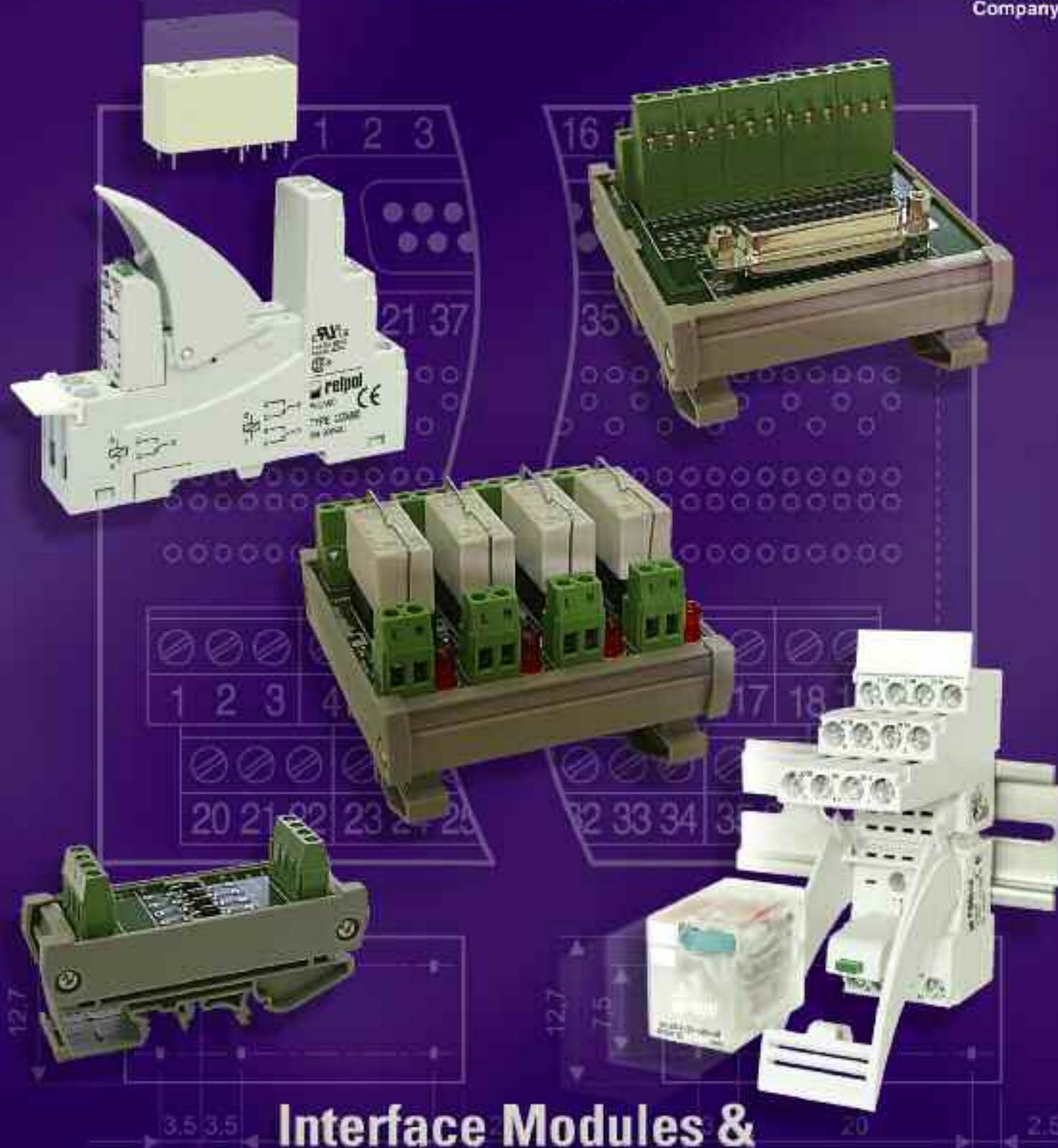


Altech Corp.®

Serving the Automation & Control Industry since 1984

Quality System

Quality
Endorsed
Company



Interface Modules & Industrial Relays

Altech Corp.®

Since 1984, Altech Corporation has grown to become a leading supplier of automation and industrial control components. Headquartered in Flemington, NJ, Altech has an experienced staff of engineering, manufacturing and sales personnel to provide the highest quality products with superior service. This is the Altech Commitment!

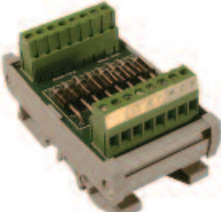
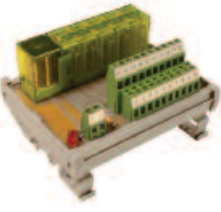
With experienced Product Engineers and Customer Service personnel, Altech provides solutions to your most pressing application challenges. All with one thought in mind - *to ensure that we solve your problem the first time!*



Quality Commitment

Altech's control components meet diverse national and international standards such as UL, NEC, CSA, IEC, VDE and more. Altech provides superior customer service and delivery through Total Quality Management and Continuous Process Improvement. Altech is ISO 9001 approved. We perform these services with honesty and integrity and are committed to achieve these goals.



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MOUNTING OPTIONS					COIL	TYPE OF RELAY	NUMBER AND TYPE OF CONTACTS								RATED CURRENT [A]																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																											
Direct PCB mounting	With plug-in socket PCB mounting	Panel mounting	35 mm rail mount acc. To PN-EN 60715	Others	AC	DC	AC/DC																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																																			

Industrial Electromagnetic Relays

							R2										12				
							R3										10				
							R4										6				
							RY2										12				
							R2M										5				
							RUC										16				
							R15 - DPDT										10				
							R15 - 3PDT										10				
							R15 - 4PDT										10				

Miniature Electromagnetic Relays

							RM40										5/8"				
							RM50										12				
							RM84										9				
							RM85										16				
							RM87										12				

Slimline Interface Relays

							RM699B										6				
							RSR30-...-D1-24-010-1										1				
							RSR30-...-A1-24-020-1										2				
							RSR30-...-D1-04-025-1										2.5				
							RSR30-...-D1-02-040-1										4				

Subminiature Electromagnetic and Solid State Modules

							PI6-1P										6				
							PI6-1T										1				
							PI6-1OC										1				
							PIR6W-1PS-...										max 6				
							PIR6WB-1PS-... **										max 6				

Relays for Photovoltaic Systems

							RS35, RS50										RSR35: 35A, RSR50: 50A				
--	--	--	--	--	--	--	------------	--	--	--	--	--	--	--	--	--	------------------------	--	--	--	--

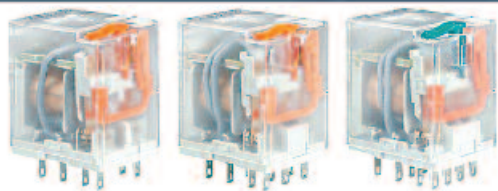
Relay Socket Combinations

							PI84 with socket GZT80										8				
							PI85 with socket GZT80										16				
							PI84 with socket GZM80										8				
							PI85 with socket GZM80										16				
							PIR2 with socket GZM2										12				
							PIR3 with socket GZM3										10				
							PIR4 with socket GZM4										6				
							PIR2M with socket GZ2										5				

* SPDT 5 A; SPST (1NO) 8A. **spring clamp socket. *** for more information see data sheet.

R2, R3, R4

Industrial Electromagnetic Relays



- 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

Number and type of contacts		R2	R3	R4
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	12 A
Rated current		12 A	10 A	6 A
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	AC1	1200 cycles/hour	1200 cycles/hour	1200 cycles/hour
• at rated load		18000 cycles/hour	18000 cycles/hour	18000 cycles/hour
• no load				

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		2500 V AC type of insulation: basic 1500 V AC type of clearance: micro-disco. 2500 V AC type of insulation: basic	2500 V AC type of insulation: basic 1500 V AC type of clearance: micro-disco. 2500 V AC type of insulation: basic	2500 V AC type of insulation: basic 1500 V AC type of clearance: micro-disco. 2500 V AC type of insulation: basic
Contact - coil distance		≥ 2.5 mm	≥ 2.5 mm	≥ 1.6 mm
• clearance		≥ 4 mm	≥ 4 mm	≥ 3.2 mm
• creepage				

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 see Fig. 2.1	> 10 ⁵ ; 10 A. 250 V AC see Fig. 2.2	> 10 ⁵ ; 6 A. 250 V AC see Fig. 2.3
• cosφ				
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.

R2, R3, R4

Industrial Electromagnetic Relays

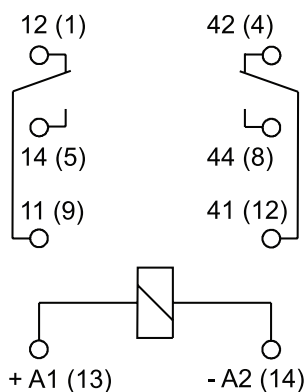
Altech®



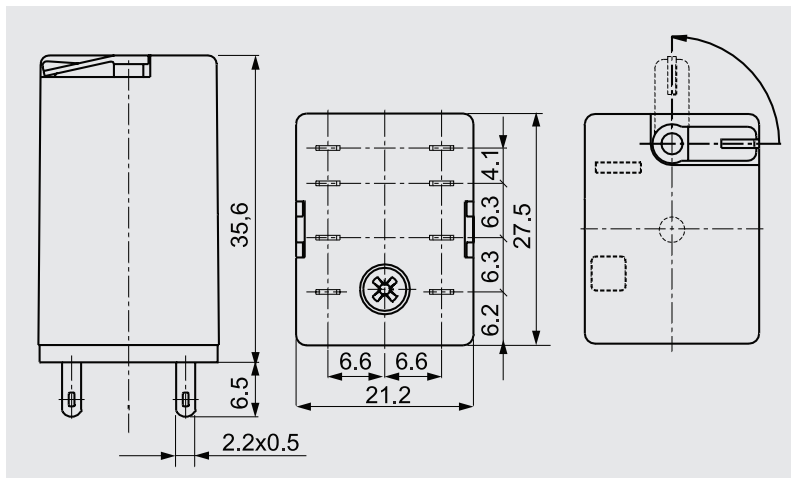
R2 (DPDT)



CONNECTION DIAGRAM

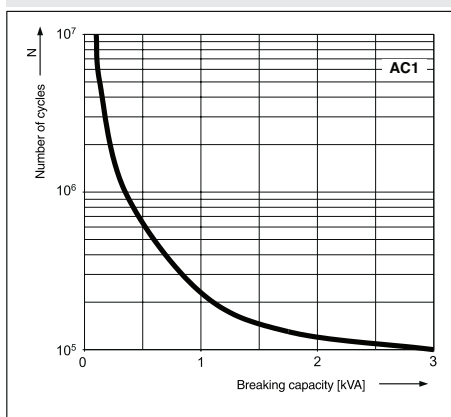


DIMENSIONS

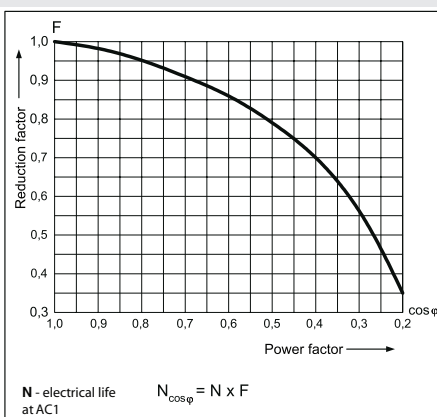


LOAD CHARTS

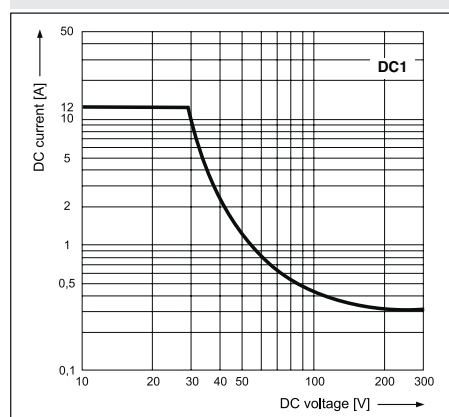
Electrical life at AC resistive load.
Switching frequency: 1200 cycles/hour **Fig. 1.1**



Electrical life reduction factor
at AC inductive load **Fig. 2.1**



Max. DC resistive load breaking capacity **Fig. 3.1**



R2, R3, R4

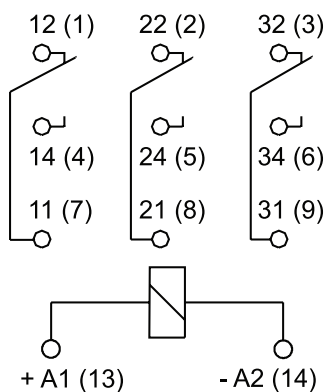
Industrial Electromagnetic Relays



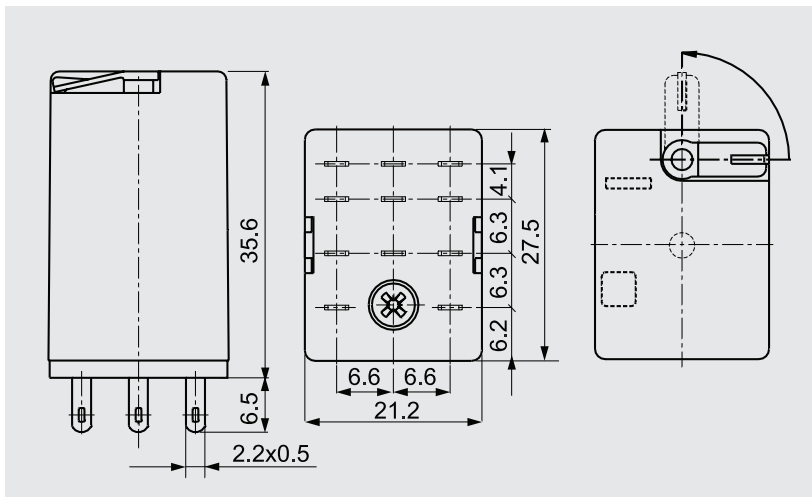
R3 (3PDT)



CONNECTION DIAGRAM

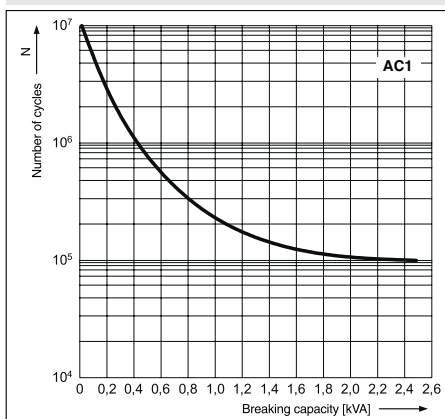


DIMENSIONS

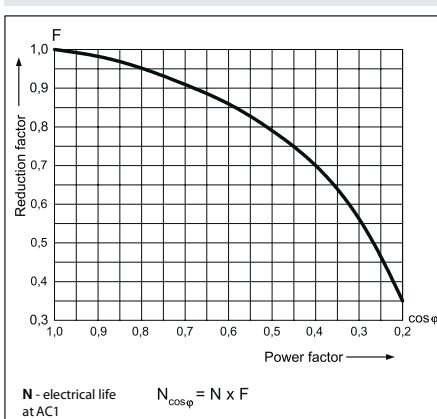


LOAD CHARTS

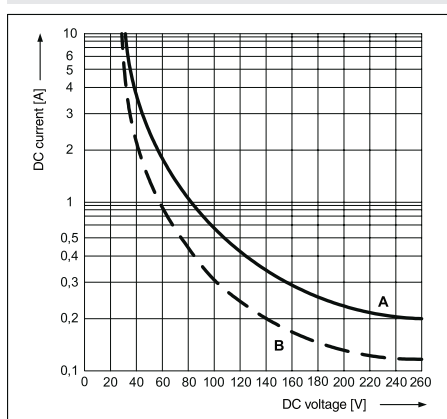
Electrical life at AC resistive load.
Switching frequency: 1200 cycles/hour **Fig. 1.2**



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**



R2, R3, R4

Industrial Electromagnetic Relays

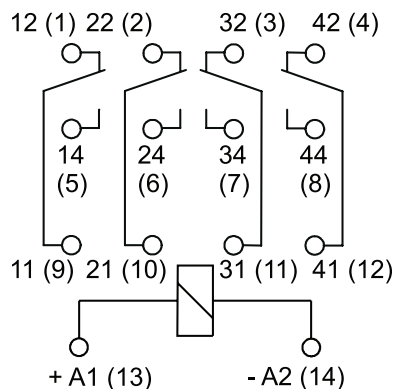
Altech®



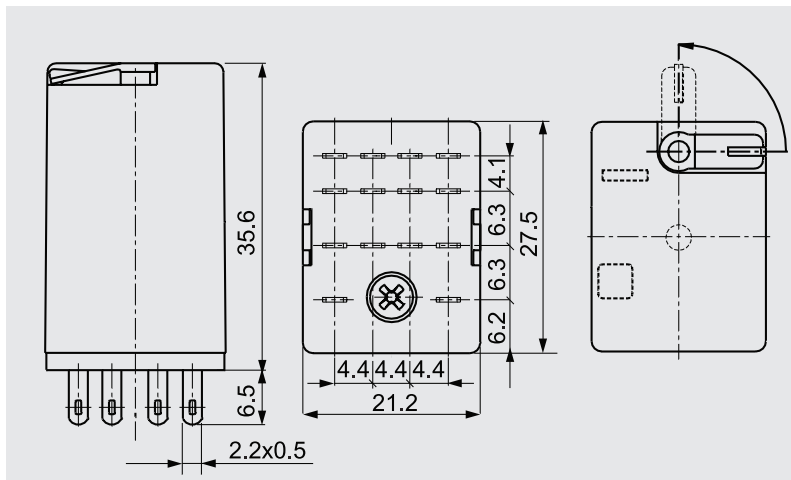
R4 (4PDT)



CONNECTION DIAGRAM

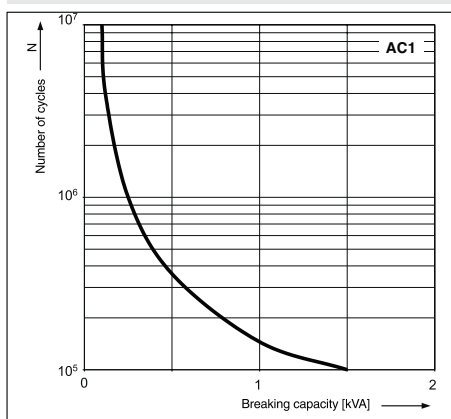


DIMENSIONS

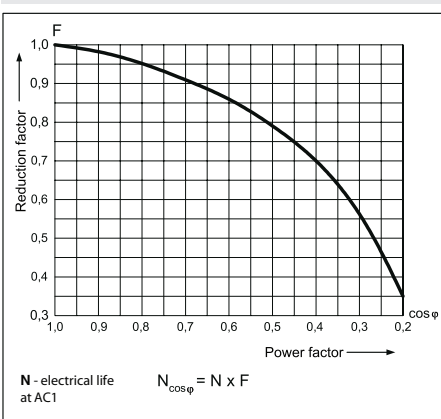


LOAD CHARTS

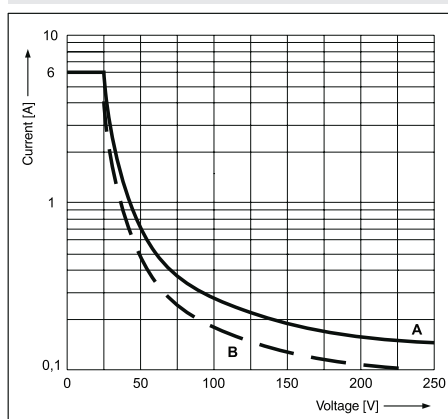
Electrical life at AC resistive load.
Switching frequency: 1200 cycles/hour **Fig. 3.1**



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



Max. DC breaking capacity
A - resistive load DC1
B - inductive load L/R = 40 ms **Fig. 3.3**



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		Options*	
				min. (at 20°C)	max. (at 55°C)	WT	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		Options*	
				min. (at 20°C)	max. (at 55°C)	WT	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		Options*	
				min. (at 20°C)	max. (at 55°C)	WT	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.

R2, R3, R4

Industrial Electromagnetic Relays - Plug-in Sockets and Accessories



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



GZT4-0040



G4 1052**

ZGGZ4 (see page 111)



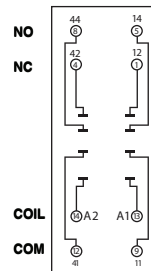
GZT4-0035

Module type M... (see page 113)

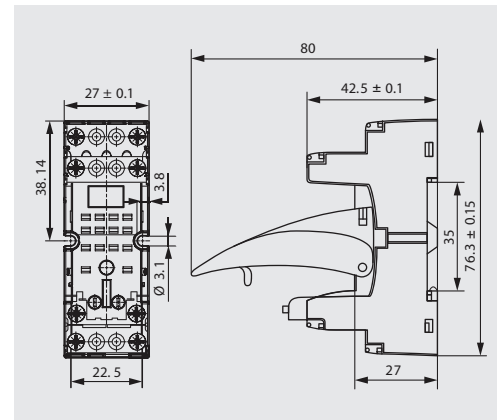


GZT2

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



GZT4-0040



G4 1052**

ZGGZ4 (see page 111)



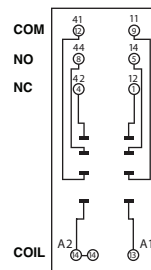
GZT4-0035

Module type M... (see page 113)

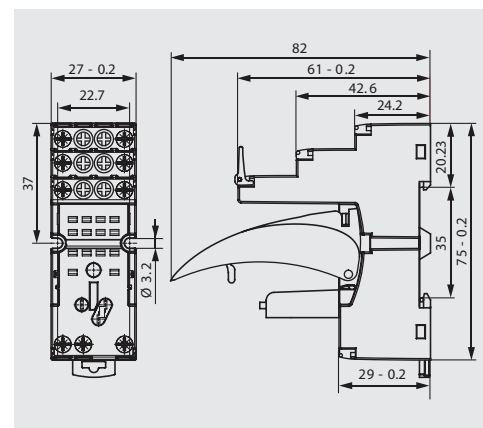


GZM2

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



GZT4-0040



G4 1052**

ZGGZ4 (see page 111)



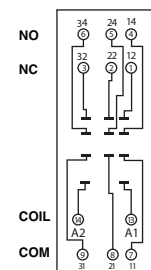
GZT4-0035

Module type M... (see page 113)

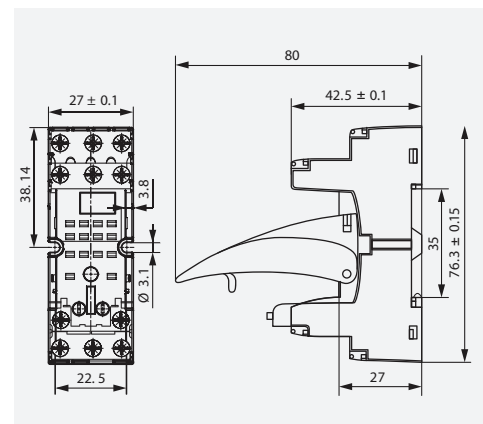


GZT3

CONNECTION DIAGRAM



DIMENSIONS



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

All accessories are sold separately.

R2, R3, R4

Industrial Electromagnetic Relays - Plug-in Sockets and Accessories

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



GZT4-0040



G4 1052**



ZGGZ4 (see page 111)

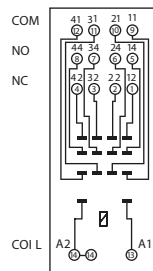


GZT4-0035

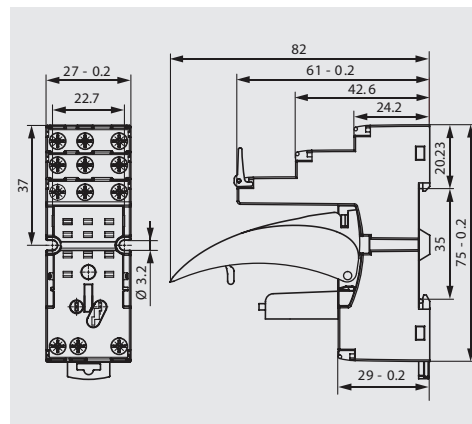


Module type M... (see page 113)

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



GZT4-0040



G4 1052**



ZGGZ4 (see page 111)

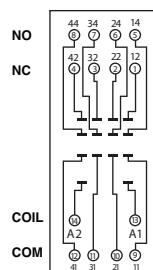


GZT4-0035

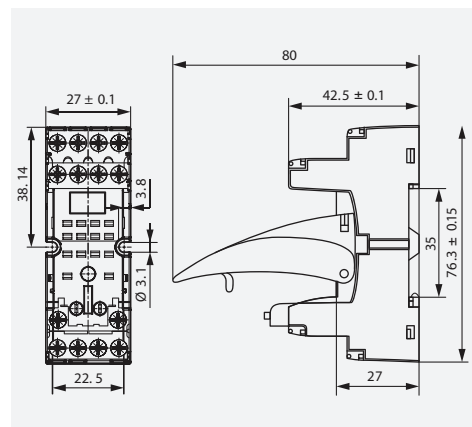


Module type M... (see page 113)

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



GZT4-0040



G4 1052**



ZGGZ4 (see page 111)

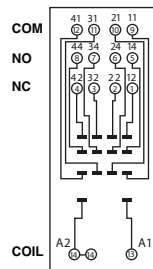


GZT4-0035

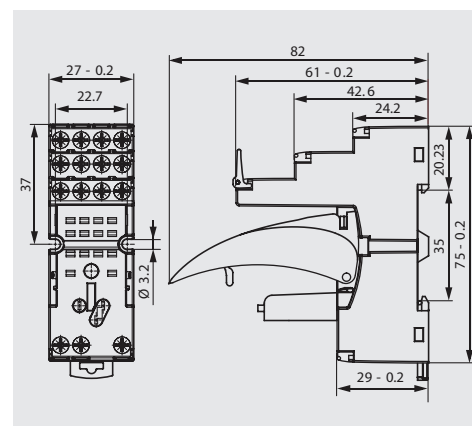


Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



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

All accessories are sold separately.

R2, R3, R4

Industrial Electromagnetic Relays - Plug-in Sockets and Accessories **Altech®**

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

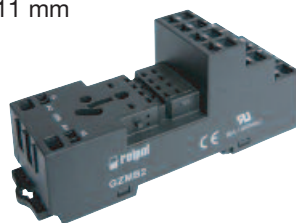
95 x 31 x 42.5(80) mm*

Two poles

10 A, 300 V AC

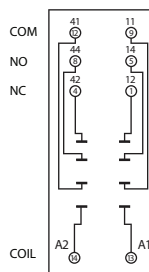


E22891

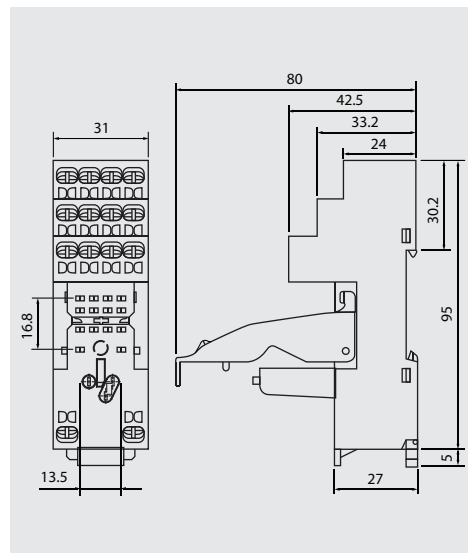


GZMB2

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

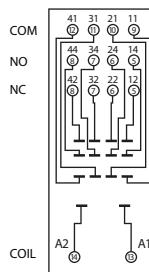


E22891

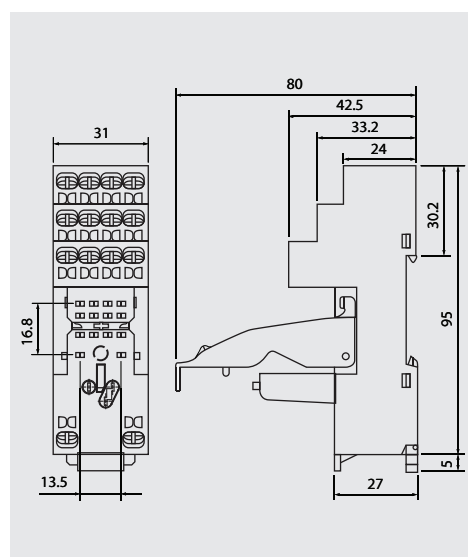


GZMB4

CONNECTION DIAGRAM



DIMENSIONS



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.

R2M / RY2 / RUC

Industrial Electromagnetic Relays



- Relays of general application
- For plug-in sockets, 35 mm rail mount or on panel mounting
- Cadmium-free contacts
- R2M and RUC also for PCB and soldering connections
- AC and DC coils available

R2M

RY2

RUC

Contact Data

Number and type of contacts		DPDT	DPDT	DPDT. 3PDT. DPST. 3PST
Contact material		AgNi*	AgNi*	AgNi*
Rated / max. switching voltage	AC	250 V / 250 V	250 V / 440 V	400 V / 440 V
Min. switching voltage		5 V	5 V	5 V
Rated load	AC1	5 A / 250 V AC	12 A / 250 V AC	16 A / 250 V AC or 10 A / 400 V AC
	DC1	5 A / 24 V DC	12 A / 30 V DC	16 A / 24 V DC (see Fig. 3.3)
Min. switching current		5 mA	5 mA	5 mA
Max. inrush current			20 A	40 A
Rated current		5A	12A	16A
Max. breaking capacity	AC1	1250 VA	3000 VA	4000 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		36000 cycles/hour	18000 cycles/hour	12000 cycles/hour

Coil Data

Rated voltage	50/60 Hz AC	6 ... 240 V	6 ... 240 V	6 ... 240 V
	DC	6 ... 110 V	5 ... 220 V	6 ... 220 V
Must release voltage		≥ 0.05 U _N	AC: ≥ 0.2 U _N ; DC: ≥ 0.1 U _N	AC: ≥ 0.15 U _N ; DC: ≥ 0.1 U _N
Operating range of supply voltage		see page 62	see page 62	see page 62
Rated power consumption	AC	1.2 VA	1.6 VA	2.8 VA 50 Hz; 2.5 VA 60 Hz
	DC	0.9 W	0.9 W	1.5 W; 1.7 W with contact gap ≥ 3 mm

Insulation

Insulation rated voltage		250 V AC	250 V AC	400 V AC
Rated surge voltage		2500 V 1.2 / 50 μs	4000 V 1.2 / 50 μs	4000 V 1.2 / 50 μs
Overvoltage category		II	III	III
Insulation pollution degree		3	3	3
Dielectric strength				
between coil and contacts				
• contact clearance		2000 V AC type of insulation: basic 1000 V AC type of clearance: micro-disconnection	2500 V AC type of insulation: basic 1000 V AC type of clearance: micro-disconnection	2500 V AC type of insulation: basic 1500 V AC type of clearance: micro-disconnection 2500 V AC with contact gap ≥ 3 mm. type of clearance: full-disconnection 2500 V AC type of insulation: basic
• pole - pole		2000 V AC type of insulation: basic	2500 V AC type of insulation: basic	
Contact - coil distance				
• clearance		≥ 3 mm	≥ 2.6 mm	≥ 5 mm
• creepage		≥ 4 mm	≥ 4 mm	≥ 8 mm

General data

Operating / release time (typical values)		AC: 8 ms / 7 ms; DC: 10 ms / 3 ms	15 ms / 10 ms	20 ms / 15 ms
Electrical life				
• resistive AC1		> 2 x 10 ⁶ ; 5 A. 250 V AC	> 10 ⁶ ; 12 A. 250 V AC	> 10 ⁶ ; 16 A. 250 V AC; > 10 ⁶ ; 10 A. 400 V AC
• cosφ		see Fig. 2.1	see Fig. 2.2	see Fig. 2.3
Mechanical life (cycles)		> 10 ⁷	> 10 ⁷	> 10 ⁷
Motor load according to UL 508		-	-	DPDT: 1/3 HP 120 V AC. single-phase motor 1/2 HP 240 V AC. single-phase motor 3PDT: 1/3 HP 120 V AC. single-phase motor 1/2 HP 240 V AC. single-phase motor 3PDT: 1/2 HP 240 V AC. three-phase motor
Dimensions (L x W x H)		27.5 x 14 x 32.9 mm	27.5 x 21.1 x 34.5 mm	36.1 x 38.6 x 45.5 mm
Weight		22 g	35 g	80 g
Ambient temperature				
• storage		-40...+70 °C	-40...+70 °C	-40...+85 °C
• operating		-40...+55 °C	-40...+55 °C	AC: -40...+55 °C 3PDT. 3PST (NO) / 16 A (+70 °C DPDT. DPST (NO) / 16 A) DC: -40...+55 °C 3PDT. 3PST (NO) / 16 A (+70 °C 3PDT. 3PST (NO) / 10 A; DPDT. DPST (NO) / 16 A)
Cover protection category		IP 40 PN-EN 60529	IP 40 PN-EN 60529	IP 00 PN-EN 60529
Shock resistance		10 g	10 g	10 g
Vibration resistance		5 g 10...150 Hz	5 g 15...150 Hz	5 g 10...150 Hz
Solder bath temperature		max. 270 °C	-	max. 270 °C
Soldering time		max. 5 s	-	max. 5 s

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

R2M / RY2 / RUC

Industrial Electromagnetic Relays

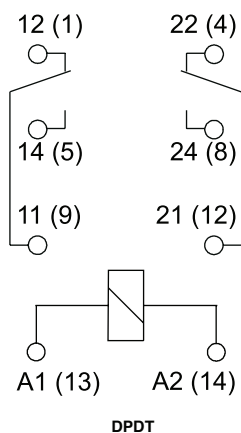
Altech®



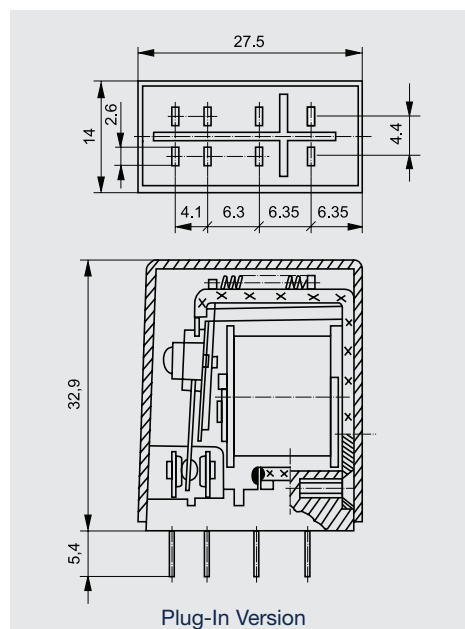
R2M



CONNECTION DIAGRAM

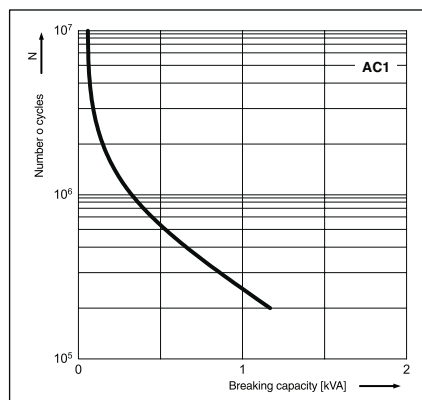


DIMENSIONS

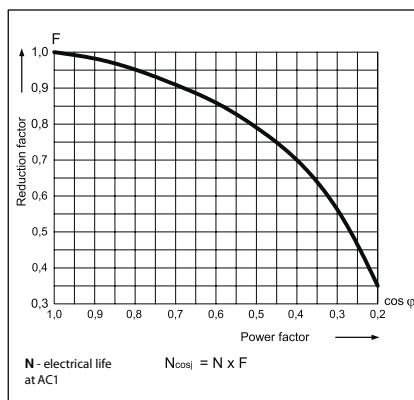


LOAD CHARTS

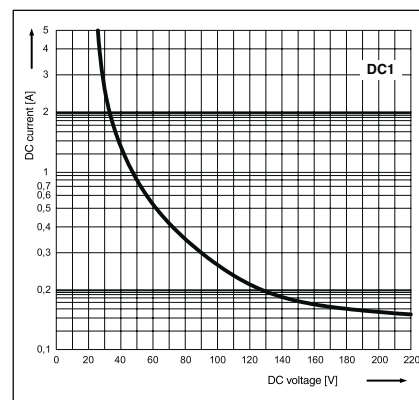
Electrical life at AC resistive load. Switching frequency: 1200 cycles/hour Fig. 1.1



Electrical life reduction factor at AC inductive load Fig. 2.1



Max. DC resistive load breaking capacity Fig. 3.1



R2M / RY2 / RUC

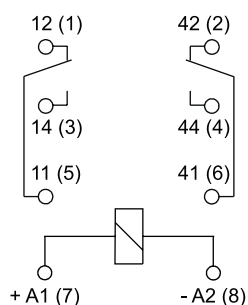
Industrial Electromagnetic Relays



RY2



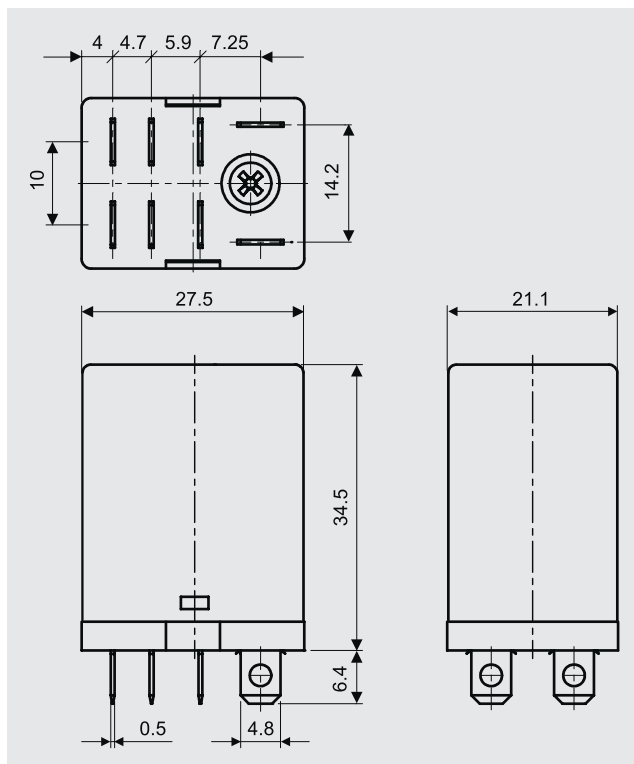
CONNECTION DIAGRAM



DPDT

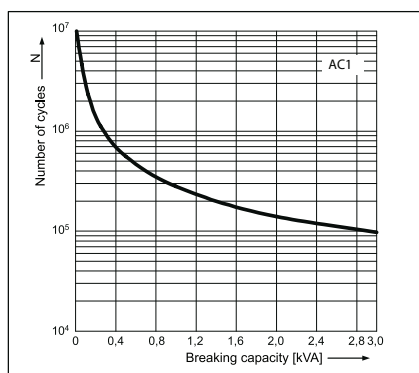
Note: the indicated polarity of the supply refers to the relays with extra equipment D - surge suppression element (diode) - for DC coils only.

DIMENSIONS

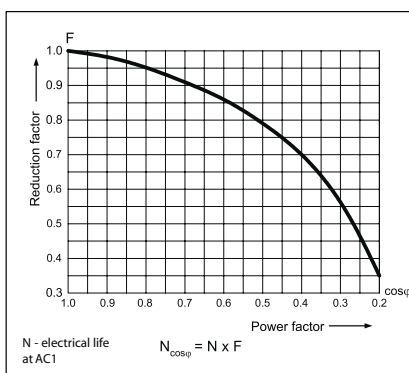


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Electrical life at AC resistive load. Switching frequency: 1 200 cycles/hour Fig. 1.2



Electrical life reduction factor at AC inductive load Fig. 2.2



R2M / RY2 / RUC

Industrial Electromagnetic Relays

Altech®

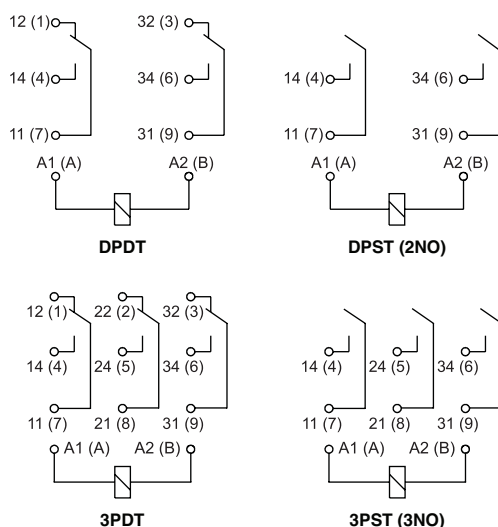


RUC

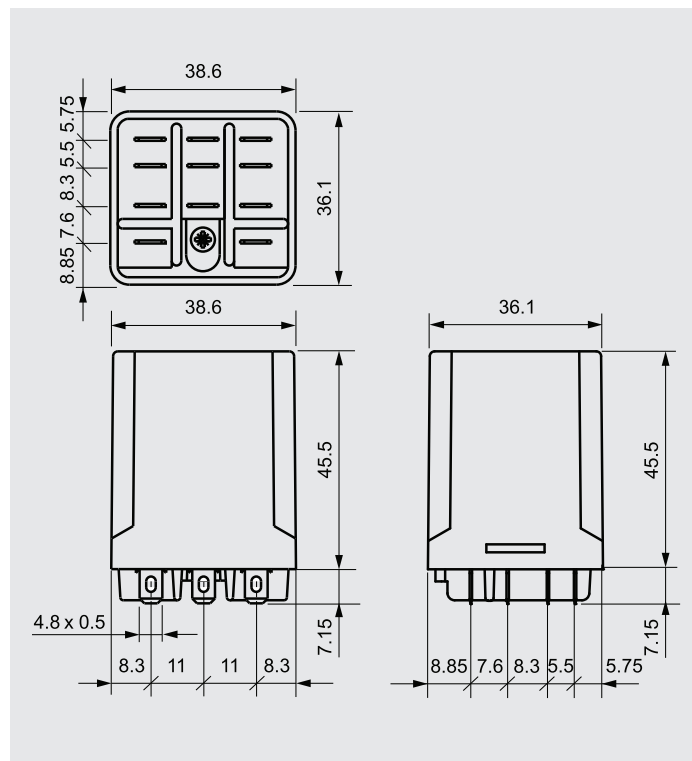
CE E105728



CONNECTION DIAGRAM



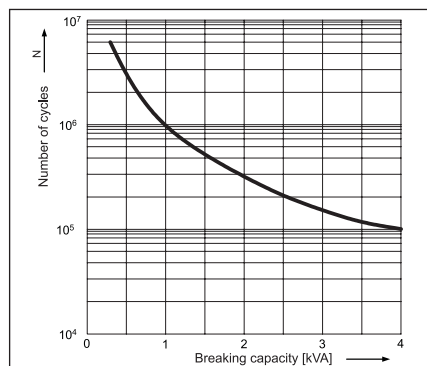
DIMENSIONS



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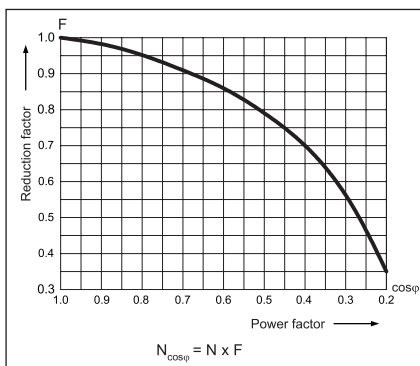
Electrical life at AC resistive load.
Switching frequency: 1200 cycles/hour

Fig. 1



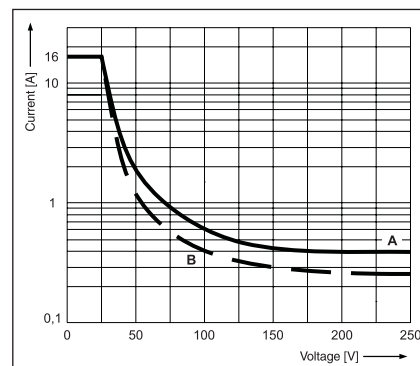
Electrical life reduction factor
at AC inductive load

Fig. 2



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

Fig. 3



R2M / RY2 / RUC

Industrial Electromagnetic Relays

R2M 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)	max. (at 55°C)
R2M-2012-23-1012	12	DC	188	9.6	13.2
► R2M-2012-23-1024	24	DC	750	19.2	26.4
R2M-2012-23-1110	110	DC	13480	88.0	121.0
► R2M-2012-23-5120	120	AC 50/60Hz	6390	96.0	132.0
R2M-2012-23-5230	230	AC 50/60Hz	21470	184.0	253.0

RY2 DPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range		Options*		
				min. (at 20°C)	max. (at 55°C)	-	L	D
► RY2-2012-26-1012	12	DC	160	9.6	13.2	x		
RY2-2012-26-1012-L	12	DC	160	9.6	13.2		x	
RY2-2012-26-1012-D	12	DC	160	9.6	13.2			x
RY2-2012-26-1012-LD	12	DC	160	9.6	13.2		x	x
► RY2-2012-26-1024	24	DC	640	19.2	26.4	x		
► RY2-2012-26-1024-L	24	DC	640	19.2	26.4		x	
RY2-2012-26-1024-D	24	DC	640	19.2	26.4			x
RY2-2012-26-1024-LD	24	DC	640	19.2	26.4		x	x
RY2-2012-26-1110	110	DC	13600	88.0	121.0	x		
RY2-2012-26-1110-L	110	DC	13600	88.0	121.0		x	
RY2-2012-26-1110-D	110	DC	13600	88.0	121.0			x
RY2-2012-26-1110-LD	110	DC	13600	88.0	121.0		x	x
RY2-2012-26-5024	24	AC 50/60Hz	158	19.2	26.4	x		
► RY2-2012-26-5024-L	24	AC 50/60Hz	158	19.2	26.4		x	
RY2-2012-26-5024-D	24	AC 50/60Hz	158	19.2	26.4			x
RY2-2012-26-5024-LD	24	AC 50/60Hz	158	19.2	26.4		x	x
► RY2-2012-26-5120	120	AC 50/60Hz	3770	96.0	132.0	x		
► RY2-2012-26-5120-L	120	AC 50/60Hz	3770	96.0	132.0		x	
RY2-2012-26-5120-D	120	AC 50/60Hz	3770	96.0	132.0			x
RY2-2012-26-5120-LD	120	AC 50/60Hz	3770	96.0	132.0		x	x
RY2-2012-26-5230	230	AC 50/60Hz	16100	184.0	253.0	x		
► RY2-2012-26-5230-L	230	AC 50/60Hz	16100	184.0	253.0		x	
RY2-2012-26-5230-D	230	AC 50/60Hz	16100	184.0	253.0			x
RY2-2012-26-5230-LD	230	AC 50/60Hz	16100	184.0	253.0		x	x

RUC DPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range		Options*		
				min. (at 20°C)	max. (at 55°C)	-	K	L
► RUC-2012-26-1012	12	DC	110	9.6	13.2	x		
RUC-2012-26-1012-K	12	DC	110	9.6	13.2		x	
RUC-2012-26-1012-L	12	DC	110	9.6	13.2			x
RUC-2012-26-1012-KL	12	DC	110	9.6	13.2		x	x
► RUC-2012-26-1024	24	DC	430	19.2	26.4	x		
RUC-2012-26-1024-K	24	DC	430	19.2	26.4		x	
RUC-2012-26-1024-L	24	DC	430	19.2	26.4			x
► RUC-2012-26-1024-KL	24	DC	430	19.2	26.4		x	x
RUC-2012-26-1110	110	DC	9200	88.0	121.0	x		
RUC-2012-26-1110-K	110	DC	9200	88.0	121.0		x	
RUC-2012-26-1110-L	110	DC	9200	88.0	121.0			x
RUC-2012-26-1110-KL	110	DC	9200	88.0	121.0		x	x
► RUC-2012-26-5120	120	AC 50/60Hz	1910	96.0	132.0	x		
RUC-2012-26-5120-K	120	AC 50/60Hz	1910	96.0	132.0		x	
RUC-2012-26-5120-L	120	AC 50/60Hz	1910	96.0	132.0			x
► RUC-2012-26-5120-KL	120	AC 50/60Hz	1910	96.0	132.0		x	x
RUC-2012-26-5230	230	AC 50/60Hz	7080	184.0	253.0z	x		
RUC-2012-26-5230-K	230	AC 50/60Hz	7080	184.0	253.0		x	
RUC-2012-26-5230-L	230	AC 50/60Hz	7080	184.0	253.0			x
► RUC-2012-26-5230-KL	230	AC 50/60Hz	7080	184.0	253.0		x	x

- = without additional features

K = with test button without block function;

L = with light indicator (LED)

D = with surge suppression element (diode)

* other options available upon request

► **BOLD** - Regular stocked items.

R2M / RY2 / RUC

Industrial Electromagnetic Relays



RUC 3PDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range		Options*		
				min. (at 20°C)	max. (at 55°C)	–	K	L
► RUC-2013-26-1012	12	DC	110	9.6	13.2	x		
RUC-2013-26-1012-K	12	DC	110	9.6	13.2		x	
RUC-2013-26-1012-L	12	DC	110	9.6	13.2			x
RUC-2013-26-1012-KL	12	DC	110	9.6	13.2		x	x
► RUC-2013-26-1024	24	DC	430	19.2	26.4	x		
RUC-2013-26-1024-K	24	DC	430	19.2	26.4		x	
RUC-2013-26-1024-L	24	DC	430	19.2	26.4			x
► RUC-2013-26-1024-KL	24	DC	430	19.2	26.4		x	x
RUC-2013-26-1110	110	DC	9200	88.0	121.0	x		
RUC-2013-26-1110-K	110	DC	9200	88.0	121.0		x	
RUC-2013-26-1110-L	110	DC	9200	88.0	121.0			x
RUC-2013-26-1110-KL	110	DC	9200	88.0	121.0		x	x
► RUC-2013-26-5120	120	AC 50/60Hz	1910	96.0	132.0	x		
RUC-2013-26-5120-K	120	AC 50/60Hz	1910	96.0	132.0		x	
RUC-2013-26-5120-L	120	AC 50/60Hz	1910	96.0	132.0			x
► RUC-2013-26-5120-KL	120	AC 50/60Hz	1910	96.0	132.0		x	x
► RUC-2013-26-5230	230	AC 50/60Hz	7080	184.0	253.0	x		
RUC-2013-26-5230-K	230	AC 50/60Hz	7080	184.0	253.0		x	
RUC-2013-26-5230-L	230	AC 50/60Hz	7080	184.0	253.0			x
RUC-2013-26-5230-KL	230	AC 50/60Hz	7080	184.0	253.0		x	x

RUC DPST(2NO) AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range		Options*		
				min. (at 20°C)	max. (at 55°C)	–	K	L
RUC-2022-26-1012	12	DC	110	9.6	13.2	x		
RUC-2022-26-1012-K	12	DC	110	9.6	13.2		x	
RUC-2022-26-1012-L	12	DC	110	9.6	13.2			x
RUC-2022-26-1012-KL	12	DC	110	9.6	13.2		x	x
RUC-2022-26-1024	24	DC	430	19.2	26.4	x		
RUC-2022-26-1024-K	24	DC	430	19.2	26.4		x	
RUC-2022-26-1024-L	24	DC	430	19.2	26.4			x
RUC-2022-26-1024-KL	24	DC	430	19.2	26.4		x	x
RUC-2022-26-1110	110	DC	9200	88.0	121.0	x		
RUC-2022-26-1110-K	110	DC	9200	88.0	121.0		x	
RUC-2022-26-1110-L	110	DC	9200	88.0	121.0			x
RUC-2022-26-1110-KL	110	DC	9200	88.0	121.0		x	x
RUC-2022-26-5120	120	AC 50/60Hz	1910	96.0	132.0	x		
RUC-2022-26-5120-K	120	AC 50/60Hz	1910	96.0	132.0		x	
RUC-2022-26-5120-L	120	AC 50/60Hz	1910	96.0	132.0			x
RUC-2022-26-5120-KL	120	AC 50/60Hz	1910	96.0	132.0		x	x
RUC-2022-26-5230	230	AC 50/60Hz	7080	184.0	253.0	x		
RUC-2022-26-5230-K	230	AC 50/60Hz	7080	184.0	253.0		x	
RUC-2022-26-5230-L	230	AC 50/60Hz	7080	184.0	253.0			x
RUC-2022-26-5230-KL	230	AC 50/60Hz	7080	184.0	253.0		x	x

RUC 3PST(3NO) AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range		Options*		
				min. (at 20°C)	max. (at 55°C)	–	K	L
RUC-2023-26-1012	12	DC	110	9.6	13.2	x		
RUC-2023-26-1012-K	12	DC	110	9.6	13.2		x	
RUC-2023-26-1012-L	12	DC	110	9.6	13.2			x
RUC-2023-26-1012-KL	12	DC	110	9.6	13.2		x	x
RUC-2023-26-1024	24	DC	430	19.2	26.4	x		
RUC-2023-26-1024-K	24	DC	430	19.2	26.4		x	
RUC-2023-26-1024-L	24	DC	430	19.2	26.4			x
RUC-2023-26-1024-KL	24	DC	430	19.2	26.4		x	x
RUC-2023-26-1110	110	DC	9200	88.0	121.0	x		
RUC-2023-26-1110-K	110	DC	9200	88.0	121.0		x	
RUC-2023-26-1110-L	110	DC	9200	88.0	121.0			x
RUC-2023-26-1110-KL	110	DC	9200	88.0	121.0		x	x
RUC-2023-26-5120	120	AC 50/60Hz	1910	96.0	132.0	x		
RUC-2023-26-5120-K	120	AC 50/60Hz	1910	96.0	132.0		x	
RUC-2023-26-5120-L	120	AC 50/60Hz	1910	96.0	132.0			x
RUC-2023-26-5120-KL	120	AC 50/60Hz	1910	96.0	132.0		x	x
RUC-2023-26-5230	230	AC 50/60Hz	7080	184.0	253.0	x		
RUC-2023-26-5230-K	230	AC 50/60Hz	7080	184.0	253.0		x	
RUC-2023-26-5230-L	230	AC 50/60Hz	7080	184.0	253.0			x
RUC-2023-26-5230-KL	230	AC 50/60Hz	7080	184.0	253.0		x	x

– = without additional features; **K** = with test button without block function; **L** = with light indicator (LED)

* other options available upon request

► **BOLD** - Regular stocked items.

R2M / RY2 / RUC

Industrial Electromagnetic Relays

RUC DPST(2NO) contact gap ≥ 3mm AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range		–	Options*	
				min. (at 20°C)	max. (at 55°C)		K	L
RUC-2052-26-1012	12	DC	110	9.6	13.2	x		
RUC-2052-26-1012-K	12	DC	110	9.6	13.2		x	
RUC-2052-26-1012-L	12	DC	110	9.6	13.2			x
RUC-2052-26-1012-KL	12	DC	110	9.6	13.2		x	x
RUC-2052-26-1024	24	DC	430	19.2	26.4	x		
RUC-2052-26-1024-K	24	DC	430	19.2	26.4		x	
RUC-2052-26-1024-L	24	DC	430	19.2	26.4			x
RUC-2052-26-1024-KL	24	DC	430	19.2	26.4		x	x
RUC-2052-26-1110	110	DC	9200	88.0	121.0	x		
RUC-2052-26-1110-K	110	DC	9200	88.0	121.0		x	
RUC-2052-26-1110-L	110	DC	9200	88.0	121.0			x
RUC-2052-26-1110-KL	110	DC	9200	88.0	121.0		x	x
RUC-2052-26-5120	120	AC 50/60Hz	1910	96.0	132.0	x		
RUC-2052-26-5120-K	120	AC 50/60Hz	1910	96.0	132.0		x	
RUC-2052-26-5120-L	120	AC 50/60Hz	1910	96.0	132.0			x
RUC-2052-26-5120-KL	120	AC 50/60Hz	1910	96.0	132.0		x	x
RUC-2052-26-5230	230	AC 50/60Hz	7080	184.0	253.0	x		
RUC-2052-26-5230-K	230	AC 50/60Hz	7080	184.0	253.0		x	
RUC-2052-26-5230-L	230	AC 50/60Hz	7080	184.0	253.0			x
RUC-2052-26-5230-KL	230	AC 50/60Hz	7080	184.0	253.0		x	x

RUC 3PST(3NO) contact gap ≥ 3mm AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range		–	Options*	
				min. (at 20°C)	max. (at 55°C)		K	L
RUC-2053-26-1012	12	DC	110	9.6	13.2	x		
RUC-2053-26-1012-K	12	DC	110	9.6	13.2		x	
RUC-2053-26-1012-L	12	DC	110	9.6	13.2			x
RUC-2053-26-1012-KL	12	DC	110	9.6	13.2		x	x
RUC-2053-26-1024	24	DC	430	19.2	26.4	x		
RUC-2053-26-1024-K	24	DC	430	19.2	26.4		x	
RUC-2053-26-1024-L	24	DC	430	19.2	26.4			x
RUC-2053-26-1024-KL	24	DC	430	19.2	26.4		x	x
RUC-2053-26-1110	110	DC	9200	88.0	121.0	x		
RUC-2053-26-1110-K	110	DC	9200	88.0	121.0		x	
RUC-2053-26-1110-L	110	DC	9200	88.0	121.0			x
RUC-2053-26-1110-KL	110	DC	9200	88.0	121.0		x	x
RUC-2053-26-5120	120	AC 50/60Hz	1910	96.0	132.0	x		
RUC-2053-26-5120-K	120	AC 50/60Hz	1910	96.0	132.0		x	
RUC-2053-26-5120-L	120	AC 50/60Hz	1910	96.0	132.0			x
RUC-2053-26-5120-KL	120	AC 50/60Hz	1910	96.0	132.0		x	x
RUC-2053-26-5230	230	AC 50/60Hz	7080	184.0	253.0	x		
RUC-2053-26-5230-K	230	AC 50/60Hz	7080	184.0	253.0		x	
RUC-2053-26-5230-L	230	AC 50/60Hz	7080	184.0	253.0			x
RUC-2053-26-5230-KL	230	AC 50/60Hz	7080	184.0	253.0		x	x

– = without additional features

K = with test button without block function

L = with light indicator (LED)

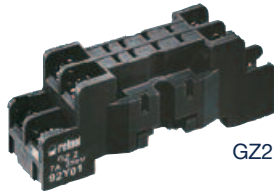
* Other options available upon request

R2M / RY2 / RUC

Industrial Electromagnetic Relays - Plug-in Sockets and Accessories **Altech**

GZ2 (for R2M)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
65.2 x 20 x 25 mm
Two poles
7 A, 250 V AC



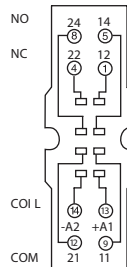
GZ2



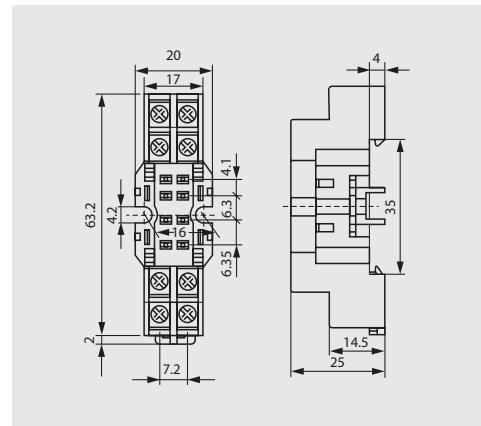
GZ2 1060

GZ2 1111

CONNECTION DIAGRAM



DIMENSIONS



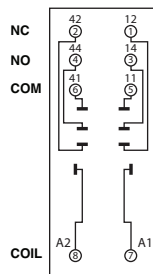
GZY2G (for RY2)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
78.7 x 28 x 32.4 mm
Two poles
12 A, 250 V AC

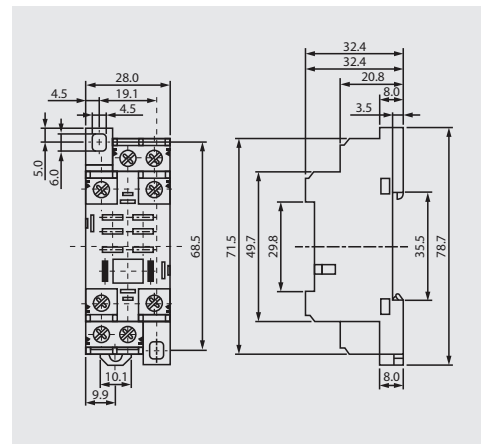


GZY2G

CONNECTION DIAGRAM



DIMENSIONS



GUC11 (for RUC)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
82 x 42.2 x 26.5 mm
Three poles
16 A, 250 V AC

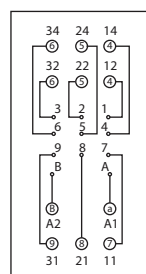


GUC11

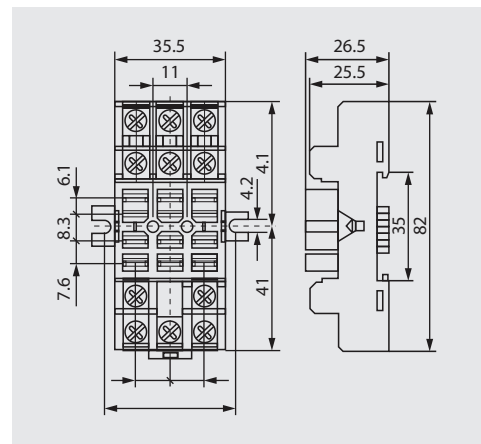


MBA

CONNECTION DIAGRAM



DIMENSIONS



All accessories are sold separately.

R15

Industrial Electromagnetic Relays



- Contacts AgNi
- For plug-in sockets, 35 mm rail mount or on panel mounting.
- Cadmium-free contacts-R15 DPDT, R15 3PDT, R15 4PDT relays
- WT (mechanical indicator and lockable front test button) - standard features of R15 DPDT, R15 3PDT relays in cover, 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

Number and type of contacts		DPDT	3PDT	4PDT
Contact material		AgNi	AgNi	AgCdO
Rated / max. switching voltage AC		250 V / 440 V	250 V / 440 V	250 V / 440 V
Min. switching voltage		10 V	10 V	10 V
Rated load (capacity)	AC1	10 A / 250 V AC; 10 A / 277 V AC UL 508	10 A / 250 V AC; 10 A / 277 V AC UL 508	10 A / 250 V AC; 10 A / 277 V AC UL 508
	AC15	3 A / 120 V; 1.5 A / 240 V (B300)	3 A / 120 V; 1.5 A / 240 V (B300)	3 A / 120 V; 1.5 A / 240 V (B300)
	AC3	370 W (single-phase motor. 1/2 HP / 240 V AC UL 508)	370 W (single-phase motor. 1/2 HP / 240 V AC UL 508)	370 W (single-phase motor. 1/2 HP / 240 V AC UL 508)
	DC1	10 A / 24 V DC (see Fig. 3)	10 A / 24 V DC (see Fig. 3)	10 A / 24 V DC (see Fig. 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	10 mA
Max. inrush current		20 A	20 A	20 A
Rated current		10A	10A	10A
Max. breaking capacity AC1		2500 VA	2500 VA	2500 VA
Min. breaking capacity		0.3 W	0.3 W	0.5 W
Contact resistance		≤ 100 mΩ	≤ 100 mΩ	≤ 100 mΩ
Max. operating frequency				
• at rated load • no load	AC1	1200 cycles/hour	1200 cycles/hour	1200 cycles/hour
		12000 cycles/hour	12000 cycles/hour	12000 cycles/hour

Coil Data

Rated voltage	50/60 Hz AC	6 ... 240 V	6 ... 240 V	6 ... 240 V
	DC	6 ... 220 V	6 ... 220 V	6 ... 220 V
Must release voltage		AC: ≥ 0.15 U _n ; DC: ≥ 0.1 U _n	AC: ≥ 0.15 U _n ; DC: ≥ 0.1 U _n	AC: ≥ 0.15 U _n ; DC: ≥ 0.1 U _n
Operating range of supply voltage		see page 68	see page 68	see page 68
Rated power consumption		AC: 2.8 VA 50 Hz; 2.5 VA 60 Hz; DC: 1.5 W	AC: 2.8 VA 50 Hz; 2.5 VA 60 Hz; DC: 1.5 W	AC: 2.8 VA 50 Hz; 2.5 VA 60 Hz; DC: 1.5 W

Insulation

Insulation rated voltage	250 V AC	250 V AC	250 V AC
Rated surge voltage	2500 V 1.2 / 50 µs	2500 V 1.2 / 50 µs	2500 V 1.2 / 50 µs
Overvoltage category	III	III	III
Insulation pollution degree	3	3	3
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	2000 V AC type of insulation: basic	2000 V AC type of insulation: basic	2000 V AC type of insulation: basic
Contact - coil distance			
• clearance	≥ 3 mm	≥ 3 mm	≥ 3 mm
• creepage	≥ 4.2 mm	≥ 4.2 mm	≥ 3.2 mm

General Data

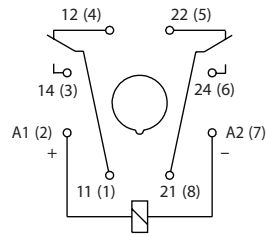
Operating / release time (typical)	AC: 12 ms / 10 ms; DC: 18 ms / 7 ms	AC: 12 ms / 10 ms; DC: 18 ms / 7 ms	AC: 12 ms / 10 ms; DC: 18 ms / 7 ms
Electrical life			
• resistive AC1	> 2 x 10 ⁵ ; 10 A. 250 V AC	> 2 x 10 ⁵ ; 10 A. 250 V AC	> 2 x 10 ⁵ ; 10 A. 250 V AC
• cos	see Fig. 2	see Fig. 2	see Fig. 2
Mechanical life (cycles)	> 2 x 10 ⁷	> 2 x 10 ⁷	> 2 x 10 ⁷
Dimensions (L x W x H)	35 x 35 x 54.4 mm	35 x 35 x 54.4 mm	35 x 42.5 x 54.5 mm
Weight	83 g	83 g	95 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	10 g	10 g	10 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	max. 270 °C
Soldering time	max. 5 s	max. 5 s	max. 5 s

R15

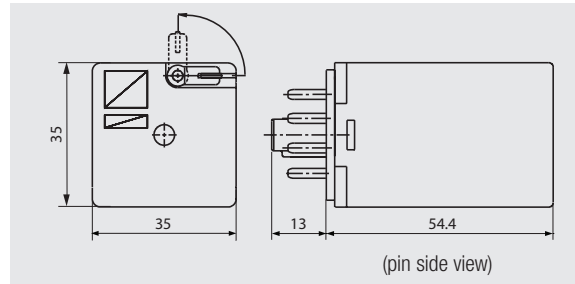
Industrial Electromagnetic Relays

DPDT

CONNECTION DIAGRAM

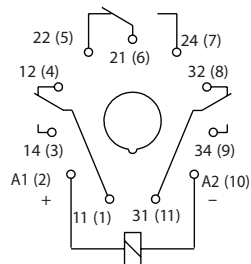


DIMENSIONS

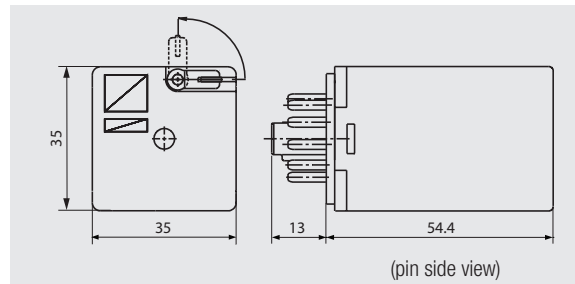


3PDT

CONNECTION DIAGRAM

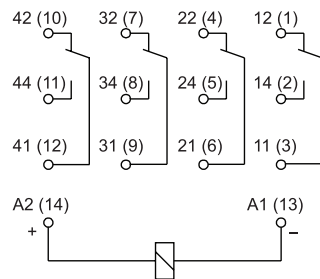


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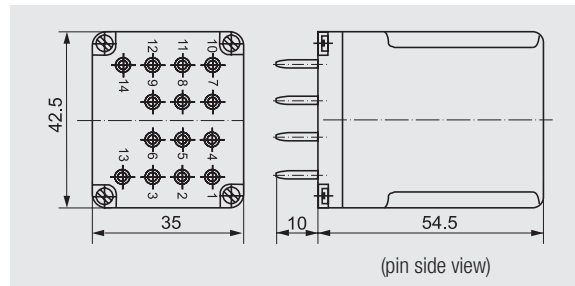


4PDT

CONNECTION DIAGRAM

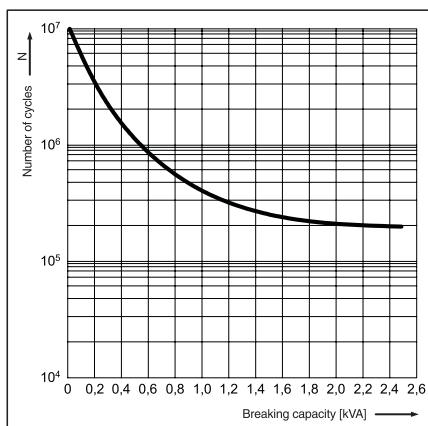


DIMENSIONS

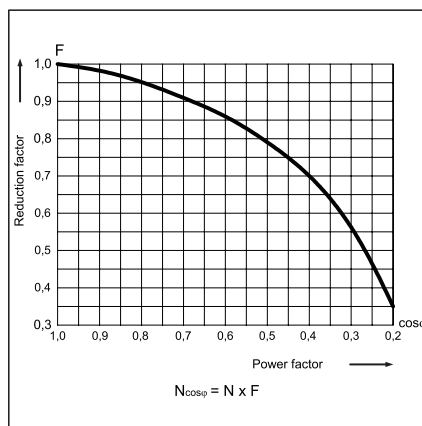


LOAD CHARTS

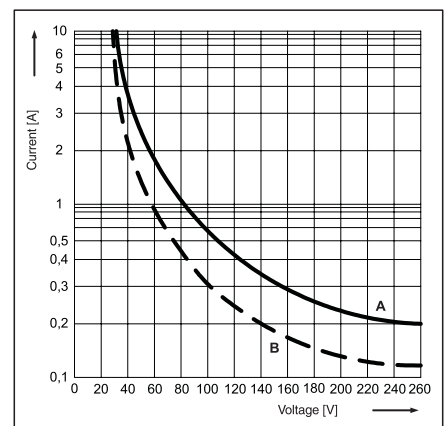
Electrical life at AC resistive load.
Switching frequency: 1200 cycles/hour Fig. 1



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



R15

Industrial Electromagnetic Relays

R15 DPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range		Options*		
				min. (at 20°C)	max. (at 55°C)	-	WT	WTL
▶ R15-2012-23-1012	12	DC	110	9.6	13.2	x		
R15-2012-23-1012-WT	12	DC	110	9.6	13.2		x	
R15-2012-23-1012-WTL	12	DC	110	9.6	13.2			x
▶ R15-2012-23-1024	24	DC	430	19.2	26.4	x		
R15-2012-23-1024-WT	24	DC	430	19.2	26.4		x	
▶ R15-2012-23-1024-WTL	24	DC	430	19.2	26.4			x
R15-2012-23-1110	110	DC	9200	88.0	121.0	x		
R15-2012-23-1110-WT	110	DC	9200	88.0	121.0		x	
R15-2012-23-1110-WTL	110	DC	9200	88.0	121.0			x
▶ R15-2012-23-5024	24	AC 50/60Hz	75	19.2	26.4	x		
R15-2012-23-5024-WT	24	AC 50/60Hz	75	19.2	26.4		x	
R15-2012-23-5024-WTL	24	AC 50/60Hz	75	19.2	26.4			x
▶ R15-2012-23-5120	120	AC 50/60Hz	1910	96.0	132.0	x		
R15-2012-23-5120-WT	120	AC 50/60Hz	1910	96.0	132.0		x	
▶ R15-2012-23-5120-WTL	120	AC 50/60Hz	1910	96.0	132.0			x
▶ R15-2012-23-5230	230	AC 50/60Hz	7080	184.0	253.0	x		
R15-2012-23-5230-WT	230	AC 50/60Hz	7080	184.0	253.0		x	
R15-2012-23-5230-WTL	230	AC 50/60Hz	7080	184.0	253.0			x

R15 3PDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range		Options*		
				min. (at 20°C)	max. (at 55°C)	-	WT	WTL
▶ R15-2013-23-1012	12	DC	110	9.6	13.2	x		
R15-2013-23-1012-WT	12	DC	110	9.6	13.2		x	
R15-2013-23-1012-WTL	12	DC	110	9.6	13.2			x
▶ R15-2013-23-1024	24	DC	430	19.2	26.4	x		
R15-2013-23-1024-WT	24	DC	430	19.2	26.4		x	
▶ R15-2013-23-1024-WTL	24	DC	430	19.2	26.4			x
R15-2013-23-1110	110	DC	9200	88.0	121.0	x		
R15-2013-23-1110-WT	110	DC	9200	88.0	121.0		x	
R15-2013-23-1110-WTL	110	DC	9200	88.0	121.0			x
▶ R15-2013-23-5024	24	AC 50/60Hz	75	19.2	26.4	x		
R15-2013-23-5024-WT	24	AC 50/60Hz	75	19.2	26.4		x	
R15-2013-23-5024-WTL	24	AC 50/60Hz	75	19.2	26.4			x
▶ R15-2013-23-5120	120	AC 50/60Hz	1910	96.0	132.0	x		
R15-2013-23-5120-WT	120	AC 50/60Hz	1910	96.0	132.0		x	
▶ R15-2013-23-5120-WTL	120	AC 50/60Hz	1910	96.0	132.0			x
▶ R15-2013-23-5230	230	AC 50/60Hz	7080	184.0	253.0	x		
R15-2013-23-5230-WT	230	AC 50/60Hz	7080	184.0	253.0		x	
R15-2013-23-5230-WTL	230	AC 50/60Hz	7080	184.0	253.0			x

R15 4PDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range		Options*			
				min. (at 20°C)	max. (at 55°C)	-	K	WT	WTL
R15-1014-23-1012	12	DC	110	9.6	13.2	x			
R15-1014-23-1012-K	12	DC	110	9.6	13.2		x		
R15-1014-23-1012-L	12	DC	110	9.6	13.2			x	
R15-1014-23-1012-D	12	DC	110	9.6	13.2				x
R15-1014-23-1024	24	DC	430	19.2	26.4	x			
R15-1014-23-1024-K	24	DC	430	19.2	26.4		x		
▶ R15-1014-23-1024-L	24	DC	430	19.2	26.4			x	
R15-1014-23-1024-D	24	DC	430	19.2	26.4				x
R15-1014-23-1110	110	DC	9200	88.0	121.0	x			
R15-1014-23-1110-K	110	DC	9200	88.0	121.0		x		
R15-1014-23-1110-L	110	DC	9200	88.0	121.0			x	
R15-1014-23-1110-D	110	DC	9200	88.0	121.0				x
R15-1014-23-3024	24	AC 50Hz	72	19.2	26.4	x			
R15-1014-23-3024-K	24	AC 50Hz	72	19.2	26.4		x		
R15-1014-23-3024-L	24	AC 50Hz	72	19.2	26.4			x	
R15-1014-23-3024-D	24	AC 50Hz	72	19.2	26.4				x
R15-1014-23-3120	120	AC 50Hz	2300	96.0	132.0	x			
R15-1014-23-3120-K	120	AC 50Hz	2300	96.0	132.0		x		
R15-1014-23-3120-L	120	AC 50Hz	2300	96.0	132.0			x	
R15-1014-23-3120-D	120	AC 50Hz	2300	96.0	132.0				x
R15-1014-23-3230	230	AC 50Hz	7900	184.0	253.0	x			
R15-1014-23-3230-K	230	AC 50Hz	7900	184.0	253.0		x		
R15-1014-23-3230-L	230	AC 50Hz	7900	184.0	253.0			x	
R15-1014-23-3230-D	230	AC 50Hz	7900	184.0	253.0				x
R15-1014-23-6120	120	AC 60Hz	2000	96.0	132.0	x			
R15-1014-23-6120-K	120	AC 60Hz	2000	96.0	132.0		x		
▶ R15-1014-23-6120-L	120	AC 60Hz	2000	96.0	132.0			x	
R15-1014-23-6120-D	120	AC 60Hz	2000	96.0	132.0				x
R15-1014-23-6230	230	AC 60Hz	7000	184.0	253.0	x			
R15-1014-23-6230-K	230	AC 60Hz	7000	184.0	253.0		x		
R15-1014-23-6230-L	230	AC 60Hz	7000	184.0	253.0			x	
R15-1014-23-6230-D	230	AC 60Hz	7000	184.0	253.0				x

WT = with mechanical indicator + lockable front test button; **WTL** = with mechanical indicator + lockable front test button + light indicator (LED)
K = with test button without block function; **L** = with light indicator (LED); **D** = with surge suppression element (diode); other options available upon request

▶ **BOLD** - Regular stocked items.

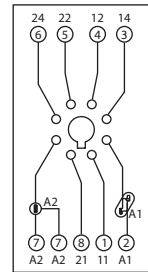
GZP8 for R15 DPDT

Screw terminals
Max. tightening moment
for the terminal: 0.5 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
73 x 38.2 x 27.2 mm Two poles
12 A, 300 V AC

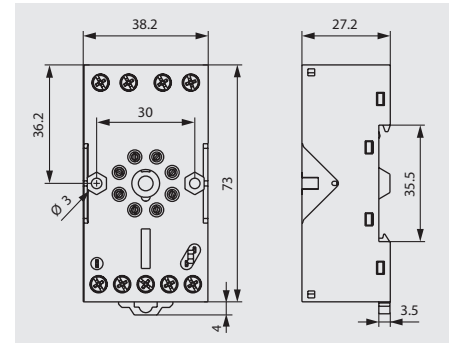


GZP8

CONNECTION DIAGRAM



DIMENSIONS



E22891



Time module COM3T



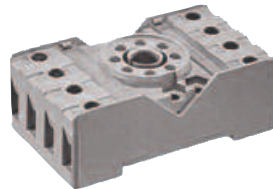
GZP-0035



GZP-0054

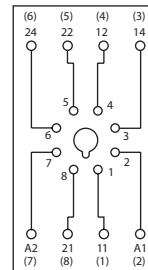
PZ8 for R15 DPDT

Screw terminals
Max. tightening moment
for the terminal: : 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
68.2 x 38 x 24.2 mm
Two poles
10 A, 250 V AC

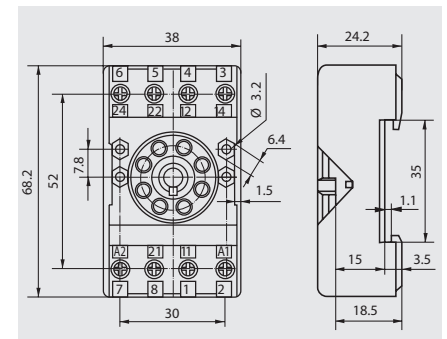


PZ8

CONNECTION DIAGRAM



DIMENSIONS



E105728



PZ11 0031

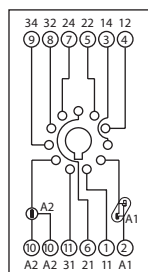
GZP11 for R15 3PDT

Screw terminals
Max. tightening moment
for the terminal: : 0,5 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
73 x 38.2 x 27.2 mm
Three poles
12 A, 300 V AC

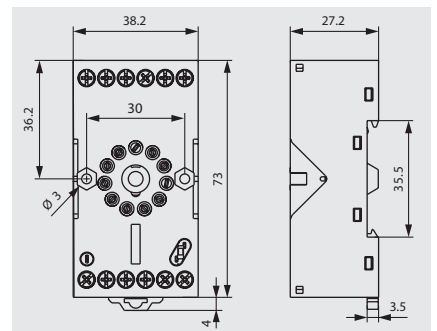


GZP11

CONNECTION DIAGRAM



DIMENSIONS



E22891



Time module COM3T



GZP-0035



GZP-0054

All accessories are sold separately.

R15

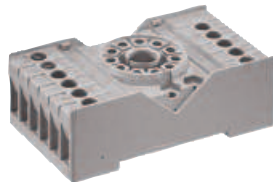
Industrial Electromagnetic Relays - Plug-in Sockets and Accessories

PZ11 for R15 3PDT

Screw terminals
Max. tightening moment
for the terminal: : 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
68.2 x 38 x 24.2 mm
Three poles
10 A, 250 V AC



E105728

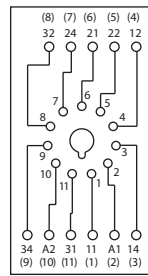


PZ11

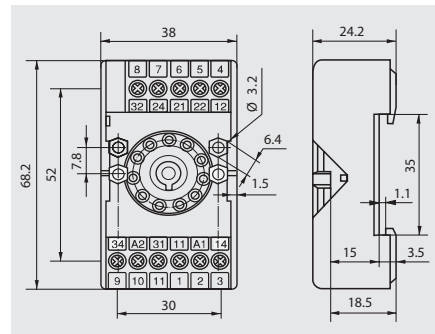


PZ11 0031

CONNECTION DIAGRAM

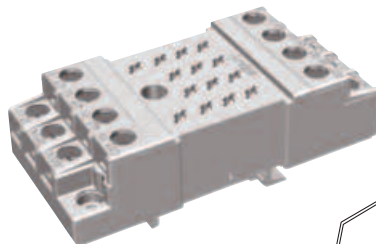


DIMENSIONS



GZ14U for R15 4PDT

Screw terminals
Max. tightening moment
for the terminal: : 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
96.8 x 46.2 x 33.3 mm
Four poles
10 A, 250 V AC

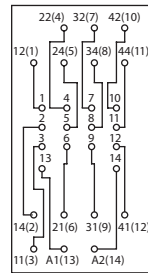


GZ14ZU

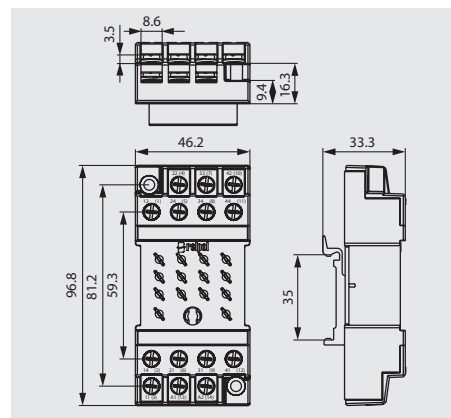


GZ14 0737

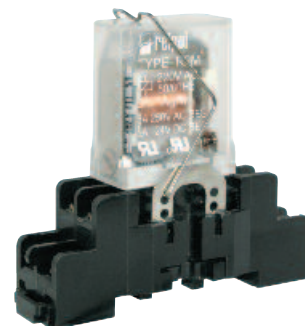
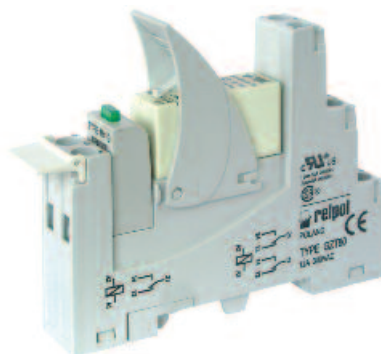
CONNECTION DIAGRAM



DIMENSIONS

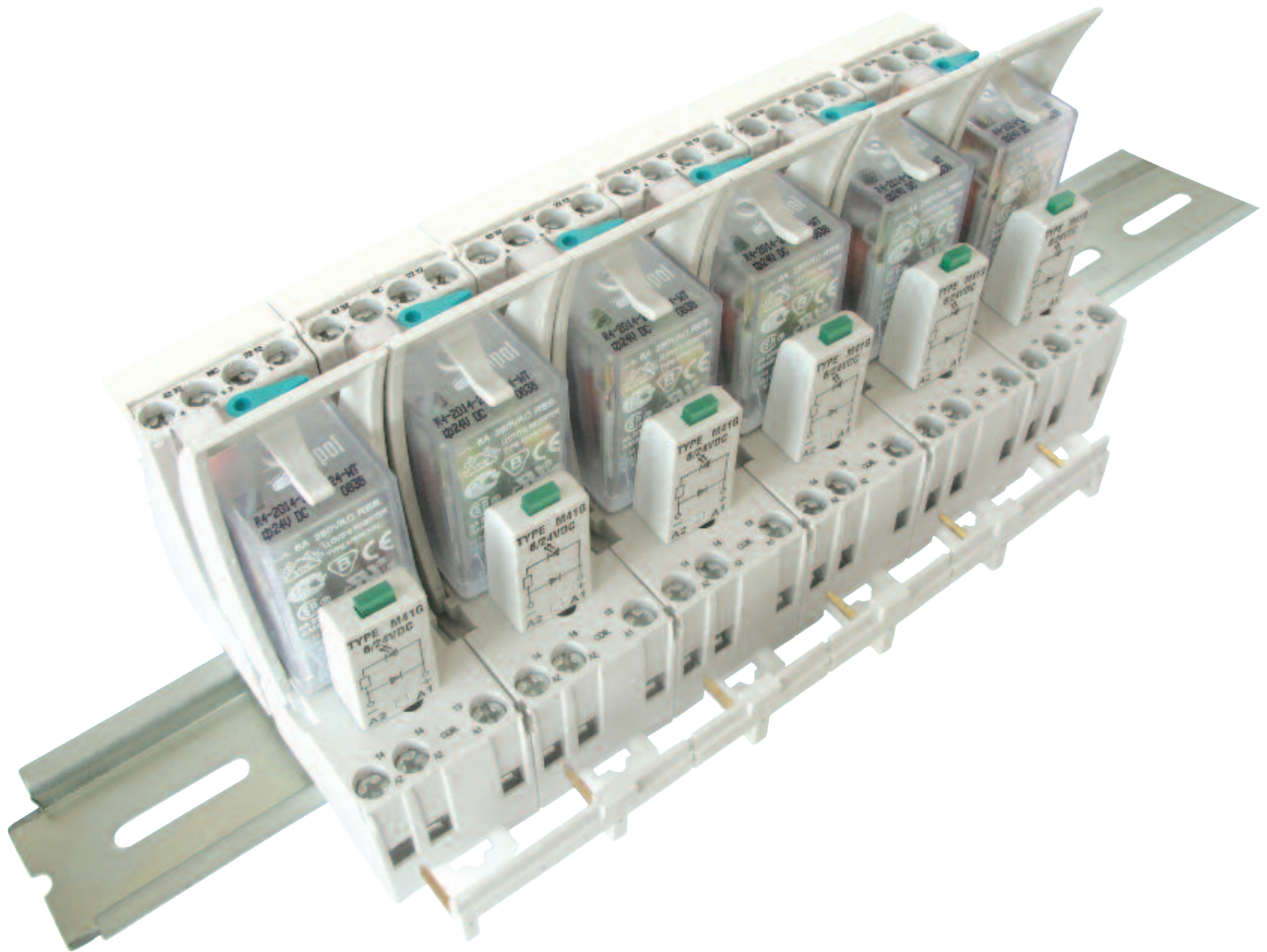


See Relay Socket Combinations on pages 104-109



All accessories are sold separately.

Altech Custom Assemblies



**Altech provides quick turnaround
and competitive prices on assemblies.**
For complete assemblies contact Altech.

RM40 and RM50

Miniature Electromagnetic Relays

RM40



- Very small dimensions
- High switching capacity up to 5 A or 8 A
- Cover with enhanced sealing protects the relay in course of soldering and cleaning
- Applications: for household equipment, office machines, control devices, alarm systems, in industrial control, industrial controllers
- Recognitions, certifications, directives: RoHS



E105728

RM50



- Small dimensions
- Switching current up to 10 A / 15 A
- The plastics applied provide for the operation of the relays at high temperature and in chemical environment
- Sealed, for soldering
- Applications: for household equipment, office machines, audio equipment, coffee machines, control devices, etc.
- Recognitions, certifications, directives: RoHS



E105728

RM40

RM50

Contact Data

No. and type of contacts	SPDT	SPST (1N0)	SPDT, SPST (1N0)
Contact material	AgNi	AgSnO ₂	AgSnO ₂
Rated / max. switching voltage AC	250 V / 380 V	250 V / 440 V	240 V / 277 V
Min. switching voltage	5 V AgNi	5 V AgSnO ₂	5 V
Rated load AC1	5 A / 250 V AC	8 A / 250 V AC	10 A / 240 V AC
DC1	5 A / 30 V DC	8 A / 30 V DC	15 A / 24 V DC
Min. switching current	10 mA AgNi	10 mA AgSnO ₂	15 mA
Rated current	5 A	8 A	12 A
Max. breaking capacity AC1	1250 VA	2000 VA	3000 VA
Min. breaking capacity	50 mW AgNi	50 mW AgSnO ₂	0.75 W
Contact resistance	≤ 100 mΩ	≤ 100 mΩ	≤ 100 mΩ

Coil Data

Rated voltage DC	3 ... 48 V	3 ... 48 V	3 ... 48 V
Must release voltage	DC: ≥ 0.05 U _N	DC: ≥ 0.05 U _N	DC: ≥ 0.05 U _N
Operating range of supply voltage	see page 75	see page 75	see page 75
Rated power consumption DC	0.20 W	0.20 W	0.36 W 3 ... 24 V; 0.45 W 48 V

Insulation

Dielectric strength			
• between coil and contacts	4000 V AC type of insulation: reinforced	4000 V AC type of insulation: reinforced	1000 V AC type of insulation: basic
• contact clearance	1000 V AC type of clearance: micro-disconnection	1000 V AC type of clearance: micro-disconnection	500 V AC type of clearance: micro-disconnection
Contact - coil distance			
• clearance	≥ 5 mm	≥ 5 mm	≥ 1.9 mm
• creepage	≥ 5 mm	≥ 5 mm	≥ 1.9 mm

General Data

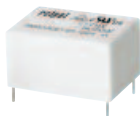
Operating / release time (typical values)	8 ms / 4 ms	8 ms / 4 ms	10 ms / 5 ms
Electrical life (number of cycles)			
• resistive AC1 360 cycles/hour	> 10 ⁵ ; 5 A, 250 V AC	> 10 ⁵ ; 8 A, 250 V AC	—
• resistive AC1 1 200 cycles/hour	—	—	> 10 ⁵ ; 7 A, 250 V AC
• resistive AC1 1 200 cycles/hour	—	—	> 3 x 10 ⁴ ; 12 A, 250 V AC
• resistive DC1 1 200 cycles/hour	—	—	> 5 x 10 ⁴ ; 15 A, 24 V DC
• resistive DC1 1 800 cycles/hour	> 10 ⁵ ; 5 A, 30 V DC	> 10 ⁵ ; 8 A, 30 V DC	—
Mechanical life 18 000 cycles/hour	> 10 ⁷	> 10 ⁷	> 10 ⁷
Dimensions (L x W x H)	20 x 10 x 10.5 mm	20 x 10 x 10.5 mm	19 x 15.4 x 15.5 mm
Weight	6 g	6 g	11 g
Ambient temperature			
• operating	-40...+85 °C	-40...+85 °C	-30...+55 °C
Cover protection category	IP 64 PN-EN 60529	IP 64 PN-EN 60529	IP 64 PN-EN 60529
Shock resistance	10 g	10 g	10 g
Vibration resistance	1.5 mm DA (constant amplitude) 10...55 Hz	1.5 mm DA (constant amplitude) 10...55 Hz	1.5 mm DA (constant amplitude) 10...55 Hz
Solder bath temperature	max. 235 °C	max. 235 °C	max. 235 °C
Soldering time	max. 3.5 s	max. 3.5 s	max. 3.5 s

RM40 and RM50

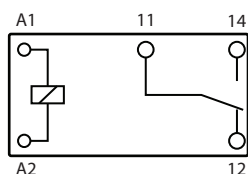
Miniature Electromagnetic Relays



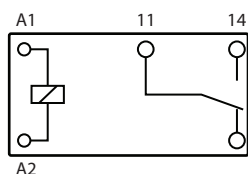
RM40



CONNECTION DIAGRAM

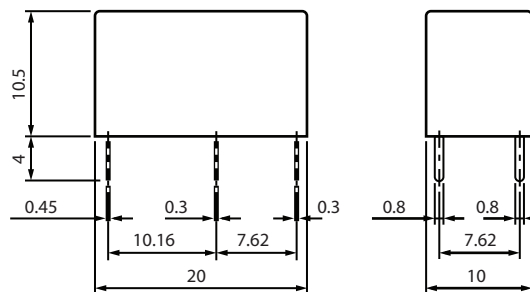


SPDT



SPST (1NO)

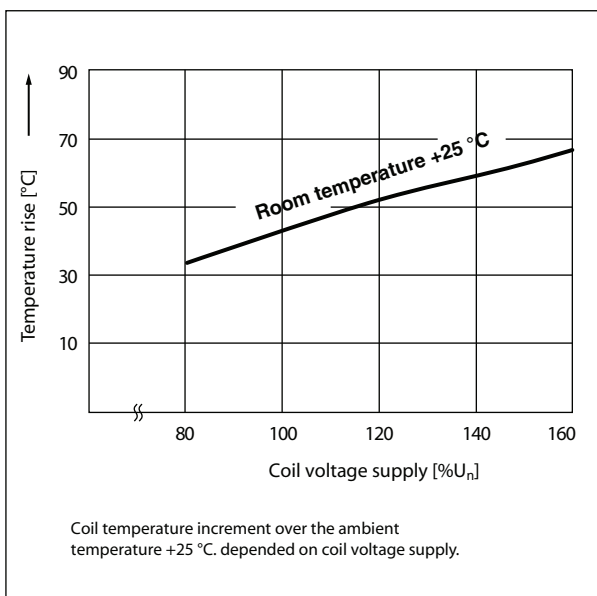
DIMENSIONS



LOAD CHARTS

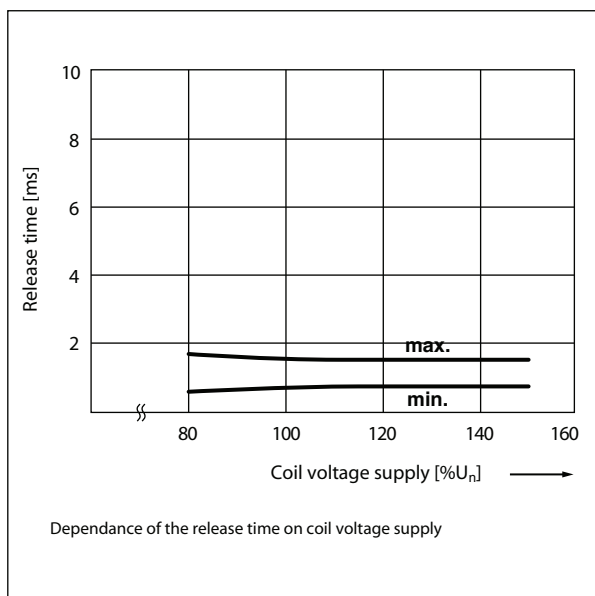
Coil temperature rise

Fig. 1



Release time

Fig. 2



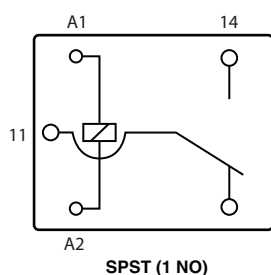
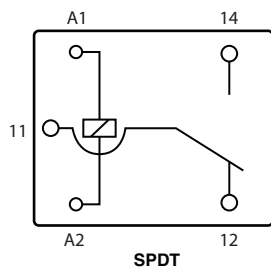
RM40 and RM50

Miniature Electromagnetic Relays

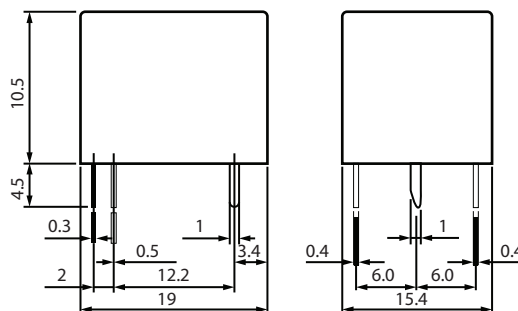
RM50



CONNECTION DIAGRAM



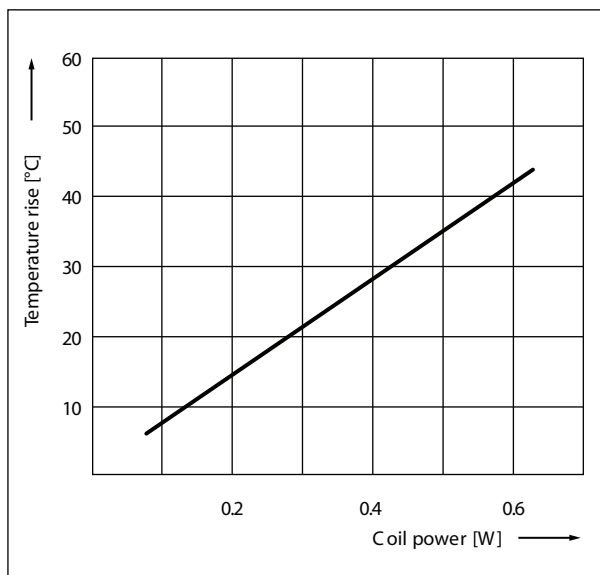
DIMENSIONS



LOAD CHARTS

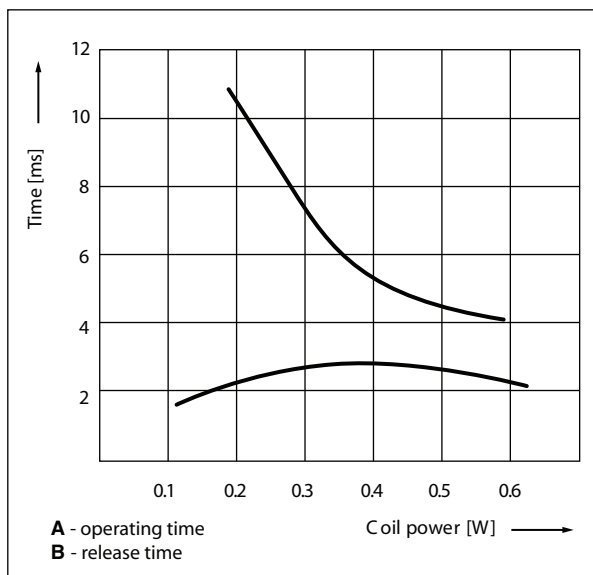
Coil temperature rise

Fig. 1



Operating / release time

Fig. 2



RM40 and RM50

Miniature Electromagnetic Relays



R40 SPDT DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range	
				min. (at 20°C)	max. (at 55°C)
RM40-2011-85-1003	3	DC	45	2.25	4.50
RM40-2011-85-1005	5	DC	125	3.75	7.50
RM40-2011-85-1006	6	DC	180	4.50	9.00
RM40-2011-85-1009	9	DC	405	6.75	13.50
RM40-2011-85-1012	12	DC	720	9.00	18.00
RM40-2011-85-1024	24	DC	2880	18.00	36.00
RM40-2011-85-1048	48	DC	11520	36.00	72.00

R40 SPST(1NO) DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range	
				min. (at 20°C)	max. (at 55°C)
RM40-3021-85-1003	3	DC	45	2.25	4.50
RM40-3021-85-1005	5	DC	125	3.75	7.50
RM40-3021-85-1006	6	DC	180	4.50	9.00
RM40-3021-85-1009	9	DC	405	6.75	13.50
RM40-3021-85-1012	12	DC	720	9.00	18.00
RM40-3021-85-1024	24	DC	2880	18.00	36.00
RM40-3021-85-1048	48	DC	11520	36.00	72.00

R50 SPDT DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range	
				min. (at 20°C)	max. (at 55°C)
RM50-3011-85-1003	3	DC	25	2.25	3.90
RM50-3011-85-1005	5	DC	70	3.75	6.50
RM50-3011-85-1006	6	DC	100	4.50	7.80
RM50-3011-85-1009	9	DC	225	6.75	11.70
RM50-3011-85-1012	12	DC	400	9.00	15.60
RM50-3011-85-1018	18	DC	900	13.50	23.40
RM50-3011-85-1024	24	DC	1600	18.00	31.20
RM50-3011-85-1048	48	DC	6400	38.40	62.40

R50 SPST(1NO) DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil resistance at 20 °C in Ω	Coil operating range	
				min. (at 20°C)	max. (at 55°C)
RM50-3021-85-1003	3	DC	25	2.25	3.90
RM50-3021-85-1005	5	DC	70	3.75	6.50
RM50-3021-85-1006	6	DC	100	4.50	7.80
RM50-3021-85-1009	9	DC	225	6.75	11.70
RM50-3021-85-1012	12	DC	400	9.00	15.60
RM50-3021-85-1018	18	DC	900	13.50	23.40
RM50-3021-85-1024	24	DC	1600	18.00	31.20
RM50-3021-85-1048	48	DC	6400	38.40	62.40

RM84 / RM85 / RM87

Miniature Electromagnetic Relays



- Miniature dimensions
- 5000 V / 10 mm reinforced insulation
- Available special versions with the increased dielectric strength of the contact clearance
- IP67 flux proof, water proof and sealed cover protection (For IP40 unsealed, contact Altech)
- Cadmium - free contacts
- For PCB and plug-in sockets

Contact Data		RM84	RM85	RM87
No. and type of contacts		DPDT, DPST (2NO)	SPDT, SPST (1NO)	SPDT, SPST (1NO)
Contact material		AgNi	AgNi	AgNi
Rated / max. switching voltage	AC	250 V / 440 V	250 V / 440 V	250 V / 440 V
Min. switching voltage		5 V	5 V	5 V
Rated load (capacity)	AC1	8 A / 250 V AC	16 A / 250 V AC	12 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)	3 A / 120 V; 1.5 A / 240 V (B300)
	AC3	550 W (single-phase motor)	750 W (single-phase motor)	750 W (single-phase motor)
	DC1	8 A / 24 V DC (see Fig. 3.1)	16 A / 24 V DC (see Fig. 3.2)	12 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		12 A	24 A	18 A
Rated current		8 A	16 A	12 A
Max. breaking capacity	AC1	2 000 VA	4 000 VA	3 000 VA
Min. breaking capacity		0.3 W	0.3 W	0.3 W
Contact resistance		≤ 100 mΩ	≤ 100 mΩ	≤ 100 mΩ
Max. operating frequency	AC1	600 cycles/hour 72000 cycles/hour	600 cycles/hour 72000 cycles/hour	600 cycles/hour 72000 cycles/hour
Coil Data				
Rated voltage	50/60 Hz AC	12 ... 240 V	12 ... 240 V	12 ... 240 V
	DC	3 ... 110 V	3 ... 110 V	3 ... 110 V
Must release voltage		AC: ≥ 0.15 U _N ; DC: ≥ 0.1 U _N	AC: ≥ 0.15 U _N ; DC: ≥ 0.1 U _N	AC: ≥ 0.15 U _N ; DC: ≥ 0.1 U _N
Operating range of supply voltage		see page 80 and Fig. 4.1. 5.1	see page 80 and Fig. 4.2. 5.2	see page 80 and Fig. 4.3. 5.3
Rated power consumption	AC	0.75 VA	0.75 VA	0.75 VA
	DC	0.4 ... 0.48 W	0.4 ... 0.48 W	0.4 ... 0.48 W
Insulation				
Insulation rated voltage		400 V AC	400 V AC	400 V AC
Rated surge voltage		4000 V 1.2 / 50 μs	4000 V 1.2 / 50 μs	4000 V 1.2 / 50 μs
Overvoltage category		III	III	III
Insulation pollution degree		3	3	3
Dielectric strength		5000 V AC type of insulation: reinforced	5000 V AC type of insulation: reinforced	5000 V AC type of insulation: reinforced
• between coil and contacts		1000 V AC type of clearance: micro-disconnection	1000 V AC type of clearance: micro-disconnection	1000 V AC type of clearance: micro-disconnection
• contact clearance		2000 V AC contacts DPST (2NO). type of clearance: full-disconnect	2000 V AC contacts DPST (2NO). type of clearance: full-disconnect	2000 V AC contacts SPST (1NO). type of clearance: full-disconnect
• pole - pole		2500 V AC type of insulation: basic	-	-
Contact - coil distance		≥ 10 mm	≥ 10 mm	≥ 10 mm
• clearance		≥ 10 mm	≥ 10 mm	≥ 10 mm
• creepage				
General data				
Operating / release time (typical values)		7 ms / 3 ms	7 ms / 3 ms	7 ms / 3 ms
Electrical life	AC1	> 10 ⁵ ; 8 A. 250 V AC see Fig. 2.1	> 0.7 x 10 ⁵ ; 16 A. 250 V AC see Fig. 2.2	> 10 ⁵ ; 12 A. 250 V AC see Fig. 2.3
• resistive		> 10 ⁵ ; 0.15 A. 220 V DC	> 10 ⁵ ; 0.15 A. 220 V DC	> 10 ⁵ ; 0.15 A. 220 V DC
• cosφ		> 3 x 10 ⁷	> 3 x 10 ⁷	> 3 x 10 ⁷
• DC L/R=40 ms		29 x 12.7 x 15.7 mm	29 x 12.7 x 15.7 mm	29 x 12.7 x 15.7 mm
Mechanical life (cycles)		14 g	14 g	14 g
Dimensions (L x W x H)		-40...+85 °C	40...+85 °C	40...+85 °C
Weight		AC: -40...+70 °C DC: -40...+85 °C	AC: -40...+70 °C DC: -40...+85 °C	AC: -40...+70 °C DC: -40...+85 °C
Ambient temperature		IP 67 PN-EN 60529	IP 67 PN-EN 60529	IP 67 PN-EN 60529
• storage		RTIII PN-EN 116000-3	RTIII PN-EN 116000-3	RTIII PN-EN 116000-3
• operating		20 g	30 g	30 g
Cover protection category		10 g / 5 g 10...150 Hz	10 g 10...150 Hz	10 g 10...150 Hz
Environmental protection	(NO/NC)	max. 270 °C	max. 270 °C	max. 270 °C
Shock resistance		max. 5 s	max. 5 s	max. 5 s
Vibration resistance				
Solder bath temperature				
Soldering time				

RM84 / RM85 / RM87

Miniature Electromagnetic Relays

Altech®



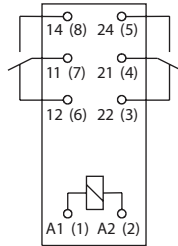
RM84



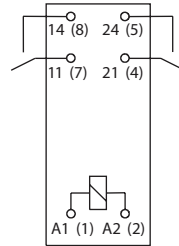
E105728



CONNECTION DIAGRAM



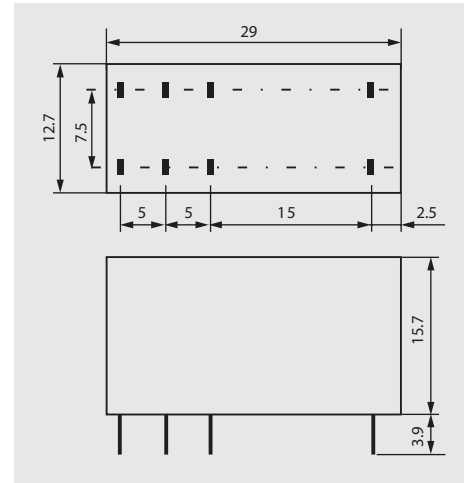
DPDT



DPST (2NO)

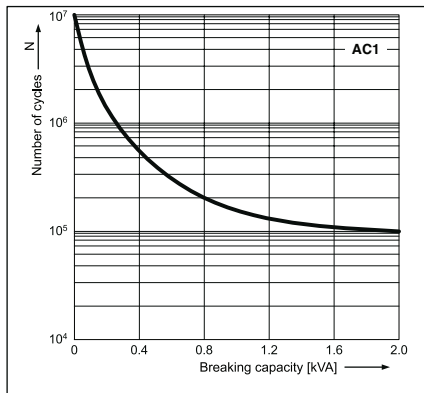
Terminal (pin)	A1(1); A2(2)	22(3); 21(4); 24(5); 12(6); 11(7); 14(8)
[mm]	Ø 0.6	0.5 x 0.9
Drilling hole:		
• for relays	Ø 1.3 + 0.1 mm	
• for sockets	Ø 1.5 + 0.1 mm	

DIMENSIONS

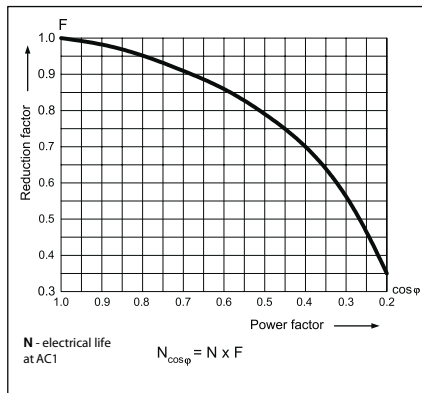


LOAD CHARTS

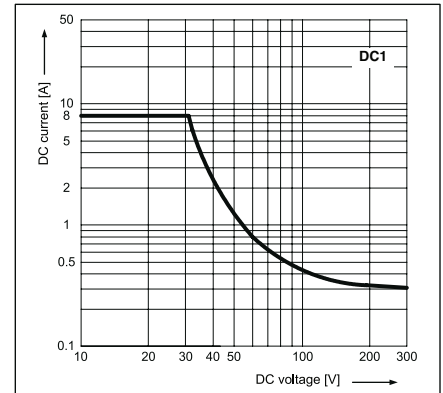
Electrical life at AC resistive load. Switching frequency: 600 cycles/hour Fig. 1.1



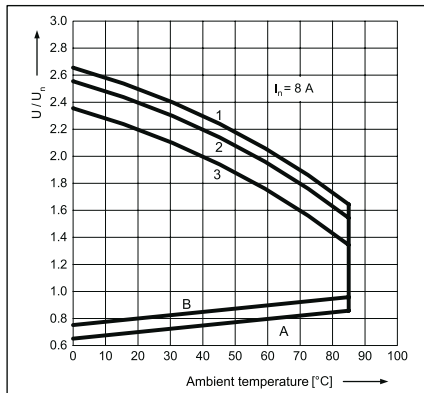
Electrical life reduction factor at AC inductive load Fig. 2.1



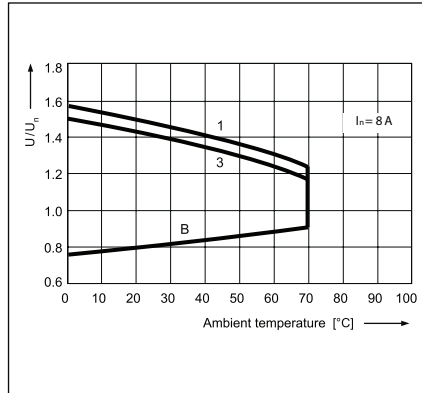
Max. DC resistive load breaking capacity Fig. 3.1



Coil operating range - DC Fig. 4.1



Coil operating range - AC 50 Hz Fig. 5.1



Description of Fig. 4.1 and 5.1

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

RM84 / RM85 / RM87

Miniature Electromagnetic Relays

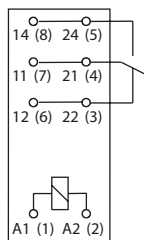


RM85

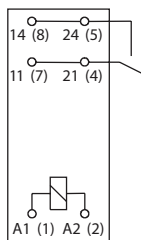


E105728

CONNECTION DIAGRAM



SPDT

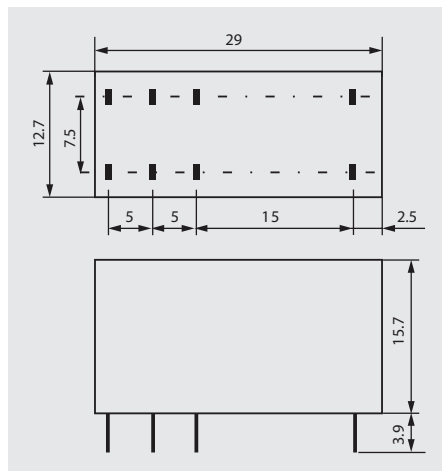


SPST (1NO)

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	Ø 1.3 ± 0.1 mm	
• for sockets	Ø 1.5 ± 0.1 mm	

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

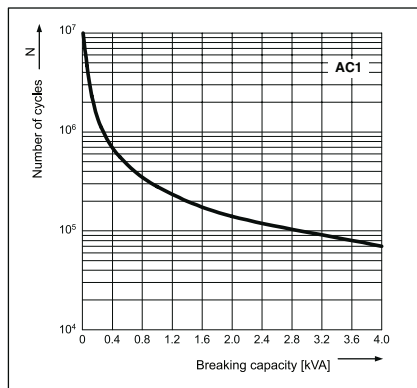
DIMENSIONS



LOAD CHARTS

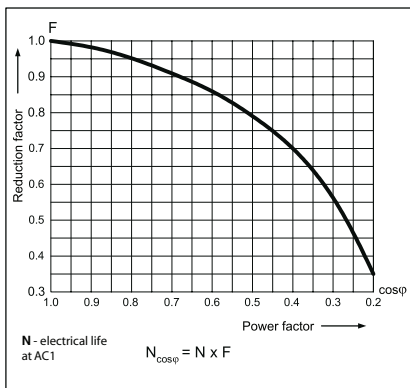
Electrical life at AC resistive load.
Switching frequency: 600 cycles/hour

Fig. 1.2



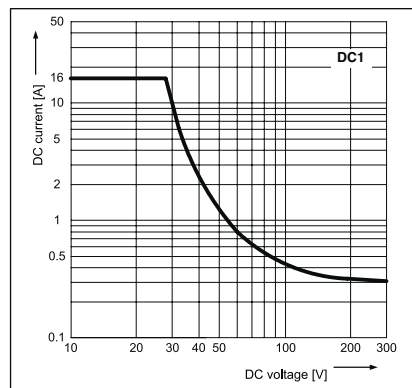
Electrical life reduction factor at AC inductive load

Fig. 2.2



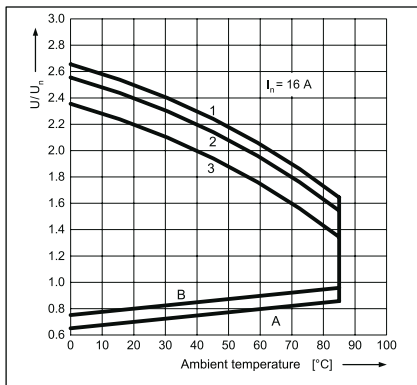
Max. DC resistive load breaking capacity

Fig. 3.2



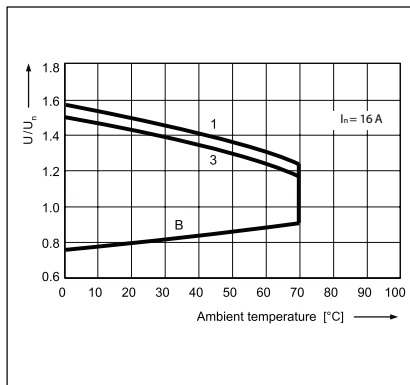
Coil operating range - DC

Fig. 4.2



Coil operating range - AC 50 Hz

Fig. 5.2



Description of Fig. 4.2 and 5.2

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, 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

RM84 / RM85 / RM87

Miniature Electromagnetic Relays

Altech®



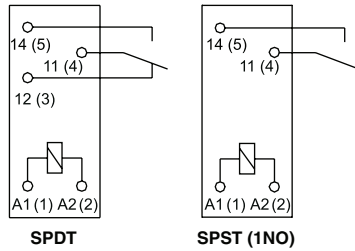
RM87



E105728

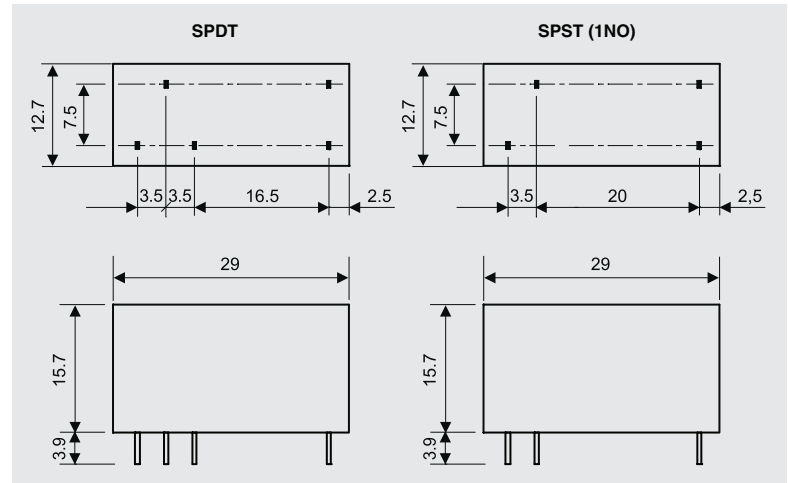


CONNECTION DIAGRAM



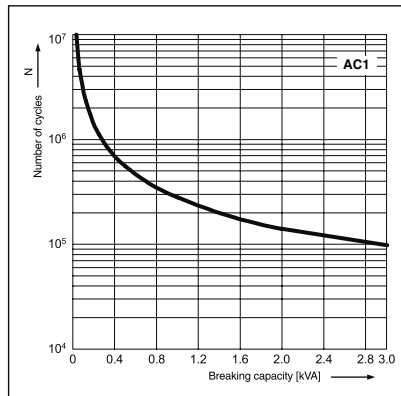
Terminal (pin)	A1(1); A2(2)	12(3); 11(4); 14(5)
[mm]	Ø 0.6	0.5 x 0.9
Drilling hole:		
• for relays	Ø 1.3 ± 0.1 mm	
• for sockets	Ø 1.5 ± 0.1 mm	

DIMENSIONS

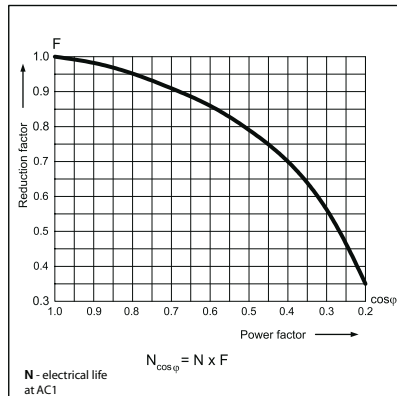


LOAD CHARTS

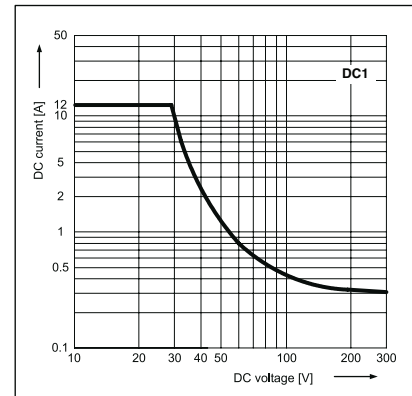
Electrical life at AC resistive load. Fig. 1.3
Switching frequency: 600 cycles/hour



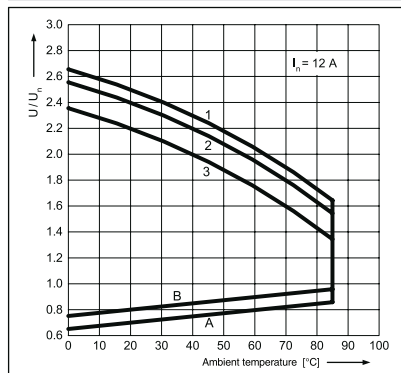
Electrical life reduction factor at AC inductive load Fig. 2.3



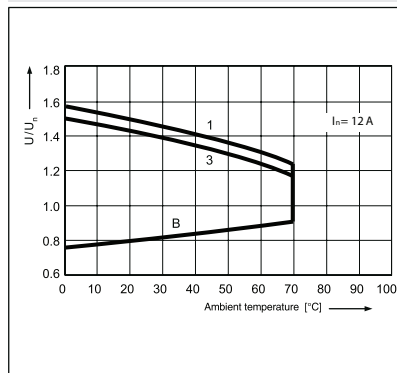
Max. DC resistive load breaking capacity Fig. 3.3
- standard version



Coil operating range - DC Fig. 4.3
- standard version



Coil operating range - AC 50 Hz Fig. 5.3



Description of Fig. 4.3 and 5.3

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

RM84 / RM85 / RM87

Miniature Electromagnetic Relays

R84 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)	max. (at 55°C)
▶ RM84-2012-35-1012	12	DC	360	8.4	30.6
▶ RM84-2012-35-1024	24	DC	1440	16.8	61.2
▶ RM84-2012-35-1110	110	DC	25200	77.0	280.0
▶ RM84-2012-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM84-2012-35-5230	230	AC 50/60Hz	38500	184.0	276.0

R84 DPST(2NO) 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)	max. (at 55°C)
▶ RM84-2022-35-1012	12	DC	360	8.4	30.6
▶ RM84-2022-35-1024	24	DC	1440	16.8	61.2
▶ RM84-2022-35-1110	110	DC	25200	77.0	280.0
▶ RM84-2022-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM84-2022-35-5230	230	AC 50/60Hz	38500	184.0	276.0

R85 SPDT 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)	max. (at 55°C)
▶ RM85-2011-35-1012	12	DC	360	8.4	30.6
▶ RM85-2011-35-1024	24	DC	1440	16.8	61.2
▶ RM85-2011-35-1110	110	DC	25200	77.0	280.0
▶ RM85-2011-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM85-2011-35-5230	230	AC 50/60Hz	38500	184.0	276.0

R85 SPST(1NO) 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)	max. (at 55°C)
▶ RM85-2021-35-1012	12	DC	360	8.4	30.6
▶ RM85-2021-35-1024	24	DC	1440	16.8	61.2
▶ RM85-2021-35-1110	110	DC	25200	77.0	280.0
▶ RM85-2021-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM85-2021-35-5230	230	AC 50/60Hz	38500	184.0	276.0

R87 SPDT 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)	max. (at 55°C)
▶ RM87N-2011-35-1012	12	DC	360	8.4	30.6
▶ RM87N-2011-35-1024	24	DC	1440	16.8	61.2
▶ RM87N-2011-35-1110	110	DC	25200	77.0	280.0
▶ RM87N-2011-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM87N-2011-35-5230	230	AC 50/60Hz	38500	184.0	276.0

R87 SPST(1NO) 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)	max. (at 55°C)
▶ RM87N-2021-35-1012	12	DC	360	8.4	30.6
▶ RM87N-2021-35-1024	24	DC	1440	16.8	61.2
▶ RM87N-2021-35-1110	110	DC	25200	77.0	280.0
▶ RM87N-2021-35-5120	120	AC 50/60Hz	10200	96.0	144.0
▶ RM87N-2021-35-5230	230	AC 50/60Hz	38500	184.0	276.0

* waterproof version

▶ **BOLD** - Regular stocked items.

RM84 / RM85 / RM87

Miniature Electromagnetic Relays - Plug-in Sockets and Accessories **Altech**®

GZT80 (for RM84 / RM85)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
75.3 x 15.5 x 61(67) mm*
Two poles, 5 mm pinout
12 A, 300 V AC

AL
E22891



GZT80



ZGGZ80 (see page 110)



GZT80-0040



GZM80-0041**

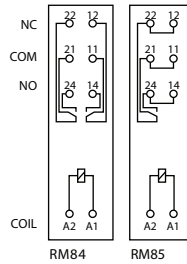


GZT80-0035

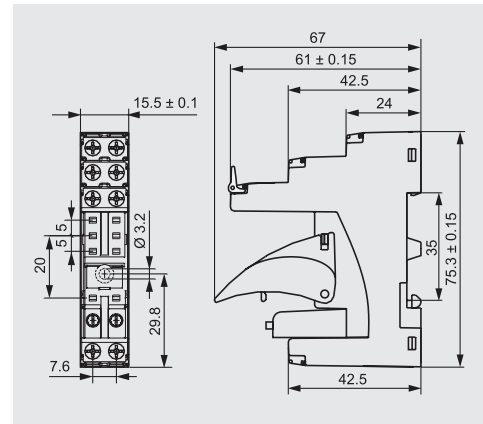


Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



GZM80 (for RM84 / RM85)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
78.1 x 15.9 x 61(66.5) mm*
Two poles, 5 mm pinout
12 A, 300 V AC

AL
E22891



GZM80



ZGGZ80 (see page 110)



GZT80-0040



GZM80-0041**

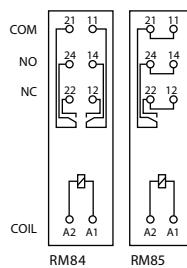


GZT80-0035

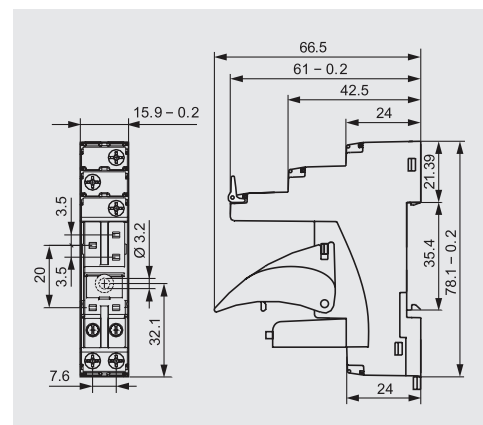


Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



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

All accessories are sold separately.

RM84 / RM85 / RM87

Miniature Electromagnetic Relays - Plug-in Sockets and Accessories

GZT92 (for RM87)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
75.3 x 15.5 x 61(67) mm*
One pole, 3,5 mm
12 A, 300 V AC



GZT92



ZGGZ80 (see page 110)



GZT80-0040



GZM80-0041**

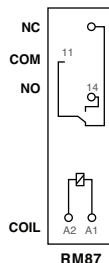


GZT80-0035

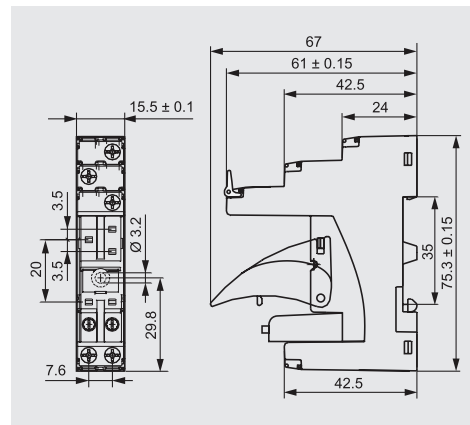


Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



GZM92 (for RM87)

Screw terminals
Max. tightening moment
for the terminal: 0.7 Nm
35 mm rail mount
acc. to PN-EN 60715
or on panel mounting
78.1 x 15.9 x 61(66.5) mm*
One pole, 3,5 mm pinout
12 A, 300 V AC



GZM92



ZGGZ80 (see page 110)



GZT80-0040



GZM80-0041**

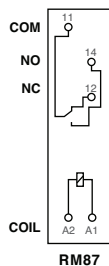


GZT80-0035

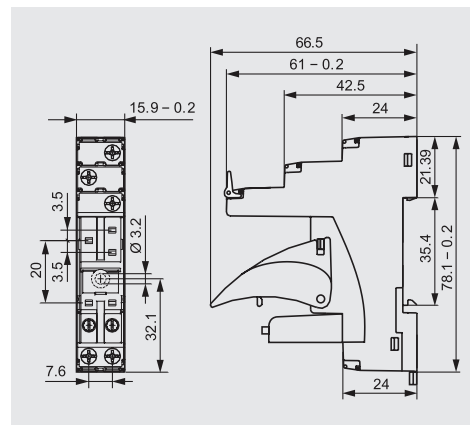


Module type M... (see page 113)

CONNECTION DIAGRAM



DIMENSIONS



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

All accessories are sold separately.

RSR30

Slimline Interface Relays



- Optically isolated
- Low on-state resistance
- Low input power consumption
- TTL and CMOS compatible
- RC networks (V AC)
- MOSFET output thyristor (V DC)

- Applications: household appliances, temperature control system, industrial automatic control, light system, office appliances, factory appliances
- Mounting: relays RSR30 are designed for direct PCB mounting, single in line package



AC Load - 2 A / 240 V

Input circuit

Part Number	Nominal voltage V DC	Control voltage range V DC	Max. control current mA	Release voltage V DC	Input resistance kΩ
▶ RSR30-D05-A1-24-020-1	5	3...10	12	1.0	0.32
▶ RSR30-D12-A1-24-020-1	12	7...20	10	1.0	1.07
▶ RSR30-D24-A1-24-020-1	24	18...32	7.7	1.0	3.0

Output circuit

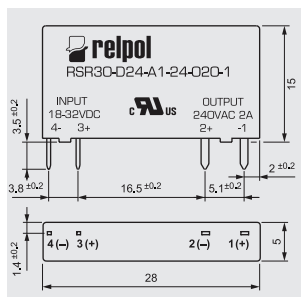
AC Load - 2 A / 240V

Nominal load current	1 A AC see Figure below
Max. load current	2 A AC see Figure below
Nominal load voltage	rest condition: 240 V AC
Load voltage range	12...280 V AC
Non-repetitive peak voltage	rest condition: 600 V AC
Non-repetitive surge current	operating state: 80 A
Max. off-state leakage current	rest condition: 1.5 mA
Max. on-state voltage drop	operating state: 1.2 V
Min. load current	operating state: 50 mA
Off-state dV/dt	max. allowable rate of voltage rise: 500 V/μs
Operating frequency range	47...400 Hz
RC snubber	10 nF, 100 Ω
Operation resistance	-
Peak power dissipation	-
Operating switching frequency	-
Transient voltage suppressor	-
Max voltage of suppressor operation	-

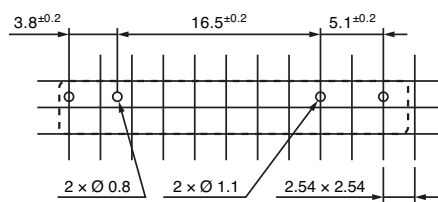
General data

Output circuit switching moment	R - instantaneous switching of the output circuit
Max. turn-on time	100 μs at rated voltage
Max. turn-off time	1/2 cycle + 1 ms at rated voltage
Insulation dielectric strength	between input and output: 4 000 V AC 1 minute
Dimensions (L x W x H)	28 x 5 x 15 mm
Weight	4 g
Storage temperature	-40...+100°C
Operating temperature	-20...+80 °C rated value: +55 °C see Figure below
Max. solder bath temperature	220 °C 10 s

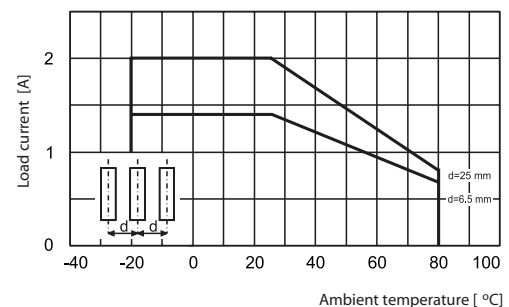
DIMENSIONS



PIN OUTS



Load current in the function of the ambient temperature and distances between relays



RSR30

Slimline Interface Relays

Altech®



- Optically isolated
- Low on-state resistance
- Low input power consumption
- TTL and CMOS compatible
- RC networks (V AC)
- MOSFET output thyristor (V DC)

- Applications: household appliances, temperature control system, industrial automatic control, light system, office appliances, factory appliances
- Mounting: relays RSR30 are designed for direct PCB mounting, single in line package



DC Load - 2,5 A / 48 V

Input circuit

Part Number	Nominal voltage V DC	Control voltage range V DC	Max. control current mA	Release voltage V DC	Input resistance kΩ
▶ RSR30-D05-D1-04-025-1	5	3...10	12	1.8	0.32
▶ RSR30-D12-D1-04-025-1	12	7...20	10	3.6	1.07
▶ RSR30-D24-D1-04-025-1	24	18...32	7.7	8.3	3.0
▶ RSR30-D48-D1-04-025-1	48	38...58	4.4	8.3	10.8

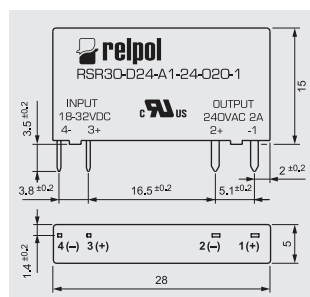
Output circuit

Nominal load current	1 A DC see Figure below
Max. load current	2.5 A DC see Figure below
Nominal load voltage	rest condition: 48 V DC
Load voltage range	0...60 V DC
Non-repetitive peak voltage	rest condition: 100 V DC
Non-repetitive surge current	operating state: 6 A
Max. off-state leakage current	rest condition: 1 mA
Max. on-state voltage drop	operating state: 0.4 V
Min. load current	operating state: 1 mA
Off-state dV/dt	-
Operating frequency range	-
RC snubber	-
Operation resistance	operating state: 160 mΩ at rated current
Peak power dissipation	600 W
Operating switching frequency	10 Hz
Transient voltage suppressor	Yes
Max voltage of suppressor operation	60 V DC

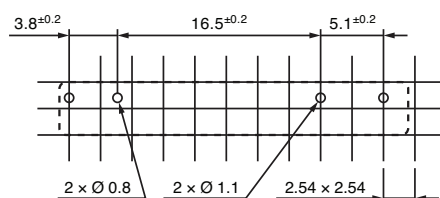
General data

Output circuit switching moment	R - instantaneous switching of the output circuit
Max. turn-on time	50 μs at rated voltage
Max. turn-off time	600 μs at rated voltage
Insulation dielectric strength	between input and output: 3 750 V AC 1 minute
Dimensions (L x W x H)	28 x 5 x 15 mm
Weight	4 g
Storage temperature	-25...+100°C
Operating temperature	-20...+80 °C rated value: +55 °C see Figure below
Max. solder bath temperature	220 °C 10 s

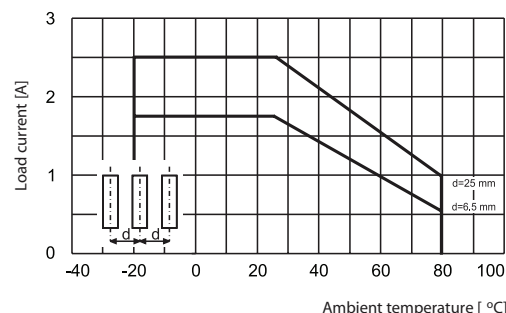
DIMENSIONS



PIN OUTS



Load current in the function of the ambient temperature and distances between relays



▶ **BOLD** - Regular stocked items.

RSR30

Slimline Interface Relays



PIR6W-1PS

- Optically isolated
- Low on-state resistance
- Low input power consumption
- TTL and CMOS compatible
- RC networks (V AC)
- MOSFET output thyristor (V DC)

- Applications: household appliances, temperature control system, industrial automatic control, light system, office appliances, factory appliances
- Mounting: relays RSR30 are designed for direct PCB mounting, single in line package



DC Load - 4 A / 24V Version

Input circuit

Part Number	Nominal voltage V DC	Control voltage range V DC	Max. control current mA	Release voltage V DC	Input resistance kΩ
▶ RSR30-D05-D1-02-040-1	5	3...10	12	1.8	0.32
▶ RSR30-D12-D1-02-040-1	12	7...20	10	3.6	1.07
▶ RSR30-D24-D1-02-040-1	24	18...32	7.7	8.3	3.0
▶ RSR30-D48-D1-02-040-1	48	38...58	4.4	8.3	10.8

Output circuit

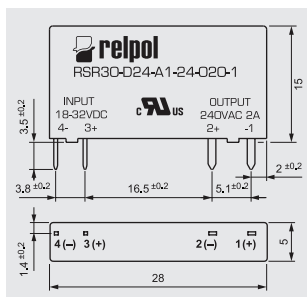
DC Load - 4 A / 24V

Nominal load current	2 A DC see Figure below
Max. load current	4 A DC see Figure below
Nominal load voltage	rest condition: 24 V DC
Load voltage range	0...32 V DC
Non-repetitive peak voltage	rest condition: 60 V DC
Non-repetitive surge current	operating state: 6 A
Max. off-state leakage current	rest condition: 1 mA
Max. on-state voltage drop	operating state: 0.24 V
Min. load current	operating state: 1 mA
Off-state dV/dt	-
Operating frequency range	-
RC snubber	-
Operation resistance	operating state: 120 mΩ
Peak power dissipation	600 W
Operating switching frequency	10 Hz
Transient voltage suppressor	Yes
Max voltage of suppressor operation	36 V DC

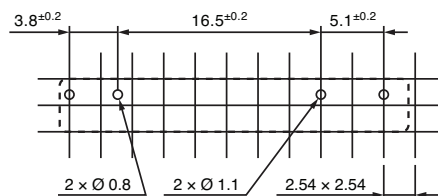
General data

Output circuit switching moment	R - instantaneous switching of the output circuit
Max. turn-on time	50 μs at rated voltage
Max. turn-off time	600 μs at rated voltage
Insulation dielectric strength	between input and output: 3 750 V AC 1 minute
Dimensions (L x W x H)	28 x 5 x 15 mm
Weight	4 g
Storage temperature	-25...+100 °C
Operating temperature	-20...+80 °C rated value: +55 °C see Figure below
Max. solder bath temperature	220 °C 10 s

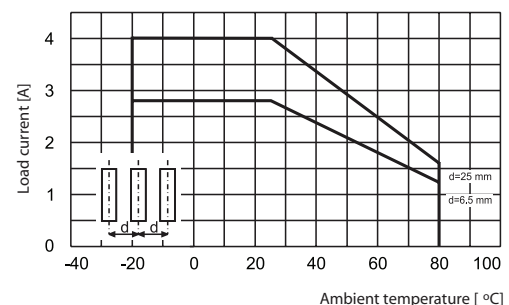
DIMENSIONS



PIN OUTS



Load current in the function of the ambient temperature and distances between relays



▶ **BOLD** - Regular stocked items.

RSR30

Slimline Interface Relays

Altech®



PIR6W-1PS

- Optically isolated
- Low on-state resistance
- Low input power consumption
- TTL and CMOS compatible
- RC networks (V AC)
- MOSFET output thyristor (V DC)

- Applications: household appliances, temperature control system, industrial automatic control, light system, office appliances, factory appliances
- Mounting: relays RSR30 are designed for direct PCB mounting, single in line package



DC Load - 1 A / 100V Version

Input circuit

Part Number	Nominal voltage V DC	Control voltage range V DC	Max. control current mA	Release voltage V DC	Input resistance kΩ
▶ RSR30-D05-D1-24-010-1	5	3...10	12	1.8	0.32
▶ RSR30-D12-D1-24-010-1	12	7...20	10	3.6	1.07
▶ RSR30-D24-D1-24-010-1	24	18...32	7.7	8.3	3.0
▶ RSR30-D48-D1-24-010-1	48	38...58	4.4	8.3	10.8

Output circuit

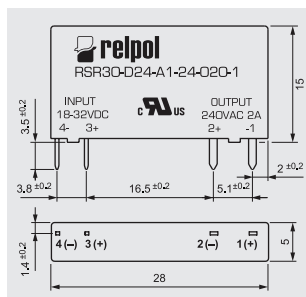
DC Load - 1 A / 100V

Nominal load current	0.4 A DC see Figure below
Max. load current	1 A DC see Figure below
Nominal load voltage	rest condition: 100 V DC
Load voltage range	0...180 V DC
Non-repetitive peak voltage	rest condition: 180 V DC
Non-repetitive surge current	operating state: 6 A
Max. off-state leakage current	rest condition: 1 mA
Max. on-state voltage drop	operating state: 0.6 V
Min. load current	operating state: 1 mA
Off-state dV/dt	-
Operating frequency range	-
RC snubber	-
Operation resistance	operating state: 1.5 Ω maximum value
Peak power dissipation	600 W
Operating switching frequency	10 Hz
Transient voltage suppressor	Yes
Max voltage of suppressor operation	180 V DC

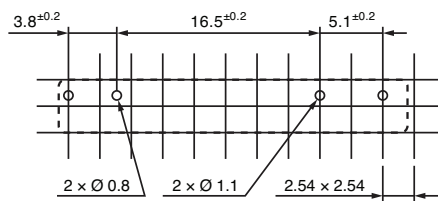
General data

Output circuit switching moment	R - instantaneous switching of the output circuit
Max. turn-on time	50 μs at rated voltage
Max. turn-off time	600 μs at rated voltage
Insulation dielectric strength	between input and output: 2 500 V AC 1 minute
Dimensions (L x W x H)	28 x 5 x 15 mm
Weight	4 g
Storage temperature	-25...+100 °C
Operating temperature	-20...+80 °C rated value: +55 °C see Figure below
Max. solder bath temperature	220 °C 10 s

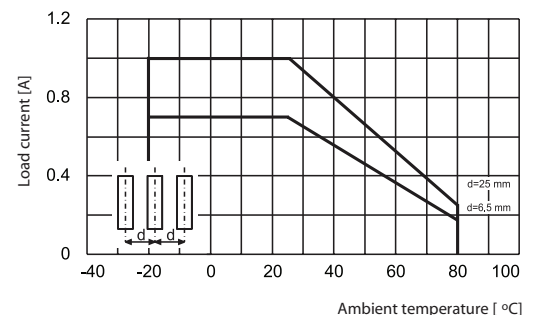
DIMENSIONS



PIN OUTS



Load current in the function of the ambient temperature and distances between relays



▶ **BOLD** - Regular stocked items.

RM699B

Slimline Interface Relays



RM699B
for PCB mounting
or plug-in sockets

- Cover width only 5,0 mm
- Sealed for soldering and cleaning
- Applications: for PLC's, industrial machinery, time relays, counters, temperature adjusters, measurement instruments, office equipment, etc.



RM699B SPDT DC coil / 6A rated current

Part Number	Coil Voltage DC	Coil Type	Coil Resistance at 20°C in Ω	Coil Operating Range	
				min. (at 20°C)	max. (at 55°C)
▶ RM699BV-3011-85-1005	5	DC	147	3.75	7.5
▶ RM699BV-3011-85-1012	12	DC	848	9.0	18.0
▶ RM699BV-3011-85-1024	24	DC	3390	18.0	36.0
▶ RM699BV-3011-85-1048	48	DC	10600	36.0	72.0
▶ RM699BV-3011-85-1060	60	DC	20500	45.0	90.0

RM699B SPDT gold plated contacts DC coil / 0.05A rated current

Part Number	Coil Voltage DC	Coil Type	Coil Resistance at 20°C in Ω	Coil Operating Range	
				min. (at 20°C)	max. (at 55°C)
RM699BV-3211-85-1005	5	DC	147	3.75	7.5
RM699BV-3211-85-1012	12	DC	848	9.0	18.0
RM699BV-3211-85-1024	24	DC	3390	18.0	36.0
RM699BV-3211-85-1048	48	DC	10600	36.0	72.0
RM699BV-3211-85-1060	60	DC	20500	45.0	90.0

Contact Data

Number and type of contacts		RM699B	
		SPDT	SPDT
		AgSnO ₂	AgSnO ₂ / Au 3 μ m
Contact material		400 V AC / 250 V DC	30V AC / 36 V DC
Max. switching voltage		10 V	5V
Min. switching voltage		6 A / 250 V AC	0.05 A / 30V AC
Rated load		6 A / 24 V DC; 0.15 A / 250 V DC	0.05 A / 36 V DC
Min. switching current		100 mA	10mA
Max. inrush current		10 A 20 ms	0.1 A 20 ms
Rated current		6A	0.05 A
Max. breaking capacity		1500 VA	1.2 VA
Min. breaking capacity		1 W	0.05 W
Contact resistance		$\leq 100 \text{ m}\Omega$ 100 mA. 24 V	$\leq 30 \text{ m}\Omega$ 10 mA. 5 V
Max. operating frequency			
• at rated load		360 cycles/hour	360 cycles/hour
• no load		72000 cycles/hour	72000 cycles/hour

Coil Data

Rated voltage	DC	5 ... 60 V
Must release voltage		DC: $\geq 0.05 U_n$
Operating range of supply voltage		see table above
Rated power consumption	DC	0.17 W 5 ... 24 V; 0.217 W 48. 60 V

Insulation

Insulation rated voltage	250 V AC
Overvoltage category	III
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	$\geq 6 \text{ mm}$
• creepage	$\geq 8 \text{ mm}$

General data

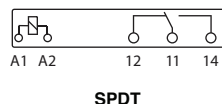
Operating / release time (typical values)	8 ms / 4 ms
Electrical life (number of cycles)	
• resistive AC1	the SPST (1 NO) and SPST (1 NC) contact loaded (bilateral load): see Fig. 1 the SPST (1 NO) contact loaded: $> 3 \times 10^4$; 6 A. 250 V AC
Mechanical life (cycles)	$> 10^7$
Dimensions (L x W x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

RM699B

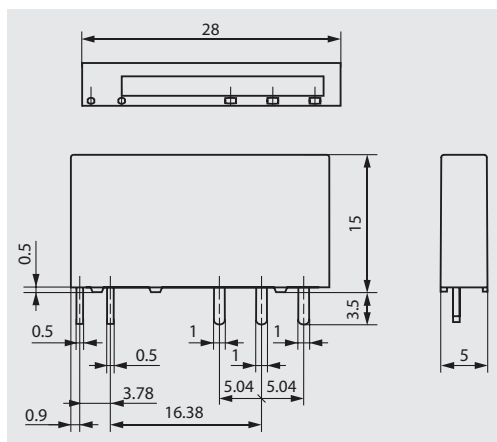
Slimline Interface Relays



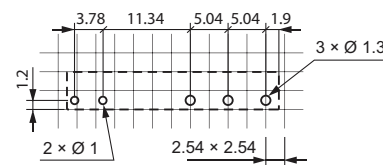
CONNECTION DIAGRAMS



DIMENSIONS



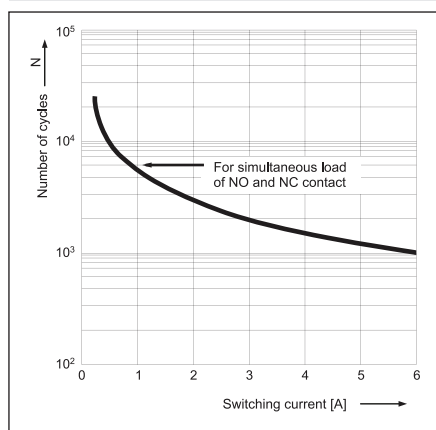
PIN OUTS



LOAD CHARTS

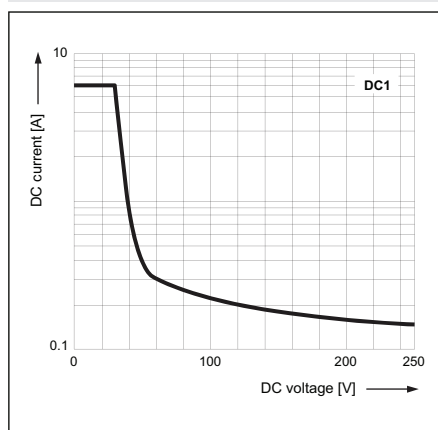
Electrical life at AC resistive current.
Switching frequency: 360 cycles/hour

Fig. 1



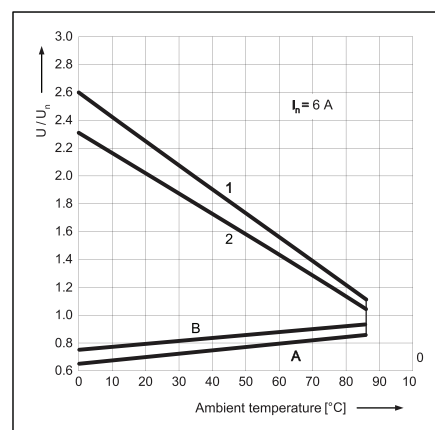
Max. DC resistive load breaking capacity

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

Socket Ordering Codes

Part Number Screw Clamp Terminals	Part Number Spring Clamp Terminals	Rated input voltage U_n	Power of input circuit
PI6W-1PS-6VDC	PI6WB-1PS-6VDC	5 VDC	0.3 W
PI6W-1PS-12/24VDC	PI6WB-1PS-12/24VDC	12/24 VDC	0.2 W
PI6W-1PS-36VDC	PI6WB-1PS-36VDC	36 VDC	0.3 W
PI6W-1PS-48VDC	PI6WB-1PS-48VDC	48 VDC	0.4 W
PI6W-1PS-60VDC	PI6WB-1PS-60VDC	60 VDC	0.5 W
PI6W-1PS-24VAC/DC	PI6WB-1PS-24VAC/DC	24 VAC/DC	0.5VA / 0.4W
PI6W-1PS-42VAC/DC	PI6WB-1PS-42VAC/DC	42 VAC/DC	0.5VA / 0.4W
PI6W-1PS-115VAC/DC	PI6WB-1PS-115VAC/DC	115 VAC/DC	1.2VA / 1.2W
PI6W-1PS-230VAC/DC	PI6WB-1PS-230VAC/DC	230 VAC/DC	1.2VA / 1.2W

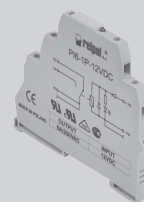


For relay socket combinations see pages 96-97 (screw clamp terminals) and pages 100-101 (spring clamp terminals).

PI6-1P / PI6-1T / PI6-OC

Subminiature Electromagnetic and Solid State Modules

- Width 6,2 mm
- Interface relays PI6-1P - with SPDT contact output / PI6-1T with triac output
- 35 mm rail mount
- Maybe linked with interconnection strip type ZG20
- Equipped in green LED



PI6-1P*

PI6-1T

PI6-OC

Contact data

Number and type of contacts	SPDT	SPST(1N0)	SPST(1N0)
Contact material	AgSnO ₂		
Max. switching voltage	400 V AC / 250 V DC	400 V / 440 V	70 V / 70 V
Min. switching voltage	10 V	20 V	5 V
Rated load	6 A / 250 V AC 6 A / 24 V DC; 0.15 A / 250 V DC	1.2 A / 400 V AC	0.5 A / 250 V DC
Min. switching current	100 mA	10 mA	10 mA
Max. inrush current	10 A 20 ms		
Max. non-repeat surge current		30 A ² t=20 ms	
Rated current	6 A	1.2 A	1.5 A
Max. breaking capacity	1500 VA		
Min. breaking capacity	1 W		
Contact resistance	≤ 100 mΩ 100 mA. 24 V		
I ² t for fusing		5.1 A ² s t=1-10 ms	
dI/dt		50 A/μs	
dV/dt		40 V/μs	
Max. operating frequency			
• at rated load	AC1		
• no load			

Input circuit

Rated voltage	DC AC: 50/60 Hz AC/DC	12 ... 36 V 24 ... 230 V	5...32 V 24 ... 230 V	5...32 V 24 ... 230 V
Turn-off voltage			AC: ≥ 0.2 U _N ; DC: ≥ 0.1 U _N	AC : ≥ 0.2 U _N ; DC: ≥ 0.1 U _N
Must release voltage		AC: ≥ 0.2 U _N ; DC: ≥ 0.1 U _N		
Operating range of supply voltage		see page 91		
Must operate voltage		AC and DC: ≤ 0.8 U _N		
Rated power consumption	DC AC/DC AC/DC	0.3 ... 0.7 W 0.3 ... 1.6 VA / 0.3 ... 1.6 W	0.3 W; 5...32 V DC at 24 V 0.3 VA / 0.3 W; 24 V AC/DC 1.6 VA / 1.6 W; 230 V AC/DC	0.3 W; 5...32 V DC at 24 V 0.3 VA / 0.3 W; 24 V AC/DC 1.0 VA / 1.0 W; 230 V AC/DC

Insulation

Insulation rated voltage	400 V AC	600 V AC	600 V AC
Rated surge voltage	4 000 V 1.2 / 50 μs		
Overvoltage category	III		
Insulation pollution degree	3	2	2
Dielectric strength			
• input - output	4000 V AC 50/60 Hz. 1 min.. type of insulation: reinforced	4000 V AC 50/60 Hz. 1 min.. type of insulation: reinforced	3000 V AC 50/60 Hz. 1 min.. type of insulation: reinforced
• input - output	6000 V 1.2 / 50 μs		
• mass - input. output	2500 V AC 50/60 Hz. 1 min.		
• contact clearance	1000 V AC 50/60 Hz. 1 min.. type of clearance: micro-disconnection		
Input - output distance			
• clearance / creepage	≥ 6 mm / ≥ 8 mm		

General data

Operating time (typical value)	AC: 7 ms; DC: 6 ms	10 ms max. (zero turn-on)	
Release time (typical value)	AC: 15 ms; DC: 10 ms	10 ms max.	
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		
Max. switching frequency			10 kHz 5...32 V DC (for load up to 24 V DC: 15 kHz)
Dimensions (L x W x H)	93.8 x 6.2 x 80 mm	93.8 x 6.2 x 80 mm	93.8 x 6.2 x 80 mm
Weight	40 g	40 g	40g
Ambient temperature			
• storage	-40...+70 °C	-40...+70 °C	-40...+70 °C
• operating	AC: -40...+55 °C; DC (12. 24 V): -40...+60 °C	-40...+55 °C	-40...+55 °C
Protection category	IP 20 PN-EN 60529	IP 20 PN-EN 60529	IP 20 PN-EN 60529
Environmental protection	RTI PN-EN 116000-3	RTI PN-EN 116000-3	RTI PN-EN 116000-3

* UL Recognized

PI6-1P / PI6-1T / PI6-OC

Subminiature Electromagnetic and Solid State Modules

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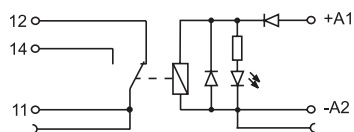


PI6-1P

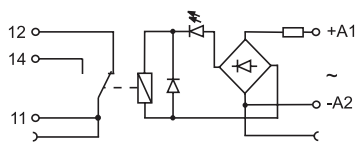


CONNECTION DIAGRAMS

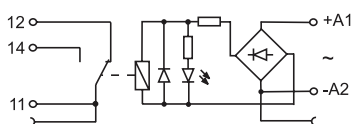
PI6-1P-12VDC, PI6-1P-12VDC-01
PI6-1P-24VDC, PI6-1P-24VDC-01
PI6-1P-36VDC, PI6-1P-36VDC-01



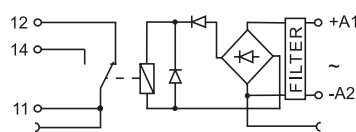
PI6-1P-115VAC/DC
PI6-1P-230VAC/DC, PI6-1P-230VAC/DC-01



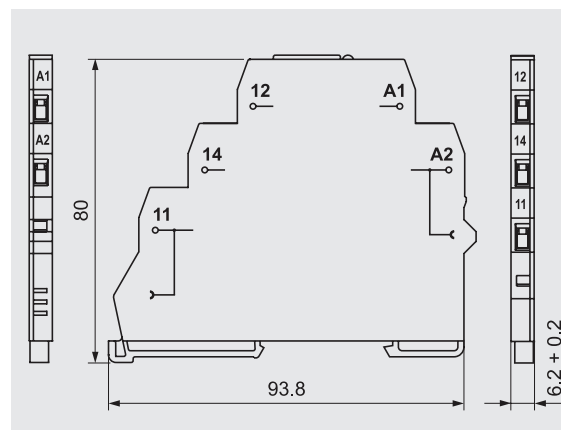
PI6-1P-24VAC/DC, PI6-1P-24VAC/DC-01
PI6-1P-42VAC/DC



PI6-1P-230VAC/DC-10



DIMENSIONS



PI6-1P SPDT AC 50/60Hz & DC coil

Part Number	Rated input voltage Un	Power of input circuit	Input voltage range in V	
			min. (at 20°C)	max. (at 55°C)
PI6-1P-12VDC	12 V DC	0.3 W	9.6	14.1
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

► BOLD - Regular stocked items.

PI6-1P / PI6-1T / PI6-OC

Subminiature Electromagnetic and Solid State Modules

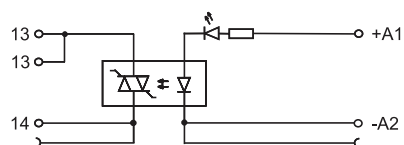


PI6-1T

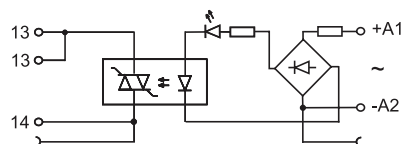


CONNECTION DIAGRAMS

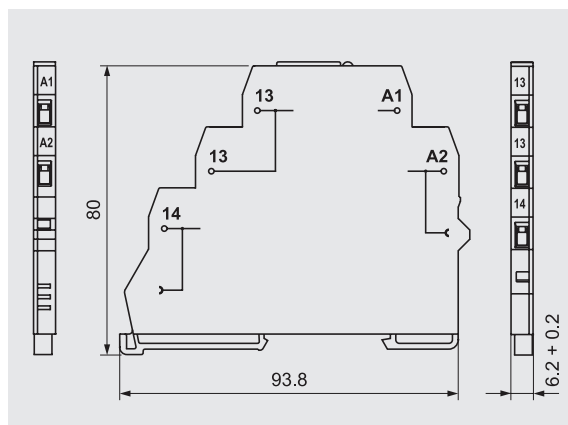
PI6-1T-5...32VDC



**PI6-1T-24VAC/DC
PI6-1T-230VAC/DC**



DIMENSIONS



PI6-1T SPST(1NO) AC 50/60Hz & DC coil

Part Number	Rated input voltage Un	Power of input circuit
► PI6-1T-5...32VDC	5...32 V DC	0.3 W at 24V
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

► **BOLD** - Regular stocked items.

PI6-1P / PI6-1T / PI6-OC

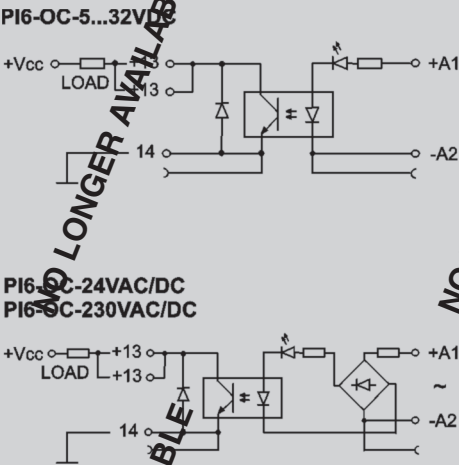
Subminiature Electromagnetic and Solid State Modules



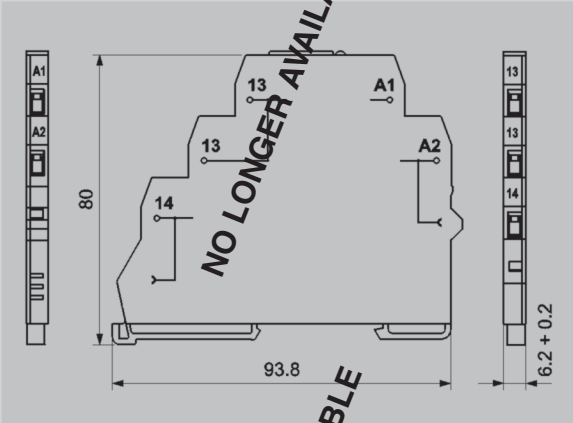
PI6-OC



CONNECTION DIAGRAMS



DIMENSIONS



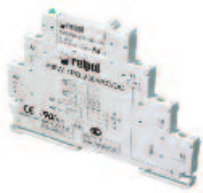
PI6-OC SPST(1NO) AC 50/60Hz & DC coil

Part Number	Rated input Voltage Un	Power of input circuit
► PI6-OC-5...32VDC	5...32 V DC	0.3 W at 24V
PI6-OC-24VAC/DC	24 V AC/DC	0.3 VA / 0.3 W
PI6-OC-230VAC/DC	230 V AC/DC	1.0 VA / 1.0 W

► BOLD - Regular stocked items.

PIR6W-1PS

Subminiature Electromagnetic and Solid State Modules



- Screw Clamp Terminals
- Electronic **screw** terminals socket (PI6W-1PS)
- Electromagnetic relay (RM699BV) or solid state relay (RSR30)
- Width 6.2 mm
- Equipped with green LED



PIR6W-1PS

Electromagnetic Relay (RM699BV) contact information

Number and type of contacts (code of output)	SPDT (R)	SPDT (R-01)
Contact material	AgSnO ₂	AgSnO ₂ / Au3μm
Max. switching voltage	400 V AC / 250 V DC	30 V AC / 36 V DC
Min. switching voltage	10 V	5 V
Rated load	6 A / 250 V AC	0.05 A / 30 V AC
	6 A / 24 V DC; 0.15 A / 250 V DC	0.05 A / 36 V DC
Min. switching current	100 mA	10 mA
Max. inrush current	10 A 20 ms	0.1 A 20 ms
Rated current	6A	0.05A
Max. / Min. breaking capacity	1500 VA / 1 W	1.2 VA / 0.05 W
Contact resistance	≤ 100 mΩ 100 mA 24 V	≤ 30 mΩ 10 mA 5 V
Max. operating frequency	360 cycles/hour	360 cycles/hour
• at rated load	72 000 cycles/hour	72 000 cycles/hour
• no load		

Solid State (RSR30) output information

Type of output (code of output)	Triac (T) max. 2 A	Transistor (C) max. 1 A	Transistor (O) max. 2 A
Number and type of outputs	SPST (1 NO)	SPST (1 NO)	SPST (1 NO)
Rated voltage	240 V AC	48 V DC	24 V DC
Max. / Min. output voltage	280 V AC / 12 V AC	60 V DC / 1.5 V DC	32 V DC / 1.5 V DC
Rated continuous output current	1A	1A	2A
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	DC	6 ... 60 V
AC: 50/60 Hz AC/DC		24 ... 230 V
Must release voltage		AC: ≥ 0.2 U _N ; 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		≤ 0.8 U _N ; ≤ 0.85 U _N 6 V DC
Rated power consumption	DC	0.2 ... 0.5 W
AC/DC		0.5 ... 1.2 VA / 0.4 ... 1.2 W

Insulation

Insulation rated voltage	250 V AC
Rated surge voltage	4000 V 1.2 / 50 μs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength: input - output	4000 V AC 50/60 Hz. 1 min.. type of insulation: reinforced
Dielectric strength: input - output	6000 V 1.2 / 50 μs
Dielectric strength: mass - input. output	2500 V AC 50/60 Hz. 1 min.
Dielectric strength: contact clearance	1000 V AC 50/60 Hz. 1 min.. output R and R-01
Input - output distance: clearance / creepage	≥ 6 mm / ≥ 8 mm
Mass - input. output distance: clearance / creepage	≥ 3 mm / ≥ 3.6 mm

General data

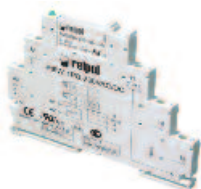
Operating time (typical value)	PIR6W-1PS-...-R/-R01: DC: 8 ms AC/DC: 20 ms
	PIR6W-1PS-...-T: DC: 100 μs AC/DC: 10 ms
	PIR6W-1PS-...-C/-O: DC: 50 μs AC/DC: 10 ms
Release time (typical value)	PIR6W-1PS-...-R/-R01: DC: 10 ms AC/DC: 25 ms
	PIR6W-1PS-...-T: DC: 1/2 cycle + 1 ms AC/DC: 30 ms
	PIR6W-1PS-...-C/-O: DC: 600 μs 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
Ambient temperature: operating	PIR6W-1PS-...-R/-R01: -40...+55 °C ...-T/-C/-O: -20...+55 °C
	PIR6W-1PS-230VAC/DC-R: -40...+50 °C ...-C/-O: -20...+50 °C
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

T - triac; C - transistor; O - transistor.

PIR6W-1PS

Subminiature Electromagnetic and Solid State Modules

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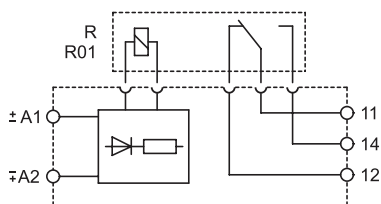


PIR6W-1PS

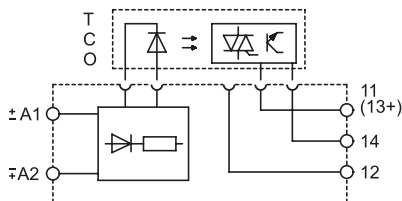


CONNECTION DIAGRAMS

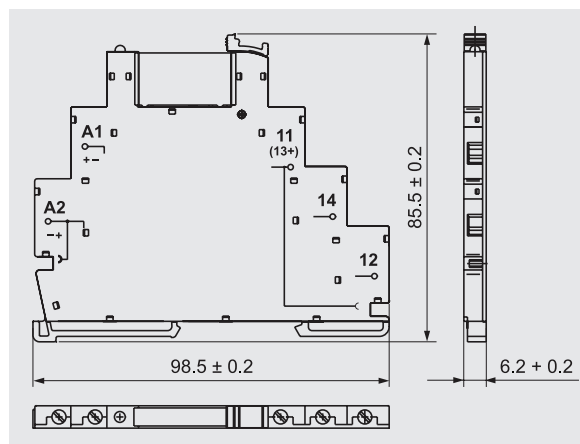
PIR6W-1PS-...-R, PIR6W-1PS-...-R01



PIR6W-1PS-...-T, PIR6W-1PS-...-C, PIR6W-1PS-...-O



DIMENSIONS



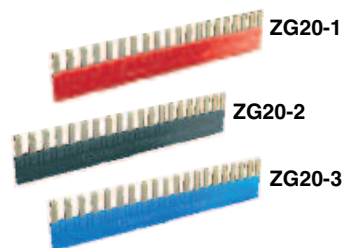
PI6W-1P-...



RM699BV



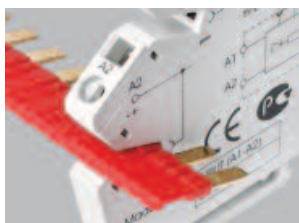
RSR30



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.

All accessories are sold separately.

PIR6W-1PS

Subminiature Electromagnetic and Solid State Modules

Electromagnetic Relays

Featuring **Electromagnetic relay RM699BV / 6A; 250VAC / 24VDC**

Part Number	Rated input voltage U_N	Power of input circuit	Socket code	*Operational relay code	Rated voltage of operational relay U_S
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	230 V AC/DC	1.2 VA / 1.2 W	PI6W-1PS-230VAC/DC	RM699BV-3011-85-1048	48 V DC

Electromagnetic relay RM699BV / 6A; 250VAC / 24VDC universal input

Part Number	Rated input voltage U_N	Power of input circuit	Socket code	*Operational relay code	Rated voltage of operational relay U_S
► PIR6W-1P-12U	12 V DC	0.3 W	PI6W-1P-12VDC	RM699BV-3011-85-1012	12 V DC
► PIR6W-1P-24U	24 V AC/DC	0.3 VA / 0.3 W	PI6W-1P-24VAC/DC	RM699BV-3011-85-1024	24 V DC
► PIR6W-1P-115U	115 V AC/DC	0.9 VA / 0.9 W	PI6W-1P-115VAC/DC	RM699BV-3011-85-1024	24 V DC
► PIR6W-1P-230V AC/DC	230 V AC/DC	0.8 VA / 0.8 W	PI6W-1P-230VAC/DC	RM699BV-3011-85-1060	60 V DC

Featuring **Electromagnetic relay RM699BV / 0.05A; 30VAC / 36VDC. gold plated contacts**

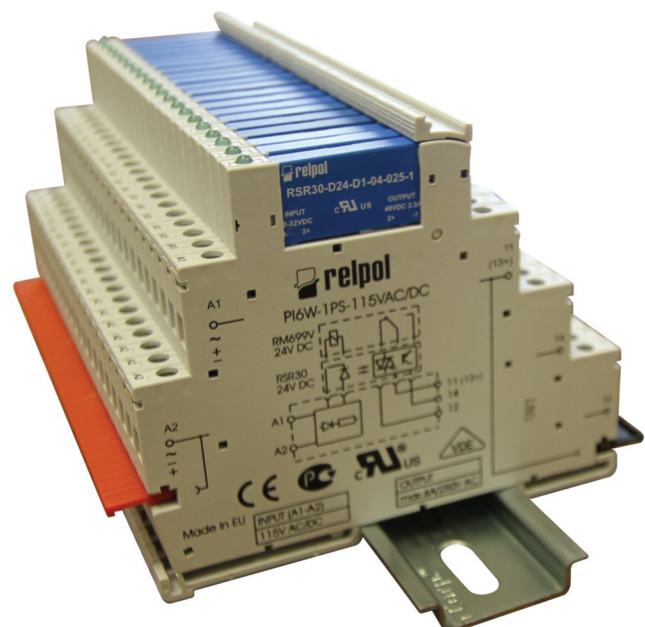
Part Number	Rated input voltage U_N	Power of input circuit	Socket code	*Operational relay code	Rated voltage of operational relay U_S
PIR6W-1PS-6VDC-R01	6 V DC	0.3 W	PI6W-1PS-6VDC	RM699BV-3011-85-1005	5 V DC
PIR6W-1PS-12VDC-R01	12 V DC	0.2 W	PI6W-1PS-12/24VDC	RM699BV-3011-85-1012	12 V DC
PIR6W-1PS-24VDC-R01	24 V DC	0.3 W	PI6W-1PS-12/24VDC	RM699BV-3011-85-1024	24 V DC
PIR6W-1PS-36VDC-R01	36 V DC	0.3 W	PI6W-1PS-36VDC	RM699BV-3011-85-1024	24 V DC
PIR6W-1PS-48VDC-R01	48 V DC	0.4 W	PI6W-1PS-48VDC	RM699BV-3011-85-1024	24 V DC
PIR6W-1PS-60VDC-R01	60 V DC	0.5 W	PI6W-1PS-60VDC	RM699BV-3011-85-1024	24 V DC
► PIR6W-1PS-24VAC/DC-R01	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-R01	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-R01	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-R01	230 V AC/DC	1.2 VA / 1.2 W	PI6W-1PS-230VAC/DC	RM699BV-3011-85-1048	48 V DC

* It should be noted that the rated input voltage of the operational relay (U_S) is not always the same as the rated input voltage of the relay and socket combination (U_N) (This is important when ordering operational relays for sockets).

Altech Custom Assemblies

Altech provides quick turnaround and competitive prices on assemblies.

For complete assemblies contact Altech.



► **BOLD** - Regular stocked items.

Solid State Relays

Featuring Solid State Triac (T) relay RSR30 / 2A; 240VAC output

Part Number	Rated input voltage U_N	Power of input circuit	Socket code	Operational relay code	Rated voltage of operational relay U_S
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

Featuring Solid State Transistor (C) relay RSR30 / 1A; 48VDC output

Part Number	Rated input voltage U_N	Power of input circuit	Socket code	Operational relay code	Rated voltage of operational relay U_S
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	230 V AC/DC	1.0 VA / 1.0 W	PI6W-1PS-230VAC/DC	RSR30-D48-D1-04-025-1	48 V DC

Featuring Solid State Transistor (O) relay RSR30 / 2A; 24VDC output

Part Number	Rated input voltage U_N	Power of input circuit	Socket code	Operational relay code	Rated voltage of operational relay U_S
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	230 V AC/DC	1.0 VA / 1.0 W	PI6W-1PS-230VAC/DC	RSR30-D48-D1-02-040-1	48 V DC

It should be noted that the rated input voltage of the operational relay (U_S) is not always the same as the rated input voltage of the relay and socket combination (U_N) (This is important when ordering operational relays for sockets).

► **BOLD** - Regular stocked items.

PIR6WB-1PS

Subminiature Electromagnetic and Solid State Modules



- Spring Clamp Terminals
- Electronic **spring** terminals socket (PI6W-1PS)
- Electromagnetic relay (RM699BV) or solid state relay (RSR30)
- Width 6.2 mm
- Equipped with green LED



PIR6WB-1PS

Electromagnetic Relay (RM699BV) contact information

Number and type of contacts (code of output)		SPDT (R)	SPDT (R-01)
Contact material		AgSnO ₂	AgSnO ₂ / Au3μm
Max. switching voltage		400 V AC / 250 V DC	30 V AC / 36 V DC
Min. switching voltage AC / DC		10 V	5 V
Rated load AC1		6 A / 250 V AC	0.05 A / 30 V AC
DC1		6 A / 24 V DC; 0.15 A / 250 V DC	0.05 A / 36 V DC
Min. switching current		100 mA	10 mA
Max. inrush current		10 A 20 ms	0.1 A 20 ms
Rated current		6A	0.05A
Max. / Min. breaking capacity AC1		1500 VA / 1 W	1.2 VA / 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	360 cycles/hour
• no load		72 000 cycles/hour	72 000 cycles/hour

Solid State (RSR30) output information

Type of output (code of output)	Triac (T) max. 2 A	Transistor (C) max. 1 A	Transistor (O) max. 2 A
Number and type of outputs	SPST (1 NO)	SPST (1 NO)	SPST (1 NO)
Rated voltage	240 V AC	48 V DC	24 V DC
Max./ Min. output voltage	280 V AC / 12 V AC	60 V DC / 1,5 V DC	32 V DC / 1,5 V DC
Rated continuous output current	1A	1A	2A
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	DC	6 ... 60 V
	AC: 50/60 Hz AC/DC	24 ... 230 V
Must release voltage		AC: ≥ 0.2 U _n ; 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		≤ 0.8 U _n ; ≤ 0.85 U _n 6 V DC
Rated power consumption	DC	0.2 ... 0.5 W
	AC/DC	0.5 ... 1.2 VA / 0.4 ... 1.2 W

Insulation

Insulation rated voltage	250 V AC
Rated surge voltage	4000 V 1.2 / 50 μs
Overvoltage category	III
Insulation pollution degree	3
Dielectric strength: input - output	4000 V AC 50/60 Hz. 1 min.. type of insulation: reinforced
Dielectric strength: input - output	6000 V 1.2 / 50 μs
Dielectric strength: contact clearance	1000 V AC 50/60 Hz. 1 min.. output R and R-01
Input - output distance: clearance / creepage	≥ 6 mm / ≥ 8 mm

General data

Operating time (typical value)	PIR6W-1PS-...-R/-R01:	DC: 8 ms	AC/DC: 20 ms
	PIR6W-1PS-...-T:	DC: 100 μs	AC/DC: 10 ms
	PIR6W-1PS-...-C/-O:	DC: 50 μs	AC/DC: 10 ms
Release time (typical value)	PIR6W-1PS-...-R/-R01:	DC: 10 ms	AC/DC: 25 ms
	PIR6W-1PS-...-T:	DC: 1/2 cycle + 1 ms	AC/DC: 30 ms
	PIR6W-1PS-...-C/-O:	DC: 600 μs	AC/DC: 20 ms
Electrical life (resistive AC1)	PIR6W-1PS-...-R:	> 0.5 x 10 ⁶	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 84.6 mm	
Weight		55 g	
Ambient temperature: storage	PIR6W-1PS-...-R/-R01-T:	-40...+70 °C	...-C/-O: -25...+70 °C
Ambient temperature: operating	PIR6W-1PS-...-R/-R01:	-40...+55 °C	...-T/-C/-O: -20...+55 °C
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	

T - triac; C - transistor; O - transistor.

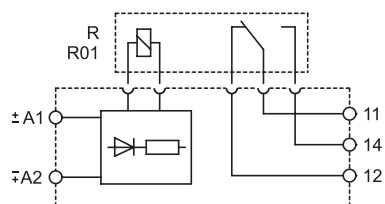
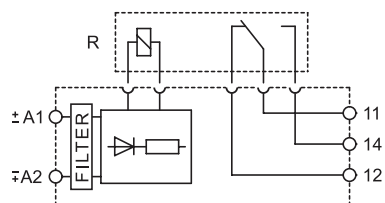


PIR6WB-1PS

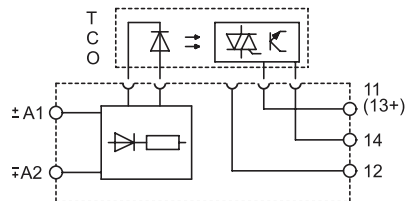


CONNECTION DIAGRAMS

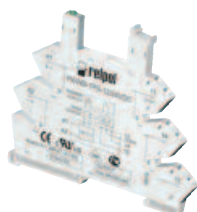
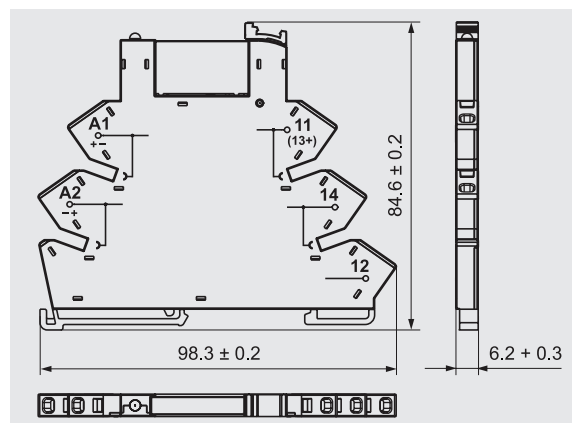
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**PIR6WB-1P-230VAC/DC-10**

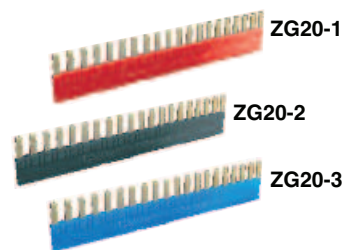
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DIMENSIONS



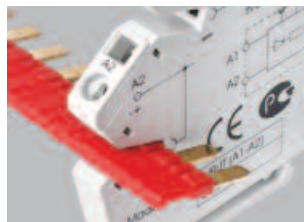
PI6WB-1PS-...

**RM699BV****RSR30**

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.

All accessories are sold separately.

PIR6WB-1PS

Subminiature Electromagnetic and Solid State Modules

Electromagnetic Relays

Featuring Electromagnetic relay RM699BV / 6A; 250VAC / 24VDC

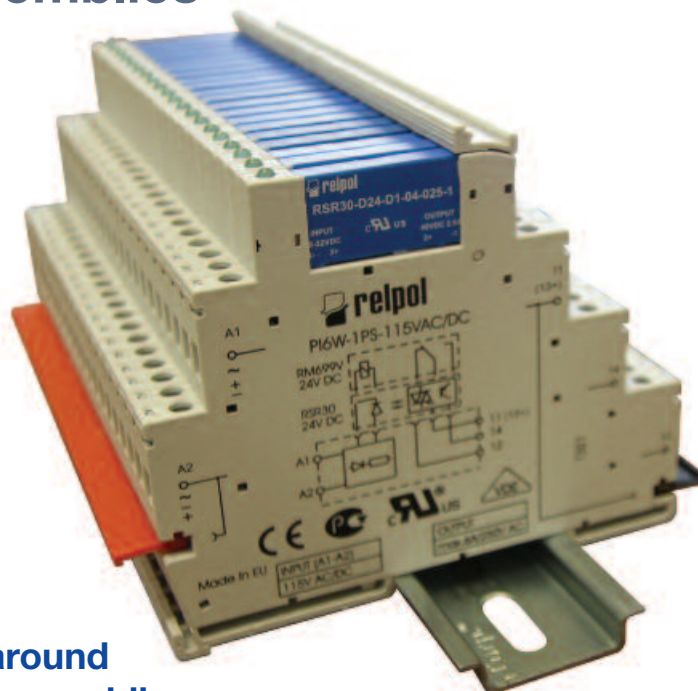
Part Number	Rated input voltage U_N	Power of input circuit	Socket code	Operational relay code	Rated voltage of operational relay U_S
PIR6WB-1PS-6VDC-R	6 V DC	0.3 W	PI6WB-1PS-6VDC	RM699BV-3011-85-1005	5 V DC
PIR6WB-1PS-12VDC-R	12 V DC	0.2 W	PI6WB-1PS-12/24VDC	RM699BV-3011-85-1012	12 V DC
► PIR6WB-1PS-24VDC-R	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	230 V AC/DC	1.2 VA / 1.2 W	PI6WB-1PS-230VAC/DC	RM699BV-3011-85-1048	48 V DC

Featuring Electromagnetic relay RM699BV / 0.05A; 30VAC / 36VDC. gold plated contacts

Part Number	Rated input voltage U_N	Power of input circuit	Socket code	Operational relay code	Rated voltage of operational relay U_S
PIR6WB-1PS-6VDC-R01	6 V DC	0.3 W	PI6WB-1PS-6VDC	RM699BV-3011-85-1005	5 V DC
PIR6WB-1PS-12VDC-R01	12 V DC	0.2 W	PI6WB-1PS-12/24VDC	RM699BV-3011-85-1012	12 V DC
PIR6WB-1PS-24VDC-R01	24 V DC	0.3 W	PI6WB-1PS-12/24VDC	RM699BV-3011-85-1024	24 V DC
PIR6WB-1PS-36VDC-R01	36 V DC	0.3 W	PI6WB-1PS-36VDC	RM699BV-3011-85-1024	24 V DC
PIR6WB-1PS-48VDC-R01	48 V DC	0.4 W	PI6WB-1PS-48VDC	RM699BV-3011-85-1024	24 V DC
PIR6WB-1PS-60VDC-R01	60 V DC	0.5 W	PI6WB-1PS-60VDC	RM699BV-3011-85-1024	24 V DC
► PIR6WB-1PS-24VAC/DC-R01	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-R01	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-R01	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-R01	230 V AC/DC	1.2 VA / 1.2 W	PI6WB-1PS-230VAC/DC	RM699BV-3011-85-1048	48 V DC

The 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). For versions of the input voltage $U_N = 230$ V AC/DC keep the distance between the mounting relays min. 5 mm under maximum load and at continuous operation.

Altech Custom Assemblies



Altech provides quick turnaround and competitive prices on assemblies.

For complete assemblies contact Altech.

► BOLD - Regular stocked items.

Solid State Relays

Featuring Solid State Triac (T) relay RSR30 / 2A; 240VAC output

Part Number	Rated input voltage U_N	Power of input circuit	Socket code	Operational relay code	Rated voltage of operational relay U_S
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

Featuring Solid State transistor (C) relay RSR30 / 1A; 48VDC output

Part Number	Rated input voltage U_N	Power of input circuit	Socket code	Operational relay code	Rated voltage of operational relay U_S
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	230 V AC/DC	1.0 VA / 1.0 W	PI6WB-1PS-230VAC/DC	RSR30-D48-D1-04-025-1	48 V DC

Featuring Solid State transistor (O) relay RSR30 / 2A; 24VDC output

Part Number	Rated input voltage U_N	Power of input circuit	Socket code	Operational relay code	Rated voltage of operational relay U_S
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	230 V AC/DC	1.0 VA / 1.0 W	PI6WB-1PS-230VAC/DC	RSR30-D48-D1-02-040-1	48 V DC

It should be noted that the rated input voltage of the operational relay (U_S) is not always the same as the rated input voltage of the relay and socket combination (U_N) (This is important when ordering operational relays for sockets). For versions of the input voltage $U_N = 230$ V AC/DC keep the distance between the mounting relays min. 5 mm under maximum load and at continuous operation.

► **BOLD** - Regular stocked items.

RS35 and RS50

Relays for Photovoltaic Systems



- 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 > 1.75 mm • Holding power 0.1 W
- For PCB
- DC coils



Contact Data

		RS35	RS50
Number and type of contacts		DPST (2 NO)	DPST (2 NO)
Contact material		AgSnO ₂	AgSnO ₂
Rated / max. switching voltage	AC	250 V / 440 V	250 V / 440 V
Min. switching voltage		10 V	10 V
Rated load	AC1	35 A / 250 V AC	48 A / 250 V AC
	DC1	35 A / 24 V DC	48 A / 24 V DC
Min. switching current		10 mA	10 mA
Rated current		35 A	50 A
Max. breaking capacity	AC1	8750 VA	12500 VA
	DC1	90 W 0.3 A / 300 V	90 W 0.3 A / 300 V
Min. breaking capacity		1 W	1 W
Contact resistance		≤ 50 mΩ	≤ 50 mΩ
Max. operating frequency			
• at rated load	AC1	360 cycles/hour	360 cycles/hour
• no load		3600 cycles/hour	3600 cycles/hour

Coil Data

Rated voltage	DC	5 ... 110 V	5 ... 110 V
Must release voltage		DC: ≥ 0.05 U _N	DC: ≥ 0.05 U _N
Operating range of supply voltage		0.75...2.0 U _N ; see page 103	0.75...2.0 U _N ; see page 103
Rated power consumption	DC	0.48 W	0.48 W
Power consumption at pickup voltage		0.3 W	0.3 W
Max. continuous dissipation		1.9 W 20 °C	1.9 W 20 °C

Insulation

Insulation rated voltage		250 V AC	250 V AC
Rated surge voltage		6000 V 1.2 / 50 μs	6000 V 1.2 / 50 μs
Overvoltage category		III	III
Insulation pollution degree		3	3
Insulation resistance		1000 MΩ	1000 MΩ
Dielectric strength			
• between coil and contacts		5000 V AC type of insulation: reinforced	5000 V AC type of insulation: reinforced
• contact clearance		2500 V AC type of clearance: full-disconnection	2500 V AC type of clearance: full-disconnection
• pole - pole		2500 V AC type of insulation: basic	2500 V AC type of insulation: basic
Contact - coil distance			
• clearance		≥ 10 mm	≥ 10 mm
• creepage		≥ 10 mm	≥ 10 mm

General data

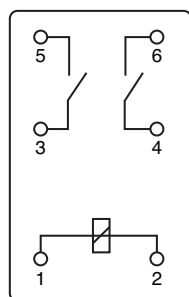
Operating / release time (typical values)		40 ms / 5 ms	40 ms / 5 ms
Electrical life			
• resistive AC1		3 x 10 ⁶ ; 35 A. 250 V AC. 20 °C	10 ⁶ ; 50 A. 250 V AC. 20 °C
• AC7a		3 x 10 ⁶ ; 35 A. 250 V AC. 20 °C	3 x 10 ⁶ ; 50 A. 250 V AC. 20 °C
Mechanical life (cycles)		10 ⁶	10 ⁶
Dimensions (L x W x H)		40 x 25 x 49.2 mm	40 x 25 x 49.2 mm
Weight		105 g	105 g
Ambient temperature			
• storage		-40...+105 °C	-40...+105 °C
• operating		-40...+85 °C	-40...+85 °C
Cover protection category		IP 40 PN-EN 60529	IP 40 PN-EN 60529
Environmental protection		RTI PN-EN 116000-3	RTI PN-EN 116000-3
Shock resistance		10 g	10 g
Vibration resistance		1.5 mm DA (constant amplitude) 0...55 Hz	1.5 mm DA (constant amplitude) 10...55 Hz
Solder bath temperature		max. 270 °C	max. 270 °C
Soldering time		max. 5 s	max. 5 s

RS35 and RS50

Relays for Photovoltaic Systems

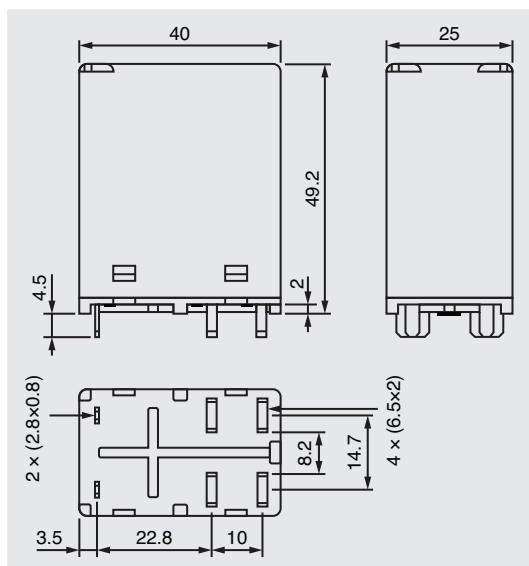


CONNECTION DIAGRAM

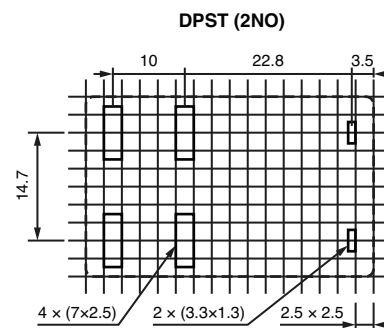


DPST (2NO)

DIMENSIONS



PINOUT



RS35 DPST(2NO) DC coil. 35A

Part Number	Coil Voltage V DC	Coil resistance at 20 °C in Ω	Coil operating range		Coil data	Cover protection IP40
			min. (at 20°C)	max. (at 55°C)		
RS35-3022-25-1012	12	300	9.00	24	DC	x
RS35-3022-25-1024	24	1200	18.00	48	DC	x
RS35-3022-25-1110	110	25000	82.50	220	DC	x

RS50 DPST(2NO) DC coil. 50A

Part Number	Coil Voltage V DC	Coil resistance at 20 °C in Ω	Coil operating range		Coil data	Cover protection IP40
			min. (at 20°C)	max. (at 55°C)		
RS50-3022-25-1012	12	300	9.00	24	DC	x
RS50-3022-25-1024	24	1200	18.00	48	DC	x
RS50-3022-25-1110	110	25000	82.50	220	DC	x



PI84

Relay Socket Combination

PI84



GTZ80 socket

Relay: RM84 (see page 76 for detailed information)

Socket: GZT80/GZM80 (see page 81 for detailed information)

Technical Information

Current8 A
Voltage.....250V AC / 24V DC
Wire Range.....2.5 mm² / 24-14 AWG
Torque.....0.7 Nm

PI84



GTM80 socket

GTZ80 Socket - PI84 DPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil Resistance at 20°C in Ω	Coil Operating Range		Type of Module
				min. (at 20°C)	max. (at 55°C)	
PI84-12DC-M41G	12	DC	360	8.4	30.6	M41G*
► PI84-24DC-M41G	24	DC	1440	16.8	61.2	M41G*
PI84-110DC-M43G	110	DC	25200	77.0	280.0	M43G*
PI84-12DC-M91G	12	DC	360	8.4	30.6	M91G**
► PI84-24DC-M91G	24	DC	1440	16.8	61.2	M91G**
PI84-110DC-M93G	110	DC	25200	77.0	280.0	M93G**
► PI84-120AC-M93G	120	AC 50/60Hz	10200	96.0	144.0	M93G**
PI84-230AC-M93G	230	AC 50/60Hz	38500	184.0	276.0	M93G**

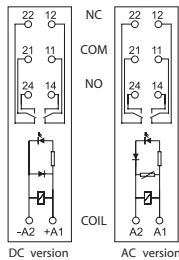
GZM80 Socket - PI84 DPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil Resistance at 20°C in Ω	Coil Operating Range		Type of Module
				min. (at 20°C)	max. (at 55°C)	
PI84-012DC-00LD	12	DC	360	8.4	30.6	M41G*
PI84-024DC-00LD	24	DC	1440	16.8	61.2	M41G*
PI84-110DC-00LD	110	DC	25200	77.0	280.0	M43G*
PI84-012DC-00LV	12	DC	360	8.4	30.6	M91G**
PI84-024DC-00LV	24	DC	1440	16.8	61.2	M91G**
PI84-110DC-00LV	110	DC	25200	77.0	280.0	M93G**
PI84-120AC-00LV	120	AC 50/60Hz	10200	96.0	144.0	M93G**
PI84-230AC-00LV	230	AC 50/60Hz	38500	184.0	276.0	M93G**

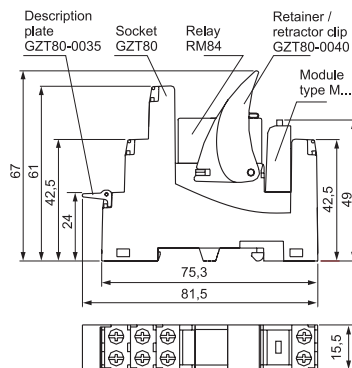
* Module LD (polarization N) It limits overvoltage on DC coils. Coil energizing indication. ** Module LV It limits overvoltage on AC and DC coils. Coil energizing indication.

PI84-GZT80

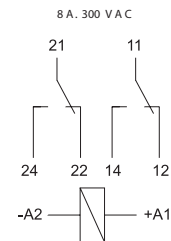
CONNECTION DIAGRAMS



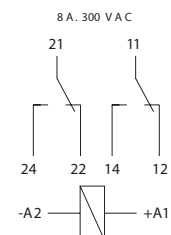
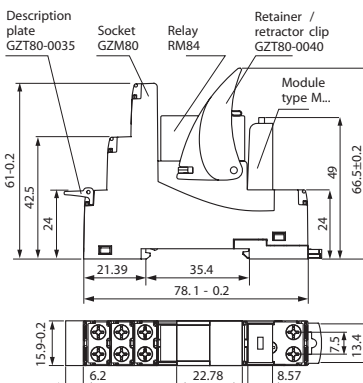
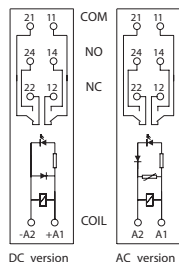
DIMENSIONS



CONNECTION



PI84-GZM80



► BOLD - Regular stocked items.

All accessories are included.

PI85

Relay Socket Combination

Altech®

PI85



GTZ80 socket

Relay: RM85 (see page 76 for detailed information)

Socket GZT80/GZM80 (see page 81 for detailed information)

Technical Information

Current16 A
Voltage.....250V AC / 24V DC
Wire Range.....2.5 mm² / 24-14 AWG
Torque.....0.7 Nm

PI85



GZM80 socket

GZT80 Socket - PI85 DPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil Resistance at 20°C in Ω	Coil Operating Range		Type of Module
				min. (at 20°C)	max. (at 55°C)	
PI85-12DC-M41G	12	DC	360	8.4	30.6	M41G*
▶ PI85-24DC-M41G	24	DC	1440	16.8	61.2	M41G*
PI85-110DC-M43G	110	DC	25200	77.0	280.0	M43G*
PI85-12DC-M91G	12	DC	360	8.4	30.6	M91G**
▶ PI85-24DC-M91G	24	DC	1440	16.8	61.2	M91G**
PI85-110DC-M93G	110	DC	25200	77.0	280.0	M93G**
▶ PI85-120AC-M93G	120	AC 50/60Hz	10200	96.0	144.0	M93G**
PI85-230AC-M93G	230	AC 50/60Hz	38500	184.0	276.0	M93G**

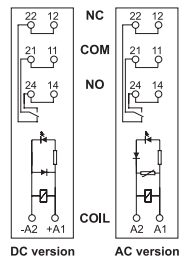
GZM80 Socket - PI85 DPDT AC 50/60Hz & DC coil

Part Number	Coil Voltage (V)	Coil Type	Coil Resistance at 20°C in Ω	Coil Operating Range		Type of Module
				min. (at 20°C)	max. (at 55°C)	
PI85-012DC-00LD	12	DC	360	8.4	30.6	M41G*
PI85-024DC-00LD	24	DC	1440	16.8	61.2	M41G*
PI85-110DC-00LD	110	DC	25200	77.0	280.0	M43G*
PI85-012DC-00LV	12	DC	360	8.4	30.6	M91G**
PI85-024DC-00LV	24	DC	1440	16.8	61.2	M91G**
PI85-110DC-00LV	110	DC	25200	77.0	280.0	M93G**
PI85-120AC-00LV	120	AC 50/60Hz	10200	96.0	144.0	M93G**
PI85-230AC-00LV	230	AC 50/60Hz	38500	184.0	276.0	M93G**

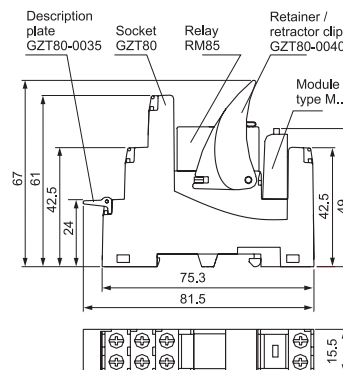
* Module LD (polarization N) It limits overvoltage on DC coils. Coil energizing indication. ** Module LV It limits overvoltage on AC and DC coils. Coil energizing indication.

PI85-GZT80

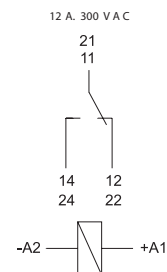
CONNECTION DIAGRAMS



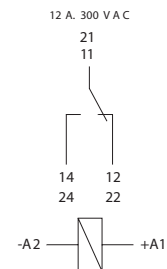
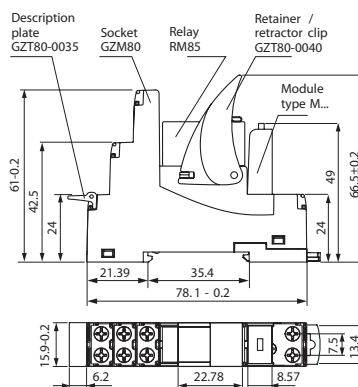
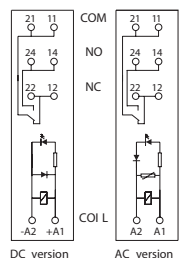
DIMENSIONS



CONNECTION



PI85-GZM80



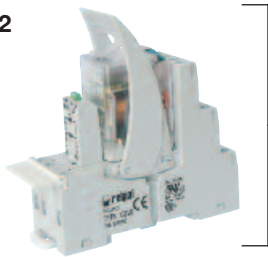
▶ BOLD - Regular stocked items.

All accessories are included.

PIR2

Relay Socket Combination

PIR2



Relay: R2 (see page 50 for detailed information)

Socket: GZM2 (see page 55 for detailed information)

Technical Information

Current12 A
Voltage.....250V AC / 24V DC
Wire Range.....2.5 mm² / 24-14 AWG
Torque.....0.7 Nm

PIR2 DPDT AC 50/60Hz & DC coil

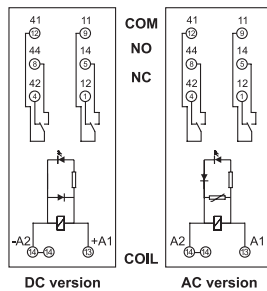
Part Number	Coil Voltage (V)	Coil Type	Coil Resistance at 20°C in Ω	Coil Operating Range		Type of Module
				min. (at 20°C)	max. (at 55°C)	
PIR2-012DC-00LD	12	DC	160	9.6	13.2	M41G*
► PIR2-024DC-00LD	24	DC	640	19.2	26.4	M41G*
PIR2-110DC-00LD	110	DC	13600	88.0	121.0	M43G*
PIR2-012DC-00LV	12	DC	160	9.6	13.2	M91G**
► PIR2-024DC-00LV	24	DC	640	19.2	26.4	M91G**
PIR2-110DC-00LV	110	DC	13600	88.0	121.0	M93G**
► PIR2-120AC-00LV	120	AC 50/60Hz	3770	96.0	132.0	M93G**
PIR2-230AC-00LV	230	AC 50/60Hz	16100	184.0	253.0	M93G**

* Module LD (polarization N) It limits overvoltage on DC coils. Coil energizing indication. M41G on 6/24VDC ; M42G on 24/60VDC ; M43G on 110/230VDC.

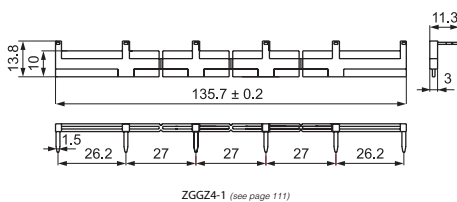
** Module LV It limits overvoltage on AC and DC coils. Coil energizing indication. M91G on 6/24VAC ; M92G on 24/60VAC ; M93G on 110/230VAC.

PIR2

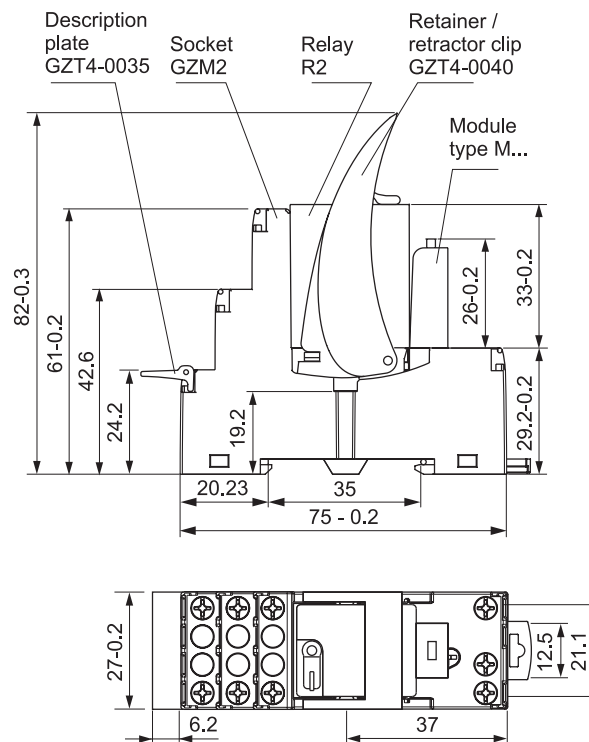
CONNECTION DIAGRAMS



INTERCONNECTION STRIP



DIMENSIONS



PIR3

Relay Socket Combination

Altech®

PIR3



Relay: R3 (see page 50 for detailed information)

Socket: GZM3 (see page 56 for detailed information)

Technical Information

Current10 A
Voltage.....250V AC / 24V DC
Wire Range.....2.5 mm² / 24-14 AWG
Torque.....0.7 Nm

PIR3 3PDT AC 50/60Hz & DC coil

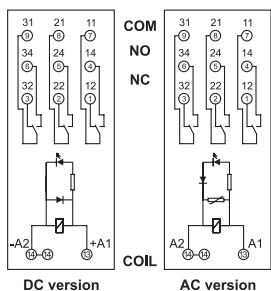
Part Number	Coil Voltage (V)	Coil Type	Coil Resistance at 20°C in Ω	Coil Operating Range		Type of Module
				min. (at 20°C)	max. (at 55°C)	
PIR3-012DC-00LD	12	DC	160	9.6	13.2	M41G*
PIR3-024DC-00LD	24	DC	640	19.2	26.4	M41G*
PIR3-110DC-00LD	110	DC	13600	88.0	121.0	M43G*
PIR3-012DC-00LV	12	DC	160	9.6	13.2	M91G**
PIR3-024DC-00LV	24	DC	640	19.2	26.4	M91G**
PIR3-110DC-00LV	110	DC	13600	88.0	121.0	M93G**
PIR3-120AC-00LV	120	AC 50/60Hz	3770	96.0	132.0	M93G**
PIR3-230AC-00LV	230	AC 50/60Hz	16100	184.0	253.0	M93G**

* Module LD (polarization N) It limits overvoltage on DC coils. Coil energizing indication. M41G on 6/24VDC ; M42G on 24/60VDC ; M43G on 110/230VDC.

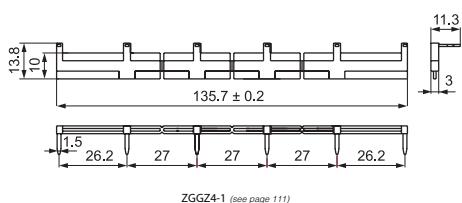
** Module LV It limits overvoltage on AC and DC coils. Coil energizing indication. M91G on 6/24VAC ; M92G on 24/60VAC ; M93G on 110/230VAC.

PIR3

CONNECTION DIAGRAMS

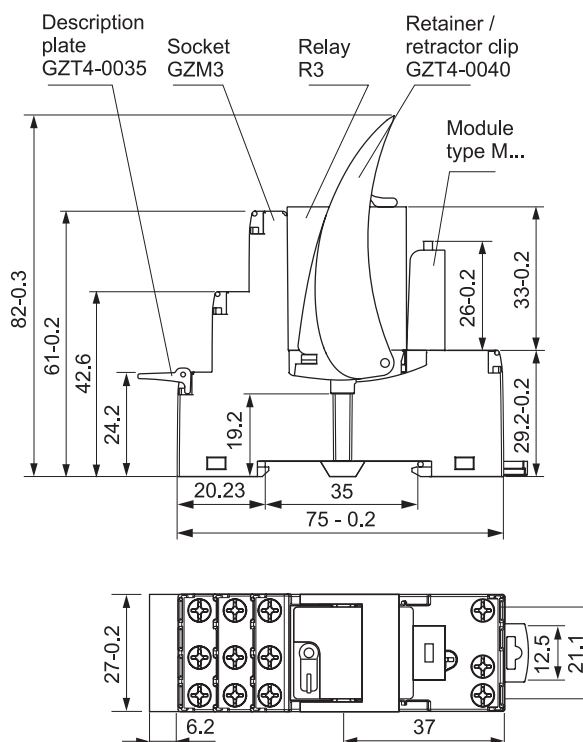


INTERCONNECTION STRIP



ZGGZ4-1 (see page 111)

DIMENSIONS

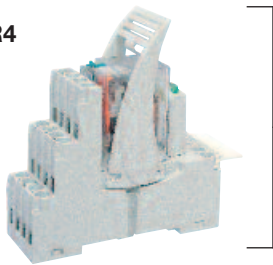


All accessories are included.

PIR4

Relay Socket Combination

PIR4



Relay: R4 (see page 50 for detailed information)

Socket: GZM4 (see page 56 for detailed information)

Technical Information

Current6 A
 Voltage.....250V AC / 24V DC
 Wire Range.....2.5 mm² / 24-14 AWG
 Torque.....0.7 Nm

PIR4 4PDT AC 50/60Hz & DC coil

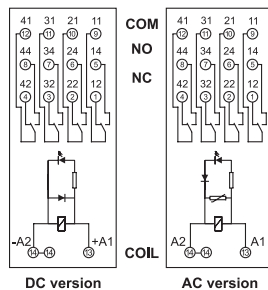
Part Number	Coil Voltage (V)	Coil Type	Coil Resistance at 20°C in Ω	Coil Operating Range		Type of Module
				min. (at 20°C)	max. (at 55°C)	
PIR4-012DC-00LD	12	DC	160	9.6	13.2	M41G*
► PIR4-024DC-00LD	24	DC	640	19.2	26.4	M41G*
PIR4-110DC-00LD	110	DC	13600	88.0	121.0	M43G*
PIR4-012DC-00LV	12	DC	160	9.6	13.2	M91G**
► PIR4-024DC-00LV	24	DC	640	19.2	26.4	M91G**
PIR4-110DC-00LV	110	DC	13600	88.0	121.0	M93G**
► PIR4-120AC-00LV	120	AC 50/60Hz	3770	96.0	132.0	/M93G**
PIR4-230AC-00LV	230	AC 50/60Hz	16100	184.0	253.0	M93G**

* Module LD (polarization N) It limits overvoltage on DC coils. Coil energizing indication. M41G on 6/24VDC ; M42G on 24/60VDC ; M43G on 110/230VDC.

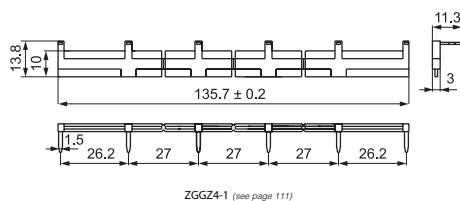
** Module LV It limits overvoltage on AC and DC coils. Coil energizing indication. M91G on 6/24VAC ; M92G on 24/60VAC ; M93G on 110/230VAC.

PIR4

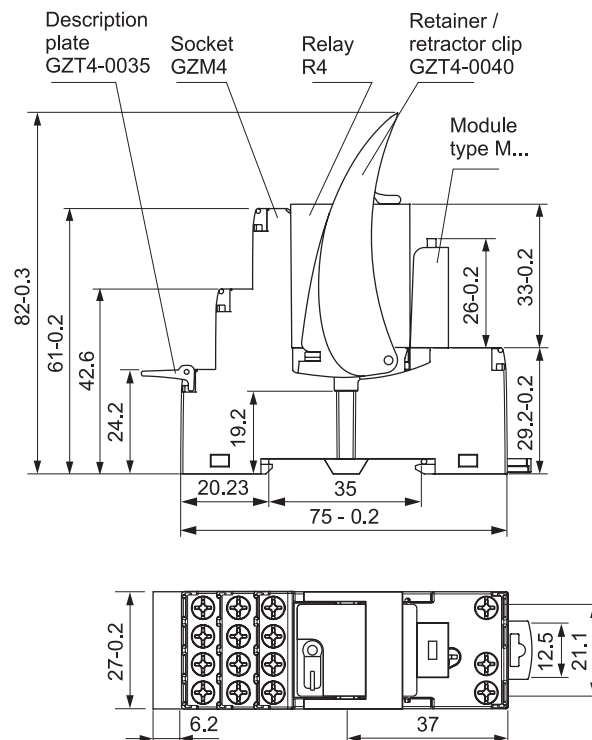
CONNECTION DIAGRAMS



INTERCONNECTION STRIP



DIMENSIONS



PIR2M

Relay Socket Combination



PIR2M



Relay: R2M (see page 58 for detailed information)

Socket: GZ2 (see page 65 for detailed information)

Technical Information

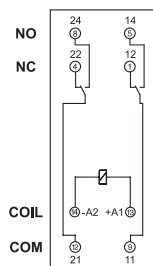
Current5 A
 Voltage.....250V AC / 24V DC
 Wire Range.....2.5 mm² / 24-14 AWG
 Torque.....0.7 Nm

PIR2M DPDT AC 50/60Hz & DC coil

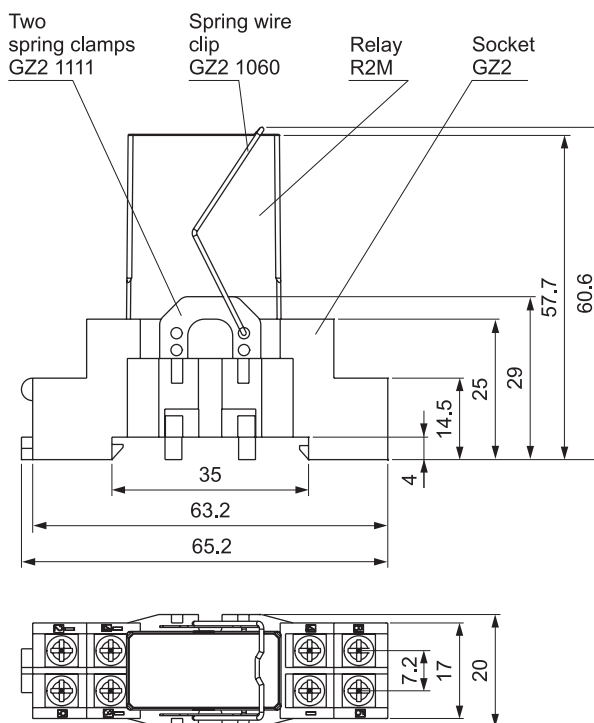
Part Number	Coil Voltage (V)	Coil Type	Coil Resistance at 20°C in Ω	Coil Operating Range	
				min. (at 20°C)	max. (at 55°C)
PIR2M-012DC-20	12	DC	188	9.6	13.2
PIR2M-024DC-20	24	DC	750	19.2	26.4
PIR2M-110DC-20	110	DC	13480	88.0	121.0
PIR2M-115AC-20	120	AC 50/60Hz	6390	96.0	132.0
PIR2M-230AC-20	230	AC 50/60Hz	21470	184.0	253.0

PIR2M

CONNECTION DIAGRAMS



DIMENSIONS



All accessories are included.

Accessories

ZGGZ80 - Interconnection Strip



ZGGZ80-1

- Designed for the co-operation with plug-in sockets of miniature relays and with interface relays PI84 and PI85, which are equipped with screw terminals; sockets and relays are mounted on 35 mm rail mount acc. to PN-EN 60715,
- Bridges common input signals (coil terminals A1 or A2) or output signals - see photo at the top,
- Maximum permissible current is 10 A / 250 V AC,
- Possibility of connection of 8 sockets or relays,
- Colors of strips: ZGGZ80-1 grey

ZGGZ80-1

Plug-in sockets

GZT 80
GZM 80
GZT 92
GZM 92

Relays for plugin sockets

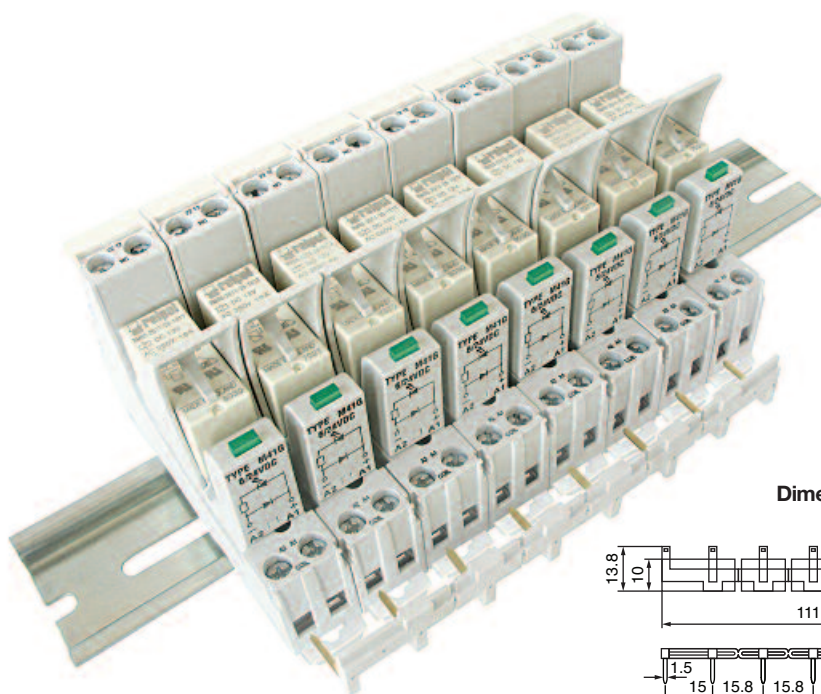
RM84, RM85, RM87
RM84, RM85, RM87
RM84, RM85, RM87
RM84, RM85, RM87

Relays socket combination

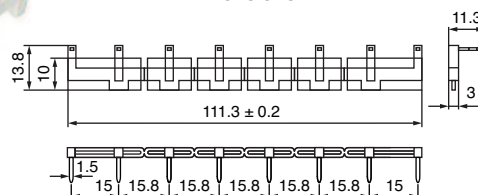
PI84-...-M..G (GZT80+RM84)
PI84-...-00L (GZM80+RM84)
PI85-...-M..G (GZT80+RM85)
PI85-...-00L (GZM80+RM85)

Interface relay PI84 (PI85) is offered as a set: plug-in socket GZT80 or GZM80 + miniature relay RM84 (RM85) + signalling / protecting module type M... + retainer / retractor clip GZT80-0040 + description plate GZT80-0035.

Altech Custom Assemblies



Dimensions



**Altech provides quick turnaround
and competitive prices on assemblies.**

For complete assemblies contact Altech.

Accessories

ZGGZ4 - Interconnection Strip

Altech®



ZGGZ4-1

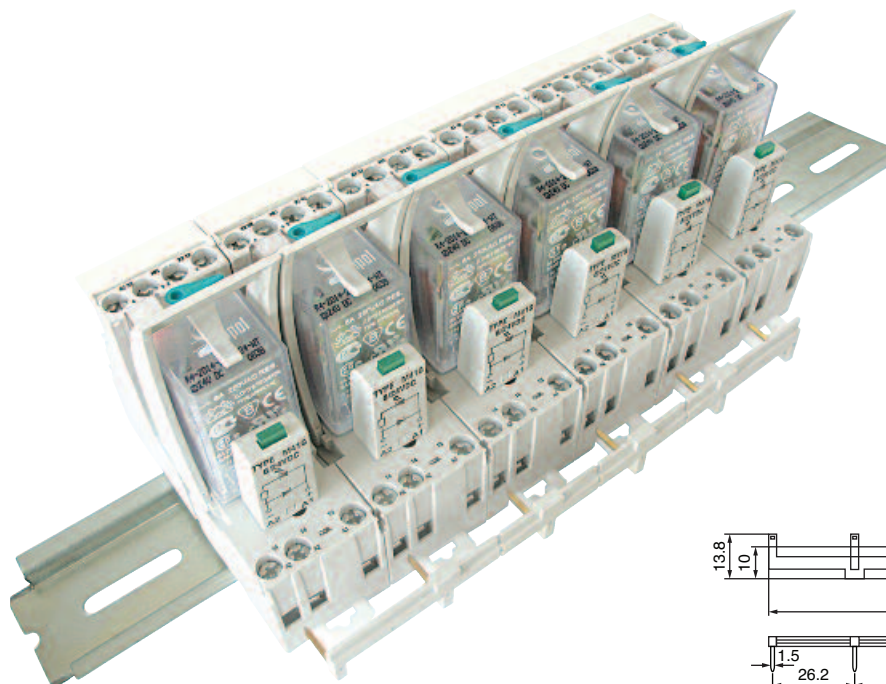
- Designed for the co-operation with plug-in sockets of miniature industrial relays and with interface relays PIR2, PIR3 and PIR4, which are equipped with screw terminals; sockets and relays are mounted on 35 mm rail mount acc. to PN-EN 60715,
- Bridges common input signals (coil terminals A1 or A2) or output signals - see photo at the top,
- Maximum permissible current is 10 A / 250 V AC,
- Possibility of connection of 6 sockets or relays,
- Colors of strips: ZGGZ4-1 grey

ZGGZ4-1

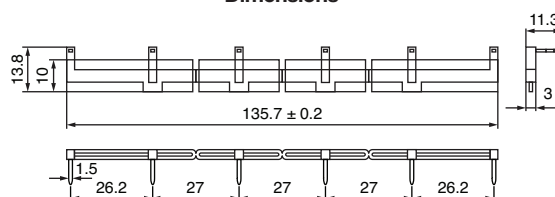
Plug-in sockets	Relays for plugin sockets	Relays socket combination
GZT2	R2	PIR2-...-00L (GZM2+R2)
GZM2	R2	
GZT3	R3	PIR3-...-00L (GZM3+R3)
GZM3	R3	
GZT4	R4	PIR4-...-00L (GZM4+R4)
GZM4	R4	

Interface relay PIR2 (PIR3, PIR4) is offered as a set: plug-in socket GZM2 (GZM3, GZM4) + miniature industrial relay R2 (R3, R4) + signalling / protecting module type M... + retainer / retractor clip GZT4-0040 + description plate GZT4-0035.

Altech Custom Assemblies



Dimensions

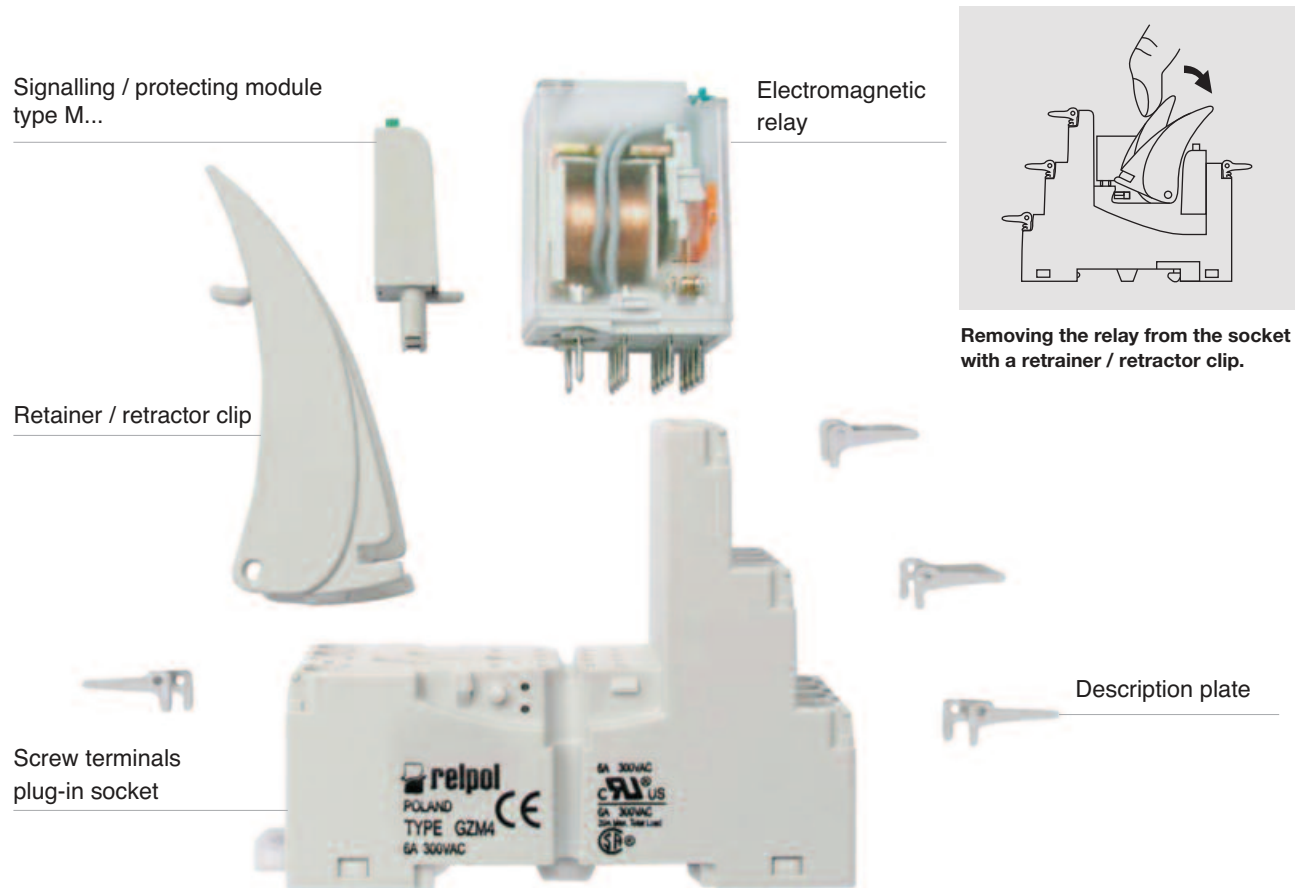


Altech provides quick turnaround and competitive prices on assemblies.

For complete assemblies contact Altech.

Accessories

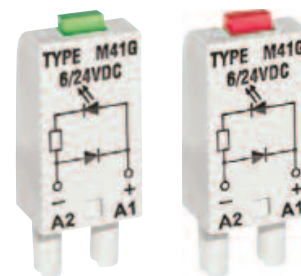
For Industrial Relays



Type of plug-in socket	GZT80, GZT92 GZM80, GZM92	GZT2, GZT3, GZT4 GZM2, GZM3, GZM4
Retainer / retractor clips		
Type	GZT80-0040	GZT4-0040
Color	gray	gray
Description plates		
Type	GZT80-0035	GZT4-0035
color	white	white
For relays	RM84, RM85, RM87	R2, R3, R4
Height of relay	15...16.5 mm	35.6 mm

For sockets type: GZT80, GZT92, GZM80, GZM92, GZS80, GZS92, ES 32, GZT2, GZT3, GZT4, GZM2, GZM3, GZM4

Modules are parallel connected with relay coil.
Polarity P: -A1/+A2. Polarity N: +A1/-A2.



Part Number	Color	Modules	Layout	Layout
M21P		Module D (polarization P) It limits overvoltage on DC coils.		6/230 V DC
M21N		Module D (polarization N) It limits overvoltage on DC coils.		6/230V DC
M31R M32R M33R M31G* M32G M33G	red red red green green green	Module LD (polarization P) It limits overvoltage on DC coils. Coil energizing indication.		6/24 V DC 24/60 V DC 110/230V DC 6/24 V DC 24/60 V DC 110/230V DC
► M41G M42G ► M43G	green green green	Module LD (polarization N) It limits overvoltage on DC coils. Coil energizing indication.		6/24 V DC 24/60V DC 110/230V DC
► M51 M52 ► M53		Module RC It protects against EMC disturbance. It limits overvoltage.		6/24V AC 24/60V AC 110/240V AC
M61R M62R M63R M61G* M62G M63G*	red red red green green green	Module L Coil energizing indication.		6/24V AC/DC 24/60V AC/DC 110/230V AC/DC 6/24V AC/DC 24/60V AC/DC 110/230V AC/DC
M91R M92R M93R ► M91G M92G ► M93G	red red red green green green	Module LV It limits overvoltage on AC and DC coils. Coil energizing indication.		6/24V AC/DC 24/60V AC/DC 110/230V AC/DC 6/24V AC/DC 24/60V AC/DC 110/230V AC/DC
M71 M72 M73		Module V It limits overvoltage on AC and DC coils. No indication.		24V AC 130V AC 230V AC
M103		Module R It limits overvoltage on AC coils.		110/230V AC

► **BOLD** - Regular stocked items.

Additional Features for Industrial Relays

Explantions for Additional Features

Type ❶	Description	For industrial relays
W	mechanical indicator	R2, R3, R4, R15 - DPDT, 3PDT
T	lockable front test button, orange colour - AC coils, green colour - DC coils	R2, R3, R4, R15 - DPDT, 3PDT
L	light indicator (LED diode), located inside the relay	R2, R3, R4, RY2, R15 - DPDT, 3PDT, 4PDT RUC, RUC-M
D	surge suppression element (diode) - only for DC coils	R2, R3, R4, RY2, R15 - DPDT, 3PDT, 4PDT
V	surge suppression element (varistor) - only for AC coils	R15 - DPDT, 3PDT
K	test button without block function	R15 - 4PDT RUC

WT = mechanical indicator + lockable front test button; basic features of standard industrial relays: R2, R3, R4, R15 - DPDT, 3PDT - for plug-in sockets. Detailed information for individual relays: see "Ordering codes - Additional features".

Available combinations:

WT, WTL, WTD, WTLD - in relays R2, R3, R4 for plug-in sockets

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

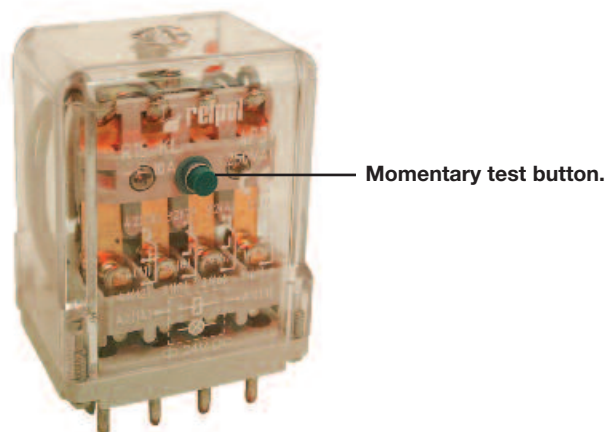
WT, WTL, WTD, WTLD, WTV, WTLV - in relays R15 - DPDT, 3PDT for plug-in sockets

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

K, L, KL - in relays RUC

L - in relays RUC-M

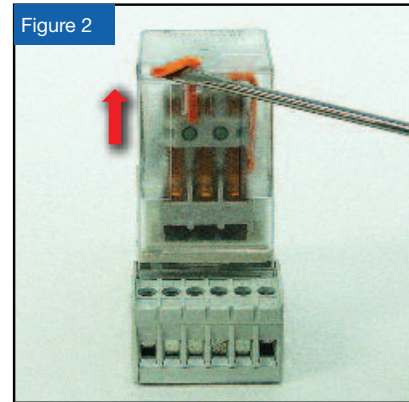
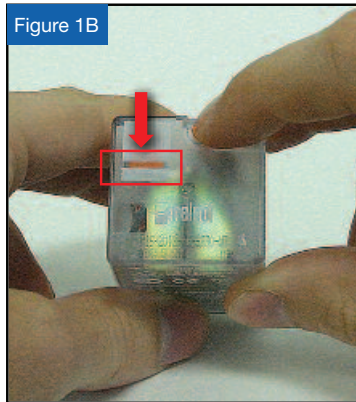
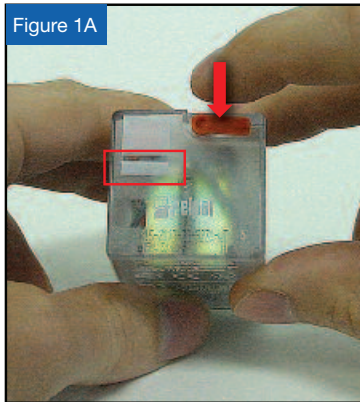
TEST BUTTONS Type T



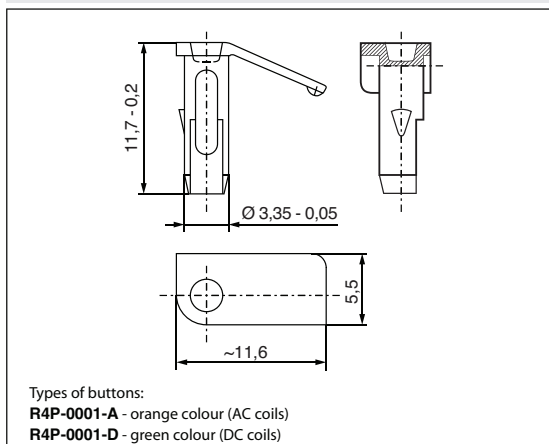
Test Buttons (no latching) and Plugs

Test buttons are available for R2...WT, R3...WT, R4...WT, R15...WT DPDT, R15...WT 3PDT, relays - **for applications that do not require permanent contact latching**. By manual operation (pressing the button, see figures 1A and 1B) 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. Button R4P-0001 or R15-M404 can be easily inserted by the Customer after removal of button type T (see figure 1B).

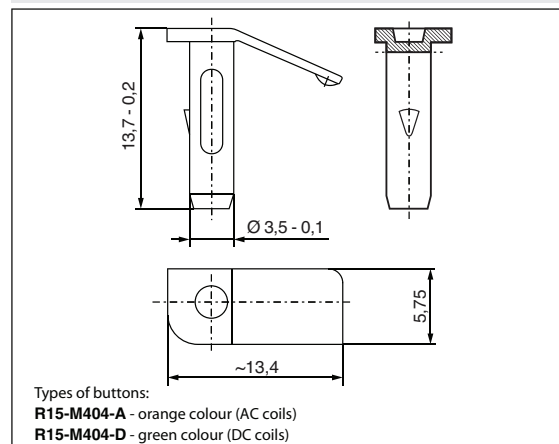
Button type T can be removed with screwdriver as shown in figure 2.



Dimensions - test button R4P-0001
for relays R2...WT, R3...WT, R4...WT

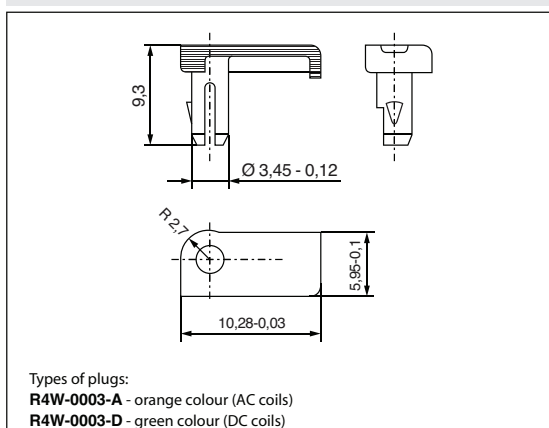


Dimensions - test button R15-M404
for relays R15...WT - DPDT, 3PDT

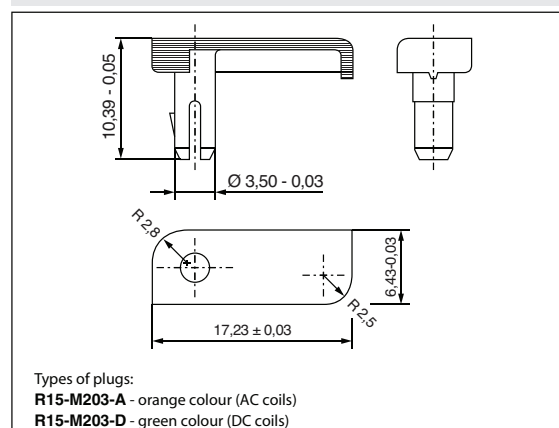


Plugs R4W-0003 or R15-M203 can substitute button type T if manual operation (latching and testing) is not allowed. Changing button type T for plug can be done by Customer themselves in the same way as changing button type T for button (no latching).

Dimensions - plug R4W-0003
for relays R2...WT, R3...WT, R4...WT



Dimensions - plug R15-M203
for relays R15...WT - DPDT, 3PDT



CUSTOM INTERFACE MODULES

If your design or application requires more functionality or features than our standard product, Altech offers complete engineering, prototype and production services for custom modules.

Our staff has the ability to take your design or requirements and manufacture your custom module. Custom module production generally includes engineering, PCB layout and prototypes, packaged in Altech extrusions for mounting on panels or DIN Rail. In many industrial control systems, customized designs are the solution for many problems.

Altech provides a quick turnaround and competitive solution to your problem. Altech provides the following benefits to your company:

Application Assistance

- Modify a standard product
- Help define a new product

Engineering Capability

- Use of latest CAD system
- PCB layouts completed promptly
- Prototypes available two weeks after PCB layout approval

Manufacturing Capability

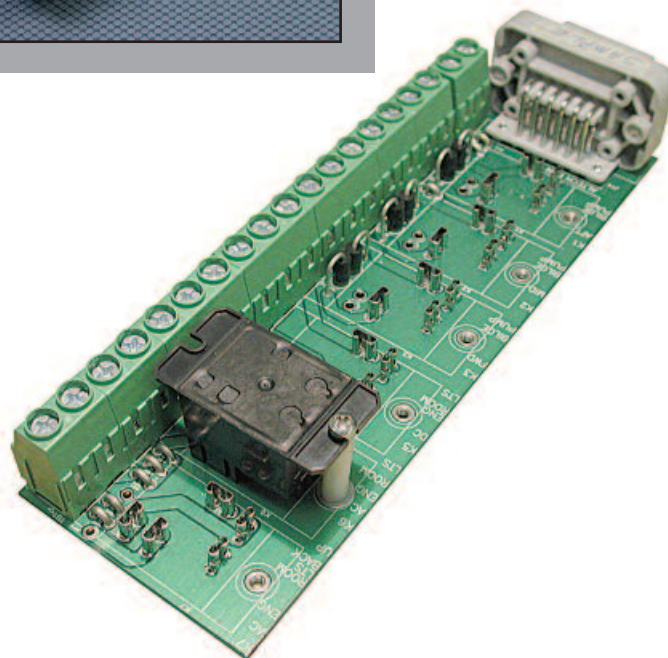
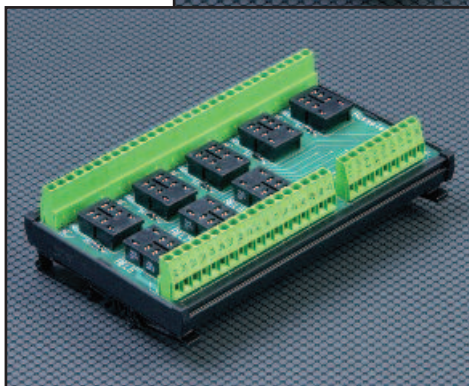
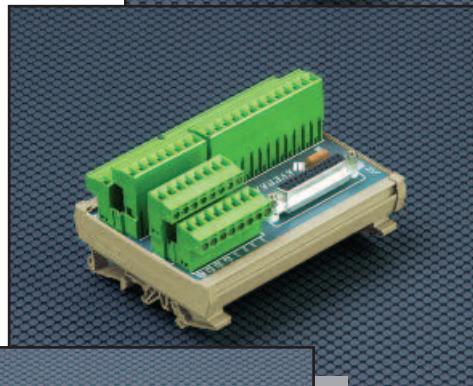
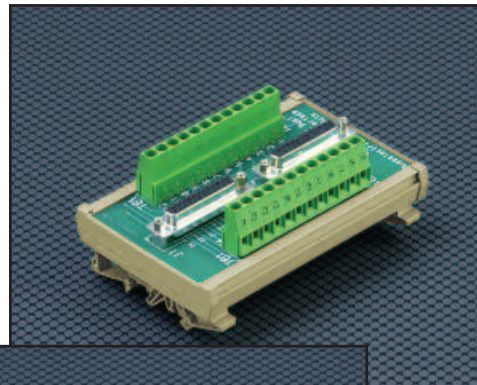
- Complete in-house manufacturing
- ISO 9001 Certified

Minimum Quantities

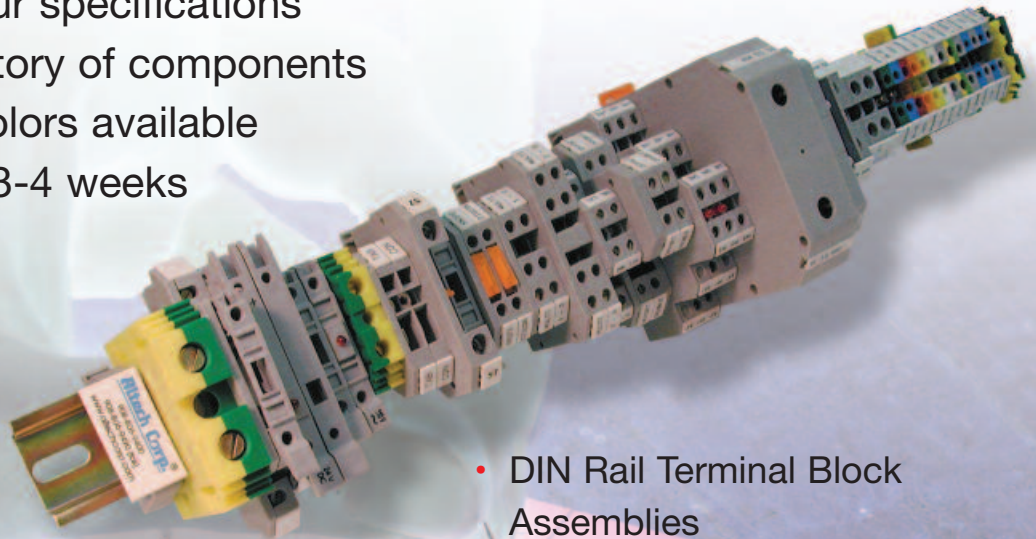
- 25 piece minimum for custom quotes
- Quotation provided at no cost

Altech Benefits

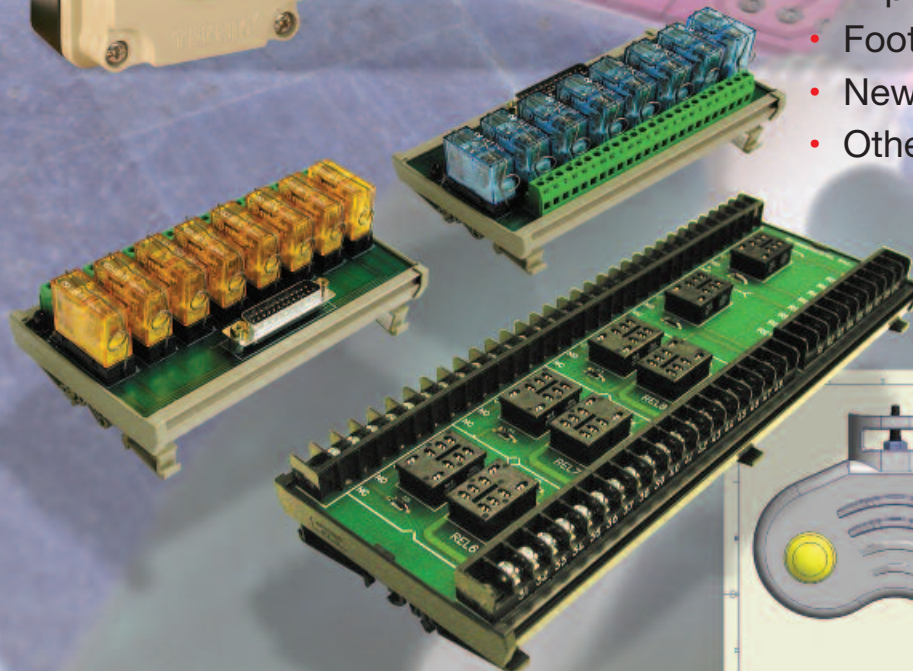
- Fast turnaround due to in-house capability
- Highly competitive in-house manufacturing
- Use of Altech components (blocks, extrusions, connectors)



- Most competitive in industry
- Made to your specifications
- Large inventory of components
- Variety of colors available
- Shipped in 3-4 weeks



- DIN Rail Terminal Block Assemblies
- Push Button Control Stations
- Relay Assemblies
- Custom Interface Assemblies
- Enclosure Customization
- Imprinting
- Foot Switch Customization
- New Product Development
- Other Value Added Services.



INDEX

Part No.	Pg.	Part No.	Pg.	Part No.	Pg.	Part No.	Pg.
5492.2	.20	8837.2	.12	8935.3	.16	8995.5	.18
5492.5	.20	8838.2	.12	8935.5	.16	8999.2	.18
5494.2	.20	8839.2	.12	8935.6	.16	8999.5	.18
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5508.2	.20	8850.3	.11	8940.6	.16	156.OA01.1231C	.34
5508.5	.20	8850.4	.11	8941.2	.16	156.OA01.2422C	.34
5514.2	.20	8861.0	.44	8941.3	.16	156.OA01.2431C	.34
5514.3	.20	8905.2	.24	8941.5	.16	156.OA11.1222C	.32
5514.5	.20	8905.3	.26	8941.6	.16	156.OA11.1231C	.32
5514.6	.20	8906.2	.24	8942.2	.16	156.OA11.2422C	.32
5700.2	.13	8906.3	.26	8942.3	.16	156.OA11.2431C	.32
5701.2	.13	8907.2	.24	8942.5	.16	156.OA12.1224C	.36
5702.2	.11	8907.3	.26	8942.6	.16	156.OA12.1224C	.38
5702.3	.11	8908.2	.24	8943.2	.16	156.OA12.1233C	.36
5702.4	.11	8908.3	.26	8943.3	.16	156.OA12.1233C	.38
5703.2	.11	8909.2	.24	8943.5	.16	156.OA12.1242C	.36
5703.3	.11	8909.3	.26	8943.6	.16	156.OA12.1242C	.38
5703.4	.11	8910.2	.24	8944.2	.16	156.OA12.2424C	.36
5704.2	.11	8910.3	.26	8944.5	.16	156.OA12.2424C	.38
5704.3	.11	8911.2	.24	8945.2	.18	156.OA12.2433C	.36
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5705.4	.11	8912.5	.20	8948.2	.16	156.OA03.1226C	.40
5706.2	.11	8912.6	.20	8948.5	.16	156.OA03.1235C	.40
5706.3	.11	8913.3	.20	8949.3	.18	156.OA03.1244C	.40
5706.4	.11	8913.6	.20	8949.6	.18	156.OA03.1253C	.40
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5718.2	.15	8921.5	.20	8951.6	.18	156.OA03.2435C	.40
5718.3	.15	8923.2	.22	8953.2	.18	156.OA03.2444C	.40
5719.2	.15	8923.3	.22	8953.3	.18	156.OA03.2453C	.40
5719.3	.15	8923.5	.22	8953.5	.18	156.OA03.2462C	.40
5720.2	.7	8923.6	.22	8953.6	.18	156.OA03.2471C	.40
5721.2	.7	8924.2	.22	8954.2	.18	248 (9.76)	.30
5722.2	.7	8924.4	.22	8954.3	.18	248 (9.76)	.30
5723.2	.7	8924.5	.22	8954.5	.18	248 (9.76)	.30
5724.2	.7	8924.6	.22	8954.6	.18	248 (9.76)	.30
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5726.2	.7	8925.3	.22	8955.3	.18	256.OA01.1231C	.34
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5728.2	.7	8925.6	.22	8955.6	.18	256.OA01.2431C	.34
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5740.2	.8	8926.3	.22	8956.3	.18	256.OA11.1231C	.32
5741.2	.8	8926.5	.22	8956.5	.18	256.OA11.2422C	.32
5742.2	.8	8926.6	.22	8956.6	.18	256.OA11.2431C	.32
5743.2	.8	8927.2	.22	8957.2	.18	256.OA12.1224C	.36
5744.2	.8	8927.3	.22	8957.3	.18	256.OA12.1224C	.38
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5746.2	.9	8927.6	.22	8957.6	.18	256.OA12.1233C	.38
5747.2	.9	8928.2	.22	8959.0	.44	256.OA12.1242C	.36
5748.2	.9	8928.3	.22	8959.2	.18	256.OA12.1242C	.38
5749.2	.9	8928.5	.22	8959.3	.18	256.OA12.2424C	.36
5800.2	.24	8928.6	.22	8959.5	.18	256.OA12.2424C	.38
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5801.3	.26	8929.5	.16	8963.5	.18	256.OA12.2442C	.36
5802.2	.24	8929.6	.16	8972.2	.18	256.OA12.2442C	.38
5802.3	.26	8931.2	.16	8972.5	.18	456.OA01.1222C	.34
5803.2	.24	8931.3	.16	8973.2	.11	456.OA01.1231C	.34
5803.3	.26	8931.5	.16	8973.3	.11	456.OA01.2422C	.34
5804.2	.24	8931.6	.16	8973.4	.11	456.OA01.2431C	.34
5804.3	.26	8932.2	.16	8974.2	.11	456.OA11.1222C	.32
5805.2	.24	8932.5	.16	8974.3	.11	456.OA11.1231C	.32
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5806.2	.24	8933.3	.16	8975.2	.11	456.OA11.2431C	.32
5806.3	.26	8933.5	.16	8975.3	.11	456.OA12.1224C	.36
8835.2	.12	8933.6	.16	8975.4	.11	456.OA12.1224C	.38
8836.2	.12	8935.2	.16	8995.2	.18	456.OA12.1233C	.36

BOLD - Regular stocked items.

Part No.	Pg.	Part No.	Pg.	Part No.	Pg.	Part No.	Pg.
456.0A12.1233C	.38	8907.3/S	.26	8931.6/S	.16	8955.2S	.28
456.0A12.1242C	.36	8908.2/S	.24	8932.2/S	.16	8955.3/S	.18
456.0A12.1242C	.38	8908.3/S	.26	8932.5/S	.16	8955.3C	.28
456.0A12.2424C	.36	8909.2/S	.24	8933.2/S	.16	8955.3N	.28
456.0A12.2424C	.38	8909.3/S	.26	8933.3/S	.16	8955.3S	.28
456.0A12.2433C	.36	8910.2/S	.24	8933.5/S	.16	8955.5/S	.18
456.0A12.2433C	.38	8910.3/S	.26	8933.6/S	.16	8955.6/S	.18
456.0A12.2442C	.36	8911.2/S	.24	8935.2/S	.16	8956.0	.44
456.0A12.2442C	.38	8911.3/S	.26	8935.3/S	.16	8956.0/B	.42
5492.2/S	.20	8912.2/S	.20	8935.5/S	.16	8956.0/E	.42
5492.5/S	.20	8912.3/S	.20	8935.6/S	.16	8956.0/G	.42
5494.2/S	.20	8912.5/S	.20	8937.2	.14	8956.2/S	.18
5494.5/S	.20	8912.6/S	.20	8937.2/S	.14	8956.2C	.28
5502.2/S	.20	8913.3/S	.20	8938.2/S	.14	8956.2N	.28
5502.5/S	.20	8913.6/S	.20	8939.2/S	.14	8956.2S	.28
5506.2/S	.20	8914.2/S	.20	8940.2/S	.16	8956.3/S	.18
5506.5/S	.20	8914.5/S	.20	8940.3/S	.16	8956.3C	.28
5508.2/S	.20	8921.2/S	.20	8940.5/S	.16	8956.3N	.28
5508.5/S	.20	8921.5/S	.20	8940.6/S	.16	8956.3S	.28
5514.2/S	.20	8923.2/S	.22	8941.2/S	.16	8956.5/S	.18
5514.3/S	.20	8923.2C	.30	8941.3/S	.16	8956.6/S	.18
5514.5/S	.20	8923.2N	.30	8941.5/S	.16	8957.0/B	.42
5514.6/S	.20	8923.2S	.30	8941.6/S	.16	8957.0/E	.42
5700.2/S	.13	8923.3/S	.22	8942.2/S	.16	8957.0/G	.42
5701.2/S	.13	8923.3C	.30	8942.3/S	.16	8957.2/S	.18
5718.2/S	.15	8923.3N	.30	8942.5/S	.16	8957.3/S	.18
5718.3/S	.15	8923.3S	.30	8942.6/S	.16	8957.5/S	.18
5719.2/S	.15	8923.5/S	.22	8943.2/S	.16	8957.6/S	.18
5719.3/S	.15	8923.6/S	.22	8943.3/S	.16	8959.2/S	.18
5720.2/S	.7	8924.2/S	.22	8943.5/S	.16	8959.3/S	.18
5721.2/S	.7	8924.2C	.30	8943.6/S	.16	8959.5/S	.18
5722.2/S	.7	8924.2N	.30	8944.2/S	.16	8959.6/S	.18
5723.2/S	.7	8924.2S	.30	8944.5/S	.16	8963.2/S	.18
5724.2/S	.7	8924.4/S	.22	8945.2/S	.18	8963.2C	.28
5725.2/S	.7	8924.4C	.30	8945.5/S	.18	8963.2N	.28
5726.2/S	.7	8924.4N	.30	8946.2/S	.16	8963.2S	.28
5727.2/S	.7	8924.4S	.30	8946.5/S	.16	8963.5/S	.18
5728.2/S	.7	8924.5/S	.22	8948.2/S	.16	8971.2	.11
5729.2/S	.7	8924.6/S	.22	8948.5/S	.16	8971.3	.11
5740.2/S	.8	8925.2/S	.22	8949.2C	.28	8971.4	.11
5741.2/S	.8	8925.3/S	.22	8949.2N	.28	8972.2/S	.18
5742.2/S	.8	8925.5/S	.22	8949.2S	.28	8972.2C	.28
5743.2/S	.8	8925.6/S	.22	8949.3/S	.18	8972.2N	.28
5744.2/S	.8	8926.2/S	.22	8949.3C	.28	8972.2S	.28
5745.2/S	.9	8926.2C	.30	8949.3N	.28	8972.5/S	.18
5746.2/S	.9	8926.2N	.30	8949.3S	.28	8995.2/S	.18
5747.2/S	.9	8926.2S	.30	8949.6/S	.18	8995.5/S	.18
5748.2/S	.9	8926.3/S	.22	8951.2/S	.18	8999.2/S	.18
5749.2/S	.9	8926.3C	.30	8951.2C	.28	8999.5/S	.18
5800.2/S	.24	8926.3N	.30	8951.2N	.28	EPDP1	.46
5800.3/S	.26	8926.3S	.30	8951.2S	.28	EPDP1/G	.46
5801.2/S	.24	8926.5/S	.22	8951.3/S	.18	EPDP2	.47
5801.3/S	.26	8926.6/S	.22	8951.3C	.28	EPDP2/G	.47
5802.2/S	.24	8927.2/S	.22	8951.3N	.28	EPDR1	.46
5802.3/S	.26	8927.2C	.30	8951.3S	.28	EPDR1/G	.46
5803.2/S	.24	8927.2N	.30	8951.5/S	.18	EPDR2	.47
5803.3/S	.26	8927.2S	.30	8951.6/S	.18	EPDR2/G	.47
5804.2/S	.24	8927.3/S	.22	8953.2/S	.18	EPS	.46
5804.3/S	.26	8927.3C	.30	8953.3/S	.18	EPS	.47
5805.2/S	.24	8927.3N	.30	8953.5/S	.18	GD35	.83
5805.3/S	.26	8927.3S	.30	8953.6/S	.18	GD50	.83
5806.2/S	.24	8927.5/S	.22	8954.0/B	.42	GUC11	.65
5806.3/S	.26	8927.6/S	.22	8954.0/E	.42	GZ14U	.70
8835.2/S	.12	8928.2/S	.22	8954.0/G	.42	GZ2	.65
8836.2/S	.12	8928.3/S	.22	8954.2/S	.18	GZM 80	.110
8837.2/S	.12	8928.5/S	.22	8954.3/S	.18	GZM 92	.110
8838.2/S	.12	8928.6/S	.22	8954.5/S	.18	GZM2	.55
8839.2/S	.12	8929.2/S	.16	8954.6/S	.18	GZM2	.111
8840.2/S	.12	8929.3/S	.16	8955.0/B	.42	GZM3	.56
8905.2/S	.24	8929.5/S	.16	8955.0/E	.42	GZM3	.111
8905.3/S	.26	8929.6/S	.16	8955.0/G	.42	GZM4	.56
8906.2/S	.24	8931.2/S	.16	8955.2/S	.18	GZM4	.111
8906.3/S	.26	8931.3/S	.16	8955.2C	.28	GZM80	.81
8907.2/S	.24	8931.5/S	.16	8955.2N	.28	GZM92	.82

BOLD - Regular stocked items.

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GZMB2	.57	PI84-012DC-00LV	.104	PIR6W-1PS-24VAC/DC-C	.97	PIR6WB-1PS-60VDC-C	.101
GZMB4	.57	PI84-024DC-00LD	.104	PIR6W-1PS-24VAC/DC-O	.97	PIR6WB-1PS-60VDC-O	.101
GZMB80	.83	PI84-024DC-00LV	.104	PIR6W-1PS-24VAC/DC-R	.96	PIR6WB-1PS-60VDC-R	.100
GZP11	.69	PI84-110DC-00LD	.104	PIR6W-1PS-24VAC/DC-R01	.96	PIR6WB-1PS-60VDC-R01	.100
GZP8	.69	PI84-110DC-00LV	.104	PIR6W-1PS-24VAC/DC-T	.97	PIR6WB-1PS-60VDC-T	.101
GZT 80	.110	PI84-110DC-M43G	.104	PIR6W-1PS-24VDC-C	.97	PIR6WB-1PS-6VDC-C	.101
GZT 92	.110	PI84-110DC-M93G	.104	PIR6W-1PS-24VDC-O	.97	PIR6WB-1PS-6VDC-O	.101
GZT2	.55	PI84-120AC-00LV	.104	PIR6W-1PS-24VDC-R	.96	PIR6WB-1PS-6VDC-R	.100
GZT2	.111	PI84-120AC-M93G	.104	PIR6W-1PS-24VDC-R01	.96	PIR6WB-1PS-6VDC-R01	.100
GZT3	.55	PI84-12DC-M41G	.104	PIR6W-1PS-24VDC-T	.97	PIR6WB-1PS-6VDC-T	.101
GZT3	.111	PI84-12DC-M91G	.104	PIR6W-1PS-36VDC-C	.97	PZ11	.70
GZT4	.56	PI84-230AC-00LV	.104	PIR6W-1PS-36VDC-O	.97	PZ8	.69
GZT4	.111	PI84-230AC-M93G	.104	PIR6W-1PS-36VDC-R	.96	R15-1014-23-1012	.68
GZT80	.81	PI84-24DC-M41G	.104	PIR6W-1PS-36VDC-R01	.96	R15-1014-23-1012-D	.68
GZT92	.82	PI84-24DC-M91G	.104	PIR6W-1PS-36VDC-T	.97	R15-1014-23-1012-K	.68
GZY2G	.65	PI85-012DC-00LD	.105	PIR6W-1PS-42VAC/DC-C	.97	R15-1014-23-1012-L	.68
M103	.113	PI85-012DC-00LV	.105	PIR6W-1PS-42VAC/DC-O	.97	R15-1014-23-1024	.68
M21N	.113	PI85-024DC-00LD	.105	PIR6W-1PS-42VAC/DC-R	.96	R15-1014-23-1024-D	.68
M21P	.113	PI85-024DC-00LV	.105	PIR6W-1PS-42VAC/DC-R01	.96	R15-1014-23-1024-K	.68
M31G*	.113	PI85-110DC-00LD	.105	PIR6W-1PS-42VAC/DC-T	.97	R15-1014-23-1024-L	.68
M31R	.113	PI85-110DC-00LV	.105	PIR6W-1PS-48VDC-C	.97	R15-1014-23-1110	.68
M32G	.113	PI85-110DC-M43G	.105	PIR6W-1PS-48VDC-O	.97	R15-1014-23-1110-D	.68
M32R	.113	PI85-110DC-M93G	.105	PIR6W-1PS-48VDC-R	.96	R15-1014-23-1110-K	.68
M33G	.113	PI85-120AC-00LV	.105	PIR6W-1PS-48VDC-R01	.96	R15-1014-23-1110-L	.68
M33R	.113	PI85-120AC-M93G	.105	PIR6W-1PS-48VDC-T	.97	R15-1014-23-3024	.68
M41G	.113	PI85-12DC-M41G	.105	PIR6W-1PS-60VDC-C	.97	R15-1014-23-3024-D	.68
M42G	.113	PI85-12DC-M91G	.105	PIR6W-1PS-60VDC-O	.97	R15-1014-23-3024-K	.68
M43G	.113	PI85-230AC-00LV	.105	PIR6W-1PS-60VDC-R	.96	R15-1014-23-3024-L	.68
M51	.113	PI85-230AC-M93G	.105	PIR6W-1PS-60VDC-R01	.96	R15-1014-23-3120	.68
M52	.113	PI85-24DC-M41G	.105	PIR6W-1PS-60VDC-T	.97	R15-1014-23-3120-D	.68
M53	.113	PI85-24DC-M91G	.105	PIR6W-1PS-6VDC-C	.97	R15-1014-23-3120-K	.68
M61G*	.113	PIR2-012DC-00LD	.106	PIR6W-1PS-6VDC-O	.97	R15-1014-23-3120-L	.68
M61R	.113	PIR2-012DC-00LV	.106	PIR6W-1PS-6VDC-R	.96	R15-1014-23-3230	.68
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M62R	.113	PIR2-024DC-00LV	.106	PIR6W-1PS-6VDC-T	.97	R15-1014-23-3230-K	.68
M63G*	.113	PIR2-110DC-00LD	.106	PIR6WB-1PS-115VAC/DC-C	.101	R15-1014-23-3230-L	.68
M63R	.113	PIR2-110DC-00LV	.106	PIR6WB-1PS-115VAC/DC-O	.101	R15-1014-23-6120	.68
M71	.113	PIR2-120AC-00LV	.106	PIR6WB-1PS-115VAC/DC-R	.100	R15-1014-23-6120-D	.68
M72	.113	PIR2-230AC-00LV	.106	PIR6WB-1PS-115VAC/DC-R01	.100	R15-1014-23-6120-K	.68
M73	.113	PIR2M-012DC-20	.109	PIR6WB-1PS-12VDC-C	.101	R15-1014-23-6120-L	.68
M91G	.113	PIR2M-024DC-20	.109	PIR6WB-1PS-12VDC-O	.101	R15-1014-23-6230	.68
M91R	.113	PIR2M-110DC-20	.109	PIR6WB-1PS-12VDC-R	.100	R15-1014-23-6230-D	.68
M92G	.113	PIR2M-115AC-20	.109	PIR6WB-1PS-12VDC-R01	.100	R15-1014-23-6230-K	.68
M92R	.113	PIR2M-230AC-20	.109	PIR6WB-1PS-12VDC-T	.101	R15-1014-23-6230-L	.68
M93G	.113	PIR3-012DC-00LD	.107	PIR6WB-1PS-12VDC-C	.101	R15-2012-23-1012	.68
M93R	.113	PIR3-012DC-00LV	.107	PIR6WB-1PS-230VAC/DC-C	.101	R15-2012-23-1012-WT	.68
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MTGF1	.46	PIR3-110DC-00LD	.107	PIR6WB-1PS-230VAC/DC-R01	.100	R15-2012-23-1024-WT	.68
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MTGF2	.47	PIR3-120AC-00LV	.107	PIR6WB-1PS-24VAC/DC-O	.101	R15-2012-23-1110	.68
MTGF2/G	.47	PIR3-230AC-00LV	.107	PIR6WB-1PS-24VAC/DC-R	.100	R15-2012-23-1110-WT	.68
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MTGTK1/1M	.46	PIR4-012DC-00LV	.108	PIR6WB-1PS-24VAC/DC-T	.101	R15-2012-23-5024	.68
MTGTK1/1M/G	.46	PIR4-024DC-00LD	.108	PIR6WB-1PS-24VDC-C	.101	R15-2012-23-5024-WT	.68
MTGTK1/G	.46	PIR4-024DC-00LV	.108	PIR6WB-1PS-24VDC-O	.101	R15-2012-23-5024-WTL	.68
MTGTK2	.47	PIR4-110DC-00LD	.108	PIR6WB-1PS-24VDC-R	.100	R15-2012-23-5120	.68
MTGTK2/1M	.47	PIR4-110DC-00LV	.108	PIR6WB-1PS-24VDC-R01	.100	R15-2012-23-5120-WT	.68
MTGTK2/1M/G	.47	PIR4-120AC-00LV	.108	PIR6WB-1PS-24VDC-T	.101	R15-2012-23-5120-WTL	.68
MTGTK2/G	.47	PIR4-230AC-00LV	.108	PIR6WB-1PS-36VDC-C	.101	R15-2012-23-5230	.68
PI6-1P-115VAC/DC	.91	PIR6W-1PS-115VAC/DC-C	.97	PIR6WB-1PS-36VDC-O	.101	R15-2012-23-5230-WT	.68
PI6-1P-12VDC	.91	PIR6W-1PS-115VAC/DC-O	.97	PIR6WB-1PS-36VDC-R	.100	R15-2012-23-5230-WTL	.68
PI6-1P-230VAC/DC	.91	PIR6W-1PS-115VAC/DC-R	.96	PIR6WB-1PS-36VDC-R01	.100	R15-2013-23-1012	.68
PI6-1P-24VAC/DC	.91	PIR6W-1PS-115VAC/DC-R01	.96	PIR6WB-1PS-36VDC-T	.101	R15-2013-23-1012-WT	.68
PI6-1P-36VDC	.91	PIR6W-1PS-115VAC/DC-T	.97	PIR6WB-1PS-42VAC/DC-C	.101	R15-2013-23-1012-WTL	.68
PI6-1P-42VAC/DC	.91	PIR6W-1PS-12VDC-C	.97	PIR6WB-1PS-42VAC/DC-O	.101	R15-2013-23-1024	.68
PI6-1T-230VAC/DC	.92	PIR6W-1PS-12VDC-O	.97	PIR6WB-1PS-42VAC/DC-R	.100	R15-2013-23-1024-WT	.68
PI6-1T-24VAC/DC	.92	PIR6W-1PS-12VDC-R	.96	PIR6WB-1PS-42VAC/DC-R01	.100	R15-2013-23-1024-WTL	.68
PI6-1T-5...32VDC	.92	PIR6W-1PS-12VDC-R01	.96	PIR6WB-1PS-48VDC-C	.101	R15-2013-23-1110	.68
PI6-OC-230VAC/DC	.93	PIR6W-1PS-12VDC-T	.97	PIR6WB-1PS-48VDC-O	.101	R15-2013-23-1110-WT	.68
PI6-OC-24VAC/DC	.93	PIR6W-1PS-230VAC/DC-C	.97	PIR6WB-1PS-48VDC-R	.100	R15-2013-23-1110-WTL	.68
PI6-OC-5...32VDC	.93	PIR6W-1PS-230VAC/DC-O	.97	PIR6WB-1PS-48VDC-R01	.100	R15-2013-23-5024	.68
PI84-012DC-00LD	.104	PIR6W-1PS-230VAC/DC-R	.96	PIR6WB-1PS-48VDC-T	.101	R15-2013-23-5024-WT	.68
		PIR6W-1PS-230VAC/DC-R01	.96			R15-2013-23-5024-WTL	.68

BOLD - Regular stocked items.

Part No.	Pg.	Part No.	Pg.	Part No.	Pg.	Part No.	Pg.
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R15-2013-23-5120-WT	.68	RM50-3021-85-1024	.75	RUC-2012-26-1110-L	.62	RUC-2052-26-1024-K	.64
R15-2013-23-5120-WTL	.68	RM50-3021-85-1048	.75	RUC-2012-26-5120	.62	RUC-2052-26-1024-KL	.64
R15-2013-23-5230	.68	RM699BV-3011-85-1005	.88	RUC-2012-26-5120-K	.62	RUC-2052-26-1024-L	.64
R15-2013-23-5230-WT	.68	RM699BV-3011-85-1012	.88	RUC-2012-26-5120-KL	.62	RUC-2052-26-1110	.64
R15-2013-23-5230-WTL	.68	RM699BV-3011-85-1024	.88	RUC-2012-26-5120-L	.62	RUC-2052-26-1110-K	.64
R2M-2012-23-1012	.62	RM699BV-3011-85-1048	.88	RUC-2012-26-5230	.62	RUC-2052-26-1110-KL	.64
R2M-2012-23-1024	.62	RM699BV-3011-85-1060	.88	RUC-2012-26-5230-K	.62	RUC-2052-26-1110-L	.64
R2M-2012-23-1110	.62	RM699BV-3211-85-1005	.88	RUC-2012-26-5230-KL	.62	RUC-2052-26-5120	.64
R2M-2012-23-5120	.62	RM699BV-3211-85-1012	.88	RUC-2012-26-5230-L	.62	RUC-2052-26-5120-K	.64
R2M-2012-23-5230	.62	RM699BV-3211-85-1024	.88	RUC-2012-26-5230-L	.62	RUC-2052-26-5120-KL	.64
R2N-2012-23-1012-WT	.54	RM699BV-3211-85-1048	.88	RUC-2012-26-1024-K	.63	RUC-2052-26-5120-L	.64
R2N-2012-23-1012-WTL	.54	RM699BV-3211-85-1060	.88	RUC-2013-26-1012-K	.63	RUC-2052-26-5120-L	.64
R2N-2012-23-1024-WT	.54	RM84-2012-35-1012	.80	RUC-2013-26-1012-KL	.63	RUC-2052-26-5230	.64
R2N-2012-23-1024-WTL	.54	RM84-2012-35-1024	.80	RUC-2013-26-1012-L	.63	RUC-2052-26-5230-K	.64
R2N-2012-23-1110-WT	.54	RM84-2012-35-1110	.80	RUC-2013-26-1024	.63	RUC-2052-26-5230-KL	.64
R2N-2012-23-1110-WTL	.54	RM84-2012-35-5120	.80	RUC-2013-26-1024-K	.63	RUC-2052-26-5230-L	.64
R2N-2012-23-5024-WT	.54	RM84-2012-35-5230	.80	RUC-2013-26-1024-KL	.63	RUC-2053-26-1012	.64
R2N-2012-23-5024-WTL	.54	RM84-2022-35-1012	.80	RUC-2013-26-1024-L	.63	RUC-2053-26-1012-K	.64
R2N-2012-23-5120-WT	.54	RM84-2022-35-1024	.80	RUC-2013-26-1110	.63	RUC-2053-26-1012-KL	.64
R2N-2012-23-5120-WTL	.54	RM84-2022-35-1110	.80	RUC-2013-26-1110-K	.63	RUC-2053-26-1012-L	.64
R2N-2012-23-5230-WT	.54	RM84-2022-35-5120	.80	RUC-2013-26-1110-KL	.63	RUC-2053-26-1024	.64
R2N-2012-23-5230-WTL	.54	RM84-2022-35-5230	.80	RUC-2013-26-1110-L	.63	RUC-2053-26-1024-K	.64
R3N-2013-23-1012-WT	.54	RM85-2011-35-1012	.80	RUC-2013-26-5120	.63	RUC-2053-26-1024-KL	.64
R3N-2013-23-1012-WTL	.54	RM85-2011-35-1024	.80	RUC-2013-26-5120-K	.63	RUC-2053-26-1024-L	.64
R3N-2013-23-1024-WT	.54	RM85-2011-35-1110	.80	RUC-2013-26-5120-KL	.63	RUC-2053-26-1110	.64
R3N-2013-23-1024-WTL	.54	RM85-2011-35-5120	.80	RUC-2013-26-5120-L	.63	RUC-2053-26-1110-K	.64
R3N-2013-23-1110-WT	.54	RM85-2011-35-5230	.80	RUC-2013-26-5230	.63	RUC-2053-26-1110-KL	.64
R3N-2013-23-1110-WTL	.54	RM85-2021-35-1012	.80	RUC-2013-26-5230-K	.63	RUC-2053-26-1110-L	.64
R3N-2013-23-5024-WT	.54	RM85-2021-35-1024	.80	RUC-2013-26-5230-KL	.63	RUC-2053-26-5120	.64
R3N-2013-23-5024-WTL	.54	RM85-2021-35-1110	.80	RUC-2013-26-5230-L	.63	RUC-2053-26-5120-K	.64
R3N-2013-23-5120-WT	.54	RM85-2021-35-5120	.80	RUC-2022-26-1012	.63	RUC-2053-26-5120-KL	.64
R3N-2013-23-5120-WTL	.54	RM85-2021-35-5230	.80	RUC-2022-26-1012-K	.63	RUC-2053-26-5120-L	.64
R3N-2013-23-5230-WT	.54	RM87N-2011-35-1012	.80	RUC-2022-26-1012-KL	.63	RUC-2053-26-5230	.64
R3N-2013-23-5230-WTL	.54	RM87N-2011-35-1024	.80	RUC-2022-26-1012-L	.63	RUC-2053-26-5230-K	.64
R4N-2014-23-1012-WT	.54	RM87N-2011-35-1110	.80	RUC-2022-26-1024	.63	RUC-2053-26-5230-KL	.64
R4N-2014-23-1012-WTL	.54	RM87N-2011-35-5120	.80	RUC-2022-26-1024-K	.63	RUC-2053-26-5230-L	.64
R4N-2014-23-1024-WT	.54	RM87N-2011-35-5230	.80	RUC-2022-26-1024-KL	.63	RY2-2012-26-1012	.62
R4N-2014-23-1024-WTL	.54	RM87N-2021-35-1012	.80	RUC-2022-26-1024-L	.63	RY2-2012-26-1012-D	.62
R4N-2014-23-1110-WT	.54	RM87N-2021-35-1024	.80	RUC-2022-26-1110	.63	RY2-2012-26-1012-L	.62
R4N-2014-23-1110-WTL	.54	RM87N-2021-35-1110	.80	RUC-2022-26-1110-K	.63	RY2-2012-26-1012-LD	.62
R4N-2014-23-5024-WT	.54	RM87N-2021-35-5120	.80	RUC-2022-26-1110-KL	.63	RY2-2012-26-1024	.62
R4N-2014-23-5024-WTL	.54	RM87N-2021-35-5230	.80	RUC-2022-26-1110-L	.63	RY2-2012-26-1024-D	.62
R4N-2014-23-5120-WT	.54	RS35-3022-25-1012	.103	RUC-2022-26-1110-KL	.63	RY2-2012-26-1024-LD	.62
R4N-2014-23-5120-WTL	.54	RS35-3022-25-1024	.103	RUC-2022-26-5120	.63	RY2-2012-26-1110	.62
R4N-2014-23-5230-WT	.54	RS35-3022-25-1110	.103	RUC-2022-26-5120-K	.63	RY2-2012-26-1110-D	.62
R4N-2014-23-5230-WTL	.54	RS50-3022-25-1012	.103	RUC-2022-26-5120-KL	.63	RY2-2012-26-1110-L	.62
RM40-2011-85-1003	.75	RS50-3022-25-1024	.103	RUC-2022-26-5230	.63	RY2-2012-26-1110-LD	.62
RM40-2011-85-1005	.75	RS50-3022-25-1110	.103	RUC-2022-26-5230-K	.63	RY2-2012-26-5024	.62
RM40-2011-85-1006	.75	RS50-3022-25-1012	.103	RUC-2022-26-5230-KL	.63	RY2-2012-26-5024-D	.62
RM40-2011-85-1009	.75	RSR30-D05-A1-24-020-1	.84	RUC-2022-26-5230-L	.63	RY2-2012-26-5024-L	.62
RM40-2011-85-1012	.75	RSR30-D05-D1-02-040-1	.86	RUC-2023-26-1012-K	.63	RY2-2012-26-5024-LD	.62
RM40-2011-85-1012	.75	RSR30-D05-D1-04-025-1	.85	RUC-2023-26-1012-KL	.63	RY2-2012-26-5120	.62
RM40-2011-85-1024	.75	RSR30-D05-D1-24-010-1	.87	RUC-2023-26-1012-L	.63	RY2-2012-26-5120-D	.62
RM40-2011-85-1048	.75	RSR30-D12-A1-24-020-1	.84	RUC-2023-26-1024	.63	RY2-2012-26-5120-L	.62
RM40-3021-85-1003	.75	RSR30-D12-D1-02-040-1	.86	RUC-2023-26-1024-K	.63	RY2-2012-26-5120-LD	.62
RM40-3021-85-1005	.75	RSR30-D12-D1-04-025-1	.85	RUC-2023-26-1024-KL	.63	RY2-2012-26-5230	.62
RM40-3021-85-1006	.75	RSR30-D12-D1-24-010-1	.87	RUC-2023-26-1024-L	.63	RY2-2012-26-5230-D	.62
RM40-3021-85-1009	.75	RSR30-D24-A1-24-020-1	.84	RUC-2023-26-1110	.63	RY2-2012-26-5230-L	.62
RM40-3021-85-1012	.75	RSR30-D24-D1-02-040-1	.86	RUC-2023-26-1110-K	.63	RY2-2012-26-5230-LD	.62
RM40-3021-85-1024	.75	RSR30-D24-D1-04-025-1	.85	RUC-2023-26-1110-KL	.63		
RM40-3021-85-1048	.75	RSR30-D24-D1-24-010-1	.87	RUC-2023-26-1110-L	.63		
RM50-3011-85-1003	.75	RSR30-D48-D1-02-040-1	.86	RUC-2023-26-5120	.63		
RM50-3011-85-1005	.75	RSR30-D48-D1-04-025-1	.85	RUC-2023-26-5120-K	.63		
RM50-3011-85-1006	.75	RSR30-D48-D1-24-010-1	.87	RUC-2023-26-5120-KL	.63		
RM50-3011-85-1009	.75	RUC-2012-26-1012	.62	RUC-2023-26-5120-L	.63		
RM50-3011-85-1012	.75	RUC-2012-26-1012-K	.62	RUC-2023-26-5230	.63		
RM50-3011-85-1018	.75	RUC-2012-26-1012-KL	.62	RUC-2023-26-5230-K	.63		
RM50-3011-85-1024	.75	RUC-2012-26-1012-L	.62	RUC-2023-26-5230-KL	.63		
RM50-3011-85-1048	.75	RUC-2012-26-1024	.62	RUC-2023-26-5230-L	.63		
RM50-3021-85-1003	.75	RUC-2012-26-1024-K	.62	RUC-2052-26-1012	.64		
RM50-3021-85-1005	.75	RUC-2012-26-1024-KL	.62	RUC-2052-26-1012-K	.64		
RM50-3021-85-1006	.75	RUC-2012-26-1024-L	.62	RUC-2052-26-1012-KL	.64		
RM50-3021-85-1009	.75	RUC-2012-26-1110	.62				
RM50-3021-85-1012	.75	RUC-2012-26-1110-K	.62				

BOLD - Regular stocked items.

STANDARD TERMS AND CONDITIONS OF SALE

TITLE - Title to the products of ALTECH shall remain with ALTECH until payment is made in full by Customer. Such reservation of title is for the purpose of securing the purchase price and shall not relieve Customer of the duty to inspect the products upon receipt, to notify ALTECH of any deficiencies or defects, and to exercise due care in the use, installation, operation, and maintenance of the products when on the premise of the Customer or under the control of the Customer. Notwithstanding any reservation of title by ALTECH, risk of loss shall pass to customer at any time of shipment.

SHIPMENT AND DELIVERY - All orders for destination in the mainland United States (less Hawaii, Alaska and non-continental United States possessions) will be shipped F.O.B. Flemington, N.J. All destination, shipping and other charges shall be paid by the Customer in accordance with ALTECH's then current shipping and billing practices.

Delivery dates given in the acceptance of any order are approximate. ALTECH shall not be liable for delays in delivery or in performance due to causes beyond its reasonable control including acts of God, acts of Customer, acts of civil or military authority, fires, strikes or other labor disturbances, war, riot or delays in transportation. In the event of such delay, the date of delivery or performance shall be extended for a period equal to the time lost by reason of the delay.

PRICE - PRICES in any ALTECH publication are subject to change without prior notification. Catalog prices are based on prices published in the current price list. All written quotations are valid for thirty (30) days from the date of quotation. Customer shall pay all sales, use, excise or similar taxes whenever ALTECH must itself pay and/or collect such tax from Customer arising out of the sale.

PAYMENT - Customer agrees to make payment within thirty (30) days of date of the invoice from ALTECH. Customer agrees to pay a late payment charge of one and one-half percent (1.5% per month, or the maximum late payment charge permitted by applicable law, whichever is less, on any unpaid amount for each calendar month (or fraction thereof) that such payment is in default. Orders amounting to less than \$100.00 will be billed at \$100.00 plus freight. Full carton purchases are required. In the event of referral to an attorney for collection, reasonable attorney's fees for collection of the overdue amount shall be paid by Customer. In the event payment is not received within 30 days from the date of invoice, any discount shall be cancelled and the full list price will be due.

LIMITED WARRANTY - ALTECH warrants to Customer that the equipment purchases shall be free from defects in material and workmanship under normal use and service for a period of one year from shipment.

Written notice as an explanation of the circumstances of any claim that the equipment has proved defective in material or workmanship shall be given promptly by the Customer to ALTECH.

ALTECH will not be liable for any misuse, improper operations, improper installation, improper maintenance, alteration, modification, accident or unusual degradation of the equipment or parts due to an unsuitable installation environment.

No representation of other affirmation of facts, including but not limited to statements regarding capacity, suitability for use or performance of the equipment, shall be or be deemed to be a warranty or representation by ALTECH for any purpose, nor give rise to any liability or obligation of ALTECH whatsoever.

Customer's sole and exclusive remedy in the event of breach of warranty, as set forth herein, is expressly limited to (1) the correction of the defect by adjustment, repair, modification, or replacement, or (2) issuance of a credit or refund of the purchase price for the defective equipment at ALTECH's election and sole expense.

EXCEPT AS SPECIFICALLY PROVIDED IN THIS AGREEMENT, THERE ARE NO OTHER WARRANTIES EXPRESSED OR IMPLIED INCLUDING BUT NOT LIMITED TO ANY IMPLIED WARRANTIES OR MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE.

THIS WARRANTY EXTENDS ONLY TO THE CUSTOMER FROM ALTECH OR ITS AUTHORIZED DISTRIBUTOR.

LIMITATION OF LIABILITY - IN NO EVENT, SHALL ALTECH BE LIABLE FOR LOSS OF PROFITS, INDIRECT, SPECIAL, CONSEQUENTIAL OR OTHER SIMILAR DAMAGES ARISING OUT OF ANY BREACH OF THIS AGREEMENT OR OBLIGATIONS UNDER THE AGREEMENT.

ALTECH SHALL NOT BE LIABLE FOR ANY DAMAGES CAUSED BY DELAY IN SHIPMENT, INSTALLATION OR FURNISHING OF EQUIPMENT OR SERVICES UNDER THIS AGREEMENT.

No action arising out of any claimed breach of this Agreement may be brought by either party more than two (2) years after the cause of action has accrued.

PATENT INDEMNITY - ALTECH shall defend or settle any suit or proceeding brought against Customer based on a claim that any equipment made to ALTECH design and furnished hereunder constitutes an infringement of any existing United States patent, provided (ALTECH) is notified promptly in writing and is given complete authorization and information required for the defense, and ALTECH shall pay all damages and costs awarded against Customer, but shall not be responsible for any costs, expense or compromise incurred or made by Customer without ALTECH's prior written consent. If any equipment is in ALTECH's opinion likely to or does become the subject of a claim for patent infringement, ALTECH may at its option and expense procure for Customer the right to continue using the device, modify it to become non-infringing, but in the event ALTECH is not reasonably able to modify, substitute, or otherwise procure for Customer the right to continue using it, ALTECH will remove such equipment and refund to Customer the amount paid in excess of a reasonable rental for past use.

ALTECH shall not be liable for any infringement or claim based upon use of the equipment in combination with other equipment not supplied by ALTECH or with modifications made by Customer.

The foregoing states the entire liability of ALTECH to Customer arising from patent infringement.

SELLER'S REMEDIES - Should Customer fail to make any payment within ten (10) days of its due date, or fail to perform any other of the Customer's obligation hereunder upon thirty (30) days written notice, or should Customer be or become insolvent or be a party to any bankruptcy receivership proceeding prior to full payment of all amounts payable hereunder, ALTECH may: (a) with or without demand or notice to customer declare the entire amount unpaid immediately due and payable; (b) enter upon the premises where the equipment may be found and remove it (Customer shall assemble the equipment and make it available to ALTECH at a place reasonably convenient to both parties and shall permit and assist ALTECH in effecting the retaking and removal of the equipment); and (c) sell any or all the equipment as permitted under applicable law, applying the proceeds of the sale to payment of the expenses of retaking, repairing and selling the equipment, reasonable attorney fees and to the satisfaction of all indebtedness then due and unpaid under this Agreement. Any surplus shall be paid to Customer and any deficiency shall be paid to ALTECH by Customer.

The remedies provided herein shall be cumulative and in addition to all other remedies provided by law or equity or under the Uniform Commercial Code.

GOVERNING LAW - This agreement will be governed by the Laws of the State of New Jersey.

GENERAL - This Agreement shall only become effective and binding when either (a) it has been accepted and executed by an authorized representative of ALTECH, or (b) the equipment has been shipped to Customer, with or without acceptance in writing hereon. Notice of acceptance is hereby waived by Customer. Customer hereby acknowledges receipt of a true and complete copy hereof.

No addition to or modification of any of the Terms and Conditions of Sale as they appear herein shall be binding upon ALTECH unless signed in writing by duly authorized representative of ALTECH in Flemington, N.J.

Typographical and clerical errors in quotations, orders and acknowledgments are subject to correction.

This Agreement is not assignable without the prior written consent of ALTECH. Any attempt to assign any of the rights, duties or obligations of this Agreement without such consent is void.

If any provision or provisions of this Agreement shall be held to be invalid, illegal or unenforceable, the validity, legality and enforceability, of the remaining provisions shall not in any way be affected or impaired thereby.

ALTECH is not responsible for failure to fulfill its obligation under this Agreement due to causes beyond its control, or except as agreed herein.

THE CUSTOMER ACKNOWLEDGES THAT HE HAS READ THE AGREEMENT, UNDERSTANDS IT, AND AGREES TO BE BOUND BY ITS TERMS AND CONDITIONS. FURTHERMORE, THE CUSTOMER AGREES THAT IT IS THE COMPLETE AND EXCLUSIVE STATEMENT OF THE AGREEMENT BETWEEN THE PARTIES, WHICH SUPERSEDES ALL PROPOSALS OR PRIOR AGREEMENTS, ORAL OR WRITTEN, EXPRESSED OR IMPLIED, AND ALL OTHER COMMUNICATIONS BETWEEN THE PARTIES RELATING TO THE SUBJECT MATTER OF THIS AGREEMENT.

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