

R15 - 2 CO, 3 CO

industrial relays of small dimensions

R15 - 2 CO (AC)



R15 - 3 CO (DC)



- Relays of general application
- For plug-in sockets: on 35 mm rail mount acc. to EN 60715; on panel mounting; with terminals for soldering
- Coils AC and DC, insulation class F: 155 °C
- WT (mechanical indicator + lockable front test button) - standard equipment of relays in cover, for plug-in sockets. Relays may be provided with the test buttons (no latching) and plugs - page 7
- **Have obtained LR Type Approval Certificate (Lloyd's Register)**
- Recognitions, certifications, directives: RoHS,



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 AC15 3 A / 120 V 1,5 A / 240 V (B300) DC1 10 A / 24 V DC (see Fig. 3) DC13 0,22 A / 120 V 0,1 A / 250 V (R300)
Motor load	acc. to UL 508 1/2 HP 240 V AC, 4,9 FLA, single-phase motor ❶ AC3 acc. to IEC 60947-4-1 0,37 kW 240 V AC, single-phase motor
Min. switching current	5 mA
Max. make 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, 12, 24 , 48, 60, 115, 120, 220, 230 , 240 V DC 6, 12 , 24 , 40, 48, 60, 110, 120, 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 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) / Weight	35 x 35 x 54,4 mm / 83 g
Ambient temperature	• storage -40...+85 °C • operating AC: -40...+55 °C DC: -40...+70 °C
Cover protection category	IP 20 (with socket PZ8, PZ11) EN 60529
Environmental protection	RTI EN 61810-7
Shock resistance	10 g
Vibration resistance	5 g 10...150 Hz
Solder bath temperature	max. 270 °C
Soldering time	max. 5 s

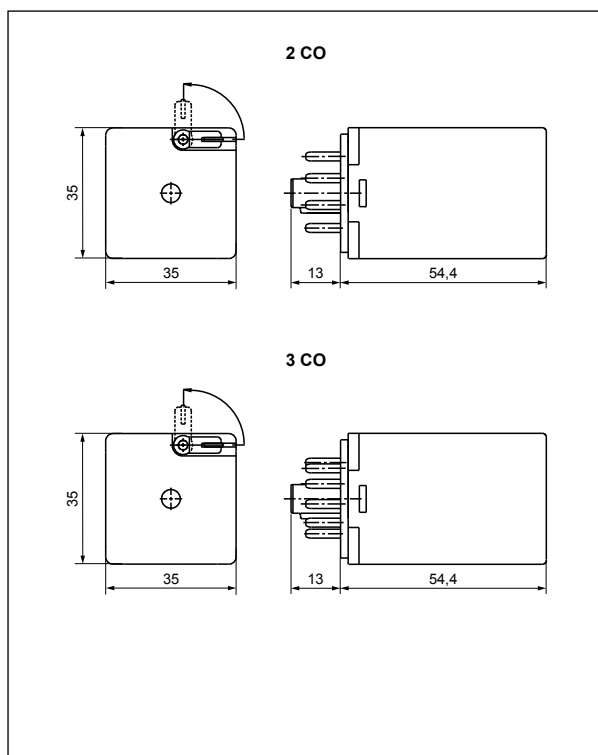
The data in bold type relate to the standard versions of the relays.

❶ For single phase motors for 110-120 V AC do not use motors with higher FLA than given for 240 V AC.

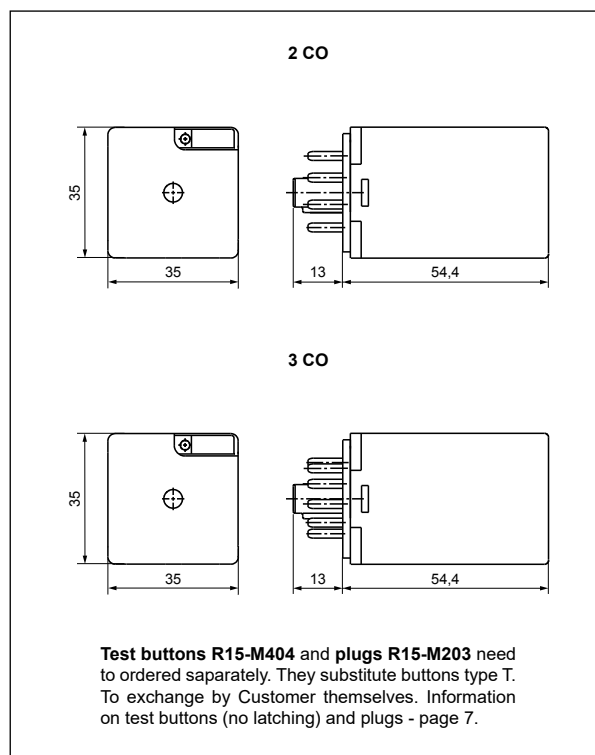
R15 - 2 CO, 3 CO

industrial relays of small dimensions

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)



Mounting, sockets and accessories for relays

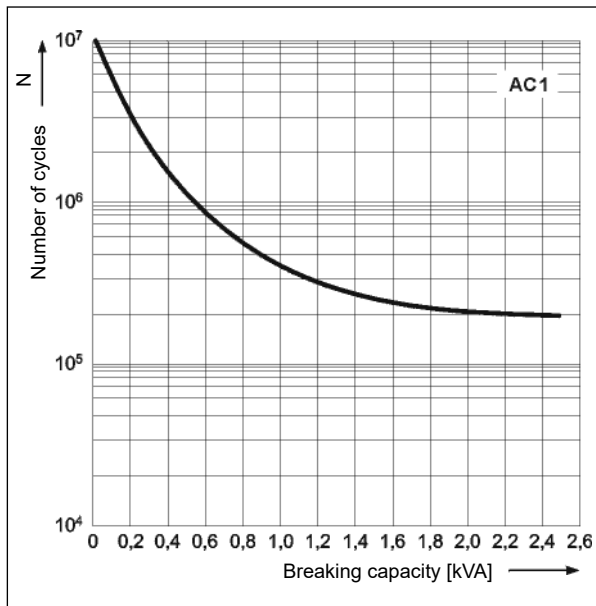
Relays **R15 - 2 CO, 3 CO** are designed for mounting in plug-in sockets. **With WT equipment as standard (W - mechanical indicator + T - lockable front test button)**. In these relays is **possibility self-exchange of button type T for test button R15-M404 (no latching) or on plug R15-M203 (no manual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

Sockets for R15 - 2 CO	Sockets for R15 - 3 CO	Accessories		Additional equipment
		Spring wire clips	Description plates	
Screw terminals sockets, 35 mm rail mount (acc. to EN 60715) or on panel mounting (two M3 screws)				
PZ8	PZ11	PZ11 0031	–	–
GZP8	GZP11	GZP-0054	GZP-0035	21, 41 ②, COM3 ③
Screw terminals sockets, 35 mm rail mount (acc. to EN 60715)				
GZU8	GZU11	GZU 1052	–	–
Screw terminals sockets, on panel mounting (two M3 screws)				
GZ8	GZ11	GZ 1050	–	–
Solder terminals sockets				
GOP8	GOP11	R159 1051 ④	–	–

② Signalling / protecting modules type 21, 41 - see page 10. ③ Time modules COM3 - see www.relpol.com.pl
④ Set R159 1051: spring wire clip and two spring clamps.

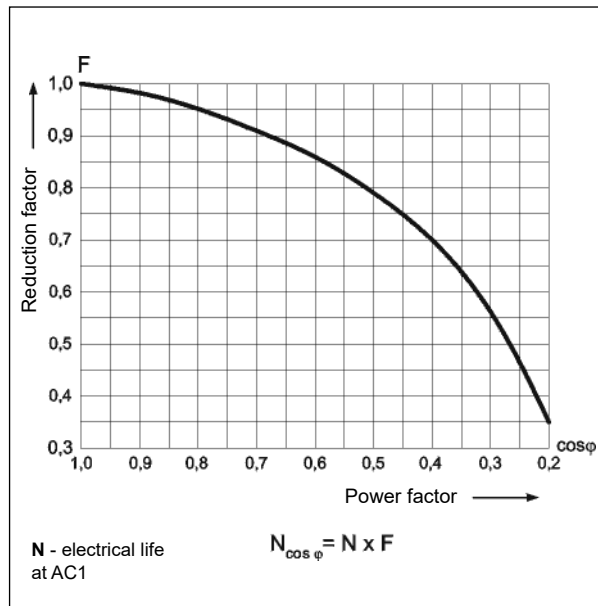
Electrical life at AC resistive load.
Switching frequency: 1 200 cycles/hour

Fig. 1



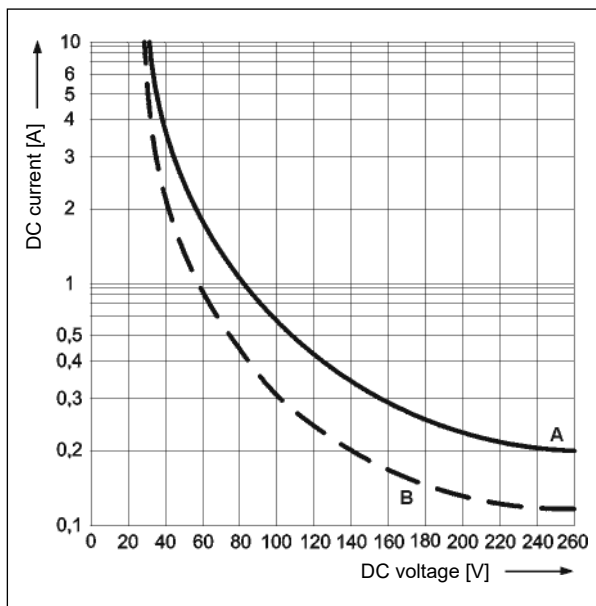
Electrical life reduction factor at AC inductive load

Fig. 2



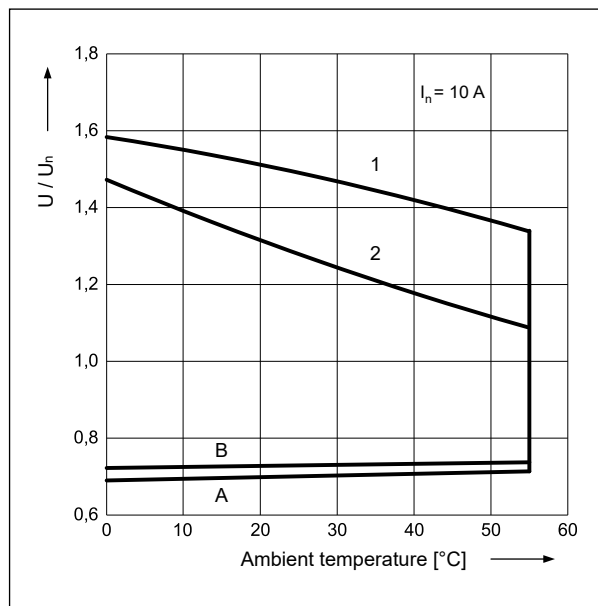
Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms

Fig. 3



Coil operating range - AC 50 Hz
- version R15 - 3 CO (AC)

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

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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	$\pm 10\%$	4,8	6,6
1012	12	110	$\pm 10\%$	9,6	13,2
1024	24	430	$\pm 10\%$	19,2	26,4
1040	40	1 340	$\pm 10\%$	32,0	44,0
1048	48	1 750	$\pm 10\%$	38,4	52,8
1060	60	2 700	$\pm 10\%$	48,0	66,0
1110	110	9 200	$\pm 10\%$	88,0	121,0
1120	120	11 000	$\pm 10\%$	96,0	132,0
1220	220	37 000	$\pm 10\%$	176,0	242,0

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

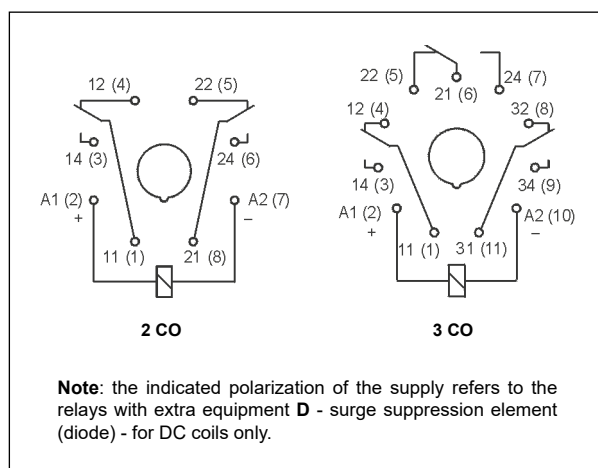
Coil data - AC 50/60 Hz voltage version

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	$\pm 15\%$	4,8	6,6
5012	12	18,5	$\pm 15\%$	9,6	13,2
5024	24	75	$\pm 15\%$	19,2	26,4
5048	48	305	$\pm 15\%$	38,4	52,8
5060	60	475	$\pm 15\%$	48,0	66,0
5115	115	1 840	$\pm 15\%$	92,0	126,5
5120	120	1 910	$\pm 15\%$	96,0	132,0
5220	220	6 980	$\pm 15\%$	176,0	242,0
5230	230	7 080	$\pm 15\%$	184,0	253,0
5240	240	7 760	$\pm 15\%$	192,0	264,0

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

Connection diagrams (pin side view)



Relays for railroad industry

PIR15.T
- interface

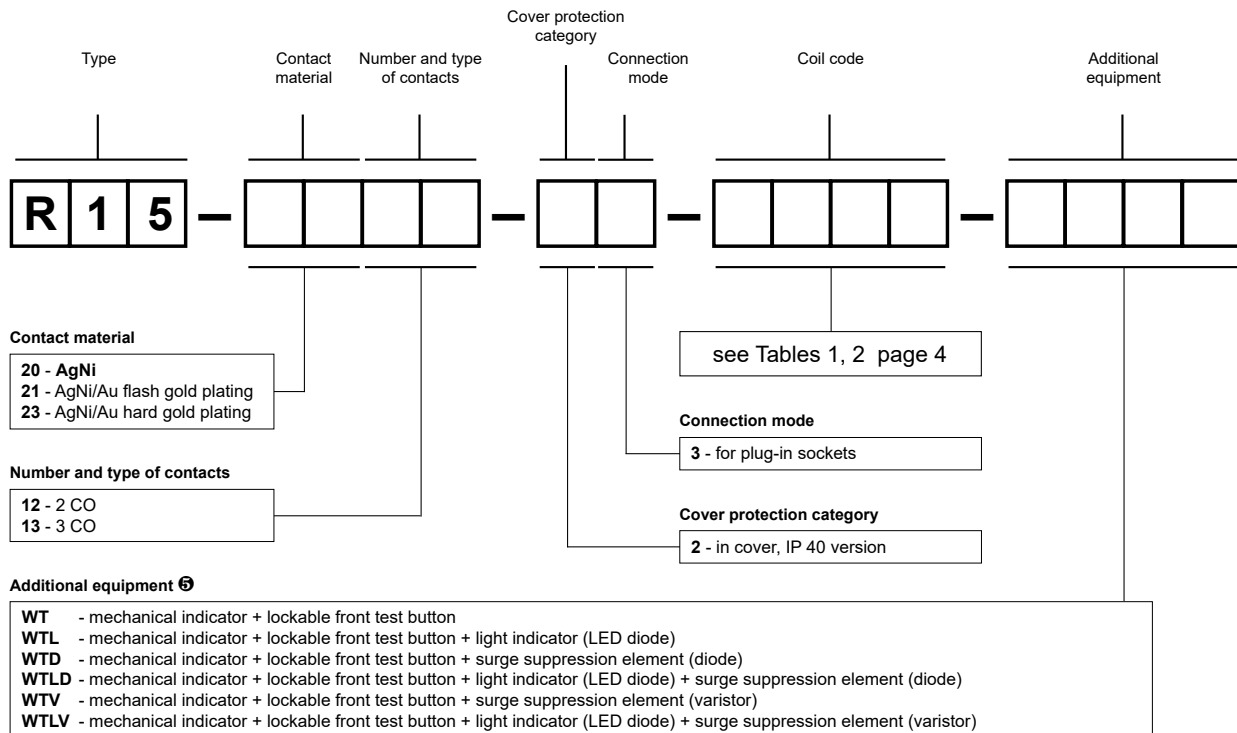
R15T
- industrial



R15 - 2 CO, 3 CO

industrial relays of small dimensions

Ordering codes



⑤ **T** - orange colour (AC coils), green (DC coils). **WT** - standard equipment of relays for plug-in sockets.
WTD, WTL D - available only in relays with DC coils. **WTV, WTL V** - only with AC coils.

Test buttons (no latching) and plugs need to ordered separately. They substitute buttons type T. To exchange by Customer themselves.
 Information on test buttons (no latching) and plugs - page 7.

- 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 equipment **D** - surge suppression element (diode) (versions **WTD** and **WTL D**) - fixed supply polarization 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 polarization is indicated on the relay cover. For other versions of the relays with DC coils any polarization 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

Additional equipment for industrial relays

Industrial relays for plug-in sockets: R2N, R3N, R4N, R15 - 2 CO , R15 - 3 CO  with **WT equipment as standard** (**W** - mechanical indicator + **T** - lockable front test button). **Detailed information** on additional equipment of individual relays can be found in the data sheets on the side of "Ordering codes".

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.

Type 	Description	For industrial relays
W	mechanical indicator	R2N, R3N, R4N, (R15 - 2 CO, 3 CO )
T	lockable front test button, orange (AC coils), green (DC coils)	R2N, R3N, R4N, (R15 - 2 CO, 3 CO )
L	light indicator (LED diode), located inside the relay	R2N, R3N, R4N, RY2, (R15 - 2 CO, 3 CO, 4 CO ) RUC, RUC-M
D	surge suppression element (diode) - only for DC coils	R2N, R3N, R4N, RY2, (R15 - 2 CO, 3 CO, 4 CO )
V	surge suppression element (varistor) - only for AC coils	(R15 - 2 CO, 3 CO )
K	test button without block function, orange (AC coils), green (DC coils)	(R15 - 4 CO ) RUC

Available combinations:

WT, WTL, WTD, WTL D - in relays R2N, R3N, R4N for plug-in sockets


L, D, LD - in relays RY2 for plug-in sockets

WT, WTL, WTD, WTL D, WTV, WTL V - in relays R15 - 2 CO, 3 CO for plug-in sockets

K, L, D, KL, KD, LD, KLD - in relays R15 - 4 CO for plug-in sockets

K, L, KL - in relays RUC

L - in relays RUC-M

 Voltage versions, in covers



Test buttons (no latching) and plugs

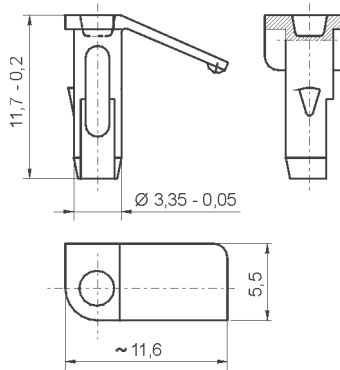
Test buttons (no latching) are recommended for R2N...WT, R3N...WT, R4N...WT, R15...WT 2 CO, R15...WT 3 CO relays - **for applications that do not allow permanent contact latching**. By manual operation (pressing the button) relay contacts can get switched for as long time as long the button is pressed. Contacts return to initial position as soon as pressure is released from the button. Those operations can be done while the coil is deenergized ③.

Button **R4P-0001** or **R15-M404** can be easily inserted by the Customer after removal of button type **T** (see Fig. 2). Button type **T** can be removed with screwdriver as shown on Fig. 1.

③ While the relay operates, the test button 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.



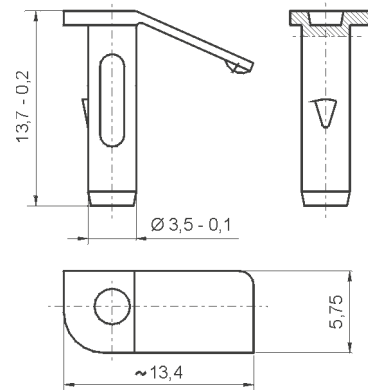
Dimensions - test button R4P-0001 for R2N...WT, R3N...WT, R4N...WT



Types of buttons:

R4P-0001-A - orange colour (AC coils)
R4P-0001-D - green colour (DC coils)

Dimensions - test button R15-M404 for R15...WT 2 CO, R15...WT 3 CO

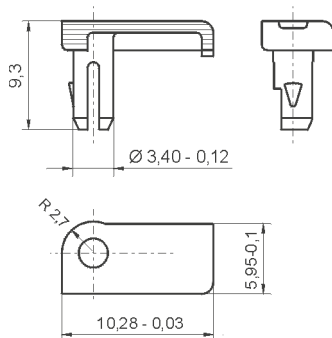


Types of buttons:

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

Plugs R4W-0003 or R15-M203 can substitute button type **T** if **manual operation (latching and testing) is not allowed**. Changing button type **T** for plug can be done by Customer themselves in the same way as changing button type **T** for button (no latching).

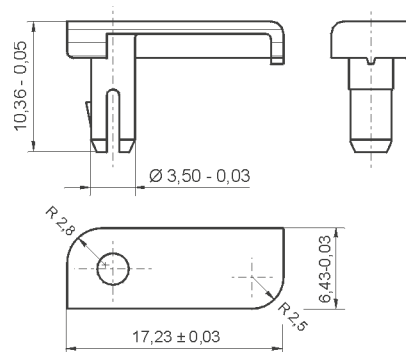
Dimensions - plug R4W-0003 for R2N...WT, R3N...WT, R4N...WT



Types of plugs:

R4W-0003-A - orange colour (AC coils)
R4W-0003-D - green colour (DC coils)

Dimensions - plug R15-M203 for R15...WT 2 CO, R15...WT 3 CO



Types of plugs:

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

Sockets and accessories

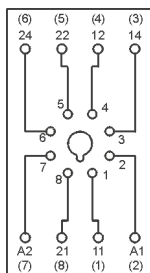
PZ8 ①

For R15 - 2 CO

Screw terminals
Max. tightening moment
for the terminal: 0,7 Nm
35 mm rail mount
acc. to EN 60715
or on panel mounting
68,2 x 38 x 24,2 mm
Two poles
10 A, 250 V AC



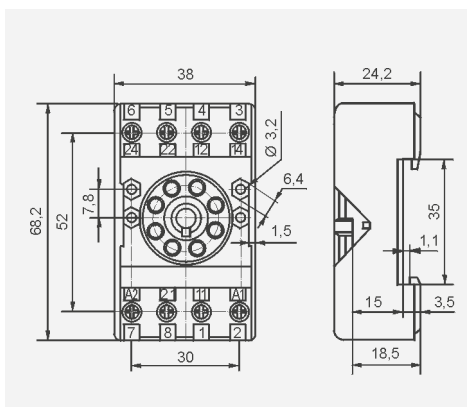
Connection diagram



PZ11 0031

Accessories

Dimensions



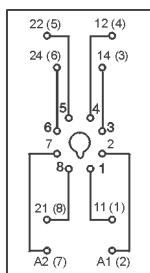
GZU8

For R15 - 2 CO

Screw terminals
Max. tightening moment
for the terminal: 0,7 Nm
35 mm rail mount
acc. to EN 60715
82 x 35,5 x 25,7 mm
Two poles
10 A, 250 V AC



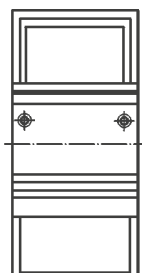
Connection diagram



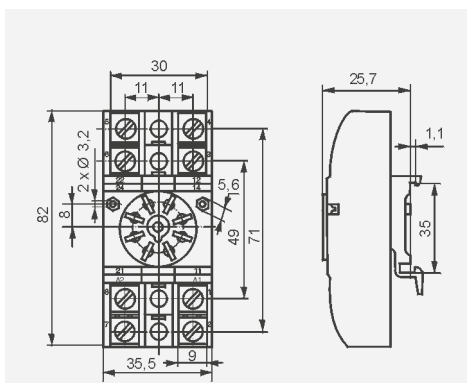
GZU 1052

Accessories

Adaptor



Dimensions



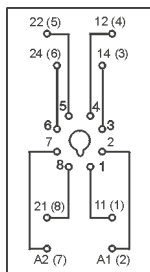
GZ8

For R15 - 2 CO

Screw terminals
Max. tightening moment
for the terminal: 0,7 Nm
On panel mounting
82,8 x 35,5 x 22,5 mm
Two poles
10 A, 250 V AC



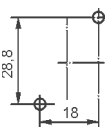
Connection diagram



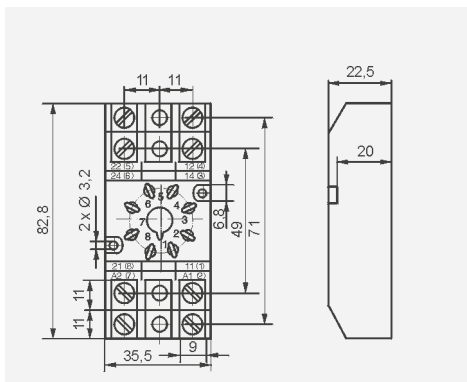
GZ 1050

Accessories

Mounting dimensions



Dimensions



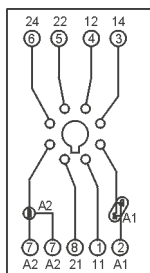
GZP8

For R15 - 2 CO

Screw terminals
Max. tightening moment
for the terminal: 0,5 Nm
35 mm rail mount
acc. to EN 60715
or on panel mounting
73 x 38,2 x 27,2 mm
Two poles
12 A, 300 V AC



Connection diagram



GZP-0054

Accessories



Module type 21, 41

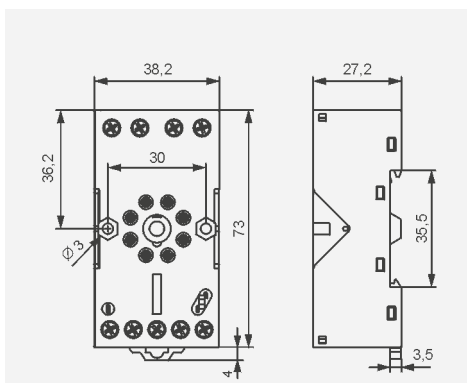


Time module COM3



GZP-0035

Dimensions



① Have obtained LR Type Approval Certificate (Lloyd's Register).

Sockets and accessories

GOP8

For R15 - 2 CO

Solder terminals
47,2 x 32 x 22 mm
Two poles
10 A, 250 V AC

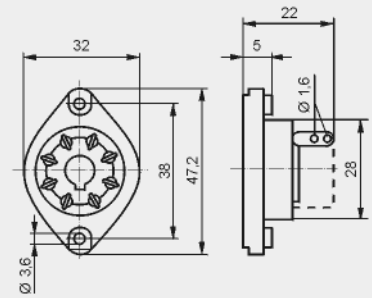


Accessories

R159 1051

Dimensions

CE ENEC



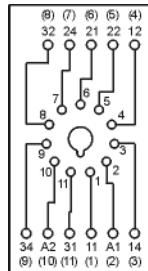
PZ11 ①

For R15 - 3 CO

Screw terminals
Max. tightening moment
for the terminal: 0,7 Nm
35 mm rail mount
acc. to EN 60715
or on panel mounting
68,2 x 38 x 24,2 mm
Three poles
10 A, 250 V AC



Connection diagram

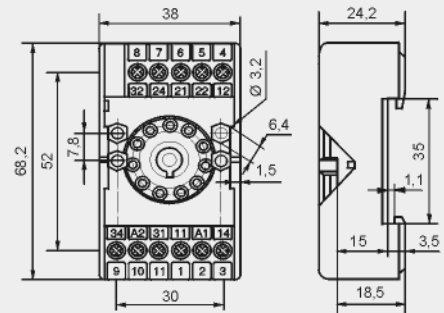


Accessories

PZ11 0031

Dimensions

CE ENEC



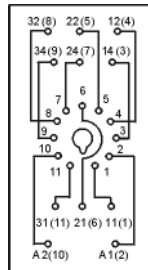
GZU11

For R15 - 3 CO

Screw terminals
Max. tightening moment
for the terminal: 0,7 Nm
35 mm rail mount
acc. to EN 60715
82 x 35,5 x 25,7 mm
Three poles
10 A, 250 V AC



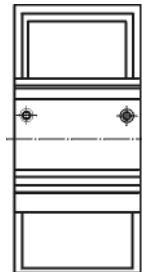
Connection diagram



Accessories

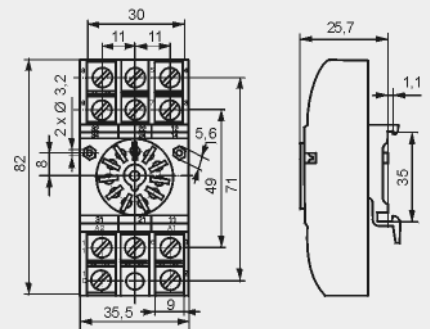
GZU 1052

Adaptor



Dimensions

CE ENEC



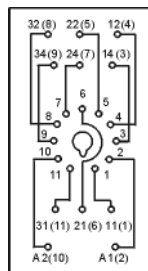
GZ11

For R15 - 3 CO

Screw terminals
Max. tightening moment
for the terminal: 0,7 Nm
On panel mounting
82,8 x 35,5 x 22,5 mm
Three poles
10 A, 250 V AC



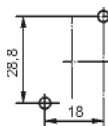
Connection diagram



Accessories

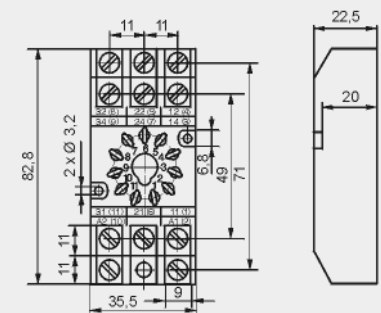
GZ 1050

Mounting dimensions



Dimensions

CE ENEC



① Have obtained LR Type Approval Certificate (Lloyd's Register).

Sockets and accessories

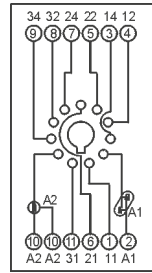
GZP11

For R15 - 3 CO

Screw terminals
Max. tightening moment
for the terminal: 0,5 Nm
35 mm rail mount
acc. to EN 60715
or on panel mounting
73 x 38,2 x 27,2 mm
Three poles
12 A, 300 V AC



Connection diagram



Module type 21, 41



Time module COM3



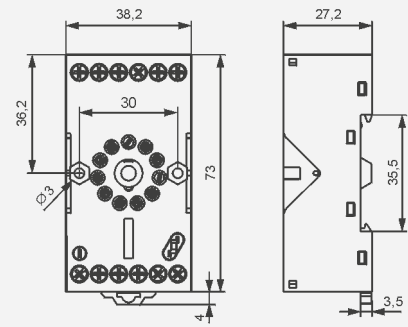
GZP-0054



GZP-0035

Accessories

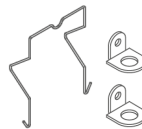
Dimensions



GOP11

For R15 - 3 CO

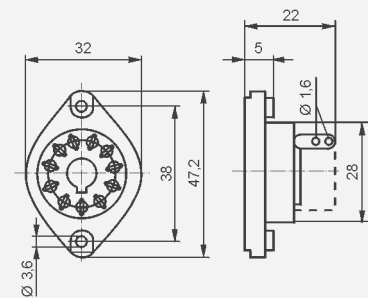
Solder terminals
47,2 x 32 x 22 mm
Three poles
10 A, 250 V AC



R159 1051

Accessories

Dimensions



Signalling / protecting modules

For sockets type: GZP8, GZP11

Modules type 21, 41 are parallelly connected with relay coil.
Polarization N: +A1/-A2.



Modules	Layout	Voltage	Type of module
Module D (polarization N) It limits overvoltage on DC coils.		6/230 V DC	Module 21
Module LD (polarization N) It limits overvoltage on DC coils. Coil energizing indication (LED red).		6/24 V DC	Module 41

PRECAUTIONS:

1. Ensure that the parameters of the product described in its specification provide a safety margin for the appropriate operation of the device or system and never use the product in circumstances which exceed the parameters of the product. 2. Never touch any live parts of the device. 3. Ensure that the product has been connected correctly. An incorrect connection may cause malfunction, excessive heating or risk of fire. 4. In case of any risk of any serious material loss or death or injuries of humans or animals, the devices or systems shall be designed so to equip them with double safety system to guarantee their reliable operation.