R2, R3, R4
Industrial Electromagnetic Relays

E105728

- Compact size
- Relays of general application
- Cadmium - free contacts
- AC and DC coils
- For plug-in sockets, 35 mm rail mount or on panel mounting *
- WT (mechanical indicator + lockable front test button) - standard features of relays for plug-in sockets. Relays may be provided with the test buttons (no latching) and plugs (see page 115)
- AUCOTEAM GmbH Berlin - railway standards.

Contact Data		R2	R3	R4
Number and type of contacts		**DPDT**	**3PDT**	**4PDT**
Contact material		AgNi**	AgNi**	AgNi**
Rated / max. switching voltage	AC	250 V / 440 V	250 V / 440 V	250 V / 250 V
Min. switching voltage		10 V	10 V	10 V
Rated load (capacity)	AC1	12 A / 250 V AC	10 A / 250 V AC	6 A / 250 V AC
	AC15	3 A / 120 V; 1.5 A / 240 V (B300)	3 A / 120 V; 1.5 A / 240 V (B300)	1.5 A / 120 V; 0.75 A / 240 V (C300)
	AC3	370 W (single-phase motor)	370 W (single-phase motor)	125 W (single-phase motor)
	DC1	12 A / 24 V DC (see Fig. 3.1)	10 A / 24 V DC (see Fig. 3.2)	6 A / 24 V DC (see Fig. 3.3)
	DC13	0.22 A / 120 V; 0.1 A / 250 V (R300)	0.22 A / 120 V; 0.1 A / 250 V (R300)	0.22 A / 120 V; 0.1 A / 250 V (R300)
Min. switching current		5 mA	5 mA	5 mA
Max. inrush current		24 A	20 A	12A
Rated current		**12 A**	**10 A**	**6A**
Max. breaking capacity	AC1	3000 VA	2500 VA	1500 VA
Min. breaking capacity		0.3 W	0.3 W	0.3 W
Contact resistance		≤ 100 mΩ	≤ 100 mΩ	≤ 100 mΩ
Max. operating frequency				
• at rated load	AC1	1200 cycles/hour	1200 cycles/hour	1200 cycles/hour
• no load		18000 cycles/hour	18000 cycles/hour	18000 cycles/hour
Coil Data				
Rated voltage	50/60 Hz AC	6 ... 240 V	6 ... 240 V	6 ... 240 V
	DC	5 ... 220 V	5 ... 220 V	5 ... 220 V
Must release voltage		AC: ≥ 0.2 U_n; DC: ≥ 0.1 U_n	AC: ≥ 0.2 U_n; DC: ≥ 0.1 U_n	AC: ≥ 0.2 U_n; DC: ≥ 0.1 U_n
Operating range of supply voltage		see page 54	see page 54	see page 54
Rated power consumption	AC	1.6 VA	1.6 VA	1.6 VA
	DC	0.9 W	0.9 W	0.9 W
Insulation				
Insulation rated voltage		250 V AC	250 V AC	250 V AC
Rated surge voltage		4000 V 1.2 / 50 µs	with AC coils: 2500 V 1.2 / 50 µs with DC coils: 4000 V 1.2 / 50 µs	2500 V 1.2 / 50 µs
Overvoltage category		III	III	II
Insulation pollution degree		3	3	2
Dielectric strength				
• between coil and contacts		2500 V AC type of insulation: basic	2500 V AC type of insulation: basic	2500 V AC type of insulation: basic
• contact clearance		1500 V AC type of clearance: micro-disco.	1500 V AC type of clearance: micro-disco.	1500 V AC type of clearance: micro-disco.
• pole - pole		2500 V AC type of insulation: basic	2500 V AC type of insulation: basic	2500 V AC type of insulation: basic
Contact - coil distance				
• clearance		≥ 2.5 mm	≥ 2.5 mm	≥ 1.6 mm
• creepage		≥ 4 mm	≥ 4 mm	≥ 3.2 mm
General data				
Operating / release time (typical)		AC: 10 ms / 8 ms; DC: 13 ms / 3 ms	AC: 10 ms / 8 ms; DC: 13 ms / 3 ms	AC: 10 ms / 8 ms; DC: 13 ms / 3 ms
Electrical life				
• resistive	AC1	> 10^5; 12 A. 250 V AC	> 10^5; 10 A. 250 V AC	> 10^5; 6 A. 250 V AC
• cosφ		see Fig. 2.1	see Fig. 2.2	see Fig. 2.3
Mechanical life (cycles)		> 2 x 10^7	> 2 x 10^7	> 2 x 10^7
Dimensions (L x W x H)		27.5 x 21.2 x 35.6 mm	27.5 x 21.2 x 35.6 mm	27.5 x 21.2 x 35.6 mm
Weight		35 g	35 g	35 g
Ambient temperature				
• storage		-40...+85 °C	-40...+85 °C	-40...+85 °C
• operating		AC: -40...+55 °C; DC: -40...+70 °C	AC: -40...+55 °C; DC: -40...+70 °C	AC: -40...+55 °C; DC: -40...+70 °C
Cover protection category		IP 40 PN-EN 60529	IP 40 PN-EN 60529	IP 40 PN-EN 60529
Environmental protection		RTI PN-EN 116000-3	RTI PN-EN 116000-3	RTI PN-EN 116000-3
Shock resistance	(NO/NC)	10 g / 5 g	10 g / 5 g	10 g / 5 g
Vibration resistance		5 g 10...150 Hz	5 g 10...150 Hz	5 g 10...150 Hz
Solder bath temperature		max. 270 °C	–	max. 270 °C
Soldering time		max. 5 s	–	max. 5 s

* PCB or threaded bolt versions contact Altech Corp.

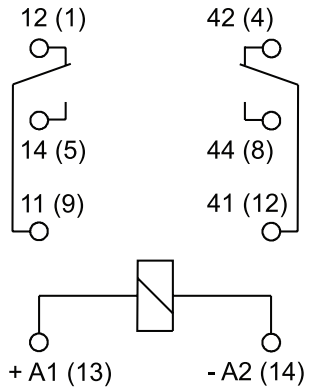
** Other contact materials (eg. gold plated) available, contact Altech Corp.

DATA SUBJECT TO CHANGE WITHOUT NOTICE

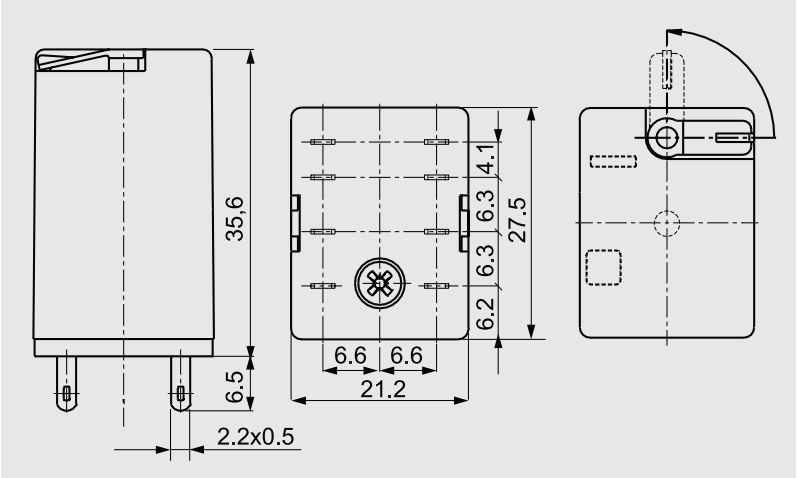
R2 (DPDT)

E105728

CONNECTION DIAGRAM

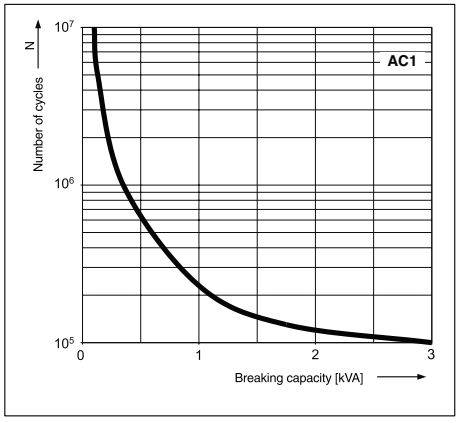


DIMENSIONS

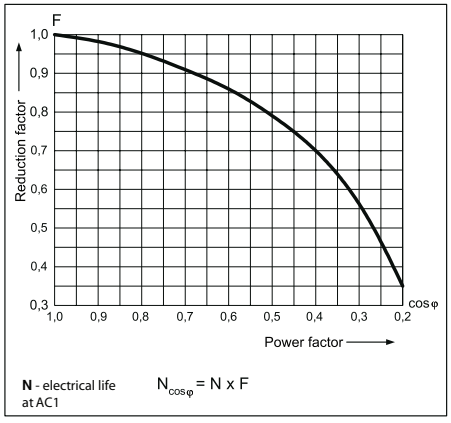


LOAD CHARTS

Electrical life at AC resistive load. Switching frequency: 1200 cycles/hour Fig. 1.1



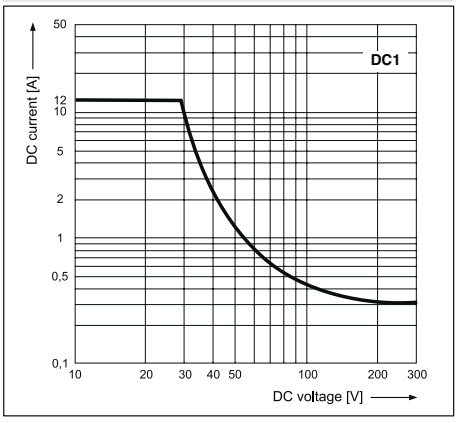
Electrical life reduction factor at AC inductive load Fig. 2.1



N - electrical life at AC1

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

Max. DC resistive load breaking capacity Fig. 3.1

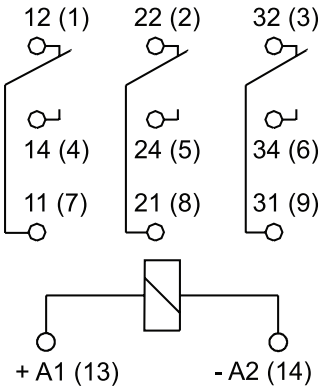


DATA SUBJECT TO CHANGE WITHOUT NOTICE

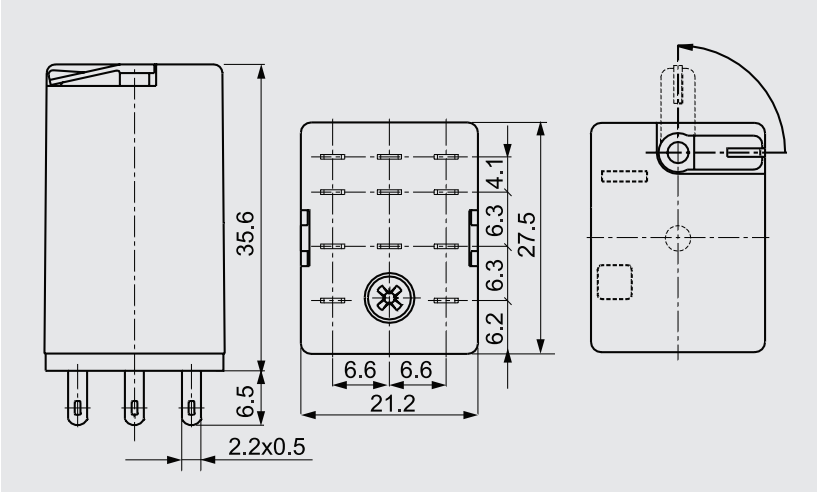
R3 (3PDT)

E105728

CONNECTION DIAGRAM

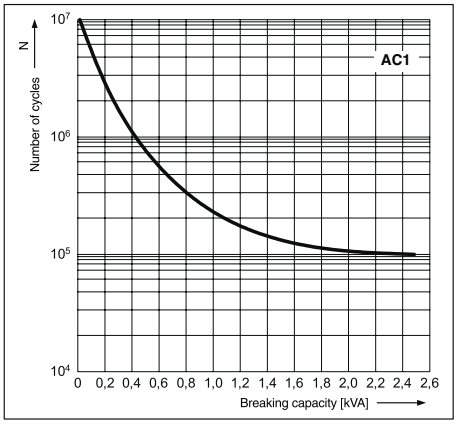


DIMENSIONS

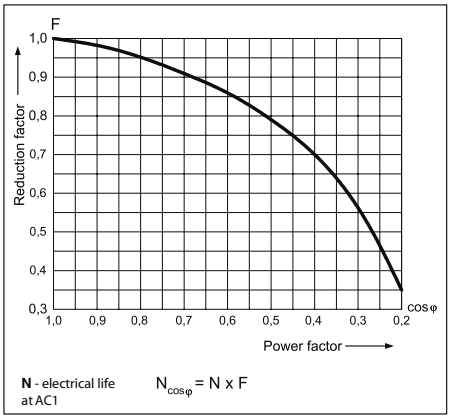


LOAD CHARTS

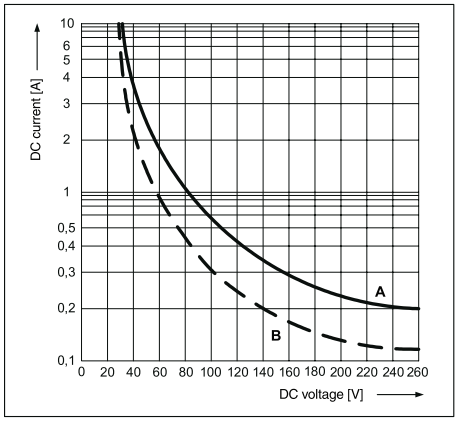
Electrical life at AC resistive load. Switching frequency: 1200 cycles/hour — Fig. 1.2



Electrical life reduction factor at AC inductive load — Fig. 2.2



Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms — Fig. 3.2

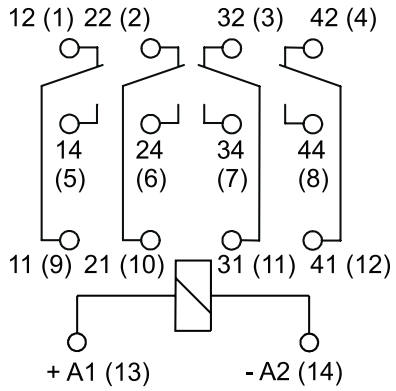


DATA SUBJECT TO CHANGE WITHOUT NOTICE

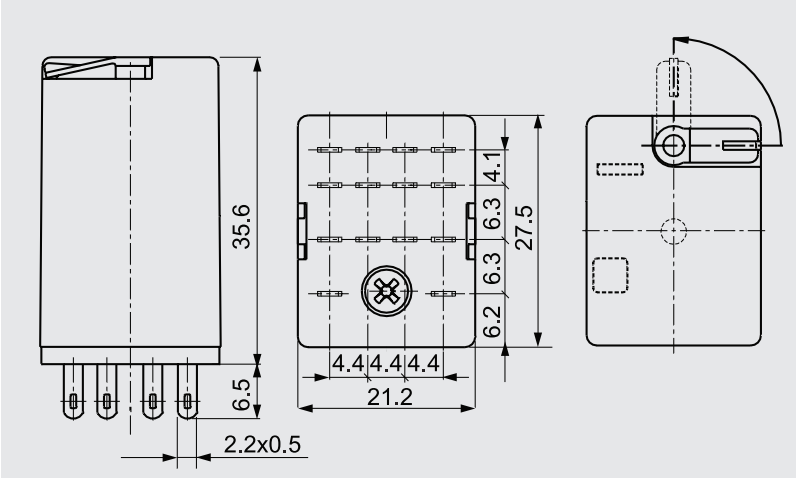
R4 (4PDT)

E105728

CONNECTION DIAGRAM

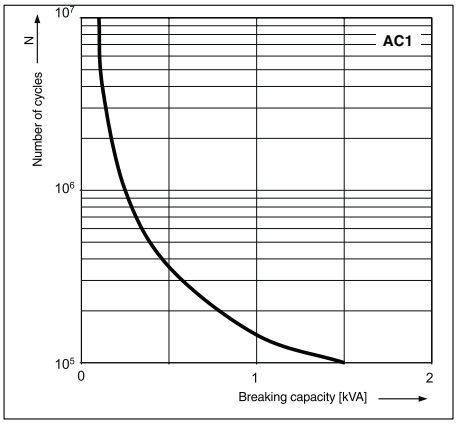


DIMENSIONS

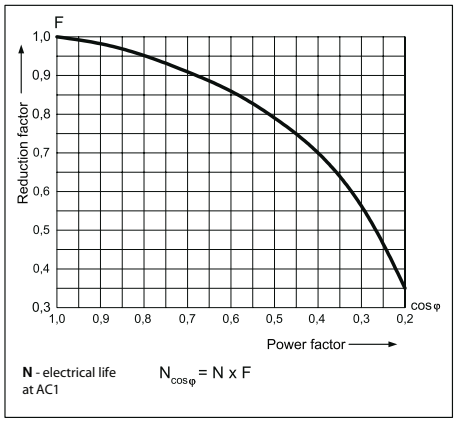


LOAD CHARTS

Electrical life at AC resistive load. Switching frequency: 1200 cycles/hour — Fig. 3.1



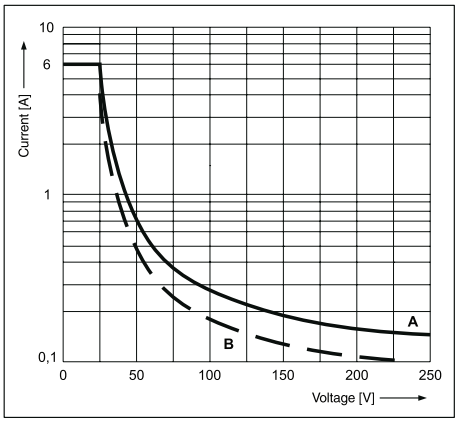
Electrical life reduction factor at AC inductive load — Fig. 2.3



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. 3.3



DATA SUBJECT TO CHANGE WITHOUT NOTICE

R2, R3, R4
Industrial Electromagnetic Relays

R2 DPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range min. (at 20°C)	Coil operating range max. (at 55°C)	Options* WT	Options* WTL
R2N-2012-23-1012-WT	12	DC	160	9.6	13.2	x	
► **R2N-2012-23-1012-WTL**	12	DC	160	9.6	13.2		x
► **R2N-2012-23-1024-WT**	24	DC	640	19.2	26.4	x	
► **R2N-2012-23-1024-WTL**	24	DC	640	19.2	26.4		x
R2N-2012-23-1110-WT	110	DC	13600	88.0	121.0	x	
R2N-2012-23-1110-WTL	110	DC	13600	88.0	121.0		x
R2N-2012-23-5024-WT	24	AC 50/60Hz	158.0	19.2	26.4	x	
► **R2N-2012-23-5024-WTL**	24	AC 50/60Hz	158.0	19.2	26.4		x
► **R2N-2012-23-5120-WT**	120	AC 50/60Hz	3770	96.0	132.0	x	
► **R2N-2012-23-5120-WTL**	120	AC 50/60Hz	3770	96.0	132.0		x
R2N-2012-23-5230-WT	230	AC 50/60Hz	16100	184.0	253.0	x	
► **R2N-2012-23-5230-WTL**	230	AC 50/60Hz	16100	184.0	253.0		x

R3 DPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range min. (at 20°C)	Coil operating range max. (at 55°C)	Options* WT	Options* WTL
R3N-2013-23-1012-WT	12	DC	160	9.6	13.2	x	
► **R3N-2013-23-1012-WTL**	12	DC	160	9.6	13.2		x
R3N-2013-23-1024-WT	24	DC	640	19.2	26.4	x	
► **R3N-2013-23-1024-WTL**	24	DC	640	19.2	26.4		x
R3N-2013-23-1110-WT	110	DC	13600	88.0	121.0	x	
R3N-2013-23-1110-WTL	110	DC	13600	88.0	121.0		x
R3N-2013-23-5024-WT	24	AC 50/60Hz	158.0	19.2	26.4	x	
R3N-2013-23-5024-WTL	24	AC 50/60Hz	158.0	19.2	26.4		x
► **R3N-2013-23-5120-WT**	120	AC 50/60Hz	3770	96.0	132.0	x	
► **R3N-2013-23-5120-WTL**	120	AC 50/60Hz	3770	96.0	132.0		x
R3N-2013-23-5230-WT	230	AC 50/60Hz	16100	184.0	253.0	x	
R3N-2013-23-5230-WTL	230	AC 50/60Hz	16100	184.0	253.0		x

R4 DPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range min. (at 20°C)	Coil operating range max. (at 55°C)	Options* WT	Options* WTL
R4N-2014-23-1012-WT	12	DC	160	9.6	13.2	x	
► **R4N-2014-23-1012-WTL**	12	DC	160	9.6	13.2		x
► **R4N-2014-23-1024-WT**	24	DC	640	19.2	26.4	x	
► **R4N-2014-23-1024-WTL**	24	DC	640	19.2	26.4		x
R4N-2014-23-1110-WT	110	DC	13600	88.0	121.0	x	
► **R4N-2014-23-1110-WTL**	110	DC	13600	88.0	121.0		x
R4N-2014-23-5024-WT	24	AC 50/60Hz	158.0	19.2	26.4	x	
► **R4N-2014-23-5024-WTL**	24	AC 50/60Hz	158.0	19.2	26.4		x
► **R4N-2014-23-5120-WT**	120	AC 50/60Hz	3770	96.0	132.0	x	
► **R4N-2014-23-5120-WTL**	120	AC 50/60Hz	3770	96.0	132.0		x
R4N-2014-23-5230-WT	230	AC 50/60Hz	16100	184.0	253.0	x	
► **R4N-2014-23-5230-WTL**	230	AC 50/60Hz	16100	184.0	253.0		x

WT = with mechanical indicator + lockable front test button
WTL = with mechanical indicator + lockable front test button + light indicator (LED)
* other options available upon request

► **BOLD - Regular stocked items.**

DATA SUBJECT TO CHANGE WITHOUT NOTICE

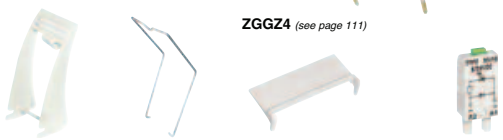
GZT2 (for R2)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
76,3 x 27 x 42.5(80) mm*
Two poles
12 A, 300 V AC

E22891

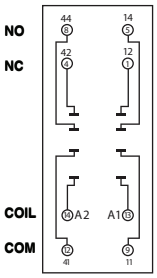
GZT2

ZGGZ4 *(see page 111)*

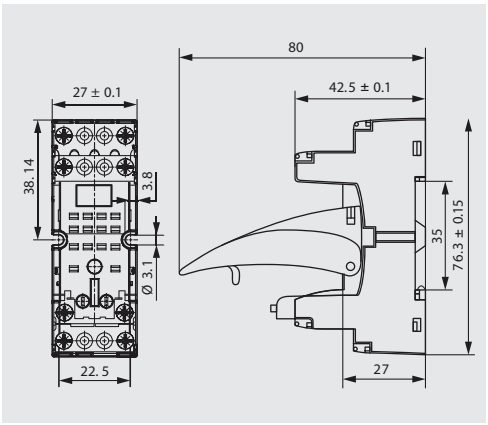


GZT4-0040 | G4 1052** | GZT4-0035 | Module type M... *(see page 113)*

CONNECTION DIAGRAM



DIMENSIONS



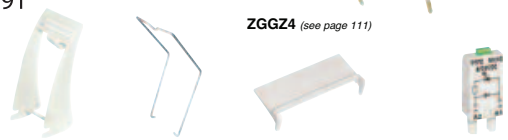
GZM2 (for R2)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
75 x 27 x 61(82) mm*
Two poles
12 A, 300 V AC

E22891

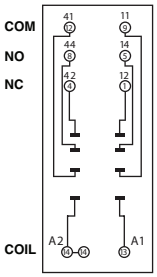
GZM2

ZGGZ4 *(see page 111)*

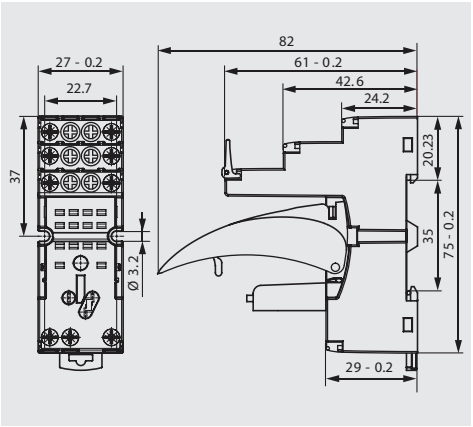


GZT4-0040 | G4 1052** | GZT4-0035 | Module type M... *(see page 113)*

CONNECTION DIAGRAM



DIMENSIONS



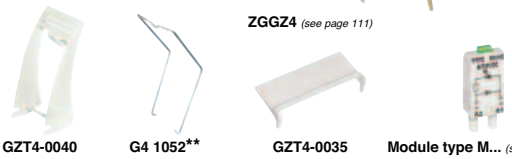
GZT3 (for R3)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
76,3 x 27 x 42.5(80) mm*
Three poles
10 A, 300 V AC

E22891

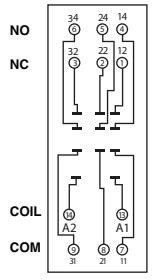
GZT3

ZGGZ4 *(see page 111)*

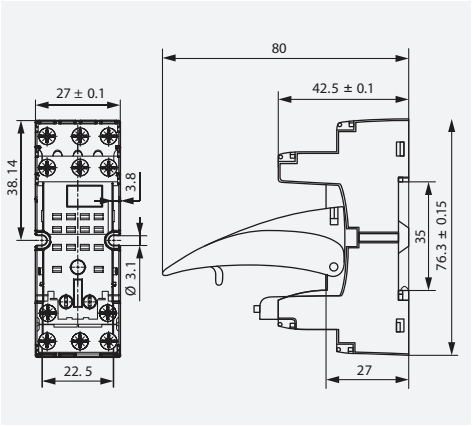


GZT4-0040 | G4 1052** | GZT4-0035 | Module type M... *(see page 113)*

CONNECTION DIAGRAM



DIMENSIONS



* In parenthesis is the height of the socket with plastic retainer clip. ** For lower profile application.

All accessories are sold separately.

DATA SUBJECT TO CHANGE WITHOUT NOTICE

GZM3 (for R3)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
75 x 27 x 61(82) mm*
Three poles
10 A, 300 V AC

E22891

GZT2

ZGGZ4 *(see page 111)*

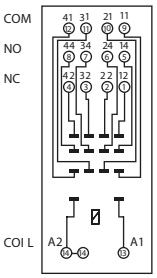
GZT4-0040

G4 1052**

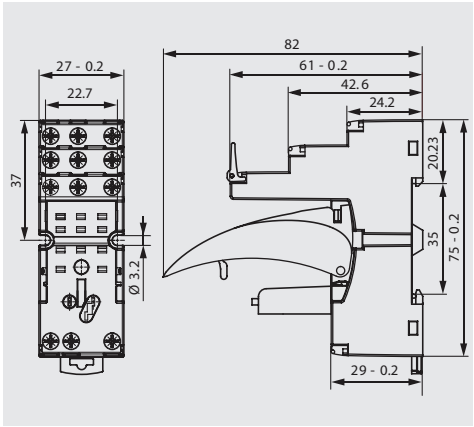
GZT4-0035

Module type M... *(see page 113)*

CONNECTION DIAGRAM



DIMENSIONS



GZT4 (for R4)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
76,3 x 27 x 42.5(80) mm *
Four poles
6 A, 300 V AC

E22891

GZM2

ZGGZ4 *(see page 111)*

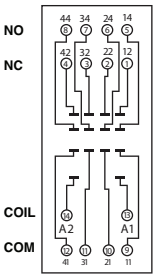
GZT4-0040

G4 1052**

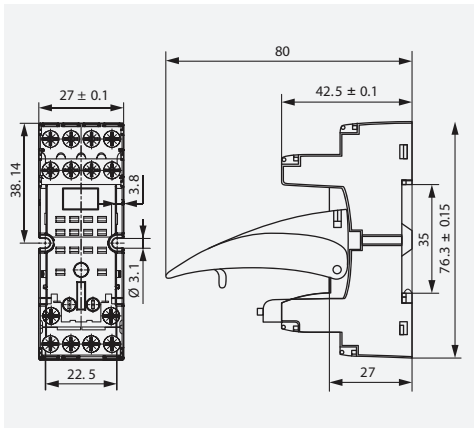
GZT4-0035

Module type M... *(see page 113)*

CONNECTION DIAGRAM



DIMENSIONS



GZM4 (for R4)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
75 x 27 x 61(82) mm*
Four poles
6 A, 300 V AC

E22891

GZT3

ZGGZ4 *(see page 111)*

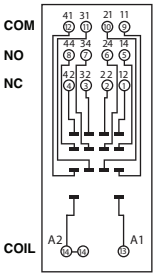
GZT4-0040

G4 1052**

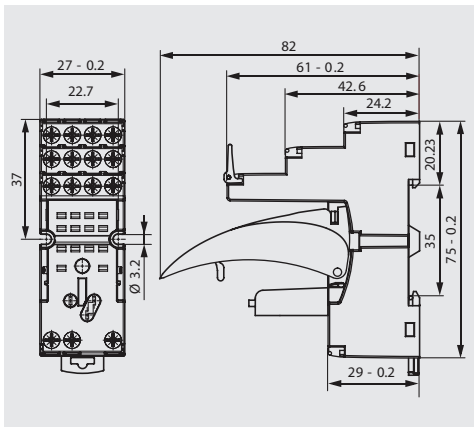
GZT4-0035

Module type M... *(see page 113)*

CONNECTION DIAGRAM



DIMENSIONS



* In parenthesis is the height of the socket with plastic retainer clip. ** For lower profile application.

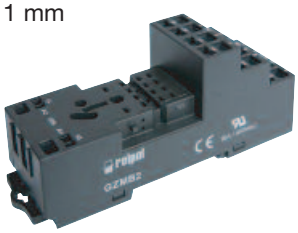
All accessories are sold separately.

DATA SUBJECT TO CHANGE WITHOUT NOTICE

GZMB2 (for R2)

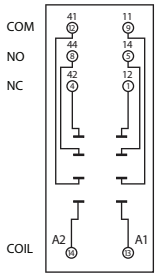
Spring terminals
Max. cross section of the cables:
1 x 0,2...1,5 mm2
(1 x 24...16 AWG)
Stripping length deinsulation: 9...11 mm
35 mm rail mount
acc. to PN-EN 60715
95 x 31 x 42.5(80) mm*
Two poles
10 A, 300 V AC

E22891

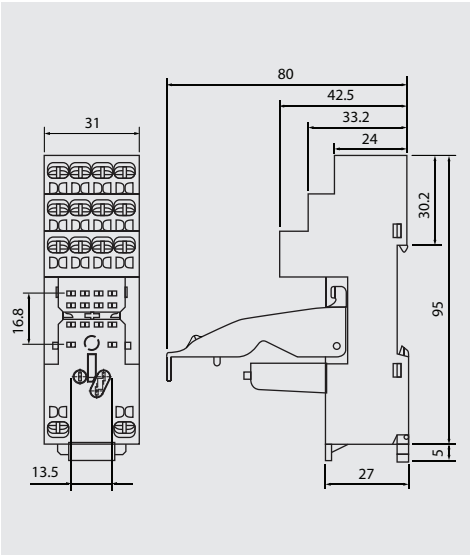


GZMB2

CONNECTION DIAGRAM



DIMENSIONS



GZMB4-0040

G4 1052**

TR

Module type M... *(see page 113)*

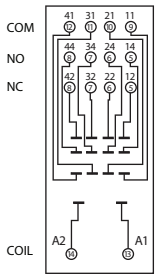
GZMB4 (for R4)

Spring terminals
Max. cross section of the cables:
1 x 0,2...1,5 mm2
(1 x 24...16 AWG)
Stripping length deinsulation:
9...11 mm
35 mm rail mount
acc. to PN-EN 60715
95 x 31 x 42.5(80) mm*
Four poles
10 A, 300 V AC

E22891

GZMB4

CONNECTION DIAGRAM



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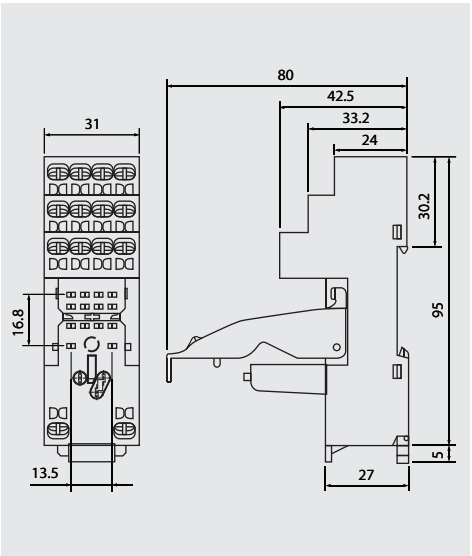

GZMB4-0040

G4 1052**

TR

Module type M... *(see page 113)*

* In parenthesis is the height of the socket with plastic retainer clip. ** For lower profile application.

All accessories are sold separately.

DATA SUBJECT TO CHANGE WITHOUT NOTICE