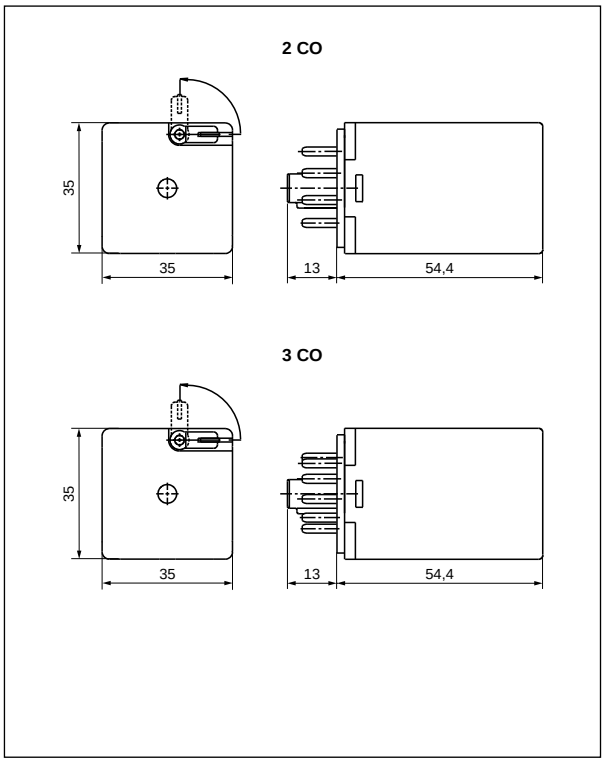
Insulation rated voltage		250 V AC
Rated surge voltage		2 500 V 1,2 / 50 µs
Overvoltage category		III
Insulation pollution degree		3
Dielectric strength		
• between coil and contacts		2 500 V AC type of insulation: basic
• contact clearance		1 500 V AC type of clearance: micro-disconnection
• pole - pole		2 000 V AC type of insulation: basic
Contact - coil distance	• clearance	≥ 3 mm
	• creepage	≥ 4,2 mm

General data

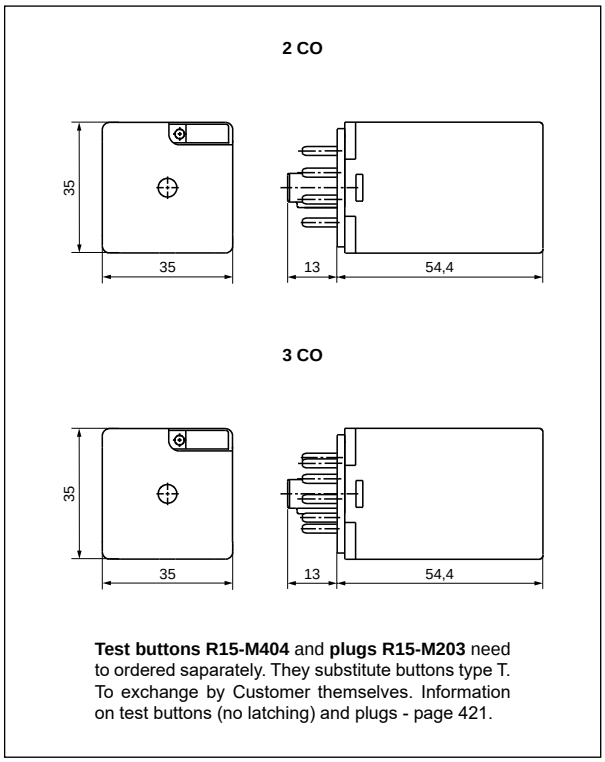
Operating / release time (typical values)		AC: 12 ms / 10 ms DC: 18 ms / 7 ms
Electrical life		
• resistive AC1		> 2 x 10^5 10 A, 250 V AC
• cosφ		see Fig. 2
Mechanical life (cycles)		> 2 x 10^7
Dimensions (L x W x H)		35 x 35 x 54,4 mm
Weight		83 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+55 °C DC: -40...+70 °C
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTI PN-EN 116000-3
Shock resistance		10 g
Vibration resistance		5 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays.

Dimensions - plug-in version (WT), with lockable front test button type T



Dimensions - plug-in version, with test button (no latching) or with plug (no manual operation)



Test buttons R15-M404 and **plugs R15-M203** need to ordered saparately. They substitute buttons type T. To exchange by Customer themselves. Information on test buttons (no latching) and plugs - page 421.

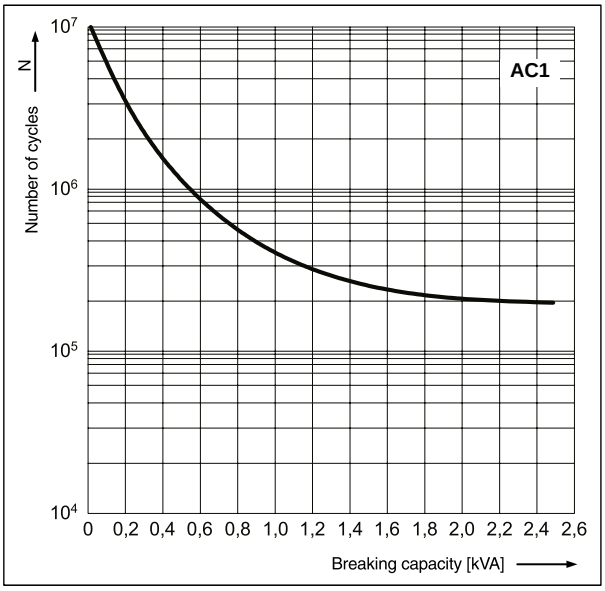
Mounting

Relays R15 - 2 CO, 3 CO are offered in versions: • for plug-in sockets. **With WT features as standard** (**W** - mechanical indicator + **T** - lockable front test button). In these relays is **possibility self-exchange of button type T for test button R15-M404** (no latching) **or on plug R15-M203** (no manual operation). The buttons **R15-M404** and the plugs **R15-M203 need to ordered saparately**.

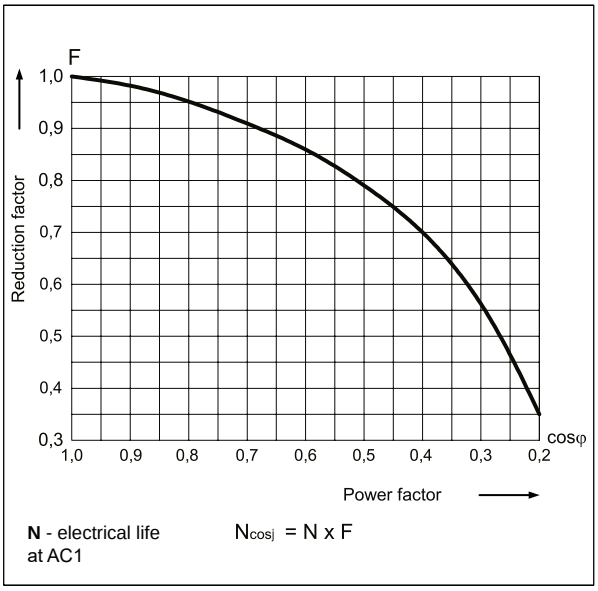
Relays **R15 - 2 CO** are designed for: • screw terminals plug-in sockets **PZ8** with clip **PZ11 0031**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • screw terminals plug-in sockets **GZU8** with clip **GZU 1052**, 35 mm rail mount acc. to PN-EN 60715 • screw terminals plug-in sockets **GZ8** with clip **GZ 1050**, on panel mounting with two M3 screws • screw terminals plug-in sockets **GZP8** with clip **GZP-0054**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • solder terminals sockets **GOP8** with clip **R159 1051** and spring clamp **R15 5922**.

Relays **R15 - 3 CO** are designed for: • screw terminals plug-in sockets **PS11** and **PZ11** with clip **PZ11 0031**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • screw terminals plug-in sockets **GZU11** with clip **GZU 1052**, 35 mm rail mount acc. to PN-EN 60715 • screw terminals plug-in sockets **GZ11** with clip **GZ 1050**, on panel mounting with two M3 screws • screw terminals plug-in sockets **GZP11** with clip **GZP-0054**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • solder terminals sockets **GOP11** with clip **R159 1051** and spring clamp **R15 5922**.

Electrical life at AC resistive load.
Switching frequency: 1 200 cycles/hour Fig. 1



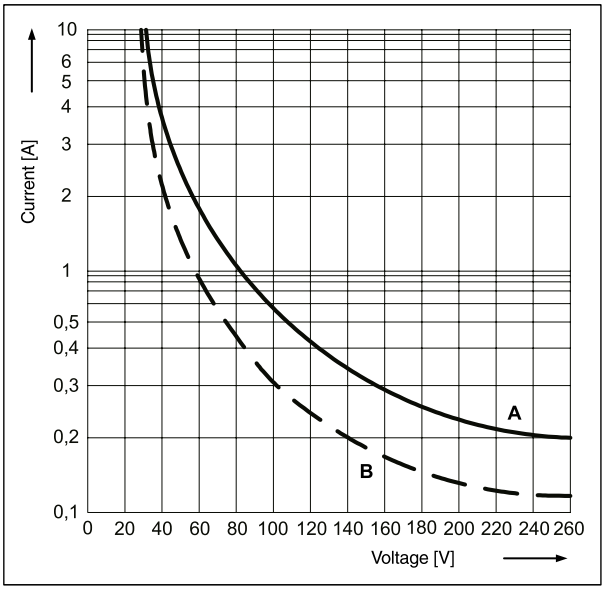
Electrical life reduction factor at AC inductive load Fig. 2



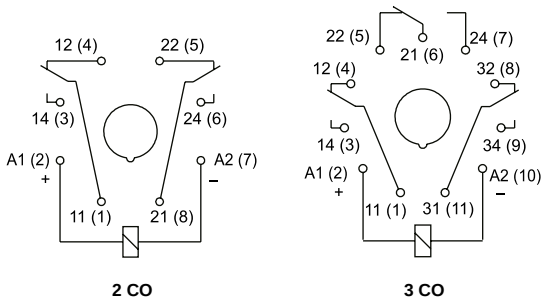
N - electrical life at AC1

$N_{cosj} = N \times F$

Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms Fig. 3



Connection diagrams (pin side view)



Note: the indicated polarity of the supply refers to the relays with extra equipment **D** - surge suppression element (diode) - for DC coils only.

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Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 70 °C)
1006	6	28	± 10%	4,8	6,6
1012	**12**	**110**	**± 10%**	**9,6**	**13,2**
1024	**24**	**430**	**± 10%**	**19,2**	**26,4**
1048	48	1 750	± 10%	38,4	52,8
1060	60	2 700	± 10%	48,0	66,0
1110	110	9 200	± 10%	88,0	121,0
1120	120	11 000	± 10%	96,0	132,0
1220	**220**	**37 000**	**± 10%**	**176,0**	**242,0**

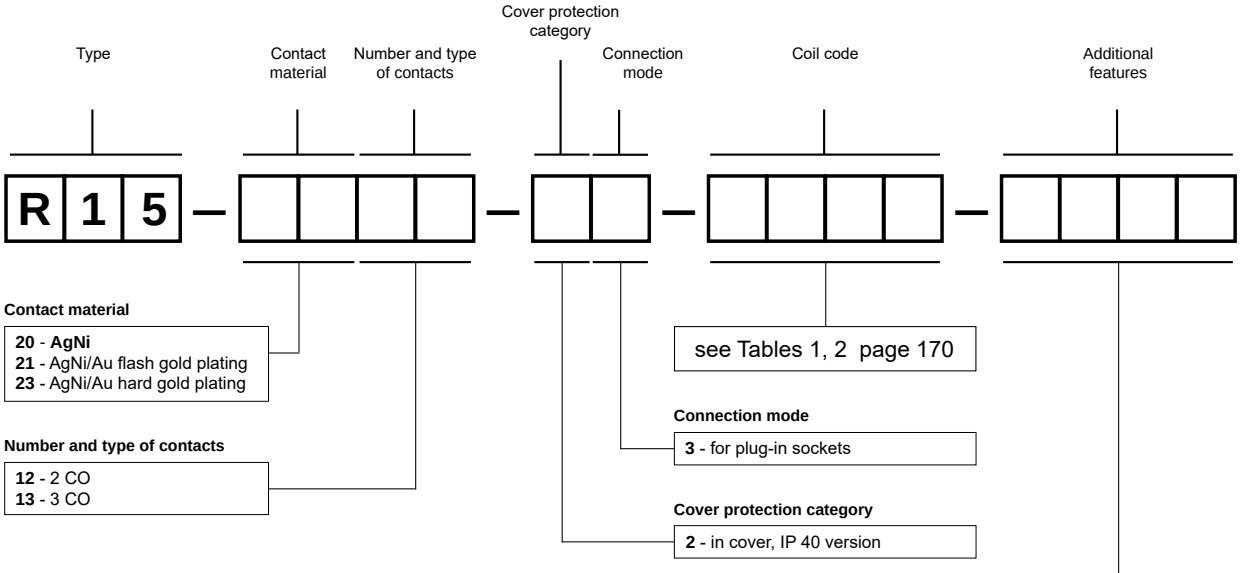
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
5006	6	4,3	± 15%	4,8	6,6
5012	12	18,5	± 15%	9,6	13,2
5024	**24**	**75**	**± 15%**	**19,2**	**26,4**
5048	48	305	± 15%	38,4	52,8
5060	60	475	± 15%	48,0	66,0
5115	115	1 840	± 15%	92,0	126,5
5120	120	1 910	± 15%	96,0	132,0
5220	220	6 980	± 15%	176,0	242,0
5230	**230**	**7 080**	**± 15%**	**184,0**	**253,0**
5240	240	7 760	± 15%	192,0	264,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Contact material

20 - **AgNi**
21 - AgNi/Au flash gold plating
23 - AgNi/Au hard gold plating

Number and type of contacts

12 - 2 CO
13 - 3 CO

see Tables 1, 2 page 170

Connection mode

3 - for plug-in sockets

Cover protection category

2 - in cover, IP 40 version

Additional features ❶

WT	- mechanical indicator + lockable front test button
WTL	- mechanical indicator + lockable front test button + light indicator (LED diode)
WTD	- mechanical indicator + lockable front test button + surge suppression element (diode)
WTLD	- mechanical indicator + lockable front test button + light indicator (LED diode) + surge suppression element (diode)
WTV	- mechanical indicator + lockable front test button + surge suppression element (varistor)
WTLV	- mechanical indicator + lockable front test button + light indicator (LED diode) + surge suppression element (varistor)

❶ **WT** - standard features of relays for plug-in sockets. **WTD, WTLD** - only for DC coils, **WTV, WTLV** - only for AC coils

Test buttons (no latching) and plugs need to ordered saparately. They substitute buttons type T. To exchange by Customer themselves. Information on test buttons (no latching) and plugs - page 421.

- Button R15-M404-A - orange colour (AC coils)
- Button R15-M404-D - green colour (DC coils)
- Plug R15-M203-A - orange colour (AC coils)
- Plug R15-M203-D - green colour (DC coils)

Note:

While the relay operates, the test button of the **T** type becomes heated. In order to push the test button manually, you should first turn the supply voltage off, and wait some time until the button becomes colder (or push the button immediately using a protective glove or an insulated tool). The button shall be pushed smoothly and quickly. The normally open contacts are closed with the button for the time during which the button is pushed. Releasing the button opens the normally open contacts. Normally open contacts may be closed with the blocking function of the button (it shall be turned by 90°). When the button is turned back, the normally open contacts are opened.

For relays with additional features **D** - surge suppression element (diode) (versions WTD and WTLD) - fixed supply polarity compulsory for the DC load of coils: +A1(2) / -A2(7) for R15 - 2 CO and +A1(2) / -A2(10) for R15 - 3 CO. The polarity is indicated on the relay cover. For other versions of the relays with DC coils any polarity is possible.

Examples of ordering codes:

R15-2012-23-1024-WT relay **R15**, for plug-in sockets, two changeover contacts, contact material AgNi, coil voltage 24 V DC, with mechanical indicator and lockable front test button, in cover IP 40

R15-2013-23-5230-WTL relay **R15**, for plug-in sockets, three changeover contacts, contact material AgNi, coil voltage 230 V AC 50/60 Hz, with mechanical indicator and lockable front test button and light indicator (LED diode), in cover IP 40

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- Relays of general application
- For plug-in sockets: 35 mm rail mount acc. to PN-EN 60715; on panel mounting; solder terminals
- Coils AC and DC
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		4 CO
Contact material		(**AgCdO**, AgCdO/Au flash gold plating, AgCdO/Au hard gold plating) ❶
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		10 V AgCdO, 10 V AgCdO/Au flash gold plating 5 V AgCdO/Au hard gold plating
Rated load (capacity)	AC1	10 A / 250 V AC 10 A / 277 V AC UL 508
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	370 W (single-phase motor; 0,5 HP / 240 V AC UL 508)
	DC1	10 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		10 mA AgCdO, 10 mA AgCdO/Au flash gold plating 5 mA AgCdO/Au hard gold plating
Max. inrush current		20 A
Rated current		10 A
Max. breaking capacity	AC1	2 500 VA
Min. breaking capacity		0,5 W AgCdO, 0,5 W AgCdO/Au flash gold plating 0,05 W AgCdO/Au hard gold plating
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		12 000 cycles/hour

Coil data

Rated voltage	50 Hz, 60 Hz AC	6 ... 240 V
	DC	6 ... 220 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2, 3
Rated power consumption	AC	2,8 VA 50 Hz 2,5 VA 60 Hz
	DC	1,5 W

Insulation according to PN-EN 60664-1

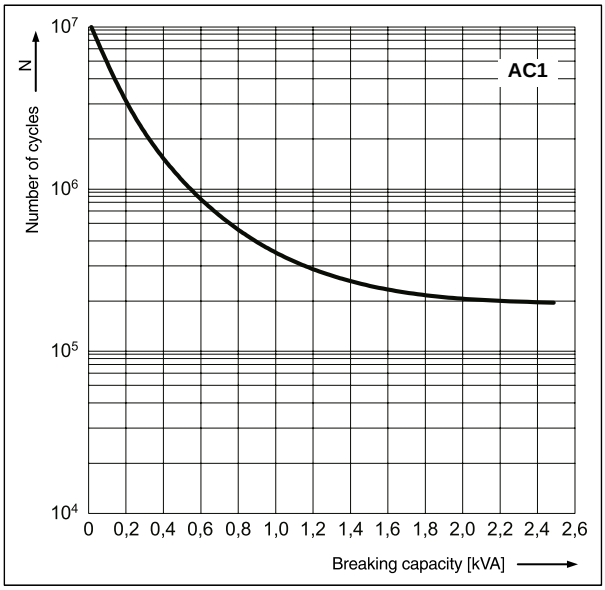
Insulation rated voltage		250 V AC
Rated surge voltage		2 500 V 1,2 / 50 µs
Overvoltage category		III
Insulation pollution degree		3
Dielectric strength	• between coil and contacts	2 500 V AC type of insulation: basic
	• contact clearance	1 500 V AC type of clearance: micro-disconnection
	• pole - pole	2 000 V AC type of insulation: basic
Contact - coil distance	• clearance	≥ 3 mm
	• creepage	≥ 3,2 mm

General data

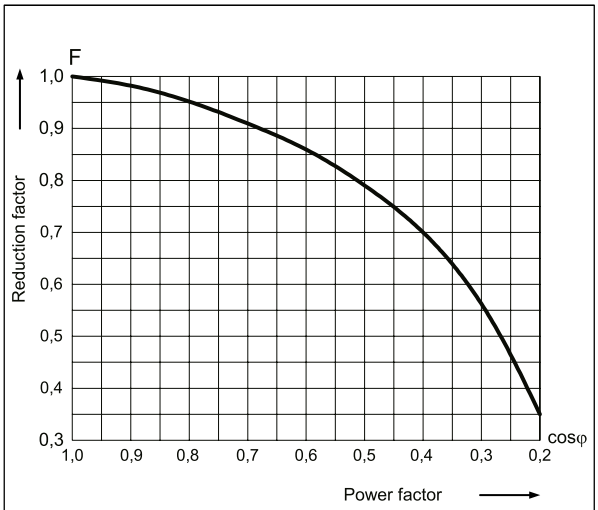
Operating / release time (typical values)		AC: 12 ms / 10 ms DC: 18 ms / 7 ms
Electrical life	• resistive AC1	> 2 x 10^5 10 A, 250 V AC
	• cosφ	see Fig. 2
Mechanical life (cycles)		> 2 x 10^7
Dimensions (L x W x H) / Weight		35 x 42,5 x 54,5 mm / 95 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+55 °C DC: -40...+70 °C
Cover protection category		IP 40 PN-EN 60529
Environmental protection		RTI PN-EN 116000-3
Shock resistance		10 g
Vibration resistance		5 g 10...150 Hz
Solder bath temperature		max. 270 °C
Soldering time		max. 5 s

The data in bold type relate to the standard versions of the relays. ❶ AgCdO contact material in electrical contacts is only for use in electrical and electronic equipment (EEE) in compliance with directive RoHS2 2011/65/EU in restricted categories of EEE covered by this directive. Relpol S.A. is not responsible for usage relays with AgCdO contact material in categories of EEE where it is prohibited by the directive RoHS2 2011/65/EU.

Electrical life at AC resistive load.
Switching frequency: 1 200 cycles/hour Fig. 1



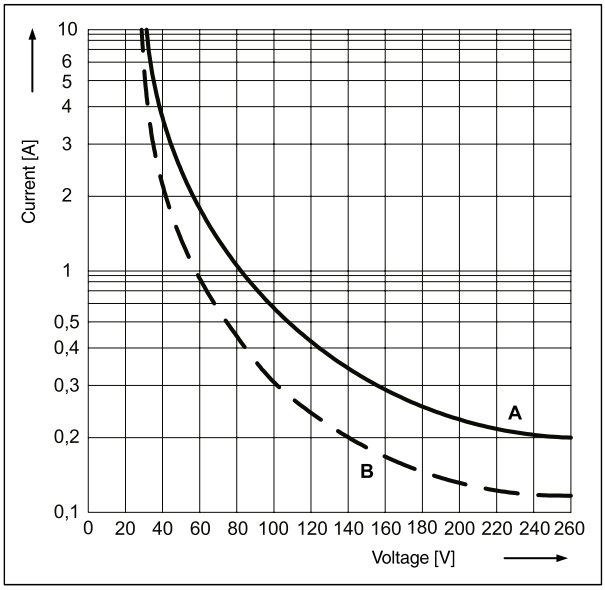
Electrical life reduction factor at AC inductive load Fig. 2



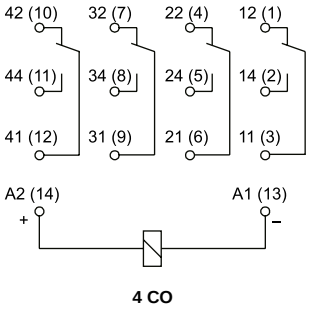
N - electrical life at AC1

$N_{cos\varphi} = N \times F$

Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms Fig. 3



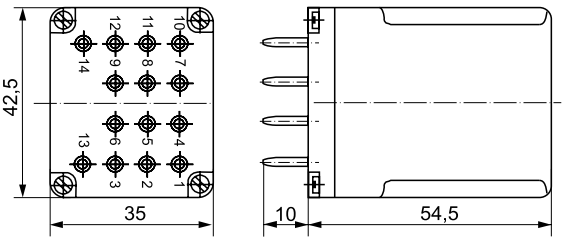
Connection diagram (pin side view)



4 CO

Note: the indicated polarity of the supply refers to the relays with extra equipment **D** - surge suppression element (diode) - for DC coils only.

Dimensions



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Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 70 °C)
1006	6	28	± 10%	4,8	6,6
1012	**12**	**110**	**± 10%**	**9,6**	**13,2**
1024	**24**	**430**	**± 10%**	**19,2**	**26,4**
1048	48	1 750	± 10%	38,4	52,8
1060	60	2 700	± 10%	48,0	66,0
1110	110	9 200	± 10%	88,0	121,0
1120	120	11 000	± 10%	96,0	132,0
1220	**220**	**37 000**	**± 10%**	**176,0**	**242,0**

The data in bold type relate to the standard versions of the relays.

Coil data - AC 50 Hz voltage version, basic Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
3006	6	4,8	± 15%	4,8	6,6
3012	12	20	± 15%	9,6	13,2
3024	24	72	± 15%	19,2	26,4
3048	48	360	± 15%	38,4	52,8
3060	60	520	± 15%	48,0	66,0
3115	115	2 100	± 15%	92,0	126,5
3120	120	2 300	± 15%	96,0	132,0
3220	220	7 000	± 15%	176,0	242,0
3230	230	7 900	± 15%	184,0	253,0
3240	240	8 300	± 15%	192,0	264,0

Coil data - AC 60 Hz voltage version, special Table 3

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
6006	6	4,8	± 15%	4,8	6,6
6012	12	17	± 15%	9,6	13,2
6024	24	65	± 15%	19,2	26,4
6048	48	310	± 15%	38,4	52,8
6060	60	490	± 15%	48,0	66,0
6110	110	1 760	± 15%	88,0	121,0
6120	120	2 000	± 15%	96,0	132,0
6220	220	6 900	± 15%	176,0	242,0
6230	230	7 000	± 15%	184,0	253,0
6240	240	7 100	± 15%	192,0	264,0

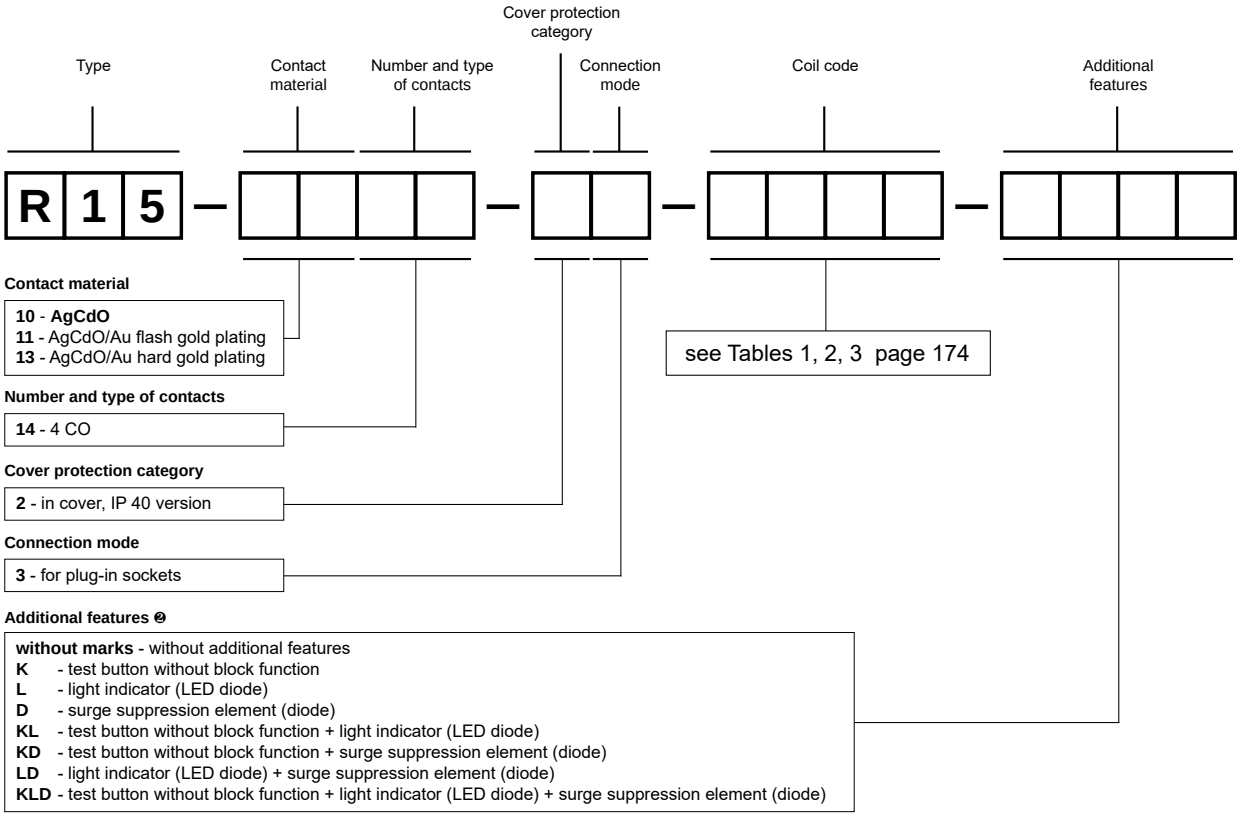
Mounting

Relays **R15 4 - CO** are designed for: • screw terminals plug-in sockets **GZ14U** with clip **GZ14 0737**, 35 mm rail mount acc. to PN-EN 60715 • screw terminals plug-in sockets **GZ14** with clip **GZ14 0737**, on panel mounting with two M3 screws • screw terminals plug-in sockets **GZ14Z** with clip **GZ14 0737**, on panel mounting with two M3 screws • solder terminals sockets **GOP14** with clip **R15 0736** and spring clamp **R15 5922**.

GZ14Z

Screw terminals
plug-in sockets
for R15 - 4 CO
to be mounted behind the assembly panel
- see page 409

Ordering codes



❷ **D, KD, LD, KLD** - only for DC coils

Note:
For relays with additional features **D** - surge suppression element (diode) (versions D, KD, LD, KLD) - fixed supply polarity compulsory for the DC load of coils: -A1(13) / +A2(14). The polarity is indicated on the relay cover. For other versions of the relays with DC coils any polarity is possible.

Examples of ordering codes:

R15-1014-23-1024-KD relay **R15**, for plug-in sockets, four changeover contacts, contact material AgCdO, coil voltage 24 V DC, with test button without block function and surge suppression element (diode), in cover IP 40

R15-1114-23-3230-KL relay **R15**, for plug-in sockets, four changeover contacts, contact material AgCdO/Au flash gold plating, coil voltage 230 V AC 50 Hz, with test button without block function and light indicator (LED diode), in cover IP 40

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with adaptor (V) with adaptor (H)

- Power relays of general application • AC and DC coils • Mounting: in sockets; 35 mm rail mount acc. to PN-EN 60715; on panel; PCB
- Versions: faston 187 (4,8 x 0,5 mm); faston 250 (6,3 x 0,8 mm)
- Contact gap: 3 mm (option - only in versions with normally open contacts) • Additional features: K - test button; L - light indicator (LED)
- Applications: control of electromagnets; systems of heating, cooling, ventillation, air conditioning; control with single-phase and three-phase motors; catering industry machines and equipment; automation systems; photoelectric systems; etc.
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		2 CO, 3 CO, 2 NO, 3 NO 2 NO, 3 NO with contact gap ≥ 3 mm	
Contact material		**AgCdO ❶**, AgNi	
Rated / max. switching voltage	AC	400 V / 440 V	230 V / 250 V ❷
Min. switching voltage		10 V AgCdO, 5 V AgNi	
Rated load	AC1 DC1	16 A / 250 V AC or 10 A / 400 V AC 16 A / 24 V DC (see Fig. 3)	16 A / 250 V AC ❷
Min. switching current		10 mA AgCdO, 5 mA AgNi	
Max. inrush current		40 A	
Rated current		16 A	
Max. breaking capacity	AC1	4 000 VA	
Min. breaking capacity		1 W AgCdO, 0,3 W AgNi	
Contact resistance		≤ 100 mΩ	
Max. operating frequency • at rated load • no load	 AC1	 1 200 cycles/hour 12 000 cycles/hour	

Coil data

Rated voltage	AC DC	6 ... 240 V 50/60 Hz 6 ... 220 V	400 V 50 Hz ❷
Must release voltage		AC: ≥ 0,15 U_n	DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2, 3, 4	
Rated power consumption	AC DC	2,8 VA 50 Hz 1,5 W	2,5 VA 60 Hz 1,7 W with contact gap ≥ 3 mm

Insulation according to PN-EN 60664-1

Insulation rated voltage	400 V AC	
Rated surge voltage	4 000 V 1,2 / 50 µs	
Overvoltage category	III	
Insulation pollution degree	2	
Dielectric strength		
• between coil and contacts	2 500 V AC	type of insulation: basic
• contact clearance	1 500 V AC	type of clearance: micro-disconnection
	2 500 V AC	type of clearance: full-disconnection, with contact gap ≥ 3 mm
• pole - pole	2 500 V AC	type of insulation: basic
Contact - coil distance		
• clearance	≥ 5 mm 2 CO, 2 NO	≥ 4 mm 3 CO, 3 NO
• creepage	≥ 8 mm 2 CO, 2 NO	≥ 5 mm 3 CO, 3 NO

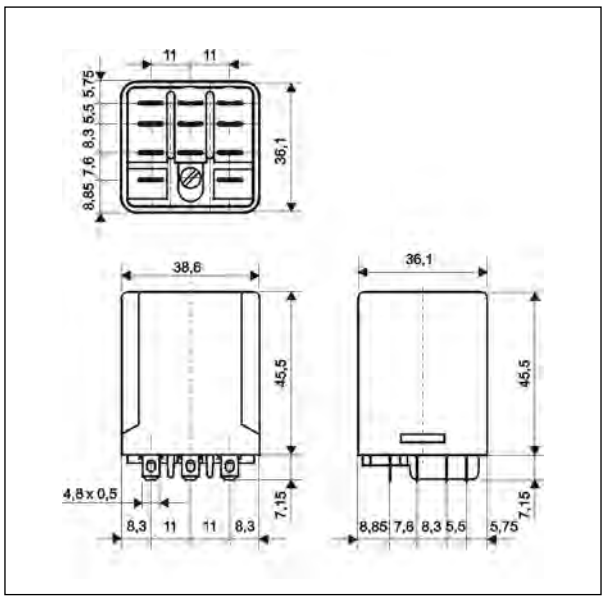
The data in bold type relate to the standard versions of the relays. ❶ AgCdO contact material in electrical contacts is only for use in electrical and electronic equipment (EEE) in compliance with directive RoHS2 2011/65/EU in restricted categories of EEE covered by this directive. Relpol S.A. is not responsible for usage relays with AgCdO contact material in categories of EEE where it is prohibited by the directive RoHS2 2011/65/EU. ❷ For RUC faston 4,8 x 0,5 with GUC11 or GUC11S socket, max. switching voltages and coil voltages of relays are limited to 250 V AC / DC.

General data

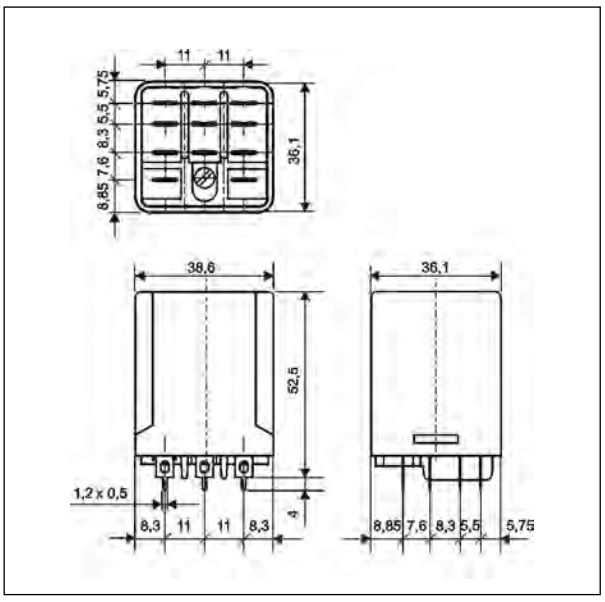
Operating / release time (typical values)	20 ms / 15 ms
Electrical life	
• resistive AC1	> 10^5 16 A, 250 V AC > 10^5 10 A, 400 V AC
• cosφ	see Fig. 2
Mechanical life (cycles)	> 10^7
Motor load according to UL 508	0,33 HP 2 CO, 3 CO / 120 V AC, single-phase motor 0,5 HP 2 CO, 3 CO / 240 V AC, single-phase motor 0,5 HP 3 CO / 240 V AC, three-phase motor
Dimensions (L x W x H)	RUC faston 4,8 x 0,5 ❸ RUC faston 6,3 x 0,8 ❹
Weight	80 g ❺ 85 g ❻
Ambient temperature	
• storage	-40...+85 °C
• operating	AC: -40...+55 °C 3 CO, 3 NO / 16 A AC: -40...+70 °C 2 CO, 2 NO / 16 A DC: -40...+55 °C 3 CO, 3 NO / 16 A DC: -40...+70 °C 3 CO, 3 NO / 10 A; 2 CO, 2 NO / 16 A
Cover protection category	IP 00 PN-EN 60529
Shock resistance	10 g
Vibration resistance	5 g 10...150 Hz
Solder bath temperature	max. 270 °C
Soldering time	max. 5 s

❸ For plug-in sockets version: 36,1 x 38,6 x 45,5 mm. For version: with (V) adaptor: 58,75 x 38,6 x 45,9 mm; with (H) adaptor: 46,8 x 38,6 x 62,45 mm. For version with mounting flange: 66,3 x 38,6 x 36,1 mm. For PCB version: 36,1 x 38,6 x 52,5 mm. ❹ For version: with (V) adaptor: 62,4 x 38,6 x 45,9 mm; with (H) adaptor: 46,8 x 38,6 x 66,1 mm. For version with mounting flange: 66,3 x 38,6 x 36,1 mm. ❺ Weight of plug-in sockets version and PCB version (RUC faston 4,8 x 0,5). ❻ Weight of version with (V) or (H) adaptor, and version with mounting flange.

Dimensions - RUC faston 4,8 x 0,5
- plug-in version (standard)



Dimensions - RUC faston 4,8 x 0,5
- PCB version



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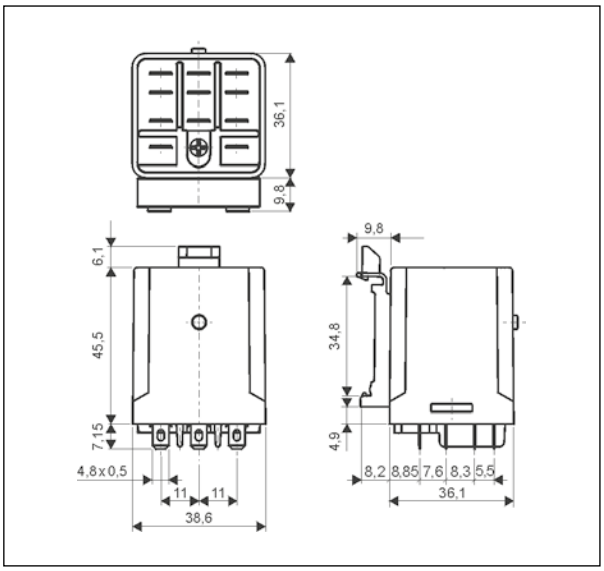
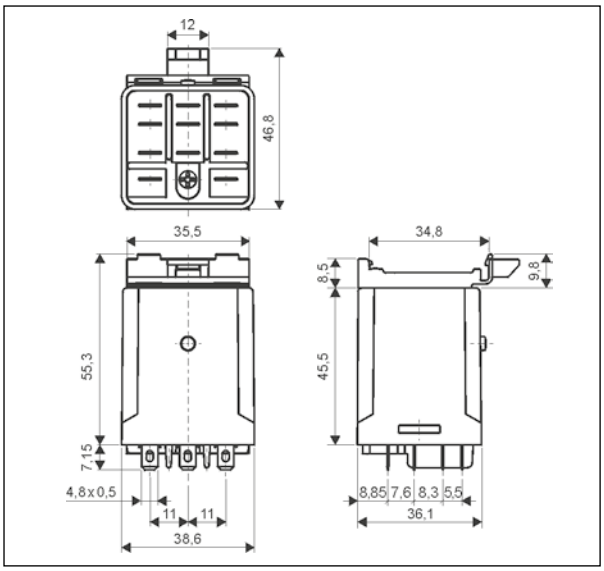
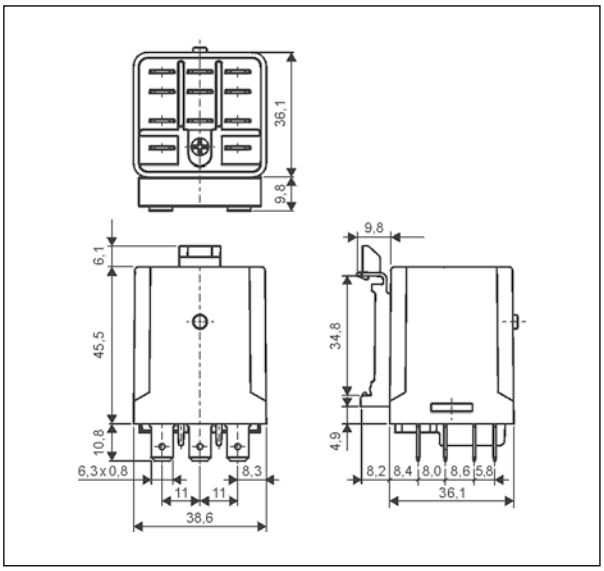
Dimensions - RUC faston 4,8 x 0,5
- version with vertical adaptor (V)



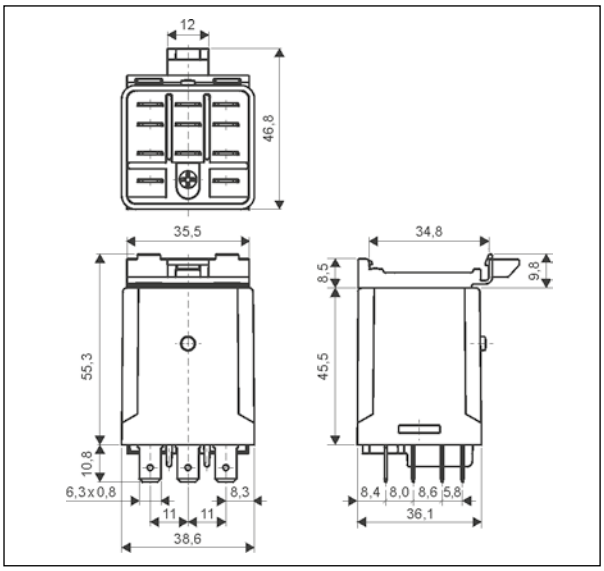
Dimensions - RUC faston 4,8 x 0,5
- version with horizontal adaptor (H)



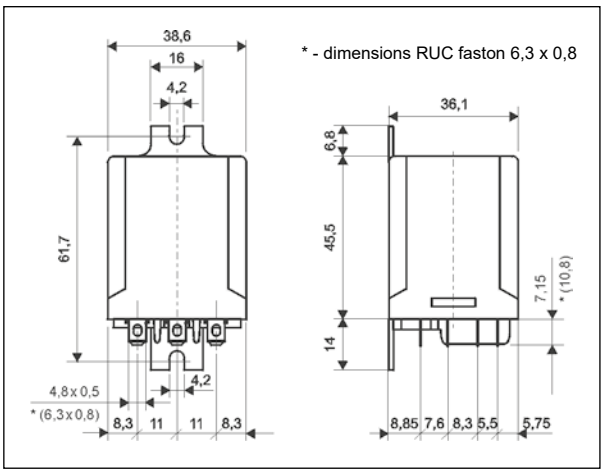
Dimensions - RUC faston 6,3 x 0,8
- version with vertical adaptor (V)



Dimensions - RUC faston 6,3 x 0,8
- version with horizontal adaptor (H)



Dimensions - RUC faston 4,8 x 0,5 (faston 6,3 x 0,8)
- version with mounting flange in the wall of the cover

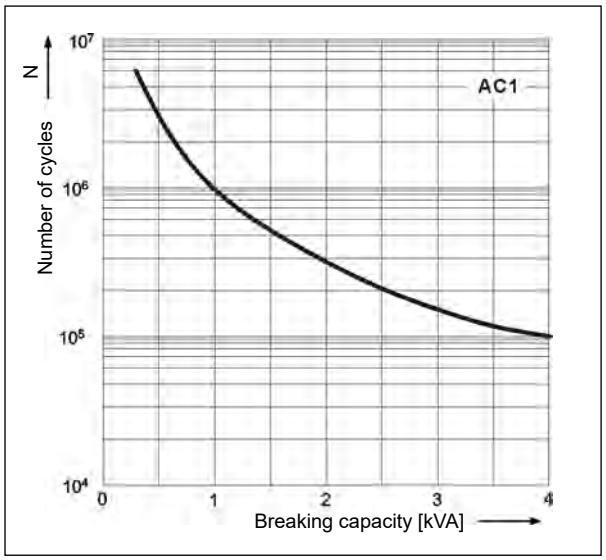


GUC11S

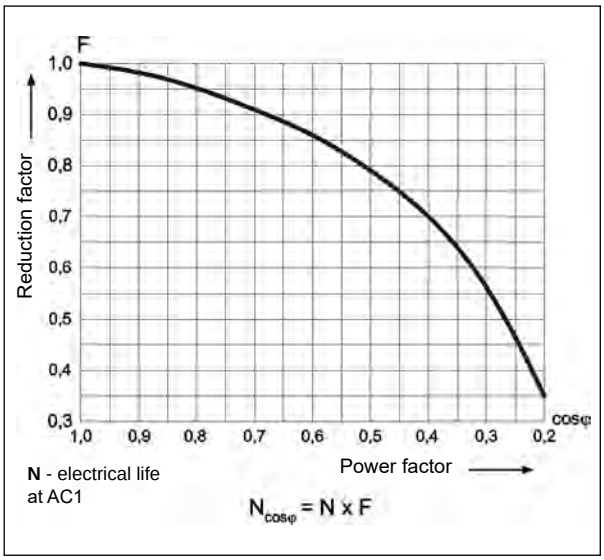
Screw terminals
plug-in sockets for
RUC faston 4,8x0,5,
RUC-M
- see page 410

NEW

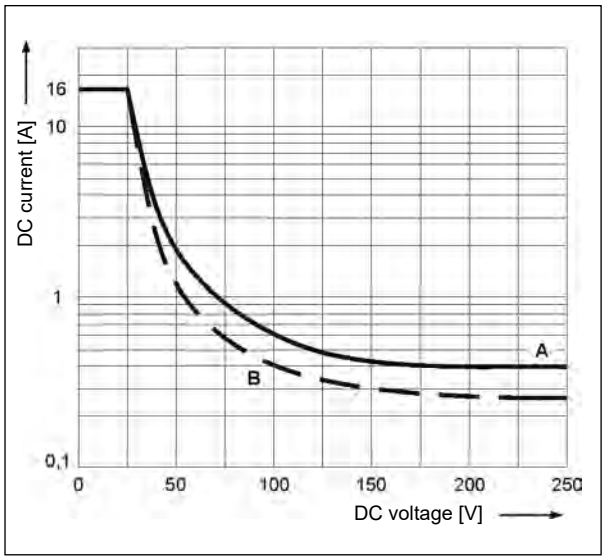
Electrical life at AC resistive load.
Switching frequency: 1 200 cycles/hour Fig. 1



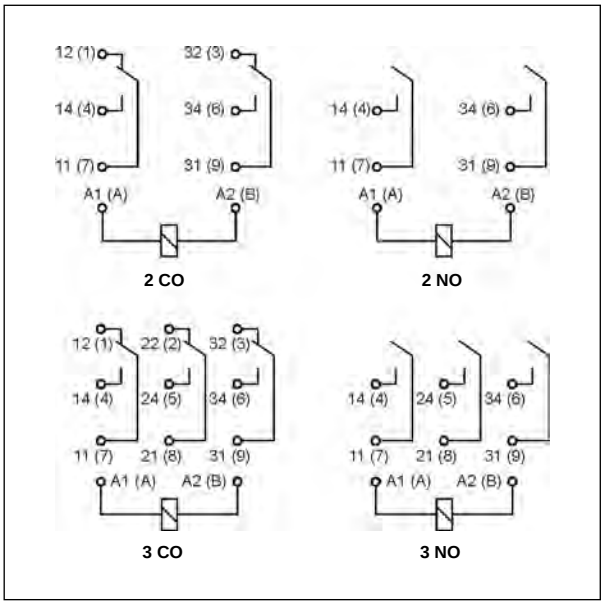
Electrical life reduction factor at AC inductive load Fig. 2



Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms Fig. 3



Connection diagrams (pin side view)



Mounting

Relays RUC are offered in versions: • standard for: screw terminals plug-in sockets **GUC11** ❷ with clip **MBA**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws; screw terminals plug-in sockets **GUC11S** ❷ with clip **MBA**, 35 mm rail mount acc. to PN-EN 60715 • with mounting flange in the wall of the cover, on panel mounting with two M4 screws, flat insert connectors - faston 187 (4,8 x 0,5 mm) or faston 250 (6,3 x 0,8 mm) • with vertical (V) or horizontal (H) adaptors for direct mounting on 35 mm rail mount acc. to PN-EN 60715, flat insert connectors - faston 187 (4,8 x 0,5 mm) or faston 250 (6,3 x 0,8 mm) • for direct PCB mounting ❼.

❼ Relays unavailable with (V) or (H) adaptor, and cover with mounting flange. ❷ For RUC faston 4,8 x 0,5 with GUC11 or GUC11S socket, max. switching voltages and coil voltages of relays are limited to 250 V AC / DC.

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Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 55 °C) ❽
1006	6	28	± 10%	4,8	6,6
1012	**12**	**110**	**± 10%**	**9,6**	**13,2**
1024	24	430	± 10%	19,2	26,4
1042	42	1 340	± 10%	33,6	46,2
1048	48	1 750	± 10%	38,4	52,8
1060	60	2 700	± 10%	48,0	66,0
1110	110	9 200	± 10%	88,0	121,0
1120	120	11 000	± 10%	96,0	132,0
1220	220	37 000	± 10%	176,0	242,0

The data in bold type relate to the standard versions of the relays.

Coil data - DC voltage version, reinforced — Table 2

Coil code ❾	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 55 °C) ❽
W012	12	85	± 10%	9,6	13,2
W024	24	345	± 10%	19,2	26,4
W048	48	1 370	± 10%	38,4	52,8
W110	110	7 300	± 10%	88,0	121,0
W220	220	30 000	± 10%	176,0	242,0

❽ Max. (at 70 °C) for versions: 3 CO, 3 NO / 10 A; 2 CO, 2 NO / 16 A
❾ For version with contact gap ≥ 3 mm.

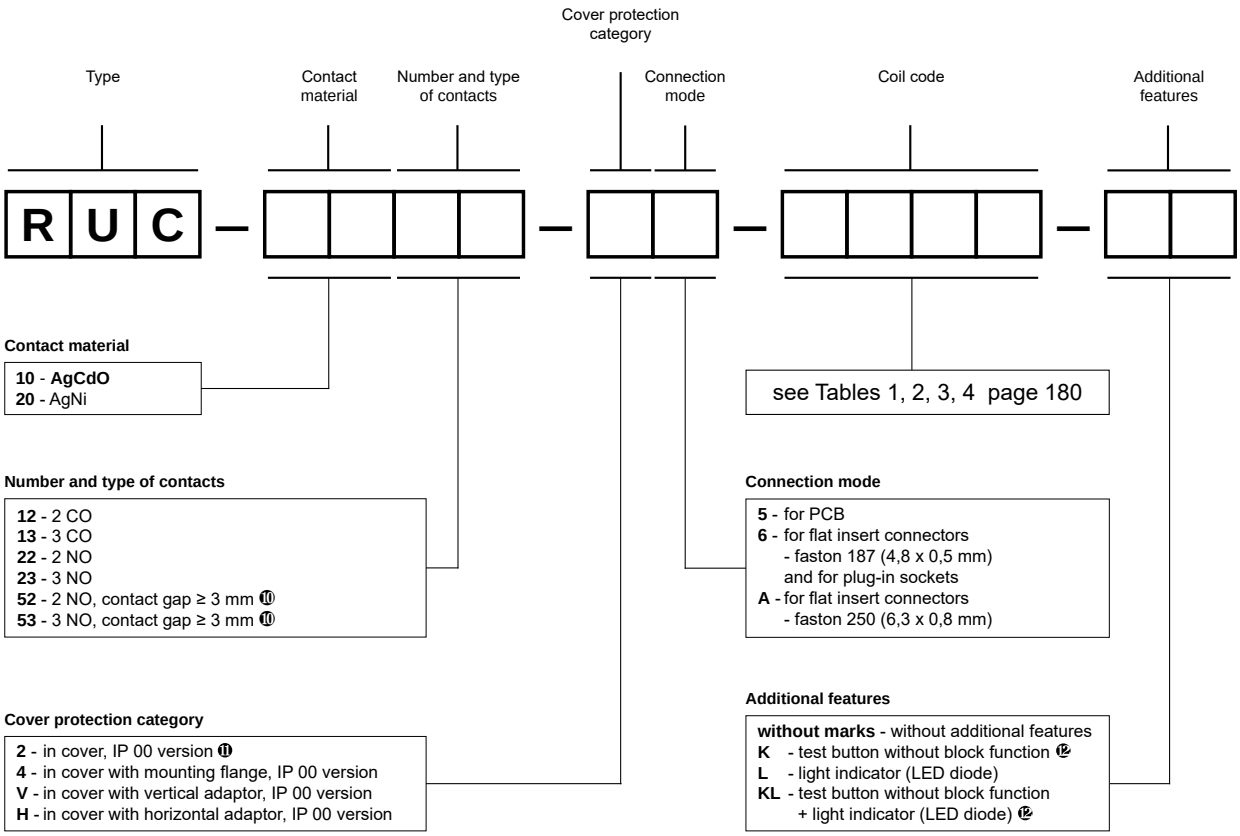
Coil data - AC 50/60 Hz voltage version — Table 3

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
5006	6	4,3	± 10%	4,8	6,6
5012	12	18,5	± 10%	9,6	13,2
5024	24	75	± 10%	19,2	26,4
5115	115	1 840	± 10%	92,0	126,5
5120	120	1 910	± 10%	96,0	132,0
5220	220	6 980	± 10%	176,0	242,0
5230	230	7 080	± 10%	184,0	253,0
5240	240	7 760	± 10%	192,0	264,0

Coil data - AC 50 Hz voltage version — Table 4

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
3400	400	21 500	± 10%	320,0	440,0

Ordering codes



⑩ For versions with reinforced DC coils: W012, W024, W048, W110, W220 and with AC coils.
⑪ For relays RUC: for plug-in sockets; for PCB.
⑫ Additional features is not available in versions of relays with contact gap ≥ 3 mm.

Examples of ordering codes:

RUC-2053-26-W024 relay **RUC**, faston 187 (4,8 x 0,5 mm), with contact gap ≥ 3 mm, for plug-in sockets, three normally open contacts, contact material AgNi, reinforced coil voltage 24 V DC, in cover IP 00

RUC-2013-V6-3400-KL relay **RUC**, faston 187 (4,8 x 0,5 mm), for flat insert connectors, with vertical adaptor (V), three changeover contacts, contact material AgNi, coil voltage 400 V AC 50 Hz, with test button without block function and light indicator (LED diode), in cover IP 00

RUC-2052-HA-W220-L relay **RUC**, faston 250 (6,3 x 0,8 mm), for flat insert connectors, with contact gap ≥ 3 mm, with horizontal adaptor (H), two normally open contacts, contact material AgNi, reinforced coil voltage 220 V DC, with light indicator (LED diode), in cover IP 00

RUC-1022-25-5024 relay **RUC**, for PCB, two normally open contacts, contact material AgCdO, coil voltage 24 V AC 50/60 Hz, in cover IP 00

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with adaptor (V) with adaptor (H)

• **Relays with permanent magnet whose magnetic field blows the electric arc between the contacts; for high DC loads** • AC and DC coils • Mounting: in sockets; 35 mm rail mount acc. to PN-EN 60715; on panel; PCB • Version: faston 187 (4,8 x 0,5 mm) • Contact gap: 3 mm (version 2 NO); 6 mm (version 1 NO) • Additional features: L - light indicator (LED) • Applications: control of electromagnets; systems of heating, cooling, ventillation, air conditioning; control with single-phase motors; catering industry machines and equipment; automation systems; photoelectric systems; etc.
• Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 NO (double-break)	2 NO
Contact material		**AgCdO ❶**, AgNi	
Rated / max. switching voltage		250 V DC; 250 V AC / 350 V DC; 440 V AC ❷	
Min. switching voltage		10 V AgCdO, 5 V AgNi	
Rated load	DC1	16 A / 24 V DC; 14 A / 110 V DC 12 A / 220 V DC	16 A / 24 V DC; 10,5 A / 110 V DC 4,5 A / 220 V DC
	DC L/R=40 ms	16 A / 24 V DC; 5,4 A / 110 V DC 3 A / 220 V DC	16 A / 24 V DC; 1,35 A / 110 V DC 0,45 A / 220 V DC
	AC1	16 A / 250 V AC	16 A / 250 V AC
Min. switching current		10 mA AgCdO, 5 mA AgNi	
Max. inrush current		40 A 20 ms	
Rated current		16 A	
Min. breaking capacity		1 W AgCdO, 0,3 W AgNi	
Contact resistance		≤ 100 mΩ	
Max. operating frequency			
• at rated load	AC1	1 200 cycles/hour	
• no load		12 000 cycles/hour	

Coil data

Rated voltage	50/60 Hz AC	12 ... 240 V	
	DC	12 ... 220 V	
Must release voltage		AC: ≥ 0,15 U_n	DC: ≥ 0,1 U_n
Operating range of supply voltage		AC: 0,85...1,1 U_n	DC: 0,8...1,1 U_n see Tables 1, 2
Rated power consumption	AC	2,8 VA	
	DC	1,7 W	

Insulation according to PN-EN 60664-1

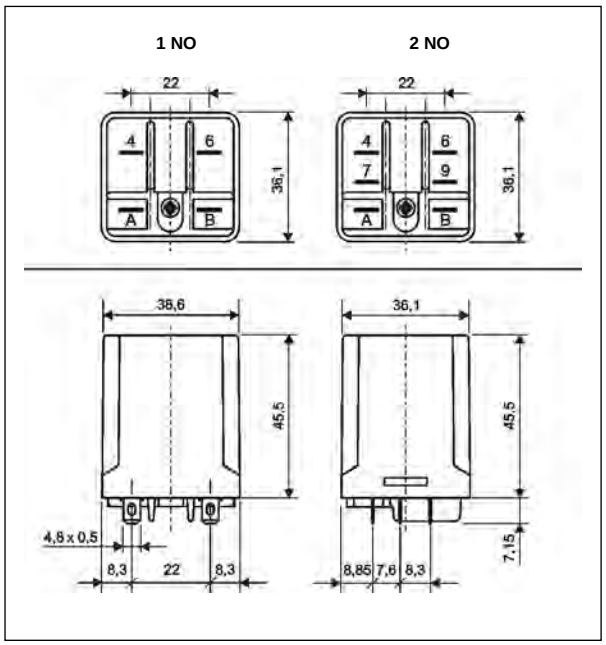
Insulation rated voltage		400 V AC	
Rated surge voltage		4 000 V 1,2 / 50 µs	
Overvoltage category		III	
Insulation pollution degree		3	
Dielectric strength	• between coil and contacts	2 500 V AC	type of insulation: basic
	• contact clearance	4 000 V AC	type of clearance: full-disconnection
	• pole - pole	2 500 V AC	contacts 2 NO, type of insulation: basic
Contact - coil distance	• clearance	≥ 6,3 mm	
	• creepage	≥ 8 mm	

General data

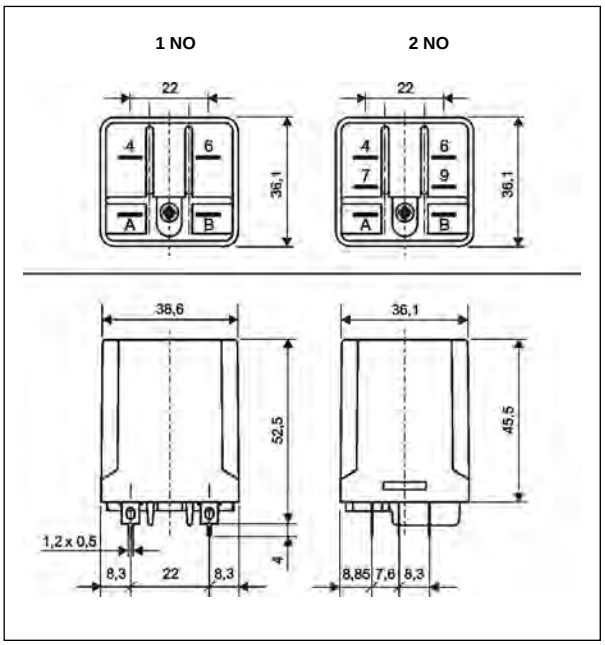
Operating / release time (typical values)		20 ms / 15 ms	
Electrical life			
• resistive DC1		> 2 x 10^5 12 A, 220 V DC	> 2 x 10^5 4,5 A, 220 V DC
• DC L/R=40 ms		> 2 x 10^5 3 A, 220 V DC	> 2 x 10^5 0,45 A, 220 V DC
Mechanical life (cycles)		> 2 x 10^7	
Dimensions (L x W x H)		36,1 x 38,6 x 45,5 mm ❸	
Weight		80 g ❹	85 g ❺
Ambient temperature	• storage	-40...+85 °C	
	• operating	-40...+70 °C	
Cover protection category		IP 00	PN-EN 60529
Shock resistance / Vibration resistance		10 g / 5 g 10...150 Hz	
Solder bath temperature		max. 270 °C	
Soldering time		max. 5 s	

The data in bold type relate to the standard versions of the relays. ❶ AgCdO contact material in electrical contacts is only for use in electrical and electronic equipment (EEE) in compliance with directive RoHS2 2011/65/EU in restricted categories of EEE covered by this directive. Relpol S.A. is not responsible for usage relays with AgCdO contact material in categories of EEE where it is prohibited by the directive RoHS2 2011/65/EU. ❷ For RUC-M with GUC11 or GUC11S socket, max. switching voltages and coil voltages of relays are limited to 250 V AC / DC. ❸ For plug-in sockets version. For version: with (V) adaptor: 58,75 x 38,6 x 45,9 mm; with (H) adaptor: 46,8 x 38,6 x 62,45 mm. For version with mounting flaange: 66,3 x 38,6 x 36,1 mm. For PCB version: 36,1 x 38,6 x 52,5 mm. ❹ Weight of plug-in sockets version and PCB version. ❺ Weight of version with (V) or (H) adaptor, and version with mounting flange.

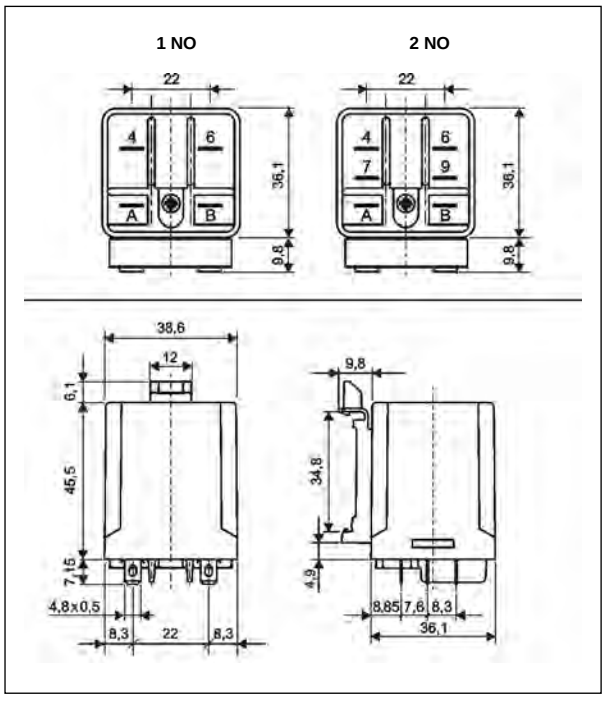
Dimensions - plug-in version (standard)



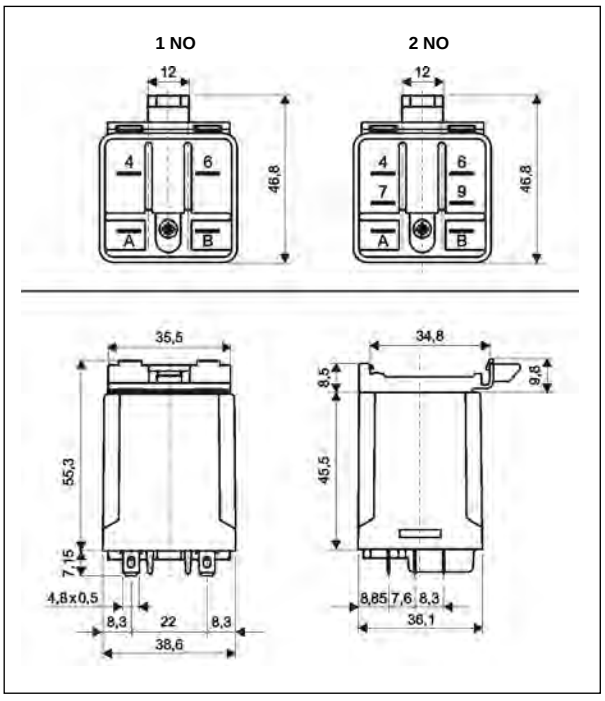
Dimensions - PCB version



Dimensions - version with vertical adaptor (V)



Dimensions - version with horizontal adaptor (H)



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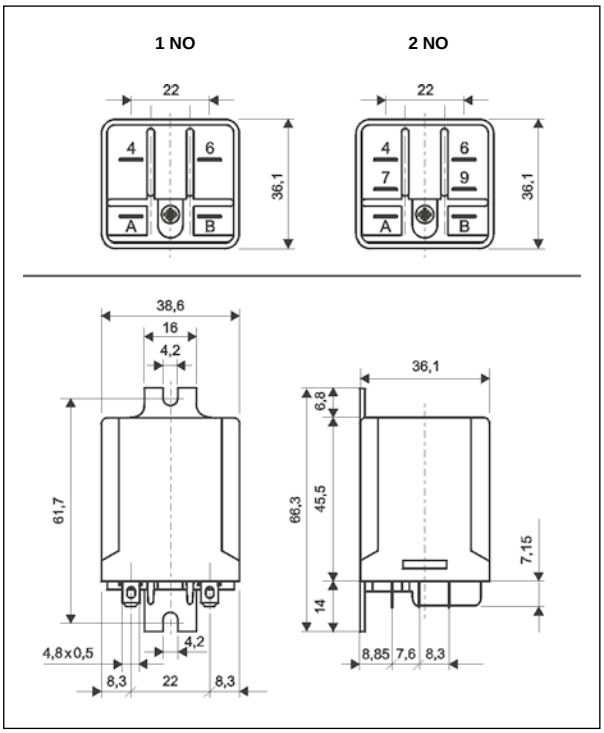
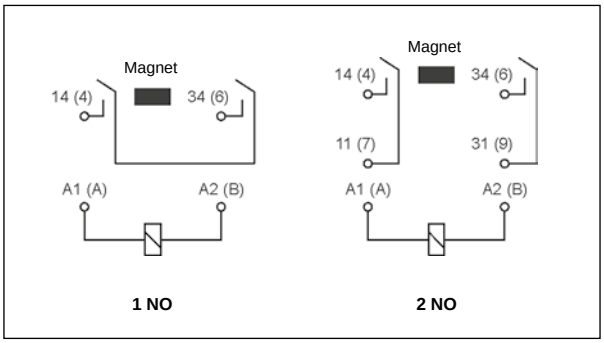
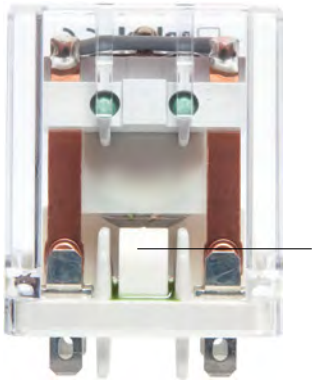
Dimensions - version with mounting flange in the wall of the cover



Connection diagrams (pin side view)



Design



The permanent magnet is fixed on the contact plate. Its magnetic field is directed to the contacts and it blows the electric arc which occurs when the DC load is switched off.

Mounting

Relays RUC-M are offered in versions: • standard for: screw terminals plug-in sockets **GUC11** ❶ with clip **MBA**, 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws; screw terminals plug-in sockets **GUC11S** ❷ with clip **MBA**, 35 mm rail mount acc. to PN-EN 60715 • with mounting flange in the wall of the cover, on panel mounting with two M4 screws, flat insert connectors - faston 187 (4,8 x 0,5 mm) • with vertical (V) or horizontal (H) adaptors for direct mounting on 35 mm rail mount acc. to PN-EN 60715, flat insert connectors - faston 187 (4,8 x 0,5 mm) • for direct PCB mounting ❻.

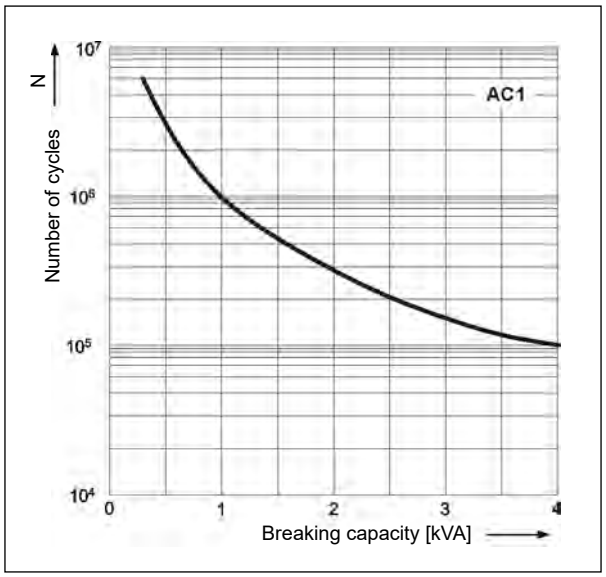
❻ Relays unavailable with (V) or (H) adaptor, and cover with mounting flange. ❷ For RUC-M with GUC11 or GUC11S socket, max. switching voltages and coil voltages of relays are limited to 250 V AC/DC.

GUC11S

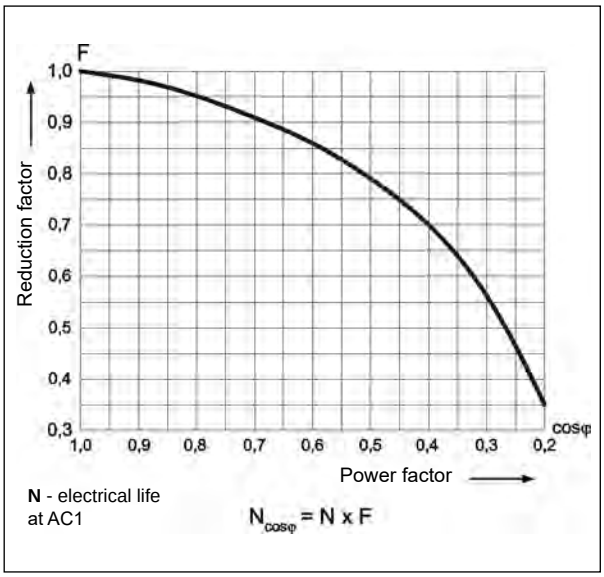
Screw terminals plug-in sockets for RUC faston 4,8x0,5, RUC-M
- see page 410

NEW

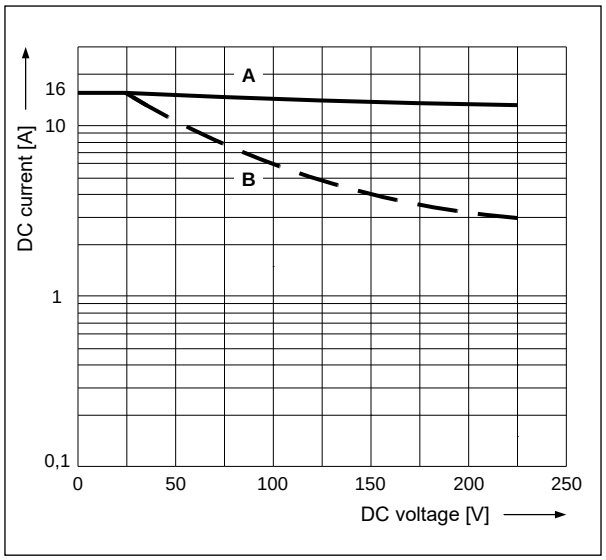
Electrical life at AC resistive load.
Switching frequency: 1 200 cycles/hour Fig. 1



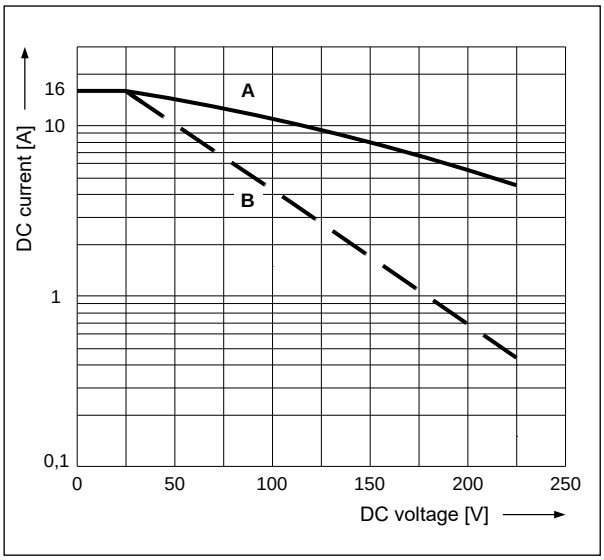
Electrical life reduction factor at AC inductive load Fig. 2



Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms
U_n = 24 V DC - version 1 NO (6 mm) Fig. 3



Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms
U_n = 24 V DC - version 2 NO (3 mm) Fig. 4



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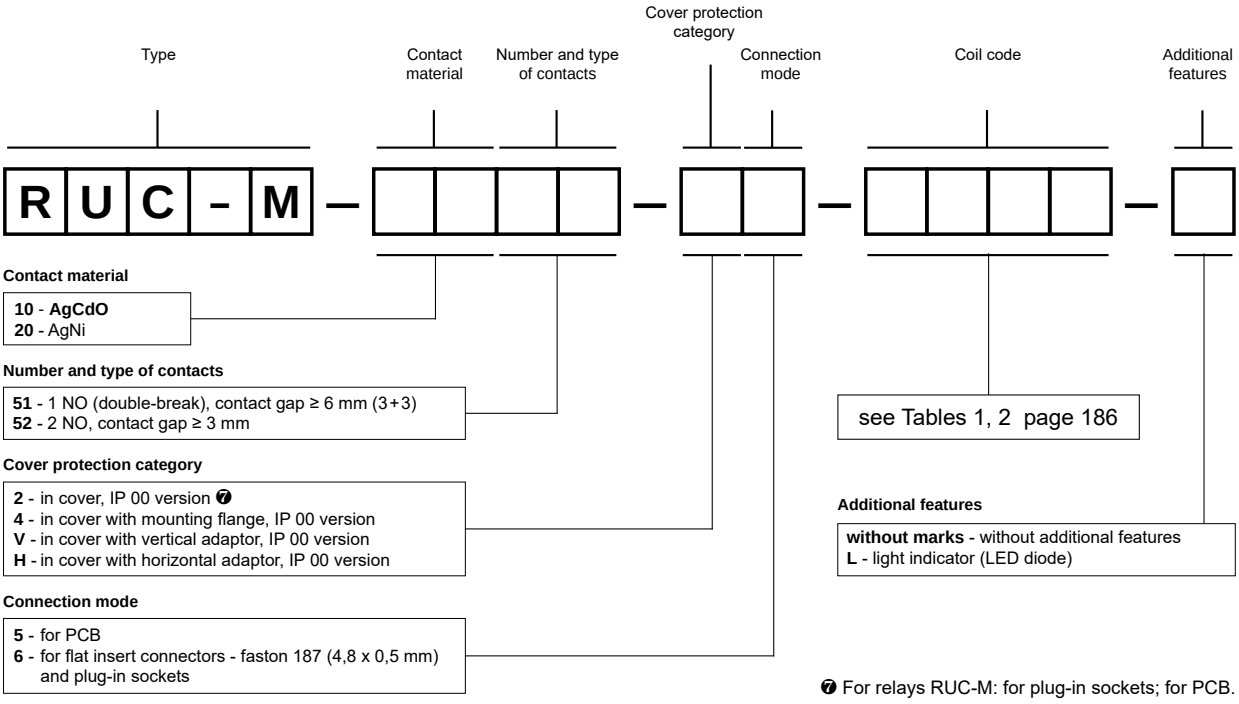
Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 70 °C)
W012	12	85	± 10%	9,6	13,2
W024	24	345	± 10%	19,2	26,4
W048	48	1 370	± 10%	38,4	52,8
W110	110	7 300	± 10%	88,0	121,0
W220	220	30 000	± 10%	176,0	242,0

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
5012	12	18,5	± 10%	9,6	13,2
5024	24	75	± 10%	19,2	26,4
5115	115	1 840	± 10%	92,0	126,5
5120	120	1 910	± 10%	96,0	132,0
5230	230	7 080	± 10%	184,0	253,0
5240	240	7 760	± 10%	192,0	264,0

Ordering codes



❼ For relays RUC-M: for plug-in sockets; for PCB.

Examples of ordering codes:

RUC-M-1051-26-W024 relay **RUC-M**, faston 187 (4,8 x 0,5 mm), with contact gap ≥ 6 mm (3+3), for plug-in sockets, one normally open contact (double-break), contact material AgCdO, reinforced coil voltage 24 V DC, in cover IP 00

RUC-M-1052-V6-5230-L relay **RUC-M**, faston 187 (4,8 x 0,5 mm), for flat insert connectors, with contact gap ≥ 3 mm, with vertical adaptor (V), two normally open contacts, contact material AgCdO, coil voltage 230 V AC 50/60 Hz, with light indicator (LED diode), in cover IP 00

RUC-M-2051-25-3024 relay **RUC-M**, with contact gap ≥ 6 mm (3+3), for PCB, one normally open contact (double-break), contact material AgNi, coil voltage 24 V AC 50 Hz, in cover IP 00

- Power relays of general application • AC and DC coils
- High breaking capacity: AC1 - 10 kVA; AC3 - 6 kVA
- 35 mm rail mount acc. to PN-EN 60715 • High insulation dielectric strength
- Applications: control of electromagnets; systems of heating, cooling, ventillation, air conditioning; control with single-phase motors; catering industry machines and equipment; automation systems; photoelectric systems; etc.
- Recognitions, certifications, directives: RoHS, CE EAC

Contact data

Number and type of contacts		2 NO
Contact material		**AgCdO** ❶
Rated / max. switching voltage	AC	400 V / 440 V
Min. switching voltage		10 V
Rated load (capacity)	AC1	25 A / 400 V AC
	AC3	5 A / 400 V AC
	DC1	25 A / 24 V DC (see Fig. 3)
	DC13	0,30 A / 120 V 0,15 A / 250 V (R300)
Min. switching current		10 mA
Max. inrush current		40 A
Rated current		25 A
Max. breaking capacity	AC1	10 000 VA
	AC3	6 000 VA
Min. breaking capacity		1 W
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
	AC3	600 cycles/hour
• no load		3 600 cycles/hour

Coil data

Rated voltage	50 Hz AC	12 ... 400 V
	DC	12 ... 220 V
Must release voltage		≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2
Rated power consumption	AC	3,0 VA
	DC	1,7 W

Insulation according to PN-EN 60664-1

Insulation rated voltage		400 V AC
Rated surge voltage		4 000 V 1,2 / 50 µs
Overvoltage category		III
Insulation pollution degree		3
Dielectric strength		
• between coil and contacts		5 000 V AC type of insulation: reinforced
• contact clearance		1 500 V AC type of clearance: micro-disconnection
• pole - pole		5 000 V AC type of insulation: reinforced
Contact - coil distance		
• clearance		≥ 6 mm
• creepage		≥ 8 mm

General data

Operating / release time (typical values)		20 ms / 20 ms
Electrical life		
• resistive AC1		> 10^5 25 A, 400 V AC
• cosφ		see Fig. 2
Mechanical life (cycles)		> 10^6
Dimensions (L x W x H)		26 x 49 x 72 mm
Weight		130 g
Ambient temperature	• storage	-25...+85 °C
	• operating	-25...+85 °C
Cover protection category		IP 20 PN-EN 60529
Environmental protection		RTI PN-EN 116000-3
Shock resistance		10 g
Vibration resistance		5 g 10...150 Hz

The data in bold type relate to the standard versions of the relays. ❶ AgCdO contact material in electrical contacts is only for use in electrical and electronic equipment (EEE) in compliance with directive RoHS2 2011/65/EU in restricted categories of EEE covered by this directive. Relpol S.A. is not responsible for usage relays with AgCdO contact material in categories of EEE where it is prohibited by the directive RoHS2 2011/65/EU.

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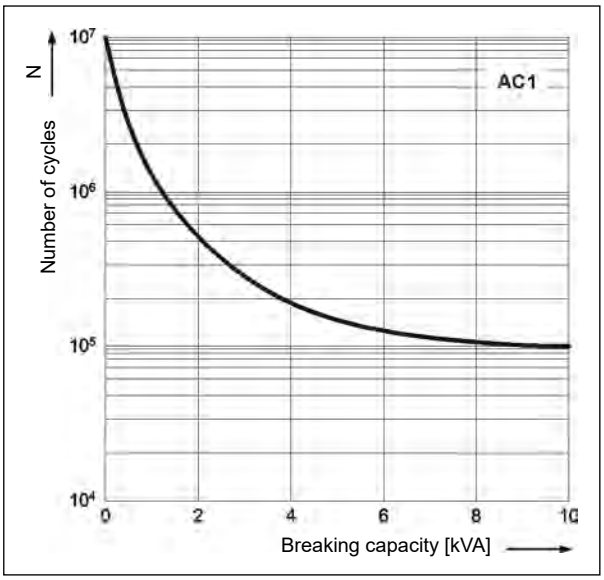
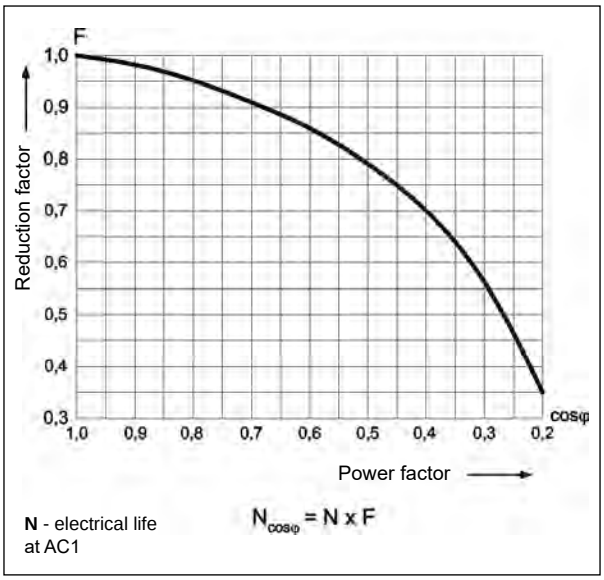
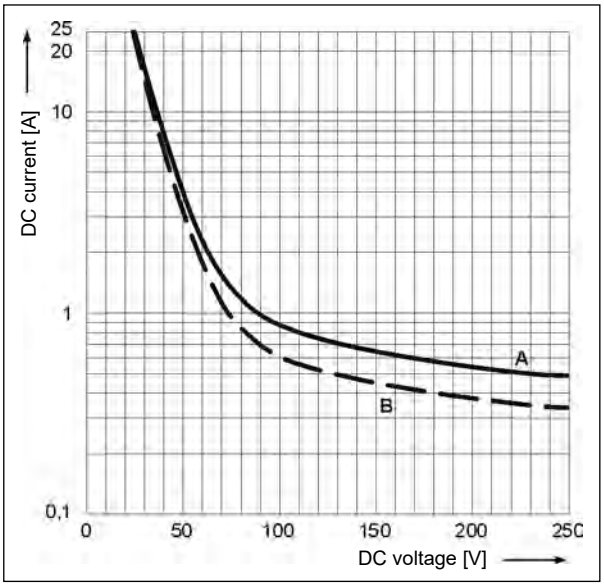
Electrical life at AC resistive load.
Switching frequency: 600 cycles/hour Fig. 1



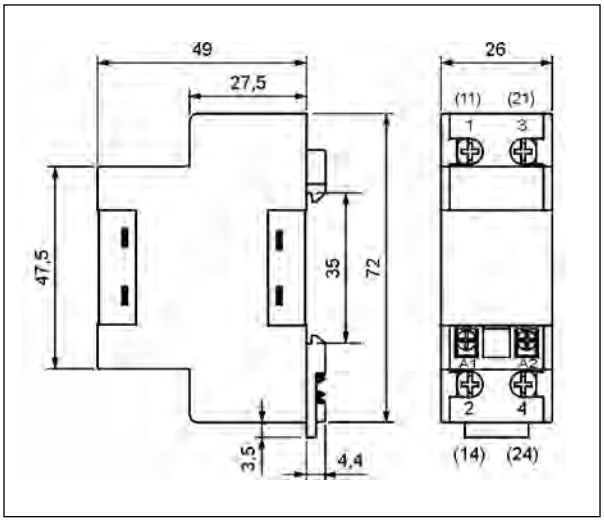
Electrical life reduction factor at AC inductive load Fig. 2



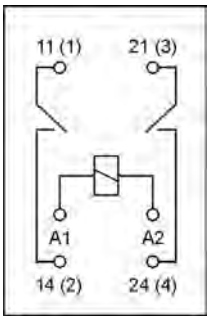
Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms Fig. 3



Dimensions



Connection diagrams
(screw terminals side view)



2 NO

Mounting

Relays **RG25** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Operational position - screw terminals of coil downwards. **Connections:** max. cross section of the cables: 2 x 2,5 mm^2 (2 x 14 AWG), length of the cable deinsulation: 9 mm, max. tightening moment for the terminal: 0,7 Nm.

Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 55 °C)
1012	12	85	± 10%	9,6	13,2
1024	**24**	**340**	**± 10%**	**19,2**	**26,4**
1048	48	1 350	± 10%	38,4	52,8
1110	110	7 600	± 10%	88,0	121,0
1220	220	30 000	± 10%	176,0	242,0

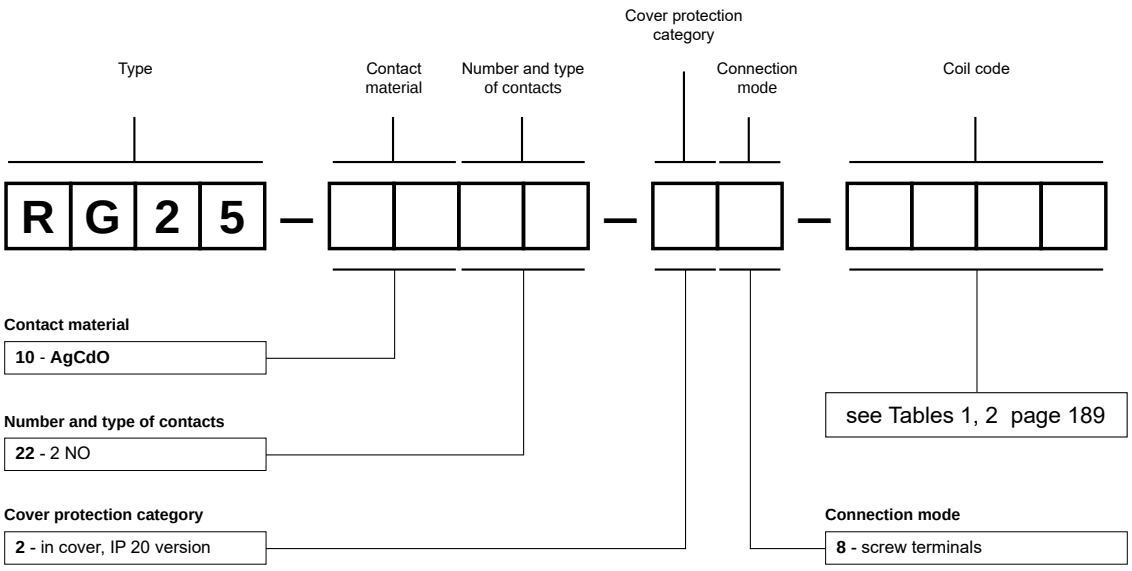
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
3012	12	17	± 10%	8,4	13,2
3024	**24**	**76**	**± 10%**	**16,8**	**26,4**
3110	110	1 600	± 10%	77,0	121,0
3230	**230**	**6 800**	**± 10%**	**161,0**	**253,0**
3400	400	18 600	± 10%	280,0	440,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Example of ordering code:

RG25-1022-28-3230 relay **RG25**, screw terminals, two normally open contacts, contact material AgCdO, coil voltage 230 V AC 50 Hz, in cover IP 20

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- High switching capacity up to 30 A
- „Bridge" type contacts which open the circuit with double break
- Flat insert connectors - faston faston 250 (6,3 x 0,8 mm)
- High resistance to interference • High strength of insulation
- Applications: household equipment; air-conditioning and ventilation systems; audio equipment; control devices; automation systems; photoelectric systems; etc.
- Recognitions, certifications, directives: RoHS, CE

Contact data

Number and type of contacts		1 NO, 2 NO	
Contact material		**$AgSnO_2$**	
Rated / max. switching voltage	AC	250 V / 440 V	
Min. switching voltage		10 V	
Rated load	AC1	1 NO: 30 A / 250 V AC	2 NO: 25 A / 250 V AC
Min. switching current		10 mA	10 mA
Rated current		1 NO: 30 A	2 NO: 25 A
Max. breaking capacity	AC1	1 NO: 7 000 VA	2 NO: 6 250 VA
Min. breaking capacity		0,1 W	
Contact resistance		≤ 100 mΩ	

Coil data

Rated voltage	50/60 Hz AC	24 ... 230 V	
	DC	12 ... 110 V	
Must release voltage		DC: ≥ 0,1 U_n	
Operating range of supply voltage		see Tables 1, 2	
Rated power consumption	AC	1,7 VA 24, 48 V	2,5 VA 115, 230 V
	DC	1,9 W	

Insulation according to PN-EN 60664-1

Insulation rated voltage		250 V AC	
Dielectric strength			
• between coil and contacts		4 000 V AC	type of insulation: reinforced
• contact clearance		2 000 V AC	type of clearance: full-disconnection
Contact - coil distance			
• clearance		≥ 9 mm	
• creepage		≥ 11 mm	

General data

Operating / release time (typical values)		30 ms / 30 ms	
Electrical life			
• resistive AC1	1 200 cycles/hour	10^5 1Z: 30 A, 250 V AC	2Z: 25 A, 250 V AC
Mechanical life (cycles)		> 10^7	
Dimensions (L x W x H)		67 x 33 x 35 mm	
Weight		90 g	
Ambient temperature	• operating	-25...+75 °C	
Cover protection category		IP 50 PN-EN 60529	
Shock resistance		10 g	
Vibration resistance		1,5 mm DA (constant amplitude) 10...55 Hz	

The data in bold type relate to the standard versions of the relays.

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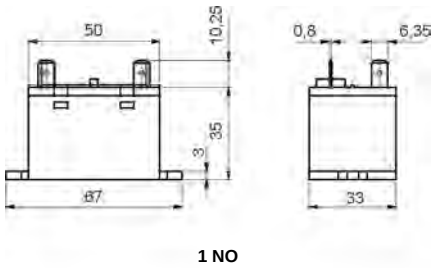
Dimensions



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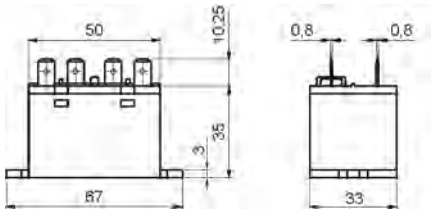
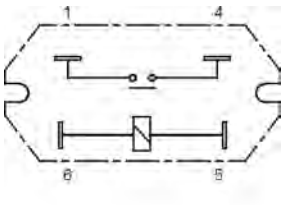


2 NO

Connection diagrams (pin side view)



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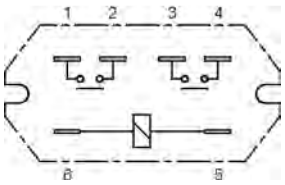
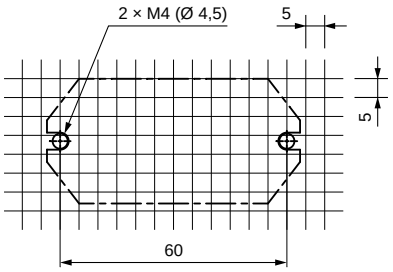


2 NO

Pinout



Mounting

Relays **R20** are designed for flat insert connectors - faston 250 (6,3 x 0,8 mm), relays are direct on panel mounting with two M4 screws.

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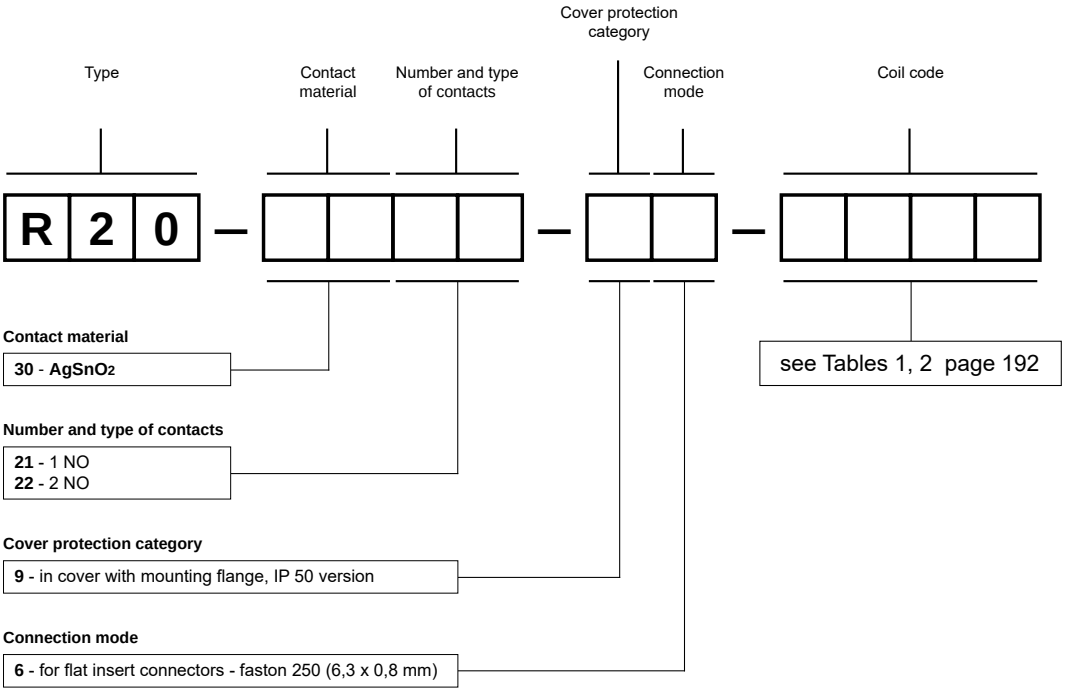
Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1012	12	75,8	± 10%	9,0	13,2
1024	24	303	± 10%	18,0	26,4
1110	110	6 400	± 10%	82,5	121,0

Coil data - AC 50/60 Hz voltage version Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 20 °C)
5024	24	338	± 10%	18,0	26,4
5048	48		± 10%	36,0	52,8
5115	115	5 260	± 10%	86,3	126,5
5230	230	21 000	± 10%	172,5	253,0

Ordering codes



Example of ordering code:

R20-3021-96-1012 relay **R20**, for flat insert connectors - faston 250 (6,3 x 0,8 mm), one normally open contact, contact material $AgSnO_2$, coil voltage 12 V DC, in cover with mounting flange IP 50

- High load 30 A • DC coils - of up to 110 V DC, low coil power 0,9 W, insulation class F: 155 °C
- For PCB • Small dimensions, light weight
- High shock and vibration resistance
- High quality, long life
- Applications: for automobile, machine, electronic equipment, air conditioner, household appliance
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO	
Contact material		**$AgSnO_2$**, AgCdO ❶	
Rated / max. switching voltage	AC	240 V / 300 V	
	DC	110 V / 110 V	
Min. switching voltage		10 V	
Rated load	AC1	1 CO: 30 A / 20 A (NO/NC) / 240 V AC	1 NO: 30 A / 240 V AC
	DC1	1 CO: 30 A / 20 A (NO/NC) / 14 V DC	1 NO: 30 A / 14 V DC
Rated current		30 A	
Max. breaking capacity	AC1	1 CO: 7 200 VA / 4 800 VA (NO/NC)	1 NO: 7 200 VA
Contact resistance		≤ 30 mΩ	

Coil data

Rated voltage	DC	5 ... 110 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1
Must operate voltage		≤ 0,75 U_n
Rated power consumption	DC	0,9 W

Insulation according to PN-EN 60664-1

Insulation rated voltage		500 V AC
Overvoltage category		II
Flammability class		V-0 UL94
Insulation resistance		> 1 000 MΩ 500 V DC, 60 s
Dielectric strength		
• between coil and contacts		2 500 V AC type of insulation: basic
• contact clearance		1 500 V AC type of clearance: micro-disconnection

General data

Operating / release time (typical values)		15 ms / 10 ms	
Electrical life			
• resistive AC1	1 200 cycles/hour	10^5 1 CO: 30 A / 20 A (NO/NC), 240 V AC	1 NO: 30 A, 240 V AC
• resistive DC1	1 200 cycles/hour	10^5 1 CO: 30 A / 20 A (NO/NC), 14 V DC	1 NO: 30 A, 14 V DC
Mechanical life (cykle)		10^7	
Dimensions (L x W x H)		32,5 x 27,6 x 20,5 mm	
Weight		30 g	
Ambient temperature	• operating	-55...+100 °C	
Cover protection category		IP 40 or **IP 64** PN-EN 60529	
Shock resistance		20 g	
Vibration resistance		1,5 mm DA (constant amplitude) 10...55 Hz	
Solder bath temperature		max. 235 °C	
Soldering time		max. 3,5 s	

The data in bold type relate to the standard versions of the relays. ❶ AgCdO contact material in electrical contacts is only for use in electrical and electronic equipment (EEE) in compliance with directive RoHS2 2011/65/EU in restricted categories of EEE covered by this directive. Relpol S.A. is not responsible for usage relays with AgCdO contact material in categories of EEE where it is prohibited by the directive RoHS2 2011/65/EU.

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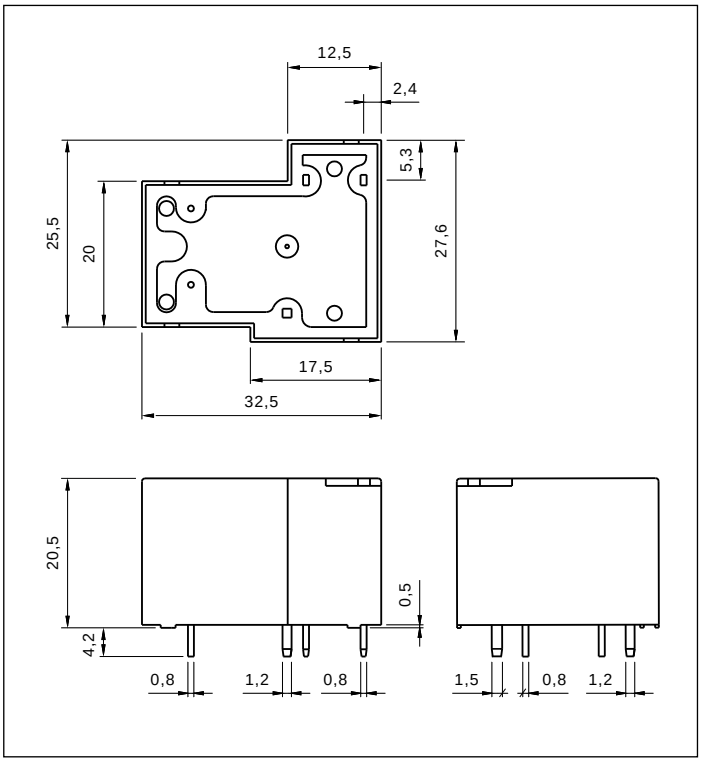
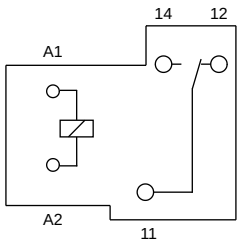
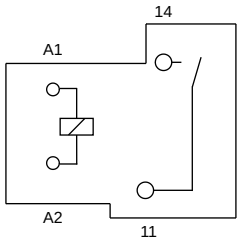
Dimensions



Connection diagrams (pin side view)



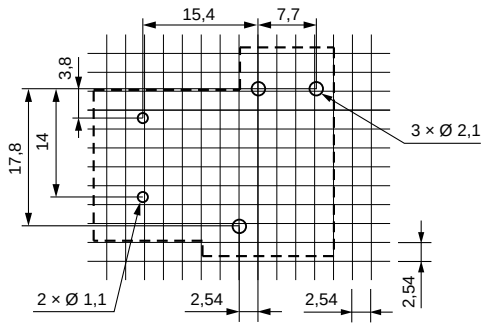
1 CO



1 NO

Pinout (solder side view)

1 CO



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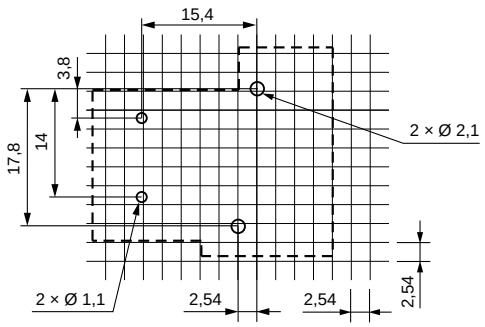


Mounting

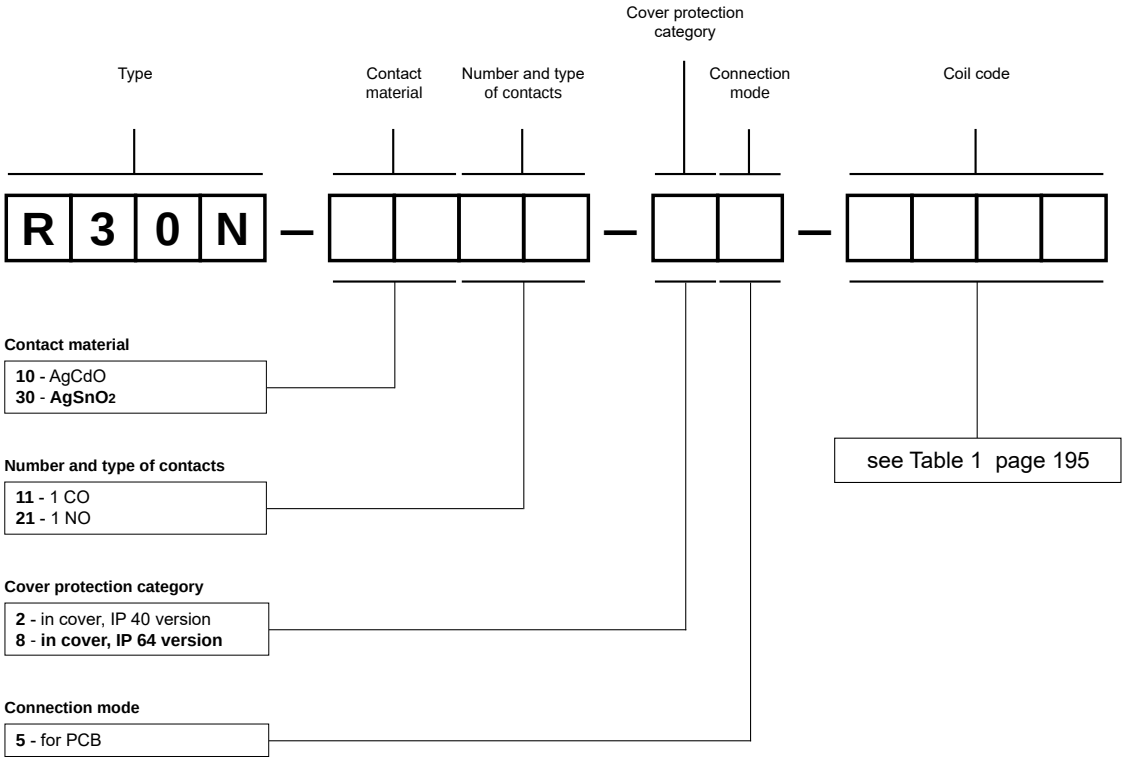
Relays **R30N** are designed for direct PCB mounting.

Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	**5**	**28**	**± 10%**	**3,8**	**6,5**
1012	**12**	**160**	**± 10%**	**9,0**	**15,6**
1024	**24**	**640**	**± 10%**	**18,0**	**31,2**
1048	48	2 560	± 10%	36,0	62,4
1110	110	13 445	± 10%	82,5	143,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Examples of ordering codes:

R30N-3011-85-1012 relay **R30N**, for PCB, one changeover contact, contact material $AgSnO_2$, coil voltage 12 V DC, in cover IP 64

R30N-1021-25-1024 relay **R30N**, for PCB, one normally open contact, contact material AgCdO, coil voltage 24 V DC, in cover IP 40

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- High load 40 A • AC coils - of up to 220 V AC, DC coils - of up to 110 V DC, insulation class F: 155 °C
- For PCB • Small dimensions, light weight
- High shock and vibration resistance
- High quality, long life
- Applications: for automobile, machine, electronic equipment, air conditioner, household appliance
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		1 CO, 1 NO	
Contact material		**$AgSnO_2$**, AgCdO ❶	
Rated / max. switching voltage	AC	240 V / 300 V	
	DC	110 V / 110 V	
Min. switching voltage		10 V	
Rated load	AC1	1 CO: 40 A / 30 A (NO/NC) / 240 V AC	1 NO: 40 A / 240 V AC
	DC1	1 CO: 40 A / 30 A (NO/NC) / 30 V DC	1 NO: 40 A / 30 V DC
Rated current		40 A	
Max. breaking capacity	AC1	1 CO: 9 600 VA / 7 200 VA (NO/NC)	1 NO: 9 600 VA
	AC3	1 CO: 2,0 HP / 1,5 HP (NO/NC) UL 508 (single-phase motor)	1 NO: 2,0 HP UL 508 (single-phase motor)
	DC1	1 CO: 1 200 W / 900 W (NO/NC)	1 NO: 1 200 W
Contact resistance		≤ 30 mΩ	

Coil data

Rated voltage	50/60 Hz AC	12 ... 220 V	
	DC	5 ... 110 V	
Must release voltage		DC: ≥ 0,1 U_n	
Operating range of supply voltage		see Tables 1, 2	
Must operate voltage		≤ 0,75 U_n	
Rated power consumption	AC	2,0 VA	
	DC	0,9 W	

Insulation according to PN-EN 60664-1

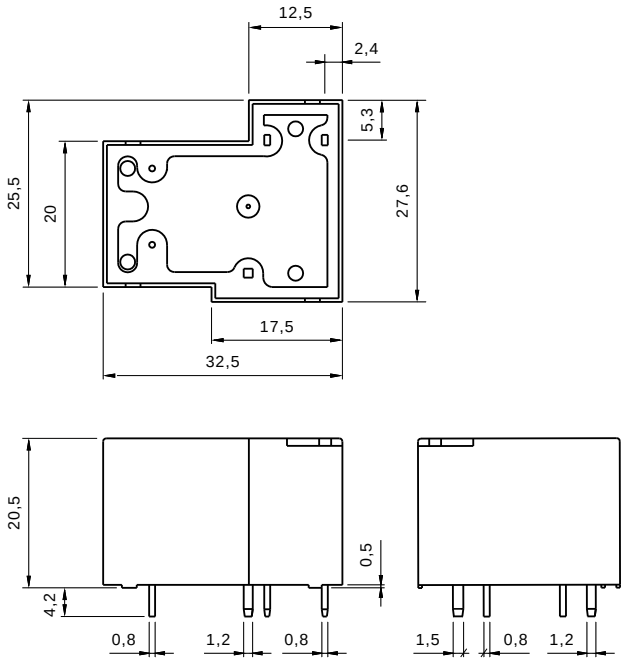
Insulation rated voltage	500 V AC	
Overvoltage category	II	
Flammability class	V-0 UL94	
Insulation resistance	> 1 000 MΩ	500 V DC, 60 s
Dielectric strength		
• between coil and contacts	4 000 V AC	type of insulation: reinforced
• contact clearance	1 500 V AC	type of clearance: micro-disconnection

General data

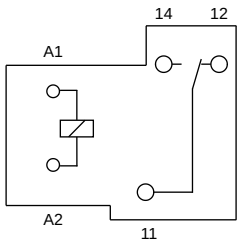
Operating / release time (typical values)		15 ms / 10 ms	
Electrical life			
• resistive AC1	1 200 cycles/hour	10^5 1 CO: 40 A / 30 A (NO/NC), 240 V AC	1 NO: 40 A, 240 V AC
• resistive DC1	1 200 cycles/hour	10^5 1 CO: 40 A / 30 A (NO/NC), 30 V DC	1 NO: 40 A, 30 V DC
Mechanical life (cykle)		10^7	
Dimensions (L x W x H)		32,5 x 27,6 x 20,5 mm	
Weight		30 g	
Ambient temperature	• operating	-55...+100 °C	
Cover protection category		IP 40 or **IP 64** PN-EN 60529	
Shock resistance		20 g	
Vibration resistance		1,5 mm DA (constant amplitude) 10...55 Hz	
Solder bath temperature		max. 235 °C	
Soldering time		max. 3,5 s	

The data in bold type relate to the standard versions of the relays. ❶ AgCdO contact material in electrical contacts is only for use in electrical and electronic equipment (EEE) in compliance with directive RoHS2 2011/65/EU in restricted categories of EEE covered by this directive. Relpol S.A. is not responsible for usage relays with AgCdO contact material in categories of EEE where it is prohibited by the directive RoHS2 2011/65/EU.

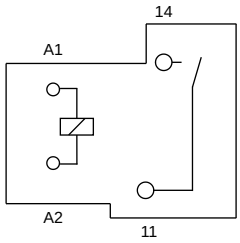
Dimensions



Connection diagrams (pin side view)



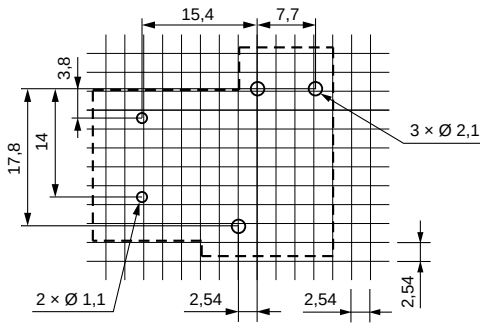
1 CO



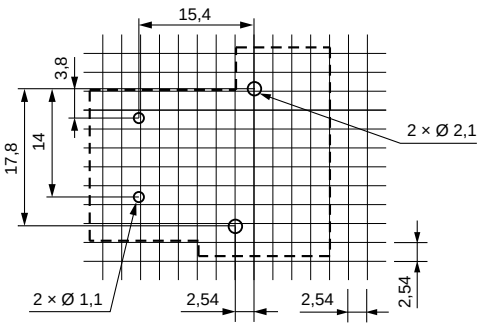
1 NO

Pinout (solder side view)

1 CO



1 NO



Mounting

Relays **R40N** are designed for direct PCB mounting.

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Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
1005	**5**	**28**	**± 10%**	**3,8**	**6,5**
1012	**12**	**160**	**± 10%**	**9,0**	**15,6**
1024	**24**	**640**	**± 10%**	**18,0**	**31,2**
1048	48	2 560	± 10%	36,0	62,4
1110	110	13 445	± 10%	82,5	143,0

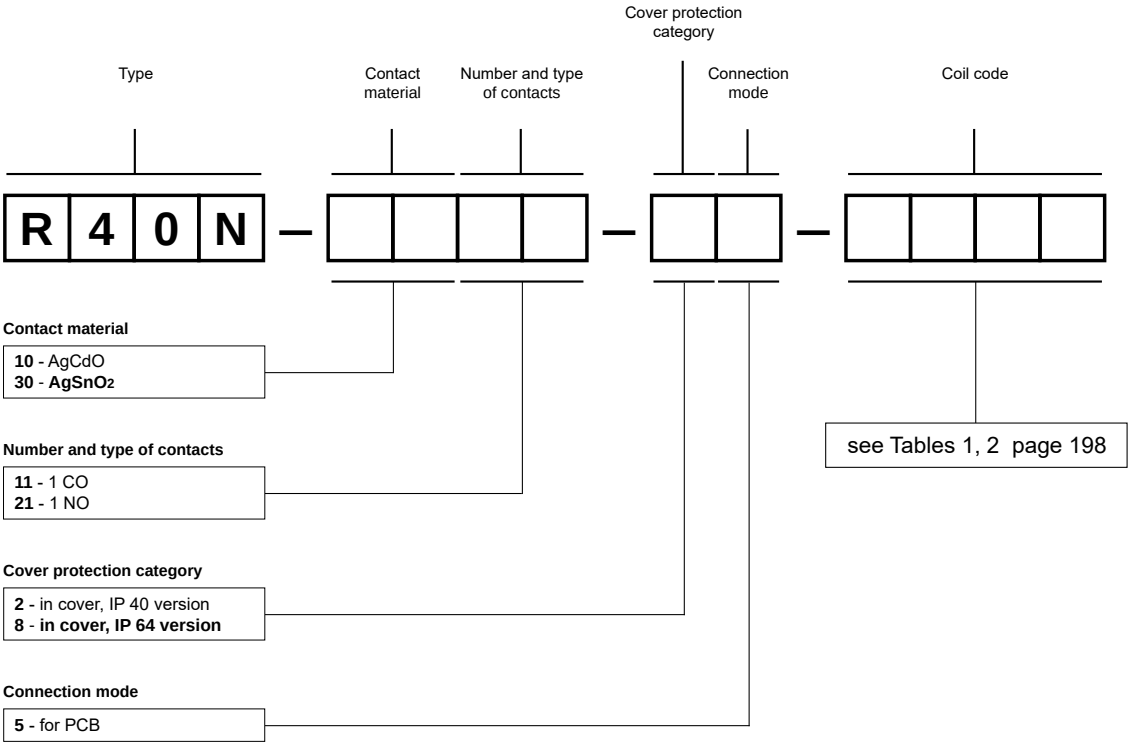
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
5012	12	27	± 10%	9,0	15,6
5024	**24**	**120**	**± 10%**	**18,0**	**31,2**
5110	110	2 360	± 10%	82,5	143,0
5120	120	3 040	± 10%	90,0	156,0
5220	**220**	**13 490**	**± 10%**	**165,0**	**286,0**

The data in bold type relate to the standard versions of the relays.

Ordering codes



Examples of ordering codes:

R40N-3011-85-1012 relay **R40N**, for PCB, one changeover contact, contact material $AgSnO_2$, coil voltage 12 V DC, in cover IP 64

R40N-1021-25-5024 relay **R40N**, for PCB, one normally open contact, contact material AgCdO, coil voltage 24 V AC 50/60 Hz, in cover IP 40


RS35


RS50

- **Relays to control power in photovoltaic systems which generate electric energy**
- Max. switching current: 35 A (version RS35); 50 A (version RS50)
- 5000 V / 10 mm reinforced insulation • Contact gap: RS35 ≥ 2,2 mm; RS50 ≥ 1,85 mm • Holding power 0,1 W
- For PCB • DC coils • Reinforced insulation, acc. PN-EN 60730-1 (VDE 0631, part 1); PN-EN 60335-1 (VDE 0700, part 1)
- Recognitions, certifications, directives: RoHS,

Contact data

Number and type of contacts		2 NO	
Contact material		**$AgSnO_2$**	
Rated / max. switching voltage	AC	250 V / 440 V	
Min. switching voltage		10 V	
Rated load	AC1	RS35: 35 A / 250 V AC	RS50: 48 A / 250 V AC
	DC1	RS35: 35 A / 24 V DC	RS50: 48 A / 24 V DC
Min. switching current		10 mA	10 mA
Rated current		RS35: 35 A	RS50: 50 A
Max. breaking capacity	AC1	RS35: 8 750 VA	RS50: 12 500 VA
	DC1	RS35: 90 W 0,3 A / 300 V	RS50: 90 W 0,3 A / 300 V
Min. breaking capacity		1 W	
Contact resistance		≤ 50 mΩ	
Max. operating frequency			
• at rated load	AC1	360 cycles/hour	
• no load		3 600 cycles/hour	

Coil data

Rated voltage	DC	5 ... 110 V
Must release voltage		DC: ≥ 0,05 U_n
Operating range of supply voltage		0,75...2,0 U_n see Table 1
Rated power consumption	DC	0,48 W
Power consumption at pickup voltage		0,3 W
Max. continuous dissipation		1,9 W 20 °C

Insulation according to PN-EN 60664-1

Insulation rated voltage	250 V AC
Rated surge voltage	6 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Insulation resistance	1000 MΩ
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	2 500 V AC type of clearance: full-disconnection
• pole - pole	2 500 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

Operating / release time (typical values)		40 ms / 5 ms	
Electrical life			
• resistive AC1		3×10^4 35 A, 250 V AC, 20 °C	10^4 50 A, 250 V AC, 20 °C
• AC7a		3×10^4 35 A, 250 V AC, 20 °C	3×10^4 50 A, 250 V AC, 20 °C
Mechanical life (cycles)		10^6	
Dimensions (L x W x H)		40 x 25 x 49,2 mm	
Weight		105 g	
Ambient temperature	• storage	-40...+105 °C	
	• operating	-40...+85 °C	
Cover protection category		IP 40 PN-EN 60529	
Environmental protection		RTI PN-EN 116000-3	
Shock resistance		10 g	
Vibration resistance		1,5 mm DA (constant amplitude) 10...55 Hz	
Solder bath temperature		max. 270 °C	
Soldering time		max. 5 s	

The data in bold type relate to the standard versions of the relays.

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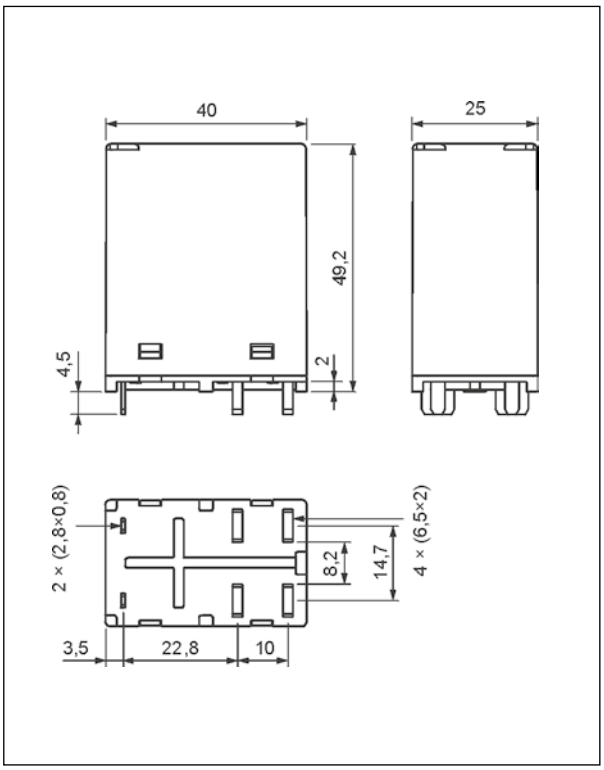
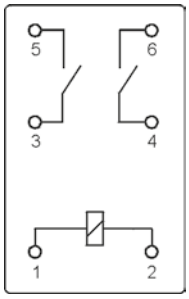
Dimensions



Mounting

Relays **RS35**, **RS50** are designed for direct PCB mounting.

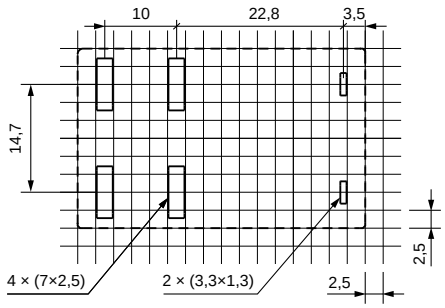
Connection diagrams (pin side view)



2 NO

Pinout (solder side view)

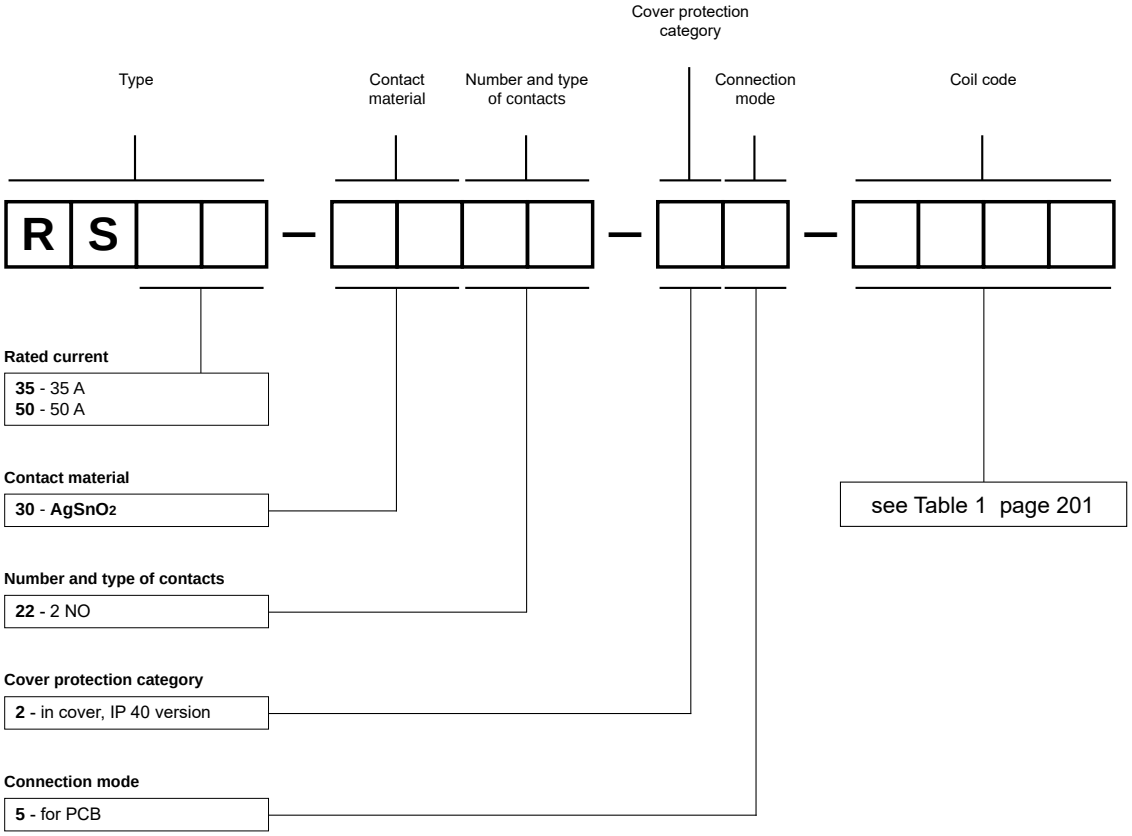
2 NO



Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 55 °C)
1005	5	50	± 10%	3,75	10
1009	9	170	± 10%	6,75	18
1012	12	300	± 10%	9,00	24
1018	18	675	± 10%	13,50	36
1024	24	1 200	± 10%	18,00	48
1110	110	25 000	± 10%	82,50	220

Ordering codes



Examples of ordering code:

RS35-3022-25-1005 relay **RS35**, rated current 35 A, for PCB, two normally open contacts, contact material $AgSnO_2$, coil voltage 5 V DC, in cover IP 40

RS50-3022-25-1110 relay **RS50**, rated current 50 A, for PCB, two normally open contacts, contact material $AgSnO_2$, coil voltage 110 V DC, in cover IP 40

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Relays
interface

relpol® S.A.

The interface relays perform the function of input/output separation in the applications with PLC controllers, and they are applied in numerous other electric devices as interface and output elements.

The basic features of the relays are: quick mounting, separation of control circuits from output circuits, coil overvoltage suppression devices, light indicators of operation, number of contacts: from 1 to 4.

The high quality and reliability of the interface relays have been proved by their numerous successful applications. Miniature and industrial relays of the types: RM699BV, RM84, RM85, R2N, R3N, R4N are the basis for these relays.

They meet the requirements of RoHS Directive.
The relays are recognized and certified by:

RM84 + GZT80

- Interface relay **PI84 with socket GZT80** consists of: electromagnetic relay **RM84**, grey plug-in socket **GZT80**, signalling / protecting module **type M...**, retainer / retractor clip **GZT80-0040** (plastic), white description plate **GZT80-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw • May be linked with interconnection strip type **ZGGZ80**
- Recognitions, certifications, directives: recognitions RM84, RoHS,

Contact data

Number and type of contacts		2 CO
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	8 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	550 W (single-phase motor)
	DC1	8 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		15 A
Rated current		8 A
Max. breaking capacity	AC1	2 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 240 V
	DC	12 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 4, 5
Rated power consumption	AC	0,75 VA
	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	300 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	1 000 V AC type of clearance: micro-disconnection
• pole - pole	2 500 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

Operating / release time (typical values)		7 ms / 3 ms
Electrical life		
• resistive AC1		> 10^5 8 A, 250 V AC
• cosφ		see Fig. 2
• DC L/R=40 ms		> 10^5 0,12 A, 220 V DC
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		80 x 15,6 x 67 mm
Weight		61 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C DC: -40...+85 °C
Cover protection category		IP 20 PN-EN 60529
Environmental protection		RM84: RTII GZT80: RT0 PN-EN 116000-3
Shock resistance		20 g
Vibration resistance	(NO/NC)	10 g / 5 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.

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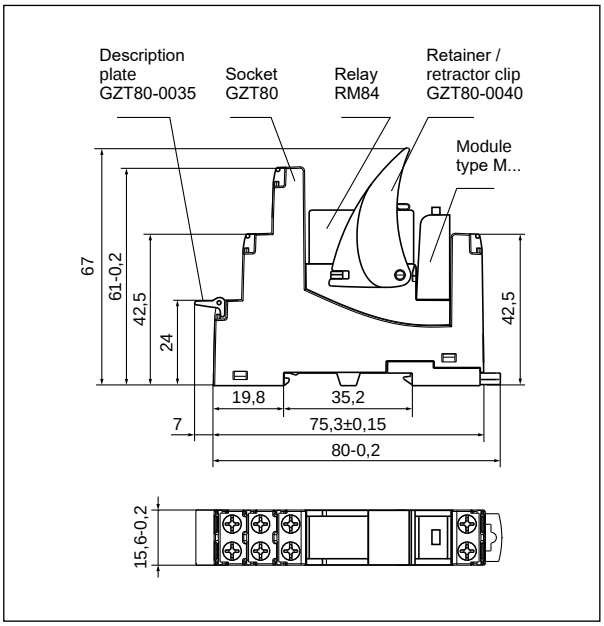
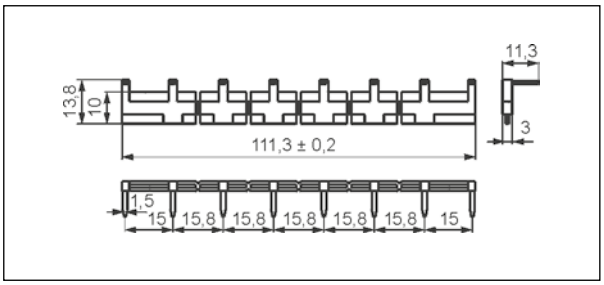
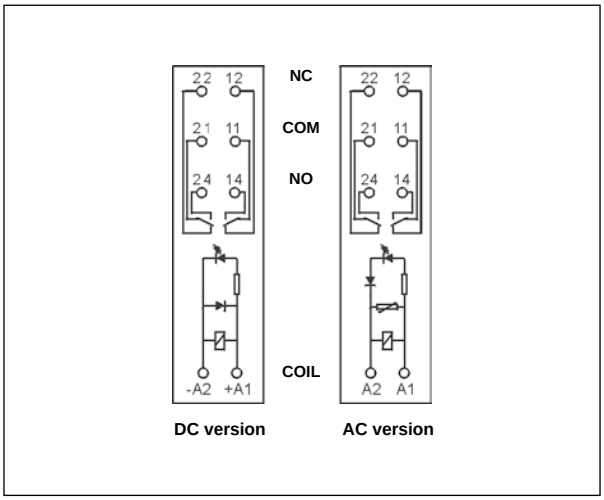
Dimensions



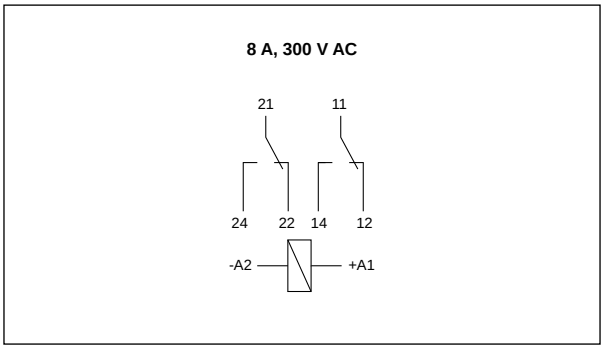


Interconnection strip type **ZGGZ80**

Connection diagrams
(screw terminals side view)



Connection of GZT80 socket



Mounting

Relays **PI84 with socket GZT80** ❶ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. **Connections:** max. cross section of the cables (stranded): 2 x 2,5 mm^2 (2 x 14 AWG), length of the cable deinsulation: 6,5 mm, max. tightening moment for the terminal: 0,7 Nm.

❶ Plug-in sockets **GZT80** may be linked with interconnection strip type **ZGGZ80**. Strip **ZGGZ80** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 8 sockets. Colours of strips: **ZGGZ80-1** grey, **ZGGZ80-2** black (see page 418).

ZGGZ80

Interconnection strip ZGGZ80:
bridging of common input signals.

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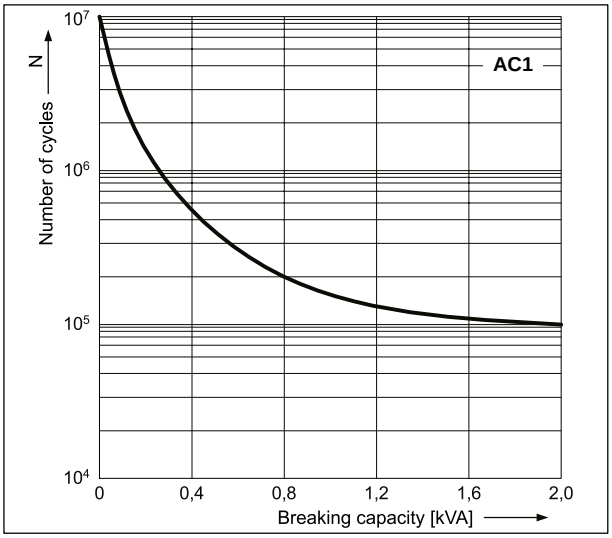
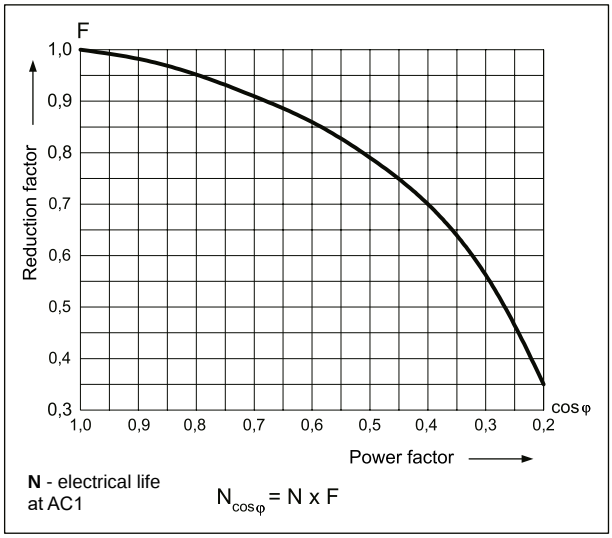
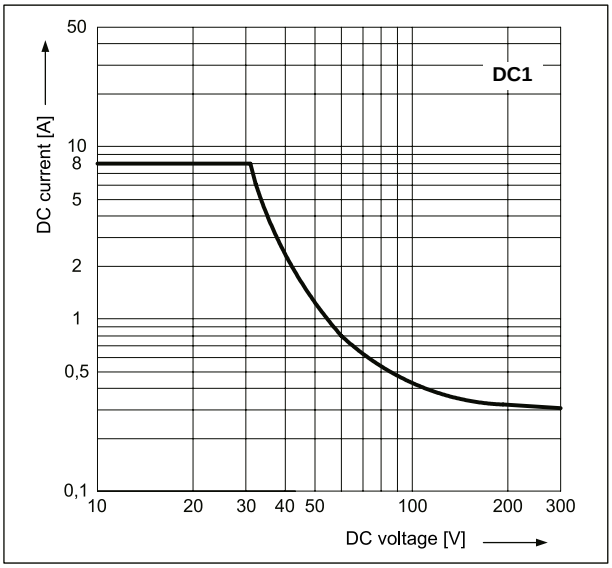
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



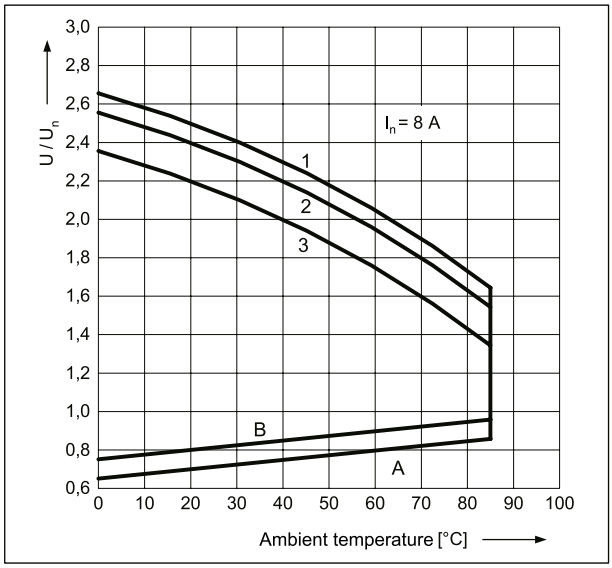
Electrical life reduction factor at AC inductive load Fig. 2



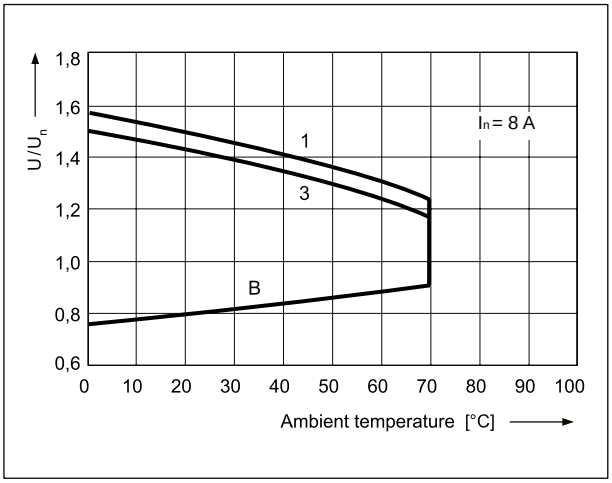
Max. DC resistive load breaking capacity Fig. 3



Coil operating range - DC Fig. 4



Coil operating range - AC 50 Hz Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

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Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
012DC	12	360	± 10%	8,4	30,6
024DC	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
048DC	48	5 700	± 10%	33,6	122,4
110DC	110	25 200	± 10%	77,0	280,0

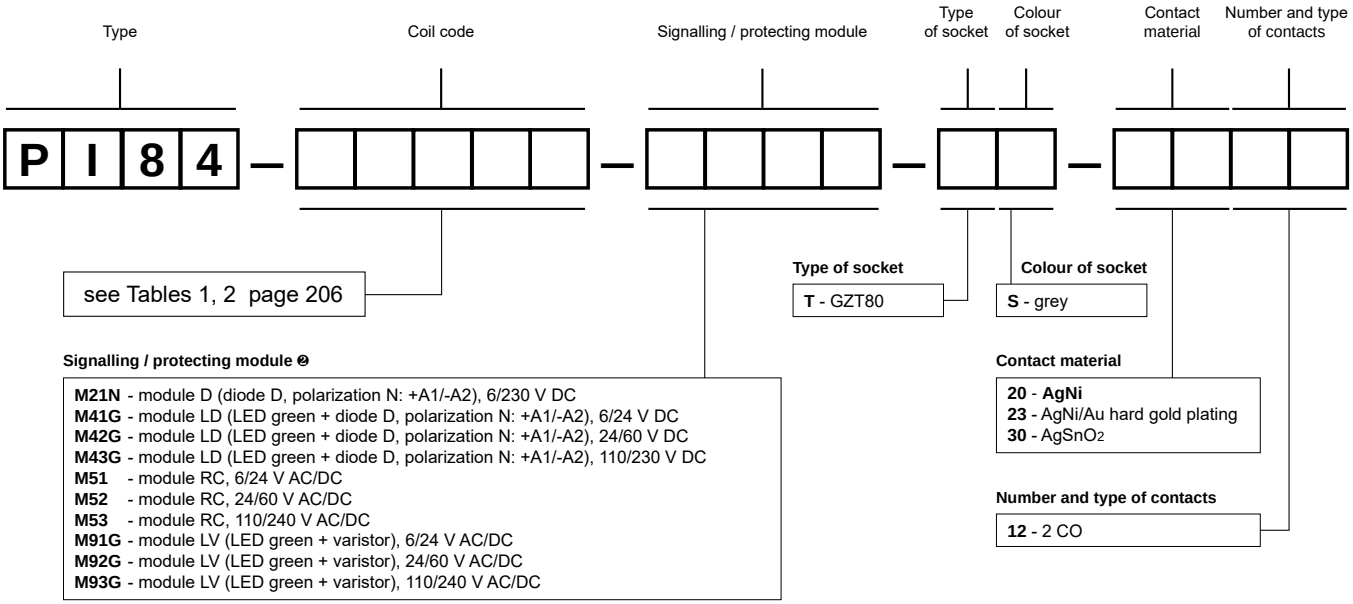
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
012AC	12	100	± 10%	9,6	13,2
024AC	**24**	**400**	**± 10%**	**19,2**	**26,4**
048AC	48	1 550	± 10%	38,4	57,6
120AC	120	10 200	± 10%	96,0	144,0
230AC	**230**	**38 500**	**± 10%**	**184,0**	**253,0**
240AC	240	42 500	± 15%	192,0	288,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



❷ Modules D, RC - only for versions with contacts AgNi

Examples of ordering codes:

PI84-012DC-M41G-TS-2012 — interface relay **PI84** consists of: relay **RM84** (two changeover contacts, contact material AgNi, coil voltage 12 V DC), socket **GZT80** (grey, screw terminals), signalling / protecting module **M41G** (version LD), retainer / retractor clip **GZT80-0040** (plastic), description plate **GZT80-0035** (white)

PI84-230AC-M93G-TS-3012 — interface relay **PI84** consists of: relay **RM84** (two changeover contacts, contact material $AgSnO_2$, coil voltage 230 V AC 50/60 Hz), socket **GZT80** (grey, screw terminals), signalling / protecting module **M93G** (version LV), retainer / retractor clip **GZT80-0040** (plastic), description plate **GZT80-0035** (white)

RM84 + GZM80

- Interface relay **PI84 with socket GZM80** consists of: electromagnetic relay **RM84**, grey plug-in socket **GZM80**, signalling / protecting module **type M...**, retainer / retractor clip **GZT80-0040** (plastic), white description plate **GZT80-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw •May be linked with interconnection strip type **ZGGZ80**
- Recognitions, certifications, directives: recognitions RM84, RoHS,

Contact data

Number and type of contacts		2 CO
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	8 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	550 W (single-phase motor)
	DC1	8 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		15 A
Rated current		8 A
Max. breaking capacity	AC1	2 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 240 V
	DC	12 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 4, 5
Rated power consumption	AC	0,75 VA
	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	300 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	1 000 V AC type of clearance: micro-disconnection
• pole - pole	2 500 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

Operating / release time (typical values)		7 ms / 3 ms
Electrical life		
• resistive AC1		> 10^5 8 A, 250 V AC
• cosφ		see Fig. 2
• cosφ = 0,4		> 10^5 3 A, 250 V AC
• DC L/R=40 ms		> 10^5 0,12 A, 220 V DC
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		81,6 x 15,9 x 67 mm
Weight		60 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C DC: -40...+85 °C
Cover protection category		IP 20 PN-EN 60529
Environmental protection		RM84: RTII GZM80: RT0 PN-EN 116000-3
Shock resistance		20 g
Vibration resistance	(NO/NC)	10 g / 5 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.

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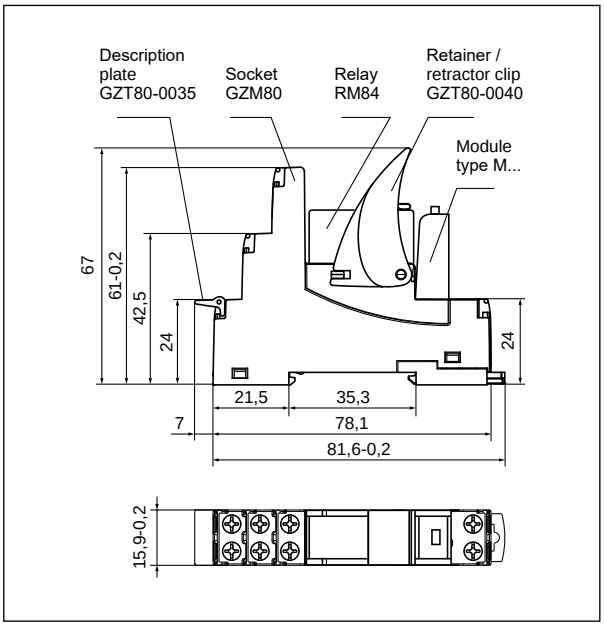
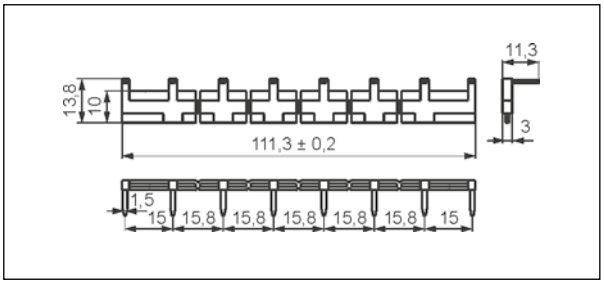
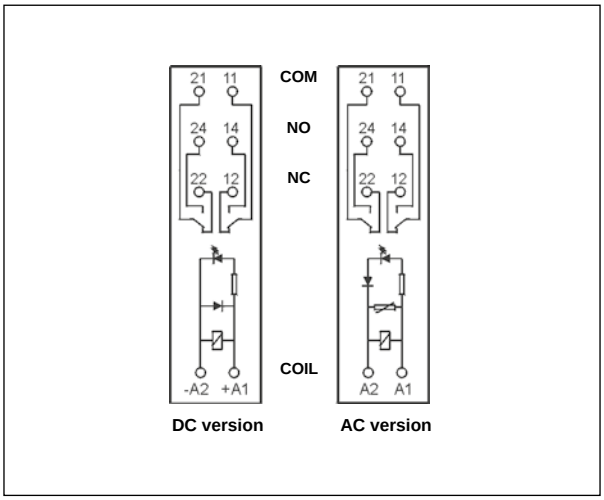
Dimensions



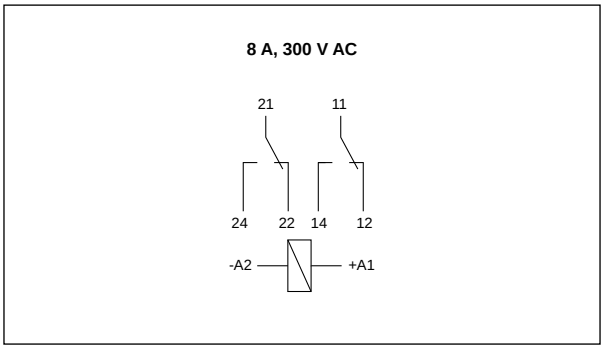


Interconnection strip type **ZGGZ80**

Connection diagrams
(screw terminals side view)



Connection of GZM80 socket



Mounting

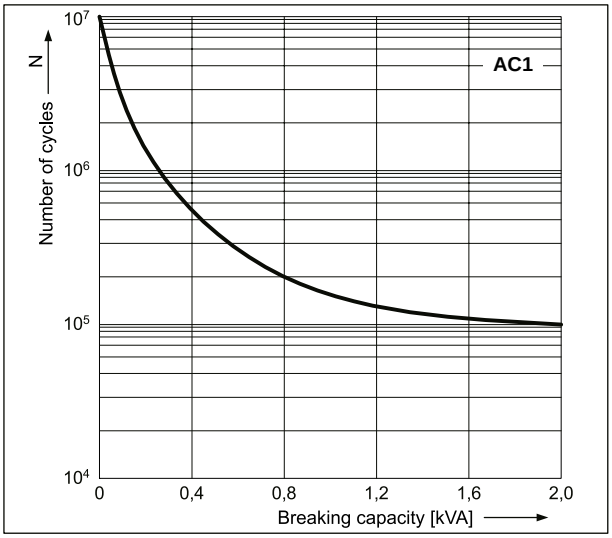
Relays **PI84 with socket GZM80** ❶ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. **Connections:** max. cross section of the cables (stranded): 2 x 2,5 mm^2 (2 x 14 AWG), length of the cable deinsulation: 6,5 mm, max. tightening moment for the terminal: 0,7 Nm.

❶ Plug-in sockets **GZM80** may be linked with interconnection strip type **ZGGZ80**. Strip **ZGGZ80** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 8 sockets. Colours of strips: **ZGGZ80-1** grey, **ZGGZ80-2** black (see page 418).

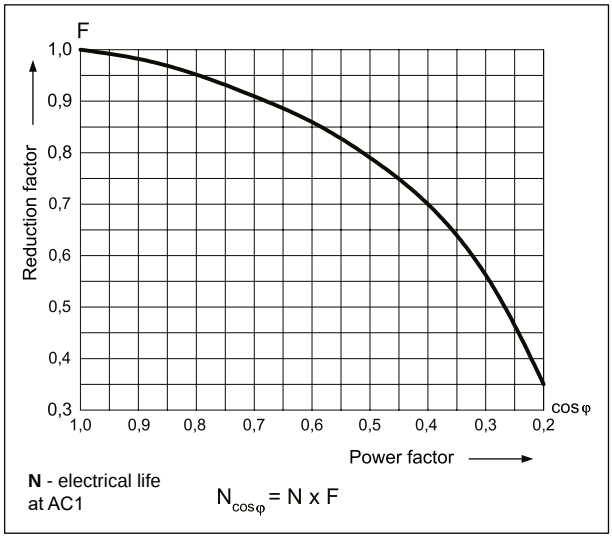
ZGGZ80

Interconnection strip ZGGZ80:
bridging of common input signals.

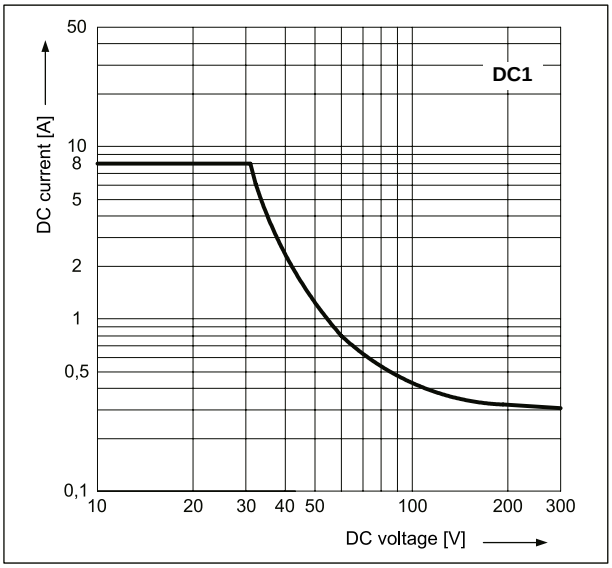
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



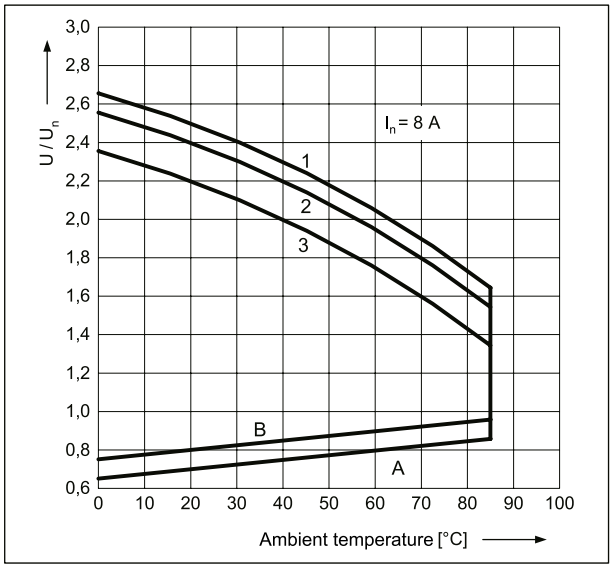
Electrical life reduction factor at AC inductive load Fig. 2



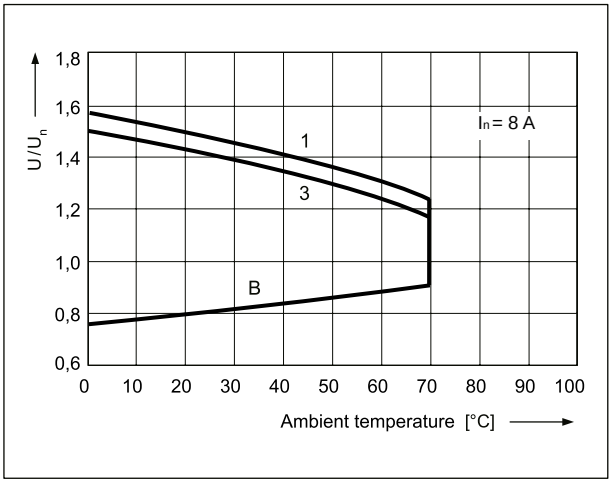
Max. DC resistive load breaking capacity Fig. 3



Coil operating range - DC Fig. 4



Coil operating range - AC 50 Hz Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

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Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
012DC	12	360	± 10%	8,4	30,6
024DC	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
048DC	48	5 700	± 10%	33,6	122,4
060DC	60	7 500	± 10%	42,0	153,0
110DC	110	25 200	± 10%	77,0	280,0

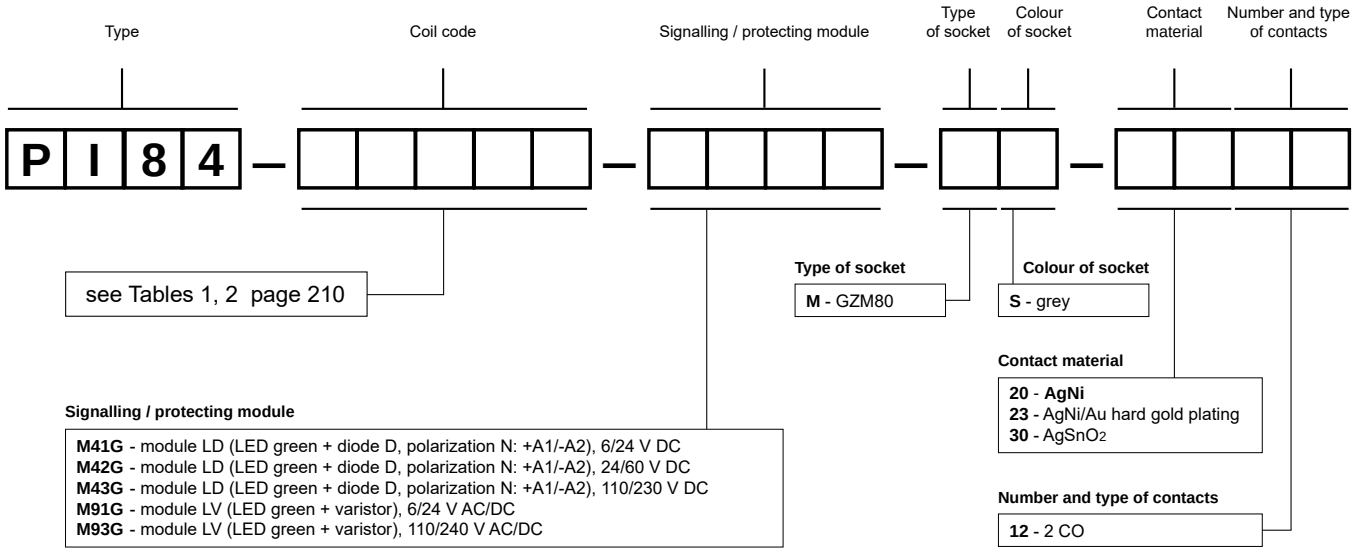
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
012AC	12	100	± 10%	9,6	13,2
024AC	**24**	**400**	**± 10%**	**19,2**	**26,4**
120AC	120	10 200	± 10%	96,0	144,0
230AC	**230**	**38 500**	**± 10%**	**184,0**	**253,0**
240AC	240	42 500	± 15%	192,0	288,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Examples of ordering codes:

PI84-012DC-M41G-MS-2012 interface relay **PI84** consists of: relay **RM84** (two changeover contacts, contact material AgNi, coil voltage 12 V DC), socket **GZM80** (grey, screw terminals), signalling / protecting module **M41G** (version LD), retainer / retractor clip **GZT80-0040** (plastic), description plate **GZT80-0035** (white)

PI84-230AC-M93G-MS-3012 interface relay **PI84** consists of: relay **RM84** (two changeover contacts, contact material $AgSnO_2$, coil voltage 230 V AC 50/60 Hz), socket **GZM80** (grey, screw terminals), signalling / protecting module **M93G** (version LV), retainer / retractor clip **GZT80-0040** (plastic), description plate **GZT80-0035** (white)

RM84 + GZMB80

- Interface relay **PI84 with socket GZMB80** consists of: electromagnetic relay **RM84**, black plug-in socket **GZMB80**, signalling / protecting module **type M...**, retainer / retractor clip **GZMB80-0040** (plastic), white description plate **TR**
- 35 mm rail mount acc. to PN-EN 60715
- Recognitions, certifications, directives: recognitions RM84, RoHS,

Contact data

Number and type of contacts		2 CO
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	8 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	550 W (single-phase motor)
	DC1	8 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		15 A $AgSnO_2$
Rated current		8 A
Max. breaking capacity	AC1	2 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 230 V
	DC	12 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 4, 5
Rated power consumption	AC	0,75 VA
	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	300 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	2 500 V AC
• contact clearance	1 000 V AC type of clearance: micro-disconnection
• pole - pole	2 500 V AC
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

Operating / release time (typical values)		7 ms / 3 ms
Electrical life		
• resistive AC1		> 10^5 8 A, 250 V AC
• cosφ		see Fig. 2
• DC L/R=40 ms		> 10^5 0,12 A, 220 V DC
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		97 x 16 x 69 mm
Weight		60 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C DC: -40...+85 °C
Cover protection category		IP 20 PN-EN 60529
Environmental protection		RM84: RTII GZMB80: RT0 PN-EN 116000-3
Shock resistance		20 g
Vibration resistance	(NO/NC)	10 g / 5 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.

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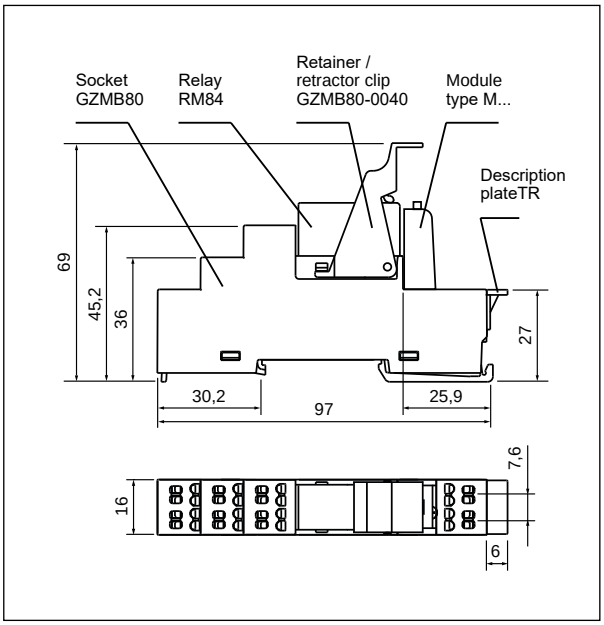
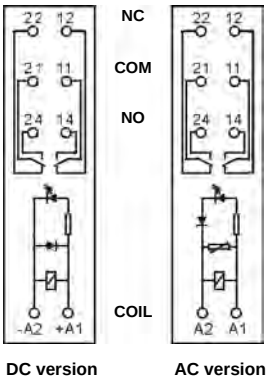
Dimensions



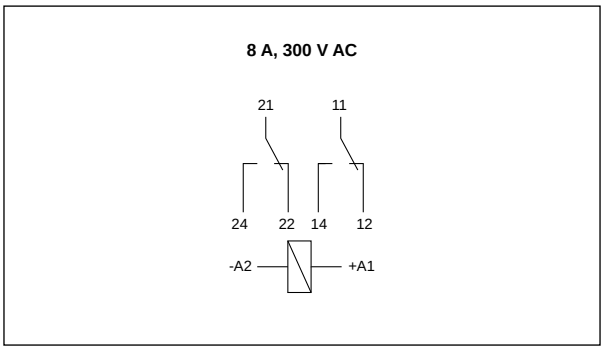
Connection diagrams
(spring terminals side view)



Mounting

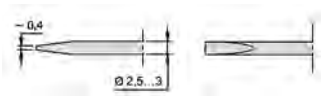
Relays **PI84 with socket GZMB80** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. **Connections:** max. cross section of the cables: 1 x 0,2...1,5 mm^2 (1 x 24...16 AWG), length of the cable deinsulation: 9...11 mm.

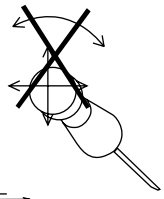
Connection of GZMB80 socket



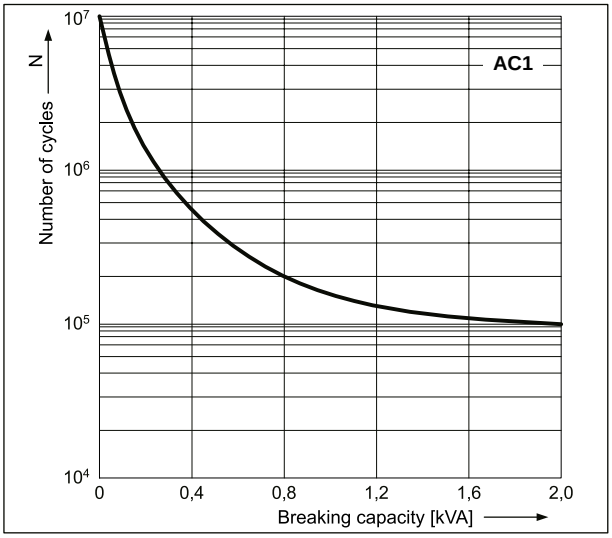
Wire connection

The drawings present the sequence of operations in course of inserting wires to the spring terminal, and the recommended screwdriver to be used for opening of case springs, comply with the DIN 5264 FORM „A".

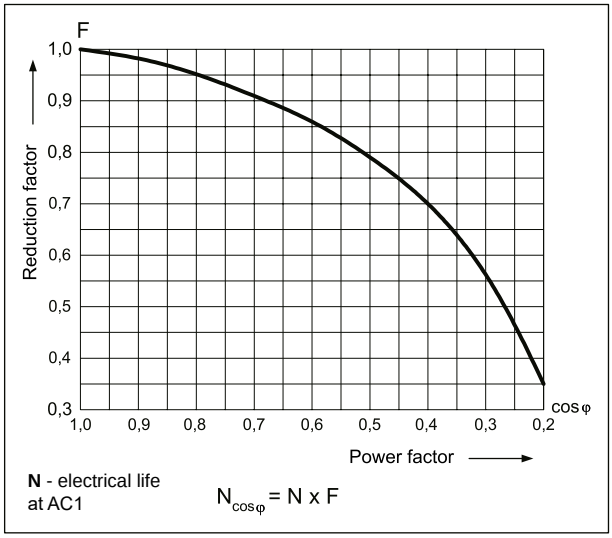




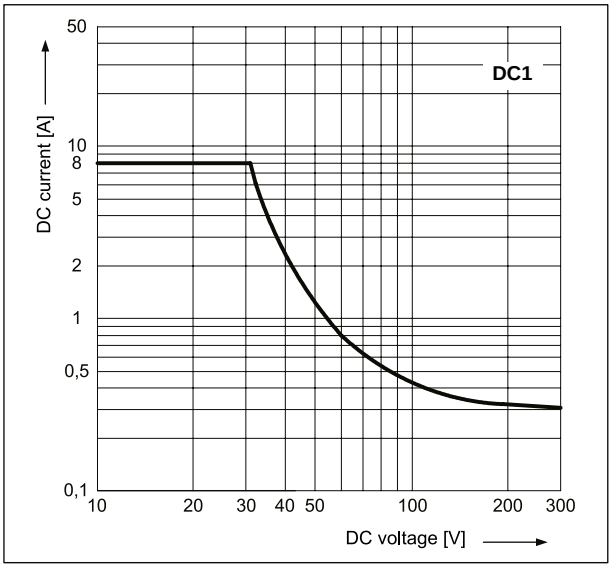
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



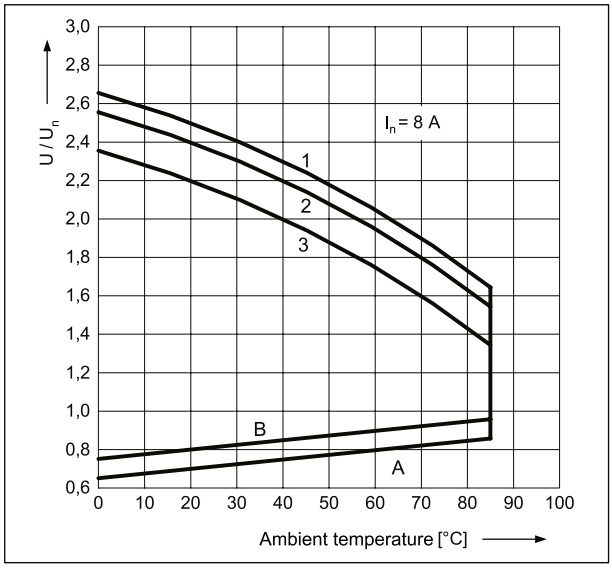
Electrical life reduction factor at AC inductive load Fig. 2



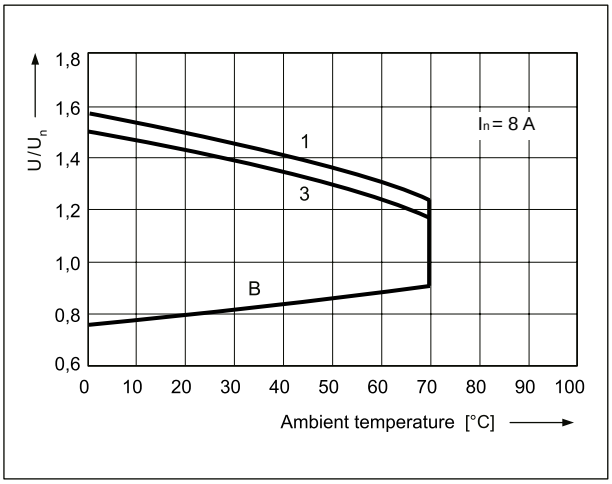
Max. DC resistive load breaking capacity Fig. 3



Coil operating range - DC Fig. 4



Coil operating range - AC 50 Hz Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

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Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
012DC	**12**	**360**	**± 10%**	**8,4**	**30,6**
024DC	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
110DC	110	25 200	± 10%	77,0	280,0

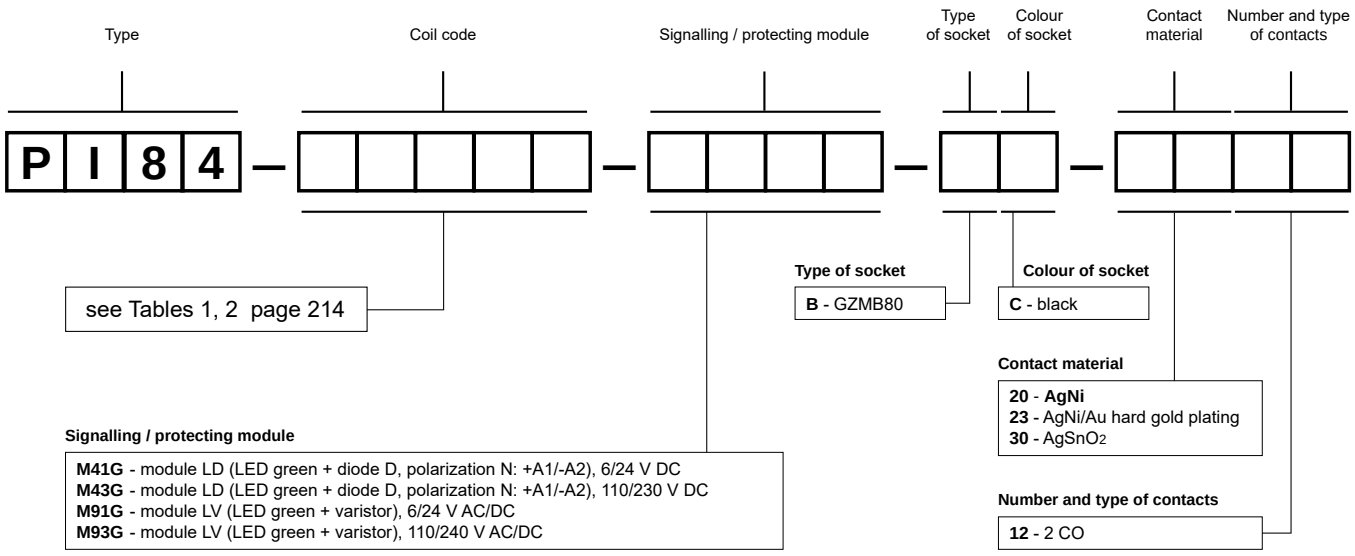
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
012AC	12	100	± 10%	9,6	13,2
024AC	**24**	**400**	**± 10%**	**19,2**	**26,4**
110AC	110	8 900	± 10%	88,0	132,0
120AC	120	10 200	± 10%	96,0	144,0
230AC	**230**	**38 500**	**± 10%**	**184,0**	**253,0**

The data in bold type relate to the standard versions of the relays.

Ordering codes



Examples of ordering codes:

PI84-012DC-M41G-BC-2012 — interface relay **PI84** consists of: relay **RM84** (two changeover contacts, contact material AgNi, coil voltage 12 V DC), socket **GZMB80** (black, spring terminals), signalling / protecting module **M41G** (version LD), retainer / retractor clip **GZMB80-0040** (plastic), description plate **TR** (white)

PI84-230AC-M93G-BC-3012 — interface relay **PI84** consists of: relay **RM84** (two changeover contacts, contact material $AgSnO_2$, coil voltage 230 V AC 50/60 Hz), socket **GZMB80** (black, spring terminals), signalling / protecting module **M93G** (version LV), retainer / retractor clip **GZMB80-0040** (plastic), description plate **TR** (white)

RM85 + GZT80

- Interface relay **PI85 with socket GZT80** consists of: electromagnetic relay **RM85**, grey plug-in socket **GZT80**, signalling / protecting module **type M...**, retainer / retractor clip **GZT80-0040** (plastic), white description plate **GZT80-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw • May be linked with interconnection strip type **ZGGZ80**
- Recognitions, certifications, directives: recognitions RM85, RoHS,

CE EAC

Contact data

Number and type of contacts		1 CO
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	16 A / 250 V AC ❶
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	750 W (single-phase motor)
	DC1	16 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		30 A
Rated current		16 A
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 240 V
	DC	12 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 4, 5
Rated power consumption	AC	0,75 VA
	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	300 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	1 000 V AC type of clearance: micro-disconnection
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

Operating / release time (typical values)		7 ms / 3 ms
Electrical life		
• resistive AC1		> 0,7 x 10^5 16 A, 250 V AC
• cosφ		see Fig. 2
• DC L/R=40 ms		> 10^5 0,12 A, 220 V DC
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		80 x 15,6 x 67 mm
Weight		61 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C DC: -40...+85 °C
Cover protection category		IP 20 PN-EN 60529
Environmental protection		RM85: RTII GZT80: RT0 PN-EN 116000-3
Shock resistance		30 g
Vibration resistance		10 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.
❶ Loads above 12 A require bridging pairs of terminals: 11 with 21, 12 with 22, 14 with 24 - see page 216.

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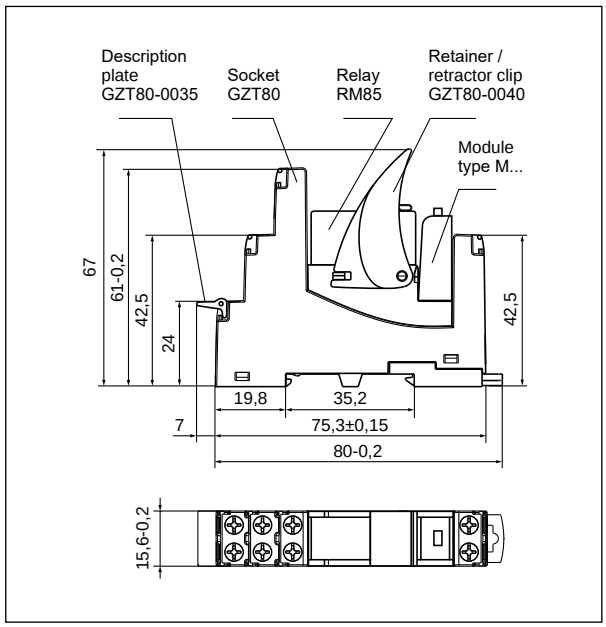
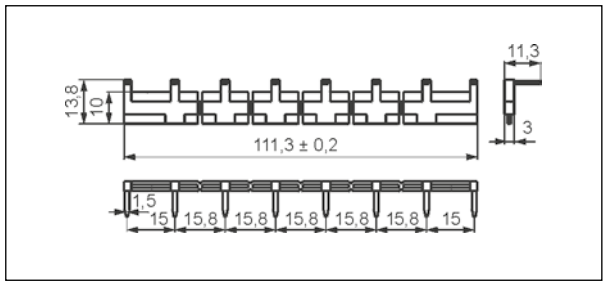
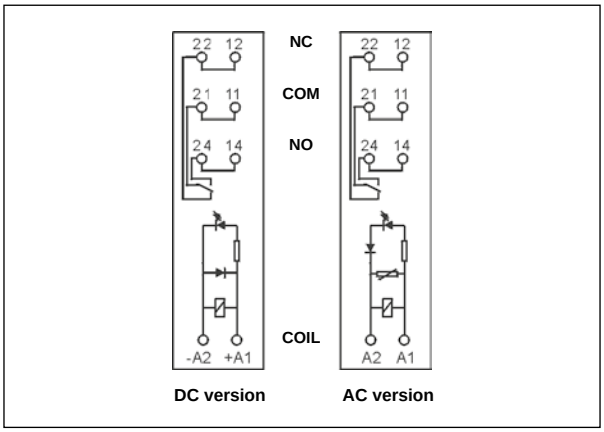
Dimensions



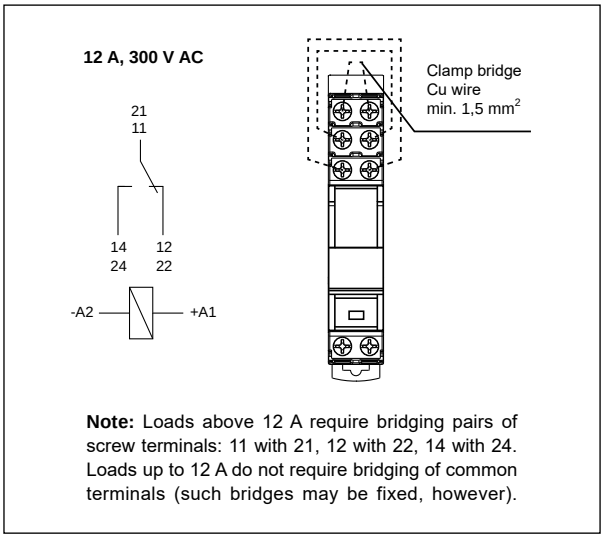


Interconnection strip type **ZGGZ80**

Connection diagrams
(screw terminals side view)



Connection of GZT80 socket



Note: Loads above 12 A require bridging pairs of screw terminals: 11 with 21, 12 with 22, 14 with 24. Loads up to 12 A do not require bridging of common terminals (such bridges may be fixed, however).

Mounting

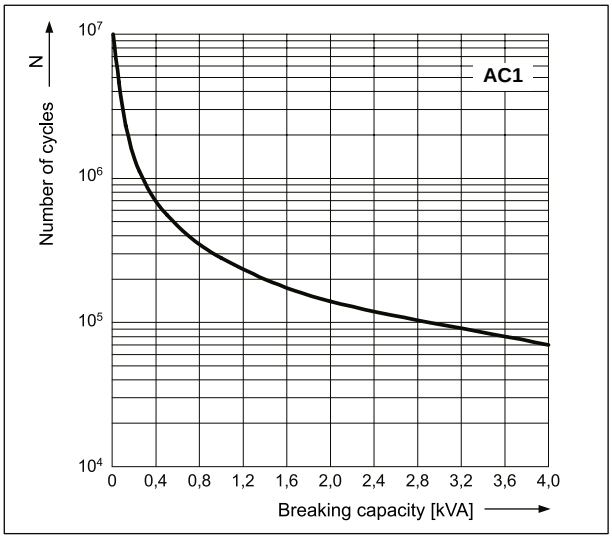
Relays **PI85 with socket GZT80** ❷ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. **Connections:** max. cross section of the cables (stranded): 2 x 2,5 mm² (2 x 14 AWG), length of the cable deinsulation: 6,5 mm, max. tightening moment for the terminal: 0,7 Nm.

❷ Plug-in sockets **GZT80** may be linked with interconnection strip type **ZGGZ80**. Strip **ZGGZ80** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 8 sockets. Colours of strips: **ZGGZ80-1** grey, **ZGGZ80-2** black (see page 418).

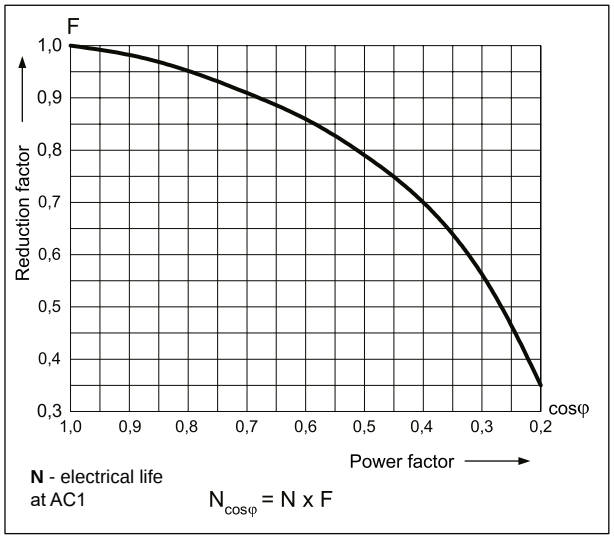
ZGGZ80

Interconnection strip ZGGZ80:
bridging of common input signals.

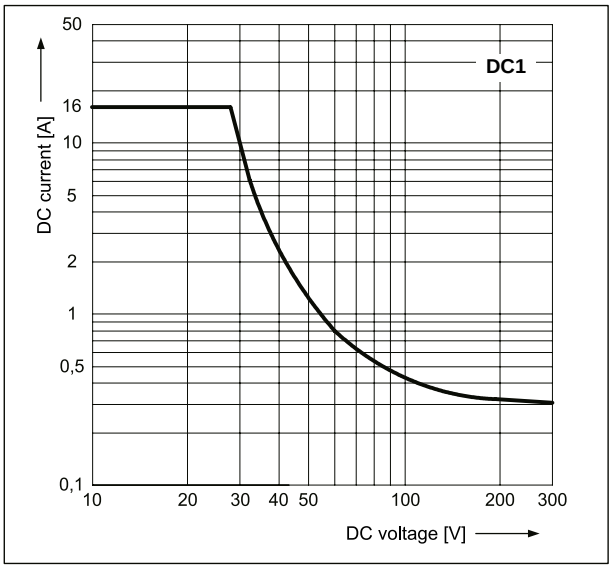
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



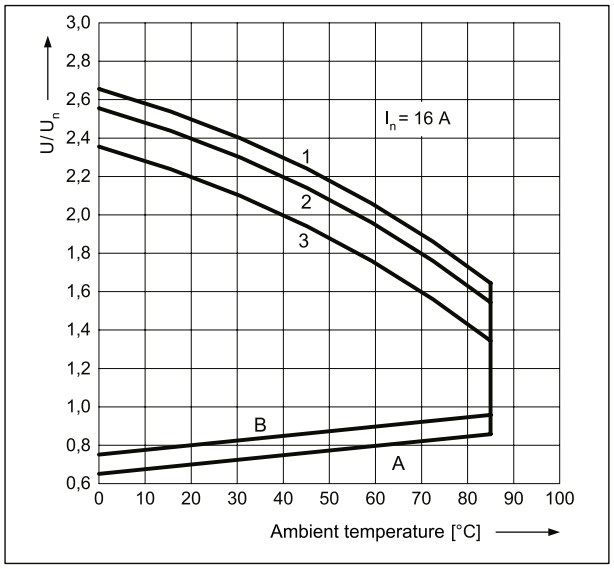
Electrical life reduction factor at AC inductive load Fig. 2



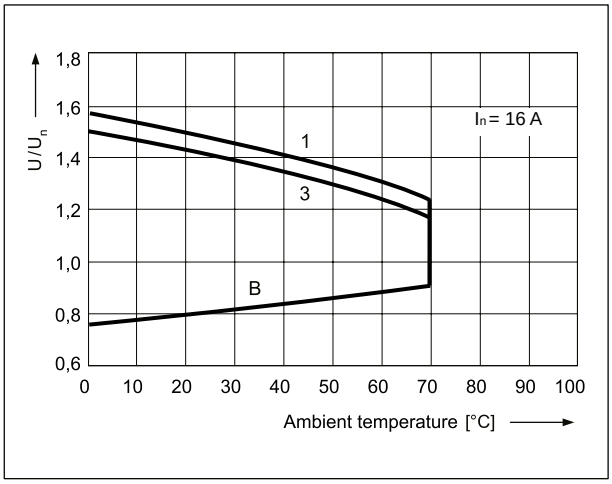
Max. DC resistive load breaking capacity Fig. 3



Coil operating range - DC Fig. 4



Coil operating range - AC 50 Hz Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

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Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
012DC	12	360	± 10%	8,4	30,6
024DC	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
048DC	48	5 700	± 10%	33,6	122,4
110DC	110	25 200	± 10%	77,0	280,0

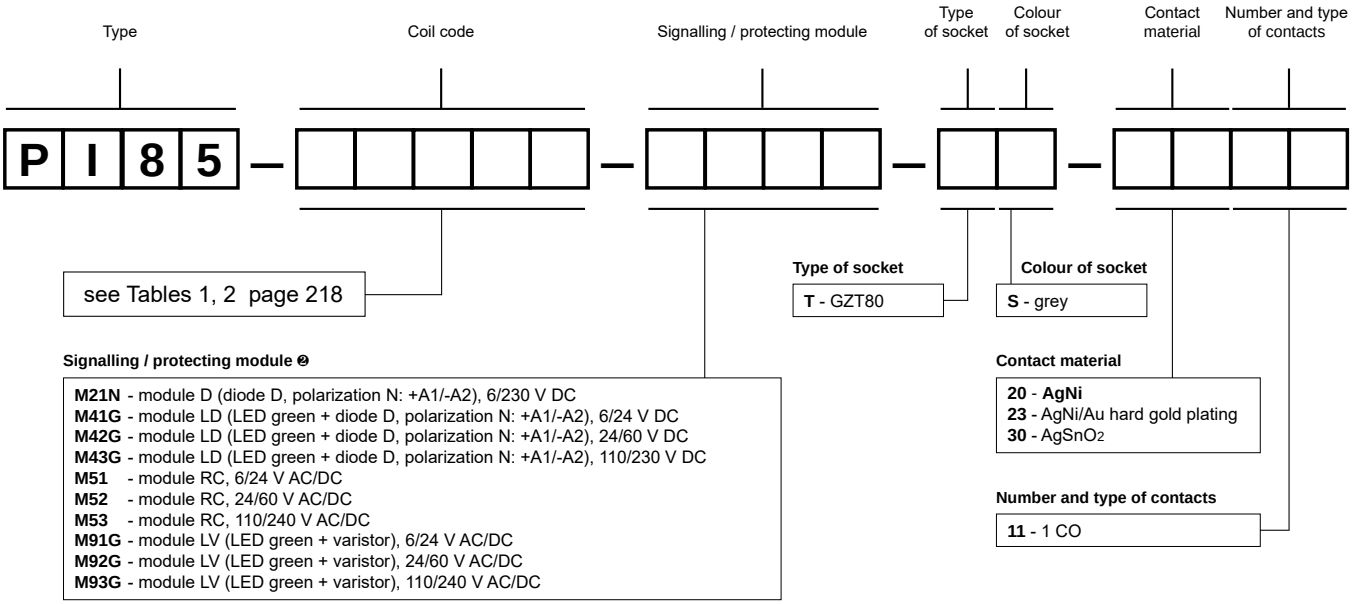
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
012AC	12	100	± 10%	9,6	13,2
024AC	**24**	**400**	**± 10%**	**19,2**	**26,4**
048AC	48	1 550	± 10%	38,4	57,6
120AC	120	10 200	± 10%	96,0	144,0
230AC	**230**	**38 500**	**± 10%**	**184,0**	**253,0**
240AC	240	42 500	± 15%	192,0	288,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



❷ Modules D, RC - only for versions with contacts AgNi

Examples of ordering codes:

PI85-012DC-M41G-TS-2011 — interface relay **PI85** consists of: relay **RM85** (one changeover contact, contact material AgNi, coil voltage 12 V DC), socket **GZT80** (grey, screw terminals), signalling / protecting module **M41G** (version LD), retainer / retractor clip **GZT80-0040** (plastic), description plate **GZT80-0035** (white)

PI85-230AC-M93G-TS-3011 — interface relay **PI85** consists of: relay **RM85** (one changeover contact, contact material $AgSnO_2$, coil voltage 230 V AC 50/60 Hz), socket **GZT80** (grey, screw terminals), signalling / protecting module **M93G** (version LV), retainer / retractor clip **GZT80-0040** (plastic), description plate **GZT80-0035** (white)

RM85 + GZM80

- Interface relay **PI85 with socket GZM80** consists of: electromagnetic relay **RM85**, grey plug-in socket **GZM80**, signalling / protecting module **type M...**, retainer / retractor clip **GZT80-0040** (plastic), white description plate **GZT80-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw • May be linked with interconnection strip type **ZGGZ80**
- Recognitions, certifications, directives: recognitions RM85, RoHS,

Contact data

Number and type of contacts		1 CO
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	16 A / 250 V AC ❶
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	750 W (single-phase motor)
	DC1	16 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		30 A
Rated current		16 A
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 240 V
	DC	12 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 4, 5
Rated power consumption	AC	0,75 VA
	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	300 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	1 000 V AC type of clearance: micro-disconnection
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

Operating / release time (typical values)		7 ms / 3 ms
Electrical life		
• resistive AC1		> 0,7 x 10^5 16 A, 250 V AC
• cosφ		see Fig. 2
• DC L/R=40 ms		> 10^5 0,12 A, 220 V DC
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		81,6 x 15,9 x 67 mm
Weight		60 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C DC: -40...+85 °C
Cover protection category		IP 20 PN-EN 60529
Environmental protection		RM85: RTII GZM80: RT0 PN-EN 116000-3
Shock resistance		30 g
Vibration resistance		10 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.
❶ Loads above 12 A require bridging pairs of terminals: 11 with 21, 12 with 22, 14 with 24 - see page 220.

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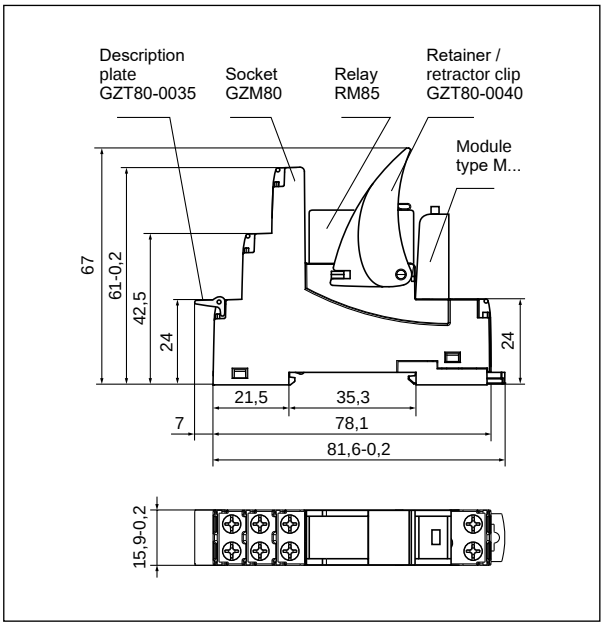
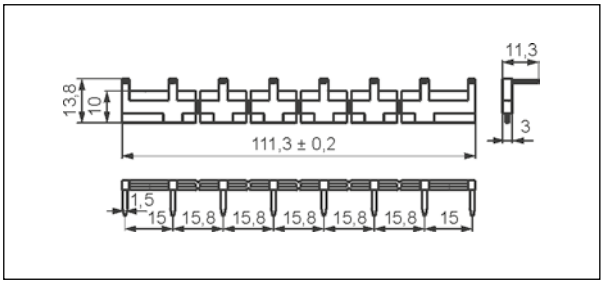
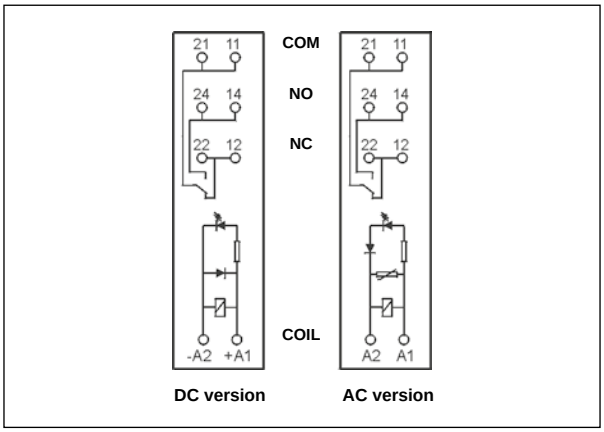
Dimensions



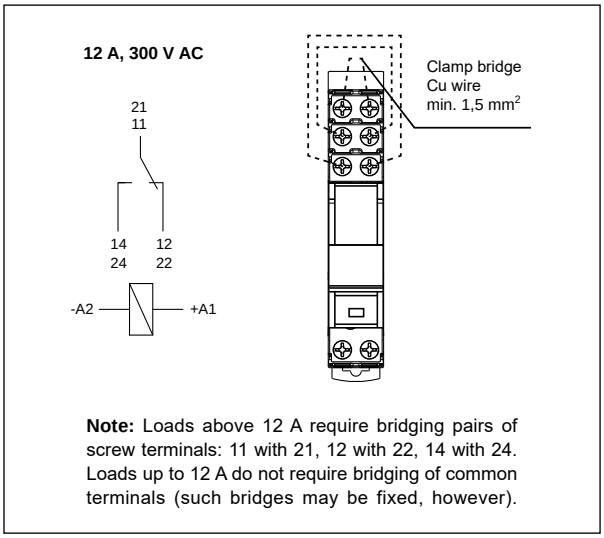


Interconnection strip type **ZGGZ80**

Connection diagrams
(screw terminals side view)



Connection of GZM80 socket



Note: Loads above 12 A require bridging pairs of screw terminals: 11 with 21, 12 with 22, 14 with 24. Loads up to 12 A do not require bridging of common terminals (such bridges may be fixed, however).

Mounting

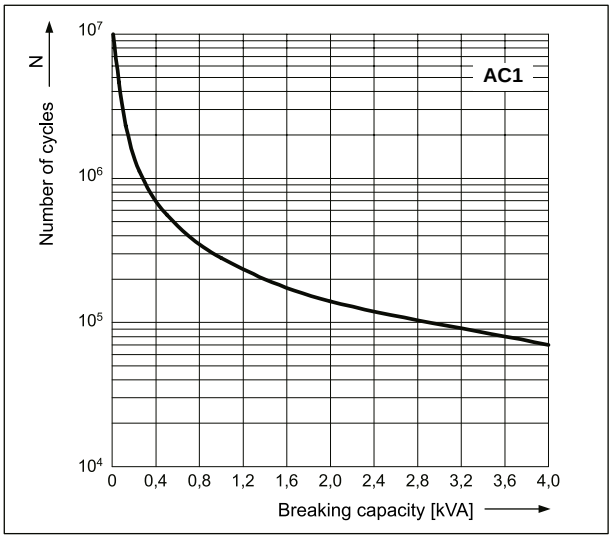
Relays **PI85 with socket GZM80** ❷ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. **Connections:** max. cross section of the cables (stranded): 2 x 2,5 mm² (2 x 14 AWG), length of the cable deinsulation: 6,5 mm, max. tightening moment for the terminal: 0,7 Nm.

❷ Plug-in sockets **GZM80** may be linked with interconnection strip type **ZGGZ80**. Strip **ZGGZ80** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 8 sockets. Colours of strips: **ZGGZ80-1** grey, **ZGGZ80-2** black (see page 418).

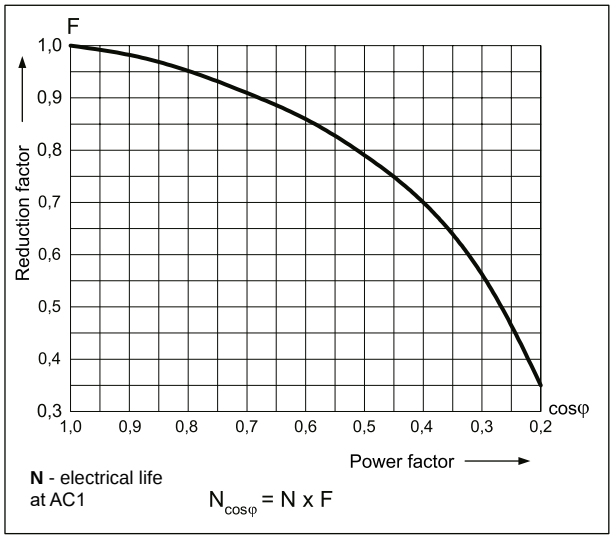
ZGGZ80

Interconnection strip ZGGZ80:
bridging of common input signals.

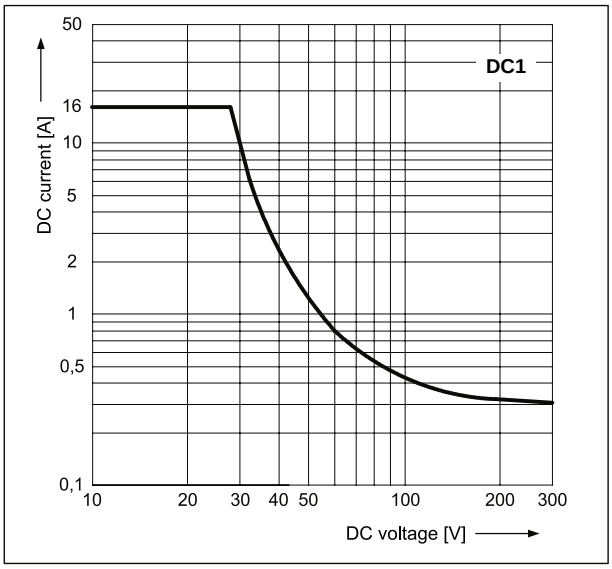
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



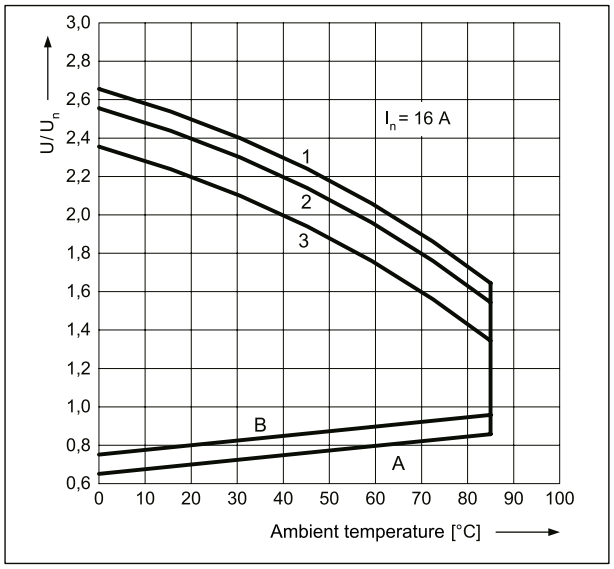
Electrical life reduction factor at AC inductive load Fig. 2



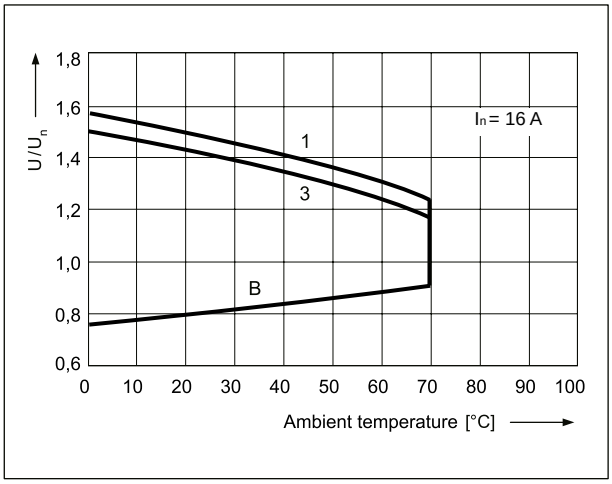
Max. DC resistive load breaking capacity Fig. 3



Coil operating range - DC Fig. 4



Coil operating range - AC 50 Hz Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

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Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
012DC	12	360	± 10%	8,4	30,6
024DC	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
048DC	48	5 700	± 10%	33,6	122,4
060DC	60	7 500	± 10%	42,0	153,0
110DC	110	25 200	± 10%	77,0	280,0

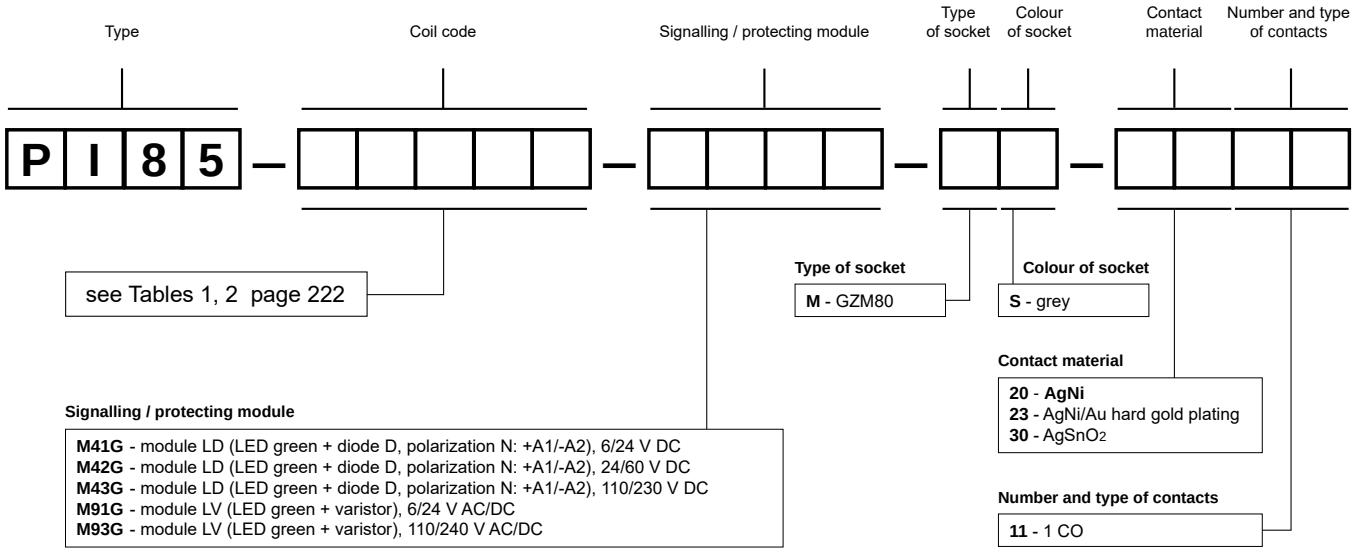
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
012AC	12	100	± 10%	9,6	13,2
024AC	**24**	**400**	**± 10%**	**19,2**	**26,4**
120AC	120	10 200	± 10%	96,0	144,0
230AC	**230**	**38 500**	**± 10%**	**184,0**	**253,0**
240AC	240	42 500	± 15%	192,0	288,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Examples of ordering codes:

PI85-012DC-M41G-MS-2011 — interface relay **PI85** consists of: relay **RM85** (one changeover contact, contact material AgNi, coil voltage 12 V DC), socket **GZM80** (grey, screw terminals), signalling / protecting module **M41G** (version LD), retainer / retractor clip **GZT80-0040** (plastic), description plate **GZT80-0035** (white)

PI85-230AC-M93G-MS-3011 — interface relay **PI85** consists of: relay **RM85** (one changeover contact, contact material $AgSnO_2$, coil voltage 230 V AC 50/60 Hz), socket **GZM80** (grey, screw terminals), signalling / protecting module **M93G** (version LV), retainer / retractor clip **GZT80-0040** (plastic), description plate **GZT80-0035** (white)

RM85 + GZMB80

- Interface relay **PI85 with socket GZMB80** consists of: electromagnetic relay **RM85**, black plug-in socket **GZMB80**, signalling / protecting module **type M...**, retainer / retractor clip **GZMB80-0040** (plastic), white description plate **TR**
- 35 mm rail mount acc. to PN-EN 60715
- Recognitions, certifications, directives: recognitions RM85, RoHS,

Contact data

Number and type of contacts		1 CO
Contact material		**AgNi**, AgNi/Au hard gold plating, $AgSnO_2$
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V AgNi, 5 V AgNi/Au hard gold plating, 10 V $AgSnO_2$
Rated load (capacity)	AC1	10 A / 250 V AC; 16 A / 250 V AC ❶
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	750 W (single-phase motor)
	DC1	16 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA AgNi, 2 mA AgNi/Au hard gold plating, 10 mA $AgSnO_2$
Max. inrush current		30 A $AgSnO_2$
Rated current		16 A
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		0,3 W AgNi, 0,05 W AgNi/Au hard gold plating, 1 W $AgSnO_2$
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 230 V
	DC	12 ... 110 V
Must release voltage		AC: ≥ 0,15 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1, 2 and Fig. 4, 5
Rated power consumption	AC	0,75 VA
	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	300 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	2 500 V AC
• contact clearance	1 000 V AC type of clearance: micro-disconnection
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

Operating / release time (typical values)		7 ms / 3 ms
Electrical life		
• resistive AC1		> 0,7 x 10^5 16 A, 250 V AC
• cosφ		see Fig. 2
• DC L/R=40 ms		> 10^5 0,12 A, 220 V DC
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		97 x 16 x 69 mm
Weight		60 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+70 °C DC: -40...+85 °C
Cover protection category		IP 20 PN-EN 60529
Environmental protection		RM85: RTII GZMB80: RT0 PN-EN 116000-3
Shock resistance		30 g
Vibration resistance		10 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.
❶ Loads above 10 A require bridging pairs of terminals: 11 with 21, 12 with 22, 14 with 24 - see page 224.

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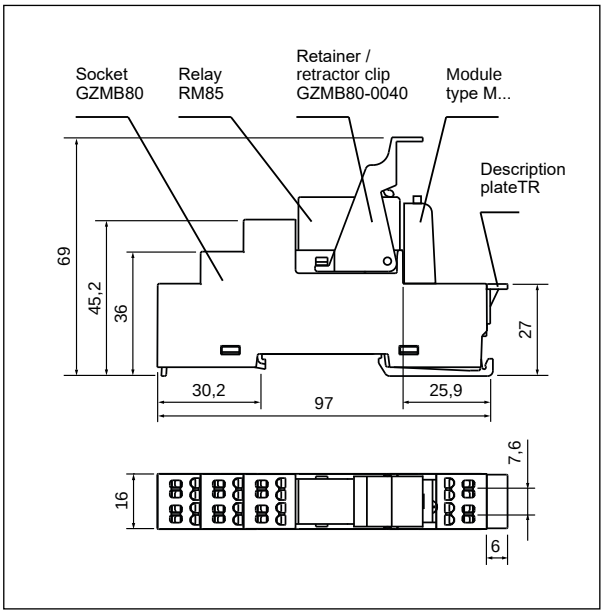
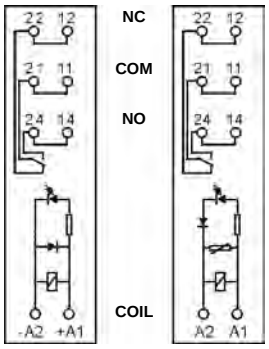
Dimensions



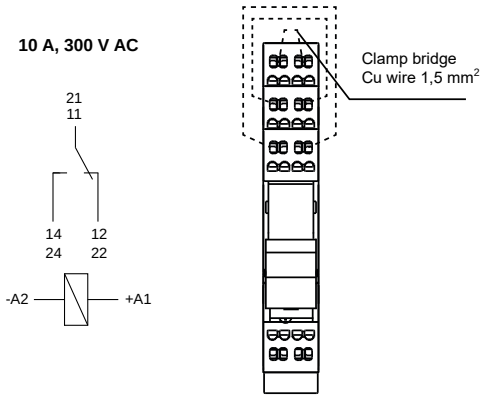
Mounting

Relays **PI85 with socket GZMB80** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. **Connections:** max. cross section of the cables: 1 x 0,2...1,5 mm² (1 x 24...16 AWG), length of the cable deinsulation: 9...11 mm.

Connection diagrams
(spring terminals side view)



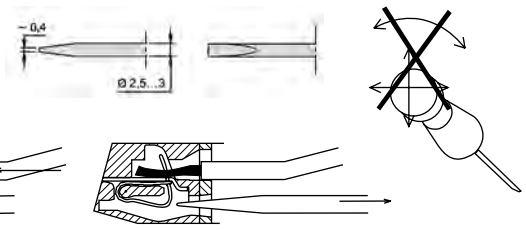
Connection of GZMB80 socket



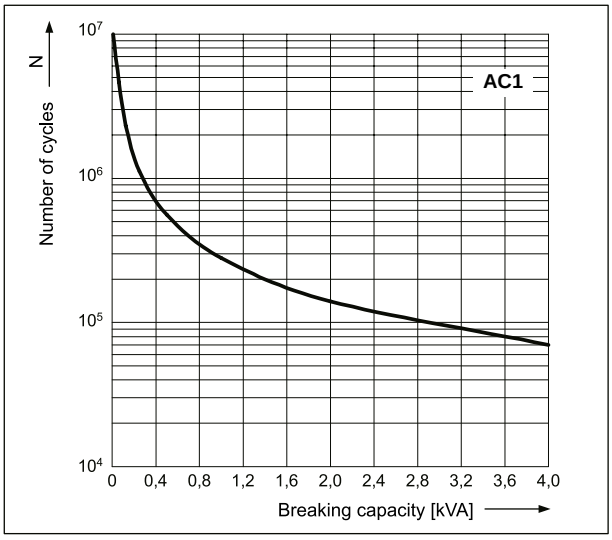
Note: Loads above 10 A require bridging pairs of spring terminals: 11 with 21, 12 with 22, 14 with 24. Loads up to 10 A do not require bridging of common terminals (such bridges may be fixed, however).

Wire connection

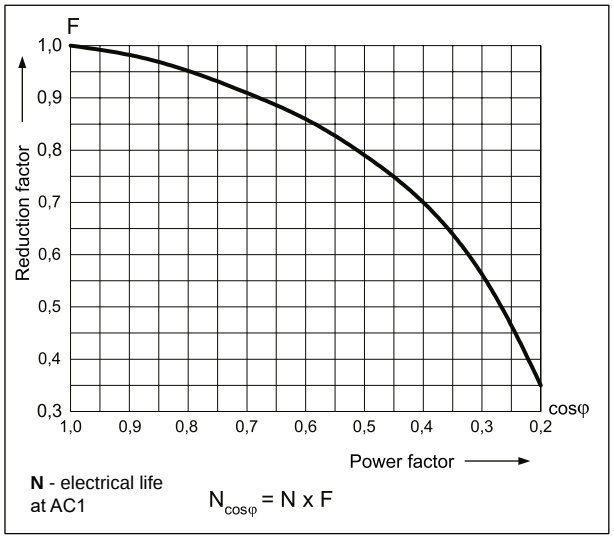
The drawings present the sequence of operations in course of inserting wires to the spring terminal, and the recommended screwdriver to be used for opening of case springs, comply with the DIN 5264 FORM „A".



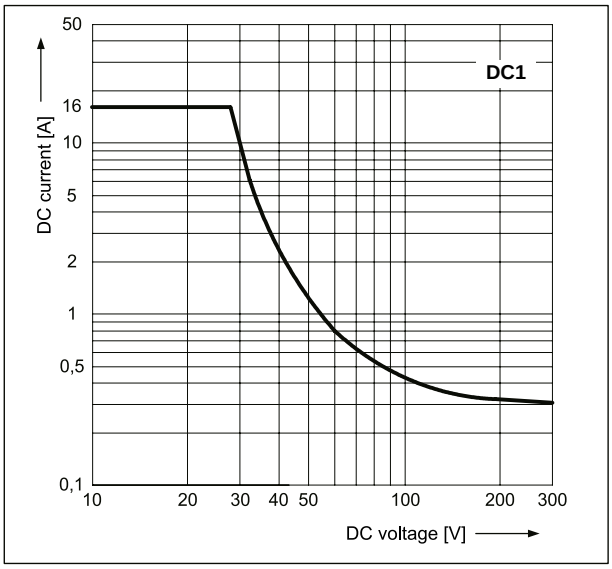
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1



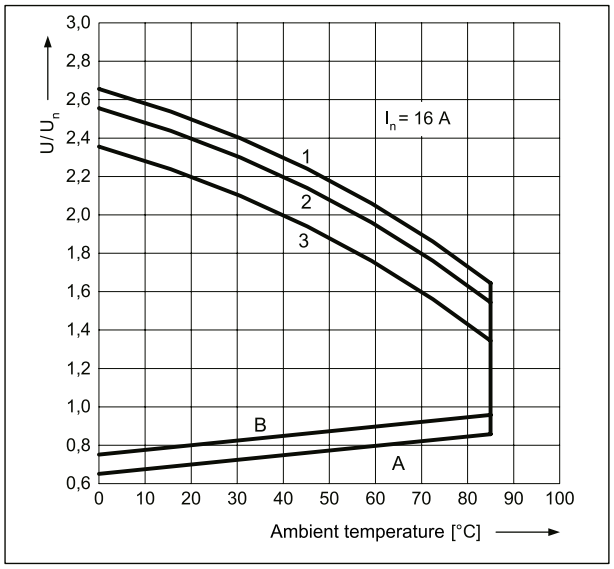
Electrical life reduction factor at AC inductive load Fig. 2



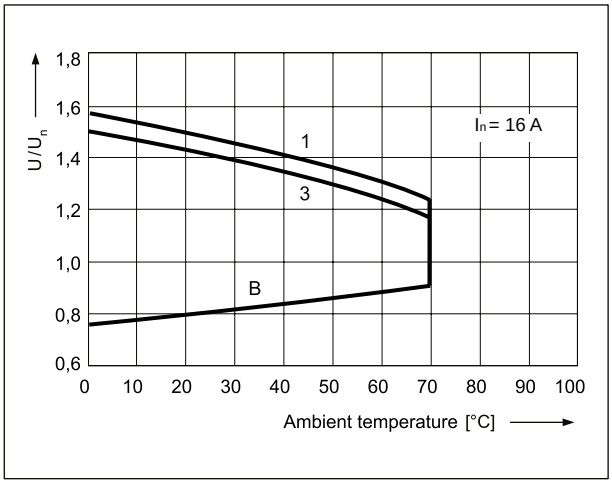
Max. DC resistive load breaking capacity Fig. 3



Coil operating range - DC Fig. 4



Coil operating range - AC 50 Hz Fig. 5



Description of Fig. 4 and 5

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

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Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
012DC	**12**	**360**	**± 10%**	**8,4**	**30,6**
024DC	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
110DC	110	25 200	± 10%	77,0	280,0

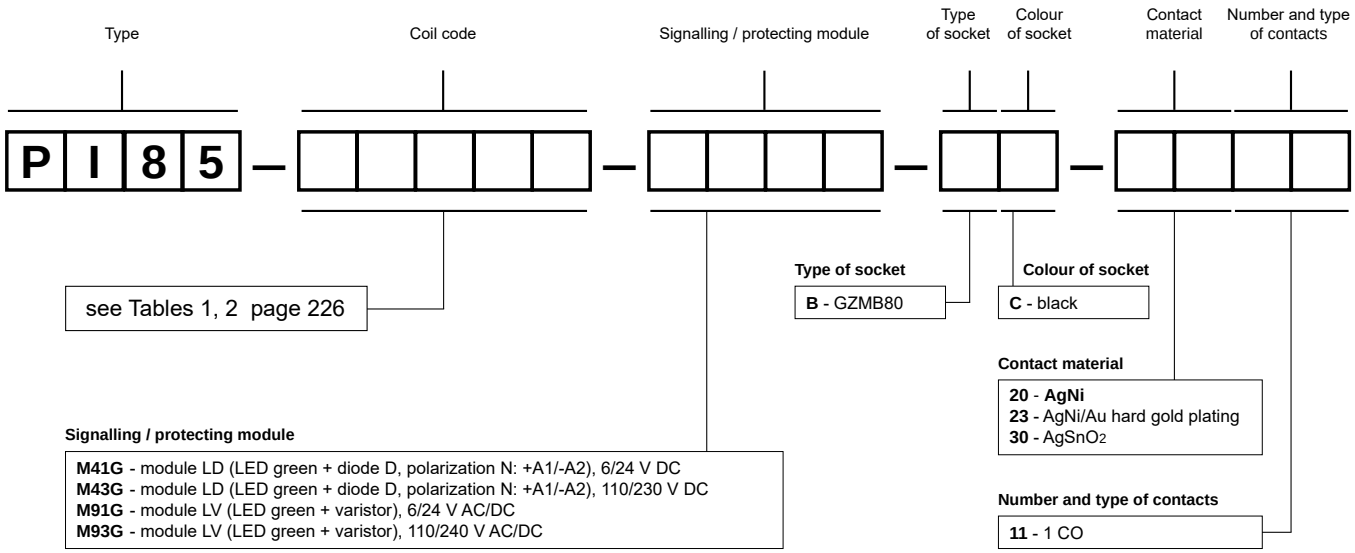
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC 50 Hz	
				min. (at 20 °C)	max. (at 20 °C)
012AC	12	100	± 10%	9,6	13,2
024AC	**24**	**400**	**± 10%**	**19,2**	**26,4**
110AC	110	8 900	± 10%	88,0	132,0
120AC	120	10 200	± 10%	96,0	144,0
230AC	**230**	**38 500**	**± 10%**	**184,0**	**253,0**

The data in bold type relate to the standard versions of the relays.

Ordering codes



Examples of ordering codes:

PI85-012DC-M41G-BC-2011 — interface relay **PI85** consists of: relay **RM85** (one changeover contact, contact material AgNi, coil voltage 12 V DC), socket **GZMB80** (black, spring terminals), signalling / protecting module **M41G** (version LD), retainer / retractor clip **GZMB80-0040** (plastic), description plate **TR** (white)

PI85-230AC-M93G-BC-3011 — interface relay **PI85** consists of: relay **RM85** (one changeover contact, contact material $AgSnO_2$, coil voltage 230 V AC 50/60 Hz), socket **GZMB80** (black, spring terminals), signalling / protecting module **M93G** (version LV), retainer / retractor clip **GZMB80-0040** (plastic), description plate **TR** (white)

RM85 inrush + GZT80

NEW

- Interface relay **PI85 inrush with socket GZT80** consists of: electromagnetic relay **RM85 inrush**, grey plug-in socket **GZT80**, signalling / protecting module **type M...**, retainer / retractor clip **GZT80-0040** (plastic), white description plate **GZT80-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw • May be linked with interconnection strip type **ZGGZ80**
- **Resistance to inrush current 80 A (20 ms)** • Recognitions, certifications, directives: recognitions RM85 inrush, RoHS, CE EAC

Contact data

Number and type of contacts		1 NO
Contact material		**$AgSnO_2$**
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		10 V
Rated load (capacity)	AC1	16 A / 250 V AC ❶
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	750 W (single-phase motor)
	DC1	16 A / 24 V DC (see Fig. 2)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		10 mA
Max. inrush current		80 A 20 ms
Rated current		16 A
Max. breaking capacity	AC1	4 000 VA
Min. breaking capacity		1 W
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	600 cycles/hour
• no load		72 000 cycles/hour

Coil data

Rated voltage	DC	12 ... 110 V
Must release voltage		DC: ≥ 0,1 U_n
Operating range of supply voltage		see Table 1 and Fig. 3
Rated power consumption	DC	0,4 ... 0,48 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	300 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	5 000 V AC type of insulation: reinforced
• contact clearance	1 000 V AC type of clearance: micro-disconnection
Contact - coil distance	
• clearance	≥ 10 mm
• creepage	≥ 10 mm

General data

Operating / release time (typical values)		8 ms / 3 ms
Electrical life		
• resistive AC1	600 cycles/hour	> 10^5 16 A, 250 V AC
• cosφ		see Fig. 1
• resistive DC1	600 cycles/hour	> 10^5 16 A, 24 V DC
• inductive AC3, I = 3,5 A		> 2,5 x 10^5
• at incandescent lamp load, 1000 W		> 0,9 x 10^5
Mechanical life (cycles)		> 3 x 10^7
Dimensions (L x W x H)		80 x 15,6 x 67 mm
Weight		61 g
Ambient temperature	• storage	-40...+85 °C
	• operating	-40...+85 °C
Cover protection category		IP 20 PN-EN 60529
Environmental protection		RM85 inrush: RTII GZT80: RT0 PN-EN 116000-3
Shock resistance		30 g
Vibration resistance		10 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.
❶ Loads above 12 A require bridging pairs of terminals: 11 with 21, 14 with 24 - see page 228.

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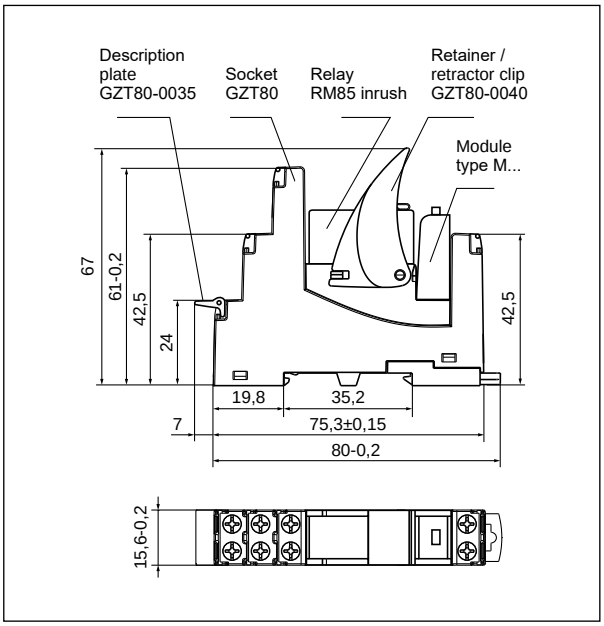
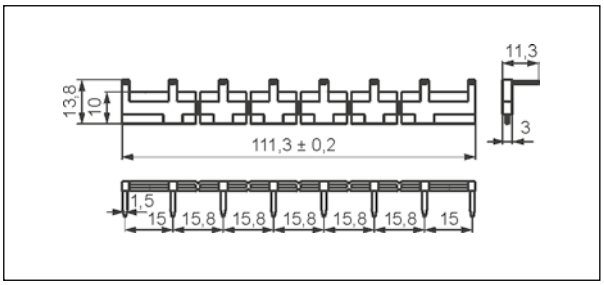
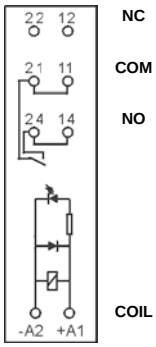
Dimensions





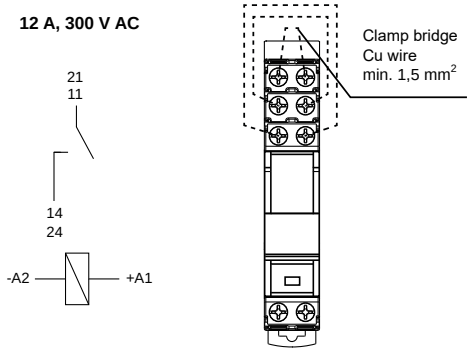
Interconnection strip type **ZGGZ80**

Connection diagrams
(screw terminals side view)



DC version

Connection of GZT80 socket



Note: Loads above 12 A require bridging pairs of screw terminals: 11 with 21, 14 with 24. Loads up to 12 A do not require bridging of common terminals (such bridges may be fixed, however).

Mounting

Relays **PI85 inrush with socket GZT80** ❷ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with one M3 screw. **Connections:** max. cross section of the cables (stranded): 2 x 2,5 mm² (2 x 14 AWG), length of the cable deinsulation: 6,5 mm, max. tightening moment for the terminal: 0,7 Nm.

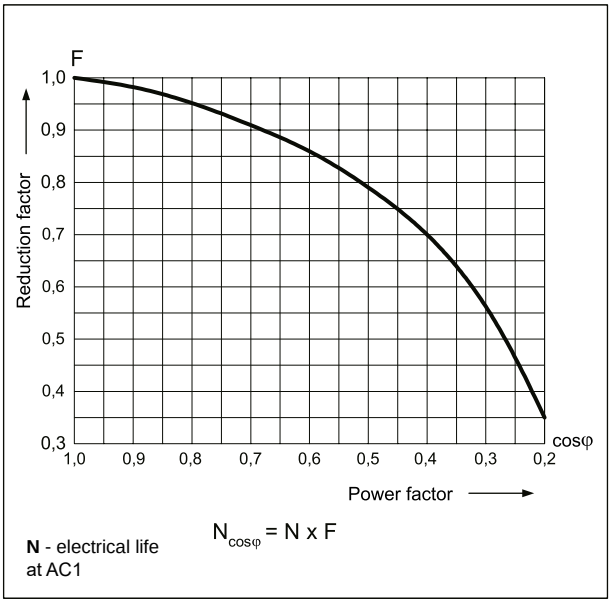
❷ Plug-in sockets **GZT80** may be linked with interconnection strip type **ZGGZ80**. Strip **ZGGZ80** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 8 sockets. Colours of strips: **ZGGZ80-1** grey, **ZGGZ80-2** black (see page 418).

ZGGZ80

Interconnection strip ZGGZ80:
bridging of common input signals.

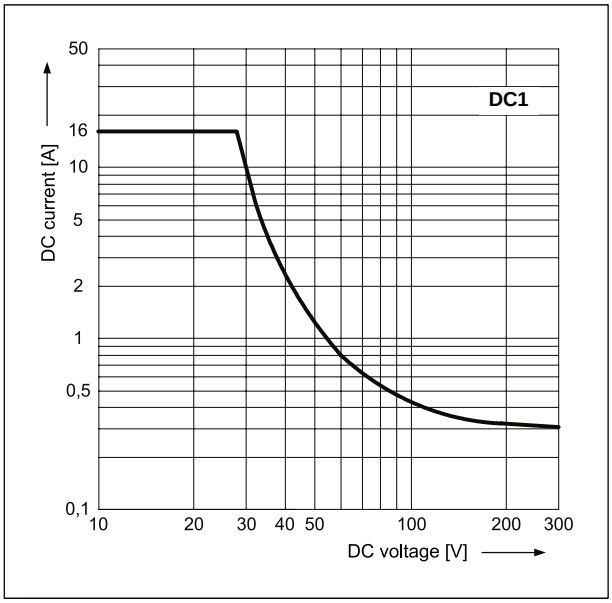
Electrical life reduction factor at AC inductive load

Fig. 1



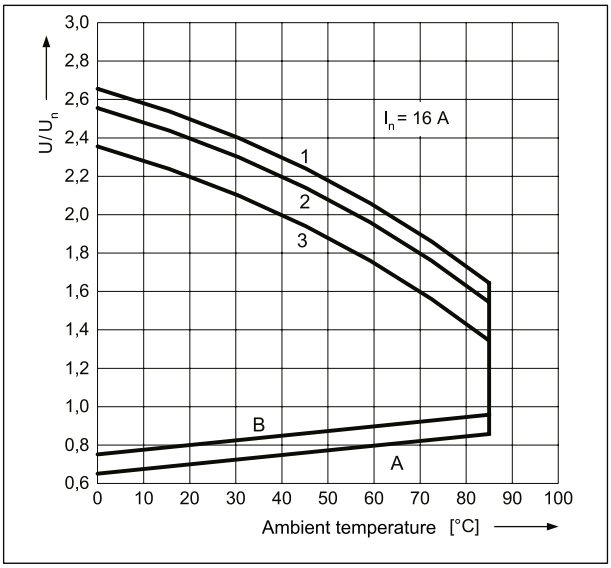
Max. DC resistive load breaking capacity

Fig. 2



Coil operating range - DC

Fig. 3



Description of Fig. 3

A - relations between make voltage and ambient temperature at no load on contacts. Coil temperature and ambient temperature are equal before coil energizing. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
B - relations between make voltage and ambient temperature after initial coil heating up with 1,1 U_n, at continues load of I_n on contacts. Make voltage is not higher than the value read on Y axis (multiplication of rated voltage).
1, 2, 3 - values on Y axis represent allowed overvoltage on coil at certain ambient temperature and contact load:
1 - no load
2 - 50% of rated load
3 - rated load

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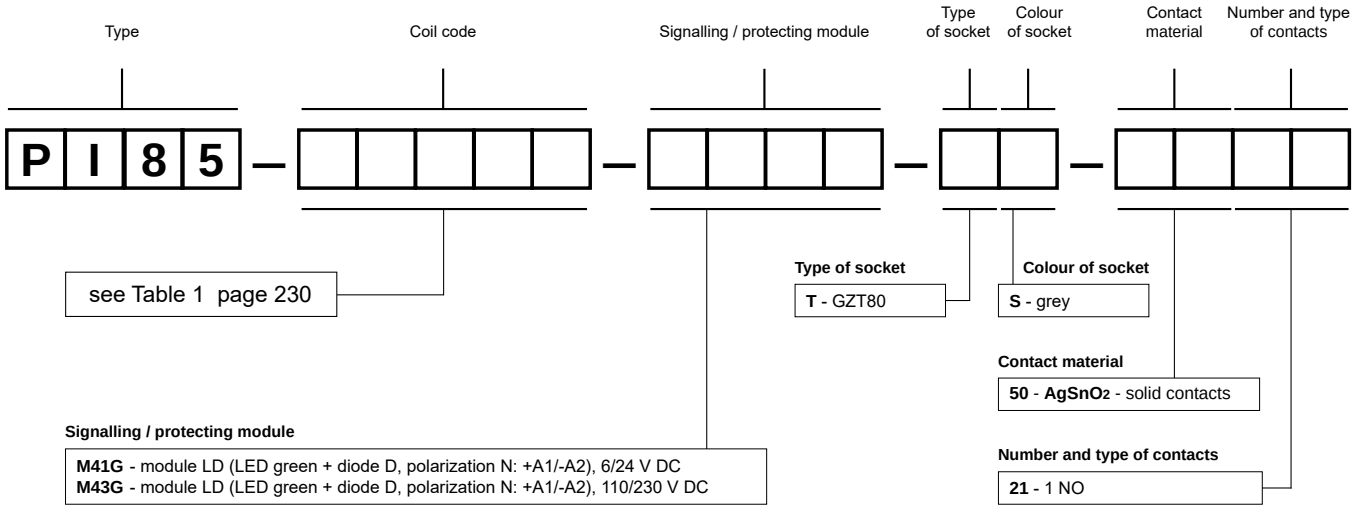
Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 20 °C)
012DC	12	360	± 10%	8,4	30,6
024DC	**24**	**1 440**	**± 10%**	**16,8**	**61,2**
110DC	110	25 200	± 10%	77,0	280,0

The data in bold type relate to the standard versions of the relays.

Ordering codes



Example of ordering code:

PI85-012DC-M41G-TS-5021

interface relay **PI85 inrush** consists of: relay **RM85 inrush** (one normally open contact, contact material $AgSnO_2$ - solid contacts, coil voltage 12 V DC), socket **GZT80** (grey, screw terminals), signalling / protecting module **M41G** (version LD), retainer / retractor clip **GZT80-0040** (plastic), description plate **GZT80-0035** (white)

R2N + GZM2

- Interface relay **PIR2 with socket GZM2** consists of: electromagnetic relay **R2N**, grey plug-in socket **GZM2**, signalling / protecting module **type M...**, retainer / retractor clip **GZT4-0040** (plastic), white description plate **GZT4-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • May be linked with interconnection strip type **ZGGZ4**
- Recognitions, certifications, directives: recognitions R2N, RoHS,

CE EAC

Contact data

Number and type of contacts		2 CO
Contact material		**AgNi**
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V
Rated load (capacity)	AC1	12 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	370 W (single-phase motor)
	DC1	12 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA
Max. inrush current		24 A
Rated current		12 A
Max. breaking capacity	AC1	3 000 VA
Min. breaking capacity		0,3 W
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		18 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 230 V
	DC	12 ... 110 V
Must release voltage		AC: ≥ 0,2 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1,2
Rated power consumption	AC	50 Hz: 1,6 VA 60 Hz: 1,3 VA
	DC	0,9 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	250 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength	
• between coil and contacts	2 500 V AC type of insulation: basic
• contact clearance	1 500 V AC type of clearance: micro-disconnection
• pole - pole	2 500 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 2,5 mm
• creepage	≥ 4 mm

General data

Operating / release time (typical values)		AC: 10 ms / 8 ms DC: 13 ms / 3 ms
Electrical life		
• resistive AC1		> 10^5 12 A, 250 V AC
• cosφ		see Fig. 2
Mechanical life (cycles)		> 2 x 10^7
Dimensions (L x W x H)		75 x 27 x 82 mm
Weight		97 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+55 °C DC: -40...+70 °C
Cover protection category		IP 20 PN-EN 60529
Environmental protection		R2: RTI GZM2: RT0 PN-EN 116000-3
Shock resistance	(NO/NC)	10 g / 5 g
Vibration resistance		5 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.

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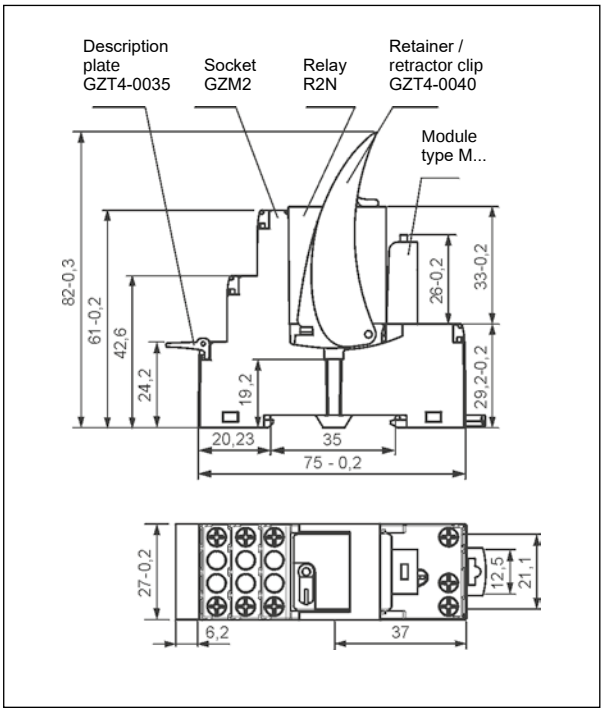
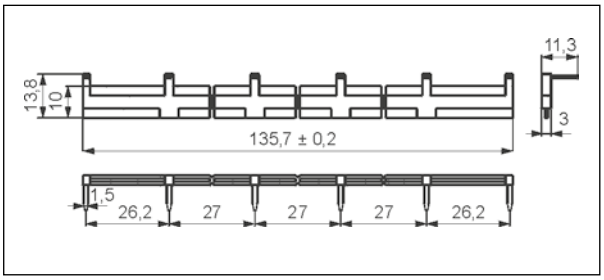
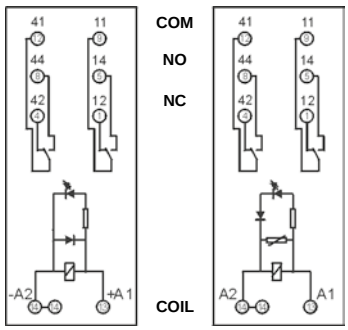
Dimensions





Interconnection strip type **ZGGZ4**

Connection diagrams
(screw terminals side view)



Mounting

Relays **PIR2 with socket GZM2** ❶ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws. **Connections:** max. cross section of the cables (stranded): 2 x 2,5 mm^2 (2 x 14 AWG), length of the cable deinsulation: 6,5 mm, max. tightening moment for the terminal: 0,7 Nm.

❶ Plug-in sockets **GZM2** may be linked with interconnection strip type **ZGGZ4**. Strip **ZGGZ4** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 6 sockets. Colours of strips: **ZGGZ4-1** grey, **ZGGZ4-2** black (see page 419).

ZGGZ4

Interconnection strip ZGGZ4:
bridging of common input signals.

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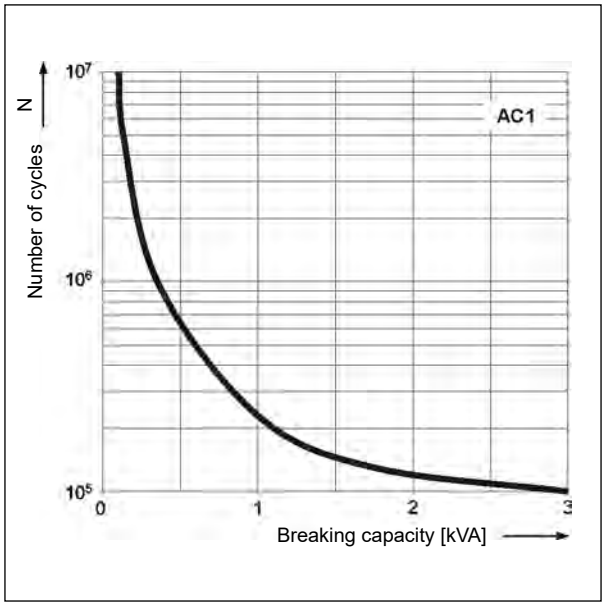
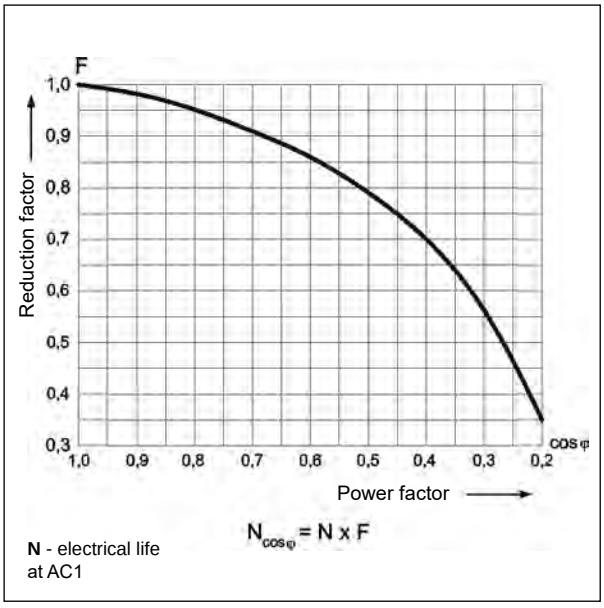
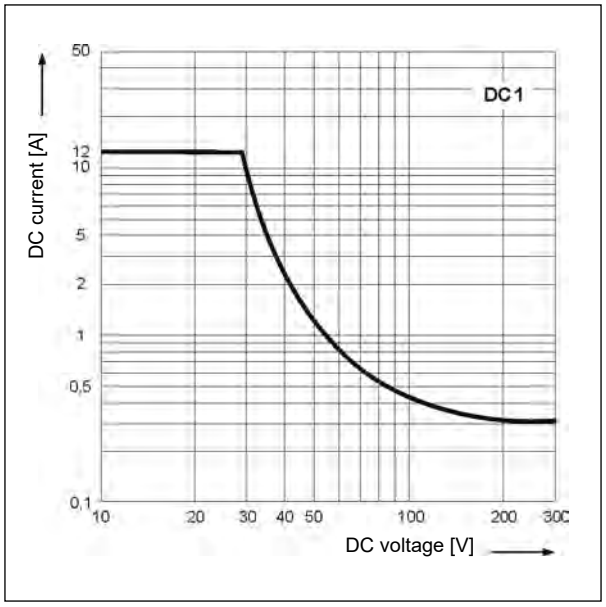
Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour Fig. 1



Electrical life reduction factor at AC inductive load Fig. 2



Max. DC resistive load breaking capacity Fig. 3



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Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 70 °C)
012DC	12	160	± 10%	9,6	13,2
024DC	**24**	**640**	**± 10%**	**19,2**	**26,4**
048DC	48	2 600	± 10%	38,4	52,8
110DC	110	13 600	± 10%	88,0	121,0

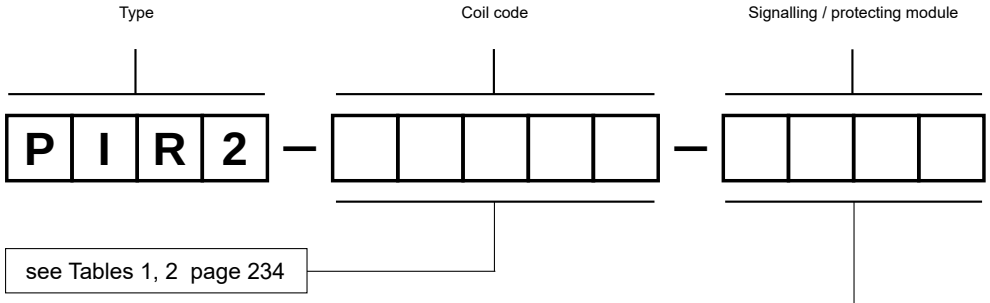
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
012AC	12	39,5	± 10%	9,6	13,2
024AC	**24**	**158**	**± 10%**	**19,2**	**26,4**
048AC	48	640	± 10%	38,4	52,8
120AC	120	3 770	± 10%	96,0	132,0
230AC	**230**	**16 100**	**± 10%**	**184,0**	**253,0**

The data in bold type relate to the standard versions of the relays.

Ordering codes



Signalling / protecting module

00LD - M41G - module LD (LED green + diode D, polarization N: +A1/-A2), 6/24 V DC
00LD - M42G - module LD (LED green + diode D, polarization N: +A1/-A2), 24/60 V DC
00LD - M43G - module LD (LED green + diode D, polarization N: +A1/-A2), 110/230 V DC
00LV - M91G - module LV (LED green + varistor), 6/24 V AC/DC
00LV - M92G - module LV (LED green + varistor), 24/60 V AC/DC
00LV - M93G - module LV (LED green + varistor), 110/240 V AC/DC

Examples of ordering codes:

PIR2-012DC-00LD — interface relay **PIR2** consists of: relay **R2N** (two changeover contacts, contact material AgNi, coil voltage 12 V DC), socket **GZM2** (grey, screw terminals), signalling / protecting module **M41G** (version LD), retainer / retractor clip **GZT4-0040** (plastic), description plate **GZT4-0035** (white)

PIR2-230AC-00LV — interface relay **PIR2** consists of: relay **R2N** (two changeover contacts, contact material AgNi, coil voltage 230 V AC 50/60 Hz), socket **GZM2** (grey, screw terminals), signalling / protecting module **M93G** (version LV), retainer / retractor clip **GZT4-0040** (plastic), description plate **GZT4-0035** (white)

R3N + GZM3

- Interface relay **PIR3 with socket GZM3** consists of: electromagnetic relay **R3N**, grey plug-in socket **GZM3**, signalling / protecting module **type M...**, retainer / retractor clip **GZT4-0040** (plastic), white description plate **GZT4-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • May be linked with interconnection strip type **ZGGZ4**
- Recognitions, certifications, directives: recognitions R3N, RoHS,

CE EAC

Contact data

Number and type of contacts		3 CO
Contact material		**AgNi**
Rated / max. switching voltage	AC	250 V / 440 V
Min. switching voltage		5 V
Rated load (capacity)	AC1	10 A / 250 V AC
	AC15	3 A / 120 V 1,5 A / 240 V (B300)
	AC3	370 W (single-phase motor)
	DC1	10 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA
Max. inrush current		20 A
Rated current		10 A
Max. breaking capacity	AC1	2 500 VA
Min. breaking capacity		0,3 W
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		18 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 230 V
	DC	12 ... 110 V
Must release voltage		AC: ≥ 0,2 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1,2
Rated power consumption	AC	50 Hz: 1,6 VA 60 Hz: 1,3 VA
	DC	0,9 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	250 V AC
Rated surge voltage	4 000 V 1,2 / 50 µs
Overvoltage category	III
Insulation pollution degree	2
Dielectric strength	
• between coil and contacts	2 500 V AC type of insulation: basic
• contact clearance	1 500 V AC type of clearance: micro-disconnection
• pole - pole	2 500 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 2,5 mm
• creepage	≥ 4 mm

General data

Operating / release time (typical values)		AC: 10 ms / 8 ms DC: 13 ms / 3 ms
Electrical life		
• resistive AC1		> 10^5 10 A, 250 V AC
• cosφ		see Fig. 2
Mechanical life (cycles)		> 2 x 10^7
Dimensions (L x W x H)		75 x 27 x 82 mm
Weight		107 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+55 °C DC: -40...+70 °C
Cover protection category		IP 20 PN-EN 60529
Environmental protection		R3: RTI GZM3: RT0 PN-EN 116000-3
Shock resistance	(NO/NC)	10 g / 5 g
Vibration resistance		5 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.

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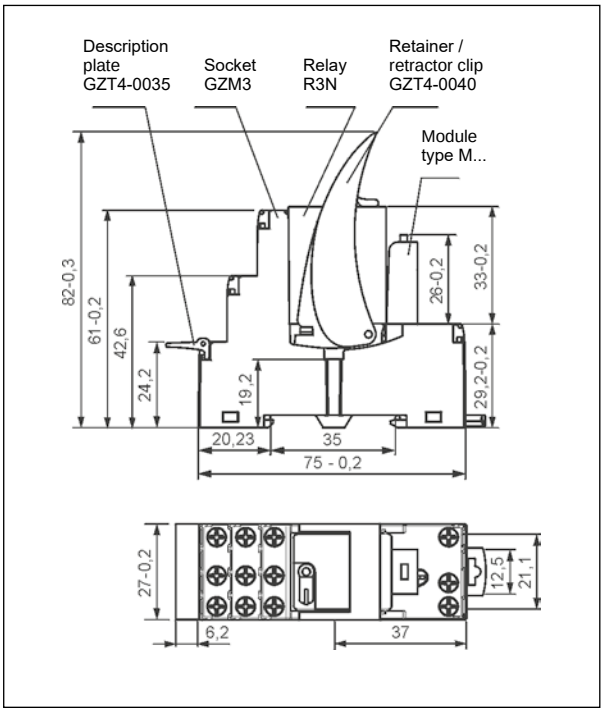
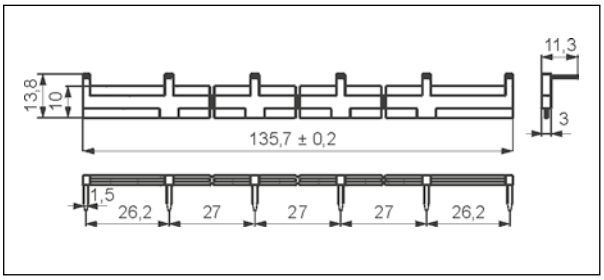
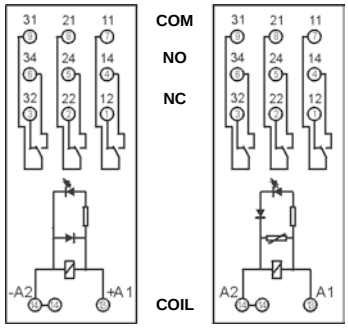
Dimensions





Interconnection strip type **ZGGZ4**

Connection diagrams
(screw terminals side view)



Mounting

Relays **PIR3 with socket GZM3** ❶ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws. **Connections:** max. cross section of the cables (stranded): 2 x 2,5 mm^2 (2 x 14 AWG), length of the cable deinsulation: 6,5 mm, max. tightening moment for the terminal: 0,7 Nm.

❶ Plug-in sockets **GZM3** may be linked with interconnection strip type **ZGGZ4**. Strip **ZGGZ4** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 6 sockets. Colours of strips: **ZGGZ4-1** grey, **ZGGZ4-2** black (see page 419).

ZGGZ4

Interconnection strip ZGGZ4:
bridging of common input signals.

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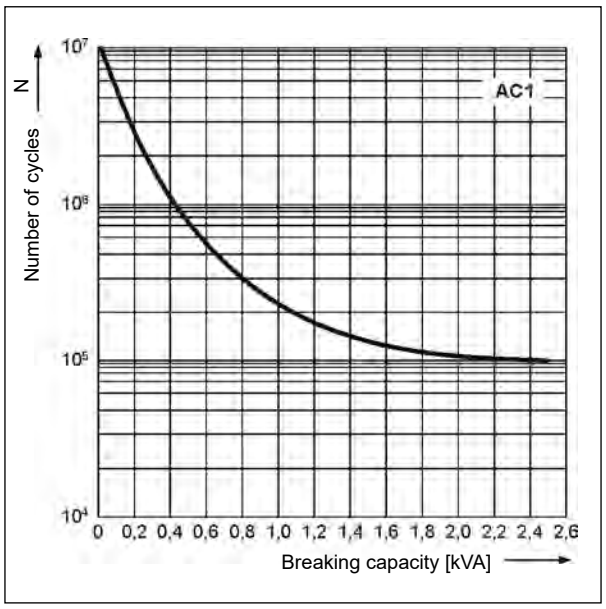
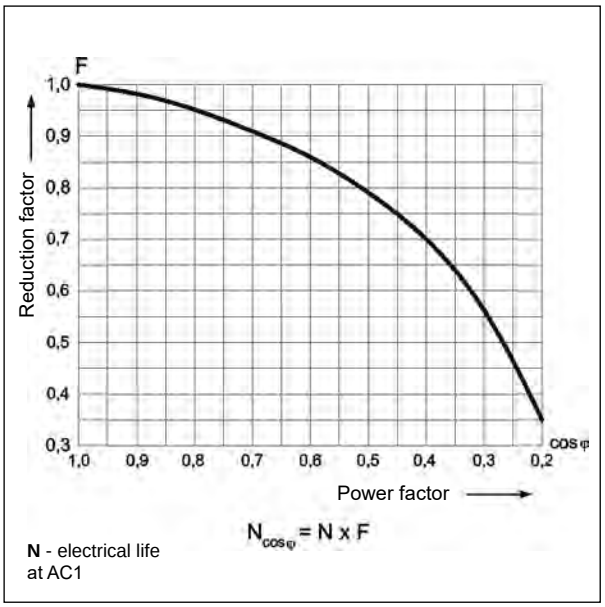
Electrical life at AC resistive load.
Switching frequency: 1 200 cycles/hour Fig. 1

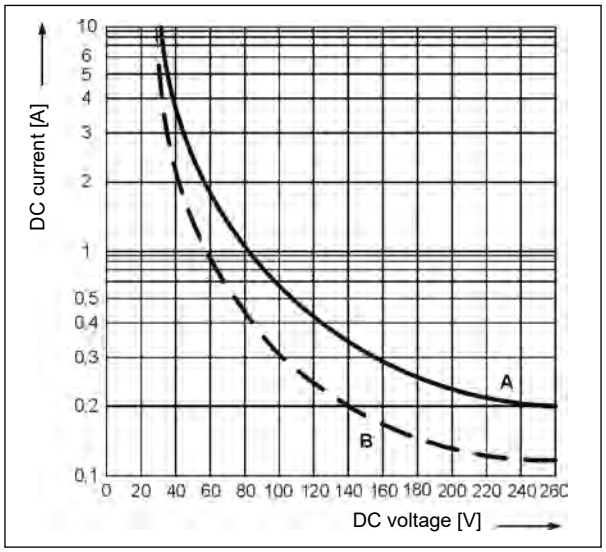


Electrical life reduction factor at AC inductive load Fig. 2



N - electrical life at AC1

Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms Fig. 3



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Coil data - DC voltage version Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 70 °C)
012DC	12	160	± 10%	9,6	13,2
024DC	**24**	**640**	**± 10%**	**19,2**	**26,4**
048DC	48	2 600	± 10%	38,4	52,8
110DC	110	13 600	± 10%	88,0	121,0

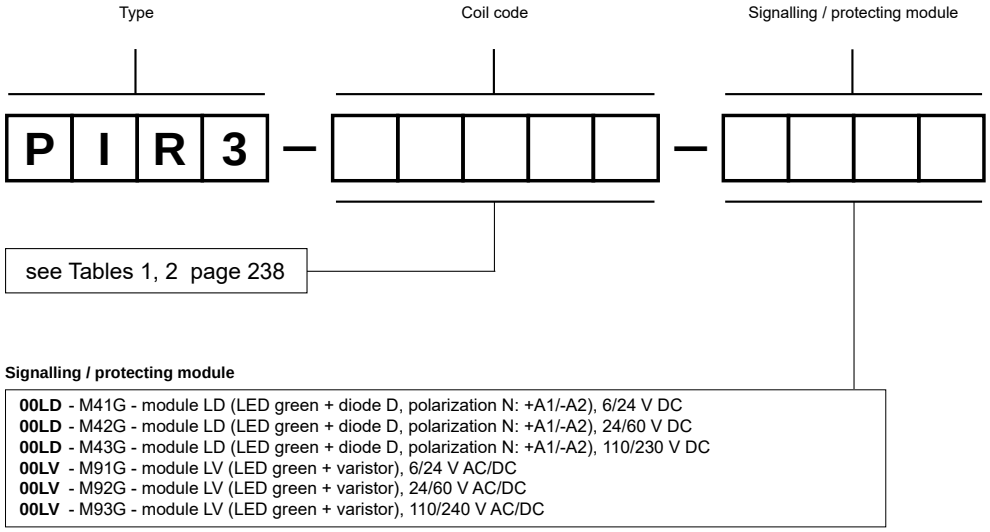
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
012AC	12	39,5	± 10%	9,6	13,2
024AC	**24**	**158**	**± 10%**	**19,2**	**26,4**
048AC	48	640	± 10%	38,4	52,8
120AC	120	3 770	± 10%	96,0	132,0
230AC	**230**	**16 100**	**± 10%**	**184,0**	**253,0**

The data in bold type relate to the standard versions of the relays.

Ordering codes



Examples of ordering codes:

PIR3-012DC-00LD interface relay **PIR3** consists of: relay **R3N** (three changeover contacts, contact material AgNi, coil voltage 12 V DC), socket **GZM3** (grey, screw terminals), signalling / protecting module **M41G** (version LD), retainer / retractor clip **GZT4-0040** (plastic), description plate **GZT4-0035** (white)

PIR3-230AC-00LV interface relay **PIR3** consists of: relay **R3N** (three changeover contacts, contact material AgNi, coil voltage 230 V AC 50/60 Hz), socket **GZM3** (grey, screw terminals), signalling / protecting module **M93G** (version LV), retainer / retractor clip **GZT4-0040** (plastic), description plate **GZT4-0035** (white)

R4N + GZM4

- Interface relay **PIR4 with socket GZM4** consists of: electromagnetic relay **R4N**, grey plug-in socket **GZM4**, signalling / protecting module **type M...**, retainer / retractor clip **GZT4-0040** (plastic), white description plate **GZT4-0035**
- 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws • May be linked with interconnection strip type **ZGGZ4**
- Recognitions, certifications, directives: recognitions R4N, RoHS,

CE EAC

Contact data

Number and type of contacts		4 CO
Contact material		**AgNi**
Rated / max. switching voltage	AC	250 V / 250 V
Min. switching voltage		5 V
Rated load (capacity)	AC1	6 A / 250 V AC
	AC15	1,5 A / 120 V 0,75 A / 240 V (C300)
	AC3	125 W (single-phase motor)
	DC1	6 A / 24 V DC (see Fig. 3)
	DC13	0,22 A / 120 V 0,1 A / 250 V (R300)
Min. switching current		5 mA
Max. inrush current		12 A
Rated current		6 A
Max. breaking capacity	AC1	1 500 VA
Min. breaking capacity		0,3 W
Contact resistance		≤ 100 mΩ
Max. operating frequency		
• at rated load	AC1	1 200 cycles/hour
• no load		18 000 cycles/hour

Coil data

Rated voltage	50/60 Hz AC	12 ... 230 V
	DC	12 ... 110 V
Must release voltage		AC: ≥ 0,2 U_n DC: ≥ 0,1 U_n
Operating range of supply voltage		see Tables 1,2
Rated power consumption	AC	50 Hz: 1,6 VA 60 Hz: 1,3 VA
	DC	0,9 W

Insulation according to PN-EN 60664-1

Insulation rated voltage	250 V AC
Rated surge voltage	2 500 V 1,2 / 50 µs
Overvoltage category	II
Insulation pollution degree	2
Dielectric strength	
• between coil and contacts	2 500 V AC type of insulation: basic
• contact clearance	1 500 V AC type of clearance: micro-disconnection
• pole - pole	2 000 V AC type of insulation: basic
Contact - coil distance	
• clearance	≥ 1,6 mm
• creepage	≥ 3,2 mm

General data

Operating / release time (typical values)		AC: 10 ms / 8 ms DC: 13 ms / 3 ms
Electrical life		
• resistive AC1		> 10^5 6 A, 250 V AC
• cosφ		see Fig. 2
Mechanical life (cycles)		> 2 x 10^7
Dimensions (L x W x H)		75 x 27 x 82 mm
Weight		108 g
Ambient temperature	• storage	-40...+85 °C
	• operating	AC: -40...+55 °C DC: -40...+70 °C
Cover protection category		IP 20 PN-EN 60529
Environmental protection		R4: RTI GZM4: RT0 PN-EN 116000-3
Shock resistance	(NO/NC)	10 g / 5 g
Vibration resistance		5 g 10...150 Hz

The data in bold type relate to the standard versions of the relays.

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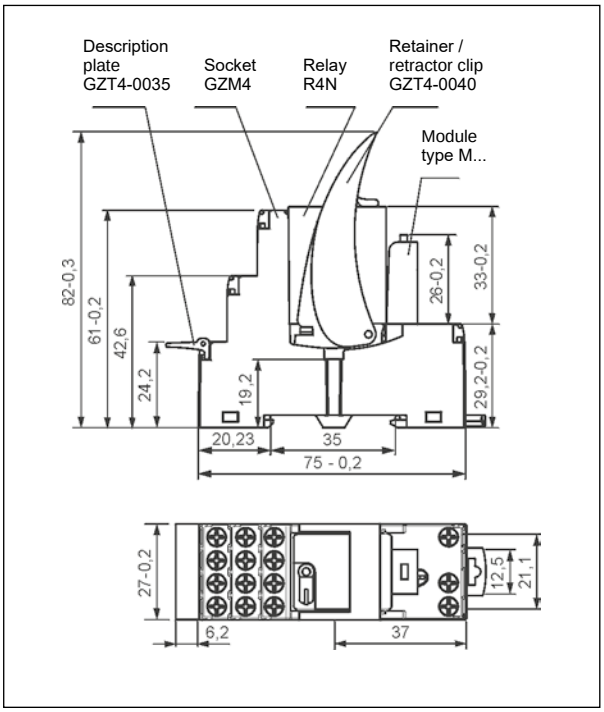
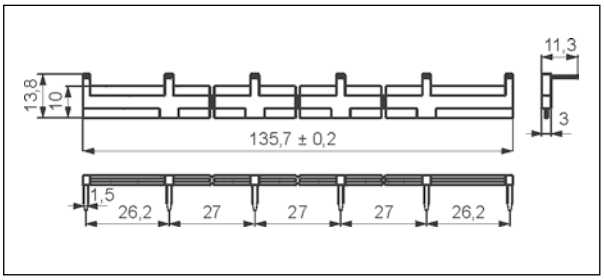
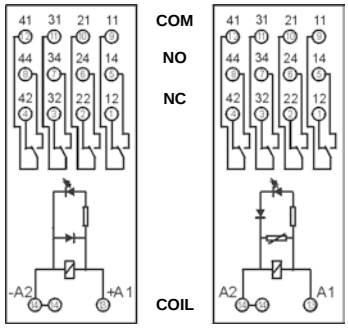
Dimensions





Interconnection strip type **ZGGZ4**

Connection diagrams
(screw terminals side view)



Mounting

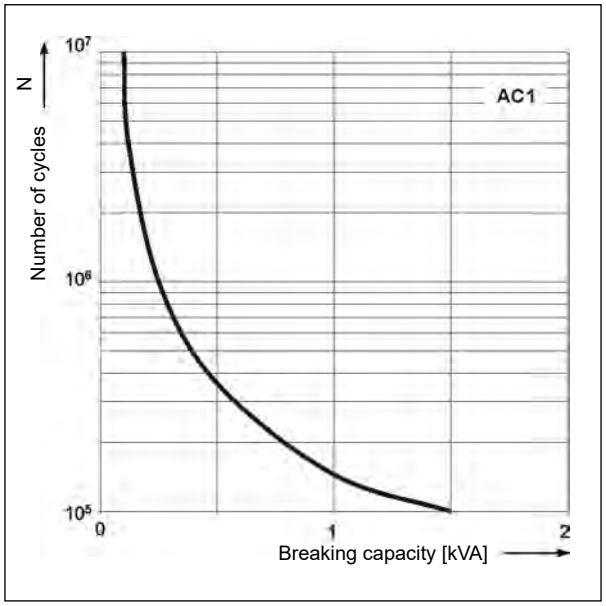
Relays **PIR4 with socket GZM4** ❶ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M3 screws. **Connections:** max. cross section of the cables (stranded): 2 x 2,5 mm^2 (2 x 14 AWG), length of the cable deinsulation: 6,5 mm, max. tightening moment for the terminal: 0,7 Nm.

❶ Plug-in sockets **GZM4** may be linked with interconnection strip type **ZGGZ4**. Strip **ZGGZ4** bridges common input signals, maximum permissible current is 10 A / 250 V AC. Possibility of connection of 6 sockets. Colours of strips: **ZGGZ4-1** grey, **ZGGZ4-2** black (see page 419).

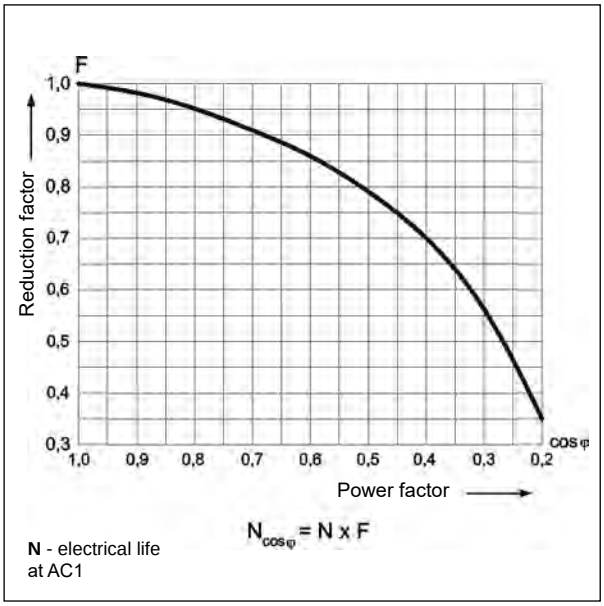
ZGGZ4

Interconnection strip ZGGZ4:
bridging of common input signals.

Electrical life at AC resistive load.
Switching frequency: 1 200 cycles/hour
Fig. 1

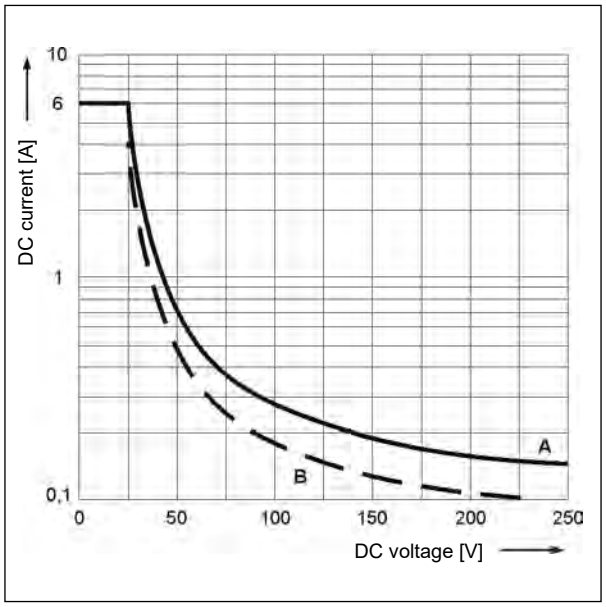


Electrical life reduction factor at AC inductive load
Fig. 2



N - electrical life at AC1

Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms
Fig. 3



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Coil data - DC voltage version — Table 1

Coil code	Rated voltage V DC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V DC	
				min. (at 20 °C)	max. (at 70 °C)
012DC	12	160	± 10%	9,6	13,2
024DC	**24**	**640**	**± 10%**	**19,2**	**26,4**
048DC	48	2 600	± 10%	38,4	52,8
110DC	110	13 600	± 10%	88,0	121,0

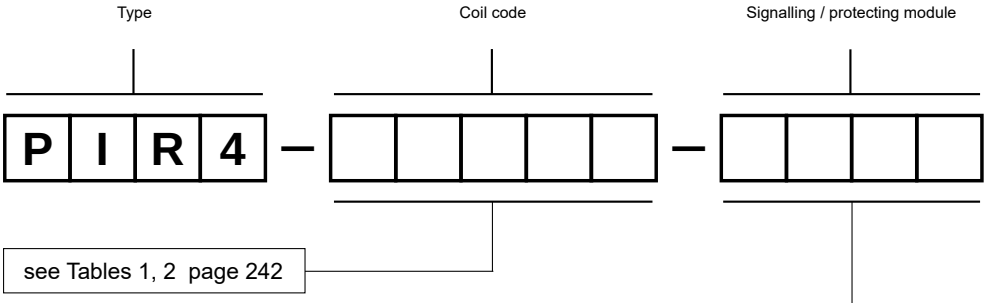
The data in bold type relate to the standard versions of the relays.

Coil data - AC 50/60 Hz voltage version — Table 2

Coil code	Rated voltage V AC	Coil resistance at 20 °C Ω	Acceptable resistance	Coil operating range V AC	
				min. (at 20 °C)	max. (at 55 °C)
012AC	12	39,5	± 10%	9,6	13,2
024AC	**24**	**158**	**± 10%**	**19,2**	**26,4**
048AC	48	640	± 10%	38,4	52,8
120AC	120	3 770	± 10%	96,0	132,0
230AC	**230**	**16 100**	**± 10%**	**184,0**	**253,0**

The data in bold type relate to the standard versions of the relays.

Ordering codes



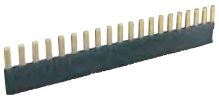
Signalling / protecting module

00LD - M41G - module LD (LED green + diode D, polarization N: +A1/-A2), 6/24 V DC
00LD - M42G - module LD (LED green + diode D, polarization N: +A1/-A2), 24/60 V DC
00LD - M43G - module LD (LED green + diode D, polarization N: +A1/-A2), 110/230 V DC
00LV - M91G - module LV (LED green + varistor), 6/24 V AC/DC
00LV - M92G - module LV (LED green + varistor), 24/60 V AC/DC
00LV - M93G - module LV (LED green + varistor), 110/240 V AC/DC

Examples of ordering codes:

PIR4-012DC-00LD — interface relay **PIR4** consists of: relay **R4N** (four changeover contacts, contact material AgNi, coil voltage 12 V DC), socket **GZM4** (grey, screw terminals), signalling / protecting module **M41G** (version LD), retainer / retractor clip **GZT4-0040** (plastic), description plate **GZT4-0035** (white)

PIR4-230AC-00LV — interface relay **PIR4** consists of: relay **R4N** (four changeover contacts, contact material AgNi, coil voltage 230 V AC 50/60 Hz), socket **GZM4** (grey, screw terminals), signalling / protecting module **M93G** (version LV), retainer / retractor clip **GZT4-0040** (plastic), description plate **GZT4-0035** (white)



- Width 6,2 mm
- Interface relay **PI6-1P** - with 1 CO contact output
- 35 mm rail mount acc. to PN-EN 60715
- May be linked with interconnection strip type **ZG20**
- Equipped in LED green
- Version for long control lines, with anti-interference filter (**PI6-1P-230VAC/DC-10** ❷)
- Recognitions, certifications, directives: : RoHS,

Output circuit - contact data

Number and type of contacts		1 CO	
Contact material		**$AgSnO_2$**	$AgSnO_2/Au$ hard gold plating ❶
Max. switching voltage		400 V AC / 250 V DC	30 V AC / 36 V DC ❶
Min. switching voltage	AC / DC	10 V	5 V
Rated load	AC1	6 A / 250 V AC	0,05 A / 30 V AC ❶
	DC1	6 A / 30 V DC; 0,15 A / 250 V DC	0,05 A / 36 V DC ❶
Min. switching current		100 mA	10 mA
Max. inrush current		10 A 20 ms	0,1 A 20 ms ❶
Rated current		6 A	0,05 A ❶
Max. breaking capacity	AC1	1 500 VA	1,2 VA ❶
Min. breaking capacity		1 W	0,05 W
Contact resistance		≤ 100 mΩ 100 mA, 24 V	≤ 30 mΩ 10 mA, 5 V
Max. operating frequency			
• at rated load	AC1	360 cycles/hour	
• no load		72 000 cycles/hour	

Input circuit

Rated voltage	DC	12 ... 36 V	
	AC: 50/60 Hz AC/DC	24 ... 230 V	
Must release voltage		AC: ≥ 0,2 U_n	AC: ≥ 0,35 U_n ❷
		DC: ≥ 0,1 U_n	
Operating range of supply voltage		see Table 1	
Must operate voltage		AC: ≤ 0,8 U_n	AC: 0,6...0,85 U_n ❷
		DC: ≤ 0,8 U_n	
Input polarization current		AC: 8 mA < I_p < 10 mA 230 V AC ❷	
Rated power consumption	DC	0,3 ... 0,7 W	
	AC/DC	0,3 ... 1,6 VA / 0,3 ... 1,6 W	
Max. length of control line		≤ 300 m	AC control voltage ❷

Insulation according to PN-EN 60664-1

Insulation rated voltage	400 V AC	
Rated surge voltage	4 000 V	1,2 / 50 µs
Overvoltage category	III	
Insulation pollution degree	3	
Dielectric strength		
• input - output	4 000 V AC	50/60 Hz, 1 min., type of insulation: reinforced
• input - output	6 000 V	1,2 / 50 µs
• mass - input, output	2 500 V AC	50/60 Hz, 1 min.
• contact clearance	1 000 V AC	50/60 Hz, 1 min., type of clearance: micro-disconnection
Input - output distance		
• clearance	≥ 6 mm	
• creepage	≥ 8 mm	

The data in bold type relate to the standard versions of the relays. ❶ For gold-plated contacts - when the maximum values given have been exceeded, the gold layer is destroyed. Then, the advantages of gold-plating disappear and the values are as for $AgSnO_2$ contacts (see beside), and electrical life of these contacts may be shorter than of normal contacts. ❷ Refers version for long control lines (max. 300 m) **PI6-1P-230VAC/DC-10** - relay with integrated anti-interference filter (desigend on the basis of appropriately selected elements R and C, and Zener diode), resistant to occurrence of induced voltages in long distances of control wires.

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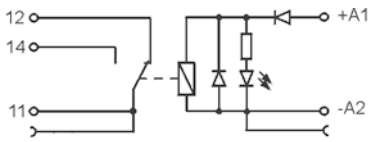
General data

Operating time (typical value)	AC: 7 ms	DC: 6 ms
Release time (typical value)	AC: 15 ms	DC: 10 ms
Electrical life		
• resistive AC1	> 0,6 x 10^5	6 A, 250 V AC
• cos φ = 0,4	> 2 x 10^5	2 A, 250 V AC
• resistive DC1	10^5	6 A, 30 V DC
Mechanical life (cycles)	> 2 x 10^7	
Dimensions (L x W x H)	93,8 x 6,2 x 80 mm	
Weight	40 g	
Ambient temperature		
• storage	-40...+70 °C	
• operating	-40...+55 °C	-40...+60 °C 12, 24 V DC
	-40...+40 °C 230 V AC ❷	-40...+50 °C 230 V DC ❷
Cover protection category	IP 20	PN-EN 60529
Environmental protection	RTI	PN-EN 116000-3
Shock resistance	10 g	
Vibration resistance	5 g 10...500 Hz	

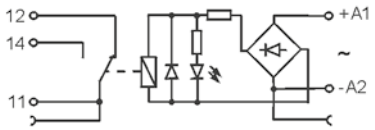
❷ Refers version for long control lines (max. 300 m) **PI6-1P-230VAC/DC-10** - relay with integrated anti-interference filter (desigend on the basis of appropriately selected elements R and C, and Zener diode), resistant to occurrence of induced voltages in long distances of control wires.

Connection diagrams

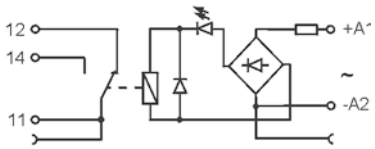
PI6-1P-12VDC, PI6-1P-12VDC-01
PI6-1P-24VDC, PI6-1P-24VDC-01
PI6-1P-36VDC, PI6-1P-36VDC-01



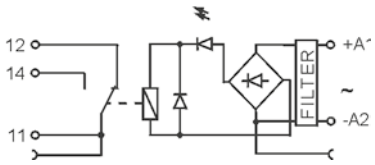
PI6-1P-24VAC/DC, PI6-1P-24VAC/DC-01
PI6-1P-42VAC/DC



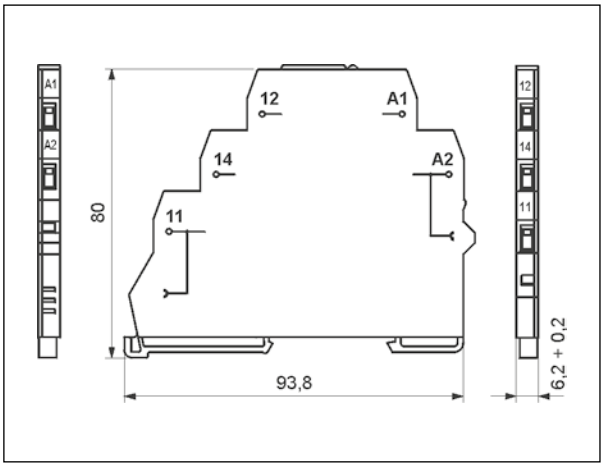
PI6-1P-115VAC/DC
PI6-1P-230VAC/DC, PI6-1P-230VAC/DC-01

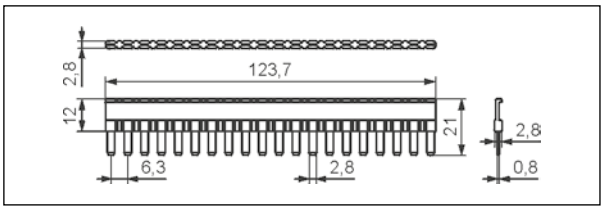


PI6-1P-230VAC/DC-10



Dimensions





Interconnection strip type **ZG20**

Mounting

Relays **PI6-1P** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. **Connections:** max. cross section of the cables: 1 x 2,5 mm^2 / 2 x 1,5 mm^2 (1 x 14 / 2 x 16 AWG), length of the cable deinsulation: 8 mm, max. tightening moment for the terminal: 0,3 Nm.
PI6-1P may be linked with interconnection strip type **ZG20**. Strip **ZG20** bridges common input or output signals, maximum permissible current is 36 A / 250 V AC. Colours of strips: **ZG20-1** red, **ZG20-2** black, **ZG20-3** blue.

Interconnection strip ZG20:
bridging of common
input or output signals.

ZG20

Input data

Table 1

Interface relay code	Rated input voltage U_n	Power of input circuit	Input - voltage range V	
			min. (at 20 °C)	max. (at 55 °C)
PI6-1P-12VDC	12 V DC	0,3 W	9,6	14,4
PI6-1P-24VDC	**24 V DC**	**0,4 W**	**19,2**	**28,0**
PI6-1P-36VDC	36 V DC	0,7 W	28,8	40,0
PI6-1P-24VAC/DC	24 V AC/DC	0,5 VA / 0,5 W	19,2	26,4
PI6-1P-42VAC/DC	42 V AC/DC	0,3 VA / 0,3 W	33,6	50,0
PI6-1P-115VAC/DC	115 V AC/DC	0,8 VA / 0,8 W	92,0	130,0
PI6-1P-230VAC/DC	**230 V AC/DC**	**0,8 VA / 0,8 W**	**184,0**	**253,0**
PI6-1P-230VAC/DC-10 ❷	230 V AC/DC	1,6 VA / 1,6 W	196,0	253,0
PI6-1P-12VDC-01 ❶	12 V DC	0,3 W	9,6	14,4
PI6-1P-24VDC-01 ❶	24 V DC	0,4 W	19,2	28,0
PI6-1P-36VDC-01 ❶	36 V DC	0,7 W	28,8	40,0
PI6-1P-24VAC/DC-01 ❶	24 V AC/DC	0,5 VA / 0,5 W	19,2	26,4
PI6-1P-230VAC/DC-01 ❶	230 V AC/DC	0,8 VA / 0,8 W	184,0	253,0

The data in bold type relate to the standard versions of the relays.
❶ Version with gold-plated contacts. ❷ Version for long control lines (max. 300 m), with anti-interference filter.

Ordering codes

Ordering codes **PI6-1P** are specified in Table 1, ”Interface relay code” column.

Interface relay PI6-1P

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- Width 6,2 mm
- Interface relay **PI6-1T** - with triac output
- 35 mm rail mount acc. to PN-EN 60715
- May be linked with interconnection strip type **ZG20**
- Equipped in LED green
- Recognitions, certifications, directives: RoHS, CE EAC

Output circuit - Triac

Number and type of outputs		1 NO	
Rated / max. switching voltage	AC	400 V / 440 V	
Min. switching voltage	AC	20 V	
Rated load	AC1	1,2 A / 400 V AC	
Min. switching current		10 mA	
Max. non-repeat surge current		30 A	t=20 ms
Rated current		1,2 A	
I^2t for fusing		5,1 A^2s	t=1-10 ms
dI/dt		50 A/µs	
dV/dt		40 V/µs	

Input circuit

Rated voltage	DC	5...32 V	
	AC: 50/60 Hz AC/DC	24 ... 230 V	
Turn-off voltage		AC: ≥ 0,2 U_n	DC: ≥ 0,1 U_n
Rated power consumption	DC	0,3 W	5...32 V DC at 24 V
	AC/DC	0,3 VA / 0,3 W	24 V AC/DC
	AC/DC	1,6 VA / 1,6 W	230 V AC/DC

Insulation according to PN-EN 60664-1

Insulation rated voltage		600 V AC	
Insulation pollution degree		2	
Dielectric strength	• input - output	4 000 V AC	50/60 Hz, 1 min., type of insulation: reinforced

General data

Operating time		10 ms	max. (zero turn-on)
Release time		10 ms	max.
Dimensions (L x W x H)		93,8 x 6,2 x 80 mm	
Weight		40 g	
Ambient temperature	• storage	-40...+70 °C	
	• operating	-40...+55 °C	
Cover protection category		IP 20	PN-EN 60529
Environmental protection		RTI	PN-EN 116000-3
Shock resistance		10 g	
Vibration resistance		5 g	10...500 Hz

EUROPRODUCT 2003
for interfece relays **PI6**

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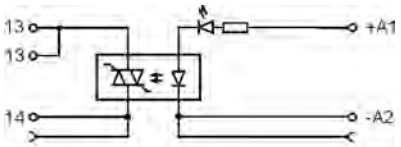
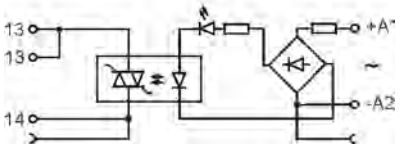
Connection diagrams

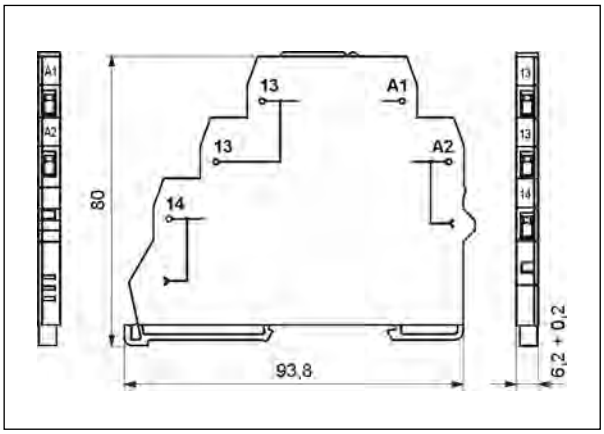
PI6-1T-5...32VDC

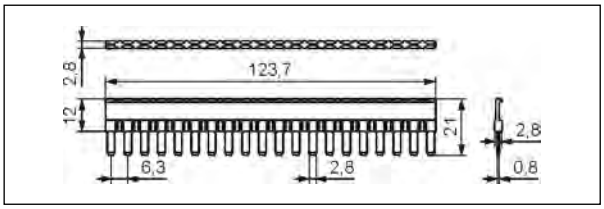


PI6-1T-24VAC/DC
PI6-1T-230VAC/DC



Dimensions





Interconnection strip type **ZG20**

Mounting

Relays **PI6-1T** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. **Connections:** max. cross section of the cables: 1 x 2,5 mm^2 / 2 x 1,5 mm^2 (1 x 14 / 2 x 16 AWG), length of the cable deinsulation: 8 mm, max. tightening moment for the terminal: 0,3 Nm.
PI6-1T may be linked with interconnection strip type **ZG20**. Strip **ZG20** bridges common input or output signals, maximum permissible current is 36 A / 250 V AC. Colours of strips: **ZG20-1** red, **ZG20-2** black, **ZG20-3** blue.

ZG20

Interconnection strip ZG20: bridging of common input or output signals.

Input data

Table 1

Interface relay code	Rated input voltage U_n	Power of input circuit
PI6-1T-5...32VDC	5...32 V DC	0,3 W at 24 V
PI6-1T-24VAC/DC	24 V AC/DC	0,3 VA / 0,3 W
PI6-1T-230VAC/DC	230 V AC/DC	1,6 VA / 1,6 W

Ordering codes

Ordering codes **PI6-1T** are specified in Table 1, ”Interface relay code” column.

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RM699BV + PI6W-1P-...

- Width 6,2 mm • Interface relay **PIR6W-1P-...** consists of: screw terminals socket, with electronic **PI6W-1P-...**, miniature operational relay - electromagnetic **RM699BV** ❶
- 35 mm rail mount acc. to PN-EN 60715 • May be linked with interconnection strip type **ZG20** • Equipped in LED green • Version for long control lines, with anti-interference filter (**PIR6W-1P-230V...-10** ❸)
- Accessories: description plates **PI6W-1246**
- Recognitions, certifications, directives: RoHS,

Output circuit (RM699BV) - contact data ❶

Number and type of contacts		1 CO	
Contact material		**$AgSnO_2$**	$AgSnO_2/Au$ hard gold plating ❷
Max. switching voltage		400 V AC / 250 V DC	30 V AC / 36 V DC ❷
Min. switching voltage	AC / DC	10 V	5 V
Rated load	AC1	6 A / 250 V AC	0,05 A / 30 V AC ❷
	DC1	6 A / 30 V DC; 0,15 A / 250 V DC	0,05 A / 36 V DC ❷
Min. switching current		100 mA	10 mA
Max. inrush current		10 A 20 ms	0,1 A 20 ms ❷
Rated current		6 A	0,05 A ❷
Max. breaking capacity	AC1	1 500 VA	1,2 VA ❷
Min. breaking capacity		1 W	0,05 W
Contact resistance		≤ 100 mΩ 100 mA, 24 V	≤ 30 mΩ 10 mA, 5 V
Max. operating frequency			
• at rated load	AC1	360 cycles/hour	
• no load		72 000 cycles/hour	

Input circuit

Rated voltage	50/60 Hz AC	230 V	
	DC	12 ... 36 V	
	AC: 50/60 Hz AC/DC	24 ... 230 V	
Must release voltage		AC: ≥ 0,2 U_n	AC: ≥ 0,1 U_n 230 V AC
		AC: ≥ 0,35 U_n 230 V AC ❸	AC: ≥ 0,35 U_n 230 V AC/DC ❸
		DC: ≥ 0,1 U_n	
Operating range of supply voltage		see Table 1	
Must operate voltage		AC: ≤ 0,8 U_n	AC: 0,6...0,85 U_n ❸
		DC: ≤ 0,8 U_n	
Rated power consumption	AC	≤ 0,8 ... 0,9 VA	
	DC	0,3 W	
	AC/DC	0,3 ... 2,1 VA / 0,3 ... 1,0 W	
Max. length of control line		≤ 300 m	AC control voltage ❸

Insulation according to PN-EN 60664-1

Insulation rated voltage	250 V AC	
Rated surge voltage	4 000 V	1,2 / 50 µs
Overvoltage category	III	
Insulation pollution degree	3	
Dielectric strength		
• input - output	4 000 V AC	50/60 Hz, 1 min., type of insulation: reinforced
• input - output	6 000 V	1,2 / 50 µs
• mass - input, output	2 500 V AC	50/60 Hz, 1 min.
• contact clearance	1 000 V AC	50/60 Hz, 1 min., type of clearance: micro-disconnection
Input - output distance		
• clearance	≥ 6 mm	
• creepage	≥ 8 mm	
Mass - output distance		
• clearance	≥ 3 mm	
• creepage	≥ 3,6 mm	

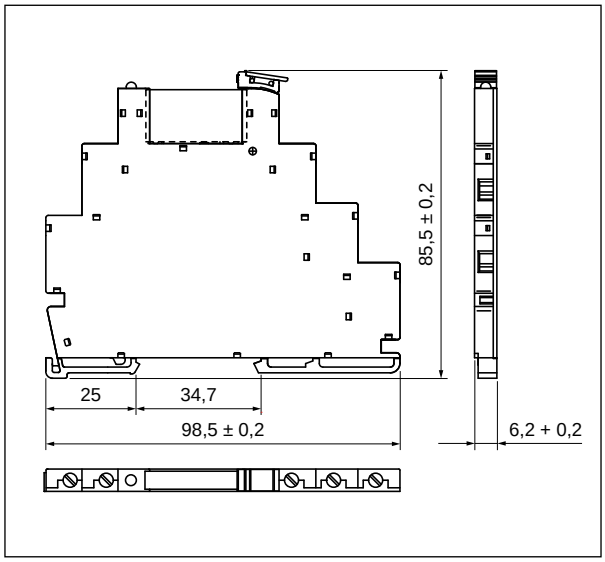
The data in bold type relate to the standard versions of the relays. ❶ Characteristics of the contact capacity of relays **PIR6W-1P-... with RM699BV** - see page 80. ❷ For gold-plated contacts - when the maximum values given have been exceeded, the gold layer is destroyed. Then, the advantages of gold-plating disappear and the values are as for $AgSnO_2$ contacts (see beside), and electrical life of these contacts may be shorter than of normal contacts. ❸ Refers version for long control lines (max. 300 m) **PIR6W-1P-230V...-10** - relay which includes the socket **PI6W-1P-230V...-10** with integrated anti-interference filter (desigend on the basis of appropriately selected elements R and C, and Zener diode), resistant to occurrence of induced voltages in long distances of control wires, and operational miniature relay **RM699BV-3011-85-1060**.

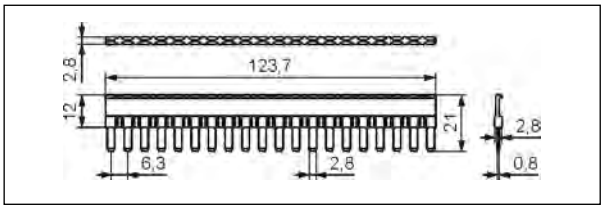
General data

Operating time (typical value)	AC: 11 ms	DC: 8 ms	AC, AC/DC: 20 ms 0,85 U_n ❸
Release time (typical value)	AC: 15 ms	DC: 10 ms	AC, AC/DC: 18 ms ❸
Electrical life			
• resistive AC1	> 0,6 x 10^5	6 A, 250 V AC, 360 cycles/hour	
• cos φ = 0,4	> 2 x 10^5	2 A, 250 V AC	
Mechanical life (cycles)	> 2 x 10^7		
Dimensions (L x W x H)	98,5 x 6,2 x 85,5 mm		
Weight	45 g		
Ambient temperature			
• storage	-40...+70 °C		
• operating	-40...+60 °C	12 V DC, 24 V DC	
	-40...+50 °C	230 V AC ❸, 230 V AC/DC ❹	
	-40...+55 °C	other voltages	
Cover protection category	IP 20	PN-EN 60529	
Environmental protection	RTI	PN-EN 116000-3	
Shock resistance	10 g		
Vibration resistance	5 g	10...500 Hz	

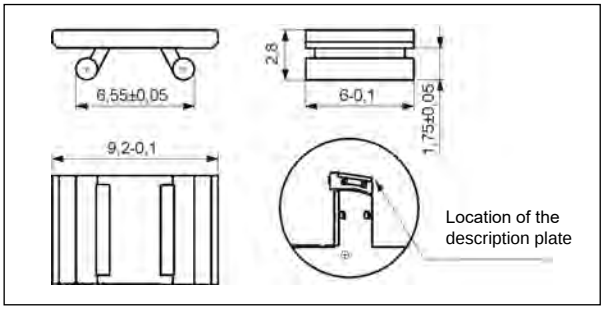
❸ Refers version for long control lines (max. 300 m) **PIR6W-1P-230V...-10** - relay which includes the socket **PI6W-1P-230V...-10** with integrated anti-interference filter (desigend on the basis of appropriately selected elements R and C, and Zener diode), resistant to occurrence of induced voltages in long distances of control wires, and operational miniature relay **RM699BV-3011-85-1060**. ❹ For versions 230VAC/DC and 230VAC/DC-10: the distance of min. 5 mm between the mounting relays.

Dimensions





Interconnection strip type **ZG20**



Description plate **PI6W-1246**

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Mounting

Relays **PIR6W-1P-...** ❹ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. **Connections:** max. cross section of the cables: 1 x 2,5 mm^2 / 2 x 1,5 mm^2 (1 x 14 / 2 x 16 AWG), length of the cable deinsulation: 9 mm, max. tightening moment for the terminal: 0,3 Nm.
Interface relay **PIR6W-1P-...** consists of: screw terminals socket, with electronic **PI6W-1P-...**, miniature operational relay - electromagnetic **RM699BV**.
PIR6W-1P-... may be linked with interconnection strip type **ZG20**. Strip **ZG20** bridges common input or output signals, maximum permissible current is 36 A / 250 V AC. Colours of strips: **ZG20-1** red, **ZG20-2** black, **ZG20-3** blue. Description plates of **PI6W-1246** type are offered for **PIR6W-1P-...** relays; they are delivered with the relays, not mounted.

❹ For versions 230VAC/DC and 230VAC/DC-10: the distance of min. 5 mm between the mounting relays.

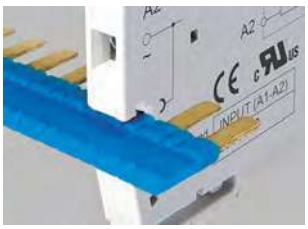
PI6W-1P-...

RM699BV

ZG20

PI6W-1246

Green LED:
signalling the operation
status of the relay.



Interconnection strip ZG20:
bridging of common
input or output signals.

Movable ejector: protection
and easy replacement
of the operational relay.

Interface relay PIR6W-1P-...

set: relay RM699BV
+ socket PI6W-1P-...

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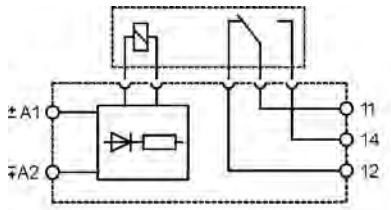
Input data

Table 1

Interface relay code	Input - voltage range V	
	min.	max.
PIR6W-1P-12VDC	9,6	14,4
PIR6W-1P-24VDC	**19,2**	**28,0**
PIR6W-1P-36VDC	28,8	40,0
PIR6W-1P-24VAC/DC	19,2	26,4
PIR6W-1P-42VAC/DC	33,6	50,0
PIR6W-1P-115VAC/DC	92,0	130,0
PIR6W-1P-230VAC/DC ❹	**184,0**	**253,0**
PIR6W-1P-230VAC	184,0	253,0
PIR6W-1P-230VAC/DC-10 ❸ ❹	❺ 196,0	253,0
PIR6W-1P-230VAC-10 ❸	196,0	253,0
PIR6W-1P-12VDC-01 ❷	9,6	14,4
PIR6W-1P-24VDC-01 ❷	**19,2**	**28,0**
PIR6W-1P-36VDC-01 ❷	28,8	40,0
PIR6W-1P-24VAC/DC-01 ❷	19,2	26,4
PIR6W-1P-42VAC/DC-01 ❷	33,6	50,0
PIR6W-1P-115VAC/DC-01 ❷	92,0	130,0
PIR6W-1P-230VAC/DC-01 ❷ ❹	**184,0**	**253,0**
PIR6W-1P-230VAC-01 ❷	184,0	253,0

Connection diagrams

PIR6W-1P-..., PIR6W-1P-...-01



PIR6W-1P-230V...-10

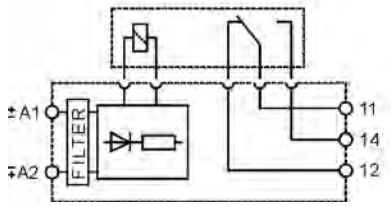


Table of codes

Table 2

Interface relay code	Rated input voltage U_n ❻	Power of input circuit	Socket code	Operational relay code	Rated voltage of operational relay U_s ❻
PIR6W-1P-12VDC	12 V DC	0,3 W	PI6W-1P-12VDC	RM699BV-3011-85-1012	12 V DC
PIR6W-1P-24VDC	**24 V DC**	**0,3 W**	**PI6W-1P-24VDC**	**RM699BV-3011-85-1024**	**24 V DC**
PIR6W-1P-36VDC	36 V DC	0,3 W	PI6W-1P-36VDC	RM699BV-3011-85-1024	24 V DC
PIR6W-1P-24VAC/DC	24 V AC/DC	0,3 VA / 0,3 W	PI6W-1P-24VAC/DC	RM699BV-3011-85-1024	24 V DC
PIR6W-1P-42VAC/DC	42 V AC/DC	0,4 VA / 0,4 W	PI6W-1P-42VAC/DC	RM699BV-3011-85-1024	24 V DC
PIR6W-1P-115VAC/DC	115 V AC/DC	0,9 VA / 0,9 W	PI6W-1P-115VAC/DC	RM699BV-3011-85-1024	24 V DC
PIR6W-1P-230VAC/DC ❹	**230 V AC/DC**	**0,8 VA / 0,8 W**	**PI6W-1P-230VAC/DC**	**RM699BV-3011-85-1060**	**60 V DC**
PIR6W-1P-230VAC	230 V AC	≤ 0,8 VA	PI6W-1P-230VAC	RM699BV-3011-85-1060	60 V DC
PIR6W-1P-230VAC/DC-10 ❸ ❹	230 V AC/DC	2,1 VA / 1,0 W	PI6W-1P-230VAC/DC-10	RM699BV-3011-85-1060	60 V DC
PIR6W-1P-230VAC-10 ❸	230 V AC	≤ 0,9 VA	PI6W-1P-230VAC-10	RM699BV-3011-85-1060	60 V DC
PIR6W-1P-12VDC-01 ❷	12 V DC	0,3 W	PI6W-1P-12VDC	RM699BV-3211-85-1012	12 V DC
PIR6W-1P-24VDC-01 ❷	**24 V DC**	**0,3 W**	**PI6W-1P-24VDC**	**RM699BV-3211-85-1024**	**24 V DC**
PIR6W-1P-36VDC-01 ❷	36 V DC	0,3 W	PI6W-1P-36VDC	RM699BV-3211-85-1024	24 V DC
PIR6W-1P-24VAC/DC-01 ❷	24 V AC/DC	0,3 VA / 0,3 W	PI6W-1P-24VAC/DC	RM699BV-3211-85-1024	24 V DC
PIR6W-1P-42VAC/DC-01 ❷	42 V AC/DC	0,4 VA / 0,4 W	PI6W-1P-42VAC/DC	RM699BV-3211-85-1024	24 V DC
PIR6W-1P-115VAC/DC-01 ❷	115 V AC/DC	0,9 VA / 0,9 W	PI6W-1P-115VAC/DC	RM699BV-3211-85-1024	24 V DC
PIR6W-1P-230VAC/DC-01 ❷ ❹	**230 V AC/DC**	**0,8 VA / 0,8 W**	**PI6W-1P-230VAC/DC**	**RM699BV-3211-85-1060**	**60 V DC**
PIR6W-1P-230VAC-01 ❷	230 V AC	≤ 0,8 VA	PI6W-1P-230VAC	RM699BV-3211-85-1060	60 V DC

The data in bold type relate to the standard versions of the relays. ❷ Version with gold-plated contacts. ❸ Version for long control lines (max. 300 m), with anti-interference filter. ❹ For versions 230VAC/DC and 230VAC/DC-10: the distance of min. 5 mm between the mounting relays. ❺ 196,0 V at supply voltage AC; 184,0 V at supply voltage DC. ❻ It shall be remarked that rated input voltage of the operational relay U_s not always complies with the rated input voltage U_n (which is important on ordering operational relays for sockets).

Ordering codes

Ordering codes **PIR6W-1P-...** are specified in Tables 1, 2, ”Interface relay code” column.

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RM699BV + PI6W-1PS-...

RSR30 + PI6W-1PS-...

- Width 6,2 mm • Interface relay **PIR6W-1PS-...** consists of: screw terminals universal socket, with electronic **PI6W-1PS-...**, miniature operational relay - electromagnetic **RM699BV** or solid state **RSR30** ❶
- 35 mm rail mount acc. to PN-EN 60715 • May be linked with interconnection strip type **ZG20** • Equipped in LED green
- Accessories: description plates **PI6W-1246**
- Recognitions, certifications, directives: RoHS,

Output circuit (RM699BV) - contact data ❶

Number and type of contacts (code of output)		1 CO (R) ❸	1 CO (R01) ❸
Contact material		**$AgSnO_2$**	$AgSnO_2$/Au hard gold plating ❷
Max. switching voltage		400 V AC / 250 V DC	30 V AC / 36 V DC ❷
Min. switching voltage	AC / DC	10 V	5 V
Rated load	AC1	6 A / 250 V AC	0,05 A / 30 V AC ❷
	DC1	6 A / 30 V DC; 0,15 A / 250 V DC	0,05 A / 36 V DC ❷
Min. switching current		100 mA	10 mA
Max. inrush current		10 A 20 ms	0,1 A 20 ms ❷
Rated current		6 A	0,05 A ❷
Max. breaking capacity	AC1	1 500 VA	1,2 VA ❷
Min. breaking capacity		1 W	0,05 W
Contact resistance		≤ 100 mΩ 100 mA, 24 V	≤ 30 mΩ 10 mA, 5 V
Max. operating frequency			
• at rated load	AC1	360 cycles/hour	
• no load		72 000 cycles/hour	

Output circuit (RSR30) - output data ❶

Type of output (code of output)		Triac (T) ❸ max. 2 A	Transistor (C) ❸ max. 1 A	Transistor (O) ❸ max. 2 A
Number and type of outputs		1 NO	1 NO	1 NO
Rated voltage		240 V AC	48 V DC	24 V DC
Max. output voltage		280 V AC	60 V DC	32 V DC
Min. output voltage		12 V AC	1,5 V DC	1,5 V DC
Rated continuous output current	AC1	1 A		
	DC1		1 A	2 A
Min. making capacity current		50 mA	1 mA	1 mA
Max. off-state leakage current (rest condition)		1,5 mA	1 mA	1 mA
Max. on-state voltage drop on the connection (operating state)		1,2 V	0,4 V	0,24 V
Operating switching frequency			10 Hz	10 Hz

Input circuit

Rated voltage	50/60 Hz AC	230 V	
	DC	6 ... 60 V	
	AC: 50/60 Hz AC/DC	24 ... 230 V	
Must release voltage		AC: ≥ 0,2 U_n	AC: ≥ 0,1 U_n 230 V AC
		DC: ≥ 0,1 U_n	
Operating range of supply voltage		0,8...1,2 U_n	0,85...1,2 U_n 6 V DC
Must operate voltage		AC: ≤ 0,8 U_n	
		DC: ≤ 0,8 U_n	DC: ≤ 0,85 U_n 6 V DC
Rated power consumption	AC	≤ 0,8 VA	
	DC	0,2 ... 0,5 W	
	AC/DC	0,5 ... 1,2 VA / 0,4 ... 1,2 W	

The data in bold type relate to the standard versions of the relays. ❶ Characteristics of the contact capacity of relays **PIR6W-1PS-... with RM699BV** - see page 80; **PIR6W-1PS-... with RSR30** - see www.relpol.com.pl ❷ For gold-plated contacts - when the maximum values given have been exceeded, the gold layer is destroyed. Then, the advantages of gold-plating disappear and the values are as for $AgSnO_2$ contacts (see beside), and electrical life of these contacts may be shorter than of normal contacts. ❸ Type of outputs: **R** - contacts $AgSnO_2$; **R01** - contacts $AgSnO_2$/Au hard gold plating; **T** - triac; **C** - transistor; **O** - transistor.

Insulation according to PN-EN 60664-1

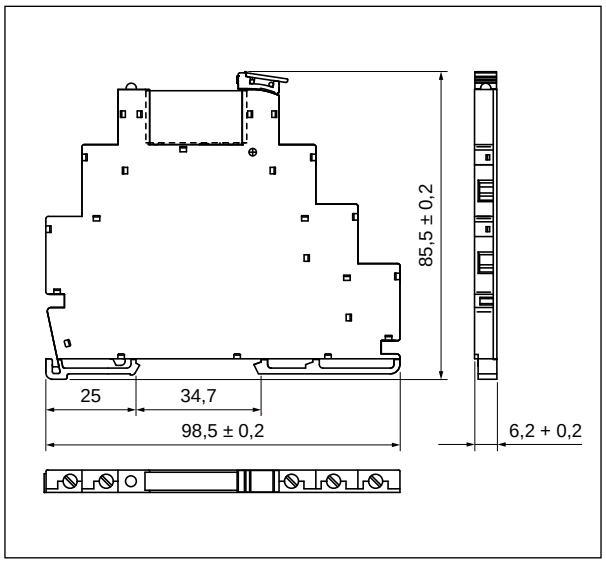
Insulation rated voltage	250 V AC	
Rated surge voltage	4 000 V	1,2 / 50 µs
Overvoltage category	III	
Insulation pollution degree	3	
Dielectric strength		
• input - output	4 000 V AC	50/60 Hz, 1 min., type of insulation: reinforced
• input - output	6 000 V	1,2 / 50 µs
• mass - input, output	2 500 V AC	50/60 Hz, 1 min.
• contact clearance	1 000 V AC	50/60 Hz, 1 min., output R and R01, type of clearance: micro-disconnection
Input - output distance		
• clearance / creepage	≥ 6 mm / ≥ 8 mm	
Mass - output distance		
• clearance / creepage	≥ 3 mm / ≥ 3,6 mm	

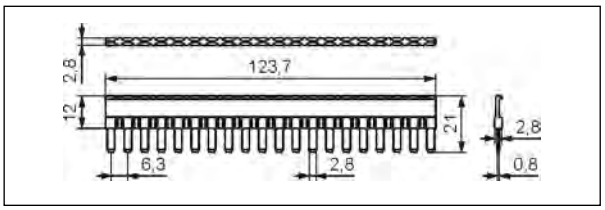
General data

Operating time (typical value)	PIR6W-1PS-...-R/-R01:	DC: 8 ms	AC: 10 ms	AC/DC: 20 ms
	PIR6W-1PS-...-T:	DC: 100 µs		AC, AC/DC: 10 ms
	PIR6W-1PS-...-C/-O:	DC: 50 µs		AC, AC/DC: 10 ms
Release time (typical value)	PIR6W-1PS-...-R/-R01:	DC: 10 ms	AC: 20 ms	AC/DC: 25 ms
	PIR6W-1PS-...-T:	DC: 1/2 cycle + 1 ms		AC, AC/DC: 30 ms
	PIR6W-1PS-...-C/-O:	DC: 600 µs		AC, AC/DC: 20 ms
Electrical life				
• resistive AC1	PIR6W-1PS-...-R:	> 0,5 x 10^5	6 A, 250 V AC	
Mechanical life (cycles)	PIR6W-1PS-...-R/-R01:	> 10^7		
Dimensions (L x W x H)	98,5 x 6,2 x 85,5 mm			
Weight	45 g			
Ambient temperature				
• storage	PIR6W-1PS-...-R/-R01/-T:	-40...+70 °C	...-C/-O:	-25...+70 °C
• operating	PIR6W-1PS-...-R/-R01:	-40...+55 °C	...-T/-C/-O:	-20...+55 °C
	PIR6W-1PS-230VAC/DC-R/-R01:	-40...+50 °C ❹	...-C/-O:	-20...+50 °C ❹
Cover protection category	IP 20	PN-EN 60529		
Environmental protection	RTI	PN-EN 116000-3		
Shock resistance	10 g			
Vibration resistance	5 g	10...500 Hz		

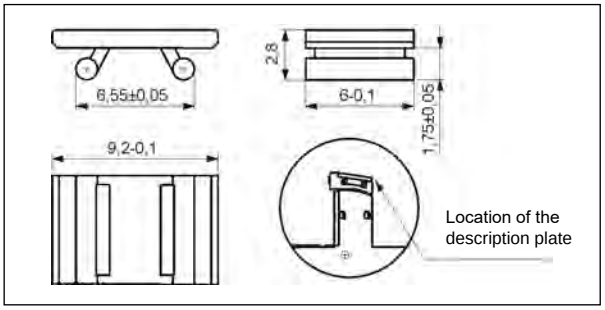
❹ For versions 230VAC/DC: the distance of min. 5 mm between the mounting relays.

Dimensions





Interconnection strip type **ZG20**



Description plate **PI6W-1246**

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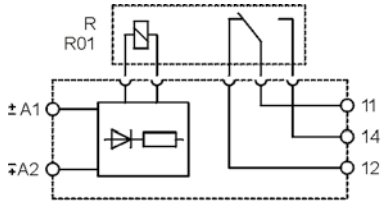
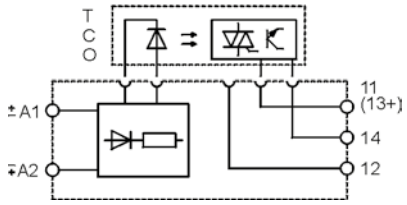
Connection diagrams

PIR6W-1PS-...-R, PIR6W-1PS-...-R01



PIR6W-1PS-...-T, PIR6W-1PS-...-C, PIR6W-1PS-...-O



Mounting

Relays **PIR6W-1PS-...** ❹ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. **Connections:** max. cross section of the cables: 1 x 2,5 mm^2 / 2 x 1,5 mm^2 (1 x 14 / 2 x 16 AWG), length of the cable deinsulation: 9 mm, max. tightening moment for the terminal: 0,3 Nm. Interface relay **PIR6W-1PS-...** consists of: screw terminals universal socket, with electronic **PI6W-1PS-...**, miniature operational relay - electromagnetic **RM699BV** or solid state **RSR30** ❸.

PIR6W-1PS-... may be linked with interconnection strip type **ZG20**. Strip **ZG20** bridges common input or output signals, maximum permissible current is 36 A / 250 V AC. Colours of strips: **ZG20-1** red, **ZG20-2** black, **ZG20-3** blue. Description plates of **PI6W-1246** type are offered for **PIR6W-1PS-...** relays; they are delivered with the relays, not mounted.

❸ Type of outputs: **R** - contacts $AgSnO_2$; **R01** - contacts $AgSnO_2$/Au hard gold plating; **T** - triac; **C** - transistor; **O** - transistor. ❹ For versions 230VAC/DC: the distance of min. 5 mm between the mounting relays.

PI6W-1PS-...

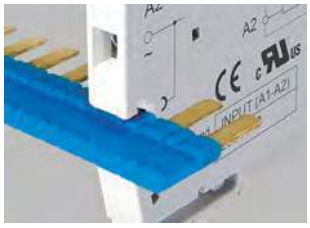
RM699BV

RSR30

ZG20

PI6W-1246

Green LED:
signalling the operation status of the relay.



Interconnection strip ZG20:
bridging of common input or output signals.

Movable ejector: protection and easy replacement of the operational relay.

Ordering codes

Ordering codes **PIR6W-1PS-...** are specified in Table 1, ”Interface relay code” column.

Table of codes Table 1

Interface relay code	Rated input voltage U_n ❺	Power of input circuit	Socket code	Operational relay code	Rated voltage of operational relay U_s ❺
PIR6W-1PS-6VDC-R	6 V DC	0,3 W	PI6W-1PS-6VDC	RM699BV-3011-85-1005	5 V DC
PIR6W-1PS-12VDC-R	12 V DC	0,2 W	PI6W-1PS-12/24VDC	RM699BV-3011-85-1012	12 V DC
PIR6W-1PS-24VDC-R	**24 V DC**	**0,3 W**	**PI6W-1PS-12/24VDC**	**RM699BV-3011-85-1024**	**24 V DC**
PIR6W-1PS-36VDC-R	36 V DC	0,3 W	PI6W-1PS-36VDC	RM699BV-3011-85-1024	24 V DC
PIR6W-1PS-48VDC-R	48 V DC	0,4 W	PI6W-1PS-48VDC	RM699BV-3011-85-1024	24 V DC
PIR6W-1PS-60VDC-R	60 V DC	0,5 W	PI6W-1PS-60VDC	RM699BV-3011-85-1024	24 V DC
PIR6W-1PS-24VAC/DC-R	**24 V AC/DC**	**0,5 VA / 0,4 W**	**PI6W-1PS-24VAC/DC**	**RM699BV-3011-85-1012**	**12 V DC**
PIR6W-1PS-42VAC/DC-R	42 V AC/DC	0,5 VA / 0,4 W	PI6W-1PS-42VAC/DC	RM699BV-3011-85-1024	24 V DC
PIR6W-1PS-115VAC/DC-R	115 V AC/DC	1,2 VA / 1,2 W	PI6W-1PS-115VAC/DC	RM699BV-3011-85-1024	24 V DC
PIR6W-1PS-230VAC/DC-R ❹	**230 V AC/DC**	**1,2 VA / 1,2 W**	**PI6W-1PS-230VAC/DC**	**RM699BV-3011-85-1060**	**60 V DC**
PIR6W-1PS-230VAC-R	230 V AC	≤ 0,8 VA	PI6W-1PS-230VAC	RM699BV-3011-85-1060	60 V DC
PIR6W-1PS-6VDC-R01 ❷	6 V DC	0,3 W	PI6W-1PS-6VDC	RM699BV-3211-85-1005	5 V DC
PIR6W-1PS-12VDC-R01 ❷	12 V DC	0,2 W	PI6W-1PS-12/24VDC	RM699BV-3211-85-1012	12 V DC
PIR6W-1PS-24VDC-R01 ❷	**24 V DC**	**0,3 W**	**PI6W-1PS-12/24VDC**	**RM699BV-3211-85-1024**	**24 V DC**
PIR6W-1PS-36VDC-R01 ❷	36 V DC	0,3 W	PI6W-1PS-36VDC	RM699BV-3211-85-1024	24 V DC
PIR6W-1PS-48VDC-R01 ❷	48 V DC	0,4 W	PI6W-1PS-48VDC	RM699BV-3211-85-1024	24 V DC
PIR6W-1PS-60VDC-R01 ❷	60 V DC	0,5 W	PI6W-1PS-60VDC	RM699BV-3211-85-1024	24 V DC
PIR6W-1PS-24VAC/DC-R01 ❷	**24 V AC/DC**	**0,5 VA / 0,4 W**	**PI6W-1PS-24VAC/DC**	**RM699BV-3211-85-1012**	**12 V DC**
PIR6W-1PS-42VAC/DC-R01 ❷	42 V AC/DC	0,5 VA / 0,4 W	PI6W-1PS-42VAC/DC	RM699BV-3211-85-1024	24 V DC
PIR6W-1PS-115VAC/DC-R01 ❷	115 V AC/DC	1,2 VA / 1,2 W	PI6W-1PS-115VAC/DC	RM699BV-3211-85-1024	24 V DC
PIR6W-1PS-230VAC/DC-R01 ❷ ❹	**230 V AC/DC**	**1,2 VA / 1,2 W**	**PI6W-1PS-230VAC/DC**	**RM699BV-3211-85-1060**	**60 V DC**
PIR6W-1PS-230VAC-R01 ❷	230 V AC	≤ 0,8 VA	PI6W-1PS-230VAC	RM699BV-3211-85-1060	60 V DC
PIR6W-1PS-6VDC-T	6 V DC	0,2 W	PI6W-1PS-6VDC	RSR30-D05-A1-24-020-1	5 V DC
PIR6W-1PS-12VDC-T	12 V DC	0,2 W	PI6W-1PS-12/24VDC	RSR30-D12-A1-24-020-1	12 V DC
PIR6W-1PS-24VDC-T	**24 V DC**	**0,3 W**	**PI6W-1PS-12/24VDC**	**RSR30-D24-A1-24-020-1**	**24 V DC**
PIR6W-1PS-36VDC-T	36 V DC	0,3 W	PI6W-1PS-36VDC	RSR30-D24-A1-24-020-1	24 V DC
PIR6W-1PS-48VDC-T	48 V DC	0,4 W	PI6W-1PS-48VDC	RSR30-D24-A1-24-020-1	24 V DC
PIR6W-1PS-60VDC-T	60 V DC	0,5 W	PI6W-1PS-60VDC	RSR30-D24-A1-24-020-1	24 V DC
PIR6W-1PS-24VAC/DC-T	**24 V AC/DC**	**0,5 VA / 0,4 W**	**PI6W-1PS-24VAC/DC**	**RSR30-D12-A1-24-020-1**	**12 V DC**
PIR6W-1PS-42VAC/DC-T	42 V AC/DC	0,5 VA / 0,4 W	PI6W-1PS-42VAC/DC	RSR30-D24-A1-24-020-1	24 V DC
PIR6W-1PS-115VAC/DC-T	115 V AC/DC	1,0 VA / 1,0 W	PI6W-1PS-115VAC/DC	RSR30-D24-A1-24-020-1	24 V DC
PIR6W-1PS-6VDC-C	6 V DC	0,2 W	PI6W-1PS-6VDC	RSR30-D05-D1-04-025-1	5 V DC
PIR6W-1PS-12VDC-C	12 V DC	0,2 W	PI6W-1PS-12/24VDC	RSR30-D12-D1-04-025-1	12 V DC
PIR6W-1PS-24VDC-C	**24 V DC**	**0,3 W**	**PI6W-1PS-12/24VDC**	**RSR30-D24-D1-04-025-1**	**24 V DC**
PIR6W-1PS-36VDC-C	36 V DC	0,3 W	PI6W-1PS-36VDC	RSR30-D24-D1-04-025-1	24 V DC
PIR6W-1PS-48VDC-C	48 V DC	0,4 W	PI6W-1PS-48VDC	RSR30-D24-D1-04-025-1	24 V DC
PIR6W-1PS-60VDC-C	60 V DC	0,5 W	PI6W-1PS-60VDC	RSR30-D24-D1-04-025-1	24 V DC
PIR6W-1PS-24VAC/DC-C	**24 V AC/DC**	**0,5 VA / 0,4 W**	**PI6W-1PS-24VAC/DC**	**RSR30-D12-D1-04-025-1**	**12 V DC**
PIR6W-1PS-42VAC/DC-C	42 V AC/DC	0,5 VA / 0,4 W	PI6W-1PS-42VAC/DC	RSR30-D24-D1-04-025-1	24 V DC
PIR6W-1PS-115VAC/DC-C	115 V AC/DC	1,0 VA / 1,0 W	PI6W-1PS-115VAC/DC	RSR30-D24-D1-04-025-1	24 V DC
PIR6W-1PS-230VAC/DC-C ❹	**230 V AC/DC**	**1,0 VA / 1,0 W**	**PI6W-1PS-230VAC/DC**	**RSR30-D48-D1-04-025-1**	**48 V DC**
PIR6W-1PS-230VAC-C	230 V AC	≤ 0,8 VA	PI6W-1PS-230VAC	RSR30-D48-D1-04-025-1	48 V DC
PIR6W-1PS-6VDC-O	6 V DC	0,2 W	PI6W-1PS-6VDC	RSR30-D05-D1-02-040-1	5 V DC
PIR6W-1PS-12VDC-O	12 V DC	0,2 W	PI6W-1PS-12/24VDC	RSR30-D12-D1-02-040-1	12 V DC
PIR6W-1PS-24VDC-O	**24 V DC**	**0,3 W**	**PI6W-1PS-12/24VDC**	**RSR30-D24-D1-02-040-1**	**24 V DC**
PIR6W-1PS-36VDC-O	36 V DC	0,3 W	PI6W-1PS-36VDC	RSR30-D24-D1-02-040-1	24 V DC
PIR6W-1PS-48VDC-O	48 V DC	0,4 W	PI6W-1PS-48VDC	RSR30-D24-D1-02-040-1	24 V DC
PIR6W-1PS-60VDC-O	60 V DC	0,5 W	PI6W-1PS-60VDC	RSR30-D24-D1-02-040-1	24 V DC
PIR6W-1PS-24VAC/DC-O	**24 V AC/DC**	**0,5 VA / 0,4 W**	**PI6W-1PS-24VAC/DC**	**RSR30-D12-D1-02-040-1**	**12 V DC**
PIR6W-1PS-42VAC/DC-O	42 V AC/DC	0,5 VA / 0,4 W	PI6W-1PS-42VAC/DC	RSR30-D24-D1-02-040-1	24 V DC
PIR6W-1PS-115VAC/DC-O	115 V AC/DC	1,0 VA / 1,0 W	PI6W-1PS-115VAC/DC	RSR30-D24-D1-02-040-1	24 V DC
PIR6W-1PS-230VAC/DC-O ❹	**230 V AC/DC**	**1,0 VA / 1,0 W**	**PI6W-1PS-230VAC/DC**	**RSR30-D48-D1-02-040-1**	**48 V DC**
PIR6W-1PS-230VAC-O	230 V AC	≤ 0,8 VA	PI6W-1PS-230VAC	RSR30-D48-D1-02-040-1	48 V DC

The data in bold type relate to the standard versions of the relays. ❷ Version with gold-plated contacts. ❹ For versions 230VAC/DC: the distance of min. 5 mm between the mounting relays. ❺ It shall be remarked that rated input voltage of the operational relay U_s not always complies with the rated input voltage U_n (which is important on ordering operational relays for sockets).

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RM699BV + PI6WB-1PS-...

RSR30 + PI6WB-1PS-...

- Width 6,2 mm • Interface relay **PIR6WB-1PS-...** consists of: spring terminals ❶ universal socket, with electronic **PI6WB-1PS-...**, miniature operational relay - electromagnetic **RM699BV** or solid state **RSR30** ❷
- 35 mm rail mount acc. to PN-EN 60715 • May be linked with interconnection strip type **ZG20** • Equipped in LED green • Version for long control lines, with anti-interference filter (**PIR6WB-1P-230V...-10** ❹)
- Accessories: description plates **PI6W-1246**
- Recognitions, certifications, directives: RoHS,

Output circuit (RM699BV) - contact data ❷

Number and type of contacts (code of output)		1 CO (R) ❺	1 CO (R01) ❺
Contact material		**$AgSnO_2$**	$AgSnO_2$/Au hard gold plating ❸
Max. switching voltage		400 V AC / 250 V DC	30 V AC / 36 V DC ❸
Min. switching voltage	AC / DC	10 V	5 V
Rated load	AC1	6 A / 250 V AC	0,05 A / 30 V AC ❸
	DC1	6 A / 30 V DC; 0,15 A / 250 V DC	0,05 A / 36 V DC ❸
Min. switching current		100 mA	10 mA
Max. inrush current		10 A 20 ms	0,1 A 20 ms ❸
Rated current		6 A	0,05 A ❸
Max. breaking capacity	AC1	1 500 VA	1,2 VA ❸
Min. breaking capacity		1 W	0,05 W
Contact resistance		≤ 100 mΩ 100 mA, 24 V	≤ 30 mΩ 10 mA, 5 V
Max. operating frequency			
• at rated load	AC1	360 cycles/hour	
• no load		72 000 cycles/hour	

Output circuit (RSR30) - output data ❷

Type of output (code of output)		Triac (T) ❺ max. 2 A	Transistor (C) ❺ max. 1 A	Transistor (O) ❺ max. 2 A
Number and type of outputs		1 NO	1 NO	1 NO
Rated voltage		240 V AC	48 V DC	24 V DC
Max. output voltage		280 V AC	60 V DC	32 V DC
Min. output voltage		12 V AC	1,5 V DC	1,5 V DC
Rated continuous output current	AC1	1 A		
	DC1		1 A	2 A
Min. making capacity current		50 mA	1 mA	1 mA
Max. off-state leakage current (rest condition)		1,5 mA	1 mA	1 mA
Max. on-state voltage drop on the connection (operating state)		1,2 V	0,4 V	0,24 V
Operating switching frequency			10 Hz	10 Hz

Input circuit

Rated voltage	50/60 Hz AC	230 V	
	DC	6 ... 60 V	
	AC: 50/60 Hz AC/DC	24 ... 230 V	
Must release voltage		AC: ≥ 0,2 U_n	AC: ≥ 0,1 U_n 230 V AC
		AC: ≥ 0,35 U_n 230 V AC ❹	AC: ≥ 0,35 U_n 230 V AC/DC ❹
		DC: ≥ 0,1 U_n	
Operating range of supply voltage		0,8...1,2 U_n	0,85...1,2 U_n 6 V DC
Must operate voltage		AC: ≤ 0,8 U_n	AC: 0,6...0,85 U_n ❹
		DC: ≤ 0,8 U_n	DC: ≤ 0,85 U_n 6 V DC
Rated power consumption	AC	≤ 0,8 ... 0,9 VA	
	DC	0,2 ... 0,5 W	
	AC/DC	0,5 ... 1,2 VA / 0,4 ... 1,2 W	
Max. length of control line		≤ 300 m	AC control voltage ❹

The data in bold type relate to the standard versions of the relays. ❶ Spring fixing terminals for electric wires (cage springs CAGE CLAMP® - is the registered trademark of WAGO Kontakttechnik GmbH & Co. KG, Germany). ❷ Characteristics of the contact capacity of relays **PIR6WB-1PS-... with RM699BV** - see page 80; **PIR6WB-1PS-... with RSR30** - see www.relpol.com.pl ❸ For gold-plated contacts - when the maximum values given have been exceeded, the gold layer is destroyed. Then, the advantages of gold-plating disappear and the values are as for $AgSnO_2$ contacts (see beside), and electrical life of these contacts may be shorter than of normal contacts. ❹ Refers version for long control lines (max. 300 m) **PIR6WB-1P-230V...-10** - relay which includes the socket **PI6WB-1P-230V...-10** with integrated anti-interference filter (desigend on the basis of appropriately selected elements R and C, and Zener diode), resistant to occurrence of induced voltages in long distances of control wires, and operational miniature relay **RM699BV-3011-85-1060**. ❺ Type of outputs: **R** - contacts $AgSnO_2$; **R01** - contacts $AgSnO_2$/Au hard gold plating; **T** - triac; **C** - transistor; **O** - transistor.

Insulation according to PN-EN 60664-1

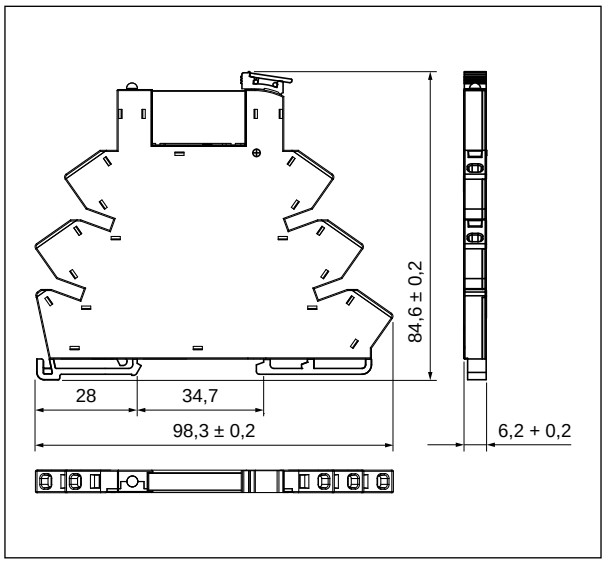
Insulation rated voltage		250 V AC
Rated surge voltage		4 000 V 1,2 / 50 µs
Overvoltage category		III
Insulation pollution degree		3
Dielectric strength	• input - output	4 000 V AC 50/60 Hz, 1 min., type of insulation: reinforced
	• input - output	6 000 V 1,2 / 50 µs
	• mass - input, output	2 500 V AC 50/60 Hz, 1 min.
	• contact clearance	1 000 V AC 50/60 Hz, 1 min., output R and R01, type of clearance: micro-disconnection
Input - output distance		clearance / creepage: ≥ 6 mm / ≥ 8 mm
Mass - output distance		clearance / creepage: ≥ 3 mm / ≥ 4 mm

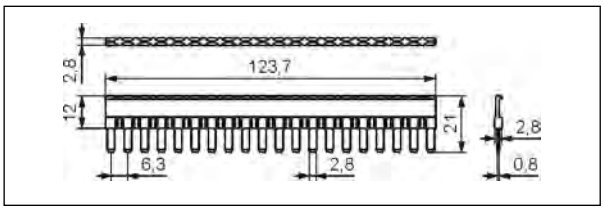
General data

Operating time (typical value)		PIR6WB-1PS-...-R/-R01: DC: 8 ms AC, AC/DC: 20 ms PIR6WB-1PS-...-T: DC: 100 µs AC, AC/DC: 10 ms PIR6WB-1PS-...-C/-O: DC: 50 µs AC, AC/DC: 10 ms
Release time (typical value)		PIR6WB-1PS-...-R/-R01: DC: 10 ms AC, AC/DC: 25 ms (18 ms ❹) PIR6WB-1PS-...-T: DC: 1/2 cycle + 1 ms AC, AC/DC: 30 ms PIR6WB-1PS-...-C/-O: DC: 600 µs AC, AC/DC: 20 ms
Electrical life	• resistive AC1	PIR6WB-1PS-...-R: > 0,5 x 10^5 6 A, 250 V AC
Mechanical life (cycles)		PIR6WB-1PS-...-R/-R01: > 10^7
Dimensions (L x W x H)		98,3 x 6,2 x 84,6 mm
Weight		55 g
Ambient temperature	• storage	PIR6WB-1PS-...-R/-R01/-T: -40...+70 °C ...-C/-O: -25...+70 °C PIR6WB-1P-230V...-10 ❹: -25...+70 °C
	• operating	PIR6WB-1PS-...-R/-R01: -40...+55 °C ...-T/-C/-O: -25...+55 °C PIR6WB-1PS-230VAC/DC-R/-R01/-C/-O: -25...+50 °C ❻ PIR6WB-1P-230V...-10 ❹: -25...+50 °C ❻
Cover protection category		IP 20 PN-EN 60529
Environmental protection		RTI PN-EN 116000-3
Shock resistance		10 g
Vibration resistance		5 g 10...500 Hz

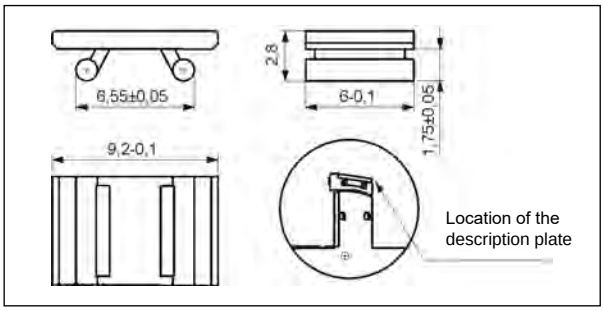
❹ Version for long control lines (max. 300 m), with anti-interference filter.
❻ For versions 230VAC/DC and 230VAC/DC-10: the distance of min. 5 mm between the mounting relays.

Dimensions





Interconnection strip type **ZG20**



Description plate **PI6W-1246**

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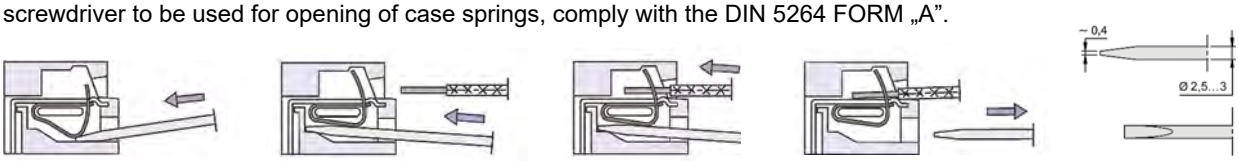
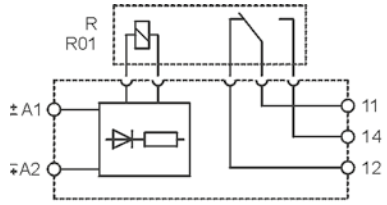
Wire connection

The drawings present the sequence of operations in course of inserting wires to the spring terminal, and the recommended screwdriver to be used for opening of case springs, comply with the DIN 5264 FORM „A".

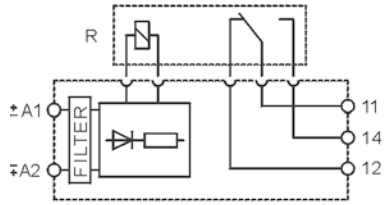


Connection diagrams

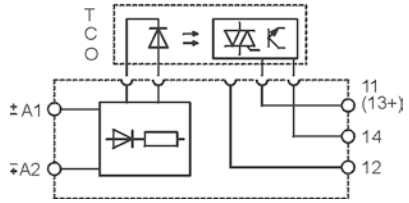
PIR6WB-1PS-...-R, PIR6WB-1PS-...-R01



PIR6WB-1P-230V...-10



PIR6WB-1PS-...-T, PIR6WB-1PS-...-C, PIR6WB-1PS-...-O



Ordering codes

Ordering codes **PIR6WB-1PS-...** are specified in Table 1, "Interface relay code" column.

Montaż

Relays **PIR6WB-1PS-...** ❻ are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. **Connections:** max. cross section of the cables: 1 x 0,22...2,5 mm² (1 x 24...14 AWG), length of the cable deinsulation: 9 mm. Interface relay **PIR6WB-1PS-...** consists of: spring terminals universal socket, with electronic **PI6WB-1PS-...**, miniature operational relay - electromagnetic **RM699BV** or solid state **RSR30** ❺.

PIR6WB-1PS-... may be linked with interconnection strip type **ZG20**. Strip **ZG20** bridges common input or output signals, maximum permissible current is 36 A / 250 V AC. Colours of strips: **ZG20-1** red, **ZG20-2** black, **ZG20-3** blue. Description plates of **PI6W-1246** type are offered for **PIR6WB-1PS-...** relays; they are delivered with the relays, not mounted.

❺ Type of outputs: **R** - contacts $AgSnO_2$; **R01** - contacts $AgSnO_2$/Au hard gold plating; **T** - triac; **C** - transistor; **O** - transistor. ❻ For versions 230VAC/DC and 230VAC/DC-10: the distance of min. 5 mm between the mounting relays.

PI6WB-1PS-...

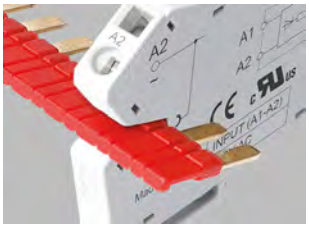
RM699BV

RSR30

ZG20

PI6W-1246

Green LED:
signalling the operation status of the relay.



Interconnection strip ZG20:
bridging of common input or output signals.

Movable ejector: protection and easy replacement of the operational relay.

Table of codes Table 1

Interface relay code	Rated input voltage Un ❼	Power of input circuit	Socket code	Operational relay code	Rated voltage of operational relay Us ❼
PIR6WB-1PS-6VDC-R	6 V DC	0,3 W	PI6WB-1PS-6VDC	RM699BV-3011-85-1005	5 V DC
PIR6WB-1PS-12VDC-R	12 V DC	0,2 W	PI6WB-1PS-12/24VDC	RM699BV-3011-85-1012	12 V DC
PIR6WB-1PS-24VDC-R	**24 V DC**	**0,3 W**	**PI6WB-1PS-12/24VDC**	**RM699BV-3011-85-1024**	**24 V DC**
PIR6WB-1PS-36VDC-R	36 V DC	0,3 W	PI6WB-1PS-36VDC	RM699BV-3011-85-1024	24 V DC
PIR6WB-1PS-48VDC-R	48 V DC	0,4 W	PI6WB-1PS-48VDC	RM699BV-3011-85-1024	24 V DC
PIR6WB-1PS-60VDC-R	60 V DC	0,5 W	PI6WB-1PS-60VDC	RM699BV-3011-85-1024	24 V DC
PIR6WB-1PS-24VAC/DC-R	**24 V AC/DC**	**0,5 VA / 0,4 W**	**PI6WB-1PS-24VAC/DC**	**RM699BV-3011-85-1012**	**12 V DC**
PIR6WB-1PS-42VAC/DC-R	42 V AC/DC	0,5 VA / 0,4 W	PI6WB-1PS-42VAC/DC	RM699BV-3011-85-1024	24 V DC
PIR6WB-1PS-115VAC/DC-R	115 V AC/DC	1,2 VA / 1,2 W	PI6WB-1PS-115VAC/DC	RM699BV-3011-85-1024	24 V DC
PIR6WB-1PS-230VAC/DC-R ❻	**230 V AC/DC**	**1,2 VA / 1,2 W**	**PI6WB-1PS-230VAC/DC**	**RM699BV-3011-85-1060**	**60 V DC**
PIR6WB-1PS-230VAC-R	230 V AC	≤ 0,8 VA	PI6WB-1PS-230VAC	RM699BV-3011-85-1060	60 V DC
PIR6WB-1P-230VAC/DC-10 ❹ ❻	230 V AC/DC	2,1 VA / 1,0 W	PI6WB-1P-230VAC/DC-10	RM699BV-3011-85-1060	60 V DC
PIR6WB-1P-230VAC-10 ❹	230 V AC	≤ 0,9 VA	PI6WB-1P-230VAC-10	RM699BV-3011-85-1060	60 V DC
PIR6WB-1PS-6VDC-R01 ❸	6 V DC	0,3 W	PI6WB-1PS-6VDC	RM699BV-3211-85-1005	5 V DC
PIR6WB-1PS-12VDC-R01 ❸	12 V DC	0,2 W	PI6WB-1PS-12/24VDC	RM699BV-3211-85-1012	12 V DC
PIR6WB-1PS-24VDC-R01 ❸	**24 V DC**	**0,3 W**	**PI6WB-1PS-12/24VDC**	**RM699BV-3211-85-1024**	**24 V DC**
PIR6WB-1PS-36VDC-R01 ❸	36 V DC	0,3 W	PI6WB-1PS-36VDC	RM699BV-3211-85-1024	24 V DC
PIR6WB-1PS-48VDC-R01 ❸	48 V DC	0,4 W	PI6WB-1PS-48VDC	RM699BV-3211-85-1024	24 V DC
PIR6WB-1PS-60VDC-R01 ❸	60 V DC	0,5 W	PI6WB-1PS-60VDC	RM699BV-3211-85-1024	24 V DC
PIR6WB-1PS-24VAC/DC-R01 ❸	**24 V AC/DC**	**0,5 VA / 0,4 W**	**PI6WB-1PS-24VAC/DC**	**RM699BV-3211-85-1012**	**12 V DC**
PIR6WB-1PS-42VAC/DC-R01 ❸	42 V AC/DC	0,5 VA / 0,4 W	PI6WB-1PS-42VAC/DC	RM699BV-3211-85-1024	24 V DC
PIR6WB-1PS-115VAC/DC-R01 ❸	115 V AC/DC	1,2 VA / 1,2 W	PI6WB-1PS-115VAC/DC	RM699BV-3211-85-1024	24 V DC
PIR6WB-1PS-230VAC/DC-R01 ❸ ❻	**230 V AC/DC**	**1,2 VA / 1,2 W**	**PI6WB-1PS-230VAC/DC**	**RM699BV-3211-85-1060**	**60 V DC**
PIR6WB-1PS-230VAC-R01 ❸	230 V AC	≤ 0,8 VA	PI6WB-1PS-230VAC	RM699BV-3211-85-1060	60 V DC
PIR6WB-1PS-6VDC-T	6 V DC	0,2 W	PI6WB-1PS-6VDC	RSR30-D05-A1-24-020-1	5 V DC
PIR6WB-1PS-12VDC-T	12 V DC	0,2 W	PI6WB-1PS-12/24VDC	RSR30-D12-A1-24-020-1	12 V DC
PIR6WB-1PS-24VDC-T	**24 V DC**	**0,3 W**	**PI6WB-1PS-12/24VDC**	**RSR30-D24-A1-24-020-1**	**24 V DC**
PIR6WB-1PS-36VDC-T	36 V DC	0,3 W	PI6WB-1PS-36VDC	RSR30-D24-A1-24-020-1	24 V DC
PIR6WB-1PS-48VDC-T	48 V DC	0,4 W	PI6WB-1PS-48VDC	RSR30-D24-A1-24-020-1	24 V DC
PIR6WB-1PS-60VDC-T	60 V DC	0,5 W	PI6WB-1PS-60VDC	RSR30-D24-A1-24-020-1	24 V DC
PIR6WB-1PS-24VAC/DC-T	**24 V AC/DC**	**0,5 VA / 0,4 W**	**PI6WB-1PS-24VAC/DC**	**RSR30-D12-A1-24-020-1**	**12 V DC**
PIR6WB-1PS-42VAC/DC-T	42 V AC/DC	0,5 VA / 0,4 W	PI6WB-1PS-42VAC/DC	RSR30-D24-A1-24-020-1	24 V DC
PIR6WB-1PS-115VAC/DC-T	115 V AC/DC	1,0 VA / 1,0 W	PI6WB-1PS-115VAC/DC	RSR30-D24-A1-24-020-1	24 V DC
PIR6WB-1PS-6VDC-C	6 V DC	0,2 W	PI6WB-1PS-6VDC	RSR30-D05-D1-04-025-1	5 V DC
PIR6WB-1PS-12VDC-C	12 V DC	0,2 W	PI6WB-1PS-12/24VDC	RSR30-D12-D1-04-025-1	12 V DC
PIR6WB-1PS-24VDC-C	**24 V DC**	**0,3 W**	**PI6WB-1PS-12/24VDC**	**RSR30-D24-D1-04-025-1**	**24 V DC**
PIR6WB-1PS-36VDC-C	36 V DC	0,3 W	PI6WB-1PS-36VDC	RSR30-D24-D1-04-025-1	24 V DC
PIR6WB-1PS-48VDC-C	48 V DC	0,4 W	PI6WB-1PS-48VDC	RSR30-D24-D1-04-025-1	24 V DC
PIR6WB-1PS-60VDC-C	60 V DC	0,5 W	PI6WB-1PS-60VDC	RSR30-D24-D1-04-025-1	24 V DC
PIR6WB-1PS-24VAC/DC-C	**24 V AC/DC**	**0,5 VA / 0,4 W**	**PI6WB-1PS-24VAC/DC**	**RSR30-D12-D1-04-025-1**	**12 V DC**
PIR6WB-1PS-42VAC/DC-C	42 V AC/DC	0,5 VA / 0,4 W	PI6WB-1PS-42VAC/DC	RSR30-D24-D1-04-025-1	24 V DC
PIR6WB-1PS-115VAC/DC-C	115 V AC/DC	1,0 VA / 1,0 W	PI6WB-1PS-115VAC/DC	RSR30-D24-D1-04-025-1	24 V DC
PIR6WB-1PS-230VAC/DC-C ❻	**230 V AC/DC**	**1,0 VA / 1,0 W**	**PI6WB-1PS-230VAC/DC**	**RSR30-D48-D1-04-025-1**	**48 V DC**
PIR6WB-1PS-230VAC-C	230 V AC	≤ 0,8 VA	PI6WB-1PS-230VAC	RSR30-D48-D1-04-025-1	48 V DC
PIR6WB-1PS-6VDC-O	6 V DC	0,2 W	PI6WB-1PS-6VDC	RSR30-D05-D1-02-040-1	5 V DC
PIR6WB-1PS-12VDC-O	12 V DC	0,2 W	PI6WB-1PS-12/24VDC	RSR30-D12-D1-02-040-1	12 V DC
PIR6WB-1PS-24VDC-O	**24 V DC**	**0,3 W**	**PI6WB-1PS-12/24VDC**	**RSR30-D24-D1-02-040-1**	**24 V DC**
PIR6WB-1PS-36VDC-O	36 V DC	0,3 W	PI6WB-1PS-36VDC	RSR30-D24-D1-02-040-1	24 V DC
PIR6WB-1PS-48VDC-O	48 V DC	0,4 W	PI6WB-1PS-48VDC	RSR30-D24-D1-02-040-1	24 V DC
PIR6WB-1PS-60VDC-O	60 V DC	0,5 W	PI6WB-1PS-60VDC	RSR30-D24-D1-02-040-1	24 V DC
PIR6WB-1PS-24VAC/DC-O	**24 V AC/DC**	**0,5 VA / 0,4 W**	**PI6WB-1PS-24VAC/DC**	**RSR30-D12-D1-02-040-1**	**12 V DC**
PIR6WB-1PS-42VAC/DC-O	42 V AC/DC	0,5 VA / 0,4 W	PI6WB-1PS-42VAC/DC	RSR30-D24-D1-02-040-1	24 V DC
PIR6WB-1PS-115VAC/DC-O	115 V AC/DC	1,0 VA / 1,0 W	PI6WB-1PS-115VAC/DC	RSR30-D24-D1-02-040-1	24 V DC
PIR6WB-1PS-230VAC/DC-O ❻	**230 V AC/DC**	**1,0 VA / 1,0 W**	**PI6WB-1PS-230VAC/DC**	**RSR30-D48-D1-02-040-1**	**48 V DC**
PIR6WB-1PS-230VAC-O	230 V AC	≤ 0,8 VA	PI6WB-1PS-230VAC	RSR30-D48-D1-02-040-1	48 V DC

The data in bold type relate to the standard versions of the relays. ❸ Version with gold-plated contacts. ❹ Version for long control lines (max. 300 m), with anti-interference filter. ❻ For versions 230VAC/DC and 230VAC/DC-10: the distance of min. 5 mm between the mounting relays. ❼ It shall be remarked that rated input voltage of the operational relay Us not always complies with the rated input voltage Un (which is important on ordering operational relays for sockets).

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Relays
installation

relpol® S.A.

Electromagnetic relays of the MT-PI-... series in modular covers, designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715.

They meet the requirements of RoHS Directive.
The relays are recognized and certified by:

CE


MT-PI-...-11-...


MT-PI-...-22-...

- Installation relays - electromagnetic • AC, DC and AC/DC coils
- Cover - modular, width 17,5 mm • Load of AC1 up to 16 A / 250 V (versions 1 CO, 1 NO) and up to 8 A / 250 V (versions 2 CO, 2 NO)
- Light indicator (LED diode) - supply voltage
- Applications: automatic systems in buildings - in cooperation with control timers, switches, control switches; electric systems; industrial automation and power engineering automation; switchgears of modular equipment
- Recognitions, certifications, directives: CE

Contact data

Number and type of contacts			1 CO, 1 NO	2 CO, 2 NO
Contact material			**$AgSnO_2$**	
Max. switching voltage			400 V AC / 300 V DC	
Min. switching voltage			10 V	
Rated load		AC1	16 A / 250 V AC	8 A / 250 V AC
		DC1	16 A / 24 V DC	8 A / 24 V DC
Min. switching current			10 mA	
Max. inrush current			30 A ❶	15 A
Rated current			16 A	8 A
Max. breaking capacity		AC1	4 000 VA	2 000 VA
Min. breaking capacity			1 W	
Contact resistance			≤ 100 mΩ	
Max. operating frequency				
• at rated load		AC1	600 cycles/hour	
• no load			72 000 cycles/hour	

Coil data

Rated voltage	• versions 1 CO, 2 CO	50/60 Hz AC	115 ... 230 V	
		DC	12 ... 48 V	
	• versions 1 NO, 2 NO	50 Hz AC	230 V	
		AC: 50 Hz AC/DC	12 ... 115 V	
Must release voltage			AC: ≥ 0,15 U_n	DC: ≥ 0,05 U_n
Operating range of supply voltage			0,85...1,1 U_n AC: 50/60 Hz	see Tables 2, 3, 4
Rated power consumption	• versions 1 CO, 2 CO	AC	≤ 1,0 VA	115 V AC, 230 V AC, AC: 50 Hz
		DC	≤ 0,5 W	12 V DC
		DC	≤ 0,65 W	24 V DC, 48 V DC
	• versions 1 NO, 2 NO	AC	≤ 5,5 VA	230 V AC, AC: 50 Hz
		AC/DC	≤ 0,75 VA / 0,75 W	12 V AC/DC, AC: 50 Hz
		AC/DC	≤ 0,65 VA / 0,65 W	24 V AC/DC, 48 V AC/DC, 115 V AC/DC, AC: 50 Hz

Insulation according to PN-EN 60664-1

Insulation rated voltage		250 V AC	
Rated surge voltage		4 000 V	1,2 / 50 µs
Overvoltage category		II	
Insulation pollution degree		1	
Flammability class		contact plate: V-0	cover: V-1 UL94
Dielectric strength	• between coil and contacts	3 000 V AC	contacts 1 CO and 2 CO, type of insulation: basic
		4 000 V AC	contacts 1 NO and 2 NO, type of insulation: reinforced
	• contact clearance	1 000 V AC	type of clearance: micro-disconnection
	• pole - pole	2 000 V AC	contacts 2 CO, type of insulation: basic
		2 500 V AC	contacts 2 NO, type of insulation: basic

General data

Operating / release time (typical values)		15 ms / 20 ms	
Mechanical life (cycles)		> 10^7	
Dimensions (L x W x H)		90 ❷ x 17,5 x 63,5 mm	
Weight		60 g	65 g
Ambient temperature	• storage	-40...+70 °C	
	• operating	-20...+45 °C	
Cover protection category		IP 20	PN-EN 60529
Relative humidity		up to 90%	
Shock resistance		15 g	
Vibration resistance	(NO/NC)	9 g / 5 g	10...150 Hz

The data in bold type relate to the standard versions of the relays.
❶ UL only for 15 A.
❷ Length with 35 mm rail taps: 98,8 mm.

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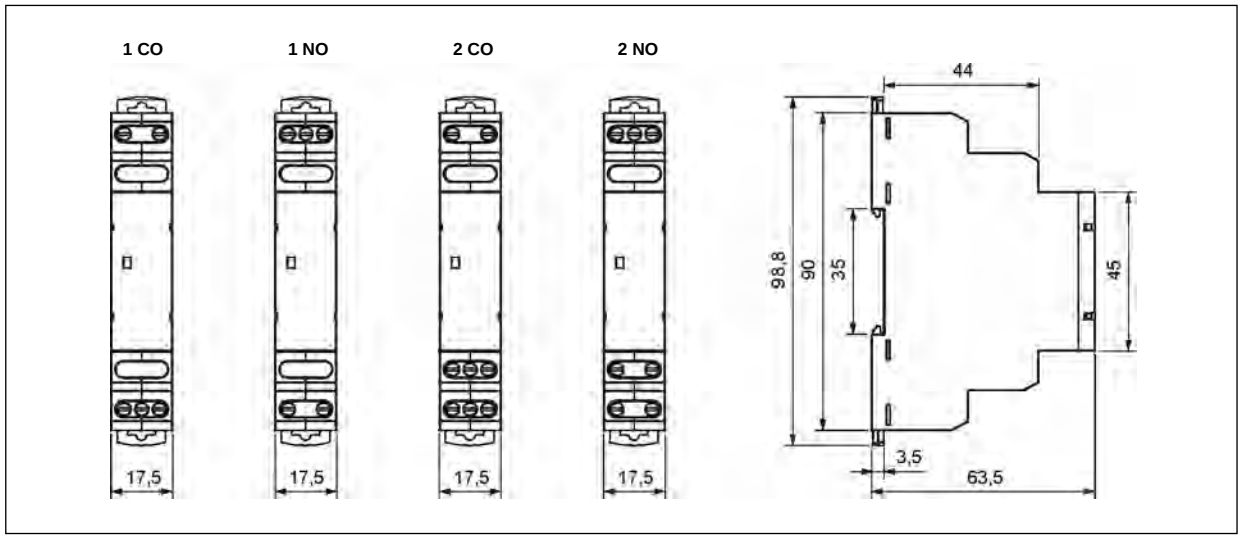
Dimensions



Connection diagrams

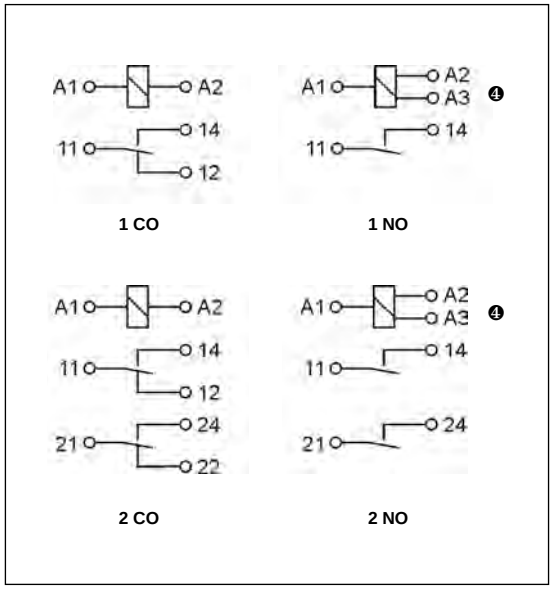


Table of codes

Table 1

Installation relay code		Rated coil voltage
with 1 CO contact	**with 2 CO contacts**	
MT-PI-17S-11-1012	MT-PI-17S-12-1012	12 V DC
MT-PI-17S-11-1024	MT-PI-17S-12-1024	24 V DC
MT-PI-17S-11-1048	MT-PI-17S-12-1048	48 V DC
MT-PI-17S-11-5115	MT-PI-17S-12-5115	115 V AC 50/60 Hz
MT-PI-17S-11-5230	MT-PI-17S-12-5230	230 V AC 50/60 Hz
with 1 NO contact	**with 2 NO contacts**	
MT-PI-17S-21-8012	MT-PI-17S-22-8012	12 V AC/DC
MT-PI-17S-21-8048	MT-PI-17S-22-8048	48 V AC/DC
MT-PI-17S-21-8115	MT-PI-17S-22-8115	115 V AC/DC
MT-PI-17S-21-9024 ❸	MT-PI-17S-22-9024 ❸	24 V AC/DC 230 V AC 50 Hz

❸ Selection of supply voltage via wires connection:
24 V AC/DC - to the terminals A1-A2; 230 V AC - to the terminals A1-A3.

❹ Terminal A3 occurs only in versions MT-PI-17S-21-9024, MT-PI-17S-22-9024; used to supply relays with rated voltage 230 V AC 50 Hz - connection to the terminals A1-A3.

Mounting

Relays **MT-PI-...** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715. Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm^2 / 2 x 1,5 mm^2 (1 x 14 / 2 x 16 AWG), length of the cable deinsulation: 6,5 mm, max. tightening moment for the terminal: 0,6 Nm.

Two taps:
easy assembly on 35 mm rail, firm tapping (top and bottom).

Green LED:
signalling the operation status of the relay.

Coil data - DC voltage version (1 CO, 2 CO contacts) Table 2

Coil code	Coil operating range V DC	Coil operating range V DC	
		min. (at 20 °C)	max. (at 55 °C)
1012	12	10,2	13,2
1024	24	20,4	26,4
1048	48	40,8	52,8

Coil data - AC 50/60 Hz voltage version (1 CO, 2 CO contacts) Table 3

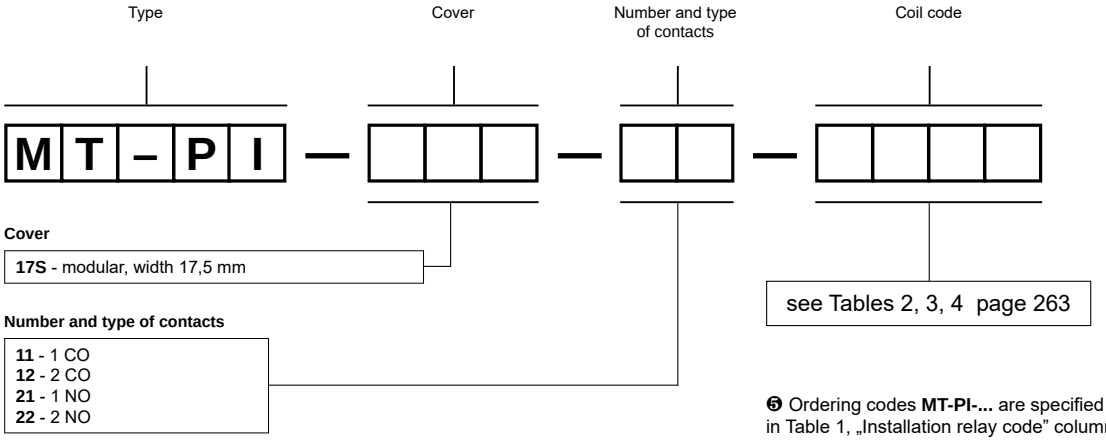
Coil code	Coil operating range V AC	Coil operating range V AC	
		min. (at 20 °C)	max. (at 55 °C)
5115	115	97,8	126,5
5230	230	195,5	253,0

Coil data - AC/DC 50 Hz voltage version (1 NO, 2 NO contacts) Table 4

Coil code	Coil operating range V AC/DC	Coil operating range V AC/DC	
		min. (at 20 °C)	max. (at 55 °C)
8012	12	10,2	13,2
9024 ❸	24 V AC/DC ❸	20,4	26,4
	230 V AC ❸	195,5	253,0
8048	48	40,8	52,8
8115	115	97,8	126,5

❸ Selection of supply voltage via wires connection: 24 V AC/DC - to the terminals A1-A2; 230 V AC - to the terminals A1-A3.

Ordering codes ❺



❺ Ordering codes **MT-PI-...** are specified in Table 1, „Installation relay code" column.

Example of ordering code ❺:

MT-PI-17S-22-9024 relay **MT-PI-...**, cover - modular, width 17,5 mm, two normally open contacts, contact material $AgSnO_2$, coil voltage 230 V AC 50 Hz or 24 V AC/DC AC: 50 Hz ❸

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Relays
programmable

relpol® S.A.

Programmable relays NEED are offered in versions: 8 inputs / 4 relay or transistor outputs, 16 inputs / 8 relay or transistor outputs; with LCD display, without display.

Supply voltages: 12 V DC, 24 V DC, 220 V DC, 230 V AC; programming: LAD, STL; LED signaling the status of the relay and inputs/outputs; designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting.

NEED-MODBUS: communication modules NEED Master / ModBus RTU Slave; designed for cooperation with NEED relays; for direct mounting on 35 mm rail mount acc. to PN-EN 60715.

They meet the requirements of RoHS Directive.
The relays are recognized and certified by:

CE EAC

NEED-...-22-...-D

NEED-...-11-...

- Programmable relays with LCD display or without display, exceptional simplicity of programming in language LAD and STL - page 273
- 8 inputs: AC or DC voltages • 4 outputs: relay or transistor
- LED signaling the status of the relay and inputs/outputs • Cooperation with communication modules NEED-MODBUS • Mounting on 35 mm rail mount or on panel mounting • Control of applications - page 274
- Compliance with standards PN-EN 61131-2, PN-EN 50178
- Recognitions, certifications, directives: CE EAC

Supply voltage

Rated supply voltage	50/60 Hz AC	230 V		
	DC	12 V, 24 V, 220 V		
Operating range of supply voltage		230 V AC: 95...260 V AC	12 V DC: 10,2...14,4 V DC	
		24 V DC: 19,6...28,8 V DC	220 V DC: 154...242 V DC	
Rated power consumption	AC	< 8,0 VA		
	DC	< 3,0 W		
Range of supply frequency	AC	47...63 Hz		

Inputs

Number of digital inputs		6 (I1 - I6)		
Number and type of analog-digital inputs		2 (I7 - I8)	AC or DC voltage	
Rated voltage	• for logic state „1”	230 V AC: 85...260 V AC 50 Hz	12 V DC: 8...26 V DC	
		24 V DC: 15...40 V DC	220 V DC: 80...260 V DC	
	• for logic state „0”	230 V AC: 0...40 V AC 50 Hz	12 V DC: -1,5...4 V DC	
		24 V DC: -3...5 V DC	220 V DC: 0...40 V DC	
Input current for logic state „1” ❶		230 V AC: 0,6 mA (I1 - I4)	8,0 mA (I5 - I6)	0,9 mA (I7 - I8)
		12 V DC: 3,3 mA (I1 - I6)		1,1 mA (I7 - I8)
		24 V DC: 3,3 mA (I1 - I6)		2,0 mA (I7 - I8)
		220 V DC: 0,6 mA (I1 - I6)	1,1 mA (I7 - I8)	
Range of analog input signals		230 V AC: 0...255 V AC 50 Hz		
		12 V DC, 24 V DC: 0...12,75 / 0...25,5 V DC		
		220 V DC: 0...255 V DC		

Outputs

Number and type of outputs		relay: 4 NO (Q1 - Q4) ❷	
		transistor: 4 NO (Q1 - Q4) ❸	
Max. voltage		250 V AC ❷, 30 V DC ❸	
Min. voltage		10 V ❷	
Rated load	AC1	10 A / 250 V AC ❷	
	DC1	0,5 A / 24 V DC ❸	
Min. current		10 mA ❷	1 mA ❸
Resistance		≤ 100 mΩ ❷	

Insulation according to PN-EN 60664-1

Insulation rated voltage	300 V AC	
Rated surge voltage		
• inputs - outputs	2 500 V	1,2 / 50 µs
Overvoltage category	II	
Insulation pollution degree	2	
Dielectric strength		
• inputs - outputs	2 000 V AC	type of insulation: reinforced
• contact clearance	1 000 V AC	type of clearance: micro-disconnection ❷

General data

Operating / release time (typical values)	7 ms / 3 ms ❷	
Electrical life		
• resistive AC1	> 0,7 x 10^5	10 A, 250 V AC ❷
• DC L/R=40 ms	> 10^5	0,15 A, 220 V DC ❷
Mechanical life (cycles)	> 3 x 10^7	
Dimensions (L x W x H)	90 x 72 x 55 mm	
Weight	max. 250 g	
Ambient temperature • storage	-40...+70 °C	
Ambient temperature • operating	-20...+55 °C	
Cover protection category	IP 20	PN-EN 60529

❶ At rated voltage U_n. ❷ Versions with unprotected relay outputs. ❸ Version 24 V DC with protected transistor outputs: max. off-state leakage current < 0,1mA; max. on-state voltage drop on the connection < 2,5 V.

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Physical resources

Mode switch	STOP/RUN
LCD display ❹	preview of variables, illuminated, of high contrast (4 lines 12 characters each)
Keyboard ❹	set of program parameters
Programmable function buttons ❹	4 (B1 - B4)
LED indicators	LED three-coloured - relay status (green: RUN, yellow: STOP, red: ERROR) yellow LEDs - output status green LEDs - input status
Internal potentiometer ❺	for analog value setting
Real time RTC clock	with automatic time change summer / winter for various time zones (EU, GB, US, RU)
Connection with stopper	for relay programming and external memory card connection

Program resources

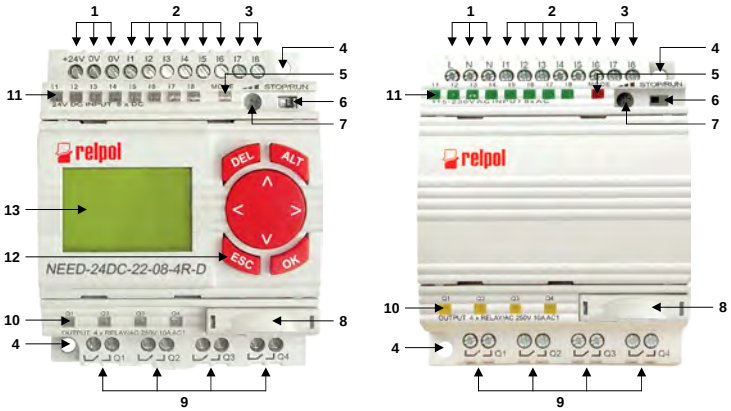
Timers ❻	NEED-...-22-...-D: 32 (T1 - T32) NEED-...-11-...: 8 (T1 - T8) time range 10 ms...99 h 59 min., resolution 10 ms, accuracy ±1% of the set value +0...1 ms
Bidirectional counters ❻	8 (C1 - C8), values 0-65535
Fast bidirectional counter / meter ❹	measurement of frequency up to 20 kHz (digital input I4)
Clocks	NEED-...-22-...-D: 8 (H1 - H8) NEED-...-11-...: 4 (H1 - H4)
Comparators of analog values	NEED-...-22-...-D: 16 (A1 - A16) NEED-...-11-...: 8 (A1 - A8)
Markers	NEED-...-22-...-D: 64 (M1 - M64) NEED-...-11-...: 16 (M1 - M16)
Text markers ❹	8 (MT1 - MT8)

System structure

NEED-...	programmable relay (see „Table of codes”)
NEED-PC-15B (RS232) NEED-PC-15C (USB)	cables for programming and diagnostics, for connection to PC computer
NEED-M-4KB (NEED-...-22-...-D) NEED-M-1KB (NEED-...-11-...)	external memory cards (4 kB or 1 kB) ❼
PC NEED	software for editing, compiling, programming of the relay and the external memory card (language: graphic LAD and text STL), user’s manual: www.need.com.pl
NEED-MODBUS	communication module NEED Master / ModBus RTU Slave

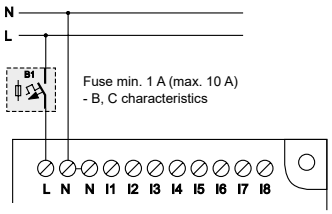
❹ Only for NEED-...-22-...-D ❺ For versions 12 V DC, 24 V DC: possibility of connecting external potentiometer. ❻ Possibility of configuration from analog inputs. ❼ The external memory card is not required and is an optional extension of the relay program memory.

Front panel description



1 Supply terminals
2 Digital input terminals
3 Analog-digital input terminals
4 Openings of 5,5 mm diameter for panel mounting with two M4 screws
5 LED indicator (three-coloured) of the relay status
6 STOP/RUN mode switch
7 Potentiometer for analog value setting
8 Relay programming and external memory card connection, secured by stopper
9 Output terminals
10 LED indicators (yellow) of output status
11 LED indicators (green) of input status
12 Keyboard
13 LCD display

Connection diagram - supply connection



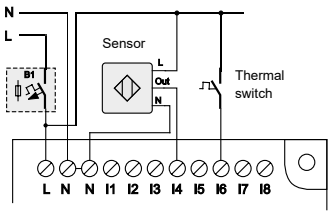
NEED-230AC-..-08-4R-.
230 V AC 50/60 Hz (95...260 V AC), L = 230 V AC, N = 0 V

NEED-12DC-..-08-4R-.
12 V DC (10,2...14,4 V DC), L = +12 V DC, N = 0 V

NEED-24DC-..-08-4.-.
24 V DC (19,6...28,8 V DC), L = +24 V DC, N = 0 V

NEED-220DC-..-08-4R-.
220 V DC (154...242 V DC), L = +220 V DC, N = 0 V

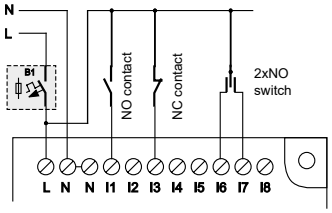
Connection diagrams - digital inputs



NEED-12DC-..-08-4R-. L = +12 V DC, N = 0 V
Logic state „1": 8...26 V DC **I1 - I6**: 3,3 mA, **I7 - I8**: 1,1 mA
Logic state „0": -1,5...4 V DC

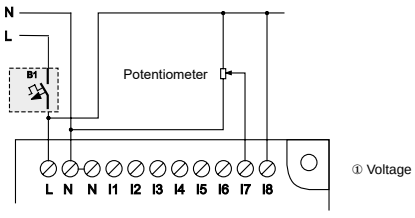
NEED-24DC-..-08-4.-. L = +24 V DC, N = 0 V
Logic state „1": 15...40 V DC **I1 - I6**: 3,3 mA, **I7 - I8**: 2,0 mA
Logic state „0": -3...5 V DC

NEED-220DC-..-08-4R-. L = +220 V DC, N = 0 V
Logic state „1": 80...260 V DC **I1 - I6**: 0,6 mA, **I7 - I8**: 1,1 mA
Logic state „0": 0...40 V DC



NEED-230AC-..-08-4R-. L = 230 V AC, N = 0 V
Logic state „1": 85...260 V AC 50 Hz **I1 - I4**: 0,6 mA
I5 - I6: 8,0 mA
I7 - I8: 0,9 mA
Logic state „0": 0...40 V AC 50 Hz

Connection diagram - analog-digital inputs



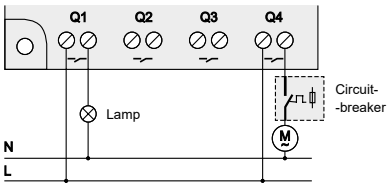
NEED-230AC-..-08-4R-.
0...255 V AC 50 Hz ① **I7 - I8**: 0,9 mA

NEED-12DC-..-08-4R-.
0...12,75 / 0...25,5 V DC ① **I7 - I8**: 1,1 mA

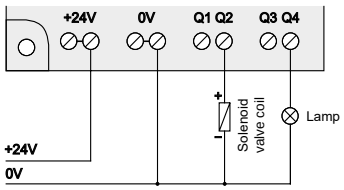
NEED-24DC-..-08-4.-.
0...12,75 / 0...25,5 V DC ① **I7 - I8**: 2,0 mA

NEED-220DC-..-08-4R-.
0...255 V DC ① **I7 - I8**: 1,1 mA

Connection diagrams - digital outputs

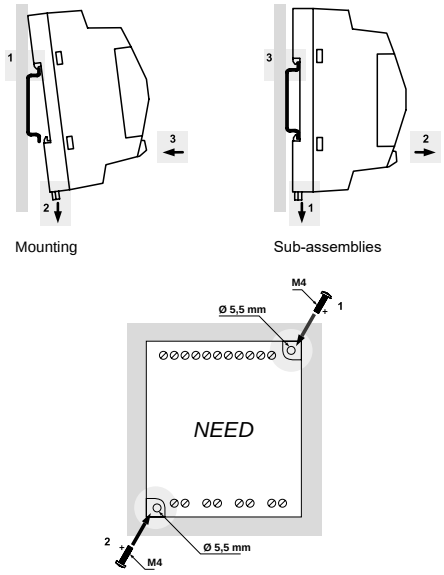


NEED-...-..-08-4R-.
relay outputs Q1 - Q4: 10 A, 250 V AC

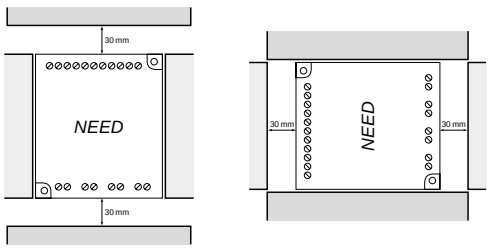


NEED-24DC-..-08-4T-.
transistor outputs Q1 - Q4: 0,5 A, 24 V DC

Mechanical mounting



Any operation position - mounting distances for walls with terminals



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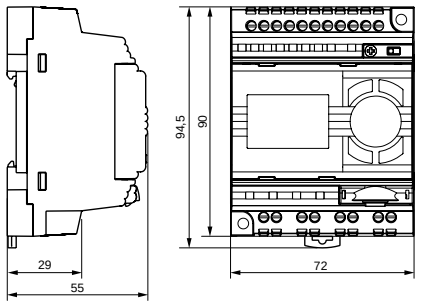
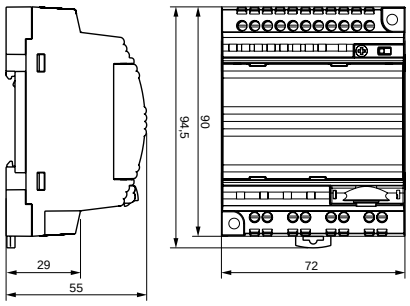
Dimensions



NEED-...-22-...-D



NEED-...-11-...

Mounting, connection to PC computer

Relays **NEED-...-08-4...** are designed for direct mounting on 35 mm rail mount acc. to PN-EN 60715 or on panel mounting with two M4 screws). Operational position - any. **Connections:** max. cross section of the cables: 1 x 2,5 mm^2 / 2 x 1,0 mm^2 (1 x 14 / 2 x 17 AWG).

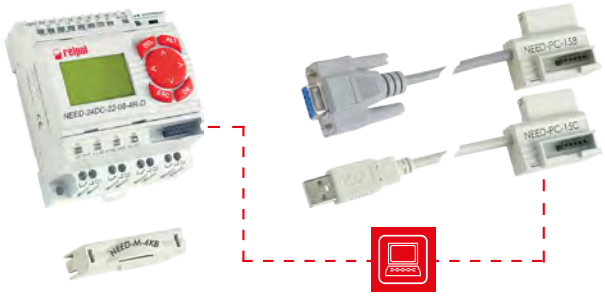


Table of codes

Table 1

Programmable relay code	Supply voltage	Version	Number of inputs	Number and type of outputs	Features
NEED-230AC-22-08-4R-D	230 V AC	22	8	4 relay	LCD display, keyboard
NEED-230AC-11-08-4R	230 V AC	11	8	4 relay	–
NEED-12DC-22-08-4R-D	12 V DC	22	8	4 relay	LCD display, keyboard
NEED-12DC-11-08-4R	12 V DC	11	8	4 relay	–
NEED-24DC-22-08-4R-D	**24 V DC**	**22**	**8**	**4 relay**	**LCD display, keyboard**
NEED-24DC-11-08-4R	**24 V DC**	**11**	**8**	**4 relay**	**–**
NEED-24DC-22-08-4T-D	24 V DC	22	8	4 transistor	LCD display, keyboard
NEED-24DC-11-08-4T	24 V DC	11	8	4 transistor	–
NEED-220DC-22-08-4R-D	220 V DC	22	8	4 relay	LCD display, keyboard
NEED-220DC-11-08-4R	220 V DC	11	8	4 relay	–

The data in bold type relate to the standard versions of the relays.

NEED-...-22-...-D

NEED-...-11-...

- Programmable relays with LCD display or without display, exceptional simplicity of programming in language LAD and STL - page 273
- 16 inputs: AC or DC voltages • 8 outputs: relay or transistor
- LED signaling the status of the relay and inputs/outputs • Cooperation with communication modules NEED-MODBUS • Mounting on 35 mm rail mount or on panel mounting • Control of applications - page 274
- Compliance with standards PN-EN 61131-2, PN-EN 50178
- Recognitions, certifications, directives: CE EAC

Supply voltage

Rated supply voltage	50/60 Hz AC	230 V		
	DC	12 V, 24 V, 220 V		
Operating range of supply voltage		230 V AC: 95...260 V AC	12 V DC: 10,2...14,4 V DC	
		24 V DC: 19,6...28,8 V DC	220 V DC: 154...242 V DC	
Rated power consumption	AC	< 10,0 VA		
	DC	12 V DC, 24 V DC: < 5,0 W	220 V DC: < 6,0 W	
Range of supply frequency	AC	47...63 Hz		

Inputs

Number of digital inputs		13 (I1 - I13)		
Number and type of analog-digital inputs		3 (I14 - I16)	AC or DC voltage ❷	
Rated voltage	• for logic state „1”	230 V AC: 85...260 V AC 50 Hz	12 V DC: 8...26 V DC	
		24 V DC: 15...40 V DC	220 V DC: 80...260 V DC	
	• for logic state „0”	230 V AC: 0...32 V AC 50 Hz	12 V DC: -1,5...4 V DC	
		24 V DC: -3...5 V DC	220 V DC: 0...40 V DC	
Input current for logic state „1” ❶		230 V AC: 0,6 mA (I1 - I11)	8,0 mA (I12 - I13)	1,5 mA (I14 - I16)
		12 V DC: 3,3 mA (I1 - I13)		1,1 mA (I14 - I16)
		24 V DC: 3,3 mA (I1 - I13)		2,0 mA (I14 - I16)
		220 V DC: 0,6 mA (I1 - I13)		1,1 mA (I14 - I16)
Range of analog input signals		230 V AC: 0...255 V AC 50 Hz		
		12 V DC, 24 V DC: 0...12,75 / 0...25,5 V DC		0...25,5 / 0...51 mA ❸
		220 V DC: 0...255 V DC		

Outputs

Number and type of outputs		relay: 8 NO (Q1 - Q8) ❹	
		transistor: 8 NO (Q1 - Q8) ❺	
Max. voltage		250 V AC ❹, 30 V DC ❺	
Min. voltage		10 V ❹	
Rated load	AC1	10 A / 250 V AC ❹	
	DC1	0,5 A / 24 V DC ❺	
Min. current		10 mA ❹	1 mA ❺
Resistance		≤ 100 mΩ ❹	

Insulation according to PN-EN 60664-1

Insulation rated voltage	300 V AC	
Rated surge voltage		
• inputs - outputs	2 500 V	1,2 / 50 µs
Overvoltage category	II	
Insulation pollution degree	2	
Dielectric strength		
• inputs - outputs	2 000 V AC	type of insulation: reinforced
• contact clearance	1 000 V AC	type of clearance: micro-disconnection ❹

General data

Operating / release time (typical values)	7 ms / 3 ms ❹	
Electrical life		
• resistive AC1	> 0,7 x 10^5	10 A, 250 V AC ❹
• DC L/R=40 ms	> 10^5	0,15 A, 220 V DC ❹
Mechanical life (cycles)	> 3 x 10^7	
Dimensions (L x W x H)	90 x 132 x 55 mm	
Weight	max. 413 g	
Ambient temperature • storage	-40...+70 °C	
Ambient temperature • operating	-20...+55 °C	
Cover protection category	IP 20	PN-EN 60529

❶ At rated voltage U_n. ❷ For versions 12 V DC, 24 V DC: it is possible to program configuration the type of inputs as voltage or current ones. ❸ Range for current mode in versions DC. ❹ Versions with unprotected relay outputs. ❺ Version 24 V DC with protected transistor outputs: max. off-state leakage current < 0,1mA; max. on-state voltage drop on the connection < 2,5 V.

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Physical resources

Mode switch	STOP/RUN
LCD display ❻	preview of variables, illuminated, of high contrast (4 lines 12 characters each)
Keyboard ❻	set of program parameters
Programmable function buttons ❻	4 (B1 - B4)
LED indicators	LED three-coloured - relay status (green: RUN, yellow: STOP, red: ERROR) yellow LEDs - output status green LEDs - input status
Internal potentiometer ❼	for analog value setting
Real time RTC clock	with automatic time change summer / winter for various time zones (EU, GB, US, RU)
Connection with stopper	for relay programming and external memory card connection
Three-phase network equipment control system	monitoring of voltage, asymmetry and phase sequence ❽

Program resources

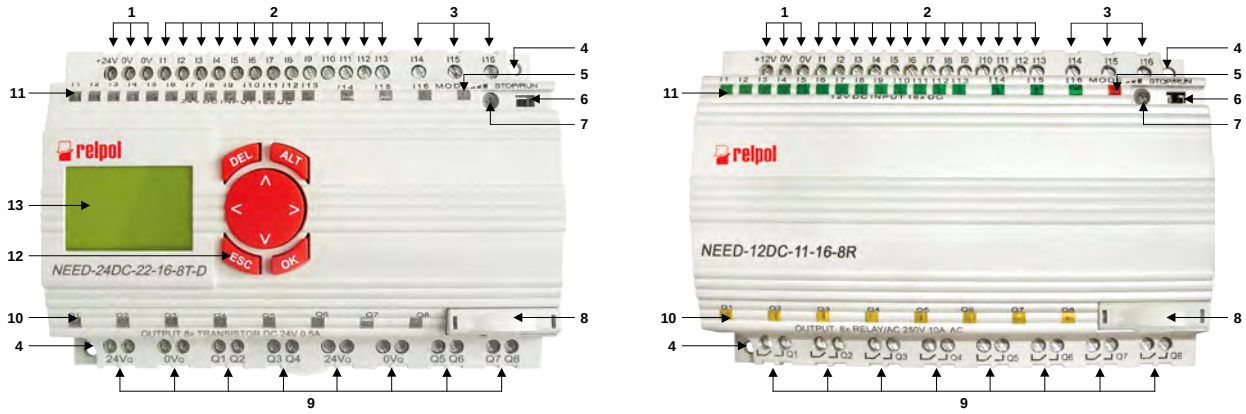
Timers ❾	NEED-...-22-...-D: 32 (T1 - T32) NEED-...-11-...: 16 (T1 - T16) time range 10 ms...99 h 59 min., resolution 10 ms, accuracy ±1% of the set value +0...1 ms
Bidirectional counters ❾	8 (C1 - C8), values 0-65535
Fast bidirectional counter / meter ❻	measurement of frequency up to 20 kHz (digital input I11)
Clocks	NEED-...-22-...-D: 8 (H1 - H8) NEED-...-11-...: 4 (H1 - H4)
Comparators of analog values	NEED-...-22-...-D: 16 (A1 - A16) NEED-...-11-...: 12 (A1 - A12)
Markers	NEED-...-22-...-D: 64 (M1 - M64) NEED-...-11-...: 16 (M1 - M16)
Text markers ❻	8 (MT1 - MT8)
Marker of phase sequence	❽

System structure

NEED-...	programmable relay (see „Table of codes”)
NEED-PC-15B (RS232) NEED-PC-15C (USB)	cables for programming and diagnostics, for connection to PC computer
NEED-M-4KB (NEED-...-22-...-D) NEED-M-1KB (NEED-...-11-...)	external memory cards (4 kB or 1 kB) ❿
PC NEED	software for editing, compiling, programming of the relay and the external memory card (language: graphic LAD and text STL), user’s manual: www.need.com.pl
NEED-MODBUS	communication module NEED Master / ModBus RTU Slave

❻ Only for NEED-...-22-...-D ❼ For versions 12 V DC, 24 V DC: possibility of connecting external potentiometer. ❽ Only for version 230 V AC.
❾ Possibility of configuration from analog inputs. ❿ The external memory card is not required and is an optional extension of the relay program memory.

Front panel description



1 Supply terminals
2 Digital input terminals
3 Analog-digital input terminals
4 Openings of 5,5 mm diameter for panel mounting with two M4 screws
5 LED indicator (three-coloured) of the relay status
6 STOP/RUN mode switch
7 Potentiometer for analog value setting
8 Relay programming and external memory card connection, secured by stopper
9 Output terminals
10 LED indicators (yellow) of output status
11 LED indicators (green) of input status
12 Keyboard
13 LCD display

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email minsk17@tut.by тел +375297584780 мтс

подробно смотрите ниже: каталог, описание, технические, характеристики, datasheet, параметры, маркировка, габариты, фото

QR код