OptiRel

Relay protection and automation devices

A set of OptiRel relay devices is used to monitor the parameters of the electrical network, protect power consumers, control loads, and ensure galvanic isolation of electrical circuits. Modular relays are compact solutions with a width of 18 and 36 mm. The devices have convenient parameter setting and a wide range of supply voltages. The interposing relays have an excellent service life of up to 10 million switching cycles and are also used in harsh environments with temperatures from -40 to +70 °C and high humidity.

Interposing relay and accessories

OptiRel C 81

3 series: narrow, miniature and general-purpose relays
In (AC-15): up to 16 A
Control coil: from 5 to 240 V AC/DC
Number of CO contacts: up to 4

Control and protection relays

OptiRel D 115

Voltage, current, level, temperature control relays
Interposing and pulse relays
Time relay
Photo relay

OptiRel G

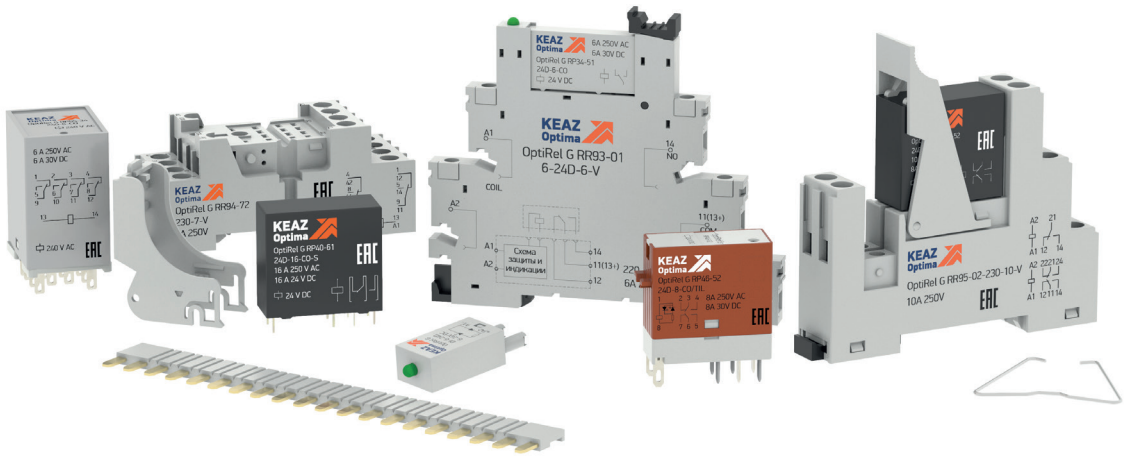
↗ Interposing relay and accessories

OptiRel G interposing (interface) relays are compact and general-purpose devices that are universally used in control and automation solutions. They are an integral part of modern automated process control systems and are effectively used in application where galvanic isolation, signal separation or amplification, as well as voltage coupling are required.

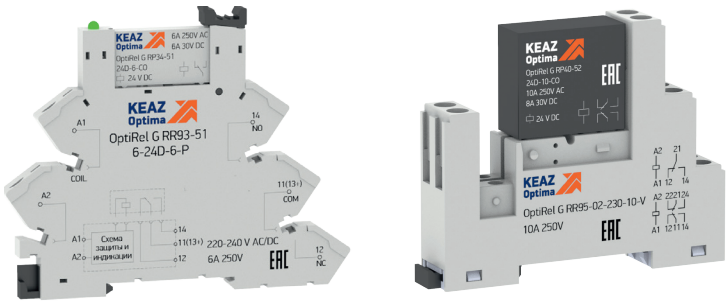
The range of interposing relays of KEAZ Company is represented by the most common and popular electromechanical devices consisting of a magnetic core with a control coil and output contacts, as well as a solid-state relays (optocouplers), which are used when it is necessary to ensure high switching frequency. The absence of moving parts in solid-state relays avoids wear and rattle of contracts, provides the possibility of relay operation under increased vibration, as well as high electrical wear resistance.

OptiRel G relays are available in 4 series, from the most compact to the most functional, as well as a wide range of additional components and accessories allowing the implementation of a solution in exact accordance with the requirements of the design documentation, the specifics of their application and the tasks to be solved.

The most popular series are available in two versions - both as components for assembly, which allows flexible configuration and stock optimization, and as ready-made solutions, which are a complete assembly of relay and mounting receptacle (base) and sold under a single code.

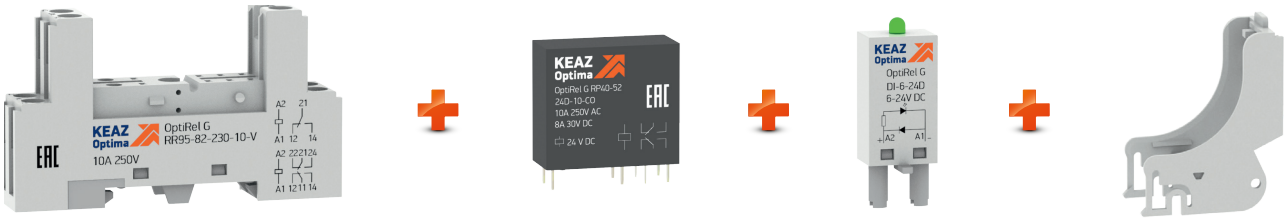


Turnkey solution



The relay modules RM38 and RM48 are an assembly of the most popular versions of plug-in relays and receptacles (bases).

Final solution assembly



The mandatory components for assembling a complete din-rail mounting solution are the plug-in relay itself and the receptacle required for its mounting and wiring. To ensure that the relay is securely fixed in the receptacle and for easy mounting and dismounting of the relay, a retainer is used, which is available separately. If additional functions such as e.g. surge overvoltage protection or operation indication are required, additional plug-in modules are available separately.

Selection guide

Series designation	Ultrafine interface relays	Pony relays	Industrial relays	General purpose relays
Series	RM38; RP34	RM48; RP40; RP41	RP46	RP55
Appearance				
Number of contacts	1 CO	1 CO; 2 CO; 1 NO; 2 NO	2 CO	2 CO; 3 CO; 4 CO
Rated current of the main circuit at the rated voltage, A	6	Up to 16	8	7; 10; 12
Rated voltage of the main circuit	250 V AC 30 V DC	Up to 250 V AC Up to 30 V DC	250 V AC 30 V DC	250 V AC 30 V DC
Maximum switched voltage [1]	400 V AC 300 V DC	Up to 440 V AC Up to 300 V DC	250 V AC 30 V DC	250 V AC 30 V DC
Material of contacts	AgNi; AgNi + Au; $AgSnO_2$	AgNi; AgNi + Au; $AgSnO_2$	$AgSnO_2$	AgNi; AgNi + Au; $AgSnO_2$
Rated voltage of the control circuit	6-24 V DC 12-240 V AC/DC	5-110 V DC 12-230 V AC	12-24 V DC 24-230 V AC	6-220 V DC 12-230 V AC
Versions complete with receptacle («Relay modules»)	+	+	-	-
Solid-state versions	+	+	-	-
IP67 moisture-proof housing	-	+/-	-	-
Integral LED	+	-	+	+/-
Test button	-	-	+	+/-
Mechanical indicator	-	-	+	+/-

Note:
[1] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.

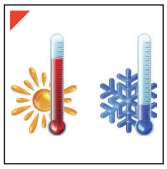
Series advantages

The devices can be ordered both as assembled relay modules sold under a single code and self-assembly components, which provides flexible configuration and inventory optimization.

Relays are available in three versions, depending on the material of the contact groups - for exact correspondence to the type and parameters of the load, to increase the service life, the possibility of switching small currents or for inductive loads with inrush currents.

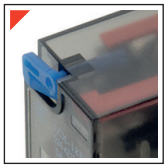
The relay receptacles are available in screw, spring and plug-in terminals allowing the solution exactly according to the customer's needs.

All relay series have very compact dimensions, with the ultrathin series models having a housing width of only 6 mm, allowing a large number of relays to be installed in a single row of limited width.



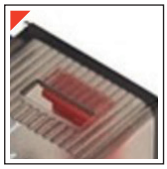
The operating temperature range of the relay is from -40 to +85 °C, which allows the use of equipment in automation solutions without the installation of heating or air conditioning systems.

The RP40 and RP41 miniature relay series include special IP67 waterproof versions that allow the equipment to be used in aggressive environments without risk of damaging the contacts.



All RP46 series relays as well as the individual RP55 series versions have an integrated test button for manual contact closure, which speeds up and simplifies the commissioning procedure.

Ultrafine relay modules RM38, receptacles RR93 for relays RP34, relays RP46 as well as individual version of relays RP55 have a LED indicator to display the operating mode state.



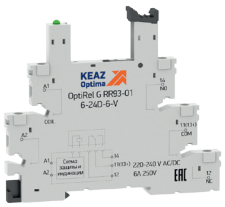
Most relay RP55 versions and all relays RP46 have a mechanical contact status indicator, which makes it possible to quickly determine the mode of operation, even in case of emergency modes.

The possibility to install additional modules such as variable resistors, LEDs, bypass diodes or resistance capacitance networks allows to implement the solution according to the requirements of the design documentation, specific application and tasks to be solved.

OptiRel G RP34 Ultrafine interface relays and OptiRel G RM38 Relay modules

The RP34 series ultrafine interface relays and RM38 series relay modules are the most compact solutions in the OptiRel G range, as they have a housing width of just 6 mm, allowing a large number of relays to be installed in a single row of limited width.
The devices of this series are mainly used to amplify and convert signals between sensors/actuators and PLCs, mechanisms or fieldbuses and to provide electrical isolation of these sensitive electronic devices.
The series range includes electromechanical and solid-state relays RM34 as well as assembled relay modules RM38.
Electromechanical relays RP34 are available in three versions, depending on the type of contact material — AgNi for general industrial applications; AgNi+Au for switching ultra-low currents and AgSnO2 for inductive loads and loads with inrush currents.
All receptacles RR93 for this series, which are available with both screw and spring terminals, have a built-in LED to indicate the mode of operation.

Selection guide

Device type	Relay modules RM38	Ultrafine interface relays RP34	Ultrafine solid-state interface relays RP34	Receptacles RR93 for relays RP34
Appearance				
Number of contacts	1 CO	1 CO; 1 NO	1 NO	–
Rated current of the main circuit at the rated voltage, A	6 A	6 A	0,1; 1; 3 A	6 A
Rated voltage of the main circuit	250 V AC 30 V DC	250 V AC 30 V DC	24; 48 V DC 230 V AC	250 V
Maximum switched voltage [1]	400 V AC 300 V DC	400 V AC 300 V DC	24; 48 V DC 230 V AC	400 V
Material of contacts	AgNi	AgNi; AgNi + Au; $AgSnO_2$	Транзистор; симистор; МОП-транзистор	–
Rated voltage of the control circuit	6; 12; 24 V DC 12; 24; 48; 110-125; 220-240 V AC/DC	6; 12; 24; 48; 60 V DC [2]	6; 12; 24; 60 V DC [2]	6-24 V DC 12-24; 48-60; 110-125; 220-240 V AC/DC

Note:
[1] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.
[2] The 110-125 V AC/DC and 220-240 V AC/DC receptacles contain circuitry to convert and step down the supply voltage to 60 V DC

OptiRel C RM38 Relay modules

Designation

OptiRel C RM 38 - 5 1 - 24 D - 6 - V - CO - C

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

1	Product range name	OptiRel C						
2	Product type name	RM — Relay module						
3	Series	38						
4	Configuration	5 — electromechanical, with screw terminals	6 — electromechanical with spring terminals					
5	Number of groups of main circuit contacts	1						
6	Rated supply voltage, V	6	12	24	48	60	110–125	220–240
7	Type of power supply circuit current	(empty) — alternative current AC; D — direct current DC; U — general-purpose current AC/DC						
8	Rated current of the main circuit, A	6						
9	Type of connecting terminals	P — spring terminal	V — screw terminal					
10	Type of main contacts	CO — changeover contact						
11	Material of contacts	(empty) — AgNi; S — $AgSnO_2$; C — AgNi + Au						

Items

Appearance	Configuration of contacts	Type of terminals	Rated voltage of the control circuit sockets	Material of contacts	Components		Relay module (assembly)	
					Interposing relay	Relay receptacle	Product name	Code
	1 CO	Screw	6 V DC	AgNi	OptiRel C RP34-51-6D-6-CO	OptiRel C RR93-01-6-24D-6-V	OptiRel C RM38-51-6D-6-V-CO	280986
			12 V DC	AgNi	OptiRel C RP34-51-12D-6-CO	OptiRel C RR93-01-6-24D-6-V	OptiRel C RM38-51-12D-6-V-CO	280987
			12 V AC/DC	AgNi	OptiRel C RP34-51-12D-6-CO	OptiRel C RR93-01-12-24U-6-V	OptiRel C RM38-51-12U-6-V-CO	280978
			12 V AC/DC	$AgSnO_2$	OptiRel C RP34-51-12D-6-CO-S	OptiRel C RR93-01-12-24U-6-V	OptiRel C RM38-51-12U-6-V-CO-S	280979
			24 V DC	AgNi	OptiRel C RP34-51-24D-6-CO	OptiRel C RR93-01-6-24D-6-V	OptiRel C RM38-51-24D-6-V-CO	280988
			24 V DC	AgNi+Au	OptiRel C RP34-51-24D-6-CO-C	OptiRel C RR93-01-6-24D-6-V	OptiRel C RM38-51-24D-6-V-CO-C	280990
			24 V DC	$AgSnO_2$	OptiRel C RP34-51-24D-6-CO-S	OptiRel C RR93-01-6-24D-6-V	OptiRel C RM38-51-24D-6-V-CO-S	280989
			24 V AC/DC	AgNi	OptiRel C RP34-51-24D-6-CO	OptiRel C RR93-01-12-24U-6-V	OptiRel C RM38-51-24U-6-V-CO	280980
			24 V AC/DC	$AgSnO_2$	OptiRel C RP34-51-24D-6-CO-S	OptiRel C RR93-01-12-24U-6-V	OptiRel C RM38-51-24U-6-V-CO-S	280981
			110-125 V AC/DC [1]	AgNi	OptiRel C RP34-51-60D-6-CO	OptiRel C RR93-01-110-125U-6-V	OptiRel C RM38-51-110-125U-6-V-CO	280982
			220-240 V AC/DC [1]	AgNi	OptiRel C RP34-51-60D-6-CO	OptiRel C RR93-01-220-240U-6-V	OptiRel C RM38-51-220-240U-6-V-CO	282945
			220-240 V AC/DC [1]	AgNi+Au	OptiRel C RP34-51-60D-6-CO-C	OptiRel C RR93-01-220-240U-6-V	OptiRel C RM38-51-220-240U-6-V-CO-C	282947
			220-240 V AC/DC [1]	$AgSnO_2$	OptiRel C RP34-51-60D-6-CO-S	OptiRel C RR93-01-220-240U-6-V	OptiRel C RM38-51-220-240U-6-V-CO-S	282946
		Spring terminals	6 V DC	AgNi	OptiRel C RP34-51-6D-6-CO	OptiRel C RR93-51-6-24D-6-P	OptiRel C RM38-61-6D-6-P-CO	280997
			12 V DC	AgNi	OptiRel C RP34-51-12D-6-CO	OptiRel C RR93-51-6-24D-6-P	OptiRel C RM38-61-12D-6-P-CO	280998
			12 V AC/DC	AgNi	OptiRel C RP34-51-12D-6-CO	OptiRel C RR93-51-12-24U-6-P	OptiRel C RM38-61-12U-6-P-CO	280991
			24 V DC	AgNi	OptiRel C RP34-51-24D-6-CO	OptiRel C RR93-51-6-24D-6-P	OptiRel C RM38-61-24D-6-P-CO	282948
			24 V DC	$AgSnO_2$	OptiRel C RP34-51-24D-6-CO-S	OptiRel C RR93-51-6-24D-6-P	OptiRel C RM38-61-24D-6-P-CO-S	282949
			24 V AC/DC	AgNi	OptiRel C RP34-51-24D-6-CO	OptiRel C RR93-51-12-24U-6-P	OptiRel C RM38-61-24U-6-P-CO	280992
			48 V AC/DC	AgNi	OptiRel C RP34-51-48D-6-CO	OptiRel C RR93-51-48-60U-6-P	OptiRel C RM38-61-48U-6-P-CO	280993
			110-125 V AC/DC [1]	AgNi	OptiRel C RP34-51-60D-6-CO	OptiRel C RR93-51-110-125U-6-P	OptiRel C RM38-61-110-125U-6-P-CO	280994
			110-125 V AC/DC [1]	AgNi+Au	OptiRel C RP34-51-60D-6-CO-C	OptiRel C RR93-51-110-125U-6-P	OptiRel C RM38-61-110-125U-6-P-CO-C	280995
			220-240 V AC/DC [1]	AgNi	OptiRel C RP34-51-60D-6-CO	OptiRel C RR93-51-220-240U-6-P	OptiRel C RM38-61-220-240U-6-P-CO	280996

Note:
[1] The 110-125 V AC/DC and 220-240 V AC/DC receptacles contain circuitry to convert and step down the supply voltage to 60 V DC, therefore the relays to be installed should be selected with a 60 V DC control circuit.

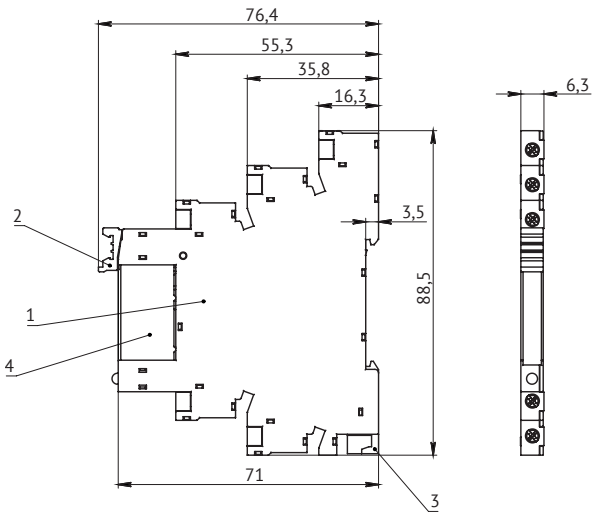
Technical specification

Parameter		Value
Contact specifications		
Number of contacts		1 CO
Rated current of the main circuit at the rated voltage, A		6
Main circuit rated voltage, V	- for AC 50 Hz	250
	- for DC	30
Maximum switched voltage B	- for AC 50 Hz	400 [1)]
	- for DC	300 [1)]
Maximum switching power, V·A/W		1500/180
Material of contacts		AgNi
Trip type		Micro-trip
Minimum switchable load parameters	Standard contacts	5 V DC/ 100 мА
	Gold-plated contacts	5 V DC/ 10 мА
Coil characteristics		
Relay module rated voltage Un, V	DC	6; 12; 24
	AC/DC	12; 24; 48-60; 110-125; 220-240
Rated power, MW	- at rated voltage from 6 up to 24 V	170
	- at rated voltage of 48 V, 60 V	210
Operating voltage range		0,8-1,1 Uн
Trip voltage		0,05 Uн
Technical parameters		
Mechanical durability, cycles		$1x10^7$
Electrical durability at rated AC/DC load for NO contact, at an operating frequency of 600 cycles per hour and a duty factor of 50 % cycles		$6x10^4$
Relay life time, min, cycles		$1x10^7$
Closing/opening time, ms, maximum		8/4
Electrical strength of insulation between coil and contacts, kV		4
Electrical strength of insulation between open contacts, kV		1
Rated value of 1.2/50 μs pulse voltage between coil and contacts of the main circuit, kV	- for NC contacts	4
	- for NO contacts	6
Rated value of 1.2/50 μs between open contacts of the main circuit, kV		1,5
Rated insulation voltage, V		400
Degree of protection from environmental influences		RTII
Protection class as per GOST 14254-2015	on the shell side (for RTII)	IP51
	on the pins side	IP00
Operating conditions		
Operating temperature range, °C	at rated input voltage up to 60 V	-40 to +70
	at rated input voltage above 60 V	-40 to +55
Installation height above sea level without reduction of electrical parameters, max, m		2000
Relative humidity, %		5 to 85
Operating position in space		Arbitrary

Note:
[1)] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.

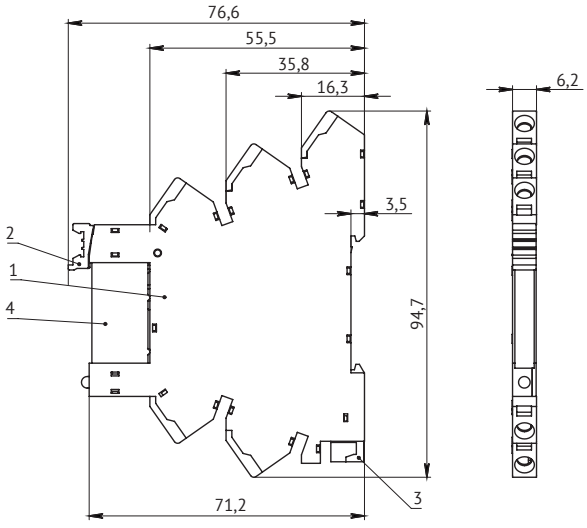
Overall dimensions (mm)

OptiRel C RM38-51 relay module with screw terminals



1 — housing; 2 — lock; 3 — latch; 4 — relay

OptiRel C RM38-61 relay module with spring terminals



1 — housing; 2 — lock; 3 — latch; 4 — relay

OptiRel G RP34 Ultrafine interface relays

Designation

OptiRel G RP 34 - 5 1 - 60 D - 6 - CO - G

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

1	Product range name	OptiRel G
2	Product type name	RP — Ultrafine interposing relay
3	Series	34
4	Configuration	5 — Electromechanical
5	Number of groups of main circuit contacts	1
6	Rated supply voltage, V	6, 12, 24, 48, 60
7	Type of power supply circuit current	D — direct current (DC)
8	Main circuit rated current, A	6
9	Type of main contacts	CO — changeover; NO – normally open
10	Material of contacts	(empty) — AgNi; S — $AgSnO_2$; G — AgNi + Au

Items

Appearance	Configuration of contacts	Control coil rated voltage	Material of contacts	Product name	Code
	1 NO	24 V DC	AgNi	OptiRel G RP34-51-24D-6-NO	281144
		24 V DC	AgNi+Au	OptiRel G RP34-51-24D-6-NO-G	281147
	1 CO	6 V DC	AgNi	OptiRel G RP34-51-6D-6-CO	281140
		6 V DC	AgNi+Au	OptiRel G RP34-51-6D-6-CO-G	281141
		12 V DC	AgNi	OptiRel G RP34-51-12D-6-CO	281142
		24 V DC	AgNi	OptiRel G RP34-51-24D-6-CO	281143
		24 V DC	AgNi+Au	OptiRel G RP34-51-24D-6-CO-G	281146
		24 V DC	$AgSnO_2$	OptiRel G RP34-51-24D-6-CO-S	281145
		48 V DC	AgNi	OptiRel G RP34-51-48D-6-CO	281148
		60 V DC	AgNi	OptiRel G RP34-51-60D-6-CO	281149
		60 V DC	AgNi+Au	OptiRel G RP34-51-60D-6-CO-G	281151
		60 V DC	$AgSnO_2$	OptiRel G RP34-51-60D-6-CO-S	281150

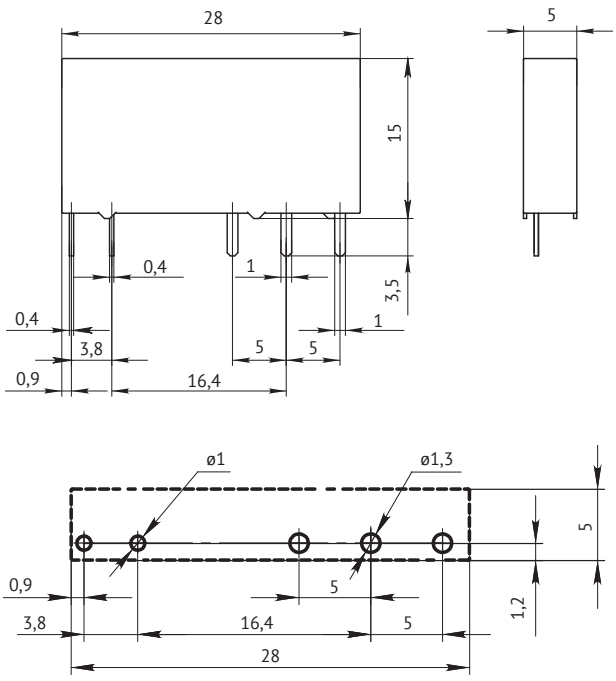
Technical specification

Parameter		Value
Contact specifications		
Number of contacts		1 CO, 1 NO
Rated current of the main circuit at the rated voltage, A		6
Main circuit rated voltage, V	- for AC 50 Hz	250
	- for DC	30
Maximum switched voltage B	- for AC 50 Hz	400 [1)]
	- for DC	300 [1)]
Maximum switching power, V·A/W		1500/180
Material of contacts		AgNi, AgNi + Au, $AgSnO_2$
Trip type		Micro-trip
Minimum switchable load parameters	Standard contacts	5 V DC/ 100 мА
	Cold-plated contacts	5 V DC/ 10 мА
Coil characteristics		
Rated power, MW	- at rated voltage from 6 up to 24 V	170
	- at rated voltage of 48 V, 60 V	210
Operating voltage range		0,8-1,1 Uн
Trip voltage		0,05 Uн
Technical parameters		
Mechanical durability, cycles		$1x10^7$
Electrical durability at rated AC/DC load for NO contact, at an operating frequency of 600 cycles per hour and a duty factor of 50% cycles		$6x10^4$
Relay life time, min, cycles		$1x10^7$
Closing/opening time, ms, maximum		8/4
Electrical strength of insulation between coil and contacts, kV		4
Electrical strength of insulation between open contacts, kV		1
Rated value of 1.2/50 μs pulse voltage between coil and contacts of the main circuit, kV	- for NC contacts	4
	- for NO contacts	6
Rated value of 1.2/50 μs pulse voltage between open contacts of the main circuit, kV		1,5
Rated insulation voltage, V		400
Degree of protection from environmental influences		RTII
Protection class as per GOST 14254-2015	On the shell side	IP51
	On the pins side	IP00
Operating conditions		
Operating temperature range, °C		-40 to +85
Installation height above sea level without reduction of electrical parameters, max, m		2000
Relative humidity, %		5 to 85
Operating position in space		Arbitrary

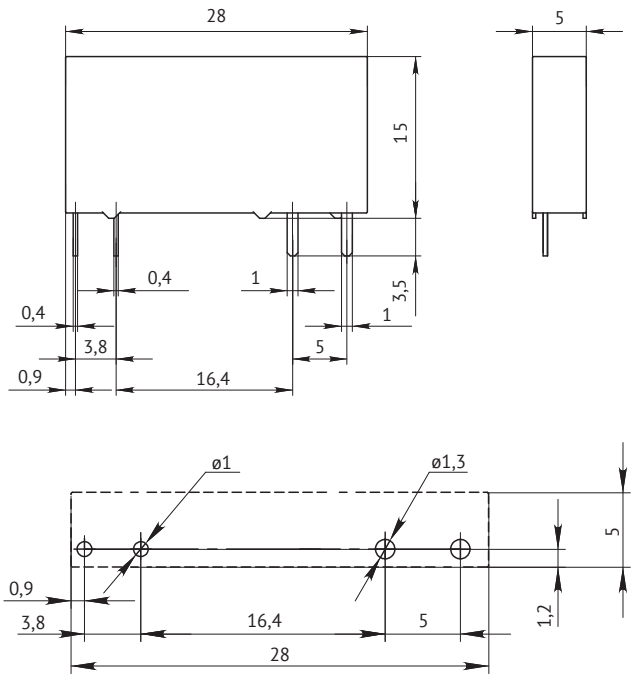
Note:
[1)] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.

Overall dimensions (mm)

OptiRel C RP34 relay with 1 CO



OptiRel C RP34 relay with 1 NO



OptiRel G RP34 Ultrafine solid-state interface relays

Designation

OptiRel G RP 34 - 8 1 - 5 D - 3 - M24D

(1) (2) (3) (4) (5) (6) (7) (8) (9)

1	Product range name	OptiRel G
2	Product type name	RP — Ultrafine interposing relay
3	Series	34
4	Configuration	8 — solid-state
5	Number of output circuits	1
6	Rated supply voltage, V	5, 12, 24, 60
7	Type of power supply circuit current	D — direct current (DC)
8	Maximum switching current, A	0,1; 1; 3
9	Electronic key type and switching voltage	M24D — MOSFET, 24 V DC; T48D — transistor, 48 V DC; TC230A — symistor, 230 B AC

Items

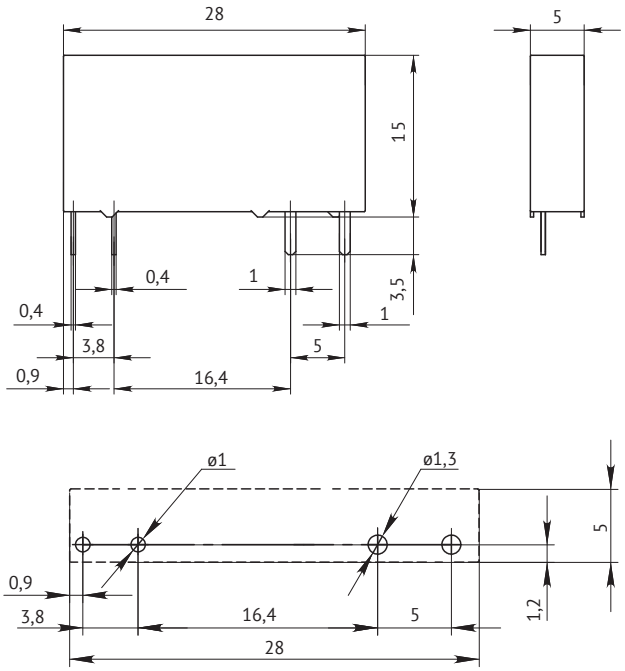
Appearance	Output configuration	Control coil rated voltage	Switching voltage and current	Product name	Code
	1 NO, transistor	24 V DC	48 V DC / 0,1 A	OptiRel G RP34-81-24D-01-T48D	365468
		60 V DC	48 V DC / 0,1 A	OptiRel G RP34-81-60D-01-T48D	365469
	1 NO, MOSFET	5 B DC	24 V DC / 3 A	OptiRel G RP34-81-5D-3-M24D	365470
		12 V DC	24 V DC / 3 A	OptiRel G RP34-81-12D-3-M24D	365471
		24 V DC	24 V DC / 3 A	OptiRel G RP34-81-24D-3-M24D	365472
		60 V DC	24 V DC / 3 A	OptiRel G RP34-81-60D-3-M24D	365473
	1 NO, symistor	24 V DC	230 B AC / 1 A	OptiRel G RP34-81-24D-1-TC230A	365474

Technical specification

Parameter		Values						
Relay type		OptiRel C RP34-81-24D-01-T48D	OptiRel C RP34-81-60D-01-T48D	OptiRel C RP34-81-24D-1-TC230A	OptiRel C RP34-81-5D-3-M24D	OptiRel C RP34-81-12D-3-M24D	OptiRel C RP34-81-24D-3-M24D	OptiRel C RP34-81-60D-3-M24D
Rated load current, A		0,1		1	3			
Rated voltage of the control circuit, B		24 DC	60 DC	24 DC	5 DC	12 DC	24 DC	60 DC
Rated switching voltage, V		48 DC		220 AC	24 DC			
Input	Operating voltage range, V DC	19,2-28,8	48-72	19,2-28,8	4-6	9,6-14,4	19,2-28,8	48-72
	Trip-on voltage, V DC	19,2	48	19,2	4	9,6	19,2	48
	Trip-off voltage, V DC	10	20	2	1	3	10	20
Output	RMS current in closed state, A	0,1		10	3			
	Pulse current (10 ms), A	0,5		0,25	15			
	Peak voltage in closed state, V DC	48		75 AC – 264 AC	33			
Electrical parameters								
Maximum current of the control circuit, mA		12						
Voltage drop in closed state, V		1,5		5	0,2			
Output leakage current in the off state, μA		20						
Make time, ms		0,4		10	0,4			
Break time, ms		0,6		10	0,6			
Rated voltage of insulation between input and output, kV		2,5						
Protection class as per GOST 14254-2015		IP67						
Operating conditions								
Ambient temperature, °C		-30 to + 60						
Height of the installation site above sea level, max., m		2000						
Operating position in space		Arbitrary						

Overall dimensions (mm)

OptiRel C RP34 solid-state output relay



OptiRel G RR93 OptiRel RP34 relay receptacles

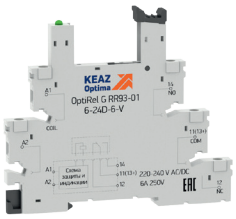
Designation

OptiRel G RR 93 - 5 1 - V 220-240 U - 6 - P

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10)

1	Product range name	OptiRel G	
2	Product type name	RR — Relay receptacle	
3	Series	93	
4	Configuration	0 — screw terminals; 5 — spring terminals	
5	Number of groups of main circuit contacts	1	
6	Availability of a VDR in the control circuit	(empty) — no; V — yes	
7	Rated supply voltage, V	6–24; 12–24; 48–60; 110–125; 220–240	
8	Type of power supply circuit current	D — direct current (DC)	U — versatile AC/DC voltage
9	Main circuit rated current, A	6	
10	Type of connecting terminals	P — spring terminals	V — screw terminal

Items

Appearance	Type of terminals	Rated voltage of the receptacle power supply circuit	Control coil voltage of mounted relay	Built-in VDR	Product name	Code
	Screw	6-24 V DC	6-24 V DC	-	OptiRel G RR93-01-6-24D-6-V	281157
		12-24 V AC/DC	12-24 V DC	-	OptiRel G RR93-01-12-24U-6-V	281155
		12-24 V AC/DC	12-24 V DC	+	OptiRel G RR93-01-12-V24U-6-V	365464
		48-60 V AC/DC	48-60 V DC	-	OptiRel G RR93-01-48-60U-6-V	281156
		48-60 V AC/DC	48-60 V DC	+	OptiRel G RR93-01-48-V60U-6-V	365465
		110-125 V AC/DC [1]	60 V DC [1]	-	OptiRel G RR93-01-110-125U-6-V	281161
		220-240 V AC/DC [1]	60 V DC [1]	-	OptiRel G RR93-01-220-240U-6-V	281162
	Spring terminals	6-24 V DC	6-24 V DC	-	OptiRel G RR93-51-6-24D-6-P	281160
		12-24 V AC/DC	12-24 V DC	-	OptiRel G RR93-51-12-24U-6-P	281158
		12-24 V AC/DC	12-24 V DC	+	OptiRel G RR93-51-12-V24U-6-P	365466
		48-60 V AC/DC	48-60 V DC	-	OptiRel G RR93-51-48-60U-6-P	281159
		48-60 V AC/DC	48-60 V DC	+	OptiRel G RR93-51-48-V60U-6-P	365467
		110-125 V AC/DC [1]	60 V DC [1]	-	OptiRel G RR93-51-110-125U-6-P	330085
		220-240 V AC/DC [1]	60 V DC [1]	-	OptiRel G RR93-51-220-240U-6-P	281163

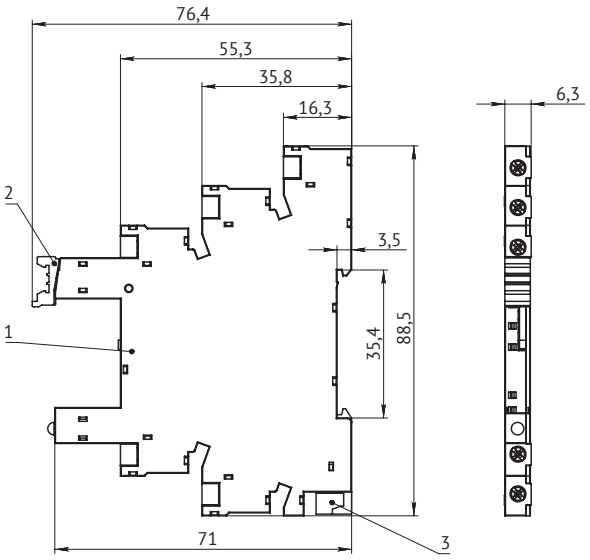
Note:
[1] The 110-125 V AC/DC and 220-240 V AC/DC receptacles contain circuitry to convert and step down the supply voltage to 60 V DC, therefore the relays to be installed should be selected with a 60 V DC control circuit.

Technical specification

Parameter		Values
Technical parameters		
Rated current of the main circuit, A		6
Main circuit rated voltage, V		250
Power supply voltage		6-24 V DC 12-24 V AC/DC 48-60 V AC/DC 110-125 V AC/DC 220-240 V AC/DC
Maximum wire size, solid wire and stranded wire, mm²	- for screw clamp receptacles	1x2,5
	- for spring clamp receptacles	1x1,5
Screw torque, N·m		0,5
Cable stripping length, mm		8÷10
Electrical strength of insulation between control and main circuit connection pins, kV		4
Protection class as per GOST 14254		IP20
Operating conditions		
Operating temperature range, °C	Versions for voltages up to 60 V	-40 to +70
	Versions for voltages above 60 V	-40 to +55
Height of the installation site above sea level, max., m		2000
Relative humidity, %		5 to 85
Operating position in space		Arbitrary

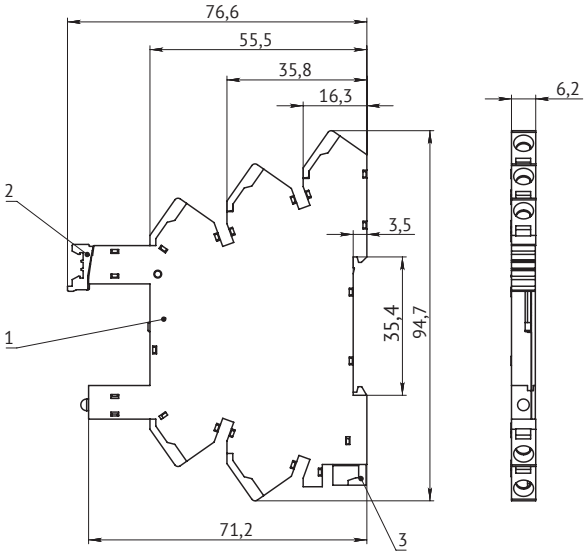
Overall dimensions (mm)

OptiRel C RR93-01 receptacle with screw terminals



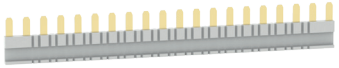
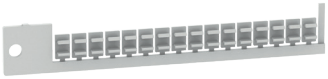
1 — housing; 2 — lock; 3 — latch

OptiRel C RR93-51 receptacle with spring terminals



1 — housing; 2 — lock; 3 — latch

Accessories

	Description	Product name	Code
	Relay groups plastic spacer	OptiRel C 93-01	281152
	20-pole busbar for receptacles	OptiRel C 93-20	281153
	Marking plate for relays	OptiRel C 93-64	281154

OptiRel G RP40, RP41 Miniature relays and OptiRel G RM48 Relay modules

RP40, RP41 miniature relays and RM48 relay modules are the most popular series of OptiRel G relays, which are characterized by the highest switching loads in the relay range, compact dimensions and availability of versions with ingress protection rating IP67.
The relays of this series are widely used in control and automation solutions and provide reliable galvanic isolation of circuits.
The range includes RP40 electromechanical relays, RP41 advanced performance models, RP41 MOSFET based solid-state relays and assembled RM48 relay modules.
RP40 and RP41 electromechanical relays are available in three versions, depending on the type of contact material - AgNi for general industrial applications; AgNi+Au for switching ultra-low currents and AgSnO2 for inductive loads and loads with inrush currents.
RR95 receptacles for this series are available with screw, spring and plug-in terminals, allowing the implementation of a solution according to the customer's needs.
Additional plug-in modules can be installed to extend the relay functionality.

Selection guide

Device type	RM48 relay modules	RP40 miniature relays	RP41 advanced miniature relays	RP41 miniature solid-state relays	RR95 receptacles for RP40 and RP41 relays
Appearance					
Number of contacts	1 CO; 2 CO	1 CO; 2 CO; 1 NO; 2 NO	1 CO; 2 CO; 1 NO	1 NO	–
Rated current of the main circuit at the rated voltage, A	10; 16 A	10; 16 A	8; 12; 16 A	5 A	10 A
Rated voltage of the main circuit	250 V AC 30 V DC	250 V AC 30 V DC	250 V AC 24 V DC	24 V DC	250 В
Maximum switched voltage [1]	277 V AC 30 V DC	250 V AC 30 V DC	440 V AC 300 V DC	24 V DC	440 В
Material of contacts	AgNi; AgNi + Au; $AgSnO_2$	AgNi; AgNi + Au; $AgSnO_2$	AgNi; AgNi + Au; $AgSnO_2$	MOSFET	–
Rated voltage of the control circuit	12; 24 V DC	5; 6; 12; 24; 48; 60 V DC	5; 6; 12; 24; 48; 60; 110 V DC 24; 110; 230 V AC	5; 12; 24; 60 V DC	5-230 V AC/DC

Note:
[1] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.

OptiRel G RM48 Relay modules

Designation

OptiRel G RM 48 - 6 1 - 24 D - 16 - V - CO - S

1	Product range name	OptiRel G
2	Product type name	RM — Relay modules
3	Series	48
4	Configuration	5 — electromechanical, only for models with 2 output contacts; 6 — electromechanical, only for models with 1 output contact
5	Number of groups of main circuit contacts	1; 2
6	Rated supply voltage, V	12; 24
7	Type of power supply circuit current	D — direct current (DC)
8	Rated current of the main circuit, A	10; 16
9	Type of connecting terminals	V — screw terminal
10	Type of main contacts	CO — changeover contact
11	Material of contacts	(empty) — AgNi; S — $AgSnO_2$; G — AgNi + Au

Items

Appearance	Configuration of contacts	Type of terminals	Control coil rated voltage розетки [1]	Material of contacts	Components		Relay module (assembly)	Code
					Interposing relay	Relay receptacle		
	1 CO	Screw	24 V DC	$AgSnO_2$	OptiRel G RP40-61-24D-16-CO-S	OptiRel G RR95-02-230-10-V	OptiRel G RM48-61-24D-16-V-CO-S	283586
	2 CO		12 V DC	AgNi	OptiRel G RP40-52-12D-10-CO	OptiRel G RR95-02-230-10-V	OptiRel G RM48-52-12D-10-V-CO	281001
			24 V DC	AgNi	OptiRel G RP40-52-24D-10-CO	OptiRel G RR95-02-230-10-V	OptiRel G RM48-52-24D-10-V-CO	281002
			24 V DC	AgNi+Au	OptiRel G RP40-52-24D-10-CO-G	OptiRel G RR95-02-230-10-V	OptiRel G RM48-52-24D-10-V-CO-G	281003

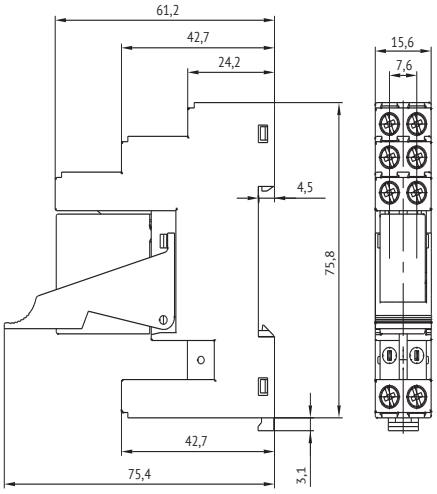
Technical specification

Parameter		Values	
Contact specifications			
Number of contacts		1 CO	2 CO
Rated current of the main circuit, A	- 250 V AC, 50 Hz	16 [1]	10
	- 30 V DC	16 [1]	8
Main circuit rated voltage, V	- for AC 50 Hz	240	250
	- for DC	24	30
Maximum switched voltage, B	- for AC 50 Hz	277 [2]	250 [2]
	- for DC	30 [2]	30 [2]
Maximum switching power, V·A/W		5540/480	2500/240
Material of contacts		$AgSnO_2$	AgNi, AgNi+Au
Trip type		Micro-trip	Micro-trip
Minimum switchable load parameters	Standard contacts	5 V DC/ 100 мА	
	Gold-plated contacts	5 V DC/ 10 мА	
Coil characteristics			
Rated voltage Un/resistance at 23 °C		24 V DC/ 1100 Ом ± 10%	12 V DC/275 Ом ± 10%
			24 V DC/1100 Ом ± 10%
Rated power, MW		530	530
Technical parameters			
Operating voltage range		0,8-1,1 Uн	
Dropout voltage		0,1 Uн	
Mechanical durability, cycles		$1x10^7$	
Electrical durability at rated load, cycles	- for NO and NC type contacts at 250 V AC (COS φ=1)	$1x10^5$	$1x10^5$
	- for NO and NC type contacts at 30 V DC	-	$1x10^5$
	- for NO and NC type contacts at 24 V DC	$5x10^4$	-
Relay life time, min, cycles		$1x10^7$	
Closing/opening time, ms, maximum		15/10	
Electrical strength of insulation between main and control circuit pins, kV		4	
Electrical strength of insulation between open contacts, kV		1	
Rated value of 1.2/50 μs withstand pulse voltage between main and control circuit contacts, kV		4	10
Rated value of 1.2/50 μs withstand pulse voltage between open contacts of the main circuit, kV		1,5	
Protection class as per GOST 14254		IP20	
Operating conditions			
Operating temperature range, °C		-40 to +70	
Installation height above sea level without reduction of electrical parameters, max, m		2000	
Relative humidity, %		5 to 85	
Operating position in space		Arbitrary	

Note:
[1] For currents over 10 A, terminals should be connected in parallel (21 with 11, 24 with 14, 22 with 12)
[2] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.

Overall dimensions (mm)

OptiRel C RM48 relay module



OptiRel G RP40 Miniature relays

Designation

OptiRel G RP 40 - 5 2 - 12 D - 10 - CO - G / W
1 2 3 4 5 6 7 8 9 10 11

1	Product range name	OptiRel G
2	Product type name	RP — Interposing relay
3	Series	40
4	Configuration	5 — electromechanical, only for models with 2 output contacts; 6 — electromechanical, only for models with 1 output contact
5	Number of groups of main circuit contacts	1; 2
6	Rated supply voltage, V	5; 6; 12; 24; 48; 60
7	Type of power supply circuit current	D — direct current (DC)
8	Rated current of the main circuit, A	10; 16
9	Type of main contacts	CO — changeover; NO — normally open
10	Material of contacts	(empty) — AgNi; S — $AgSnO_2$; G — AgNi + Au
11	Moisture-proof housing	W — available; (empty) — AgNi

Items

Appearance	Configuration of contacts	Control coil rated voltage	Material of contacts	Product name	Code
	1 NO	24 V DC	$AgSnO_2$	OptiRel G RP40-61-24D-16-NO-S	281037
	2 NO	24 V DC	AgNi	OptiRel G RP40-52-24D-10-NO/W [1)]	281024
	1 CO	12 V DC	$AgSnO_2$	OptiRel G RP40-61-12D-16-CO-S	281038
		24 V DC	$AgSnO_2$	OptiRel G RP40-61-24D-16-CO-S	281036
	2 CO	5 V DC	AgNi	OptiRel G RP40-52-5D-10-CO	281016
		6 V DC	AgNi	OptiRel G RP40-52-6D-10-CO	281023
		12 V DC	AgNi	OptiRel G RP40-52-12D-10-CO	281017
		12 V DC	AgNi	OptiRel G RP40-52-12D-10-CO/W [1)]	281018
		24 V DC	AgNi	OptiRel G RP40-52-24D-10-CO	281019
		24 V DC	AgNi+Au	OptiRel G RP40-52-24D-10-CO-G	281021
		24 V DC	AgNi	OptiRel G RP40-52-24D-10-CO-W [1)]	281020
		48 V DC	AgNi	OptiRel G RP40-52-48D-10-CO	281028
		60 V DC	AgNi	OptiRel G RP40-52-60D-10-CO	281029
		60 V DC	AgNi	OptiRel G RP40-52-60D-10-CO/W [1)]	281022
		60 V DC	AgNi+Au	OptiRel G RP40-52-60D-10-CO-G	281031

Note:
[1)] Ingress protection rating IP67 models.

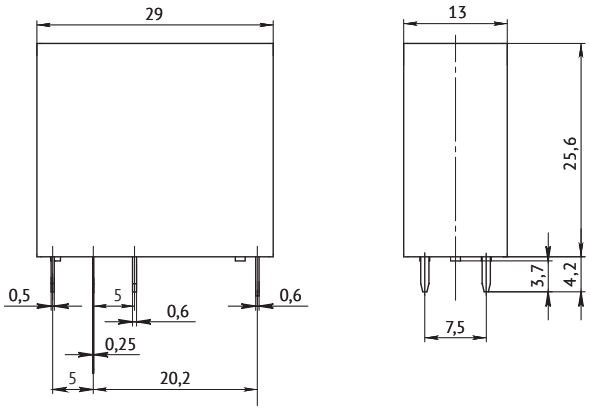
Technical specification

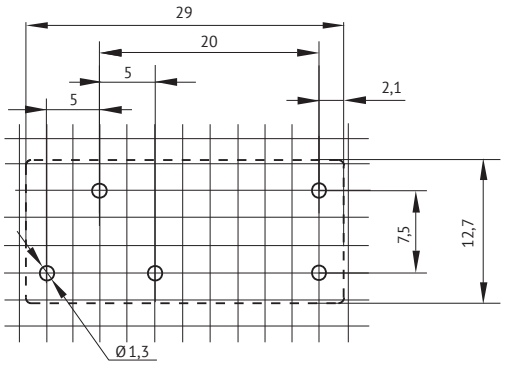
Parameter		Values
Contact specifications		
Number of contacts		2 CO
Rated current of the main circuit, A	- 250 V AC, 50 Hz	10
	- 30 V DC	8
Main circuit rated voltage, V	- for AC 50 Hz	250
	- for DC	30
Maximum switched voltage, B	- for AC 50 Hz	250 [1)]
	- for DC	30 [1)]
Maximum switching power, V·A/W		2500/240
Material of contacts		AgNi, AgNi + Au
Trip type		Micro-trip
Minimum switchable load parameters	Standard contacts	5 В DC/ 100 мА
	Gold-plated contacts	5 В DC/ 10 мА
Coil characteristics		
Rated power, MW		530
Operating voltage range		0,8-1,1 Uн
Maximum voltage, V		1,5 Uн
Dropout voltage		0,05 Uн
Technical parameters		
Mechanical durability, cycles		$1x10^7$
Electrical durability at rated load, cycles at a frequency 360 k/h and 10% work factor		$1x10^5$
Closing/opening time, ms, maximum		15/5
Electrical strength of insulation between main and control circuit contacts, kV		5
Relay life time, min, cycles		$1x10^7$
Electrical strength of insulation between open contacts of the main circuits,kV		1
Rated value of 1.2/50 μs withstand pulse voltage between main and control circuit contacts, kV		10
Rated value of 1.2/50 μs withstand pulse voltage between open contacts of the main circuit, kV		1
Rated value of 1.2/50 μs withstand pulse voltage between contact groups of the main circuit, kV		4
Rated insulation voltage, V		250
Degree of protection from environmental influences		RTII; RTIII
Protection class as per GOST 14254	- On the shell side (for standard version)	IP51
	- On the shell side (for moisture-proof version)	IP67
	- On the pins side	IP00
Operating conditions		
Operating temperature range, °C		-40 to +85
Installation height above sea level without reduction of electrical parameters, max, m		2000
Relative humidity, %		5 to 85
Operating position in space		Arbitrary

Note:
[1)] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.

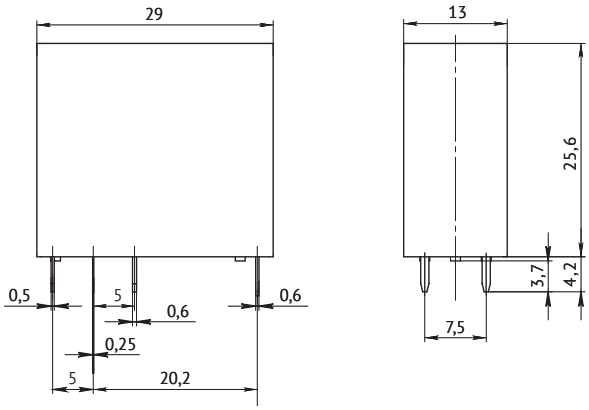
Overall dimensions (mm)

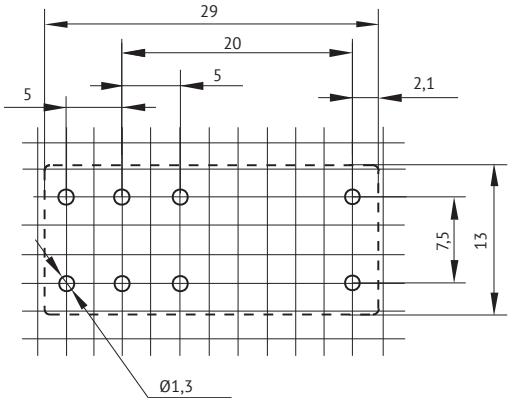
OptiRel C RP40 relay with 1 CO



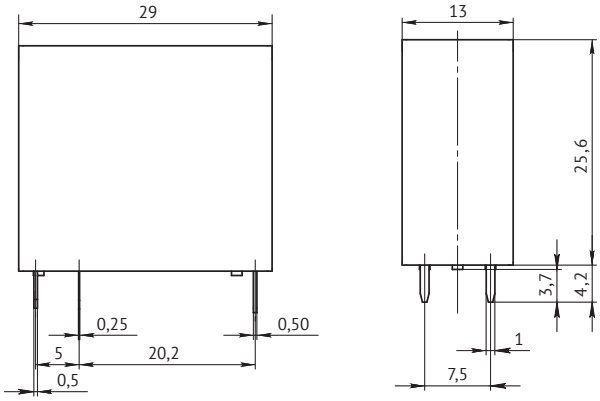


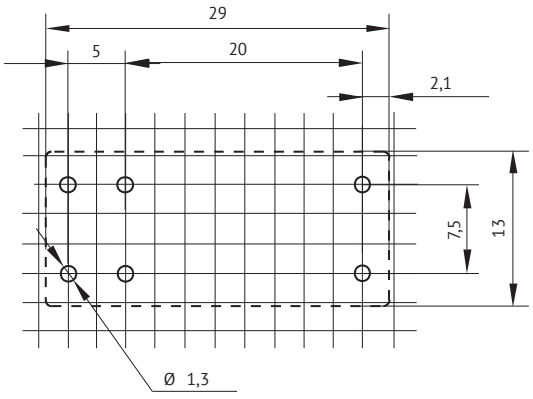
OptiRel C RP40 relay with 2 CO





OptiRel C RP40 relay with 1 NO





OptiRel C RP41 Advanced miniature relays

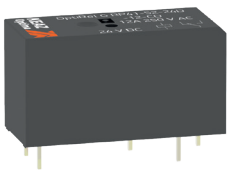
Designation

OptiRel C RP 41 - 5 1 - 230 - 12 - CO - C / W

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11)

1	Product range name	OptiRel C	
2	Product type name	RP — Interposing relay	
3	Series	41	
4	Configuration	5 — electromechanical	
5	Number of groups of main circuit contacts	1; 2	
6	Rated supply voltage, V	5; 6; 12; 24; 48; 60; 110; 230	
7	Type of power supply circuit current	D — direct current (DC)	(empty) — alternating current AC
8	Rated current of the main circuit, A	8; 12	
9	Type of main contacts	CO — changeover; NO — normally open	
10	Material of contacts	(empty) — AgNi; S — $AgSnO_2$; C — AgNi + Au	
11	Moisture-proof housing	W — available; (empty) — not available	

Items

Appearance	Configuration of contacts	Control coil rated voltage	Material of contacts	Product name	Code
	1 NO	5 V DC	AgNi	OptiRel C RP41-51-5D-12-NO	281007
	1 CO	6 V DC	AgNi	OptiRel C RP41-51-6D-12-CO	281005
		12 V DC	AgNi	OptiRel C RP41-51-12D-12-CO	281011
		12 V DC	AgNi	OptiRel C RP41-51-12D-16-CO	329971
		24 V AC	AgNi	OptiRel C RP41-51-24-12-CO	281015
		24 V AC	AgNi	OptiRel C RP41-51-24-16-CO	348364
		24 V DC	AgNi	OptiRel C RP41-51-24D-12-CO	281012
		24 V DC	AgNi	OptiRel C RP41-51-24D-12-CO/W [1)]	281013
		24 V DC	AgNi+Au	OptiRel C RP41-51-24D-12-CO-C	281014
		24 V DC	AgNi	OptiRel C RP41-51-24D-16-CO	329974
		48 V DC	AgNi	OptiRel C RP41-51-48D-12-CO	281008
		110 V AC	AgNi	OptiRel C RP41-51-110-16-CO	329970
		110 V DC	AgNi	OptiRel C RP41-51-110D-12-CO	281009
		115 V AC	AgNi	OptiRel C RP41-51-115-16-CO	348365
		230 V AC	AgNi	OptiRel C RP41-51-230-12-CO	281010
		230 V AC	AgNi+Au	OptiRel C RP41-51-230-12-CO-C/W [1)]	281006
		230 V AC	AgNi	OptiRel C RP41-51-230-16-CO	329972
	2 CO	12 V DC	AgNi	OptiRel C RP41-52-12D-8-CO	281041
		24 V AC	AgNi	OptiRel C RP41-52-24-8-CO	348378
		24 V AC	$AgSnO_2$	OptiRel C RP41-52-24-8-CO-S	348379
		24 V DC	AgNi	OptiRel C RP41-52-24D-8-CO	281042
		24 V DC	AgNi	OptiRel C RP41-52-24D-8-CO/W [1)]	281043
		24 V DC	AgNi+Au	OptiRel C RP41-52-24D-8-CO-C	281044
		60 V DC	AgNi	OptiRel C RP41-52-60D-8-CO	281045
		60 V DC	AgNi	OptiRel C RP41-52-60D-8-CO/W [1)]	281046
		60 V DC	AgNi+Au	OptiRel C RP41-52-60D-8-CO-C	281047
		110 V DC	AgNi	OptiRel C RP41-52-110D-8-CO	281048
		110 V DC	AgNi	OptiRel C RP41-52-110D-8-CO/W [1)]	281049
		230 V AC	AgNi	OptiRel C RP41-52-230-8-CO	324476

Note:
[1)] Ingress protection rating IP67 models.

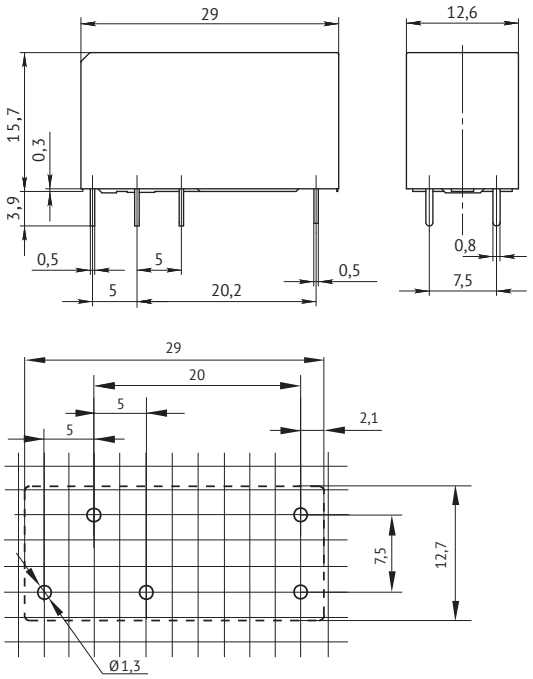
Technical specification

Parameter		Value	
Contact specifications			
Number of contacts		1 CO; 1 NO	2 CO
Rated current of the main circuit at the rated voltage, A:		12 [1]	8
Main circuit rated voltage, V	- for AC 50 Hz	250	
	- for DC	24	
Maximum switched voltage, B	- for AC 50 Hz	440 [2]	
	- for DC	300 [2]	
Maximum switching power, V·A/W		3000/280	2000/192
Material of contacts		AgNi, AgNi + Au, $AgSnO_2$	
Trip type		Micro-trip	
Minimum switchable load parameters	Standard contacts	5 В DC/ 100 мА	
	Gold-plated contacts	5 В DC/ 10 мА	
Coil characteristics			
Rated power, MW/B·A		400/0,75	
Operating voltage range		0,8-1,1 Uн	
AC/DC dropout voltage		0,15 Uн/0,1 Uн	
Technical parameters			
Mechanical durability, cycles	- for DC control coil	$1x10^7$	
	- for AC control coil	$1x10^8$	
Electrical durability at rated load, at 250 V AC (COS φ=1), at an operating frequency of 360 cycles per hour and 10% work factor, cycles		$5x10^4$	
Relay life time, min, cycles	- for DC control coil	$1x10^7$	
	- for AC control coil	$1x10^8$	
Closing/opening time, ms, maximum		15/5	
Electrical strength of insulation between main and control circuit contacts, kV		5	
Electrical strength of insulation between open contacts of the main circuits, kV		1	
Rated value of 1.2/50 μs withstand pulse voltage between main and control circuit contacts, kV		10	
Rated value of 1.2/50 μs withstand pulse voltage between open contacts of the main circuit, kV		1,5	
Rated insulation voltage, V		440	
Degree of protection from environmental influences		RTII; RTIII	
Protection class as per GOST 14254	- On the shell side (for standard version)	IP51	
	- On the shell side (for moisture-proof version)	IP67	
	- On the pins side	IP00	
Operating conditions			
Operating temperature range, °C		-40 to +85	
Height of the installation site above sea level, max., m		2000	
Relative humidity, %		5 to 85	
Operating position in space		Arbitrary	

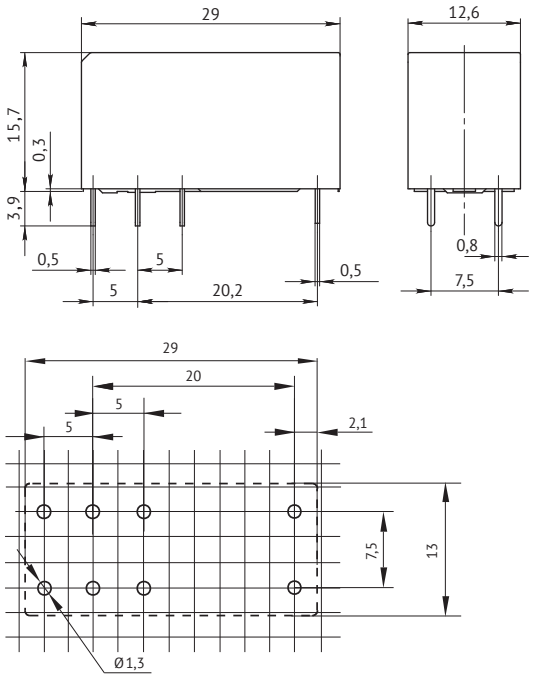
Note:
[1] At a load current over 10 A, output contact terminals should be connected in parallel (21 with 11, 24 with 14, 22 with 12)
[2] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.

Overall dimensions (mm)

OptiRel G RP41 relay with 1 CO



OptiRel G RP41 relay with 2 CO



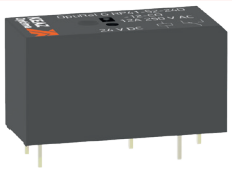
OptiRel C RP41 Miniature solid-state relays

Designation

OptiRel C RP 41 - 8 1 - 5 D - 5 - M24D

1	Product range name	OptiRel C
2	Product type name	RP — Ultrafine interposing relay
3	Series	41
4	Configuration	8 — solid-state
5	Number of output circuits	1
6	Rated supply voltage, V	5; 12; 24; 60
7	Type of power supply circuit current	D — direct current (DC)
8	Maximum switching current, A	5
9	Electronic key type and switching voltage	M24D — MOSFET, 24 V DC

Items

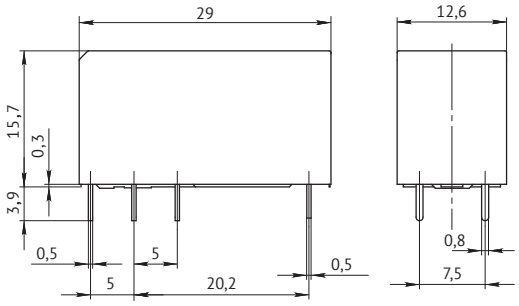
Appearance	Output configuration	Control coil rated voltage	Switching voltage and current	Product name	Code
	1 NO, MOSFET	5 V DC	24 V DC / 5 A	OptiRel C RP41-81-5D-5-M24D	365475
		12 V DC	24 V DC / 5 A	OptiRel C RP41-81-12D-5-M24D	365476
		24 V DC	24 V DC / 5 A	OptiRel C RP41-81-24D-5-M24D	365477
		60 V DC	24 V DC / 5 A	OptiRel C RP41-81-60D-5-M24D	365478

Technical specification

Parameter		Values			
Rated parameters					
Relay type		OptiRel C RP41-81-5D-M24D	OptiRel C RP41-81-12D-M24D	OptiRel C RP41-81-24D-M24D	OptiRel C RP41-81-60D-M24D
Rated load current, A		5			
Rated voltage of the control circuit, B		5 DC	12 DC	24 DC	60 DC
Rated switching voltage, V		24 DC			
Input	Operating voltage range, V DC	4-6	9,6-14,4	19,2-28,8	48-72
	Trip-on voltage, V DC	4	9,6	19,2	48
	Trip-off voltage, V DC	1	3	10	20
Output	RMS current in closed state, A	5			
	Pulse current (10 ms), A	15			
	Peak voltage in closed state, V DC	33			
Electrical parameters					
Maximum current of the control circuit, mA		12			
Voltage drop in closed state, V		0,2			
Output leakage current in the off state, μA		20			
Make time, ms		0,4			
Break time, ms		0,6			
Rated voltage of insulation between input and output, kV		2,5			
Protection class as per GOST 14254-2015		IP67			
Operating conditions					
Ambient temperature, °C		-30 to + 60			
Height of the installation site above sea level, max., m		2000			
Operating position in space		Arbitrary			

Overall dimensions (mm)

OptiRel C RP41 solid-state output relay



OptiRel C RR95 RP40 and RP41 relay receptacles

Designation

OptiRel C RR 95 - 8 2 - 230 - 10 - V

(1) (2) (3) (4) (5) (6) (7) (8)

1	Product range name	OptiRel C
2	Product type name	RR — Relay receptacle
3	Series	95
4	Configuration	0 — screw terminals, logical base; 1 — for PCB mounting by soldering; 5 — spring or plug-in terminals, logical base; 8 — screw terminals, standard base
5	Number of groups of main circuit contacts	2
6	Rated supply voltage, V	230
7	Rated current of the main circuit, A	10
8	Type of connecting terminals	V — screw terminals; P — spring terminals; PI — plug-in terminals; (empty) — PCB mounting by soldering

Items

Appearance	Type of terminals	Base type	Product name [1]	Code	Compatible retainer		
					Material	Product name	Code
	Screw	Standard	OptiRel C RR95-82-230-10-V	281176	Plastic Metal Plastic Metal	OptiRel C 40-H6 [2] OptiRel C 40-H8 [2] OptiRel C 41-H4 [3] OptiRel C 41-H7 [3]	281186 281188 281185 281187
	Screw	Logical	OptiRel C RR95-02-230-10-V	281173			
	Spring terminals		OptiRel C RR95-52-230-10-P	281175			
	Plug-in terminals		OptiRel C RR95-52-230-10-PI	365460			
	For soldering	–	OptiRel C RR95-12-230-10	281174	Metal	OptiRel C 40-H3 [2] OptiRel C 41-H1 [3]	281184 281183

Note:
[1] For currents above 10 A, the output contacts of the receptacle should be connected in parallel. The wiring diagram can be found in the operating manual.
[2] For RP40 series relays and RM48 relay modules.
[3] For RP41 series relay.

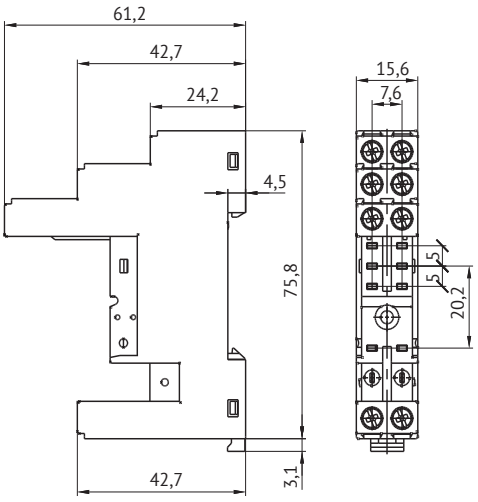
Technical specification

Parameter	Values
Technical parameters	
Rated current of the main circuit, A	10 [1]
Main circuit rated voltage, V	250
Maximum wire size, solid wire and stranded wire, mm2	1x4; 2x2,5
Screw torque, N·m	0,6
Cable stripping length, mm	7
Electrical strength of insulation between control and main circuit connection pins, kV	5
Protection class as per GOST 14254	IP20
Operating conditions	
Operating temperature range	-40 to +70
Height of the installation site above sea level, max., m	2000
Relative humidity, %	5 to 85
Operating position in space	Arbitrary

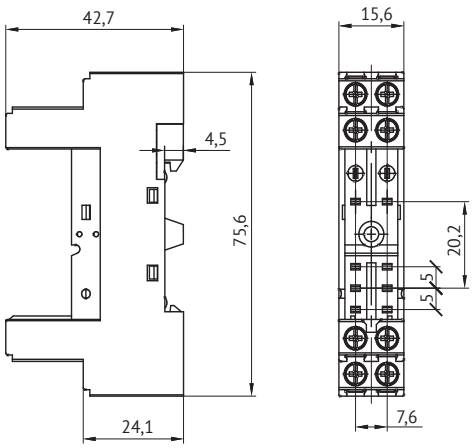
Note:
[1] At a load current over 10 A, output contact terminals should be connected in parallel (21 with 11, 24 with 14, 22 with 12)

Overall dimensions (mm)

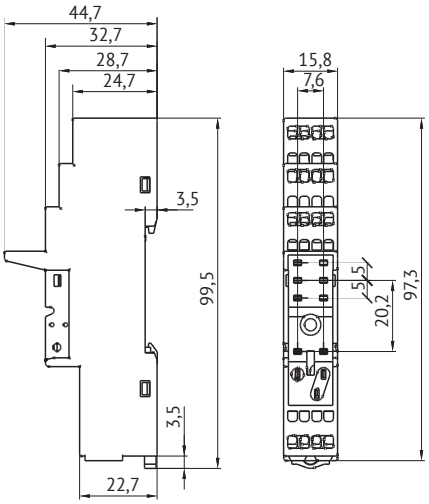
RR95-02 receptacle with screw terminals and logic base



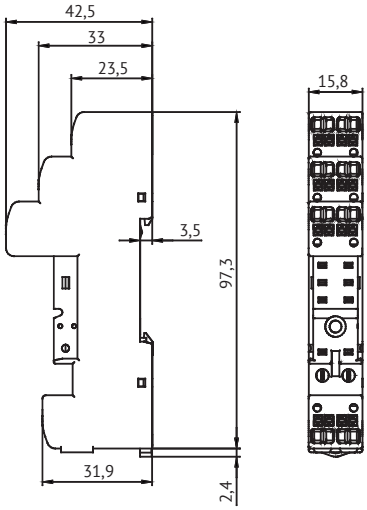
RR95-82 receptacle with screw terminals and standard base



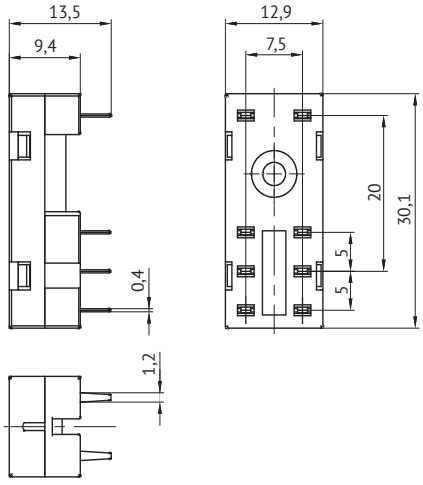
OptiRel C RR95-52 receptacle with spring terminals



OptiRel C RR95-52 receptacle with plug-in terminals



OptiRel C RR95-12 receptacle for PCB mounting by soldering



OptiRel G RP46 Industrial relays

RP46 industrial relays are designed for the most difficult switching modes and due to the use of special $AgSnO_2$ alloy contact groups can be used for switching inductive loads and loads with inrush currents.

For ease of operation and commissioning, all RP46 series relays have a built-in test button for manual closure of contacts as standard, which speeds up and simplifies the commissioning procedure, a mechanical indicator to show contact status as well as a LED to indicate the operating mode.

RR97 receptacles for this series are available with screw and plug-in terminals, allowing the implementation of a solution according to the customer's needs.

Selection guide

Device type	RP46 industrial relays	RR97 receptacles for RP46 relays
Appearance		
Number of contacts	1 CO; 2 CO	–
Rated current of the main circuit at the rated voltage, A	8; 12	10
Rated voltage of the main circuit	250 V AC 30 V DC	250 V
Maximum switched voltage [1)]	250 V AC 30 V DC	440 V
Material of contacts	$AgSnO_2$	–
Rated voltage of the control circuit	12; 24 V DC 24; 48; 110; 230 V AC	24-230 V AC/DC

Note:
[1)] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.

OptiRel G RP46 Industrial relays

Designation

OptiRel G RP 46 - 5 2 - 12 D - 8 - CO - S / T I L

(1) (2) (3) (4) (5) (6) (7) (8) (9) (10) (11) (12) (13)

1	Product range name	OptiRel G	
2	Product type name	RP — Interposing relay	
3	Series	46	
4	Configuration	5 — electromechanical	
5	Number of groups of main circuit contacts	2	
6	Rated supply voltage, V	12; 24; 48; 110; 230	
7	Type of power supply circuit current	D — direct current (DC)	(empty) — alternating current AC
8	Rated current of the main circuit, A	8	
9	Type of main contacts	CO — changeover contact	
10	Material of contacts	S — $AgSnO_2$	
11	Test button	T — available; (empty) — not available	
12	Mechanical indicator	I — available; (empty) — not available	
13	LED	L — available; (empty) — not available	

Items

Appearance	Configuration of contacts	Control coil rated voltage	Material of contacts	Test button	Mechanical indicator	LED	Product name	Code
	1 CO	24 V DC	$AgSnO_2$	+	+	+	OptiRel G RP46-51-24D-12-CO-S/TIL	324477
		230 V AC	$AgSnO_2$	+	+	+	OptiRel G RP46-51-230-12-CO-S/TIL	324478
	2 CO	12 V DC	$AgSnO_2$	+	+	+	OptiRel G RP46-52-12D-8-CO-S/TIL	281054
		24 V AC	$AgSnO_2$	+	+	+	OptiRel G RP46-52-24-8-CO-S/TIL	281050
		24 V DC	$AgSnO_2$	+	+	+	OptiRel G RP46-52-24D-8-CO-S/TIL	281055
		48 V AC	$AgSnO_2$	+	+	+	OptiRel G RP46-52-48-8-CO-S/TIL	281051
		48 V DC	$AgSnO_2$	+	+	+	OptiRel G RP46-52-48D-8-CO-S/TIL	281056
		110 V AC	$AgSnO_2$	+	+	+	OptiRel G RP46-52-110-8-CO-S/TIL	281052
		110 V DC	$AgSnO_2$	+	+	+	OptiRel G RP46-52-110D-8-CO-S/TIL	281057
		230 V AC	$AgSnO_2$	+	+	+	OptiRel G RP46-52-230-8-CO-S/TIL	281053

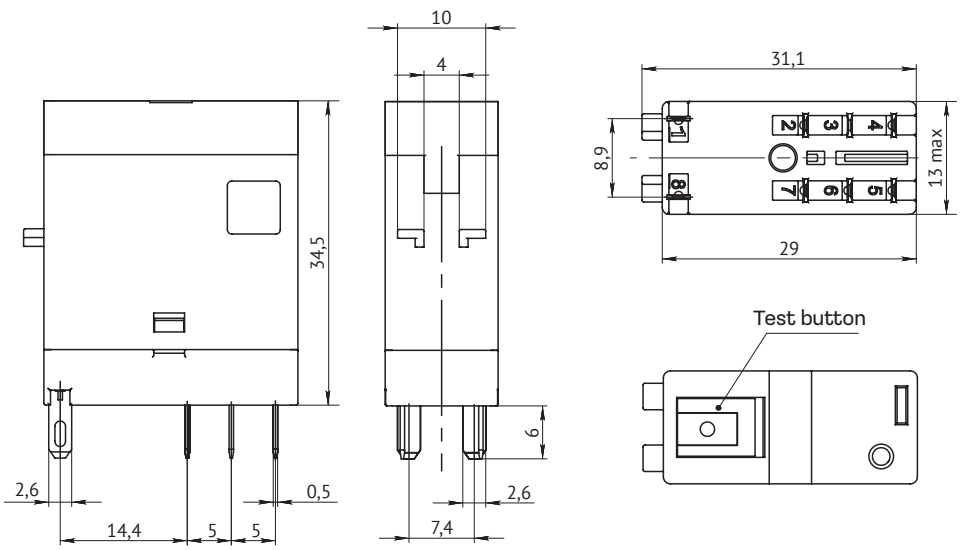
Technical specification

Parameter		Values
Contact specifications		
Number of contacts		2 CO
Rated current of the main circuit at the rated voltage, A:		8
Main circuit rated voltage, V	- for AC 50 Hz	250
	- for DC	30
Maximum switched voltage, B	- for AC 50 Hz	250 [1)]
	- for DC	30 [1)]
Maximum switching power, V·A/W		2500/300
Material of contacts		$AgSnO_2$
Trip type		Micro-trip
Minimum switchable load parameters	Standard contacts	5 V DC/ 100 мА
	Cold-plated contacts	5 V DC/ 10 мА
Coil characteristics		
Rated power, MW/BA		530/0,9
Operating voltage range		0,8-1,1 Uн
AC/DC dropout voltage		0,3 Uн/0,1 Uн
Technical parameters		
Mechanical durability, cycles	- for DC control coil	$5x10^7$
	- for AC control coil	$3x10^7$
Electrical durability at rated load, for 8 A 250 V AC /30 V DC NC or NO type contacts, at a frequency of 360 switches per hour and 10% work factor, cycles		$1x10^5$
Relay life time, min, cycles	- for DC control coil	$5x10^7$
	- for AC control coil	$3x10^7$
Closing/opening time, ms, maximum	- for DC control coil	15/10
	- for AC control coil	15/20
Electrical strength of insulation between main and control circuit contacts, kV		5
Electrical strength of insulation between open contacts of the main circuits,kV		1
Rated value of 1.2/50 μs withstand pulse voltage between main and control circuit contacts, kV		6
Rated value of 1.2/50 μs withstand pulse voltage between open contacts of the main circuit, kV		1
Rated value of 1.2/50 μs withstand pulse voltage between contact groups of the main circuit, kV		4
Rated insulation voltage, V		250
Degree of protection from environmental influences		RTII
Protection class as per GOST 14254	- On the shell side	IP51
	- on the pins side	IP00
Operating conditions		
Operating temperature range, °C		-40 to +70
Height of the installation site above sea level, max., m		2000
Relative humidity, %		5 to 85
Operating position in space		Arbitrary

Note:
[1)] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.

Overall dimensions (mm)

OptiRel C RP46 relay with 2 CO



OptiRel G RR97 RP46 relay receptacles

Designation

OptiRel G RR 97 - 7 2 - 230 - 10 - V

(1) (2) (3) (4) (5) (6) (7) (8)

1	Product range name	OptiRel G
2	Product type name	RR — Relay receptacle
3	Series	97
4	Configuration	5 — spring terminals, logical base; 7 — spade lug screw terminals, standard base
5	Number of groups of main circuit contacts	1; 2
6	Rated supply voltage, V	230
7	Rated current of the main circuit, A	10
8	Type of connecting terminals	V — Screw; PI — Plug-in terminals

Items

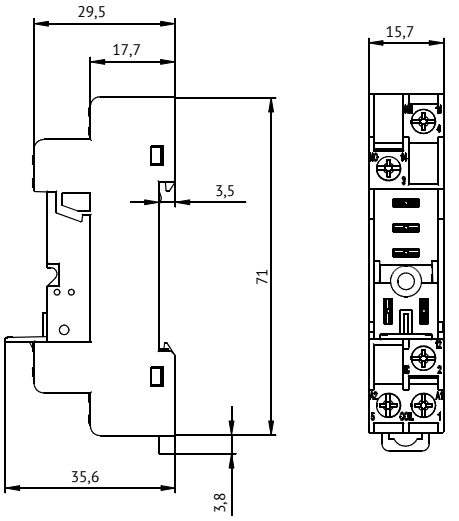
Appearance	Type of terminals	Base type	Number of relay contacts	Product name	Code	Compatible retainer		
						Material	Product name	Code
	Screw terminals for spade lug	Standard	1 CO	OptiRel G RR97-71-230-12-V	365459	Plastic	OptiRel G 46-H1	281182
		Standard	2 CO	OptiRel G RR97-72-230-10-V	281177			
	Plug-in terminals	Logical	2 CO	OptiRel G RR97-52-230-10-PI	365463			

Technical specification

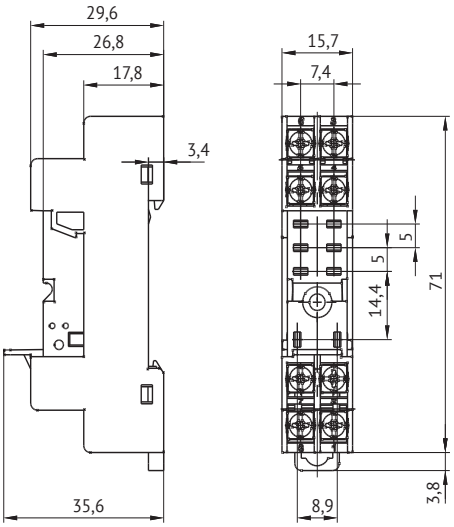
Parameter	Values
Technical parameters	
Rated current of the main circuit, A	10
Main circuit rated voltage, V	250
Cable stripping length, mm	7
Maximum wire size, solid wire and stranded wire, mm²	1x2,5 2x1,5
Screw torque, N·m	1
Electrical strength of insulation between control and main circuit connection pins, kV	4
Protection class as per GOST 14254	IP10
Operating conditions	
Operating temperature range	40 to +70
Height of the installation site above sea level, max., m	2000
Relative humidity, %	5 to 85
Operating position in space	Arbitrary

Overall dimensions (mm)

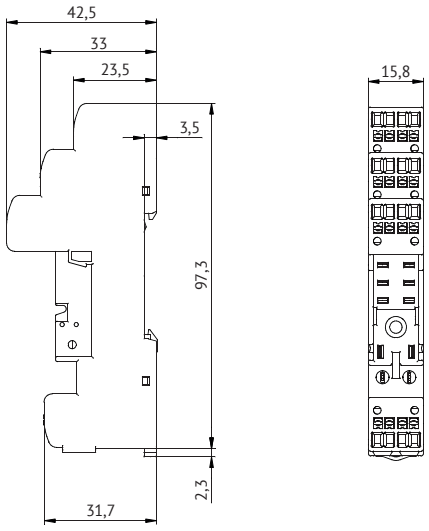
OptiRel C RR97 receptacle with screw terminals for 1 CO relays



OptiRel C RR97 receptacle with screw terminals for 2 CO relays



OptiRel C RR97 receptacle with plug-in terminals for 2 CO relays



OptiRel G RP55 General-purpose relays

RP55 general-purpose relays offer the widest range of versions of all OptiRel G series and can be used for a variety of applications and automation systems, as well as can provide reliable galvanic isolation of electrical circuits.

The series range is represented by RP55 electromechanical relays, which are available in three versions, depending on the type of contact material — AgNi for general industrial applications; AgNi+Au for switching ultra-low currents and $AgSnO_2$ for inductive loads and loads with inrush currents.

For ease of operation and commissioning, the RP55 series relay range includes versions that have a built-in test button for manual contact closure to speed up and simplify commissioning, a mechanical indicator to show contact status, a LED to indicate operating mode, and a built-in bypass diode for protection against switching overvoltages.

RR95 receptacles for this series are available with screw terminals, spade lug terminals, spring terminals and plug-in terminals, as well as in PCB mount versions, which will allow to implement the exact solution according to the customer's needs.
Additional plug-in modules can be installed to extend the relay functionality.

Selection guide

Device type	RP55 general-purpose relays	RR94 receptacles for RP55 relays
Appearance		
Number of contacts	2 CO; 3 CO; 4 CO	–
Rated current of the main circuit at the rated voltage, A	7; 10; 12 A	6; 7; 10; 12 A
Rated voltage of the main circuit	250 V AC 30 V DC	250 V
Maximum switched voltage [1]	250 V AC 30 V DC	250 V
Material of contacts	AgNi; AgNi + Au; $AgSnO_2$	–
Rated voltage of the control circuit	6; 12; 24; 48; 110; 220 V DC 12; 24; 48; 110; 230 V AC	6-230 V AC/DC

Note:
[1] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.

OptiRel C RP55 General-purpose relays

Designation

OptiRel C RP 55 - 3 3 - 12 D - 10 - CO - /T I L D

1	Product range name	OptiRel C	
2	Product type name	RP — Interposing relay	
3	Series	55	
4	Configuration	1 — electromechanical, PCB mount; 3 — electromechanical, receptacle mount	
5	Number of groups of main circuit contacts	2; 3; 4	
6	Rated supply voltage, V	6; 12; 24; 36; 48; 60; 110; 115; 120; 125; 220; 230; 240	
7	Type of power supply circuit current	D — direct current (DC)	(empty) — alternating current AC
8	Rated current of the main circuit, A	6; 10; 12	
9	Type of main contacts	CO — changeover contact	
10	Material of contacts	(empty) — AgNi; S — $AgSnO_2$; C — AgNi + Au	
11	Test button	T — available; (empty) — not available	
12	Mechanical indicator	I — available; (empty) — not available	
13	LED	L — available; (empty) — not available	
14	Bypass diode	D — available; (empty) — not available	

Items

Appearance	Configuration of contacts	Control coil rated voltage	Material of contacts	Test button	Mechanical indicator	LED	Bypass diode	Product name	Code
	2 CO	12 V DC	AgNi	-	-	-	-	OptiRel C RP55-32-12D-12-CO	281072
		24 V AC	AgNi	-	-	-	-	OptiRel C RP55-32-24-12-CO	281063
		24 V AC	AgNi	-	-	+	-	OptiRel C RP55-32-24-12-CO/L	281064
		24 V DC	AgNi	-	-	-	-	OptiRel C RP55-32-24D-12-CO	281073
		24 V DC	AgNi	-	-	+	+	OptiRel C RP55-32-24D-12-CO/LD	281074
		24 V DC	AgNi	+	+	-	-	OptiRel C RP55-32-24D-12-CO/TI	329977
		24 V DC	AgNi	+	+	+	-	OptiRel C RP55-32-24D-12-CO/TIL	329978
		24 V DC	AgNi+Au	+	+	-	-	OptiRel C RP55-32-24D-12-CO-G/TI	281075
		48 V AC	AgNi	+	+	-	-	OptiRel C RP55-32-48-12-CO/TI	281065
		48 V DC	AgNi	+	+	-	-	OptiRel C RP55-32-48D-12-CO/TI	281076
		60 V DC	AgNi	+	+	-	-	OptiRel C RP55-32-60D-12-CO/TI	281077
		110 V AC	AgNi	-	-	-	-	OptiRel C RP55-32-110-12-CO	281066
		110 V AC	AgNi	+	+	+	-	OptiRel C RP55-32-110-12-CO/TIL	281067
		110 V DC	AgNi	-	-	-	-	OptiRel C RP55-32-110D-12-CO	281078
		120 V AC	AgNi	+	+	-	-	OptiRel C RP55-32-120-12-CO/TI	281068
		125 V AC	AgNi	-	-	-	-	OptiRel C RP55-32-125-12-CO	348368
		125 V AC	AgNi	+	+	+	-	OptiRel C RP55-32-125-12-CO/TIL	348369
		125 V DC	AgNi	-	-	-	-	OptiRel C RP55-32-125D-12-CO	348366
		125 V DC	AgNi	+	+	+	-	OptiRel C RP55-32-125D-12-CO/TIL	348367
		220 V DC	AgNi	-	-	-	-	OptiRel C RP55-32-220D-12-CO	281079
		230 V AC	AgNi	+	+	-	-	OptiRel C RP55-32-230-12-CO/TI	329976
		220-240 V AC	AgNi	-	-	-	-	OptiRel C RP55-32-240-12-CO	281069
		220-240 V AC	AgNi	-	-	+	-	OptiRel C RP55-32-240-12-CO/L	281070
		220-240 V AC	AgNi	+	+	-	-	OptiRel C RP55-32-240-12-CO/TI	324480
		220-240 V AC	AgNi	+	+	+	-	OptiRel C RP55-32-240-12-CO/TIL	324479
		220-240 V AC	AgNi+Au	+	+	-	-	OptiRel C RP55-32-240-12-CO-G/TI	281071
	3 CO	12 V AC	AgNi	-	-	+	-	OptiRel C RP55-33-12-10-CO/L	281082
		12 V AC	AgNi	+	+	-	-	OptiRel C RP55-33-12-10-CO/TI	281080
		12 V AC	AgNi+Au	-	-	-	-	OptiRel C RP55-33-12-10-CO-G	281083
		12 V DC	AgNi	-	-	-	-	OptiRel C RP55-33-12D-10-CO	281089
		12 V DC	AgNi	+	+	+	+	OptiRel C RP55-33-12D-10-CO/TILD	281090
		24 V AC	AgNi	-	-	-	-	OptiRel C RP55-33-24-10-CO	281081
		24 V AC	AgNi	+	+	-	-	OptiRel C RP55-33-24-10-CO/TI	329983
		24 V AC	AgNi	+	+	+	-	OptiRel C RP55-33-24-10-CO/TIL	330056
		24 V DC	AgNi	-	-	-	-	OptiRel C RP55-33-24D-10-CO	281091
		24 V DC	AgNi	-	-	+	+	OptiRel C RP55-33-24D-10-CO/LD	281092
		24 V DC	AgNi	+	+	-	-	OptiRel C RP55-33-24D-10-CO/TI	330057

Appearance	Configuration of contacts	Control coil rated voltage	Material of contacts	Test button	Mechanical indicator	LED	Bypass diode	Product name	Code
	3 CO	24 V DC	AgNi	+	+	+	-	OptiRel C RP55-33-24D-10-CO/TIL	330058
		24 V DC	$AgSnO_2$	-	-	-	-	OptiRel C RP55-33-24D-10-CO-S	282951
		24 V DC	$AgSnO_2$	-	-	+	+	OptiRel C RP55-33-24D-10-CO-S/LD	282952
		48 V AC	AgNi	-	-	-	-	OptiRel C RP55-33-48-10-CO	281084
		48 V AC	AgNi	+	+	+	-	OptiRel C RP55-33-48-10-CO/TIL	330059
		48 V DC	AgNi	-	-	-	-	OptiRel C RP55-33-48D-10-CO	281095
		48 V DC	AgNi	+	+	-	-	OptiRel C RP55-33-48D-10-CO/TI	330061
		48 V DC	AgNi	+	+	+	-	OptiRel C RP55-33-48D-10-CO/TIL	330063
		110 V AC	AgNi	-	-	-	-	OptiRel C RP55-33-110-10-CO	281085
		110 V DC	AgNi	-	-	-	-	OptiRel C RP55-33-110D-10-CO	281096
		110 V DC	AgNi	-	-	+	+	OptiRel C RP55-33-110D-10-CO/LD	281097
		120 V AC	AgNi	+	+	-	-	OptiRel C RP55-33-120-10-CO/TI	281086
		120 V AC	AgNi	+	+	+	-	OptiRel C RP55-33-120-10-CO/TIL	329979
		125 V AC	AgNi	-	-	-	-	OptiRel C RP55-33-125-10-CO	348372
		125 V AC	AgNi	+	+	+	-	OptiRel C RP55-33-125-10-CO/TIL	348373
		125 V DC	AgNi	-	-	-	-	OptiRel C RP55-33-125D-10-CO	348370
		125 V DC	AgNi	+	+	-	-	OptiRel C RP55-33-125D-10-CO/TI	348381
		125 V DC	AgNi	+	+	+	-	OptiRel C RP55-33-125D-10-CO/TIL	348371
		220 V DC	AgNi	-	-	-	-	OptiRel C RP55-33-220D-10-CO	281098
		230 V AC	AgNi	+	+	-	-	OptiRel C RP55-33-230-10-CO/TI	329980
		220-240 V AC	AgNi	-	-	-	-	OptiRel C RP55-33-240-10-CO	281087
		220-240 V AC	AgNi	-	-	+	-	OptiRel C RP55-33-240-10-CO/L	281088
		220-240 V AC	AgNi	+	+	+	-	OptiRel C RP55-33-240-10-CO/TIL	329982
	4 CO	6 V DC	AgNi	+	+	+	+	OptiRel C RP55-34-6D-6-CO/TILD	281122
		12 V AC	AgNi	+	+	-	-	OptiRel C RP55-34-12-6-CO/TI	281099
		12 V DC	AgNi	-	-	-	-	OptiRel C RP55-34-12D-6-CO	281123
		12 V DC	AgNi	+	+	-	-	OptiRel C RP55-34-12D-6-CO/TI	330070
		12 V DC	AgNi	+	+	+	-	OptiRel C RP55-34-12D-6-CO/TIL	330071
		12 V DC	AgNi	+	+	+	+	OptiRel C RP55-34-12D-6-CO/TILD	281124
		24 V AC	AgNi	-	-	-	-	OptiRel C RP55-34-24-6-CO	281100
		24 V AC	AgNi	-	+	-	-	OptiRel C RP55-34-24-6-CO/I	281101
		24 V AC	AgNi	-	-	+	-	OptiRel C RP55-34-24-6-CO/L	330081
		24 V AC	AgNi	+	+	-	-	OptiRel C RP55-34-24-6-CO/TI	330082
		24 V AC	AgNi	+	+	+	-	OptiRel C RP55-34-24-6-CO/TIL	281102
		24 V AC	AgNi+Au	+	+	-	-	OptiRel C RP55-34-24-6-CO-G/TI	281103
		24 V AC	AgNi+Au	+	+	+	-	OptiRel C RP55-34-24-6-CO-G/TIL	281104
		24 V DC	AgNi	-	-	-	-	OptiRel C RP55-34-24D-6-CO	281125
		24 V DC	AgNi	-	-	+	+	OptiRel C RP55-34-24D-6-CO/LD	281126
		24 V DC	AgNi	+	+	-	-	OptiRel C RP55-34-24D-6-CO/TI	324484
		24 V DC	AgNi	+	+	+	-	OptiRel C RP55-34-24D-6-CO/TIL	324483
		24 V DC	AgNi+Au	-	-	+	+	OptiRel C RP55-34-24D-6-CO-G/LD	281128
		24 V DC	$AgSnO_2$	+	+	-	-	OptiRel C RP55-34-24D-6-CO-S/TI	282953
		36 V AC	AgNi	-	-	-	-	OptiRel C RP55-34-36-6-CO	281105
		36 V AC	AgNi	+	+	+	-	OptiRel C RP55-34-36-6-CO/TIL	281106
		48 V AC	AgNi	+	+	-	-	OptiRel C RP55-34-48-6-CO/TI	281107
		48 V AC	AgNi	+	+	+	-	OptiRel C RP55-34-48-6-CO/TIL	281108
		48 V DC	AgNi	-	-	-	-	OptiRel C RP55-34-48D-6-CO	281129
		48 V DC	AgNi	+	+	-	-	OptiRel C RP55-34-48D-6-CO/TI	330083
		48 V DC	AgNi	+	+	+	-	OptiRel C RP55-34-48D-6-CO/TIL	330084
		48 V DC	$AgSnO_2$	+	+	-	-	OptiRel C RP55-34-48D-6-CO-S/TI	282954
		60 V AC	AgNi	+	+	-	-	OptiRel C RP55-34-60-6-CO/TI	281109
		60 V DC	AgNi	+	+	-	-	OptiRel C RP55-34-60D-6-CO/TI	281131
		60 V DC	AgNi	+	+	+	+	OptiRel C RP55-34-60D-6-CO/TILD	281132
		110 V AC	AgNi	+	+	-	-	OptiRel C RP55-34-110-6-CO/TI	281110
		110 V AC	AgNi	+	+	+	-	OptiRel C RP55-34-110-6-CO/TIL	281111
		110 V DC	AgNi	-	-	-	-	OptiRel C RP55-34-110D-6-CO	281133
		110 V DC	AgNi	-	+	-	-	OptiRel C RP55-34-110D-6-CO/I	281134
		110 V DC	AgNi	+	+	-	-	OptiRel C RP55-34-110D-6-CO/TI	330065
		110 V DC	AgNi	+	+	+	-	OptiRel C RP55-34-110D-6-CO/TIL	330067
		110 V DC	AgNi	+	+	+	+	OptiRel C RP55-34-110D-6-CO/TILD	281135
		110 V DC	AgNi+Au	+	+	+	+	OptiRel C RP55-34-110D-6-CO-G/TILD	281137
		110 V DC	$AgSnO_2$	+	+	-	-	OptiRel C RP55-34-110D-6-CO-S/TI	282955
		120 V AC	AgNi	+	+	-	-	OptiRel C RP55-34-120-6-CO/TI	281112
		120 V AC	AgNi	+	+	+	-	OptiRel C RP55-34-120-6-CO/TIL	281113
		120 V AC	$AgSnO_2$	+	+	+	-	OptiRel C RP55-34-120-6-CO-S/TIL	281114
		125 V AC	AgNi	-	-	-	-	OptiRel C RP55-34-125-6-CO	348375
		125 V AC	AgNi	+	+	+	-	OptiRel C RP55-34-125-6-CO/TIL	348376
		125 V DC	AgNi	-	-	-	-	OptiRel C RP55-34-125D-6-CO	348374
		125 V DC	AgNi	+	+	+	-	OptiRel C RP55-34-125D-6-CO/TIL	330068
		220 V DC	AgNi	-	-	-	-	OptiRel C RP55-34-220D-6-CO	281138
		220 V DC	AgNi	-	+	-	-	OptiRel C RP55-34-220D-6-CO/I	281139
		220 V DC	AgNi	+	+	-	-	OptiRel C RP55-34-220D-6-CO/TI	330072
		220-240 V AC	AgNi	-	-	-	-	OptiRel C RP55-34-240-6-CO	281115
		220-240 V AC	AgNi	-	+	-	-	OptiRel C RP55-34-240-6-CO/I	281116
		220-240 V AC	AgNi	+	+	-	-	OptiRel C RP55-34-240-6-CO/TI	324482
		220-240 V AC	AgNi	+	+	+	-	OptiRel C RP55-34-240-6-CO/TIL	281117
		220-240 V AC	AgNi+Au	-	-	-	-	OptiRel C RP55-34-240-6-CO-G	281120
		220-240 V AC	AgNi+Au	-	-	+	-	OptiRel C RP55-34-240-6-CO-G/L	281121
		220-240 V AC	$AgSnO_2$	+	+	-	-	OptiRel C RP55-34-240-6-CO-S/TI	281118
		220-240 V AC	$AgSnO_2$	+	+	+	-	OptiRel C RP55-34-240-6-CO-S/TIL	281119
		12 V DC	AgNi	-	-	-	-	OptiRel C RP55-14-12D-6-CO [1]	281059
		24 V DC	AgNi	-	-	-	-	OptiRel C RP55-14-24D-6-CO [1]	281060
		24 V DC	$AgSnO_2$	-	-	-	-	OptiRel C RP55-14-24D-6-CO-S [1]	282950
		110 V DC	AgNi	-	-	-	-	OptiRel C RP55-14-110D-6-CO [1]	281062
		220-240 V AC	AgNi	-	-	-	-	OptiRel C RP55-14-240-6-CO [1]	281058

[1] Models for PCB mounting by soldering. Receptacle not required.

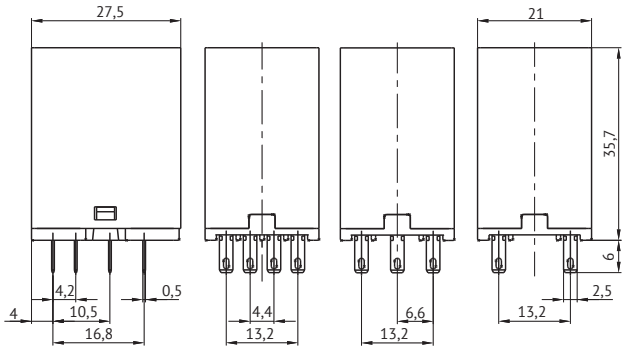
Technical specification

Parameter		Values		
Contact specifications				
Number of contacts		2 CO	3 CO	4 CO
Rated current of the main circuit at the rated voltage, A:		12	10	6
Main circuit rated voltage, V	- for AC 50 Hz	250		
	- for DC	30		
Maximum switched voltage, B	- for AC 50 Hz	250 [1)]		
	- for DC	30 [1)]		
Maximum switching power, V·A/W		3000/360	2500/300	1500/180
Material of contacts		AgNi, $AgSnO_2$, AgNi+Au		
Trip type		Micro-trip		
Standard contacts		5 В DC/ 100 мА		
Cold-plated contacts		5 В DC/ 10 мА		
Coil characteristics				
Rated power, MW/B·A		0,8-1,1/0,9-1,5		
Operating voltage range		0,8-1,1 Uн		
AC/DC dropout voltage		0,3 Uн/0,1 Uн		
Technical parameters				
Mechanical durability, cycles		$2x10^7$		
Electrical durability at rated load at a frequency of 600 switchesper hour and 50% work factor		$1x10^5$		
Relay life time, min, cycles		$2x10^7$		
Closing/opening time, ms, maximum	- for DC control coil	20/15		
	- for AC control coil	20/25		
Electrical strength of insulation between main and control circuit contacts, kV		1,5		
Electrical strength of insulation between open contacts of the main circuits,kV		1		
Rated value of 1.2/50 μs withstand pulse voltage between main and control circuit contacts, kV	- for 2 CO, 3 CO contact group	4		
	- for 4 CO contact group	2,5		
Rated value of 1.2/50 μs withstand pulse voltage between open contacts of the main circuit, kV		1,5		
Rated value of 1.2/50 μs withstand pulse voltage between contact groups of the main circuit, kV	- for 2 CO, 3 CO contact group	4		
	- for 4 CO contact group	2,5		
Rated insulation voltage, V		250		
Degree of protection from environmental influences		RTI		
Protection class as per GOST 14254	- on the shell side	IP51		
	- on the pins side	IP00		
Operating conditions				
Operating temperature range, °C		-40 to +85		
Installation height above sea level without reduction of electrical parameters, max, m		2000		
Relative humidity, %		5 to 85		
Operating position in space		Arbitrary		

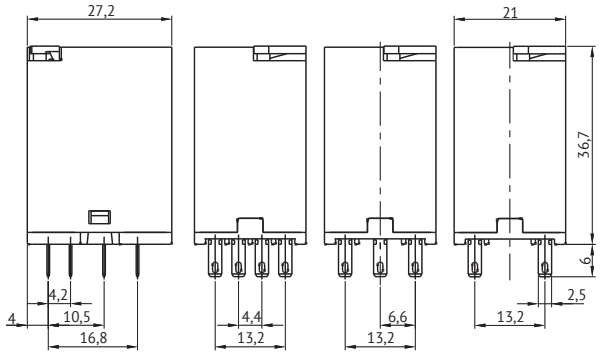
Note:
[1)] The curves of dependence of the switching current on the voltage level and current type are given in the operating manual.

Overall dimensions (mm)

OptiRel C RP55-3.. relay for mounting in RR94 receptacles



OptiRel C RP55-1.. relay for PCB mounting by soldering



OptiRel C RR94 RP55 relay receptacles

Designation

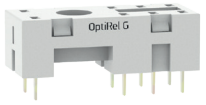
OptiRel C RR 94 - 5 4 - 230 - 7 - P

(1) (2) (3) (4) (5) (6) (7) (8)

1	Product range name	OptiRel C
2	Product type name	RR — Relay receptacle
3	Series	94
4	Configuration	1 — PCB mounting by soldering 5 — spring or plug-in terminals, logical base 7 — spade lug screw terminals, standard base 8— screw terminals, standard base 9 — screw terminals, logical base
5	Number of groups of main circuit contacts	2; 3; 4
6	Rated supply voltage, V	230
7	Rated current of the main circuit, A	7; 10*; 12**
8	Type of connecting terminals	P — Spring terminals; V — Screw; PI — Plug-in terminals; (empty) — not available

* Only for OptiRel C RR 94-93-230-10-V
** Only for OptiRel C RR 94-92-230-12-V

Items

Appearance	Type of terminals	Base type	Number and current of relay contacts	Product name	Code	Compatible retainer		
						Material	Product name	Code
	Screw terminals for spade lug	Standard	2 CO, 7 A [1]	OptiRel C RR94-72-230-7-V	281170	Plastic Metal	OptiRel C 55-H4 OptiRel C 55-H5	281190 281191
		Standard	4 CO, 7 A	OptiRel C RR94-74-230-7-V	281171			
	Screw	Standard	2 CO, 7 A [1]	OptiRel C RR94-82-230-7-V	281172			
		Logical	2 CO, 12 A	OptiRel C RR94-92-230-12-V	281164			
		Logical	3 CO, 10 A	OptiRel C RR94-93-230-10-V	281165			
		Logical	4 CO, 7 A	OptiRel C RR94-94-230-7-V	281166			
	Spring terminals	Logical	4 CO, 7 A	OptiRel C RR94-54-230-7-P	281169			
	Plug-in terminals	Logical	2 CO, 10 A [2]	OptiRel C RR94-52-230-10-PI	365461			
			4 CO, 6 A	OptiRel C RR94-54-230-6-PI	365462			
	For soldering	–	2 CO, 7 A	OptiRel C RR94-12-230-7	281167	Metal	OptiRel C 55-H1	286404
			4 CO, 7 A	OptiRel C RR94-14-230-7	281168			

Note:
[1] For OptiRel C RP55-32 and OptiRel C RP55-33 relays used to switch loads with a current over 7 A, only OptiRel C RR94-92-23012-V and OptiRel C RR94-93-230-10-V receptacles should be used respectively.
[2] Maximum load current should be not more than 10 A.

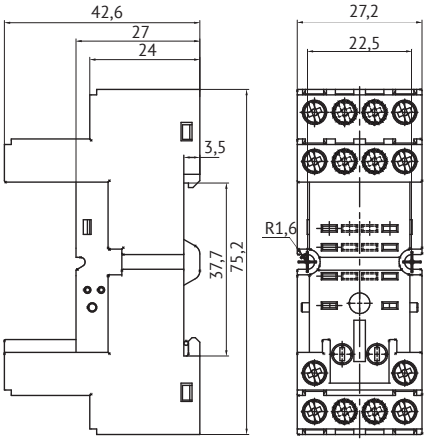
Technical specification

Parameter		Values
Technical parameters		
Rated current of the main circuit, A		7; 10 [1]; 12 [2]
Main circuit rated voltage, V		250
Maximum wire size, solid wire and stranded wire, mm²	OptiRel C RR94-8X	1x4
	OptiRel C RR94-9X	2x2,5
	OptiRel C RR94-7X	2x1,5
	OptiRel C RR94-54	
Screw torque, N·m		0,6
Cable stripping length, mm		7
Electrical strength of insulation between control and main circuit connection pins, kV		2
Protection class as per GOST 14254		IP20
Operating conditions		
Operating temperature range		-40 to +70
Height of the installation site above sea level, max., m		2000
Relative humidity, %		5 to 85
Operating position in space		Arbitrary

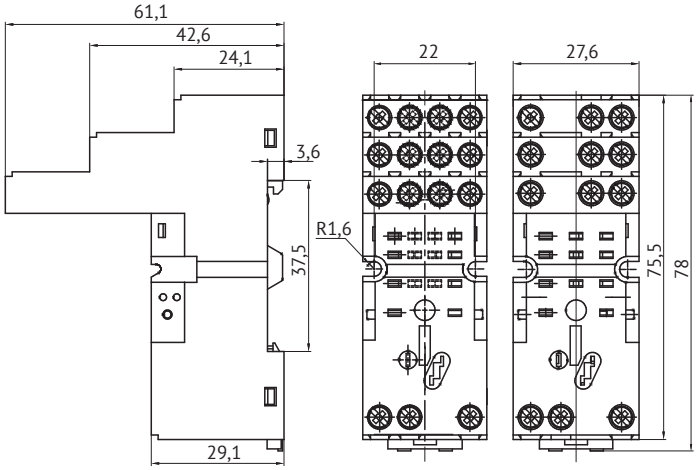
Note:
[1] Only for OptiRel C RR 94-93-230-10-V
[2] Only for OptiRel C RR 94-92-230-12-V

Overall dimensions (mm)

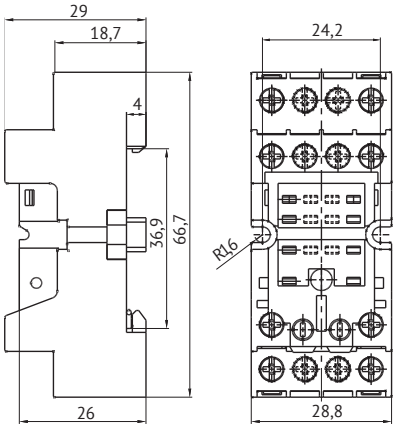
OptiRel C RR94-8.. receptacle with screw terminals and standard base



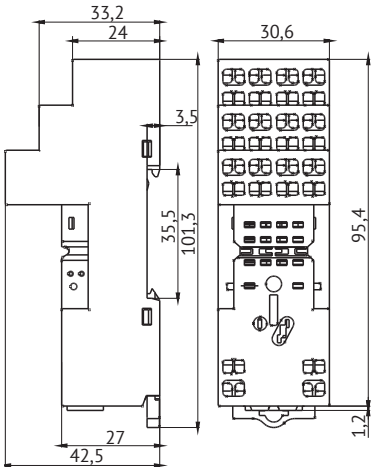
OptiRel C RR94-9.. receptacle with screw terminals and logical base



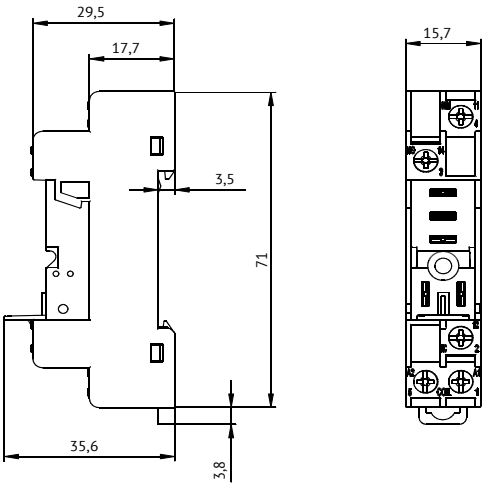
OptiRel C RR94-7.. receptacle with spade lug screw terminals and standard base



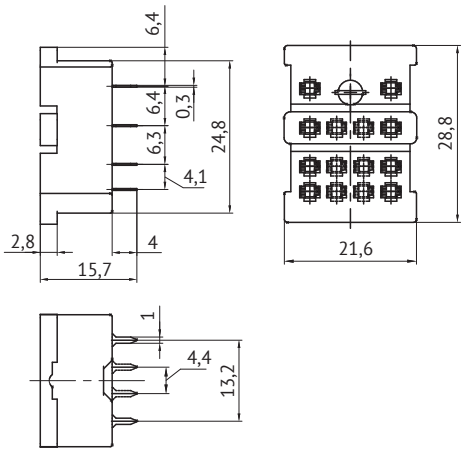
OptiRel C RR94-7.. receptacle with spring terminals and logical base



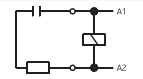
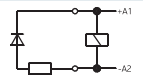
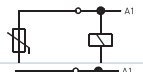
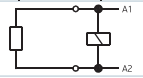
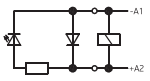
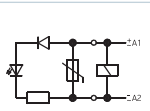
OptiRel G RR94-7.. receptacle with screw terminals and logical base



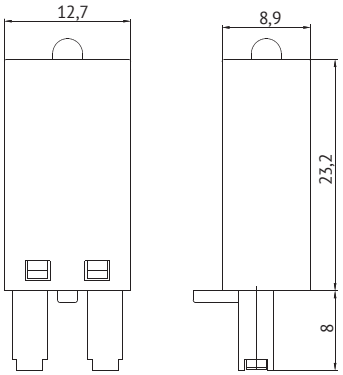
OptiRel G RR94-1.. receptacle for PCB mounting by soldering



Accessories

Appearance	Type	Purpose	Operating voltage	Circuit diagrams	Series of compatible receptacles	Product name	Code
	RC-circuit	Suppression of pulse currents in the control circuit	6-24 V AC/DC		OptiRel G RR94-52-230-10-PI OptiRel G RR94-54-230-6-PI OptiRel G RR94-54-230-7-P OptiRel G RR94-72-230-7-V OptiRel G RR94-74-230-7-V OptiRel G RR94-82-230-7-V OptiRel G RR94-92-230-12-V OptiRel G RR94-93-230-10-V OptiRel G RR94-94-230-7-V OptiRel G RR95-02-230-10-V OptiRel G RR95-52-230-10-P OptiRel G RR95-52-230-10-PI OptiRel G RR95-82-230-10-V	OptiRel G RC-6-24U	281178
			28-60 V AC/DC			OptiRel G RC-28-60U	281179
			110-230 V AC/DC			OptiRel G RC-110-230U	330353
	Bypass diode	Protection against reverse current when power is removed from the control circuit coil	6-220 V DC			OptiRel G DI-6-220D	330361
	VDR	Limiting surge currents and overvoltage in the control circuit	230 V AC			OptiRel G V-230	330356
	Resistor	Limiting the reverse current amplitude during relay tripping	110-230 V AC			OptiRel G RC-110-230	330352
	Bypass diode + LED	Protection against reverse current when power is removed from the control circuit coil + Operating mode display	6-24 V DC			OptiRel G DI-6-24D	281180
			28-60 V DC			OptiRel G DI-28-60D	281181
	VDR + LED	Limiting surge currents and overvoltage in the control circuit + Operating mode display	6-24 V AC/DC			OptiRel G RCV-6-24U/L	330348
			28-60 V AC/DC			OptiRel G RCV-24-60U/L	330358
			110-230 V AC/DC			OptiRel G RCV-110-230U/L	330354

OptiRel G additional protection and display modules



OptiRel D

↗ Time, monitoring, control and protection relays

OptiRel D time, monitoring, control and protection relays are a group of modular device series used for process automation, network and load parameter monitoring, and load protection.

The use of monitoring and protection relays ensures timely notification about deviations of parameters from permissible values, which allows to take measures and recover the situation before more serious malfunctions, equipment damage and additional material costs are caused. The control relays and time relays are designed for load automation, automatic control of devices and technological processes, including the applications requiring activation time delays or maintaining the required operating sequence of system elements.

The OptiRel D series includes a wide range of solutions, from cost-effective single-functional models with analogue parameter setting to advanced multifunctional devices with digital setting and data display on the screen.

▸ Series advantages

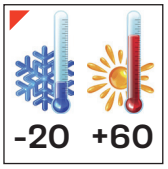
The wide range of series and solutions of OptiRel D, as well as the variability of their functionality allow to implement an integrated control and protection system.

The LEDs on the front panel provide convenient visible indication of relay operating modes and condition.

The versions of relays with LED indicators or LCD displays ensure accurate parameter adjustment, and real-time indication of the actual value of a monitored parameter.

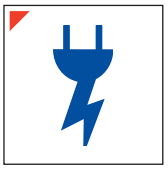
The plastic of the OptiRel D relay housing does not support combustion, increasing the equipment application safety even in emergency situations.

The modular housing allows to install the equipment under shields in cabinets for modular equipment, and its compact dimensions provide space optimization.



The operating temperature range of the relay is -20 to +60 °C, which allows to use equipment in automation solutions without the need for installation of heating or air conditioning systems.

The functional diagrams and connection scheme on the side panel of the relay simplify the commissioning process and decrease the probability of errors during installation.



The wide range of power supply voltages 24-240 V AC/DC for operation in unstable supply networks ensures stable operation of the technological process and prevents unscheduled shutdowns.

Scales marked with absolute values and two potentiometers for time relay setting increase the relay setting accuracy and decrease the commissioning time.

The long-term service life and high operating life of up to 10 million switching cycles ensure reliable operation and reduced operating costs.

OptiRel D TMR Time relays

The OptiRel D TMR series time relays are intended for automatic control of devices and processes requiring activation time delay or maintaining a required operating sequence of system elements. The relays are used in technological process control and automation solutions, for example, in ventilation, heating and air conditioning systems of residential and commercial buildings and industrial facilities, and to solve other tasks.

The product range of KEAZ time relays comprises a wide range of solutions, including both single-functional models with analogue parameter setting, and multifunctional devices, including ones with digital setting and data display on the screen.

Designation

OptiRel D TMR - DONF - MTD - 240U - 2

1	Product range name	OptiRel D	
2	Product type name	TMR — time relays	
3	Function	DON — turn-on delay DOF — turn-off delay DOFU — turn-off delay with no supply voltage DONS — star-delta ACY — cyclic ARD — cyclic with pause, for engine reverse DONF — multifunctional	
4	Work algorithm	1T — single-command 2T — dual-command MT — multicommand MTD — multicommand with display	
5	Rated supply voltage, V	230A — 230 V AC	240U — 12-240 V AC/DC
6	Number and type of output contacts	1 — 1 CO 2 — 2 CO 2I — 1 CO with adjustable delay + 1 CO instantaneous	

Items

Appearance	Function	Rated supply voltage	Time setting range	Number of output contacts	LED-indicator	Product name	Code
	Switch-on delay	230 V AC	0.1 s - 10 days (8 intervals)	1 CO	-	OptiRel D TMR-DON-1T-230A-1	332006
		230 V AC		2 CO	-	OptiRel D TMR-DON-1T-230A-2	332010
		12-240 V AC/DC		1 CO	-	OptiRel D TMR-DON-1T-240U-1	332008
		12-240 V AC/DC		2 CO	-	OptiRel D TMR-DON-1T-240U-2	332012
		12-240 V AC/DC		2 CO [1]	-	OptiRel D TMR-DON-1T-240U-2I	332014
		12-240 V AC/DC		2 CO [2]	-	OptiRel D TMR-DON-2T-240U-2	332029
	Switch-off delay	230 V AC	0.1 s - 10 days (8 intervals)	1 CO	-	OptiRel D TMR-DOF-1T-230A-1	332007
		230 V AC		2 CO	-	OptiRel D TMR-DOF-1T-230A-2	332011
		12-240 V AC/DC		1 CO	-	OptiRel D TMR-DOF-1T-240U-1	332009
		12-240 V AC/DC		2 CO	-	OptiRel D TMR-DOF-1T-240U-2	332013
		12-240 V AC/DC		2 CO [1]	-	OptiRel D TMR-DOF-1T-240U-2I	332015
	Switch-off delay with no supply voltage	12-240 V AC/DC	0.1 s - 10 min (4 intervals)	1 CO	-	OptiRel D TMR-DOFU-1T-240U-1	332016
	Star-delta	12-240 V AC/DC	0.1 s - 10 min (4 intervals)	2 CO	-	OptiRel D TMR-DONS-1T-240U-2	332017

Appearance	Function	Rated supply voltage	Time setting range	Number of output contacts	LED-indicator	Product name	Code
	Cyclic	12-240 V AC/DC	0.1 s - 10 days (8 intervals)	1 CO	-	TMR-ACY-1T-240U-1	332030
	Cyclic with pause (Alternate load activation relays / Engine reverse relays)	12-240 V AC/DC	0.1 s - 99 days (digital setting)	1 CO	+	TMR-ARD-1T-240U-1	357858
	Multifunctional, 10 functions	12-240 V AC/DC	0.1 s - 10 days (8 intervals)	1 CO	-	TMR-DONF-MT-240U-1	332018
		12-240 V AC/DC		2 CO	-	TMR-DONF-MT-240U-2	332019
	Multifunctional, 20 functions	12-240 V AC/DC	0.1 s - 99 days (digital setting)	2 CO	+	TMR-DONF-MTD-240U-2	357856

Note:
[1] One output contact has an adjustable delay, and the second one trips instantaneously regardless of the time settings.
[2] Two output contacts have independent time delay settings and operate independently of each other.

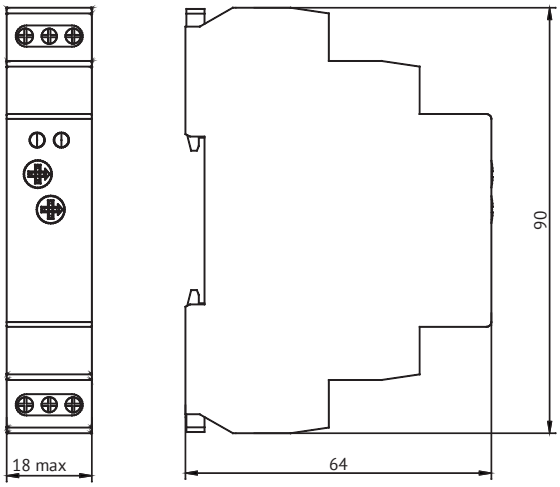
Technical specification

Parameter		Value
Operating mode		continuous
Protection class in accordance with GOST 14254	provided by the enclosure	IP40
	on the output side	IP20
Rated insulation voltage Ui, V		270
Rated impulse withstand voltage Uimp, kV		4
Power outputs		A1-A2
Rated voltage of control circuit Un, V	240U	AC/DC: 12-240 (50-60Hz)
	230A	AC: 230 (50-60Hz)
Maximum input power, VA/W	240U	3 / 1,7
	230A	6 / 1,9
Supply voltage permissible tolerance, %		-15; +10
Rated operating current in AC-1 utilization category at 250 V, 50 Hz voltage, A		16
Rated operating current in AC-15 utilization category as per GOST IEC 60947-5-1 at 250 V, 50 Hz voltage		5
Minimum switching DC power, mW		500
Maximum switched voltage, B		AC: 250/DC: 24
Time delay range	DONF-MTD, ARD	0.1 s - 99 days, ON, OFF
	DON, DOF, ACY, DONF-MT	0.1 s - 10 days, ON, OFF
	DOFU, DONS	0,1 c - 10 min
Minimum control pulse, ms, min	ACY, ARD, DOF, DON, DONF, DONS	25
	DOFU	200
Reset time, ms, max		200
Temperature coefficient at 20 °C		0,05 %/°C
Time delay setting error, %		10
Time delay error, %		0,2
Restart delay duration, s		0,2
Mechanical wear resistance, ON/OFF cycles, min		$1x10^7$
Electrical wear resistance in utilization category AC-1, ON/OFF cycles, min		$1x10^5$

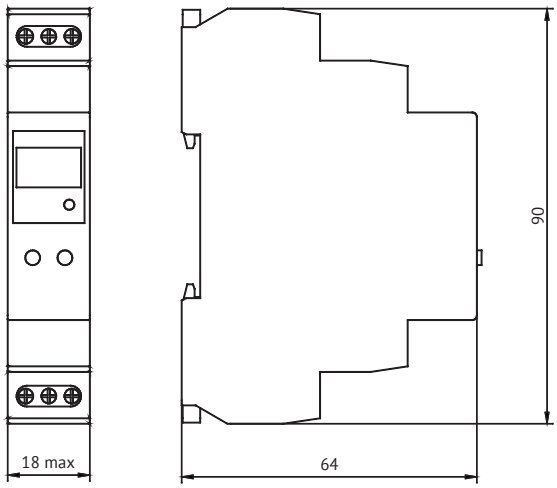
Parameter		Value
Conductor connection		
Flexible conductor with lug, mm²	1 conductor/2 conductors	1 – 2,5 / 0,75 – 1,5
Flexible conductor with no lug, mm²	1 conductor/2 conductors	1 – 2,5 / 0,75 – 1,5
Rigid conductor, mm²	1 conductor	1 – 4
	2 conductors	0,75 – 2,5
Stripped insulation length, mm		8
Screw tightening torque, N·m		0,4
Tool		Philips №0 screwdriver or flat end screwdriver Ø4
Operating conditions		
Ambient temperature, °C	In operation	-20...+60
	In storage	-35...+75
Altitude above the sea level, max, m		2000
Pollution degree in accordance with GOST IEC 60255-27		2
Electromagnetic environment in accordance with GOST IEC 60255-26		B
Overvoltage category in accordance with GOST R IEC 60664-1		III

Overall dimensions (mm)

OptiRel D TMR time relay with analogue setting



OptiRel D TMR time relay with digital setting



OptiRel D PVP and OptiRel D PVC Voltage relays

The OptiRel D PVP voltage relays and OptiRel D PVC voltage and current relays are intended for level control of single-phase and three-phase voltage in electric power supply networks, and provide protection of electric equipment and consumers in the event of supply network quality issues. The OptiRel D PVC relay series also provide consumed load current monitoring.

All voltage relays have a built-in contactor which opens its contacts and disables the load in the event of deviation of monitored parameters. Using the function of repeated activation with time setting capability, the relay automatically restores load power supply after the return of monitored parameters to the allowable range.

All devices are supplied with an LED indicator allowing to accurately set all parameters, and providing real-time indication of monitored parameters.

Designation

OptiRel D PVC - 3 - 63
1 2 3 4

1	Product range name	OptiRel D	
2	Product type name	PVP — overcurrent and reduced current protection relays	PVC — overvoltage and lowered voltage protection relay with current monitoring (power limitation function)
3	Number of phases	(empty) — single-phase; 3 — three-phase	
4	Rated load current	32 — 32 A; 63 — 63 A; 80 — 80 A	

Items

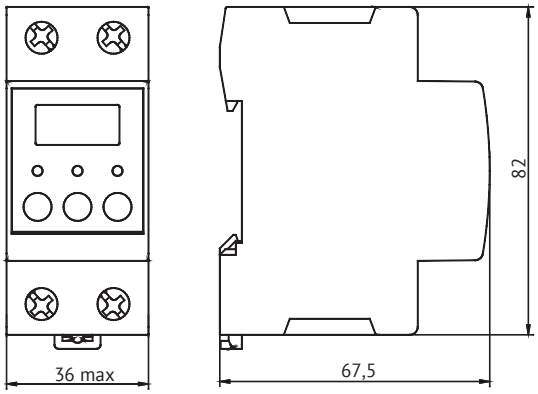
Appearance	LED-indicator	Connection diagram	Voltage monitoring	Current monitoring	Rated current, A	Product name	Code
	+	1P+N	+	-	32	OptiRel D PVP-32	357861
					63	OptiRel D PVP-63	357864
					80	OptiRel D PVP-80	357865
			+	+	32	OptiRel D PVC-32	357866
					63	OptiRel D PVC-63	357869
					80	OptiRel D PVC-80	357870
		3P+N	+	+	63	OptiRel D PVC-3-63	357871

Technical specification

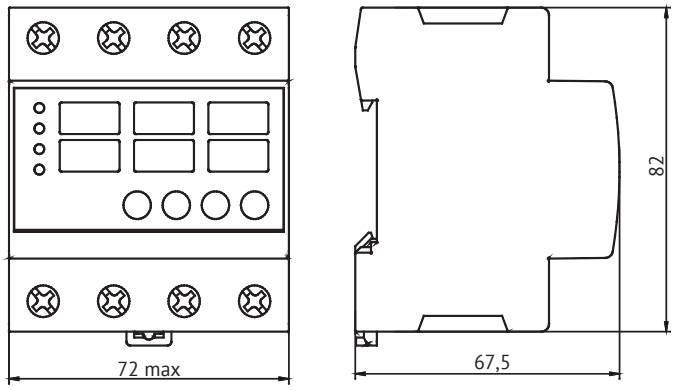
Parameter		Value
Operating mode		continuous
Protection class in accordance with GOST 14254	on front panel side	IP40
	on terminal side	IP20
Electrical strength of the insulation between power supply terminals and relay actuation terminals, kV		4
Rated supply voltage Un AC, V		220
Current type		AC
Supply line rated frequency, Hz		45 – 65
Allowable voltage upper limit adjustment range, V		230 – 300
Allowable voltage lower limit adjustment range, V		140 – 210
Maximum power consumption, V/A, AC		3
Rated operating current in AC-1 utilization category at 220 V, 50 Hz voltage	PVP, PVC	32 / 63 / 80
	PVC-3	63
Activation threshold with overcurrent, A	PVC	1 – 32 / 63 / 80
	PVC-3	1 – 63
Operating voltage range, V		80 – 400
Rated insulation voltage, V		400
Type of actuating relay contacts		HO
Response delay time, s		0,1 – 10
Startup delay time, s		2 – 600
Duration of repeated activation delay after tripping, s		2 – 900
Monitored voltage measurement error, max, %		≤ 1
Hysteresis, V		> 5 (adj.)
Temperature coefficient (normal value at 20 °C)		0,1 % / °C
Mechanical wear resistance, ON/OFF cycles, min		$1x10^7$
Electrical wear resistance with utilization category AC-1, ON/OFF cycles, min		$1x10^5$
Insulation resistance, MΩ		20
Conductor connection		
Flexible conductor with lug, mm^2	1 conductor/2 conductors	1 - 35/ 0,75 - 10
Flexible conductor with no lug, mm^2	1 conductor/2 conductors	1 - 35/ 0,75 - 10
Rigid conductor, mm^2	1 conductor	1 - 35
	2 conductors	0,75 - 10
Stripped insulation length, mm		10
Screw tightening torque, N·m		3,5 ± 0,4
Tool		Screwdriver with profile PZ2
Operating conditions		
Ambient temperature, °C	In operation	-20...+60
	In storage	-35...+75
Altitude above the sea level, max, m		2000
Pollution degree in accordance with GOST IEC 60255-27		2
Electromagnetic environment in accordance with GOST IEC 60255-26		B
Overvoltage category in accordance with GOST R IEC 60664-1		III

Overall dimensions (mm)

OptiRel D PVP and OptiRel D PVC single-phase voltage relays



OptiRel D PVC three-phase voltage relays



OptiRel D PHS Voltage monitoring relays

The OptiRel D PHS voltage monitoring relays are a wide range of advanced compact relays monitoring the parameters of single-phase and three-phase voltage in electric power supply networks, and provide protection of electric equipment and consumers in the event of supply network quality issues.

The voltage monitoring relays allow to monitor the deviations of the voltage level from the set thresholds, and three-phase models are also capable of monitoring phase sequences, phase losses and phase unbalance. In the event of deviation of monitored parameters, the relay changes the position of output contacts, sending a signal to the control and dispatching system.

The product range of the OptiRel D PHS series is represented by a wide range of electronic relays with various functional capabilities with analogue setting of threshold values, and advanced digital devices with an LCD display.

Designation

OptiRel D PHS - 1 - 2M - 11 - PN - 2

1 2 3 4 5 6 7

1	Product range name	OptiRel D
2	Product type name	PHS — voltage (phase) monitoring relays
3	Number of phases	1 — single-phase; 3 — three-phase
4	Relay housing width	1M — 1 module (18 mm); 2M — 2 modules (36 mm)
5	Function	01...11 — function number (ref. selection table for description of the functions and relay characteristics) D — digital multifunctional relay with display
6	Connection diagram	PN — with neutral monitoring (P-N); PP — without neutral monitoring (P-P)
7	Number and type of output contacts	1 — 1 CO; 2 — 2 CO

Items

Appearance	Connection diagram	LCD-display	Relay power supply	Overvoltage, V	Lowered voltage, V	Hysteresis, %	Activation delay, s	Number of output contacts	Product name	Code
	1P+N	-	From monitoring circuit 50-270 V AC/DC	65 - 260, incr. or decr.		5 - 20	0,1 - 10	1 CO	OptiRel D PHS-1-1M-01-PN-1	332004
				65 - 260	65 - 260	3	0,1 - 10	1 CO	OptiRel D PHS-1-1M-02-PN-1	332005
			External power supply 24-240 V AC/DC	15 - 600	15 - 600	5 - 20	0,1 - 10	2 CO	OptiRel D PHS-1-2M-11-PN-2	357852
		+	From monitoring circuit 50-350 V AC/DC	65 - 300	65 - 300	from 5 V, adj.	0,1 - 20	2 CO	OptiRel D PHS-1-2M-D-PN-2	357848

Appearance	Connection diagram	LCD display	Overvoltage, V	Lowered voltage, V	Phase loss	Phase sequence	Phase unbalance, %	Hysteresis, %	Activation delay, s	Number of output contacts	Product name	Code
	3P+N	-	-	-	+	+	-	2	-	1 CO	OptiRel D PHS-3-1M-03-PN-1	331983
			-	-	+	+	-	2	-	2 CO	OptiRel D PHS-3-1M-03-PN-2	331993
	3P		-	-	+	+	-	2	-	1 CO	OptiRel D PHS-3-1M-03-PP-1	331988
			-	-	+	+	-	2	-	2 CO	OptiRel D PHS-3-1M-03-PP-2	331997
	3P+N		-20...+ 2% Un (101 - 270 V)	-20...+ 2% Un (260 - 318 V)	+	+	-	2	0,1 - 10	1 CO	OptiRel D PHS-3-1M-04-PN-1	331985
					+	+	-	2	0,1 - 10	2 CO	OptiRel D PHS-3-1M-04-PN-2	331994
	3P		-20...+ 2% Un (176 - 470 V)	-20...+ 2% Un (450 - 552 V)	+	+	-	2	0,1 - 10	1 CO	OptiRel D PHS-3-1M-04-PP-1	331989
					+	+	-	2	0,1 - 10	2 CO	OptiRel D PHS-3-1M-04-PP-2	331998
	3P+N		-20...+ 2% Un (101 - 270 V)	-20...+ 2% Un (260 - 318 V)	+	+	8	2	0,1 - 10	1 CO	OptiRel D PHS-3-1M-05-PN-1	331986
					+	+	8	2	0,1 - 10	2 CO	OptiRel D PHS-3-1M-05-PN-2	331995
	3P		-20...+ 2% Un (176 - 470 V)	-20...+ 2% Un (450 - 552 V)	+	+	8	2	0,1 - 10	1 CO	OptiRel D PHS-3-1M-05-PP-1	331990
					+	+	8	2	0,1 - 10	2 CO	OptiRel D PHS-3-1M-05-PP-2	331999
	3P+N		-20...+ 2% Un (101 - 270 V)	-20...+ 2% Un (260 - 318 V)	+	+	5 - 15	2	2	1 CO	OptiRel D PHS-3-1M-06-PN-1	331987
					+	+	5 - 15	2	2	2 CO	OptiRel D PHS-3-1M-06-PN-2	331996
	3P		-20...+ 2% Un (176 - 470 V)	-20...+ 2% Un (450 - 552 V)	+	+	5 - 15	2	2	1 CO	OptiRel D PHS-3-1M-06-PP-1	331991
					+	+	5 - 15	2	2	2 CO	OptiRel D PHS-3-1M-06-PP-2	332000
	3P		-15% Un (187 - 391 V)	+15% Un (255 - 529 V)	+	+	8	2	2	1 CO	OptiRel D PHS-3-1M-08-PP-1	331992
					+	+	8	2	2	2 CO	OptiRel D PHS-3-1M-08-PP-2	332001
	3P+N		-20...+ 2% Un (101 - 270 V)	-20...+ 2% Un (260 - 318 V)	+	+	5 - 15	2	0,1 - 10 [1]	2 CO	OptiRel D PHS-3-2M-10-PN-2	332002
	3P		-20...+ 2% Un (176 - 470 V)	-20...+ 2% Un (450 - 552 V)	+	+	5 - 15	2	0,1 - 10 [1]	2 CO	OptiRel D PHS-3-2M-10-PP-2	332003
	3P+N	+	80 - 350/Off	80 - 350/Off	+	On/Off	5 - 20/Off	2	0,1 - 20 [2]	2 CO	OptiRel D PHS-3-2M-D-PN-2	357849
	3P		150 - 600/Off	150 - 600/Off	+	On/Off	5 - 20/Off	2	0,1 - 20 [2]	2 CO	OptiRel D PHS-3-2M-D-PP-2	357850

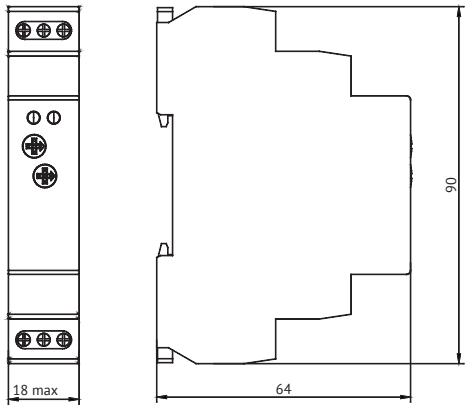
Note:
[1] The relay has the function of setting the delay of reset after restoration of monitored parameters within the range of 0.1 - 10 s.
[2] The relay has the function of activating and setting the delay of reset after restoration of monitored parameters within the range of 0.3 - 30 s.

Technical specification

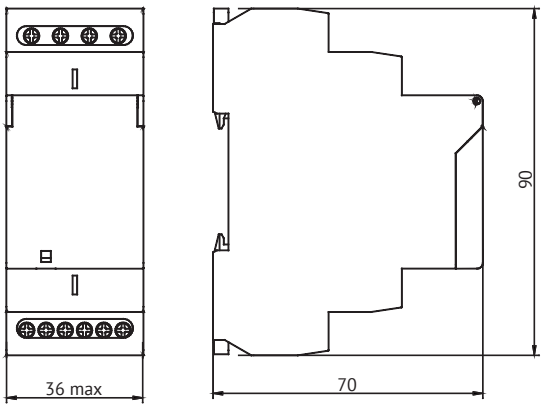
Parameter		Value
Operating mode		continuous
Protection class in accordance with GOST 14254	on front panel side	IP40
	on terminal side	IP20
Electrical strength of the insulation between power supply terminals and relay actuation terminals, kV		4
Rated AC frequency, Hz		45-65
Rated operating current in AC-1 utilization category at 250 V 50 Hz voltage, conventional outdoor thermal current Ith, A		16
Minimum switching DC power, mW		500
Maximum switched voltage, B		AC: 250/DC: 24
Setting error (mechanical), %		10
Repetition error, less than, %		1
Temperature coefficient (normal value at 20 °C)		0,1%/°C
Mechanical wear resistance, ON/OFF cycles, min		$1x10^7$
Electrical wear resistance in utilization category AC-1, ON/OFF cycles, min		$1x10^5$
Conductor connection		
Flexible conductor with lug, mm^2	1 conductor / 2 conductors	1 - 2,5 / 0,75 - 1,5
Flexible conductor with no lug, mm^2	1 conductor / 2 conductors	1 - 2,5 / 0,75 - 1,5
Rigid conductor, mm^2	1 conductor	1 - 4
	2 conductors	0,75 - 2,5
Stripped insulation length, mm		8
Screw tightening torque, N·m		0,4
Tool		Philips №0 screwdriver or flat end screwdriver Ø4
Operating conditions		
Ambient temperature, °C	In operation	-20...+60
	In storage	-35...+75
Altitude above the sea level, max, m		2000
Pollution degree in accordance with GOST IEC 60255-27		2
Electromagnetic environment in accordance with GOST IEC 60255-26		B
Overvoltage category in accordance with GOST R IEC 60664-1		III

Overall dimensions (mm)

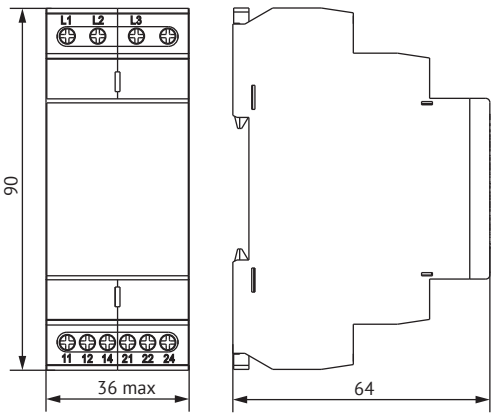
OptiRel D PHS voltage monitoring relay 1 module wide with analogue setting



The OptiRel D PHS voltage monitoring relay 2 modules wide with digital setting, as well as models with analogue settings and external power supply



OptiRel D PHS voltage monitoring relay 2 module wide with analogue setting



OptiRel D Monitoring relays

The monitoring relays allow to trace the actual parameters and monitor the current, temperature and liquid level during operation of technological equipment.

The OptiRel D CMR current monitoring relays are designed to monitor the current level in single-phase AC current circuits and disconnect the load when it exceeds or falls below the current setpoint with adjustable time delay.

The OptiRel D LVL level monitoring relays are designed for liquid level monitoring by using level sensors and controlling pump and shut-off devices for filling and draining of tanks.

The OptiRel D TMP temperature monitoring relays are designed for monitoring the set temperature by using NTC temperature sensors and allow to control equipment for temperature regulation in a controlled area of an electrical plant or room to prevent failures of connected equipment.

Designation

OptiRel D TMP - NTC - 05 - 240U - 1

1	Product range name	OptiRel D			
2	Product type name	CMR — current monitoring relays	TMP — temperature monitoring relays	LVL — liquid level monitoring relays	
3	Measurement threshold/type and length of sensor cable	05 — 50...500 mA 1 — 0,1...1 A 5 — 0,5...5 A 16 — 1,6 - 16 A	NTC-05 — NTC; 0,5 m NTC-1 — NTC; 1 m NTC-2 — NTC; 2 m	S — 3 electrodes; 1.5 m	
4	Rated supply voltage, V	240U — 12-240 V AC/DC			
5	Number and type of output contacts	1 — 1 CO			

Items

OptiRel D CMR Current monitoring relays

Appearance	Function	Threshold setting range	Rated supply voltage	Number of output contacts	Product name	Code
	Overvoltage or lowered voltage monitoring	50 - 500 mA	24 - 240 V AC/DC	1 CO	OptiRel D CMR-05-240U-1	332025
		0,1 - 1 A			OptiRel D CMR-1-240U-1	332026
		0,5 - 5 A			OptiRel D CMR-5-240U-1	332027
		1,6 - 16 A			OptiRel D CMR-16-240U-1	332028

OptiRel D TMP Temperature monitoring relays

Appearance	Function	Type and length of sensor in delivery package	Rated supply voltage	Number of output contacts	Product name	Code
	High and low temperature monitoring	NTC; 0,5 m [1]	24 - 240 V AC/DC	1 CO	OptiRel D TMP-NTC-05-240U-1	332031
		NTC; 1 m [1]			OptiRel D TMP-NTC-1-240U-1	332032
		NTC; 2 m [1]			OptiRel D TMP-NTC-2-240U-1	332033

Note:
[1] Maximum and minimum temperature threshold setting range: -15...+45 °C

OptiRel D LVL Liquid level monitoring relays

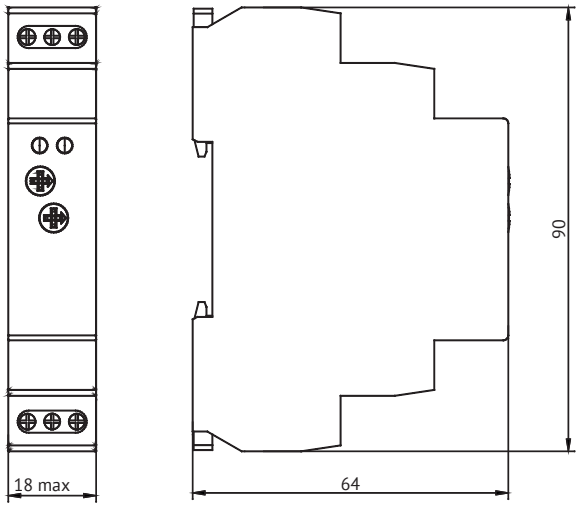
Appearance	Function	Type and length of sensor in delivery package	Rated supply voltage	Number of output contacts	Product name	Code
	Monitoring the maximum and minimum levels and controlling the actuators	3 electrodes; 1.5 m	24 - 240 V AC/DC	1 CO	OptiRel D LVL-S-240U-1	332024

Technical specification

Parameter		Value
Operating mode		continuous
Protection class in accordance with GOST 14254	on front panel side	IP40
	on terminal side	IP20
Electrical strength of the insulation between power supply terminals and relay actuation terminals, kV		4
Rated supply voltage Un		24 - 240
Main circuit rated voltage, V		250
Rated AC frequency, Hz		50 - 60
Supply voltage permissible tolerance, %		-15; +10
Consumed power, max, V·A		2
Rated current of the main circuit of output contacts, A		Up to 10 (depending on the model)
Minimum switching DC power, mW		500
Maximum switched voltage, B		AC: 250 / DC: 24
Setting error (mechanical), %		10
Repetition error, less than, %		1
Hysteresis (for current monitoring relays), %		5
Mechanical wear resistance, ON/OFF cycles, min		$1x10^7$
Electrical wear resistance in utilization category AC-1, ON/OFF cycles, min		$1x10^5$
Conductor connection		
Flexible conductor with lug, mm^2	1 conductor / 2 conductors	1 - 2,5 / 0,75 - 1,5
Flexible conductor with no lug, mm^2	1 conductor / 2 conductors	1 - 2,5 / 0,75 - 1,5
Rigid conductor, mm^2	1 conductor	1 - 4
	2 conductors	0,75 - 2,5
Stripped insulation length, mm		8
Screw tightening torque, N·m		0,4
Tool		Philips #0 screwdriver or flat end screwdriver Ø4
Operating conditions		
Ambient temperature, °C	In operation	-20...+60
	In storage	-35...+75
Altitude above the sea level, max, m		2000
Pollution degree in accordance with GOST IEC 60255-27		2
Electromagnetic environment in accordance with GOST IEC 60255-26		B
Overvoltage category in accordance with GOST R IEC 60664-1		III

Overall dimensions (mm)

OptiRel D CMR current monitoring relay, OptiRel D TMP temperature monitoring relay, OptiRel D LVL liquid level monitoring relay



OptiRel D Control relays

The OptiRel D control relays are a set of equipment series for load automation solutions which are used at residential and commercial construction sites and include:

- The OptiRel D CR modular interposing relays are designed for load switching are used to resolve tasks requiring remote load control, galvanic isolation or signal splitting and amplification.
- The OptiRel D IMR pulse relays sequentially change the condition of the output relay's transfer contact when the control input receives a short pulse, most frequently arriving from a button lighting control switch.
- The OptiRel D FMR dusk relays (photo relays) are designed for monitoring the illumination and load activation/deactivation when the illumination level detected by the sensor is increased (decreased).
- The OptiRel D SSW stairway lighting relays (stairway timers) are used to control lighting or other loads requiring the possibility of activation from several control points and deactivation delay.

Designation

OptiRel D CR - 08 - 024U - 2

1 2 3 4 5

1	Product range name	OptiRel D			
2	Product type name	CR — modular interposing relays	IMR — pulse relays	FMR — dusk relays (photo relays)	SSW — stairway lighting relays (stairway timer)
3	Rated current/type and length of sensor cable/function	08 — 8 A 16 — 16 A	(empty)	15 — sensor with cable 1.5 in the delivery package	15 — sensor with cable 1.5 in the delivery package
4	Rated supply voltage, V	024U — 24 V AC/DC 230A — 230 V AC 230U — 230 V AC или 24 V AC/DC 240A — 110-240 V AC 240U — 12-240 V AC/DC			
5	Number and type of output contacts	1 — 1 CO; 2 — 2 CO; 3 — 3 CO			

Items

OptiRel D CR Modular interposing relays

Appearance	Rated current (AC-1)	Rated supply voltage	Number of output contacts	Product name	Code
	8 A	24 V AC/DC	2 CO	OptiRel D CR-08-024U-2	332037
			3 CO	OptiRel D CR-08-024U-3	332039
		230 B AC или 24 V AC/DC	2 CO	OptiRel D CR-08-230U-2	332038
			3 CO	OptiRel D CR-08-230U-3	332040
	16 A	24 V AC/DC	1 CO	OptiRel D CR-16-024U-1	332035
			3 CO	OptiRel D CR-16-024U-3	332041
		230 V AC	3 CO	OptiRel D CR-16-230A-3	332042
		230 V AC или 24 V AC/DC	1 CO	OptiRel D CR-16-230U-1	332036

OptiRel D IMR Pulse relays

Appearance	Rated current (AC-1)	Rated supply voltage	Number of output contacts	Product name	Code
	16 A	230 V AC	1 CO	OptiRel D IMR-230A-1	332020
			2 CO	OptiRel D IMR-230A-2	332022
		12-240 V AC/DC	1 CO	OptiRel D IMR-240U-1	332021
			2 CO	OptiRel D IMR-240U-2	332023

OptiRel D FMR Dusk relays (photo relays)

Appearance	Rated current (AC-1)	Rated supply voltage	Number of output contacts	Product name	Code
	16 A	110-240 V AC	1 CO	OptiRel D FMR-15-240A-1 [1]	332034

Note:
[1] Sensor with cable 1.5 in the delivery package.

OptiRel D SSW Stairway lighting relays (stairway timers)

Appearance	Rated current (AC-1)	Rated supply voltage	Number of output contacts	Product name	Code
	16 A	230 V AC	1 CO	OptiRel D SSW-1-230A-1 [1]	357859
				OptiRel D SSW-M-230A-1 [2]	357860

Note:
[1] Single-function, with manual control option.
[2] Multifunctional, 10 operation modes.

Technical specification

Parameter		Value
Operating mode		continuous
Protection class in accordance with GOST 14254	on front panel side	IP40
	on terminal side	IP20
Electrical strength of the insulation between power supply terminals and relay actuation terminals, kV		4
Input circuit		
Rated supply voltage Un	230A	230 AC
	240A	110-240 AC
	230U	230 AC or 24 AC/DC
	240U	12-240 AC/DC
Rated AC frequency, Hz		50-60
Supply voltage permissible tolerance, %		-15 %:+10 %
Power consumption, V·A/W	*-230A-1 *-240A-1	1,7
	*-230A-2 *-240A-2	2,1
	230U	AC 3,0/DC 1,7
	240U	
Control circuit		
Power supply terminals		A1-A2
Control terminals		A1-S
Control pulse minimum duration, ms		25
Control pulse maximum duration, ms		Unlimited
Contact specifications		
Contact group	*-1	1 CO
	*-2	2 CO
	*-3	3 CO
Restart delay duration, s		0,2
Main circuit rated voltage, V		250
Rated current of the main circuit, A		8/16 (depending on the model)
Mechanical durability, cycles		$1x10^7$
Electrical durability at AC-1 rated load, cycles		$1x10^5$
Conductor connection		
Flexible conductor with lug, mm^2	1 conductor/2 conductors	1 - 2,5 / 0,75 - 1,5
Flexible conductor with no lug, mm^2	1 conductor/2 conductors	1 - 2,5 / 0,75 - 1,5
Rigid conductor, mm^2	1 conductor	1 - 4
	2 conductors	0,75 - 2,5

Parameter		Value
Stripped insulation length, mm		7
Screw tightening torque, N·m		0,4
Tool		Philips №0 screwdriver or flat end screwdriver Ø4
Operating conditions		
Ambient temperature, °C	In operation	-20...+60
	In storage	-35...+75
Altitude above the sea level, max, m		2000
Pollution degree in accordance with GOST IEC 60255-27		2
Electromagnetic environment in accordance with GOST IEC 60255-26		B
Overvoltage category in accordance with GOST R IEC 60664-1		III

Overall dimensions (mm)

OptiRel D GR modular interposing relays, OptiRel D IMR pulse relays, OptiRel D FMR dusk relays and OptiRel D SSW stairway lighting relays