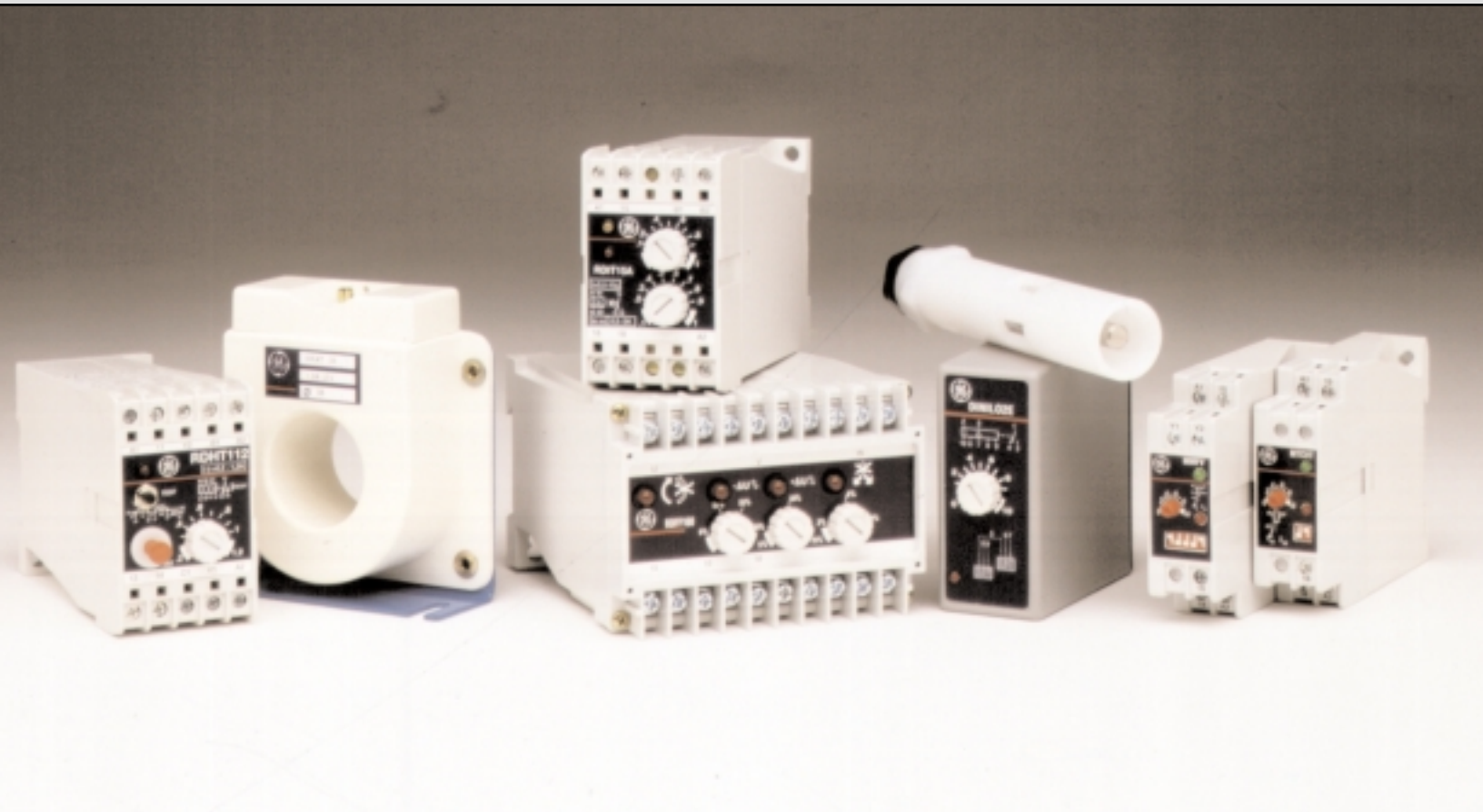




GE Industrial Systems

***IEC Electronic Timers
& Protective Relays***



Catalog
Application, Selection & Pricing



PRODUCT LINE OVERVIEWS

Multivoltage electronic timers



Voltage
Types
Selection/Pricing Page
Technical Data Page
Functions
Delayed ON
ON delay with auxiliary contact
ON delay + instantaneous contact
OFF delay
OFF delay with auxiliary contact
ON + OFF delay with auxiliary contact
Impulse ON
Impulse ON with auxiliary contact
OFF pulse with auxiliary contact
Symmetric intermittence
Asymmetric intermittence
Star-delta starter
Multifunction
Features
Multirange of time
Time setting range from to
Relay output (Nr. of changeover contacts)

Multivoltage											
MTCV	MTCVL	MTCV	MTCCV	METV	MTDV	MRDV	MICV	MIFV	MIVV	MIVVL	MMFV
2	2	2	2	2	3	2	2	3	3	3	3
12	12	13	14	15	16	15	13	17	18	19	20
•	•										•
			•								•
		•									
				•	•						
				•							•
											•
							•				•
									•	•	
				•							•
											•
•	•	•	•		•		•	•	•	•	•
0.6s 60 min.	0.06s 60 h	0.6s 60 min.	0.6s 60 min.	1 60 s	0.6s 60 min.	0.5 500 s	0.6s 60 min.	0.6s 60 min.	0.6s 60 min.	0.6 60h	0.6s 50 min.
1 2	1 2	1 del+ 1 inst	1	1	1	1 2	1 2	1 2	1 2	1 2	1 2

Protective relays



Voltage
Types
Selection/Pricing Page
Technical Data Page
Functions
Liquid level detection
Differential ground fault
Integral protection for three-phase lines
Unbalance and phase failure protection
Unbalance, phase failure and min. voltage protection
Phase sequence and phase failure protection
Max. and min. voltage protection (three-phase)
Max. and min. voltage protection (single phase)
Voltage detection
Current detection
Current detection with delay (0.5-15s)
Thermistor
Thermistor (adjustable)
Frequency control

Single voltage													
DINIL	RDH/T/A	RDF1	RPDF	RDMT1	RSFF	RTMM	RMM	RDT	RDI	RDIT	RS01N	RSR	RCF
4	5	6	6	6	6	6	6	7	7	8	9	9	9
21	25	26	27	28	29	30	30	31	32	33	34	35	35
•													
	•												
		•											
			•										
				•									
					•								
						•							
							•						
								•					
									•				
										•			
											•		
												•	
													•

Ordering data, see p.2-9
 Technical data, see p.10-36
 Dimensional drawings, see p.37-38



Multivoltage electronic timers



MTCV



MTCIV



MRDV

Supply voltage	Time range	Available contacts	Cat. no. ⁽¹⁾	List Price, GO-10RT
Delayed ON timers				
Direct	0.6 - 6 sec.	1 selectable NO-NC	MTCV	\$61.00
24-240V AC/DC	6 - 60 sec.	2 selectable NO-NC	MTCV2	75.00
With transformer	0.6 - 6 min. 6 - 60 min.	1 selectable NO-NC	MTCVT●	79.00
Long time delayed ON timers				
Direct	0.06 - 0.6 sec.	1 selectable NO-NC	MTCVL	64.00
24-240V AC/DC	0.6 - 6 sec.	2 selectable NO-NC	MTCVL2	78.00
With transformer	0.6 - 6 h. 6 - 60 h.	1 selectable NO-NC	MTCVLT●	82.00
Delayed ON timer with instantaneous contact				
Direct	0.6 - 6 sec.	1 timed contact	MTCIV	64.00
24-240V AC/DC	6 - 60 sec.	+ 1 instant contact		
	0.6 - 6 min.			
	6 - 60 min.			
Delayed ON through contact				
Direct	0.6 - 6 sec.	1 selectable NO-NC	MTCCV	65.00
24-240V AC/DC	6 - 60 sec.			
With transformer	0.6 - 6 min. 6 - 60 min.	1 selectable NO-NC	MTCCVT●	83.00
Impulse ON timer				
Direct	0.6 - 6 sec.	1 selectable NO-NC	MICV	65.00
24-240V AC/DC	6 - 60 sec.	2 selectable NO-NC	MICV2	78.00
With transformer	0.6 - 6 min. 6 - 60 min.	1 selectable NO-NC	MICVT●	83.00
Star-delta starter timers				
Direct 24-240V AC/DC	1 - 10 sec.	2 timed	METV	89.00
With transformer	1 - 60 sec.	2 timed	METVT●	107.00
Delayed OFF timers				
Direct	0.5 - 6 sec.	1 selectable NO-NC	MRDV-6	81.00
24-240V AC/DC	5 - 60 sec.	1 selectable NO-NC	MRDV-60	81.00
	50 - 600 sec.	1 selectable NO-NC	MRDV-600	81.00
	0.5 - 6 sec.	2 selectable NO-NC	MRDV2-6	89.00
	5 - 60 sec.	2 selectable NO-NC	MRDV2-60	89.00
	50 - 600 sec.	2 selectable NO-NC	MRDV2-600	89.00
	With transformer	0.5 - 6 sec.	1 selectable NO-NC	MRDVT-6●
(up to 440V)	5 - 60 sec.	1 selectable NO-NC	MRDVT-60●	93.00
	50 - 600 sec.	1 selectable NO-NC	MRDVT-600●	93.00

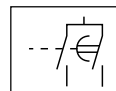
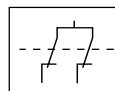
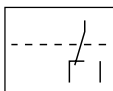
Technical data.

Type	see page
MTCV	12
MTCVL	12
MTCIV	13
MTCCV	14
MICV	13
METV	15
MRDV	15

Dimensions, see p.37

Contact diagrams.

1 selectable NO-NC 2 selectable NO-NC 2 timed



(1) To complete the catalog number, replace the symbol ● with the code corresponding to the voltage. See p.10-11



Multivoltage electronic timers



MTDV



MIFV



MIVV



MMFV



MMFV2

Supply voltage	Time range	Available contacts	Cat. no. ⁽¹⁾	List Price, GO-10RT
Delayed OFF through contact timer				
Direct	0.6 - 6 sec.	1 selectable NO-NC	MTDV	\$56.00
24-240V AC/DC	6 - 60 sec.			
With transformer	0.6 - 6 min.	1 selectable NO-NC	MTDVT●	74.00
	6 - 60 min.			
Symmetric intermittence				
Direct	0.6 - 6 sec.	1 selectable NO-NC	MIFV	108.00
24-240V AC/DC	6 - 60 sec.	2 selectable NO-NC	MIFV2	122.00
With transformer	0.6 - 6 min.	1 selectable NO-NC	MIFVT●	126.00
	6 - 60 min.			
Asymmetric intermittence, started by connection or pause (choice)				
Direct	0.6 - 6 sec.	1 selectable NO-NC	MIVV	108.00
24-240V AC/DC	6 - 60 sec.	2 selectable NO-NC	MIVV2	122.00
With transformer	0.6 - 6 min.	1 selectable NO-NC	MIVVT●	126.00
	6 - 60 min.			
Long time asymmetric intermittence, started by connection or pause (choice)				
Direct	0.6 - 6 min.	1 selectable NO-NC	MIVVL	110.00
24-240V AC/DC	6 - 60 min.	2 selectable NO-NC	MIVVL2	125.00
With transformer	0.6 - 6 h.	1 selectable NO-NC	MIVVLT●	130.00
	6 - 60 h.			
Multifunction timer				
-Delayed ON timer		-Impulse ON timer		
-Delayed ON through contact timer		-Impulse ON through contact timer		
-Delayed OFF through contact timer		-Impulse OFF through contact timer		
-Delayed ON and OFF through contact timer		-Impulse ON and OFF through contact timer		
Direct	0.6 - 6 sec.	1 selectable NO-NC	MMFV	120.00
24-240V AC/DC	6 - 60 sec.			
	0.6 - 6 min.			
	6 - 60 min.			
Multifunction timer - large 45 mm				
-Delayed ON timer		-Impulse ON timer		
-Delayed ON through contact timer		-Impulse ON through contact timer		
-Delayed OFF through contact timer		-Impulse OFF through contact timer		
-Delayed ON and OFF through contact timer		-Impulse ON and OFF through contact timer		
Direct	0.6 - 6 sec.	2 selectable NO-NC	MMFV2	140.00
24-240V AC/DC	6 - 60 sec.			
With transformer	0.6 - 6 min.	2 selectable NO-NC	MMFVT2●	145.00
	6 - 60 min.			

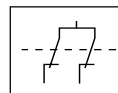
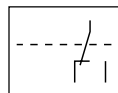
Technical data.

Type	see page
MTDV	16
MIFV	17
MIVV	18
MIVVL	19
MMFV	20

Dimensions, see p.37

Contact diagrams.

1 selectable NO-NC 2 selectable NO-NC



(1) To complete the catalog number, replace the symbol ● by the code corresponding to the voltage. See p.10-11



Liquid level detectors



DINIL 02



DINIL-03E



SON

Supply voltage	Contacts	Number of circuits	Cat. no. ⁽¹⁾	List Price, GO-10RT
Liquid level detector relays				
With transformer	DINIL....	2	DINIL 02 ●	\$155.00
	1 selectable NO-NC contact	1	DINIL 03 ●	190.00
	DINIL ...E (Plug-in)	2	DINIL 02E ●	125.00
	1 selectable NO-NC contact	1	DINIL 03E ●	150.00
11 pins socket for DINIL-02E and DINIL-03E for panel fixing. Front terminals (GO-10PR)			CR420KA3	12.00

	Cable length	Cat. no. ⁽¹⁾	List Price, GO-10RT
Probes			
Cable union and probe encapsulated and protected by thermoplastic housing Stainless steel probe	5 m., 16.4'	SON-1	\$33.00
	10 m., 32.8'	SON-2	45.00
Without cable. Waterproof and protected with a thermoplastic housing	–	SON-3	23.00

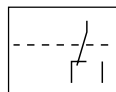
Technical data.

Type	see page
DINIL-02	21
DINIL-02E	21
DINIL-03	23
DINIL-03E	23

Dimensions, see p.37

Contact diagrams.

1 selectable NO-NC



(1) To complete the catalog number, replace the symbol ● with the code corresponding to the voltage. See p.10-11



Ground fault



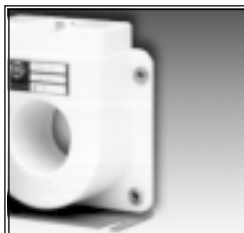
RDH



RDHT



RDHA



WKA⁽²⁾

Technical data.

Type	see page
RDH	25
RDHT	25
RDHA	25

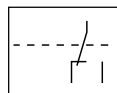
Dimensions, see p.37

Contacts	Sensitivity (A)	Differential Transformer		Ground Fault	
		Cat. no. ⁽¹⁾	List Price GO-10RT	Cat. no. ⁽¹⁾	List Price GO-10RT
Differential ground fault hand reset					
RDH1-... Without test One selectable NO-NC contact	0.2 - 1.2	WKA 35 - 1.2A/2V	\$134.00	RDH 1-1.2 ●	\$225.00
		WKA 70 - 1.2A/2V	188.00		
		WKA 105 - 1.2A/2V	375.00		
		WKA 140 - 1.2A/2V	467.00		
		WKA 210 - 1.2A/2V	1357.00		
1 - 10	WKA 35 - 10A/2V	134.00	RDH 1-10 ●	131.00	
		WKA 70 - 10A/2V			188.00
		WKA 105 - 10A/2V			375.00
		WKA 140 - 10A/2V			467.00
		WKA 210 - 10A/2V			1357.00
RDHT1-... With test One selectable NO-NC contact	0.2 - 1.2	WKAT 35 - 1.2A/2V	168.00	RDHT 1-1.2 ●	253.00
		WKAT 70 - 1.2A/2V	263.00		
		WKAT 105 - 1.2A/2V	472.00		
		WKAT 140 - 1.2A/2V	660.00		
		WKAT 210 - 1.2A/2V	1438.00		
1 - 10	WKAT 35 - 10A/2V	168.00	RDHT 1-10 ●	147.00	
		WKAT 70 - 10A/2V			263.00
		WKAT 105 - 10A/2V			472.00
		WKAT 140 - 10A/2V			660.00
		WKAT 210 - 10A/2V			1438.00
Differential ground fault with automatic reset					
RDHA1-... With test One selectable NO-NC contact	0.2 - 1.2	WKAT 35 - 1.2A/2V	168.00	RDHA 1-1.2 ●	195.00
		WKAT 70 - 1.2A/2V	263.00		
		WKAT 105 - 1.2A/2V	472.00		
		WKAT 140 - 1.2A/2V	660.00		
		WKAT 210 - 1.2A/2V	1438.00		
1 - 10	WKAT 35 - 10A/2V	168.00	RDHA 1-10 ●	144.00	
		WKAT 70 - 10A/2V			263.00
		WKAT 105 - 10A/2V			472.00
		WKAT 140 - 10A/2V			660.00
		WKAT 210 - 10A/2V			1438.00

Differential transformers are used in conjunction with ground fault relays. See pages 25 and 38.

Contact diagrams.

1 selectable NO-NC



(1) To complete the catalog number, replace the symbol ● with the code corresponding to the voltage. See p.10-11
 (2) See page 38 for outline dimensions.



Control and protection



RDFF



RSF



RMM

Supply voltage contact	Operating range U min.% U max.%		Unbalance %	Mains frequency	Cat. no. ⁽¹⁾	List Price, GO-10RT
Integral protection relays for three-phase lines						
With transformer RDFF 1-... 1 selectable NO-NC	5 - 20%	5 - 15%	2.5 - 10%	50 Hz	RDFF1-50 ●	\$225.00
				60 Hz	RDFF1-60 ●	225.00
Unbalance and phase failure protection relay for three-phase lines						
With transformer RPDF 1- ... 1 selectable NO-NC RPDF 2- ... 2 selectable NO-NC	-	-	2.5 - 10%	50 Hz	RPDF1-50 ●	131.00
					RPDF2-50 ●	157.00
				60 Hz	RPDF1-60 ●	131.00
					RPDF2-60 ●	157.00
Unbalance, phase failure and minimum voltage protection relay for three-phase lines						
With transformer RDMT 1 1 selectable NO-NC	0 - 20%	2 - 10%	2.5 - 10%	50 Hz	RDMT1-50 ●	196.00
Phase sequence and phase failure protection relay for three-phase lines						
With transformer RSFF 1-... 1 selectable NO-NC	-	-	-	50 Hz	RSFF1-50 ●	144.00
				60 Hz	RSFF1-60 ●	144.00
Maximum and minimum voltage protection relay for three-phase lines						
With transformer RTMM 1 1 selectable NO-NC RTMM 2 2 selectable NO-NC	5 - 20%	5 - 15%	-	-	RTMM 1 ●	157.00
					RTMM 2 ●	165.00
Maximum and minimum voltage protection relay for single-phase lines						
With transformer RMM 1 1 selectable NO-NC RMM 2 2 selectable NO-NC	5 - 20%	5 - 15%	-	-	RMM 1 ●	117.00
					RMM 2 ●	125.00

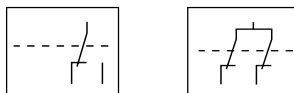
Technical data.

Type	see page
RDFF	26
RPDF	27
RDMT	28
RSFF	29
RTMM	30
RMM	30

Dimensions, see p.37

Contact diagrams.

1 selectable NO-NC 2 selectable NO-NC



(1) To complete the catalog number, replace the symbol ● with the code corresponding to the voltage. See p.10-11



Control and protection



RDT



RDI

Operating range	Voltage drop	Input impedance	Max. input voltage current	Available contacts	Cat. no. ^{(1) (2)}	List Price, GO-10RT
Voltage detector relays						
0.1 - 1V	-	10 kΩ	40V	1	RDT1-1V ●	\$401.00
				2	RDT2-1V ●	414.00
0.5 - 5V	-	10 kΩ	60V	1	RDT1-5V ●	401.00
				2	RDT2-5V ●	414.00
1 - 10V	-	20 kΩ	75V	1	RDT1-10V ●	401.00
				2	RDT2-10V ●	414.00
3 - 30V	-	60 kΩ	110V	1	RDT1-30V ●	401.00
				2	RDT2-30V ●	414.00
12 - 125V	-	250 kΩ	300V	1	RDT1-125V ●	401.00
				2	RDT2-125V ●	414.00
40 - 400V	-	800 kΩ	600V	1	RDT1-400V ●	401.00
				2	RDT2-400V ●	414.00
0.1 - 1V	-	10 kΩ	40V	1	RDTA1-1V ●	767.00
				2	RDTA2-1V ●	423.00
0.5 - 5V	-	10 kΩ	60V	1	RDTA1-5V ●	767.00
				2	RDTA2-5V ●	423.00
1 - 10V	-	20 kΩ	75V	1	RDTA1-10V ●	767.00
				2	RDTA2-10V ●	423.00
3 - 30V	-	60 kΩ	110V	1	RDTA1-30V ●	767.00
				2	RDTA2-30V ●	423.00
12 - 125V	-	250 kΩ	300V	1	RDTA1-125V ●	767.00
				2	RDTA2-125V ●	423.00
40 - 400V	-	800 kΩ	600V	1	RDTA1-400V ●	767.00
				2	RDTA2-400V ●	423.00
Current detector relays						
1 - 10A	0.33V	0.033 Ω	12A	1	RDI1-10A ●	400.00
				2	RDI2-10A ●	415.00
0.5 - 5A	0.25V	0.05 Ω	10A	1	RDI1-5A ●	400.00
				2	RDI2-5A ●	415.00
0.1 - 1A	0.5V	0.5 Ω	3A	1	RDI1-1A ●	400.00
				2	RDI2-1A ●	415.00
20 - 200mA	0.44V	2.2 Ω	1A	1	RDI1-0.2A ●	400.00
				2	RDI2-0.2A ●	415.00
20 - 200mV		1 kΩ	15V	1	RDI1-0.2V ●	400.00
				2	RDI2-0.2V ●	415.00
1 - 10A	0.33V	0.033 Ω	12A	1	RDIA1-10A ●	410.00
				2	RDIA2-10A ●	425.00
0.5 - 5A	0.25V	0.05 Ω	10A	1	RDIA1-5A ●	410.00
				2	RDIA2-5A ●	425.00
0.1 - 1A	0.5V	0.5 Ω	3A	1	RDIA1-1A ●	410.00
				2	RDIA2-1A ●	425.00
20 - 200mA	0.44V	2.2 Ω	1A	1	RDIA1-0.2A ●	410.00
				2	RDIA2-0.2A ●	425.00
20 - 200mV		1 kΩ	15V	1	RDIA1-0.2V ●	410.00
				2	RDIA2-0.2V ●	425.00

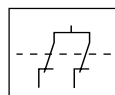
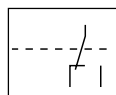
Technical data.

Type	see page
RDT	31
RDTA	31
RDI	32
RDIA	32

Dimensions, see p.37

Contact diagrams.

1 selectable NO-NC 2 selectable NO-NC



(1) To complete the catalog number, replace the symbol ● with the code corresponding to the voltage. See p.10-11
 (2) Versions in 24V DC only with internal galvanic insulation: RDTA, RDIA, RDITA



Control and protection



RDIT

Operating range	Voltage drop	Input impedance	Max. input voltage current	Available contacts	Cat. no. ^{(1) (2)}	List Price, GO-10RT
Current detector relays with delay (0.5 - 15 s.)						
1 - 10A	0.33V	0.033 Ω	12A	1	RDIT1-10A ●	\$420.00
				2	RDIT2-10A ●	435.00
0.5 - 5A	0.25V	0.05 Ω	10A	1	RDIT1-5A ●	420.00
				2	RDIT2-5A ●	435.00
0.1 - 1A	0.5V	0.5 Ω	3A	1	RDIT1-1A ●	420.00
				2	RDIT2-1A ●	435.00
20 - 200mA	0.44V	2.2 Ω	1A	1	RDIT1-0.2A ●	420.00
				2	RDIT2-0.2A ●	435.00
20 - 200mV		1 kΩ	15V	1	RDIT1-0.2V ●	420.00
				2	RDIT2-0.2V ●	435.00
Current detector relays without delay						
1 - 10A	0.33V	0.033 Ω	12A	1	RDITA1-10A ●	430.00
				2	RDITA2-10A ●	445.00
0.5 - 5A	0.25V	0.05 Ω	10A	1	RDITA1-5A ●	430.00
				2	RDITA2-5A ●	445.00
0.1 - 1A	0.5V	0.5 Ω	3A	1	RDITA1-1A ●	430.00
				2	RDITA2-1A ●	445.00
20 - 200mA	0.44V	2.2 Ω	1A	1	RDITA1-0.2A ●	430.00
				2	RDITA2-0.2A ●	445.00
20 - 200mV		1 kΩ	15V	1	RDITA1-0.2V ●	430.00
				2	RDITA2-0.2V ●	445.00

Technical data.

Type	see page
RDIT	33
RDITA	33

Dimensions, see p.37

(1) To complete the catalog number, replace the symbol ● with the code corresponding to the voltage. See p.10-11
 (2) Versions in 24V DC only with internal galvanic insulation: RDTA, RDIA, RDITA



Control and protection



RSR



RCF-1

Available contacts	Thermal probe resistance operating range ⁽²⁾		Cat. no. ⁽¹⁾	List Price, GO-10RT
	When cold	When hot		
Thermistor relay				
1 selectable NO-NC	1.5 kΩ	2.5 kΩ	RS01N ●	\$150.00
Thermistor relay (adjustable)				
1 selectable NO-NC	30 - 60°C, 86 - 140°F		RSR1-30 ●	\$150.00
	55 - 85°C, 131 - 185°F		RSR1-55 ●	150.00
	80 - 110°C, 176 - 230°F		RSR1-80 ●	150.00
	105 - 135°C, 221 - 275°F		RSR1-105 ●	150.00
	130 - 180°C, 266 - 356°F		RSR1-130 ●	150.00
Frequency control relay				
1 selectable NO-NC	Without	5 - 15Hz	RCF-1 ●	\$230.00
	Y1 - Y2	15 - 45Hz		
	Y1 - Y3	45 - 135Hz		
Computerized reactive power regulator (1:1:1 or 1:2:2 Selectable Program)				
		6	RPRB-6V ●	\$750.00
		12	RPRB-12V ●	\$975.00

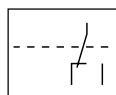
Technical data.

Type	see page
RS01N	34
RSR	35
RCF	35
PRRB-6V	36

Dimensions, see p.37

Contact diagrams.

1 selectable NO-NC



(1) To complete the catalog number, replace the symbol ● with the code corresponding to the voltage. See p.10-11
 (2) Thermal probe resistor not included.



IEC Electronic Timers & Protective Relays

Available supply voltages

Legend:

●=Available

▲=Recommended stock

Shaded columns indicate UL approved devices, except where marked with *

Current	Direct supply	Supplied with internal transformer									
	AC (50/60 Hz) /DC	AC (50/60Hz)									
	Voltage	24-240	24	48	110 125	110	125	200 240	220 230	240	380 400
Cat No. Code	None	AD	AG	AJ	AJ	AK	AM	EN	AR	AU	
DINIL02		●	●		▲	●		●	●	●	
DINIL02E		●	●		▲	●			●		
DINIL03		●	●		▲	●		●	●	●	
DINIL03E		●	●		▲	●			●		
METV	▲										
METVT				▲			●			●	
MICV	▲										
MICV2	▲										
MICVT				▲			●			●	
MIFV	▲										
MIFV2	●										
MIFVT				▲			●			●	
MIVV	▲										
MIVV2	●										
MIVVL	▲										
MIVVL2	●										
MIVVLT				▲			●			●	
MIVVT				▲			●			●	
MMFV	▲										
MMFV2	▲										
MMFVT2				▲			●			●	
MRDV	▲										
MRDV2	▲										
MRDVT				▲			●			●	
MTCCV	▲										
MTCCVT				▲			●			●	
MTCIV	▲										
MTCV	▲										
MTCV2	▲										
MTCVL	▲										
MTCVL2	▲										
MTCVLT				▲			●			●	
MTCVT				▲			●			●	
MTDV	▲										

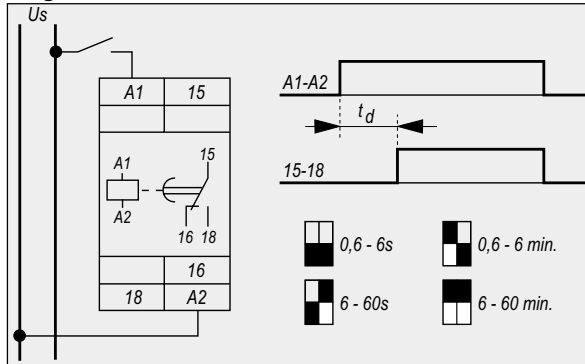


MTCV - Delayed ON timer

Function

Electronic relay whose output contact connects with a certain adjustable delay from the moment voltage is applied to supply terminals A1-A2. It has four timing ranges: 0.6-6s, 6-60s, 0.6-6min, 6-60 min. Range selection is made by dipswitches located on the front of the relay. Times are set by front potentiometer controlling an Application Specific Integrated Circuit (ASIC) specially designed for this group of relays. This allows for excellent precision and repeatability features.

Diagram



Technical characteristics

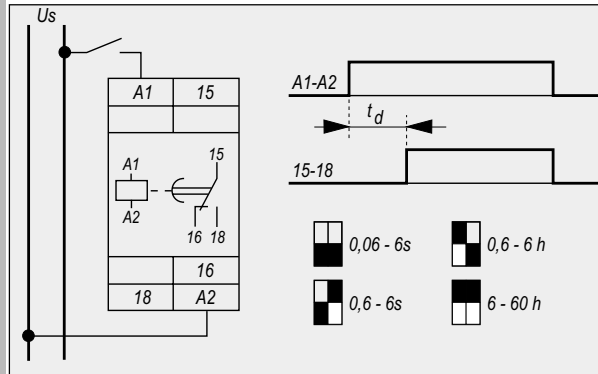
Type	MTCV	MTCV2	MTCVT
Number of selectable NO-NC contacts	1	2	1
Output contacts			
Rated insulation voltage U_i	AC	400V	
	DC	250V	
Thermal current I_{th}		6A	
Utilization category AC15			
Rated voltage U_e		120/240V	
Rated current I_e		2.5/1.3A	
Utilization category DC13			
Rated voltage U_e		110/220V	
Rated current I_e		0.2/0.1A	
Supply voltages U_n			
AC (with transformer)	-	-	110-125V
	-	-	200-240V
	-	-	380-440V
DC/AC (direct)	24-240V	24-240V	-
Frequency		50/60 Hz	
Supply voltage tolerance	+10/-20%	+10/-20%	+10/-15%
Consumption	(mA)	50 (24V)	50 (24V)
	(mA)	15 (240V)	15 (240V)
	(VA)	-	3.5
Input circuit test voltage (between input, output and group circuits)		4 kV	
Switch ON response time		0.6s-60 min	
Switch OFF response time		100 ms	
Reset time between 2 cycles		100 ms	
Repeat accuracy with 0.85 - 1.1 U_n		2%	
Weight		0.120, .26 lbs.	
Conformity to standards			
VDE 0106	EN 50002		UL 508
VDE 0110	CSA C 22.2 N° 14		IEC 255.5
EN 50001	UL 94		

MTCVL - Long time delayed ON timer

Function

Electronic relay whose output contact connects with a certain adjustable delay from the moment voltage is applied to supply terminals A1-A2. It has four timing ranges: 0.06-0.6s, 0.6-6s, 0.6-6h, 6-60h. Range selection is made by dip-switches located on the front of the relay. Times are set by front potentiometer controlling an Application Specific Integrated Circuit (ASIC) specially designed for this group of relays. This allows for excellent precision and repeatability features.

Diagram



Technical characteristics

Type	MTCV	MTCV2	MTCVT
Number of selectable NO-NC contacts	1	2	1
Output contacts			
Rated insulation voltage U_i	AC	400V	
	DC	250V	
Thermal current I_{th}		6A	
Utilization category AC15			
Rated voltage U_e		120/240V	
Rated current I_e		2.5/1.3A	
Utilization category DC13			
Rated voltage U_e		110/220V	
Rated current I_e		0.2/0.1A	
Supply voltages U_n			
AC (with transformer)	-	-	110-125V
	-	-	200-240V
	-	-	380-440V
DC/AC (direct)	24-240V	24-240V	-
Frequency		50/60 Hz	
Supply voltage tolerance	+10/-20%	+10/-20%	+10/-15%
Consumption	(mA)	50 (24V)	50 (24V)
	(mA)	15 (240V)	15 (240V)
	(VA)	-	3.5
Input circuit test voltage (between input, output and group circuits)		4 kV	
Switch ON response time		0.06s-60 h.	
Switch OFF response time		100 ms	
Reset time between 2 cycles		100 ms	
Repeat accuracy with 0.85 - 1.1 U_n		2%	
Weight		0.115, .25 lbs.	
Conformity to standards			
VDE 0106	EN 50002		UL 508
VDE 0110	CSA C 22.2 N° 14		IEC 255.5
EN 50001			

(1) Reset time: Time that must go by from the relay ends an operation until it is able to initiate the next one without error.

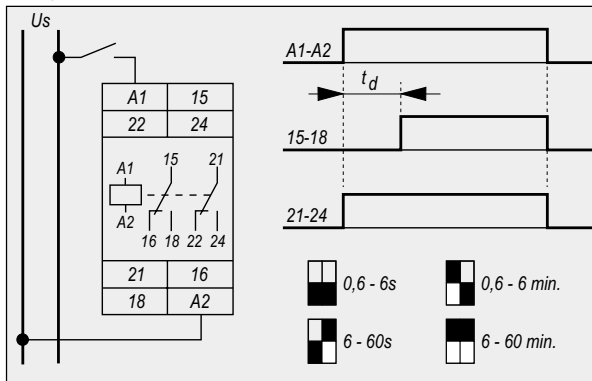


MTCIV - Delayed ON timer with instantaneous contact

Function

Electronic relay with two output contacts. One contact connects instantly when voltage is applied to the supply terminals A1-A2 and the other connects with a certain adjustable delay. It has four timing ranges: 0.6-6s, 6-60s, 0-6min, 6-60min. Range selection is made by dip-switches located on the front of the relay. Times are set by front potentiometer controlling an ASIC specially designed for this group of relays. This allows for excellent precision and repeatability features.

Diagram



Technical characteristics

Type	MTCIV	
Number of selectable NO-NC contacts	2	
Output contacts		
Rated insulation voltage U_i	AC	400V
	DC	250V
Thermal current I_{th}	6A	
Utilization category AC15		
Rated voltage U_e	120/240V	
Rated current I_e	2.5/1.3A	
Utilization category DC13		
Rated voltage U_e	110/220V	
Rated current I_e	0.2/0.1A	
Supply voltages Un		
AC/DC (direct)	24-240V	
Frequency	50/60 Hz	
Permissible supply voltage variation	+10% / -20%	
Consumption	50 mA (24V) 15 mA (240)	
Input circuit test voltage (between input, output circuits and earth)	4 kV	
Switch ON response time	0.6s-60 min	
Switch OFF response time	100 ms	
Reset time between 2 cycles	100 ms	
Repeat accuracy with 0.85 - 1.1 Un	2%	
Weight	0.130, .28 lbs.	

Conformity to standards

VDE 0106	CSA C 22.2 N° 14	IEC 255.5
VDE 0110	UL 94	IEC 947.5.1
EN 50002	UL 508	UNE 20-119
EN 50042		

For ambient conditions data, see p.36, Table 1.

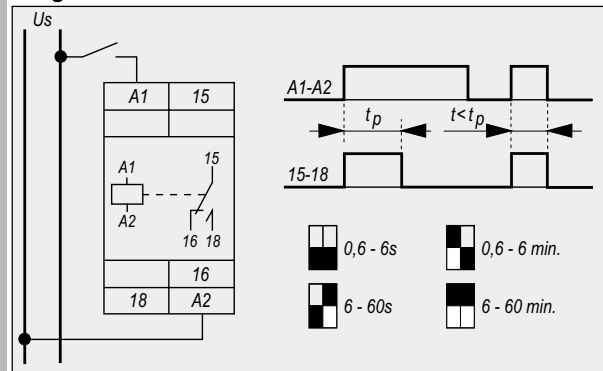
Note: The relays have a **green** LED that lights when the relay is energized (flashing during the timing) and a **red** LED that lights when the output contact is made.

MICV - Impulse ON timer

Function

Electronic relay whose output contact connects when voltage is applied to supply terminals A1-A2. It goes back to stand-by after a preset time. It has four timing ranges: 0.6-6s, 6-60s, 0.6-6min, 6-60min. Range selection is made by dip-switches located on the front of the relay. Times are set by front potentiometer controlling an ASIC specially designed for this group of relays. This allows for excellent precision and repeatability features.

Diagram



Technical characteristics

Type	MICV	MICV2	MICVT
Number of selectable NO-NC contacts	1	2	1
Output contacts			
Rated insulation voltage	AC	400V	
	DC	250V	
Thermal current I_{th}	6A		
Utilization category AC15			
Rated voltage U_e	120/240V		
Rated current I_e	2.5/1.3A		
Utilization category DC13			
Rated voltage U_e	110/220V		
Rated current I_e	0.2/0.1A		
Supply voltages			
AC/DC (direct)	24-240V	24-240V	-
AC (with transformer)	-	-	110-125V 200-240V 380-440V
Frequency	50/60 Hz		
Supply voltage tolerance	% +10 / -20	+10 / -20	+10 / -15
Consumption	(mA) 50 (at 24V) (mA) 15 (at 240V) (VA) -	50 (at 24V) 15 (at 240V) -	- - 3.5
Input circuit test voltage (between input, output and ground circuits)	4 kV		
Switch ON response time	100 ms		
Switch OFF response time	0,6s - 60 min. (adjustable)		
Reset time between 2 cycles	100 ms		
Repeat accuracy with 0.85 - 1.1 Un	2 %		
Weight	0.120, .26 lbs.		

Conformity to standards

VDE 0106	CSA C 22.2 N° 14	IEC 255.5
VDE 0110		IEC 947.5.1
EN 50002	UL 508	UNE 20-119
EN 50042		

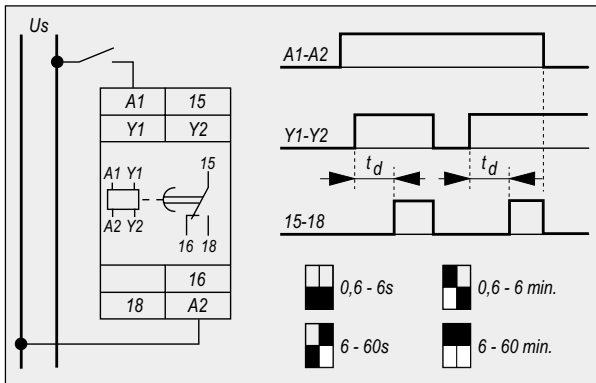


MTCCV - Delayed ON through contact timer

Function

Electronic relay whose output contact connects with an adjustable delay from the moment voltage is applied to terminals Y1-Y2. This is done by a voltage free control contact and it disconnects the moment the terminals are disconnected. The relay must be supplied with the nominal voltage between A1-A2. Lack of supply voltage will cause immediate disconnection. It has four timing ranges: 0.6-6s, 6-60s, 0.6-6min, 6-60min. Range selection is made by dip-switches located on the front of the relay. Times are set by front potentiometer controlling an ASIC specially designed for this group of relays. This allows for excellent precision and repeatability features.

Diagram



Technical characteristics

Type	MTCCV	MTCCVt
Number of selectable NO-NC contacts	1	
Output contacts		
Rated insulation voltage U_i	AC	400V
	DC	250V
Thermal current I_{th}	6A	
Utilization category AC15		
Rated voltage U_e	120/240V	
Rated current I_e	2.5/1.3A	
Utilization category DC13		
Rated voltage U_e	110/220V	
Rated current I_e	0.2/0.1A	
Supply voltages U_n		
AC (with transformer)	-	110-125V
	-	200-240V
	-	380-440V
DC/AC (direct)	24-240V	-
Frequency	50/60 Hz	
Permissible supply voltage variation	+10% / -20%	+10% / -15%
Consumption	50 mA (24V) 15 mA (240V)	3.5 VA
Input circuit test voltage (between input, output circuit and earth)	4 kV	
Switch ON response time	0.6s-60 min	
Switch OFF response time	100 ms	
Reset time between 2 cycles	100 ms	
Repeat accuracy with 0.85 - 1.1 U_n	2%	
Voltage at open Y1 - Y2 control terminals	15V DC	-
Current through control contact	initial	15 mA
	permanent	1 mA
Weight	0.120, .26 lbs.	
Conformity to standards		
VDE 0106	EN 50002	UL 508
VDE 0110	CSA C 22.2 N° 14	IEC 255.5
EN 50001		

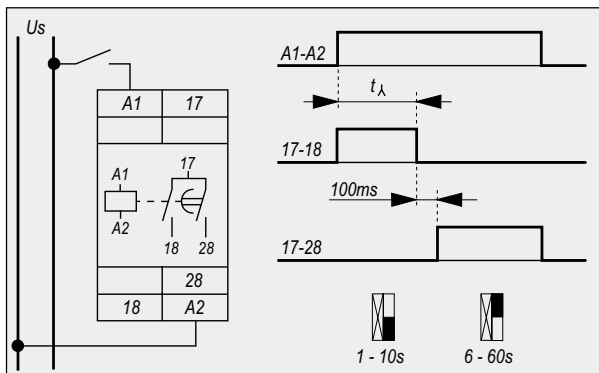


METV - Star-delta starter timer

Function

Electronic relay timed in steps whose purpose is to control star-delta starting. When supply voltage is applied to the A1-A2 terminals, the star contact (17-18) closes for an adjustable time between 1-10 sec. or 6-60 sec. (selectable). When this time is up, it opens, there is a pause and then the delta contact connects (17-18). The standard pause time is about 100ms. Times are set by front potentiometer controlling an ASIC specially designed for this group of relays. This allows for excellent precision and repeatability features.

Diagram



Technical characteristics

Type	METV	METVT
Number of selectable NO-NC contacts	2	
Output contacts		
Rated insulation voltage	AC	400V
	DC	250V
Thermal current Ith	6A	
Utilization category AC15		
Rated voltage Ue	120/240V	
Rated current Ie	2.5/1.3A	
Utilization category DC13		
Rated voltage Ue	110/220V	
Rated current Ie	0.2/0.1A	
Supply voltages Un		
AC/DC (direct)	24-240V	-
AC (with transformer)	-	110-125V
	-	200-240V
	-	380-440V
Frequency	50/60 Hz	
Supply voltage tolerance %	+10 / -20	+10 / -15
Consumption	(mA)	50 (at 24V)
	(mA)	12 (at 240V)
	(VA)	-
		3.5
Test voltage (between input, output and ground)	4 kV	
Switch ON response	100 ms	
Reset time between 2 cycles	100 ms	
Repeat accuracy with 0.85 - 1.1 Un	2%	
Weight	0.130, .28 lbs.	

Conformity to standards

VDE 0106	EN 50002	UL 508
VDE 0110	CSA C 22.2 N° 14	IEC 255.5
EN 50001	UL 94	

For ambient conditions data, see p.36, Table 2.

Note: The relays have a **green** LED that lights when the relay is energized (flashing during the timing) and a **red** LED that lights when the output contact is made.

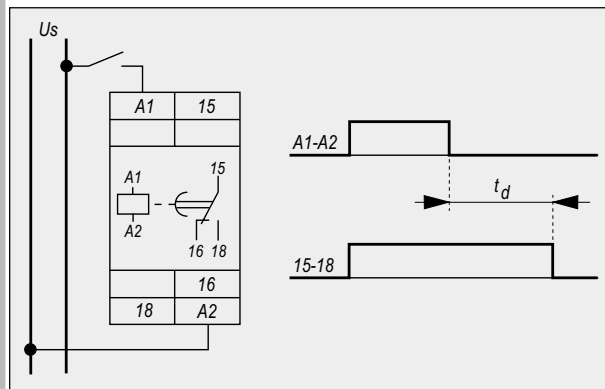
MRDV - Delayed OFF timer

Function

Electronic relay whose output contact instantly connects when supply voltage is applied to terminals A1-A2. It disconnects with an adjustable delay from the moment the relay loses supply voltage.

There are several types depending on the range of timers.

Diagram



Technical characteristics

Type	MRDV	MRDV2	MRDVT
Number of selectable NO-NC contacts	1	2	1
Output contacts			
Rated insulation voltage Ui	AC	400V	
	DC	250V	
Thermal current Ith	6A		
Utilization category AC15			
Rated voltage Ue	120/240V		
Rated current Ie	2.5/1.3A		
Utilization category DC13			
Rated voltage Ue	110/220V		
Rated current Ie	0.2/0.1A		
Supply voltages (Un)			
AC/DC (direct)	24-240V	24-240V	-
AC (with transformer)	-	-	110-125V
	-	-	200-240V
	-	-	380-440V
Frequency	50/60 Hz		
Supply voltage tolerance %	+10 / -20	+10 / -20	+10 / -15
Consumption	(mA)	50 (at 24V)	50 (at 24V)
	(mA)	15 (at 240V)	15 (at 240V)
	(VA)	-	-
		-	3.5
Test voltage (between input, output and ground)	4 kV		
Switch-ON response time	250 ms (1)		
Switch-OFF response time	0.5 - 600s		
Reset time between 2 cycles	250 ms		
Repeat accuracy with 0.85 - 1.1 Un	5 %		
Weight	0.130, .28 lbs.		

Conformity to standards

VDE 0106	CSA C 22.2 N° 14	IEC 255.5
VDE 0110		IEC 947.5.1
EN 50002	UL 508	UNE 20-119
EN 50042		

(1) For 24V DC = 300 ms.

For ambient conditions data, see p.36, Table 1.



MTDV - Delayed OFF through contact timer

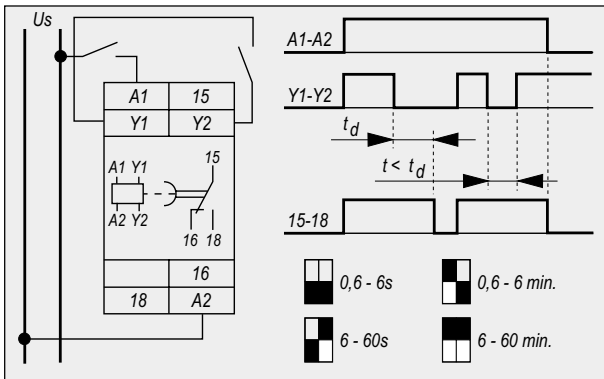
Function

Electronic relay whose output contact connects instantly when connecting the Y1-Y2 terminals with a voltage-free control. It disconnects with an adjustable delay when the terminals are disconnected. The relay must be supplied with nominal voltage between A1-A2. Loss of supply voltage causes immediate disconnection.

It has timing ranges: 0.6-6s, 6-60s, 0.6-6min, 6-60min.

Range selection is made by dip-switches located on the front of the relay. Times are set by front potentiometer controlling an ASIC specially designed for this group of relays. This allows for excellent precision and repeatability features.

Diagram



Technical characteristics

Type	MTDV	MTDVT
Number of selectable NO-NC contacts	1	
Output contacts		
Rated insulation voltage U_i	AC	400V
	DC	250V
Thermal current I_{th}	6A	
Utilization category AC-15		
Rated voltage U_e	120/240V	
Rated current I_e	2.5/1.3A	
Utilization category DC-13		
Rated voltage U_e	110/220V	
Rated current I_e	0.2/0.1A	
Supply voltages U_n		
AC/DC (direct)	24-240V	-
AC (with transformer)	-	110-125V
	-	200-240V
	-	380-440V
Frequency	50/60 Hz	
Supply voltage tolerance %	+10 / -20	+10 / -15
Consumption (mA)	50 (at 24V)	-
(mA)	15 (at 240V)	-
(VA)	-	3.5
Test voltage (between input, output and ground circuits)	4 kV	
Switch ON response time	100 ms	
Switch OFF response time	0.6s - 60 min.	
Reset time between 2 cycles	100 ms	
Repeat accuracy with 0.85 - 1.1 U_n	2 %	
Voltage at open Y1-Y2 control contact terminals	15V DC	
Current through control contact		
Initial	15 mA	
Permanent	1 mA	
Weight	0.120, .26 lbs.	

Conformity to standards

VDE 0106	EN 50002	UL 508
VDE 0110	CSA C 22.2 N° 14	IEC 255.5
EN 50001		

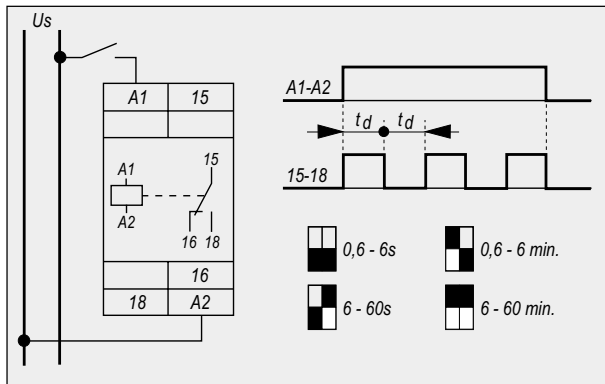


MIFV - Symmetric on-off

Function

Electronic relay whose output contact connects and disconnects intermittently with a symmetric cycle (connection and pause times are the same). It has four ranges: 0.6-6s; 6-60s; 0.6-6min; 6-60min. Range selection is made by dip-switches located on the front of the relay. Times are set by front potentiometer controlling an ASIC specially designed for this group of relays. This allows for excellent precision and repeatability features.

Diagram



Technical characteristics

Type	MIFV	MIFV2	MIFVT
Number of selectable NO-NC contacts	1	2	1
Output contacts			
Rated insulation voltage U_i	AC	400V	
	DC	250V	
Thermal current I_{th}	6A		
Utilization category AC15			
Rated voltage U_e	120/240V		
Rated current I_e	2.5/1.3A		
Utilization category DC13			
Rated voltage U_e	110/220V		
Rated current I_e	0.2/0.1A		
Supply voltages U_n			
AC/DC (direct)	24-240V	24-240V	-
AC (with transformer)	-	-	110-125V
	-	-	200-240V
	-	-	380-440V
Frequency	50/60 Hz		
Supply voltage tolerance	%	+10 / -20	+10 / -20
Consumption	(mA)	50 (at 24V)	50 (at 24V)
	(mA)	15 (at 240V)	15 (at 240V)
	(VA)	-	-
Test voltage (between input, output and ground circuits)	4 kV		
Intermittent switch times	0.6s - 60 min.		
Reset time between 2 cycles	100 ms		
Repeat accuracy with 0.85 - 1.1 U_n	2 %		
Weight	0.120, .26 lbs.		

Conformity to standards

VDE 0106	CSA C 22.2 N° 14	IEC 255.5
VDE 0110		IEC 947.5.1
EN 50002	UL 508	UNE 20-119
EN 50042		

For ambient conditions data, see p.36, Table 1.

Note: The relays have a **green** LED that lights when the relay is energized (flashing during the timing) and a **red** LED that lights when the output contact is made.

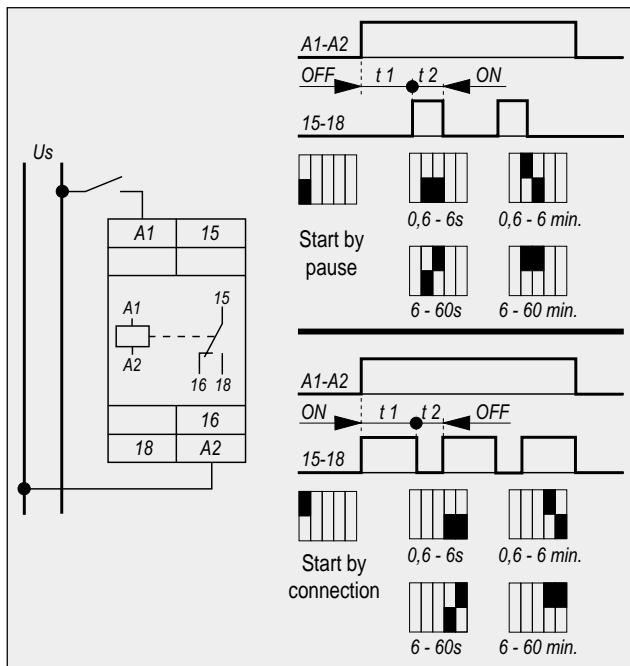


MIVV - Asymmetric on-off, started by connection on or off

Function

Electronic relay whose contact connects and disconnects intermittently. Connection and pause times may be set separately. The intermittency cycle begins with a connection or pause selected by dip-switch and starts the instant connection is made from supply voltage to the A1-A2 terminals. A new step is begun if voltage supply is interrupted during operation. It has four timing ranges: 0.6-6s; 6-60s; 0.6-6 min; 6-60min. Range selection is made by dip-switches located on the front of the relay. Times are set by front potentiometer controlling an ASIC specially designed for this group of relays. This allows for excellent precision and repeatability features.

Diagram



Technical characteristics

Type	MIVV	MIVV2	MIVVT
Number of selectable NO-NC contacts	1	2	1
Output contacts			
Rated insulation voltage U_i	AC	400V	
	DC	250V	
Thermal current I_{th}	6A		
Utilization category AC-15			
Rated voltage U_e	120/240V		
Rated current I_e	2.5/1.3A		
Utilization category DC-13			
Rated voltage U_e	110/220V		
Rated current I_e	0.2/0.1A		
Supply voltages (U_n)			
AC/DC (direct)	24-240V	24-240V	-
AC (with transformer)	-	-	110-125V
	-	-	200-240V
	-	-	380-440V
Frequency	50/60 Hz		
Supply voltage tolerance %	+10 / -20	+10 / -20	+10 / -15
Consumption	(mA)	50 (at 24V)	50 (at 24V)
	(mA)	15 (at 240V)	15 (at 240V)
	(VA)	-	-
			3.5
Test voltage (between input, output and ground circuit)	4 kV		
Switch ON response time	100 ms		
Intermittent switch ON times ⁽¹⁾	0.6s - 60 min.		
Intermittent switch OFF times ⁽¹⁾	0.6s - 60 min.		
Reset time between 2 cycles	100 ms		
Repeat accuracy with 0.85 - 1.1 U_n	2 %		
Weight	0.120, .26 lbs		
Conformity to standards			
VDE 0106	EN 50042	IEC 255.5	
VDE 0110	CSA C 22.2 N° 14	IEC 947.5.1	
EN 50002		UNE 20-119	
EN 50005	UL 508		

(1) Connection and pause times be set within different ranges.

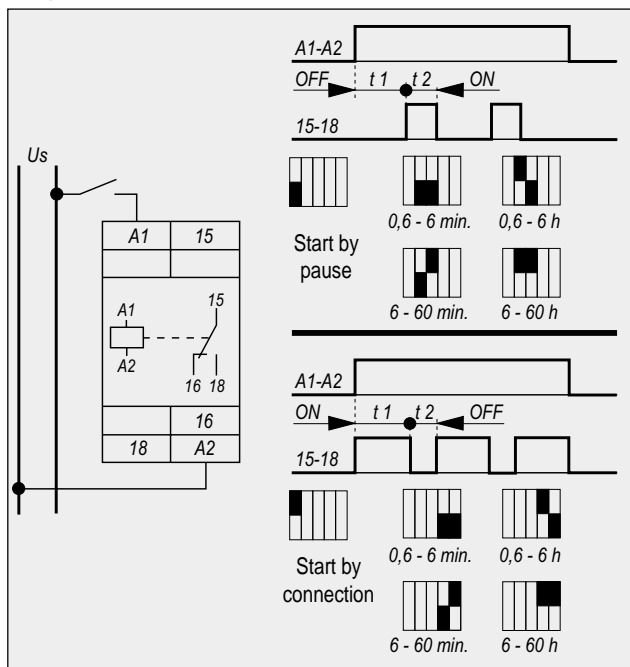


MIVVL - Long time asymmetric on-off, started by connection on or off

Function

Electronic relay whose output contact connects and disconnects intermittently. Connection and pause times may be set separately. The intermittency cycle begins a connection or pause selected by dip-switch and starts the instant connection is made from supply voltage to the A1-A2 terminals. A new step is begun if voltage supply is interrupted during operation. It has four timing ranges: 0.6-6s; 6-60s; 0.6-6min; 6-60min. Range selection is made by dip-switches located on the front of the relay. Times are set by front potentiometer an ASIC specially designed for this group of relays. This allows for excellent precision and repeatability features.

Diagram



Technical characteristics

Type	MIVVL	MIVVL2	MIVVLT
Number of selectable NO-NC contacts	1	2	1
Output contacts			
Rated insulation voltage U_i	AC	400V	
	DC	250V	
Thermal current I_{th}	6A		
Utilization category AC-15			
Rated voltage U_e	120/240V		
Rated current I_e	2.5/1.3A		
Utilization category DC-13			
Rated voltage U_e	110/220V		
Rated current I_e	0.2/0.1A		
Supply voltages (U_n)			
AC/DC (direct)	24-240V	24-240V	-
AC (with transformer)	-	-	110-125V
	-	-	200-240V
	-	-	380-440V
Frequency		50/60 Hz	
Supply voltage tolerance %	+10 / -20	+10 / -20	+10 / -15
Consumption	(mA)	50 (at 24V)	50 (at 24V)
	(mA)	15 (at 240V)	15 (at 240V)
	(VA)	-	-
Test voltage (between input, output and ground circuits)	4 kV		
Switch ON response time	100 ms		
Intermittent switch ON times ⁽¹⁾	0.6s - 60 h		
Intermittent switch OFF times ⁽¹⁾	0.6s - 60 h		
Reset time between 2 cycles	100 ms		
Repeat accuracy with 0.85 - 1.1 U_n	2 %		
Weight	0.120, .26 lbs.		

Conformity to standards

VDE 0106	EN 50042	IEC 255.5
VDE 0110	CSA C 22.2 N° 14	IEC 947.5.1
EN 50002		UNE 20-119
EN 50005	UL 508	

(1) Connection and pause times be set within different ranges.



MMFV - Multifunction relay

Function

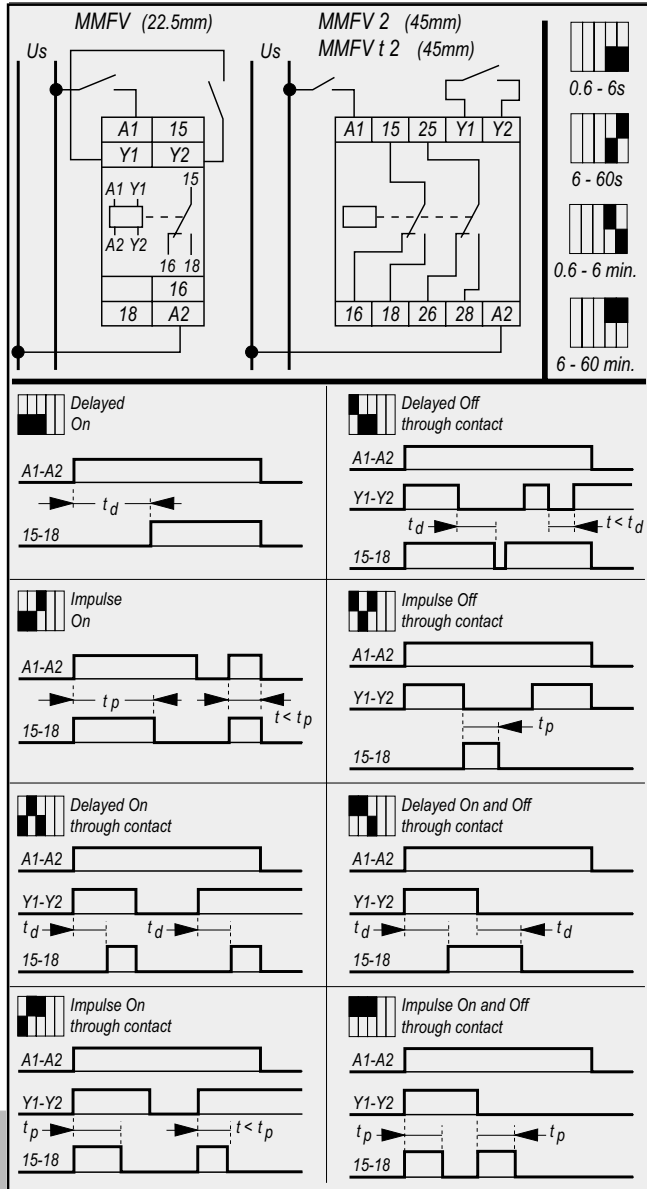
The functions of this multifunction and multirange electronic relay are selected by 3 dipswitches located on the front of the relay.

It has eight functions:

- Delayed ON timer,
- Delayed ON through contact timer,
- Delayed OFF through contact timer,
- Delayed ON and OFF through contact timer,
- Impulse ON timer,
- Impulse ON through contact timer,
- Impulse OFF through contact timer,
- Impulse ON and OFF through contact timer.

If the relay loses current during timing, it disconnects and is ready for a new cycle. It has four timing ranges: 0.6-6s, 6-60s, 0.6-6min, 6-60min. Times are set by front potentiometer controlling an ASIC specially designed for this group of relays. This allows for excellent precision and repeatability features.

Diagram



Technical characteristics

Type	MMFV	MMFV2	MMFVT2
Number of selectable NO-NC contacts	1	2	2
Output contacts			
Rated insulation voltage U_i	AC	400V	
	DC	250V	
Thermal current I_{th}	6A		
Utilization category AC-15			
Rated voltage U_e	120/240V		
Rated current I_e	2.5/1.3A		
Utilization category DC-13			
Rated voltage U_e	110/220V		
Rated current I_e	0.2/0.1A		
Supply voltages (U_n)			
AC/DC (direct)	24-240V	24-240V	-
AC (with transformer)	-	-	110-125V
	-	-	200-240V
	-	-	380-440V
Frequency	50/60 Hz		
Supply voltage tolerance %	+10 / -20	+10 / -20	+10 / -15
Consumption	(mA)	50 (at 24V)	50 (at 24V)
	(mA)	15 (at 240V)	15 (at 240V)
	(VA)	-	-
	-	-	3
Test voltage (between input, output and ground circuit)	4 kV		
Switch ON response time	0.6s - 60 min. or 100ms		
Switch OFF response time	0.6s - 60 min. or 100ms		
Reset time between 2 cycles	100 ms		
Repeat accuracy with 0.85 - 1.1 U_n	2 %		
Voltage open Y1-Y2 control contact terminals	15 V DC		
Current through control contact	Initial	15 mA	
	Permanent	1 mA	
Weight	0.125, .27 lbs.		
Conformity to standards			
VDE 0106	CSA C 22.2 N° 14	IEC 255.5	
VDE 0110		IEC 947.5.1	
EN 50002	UL 508	UNE 20-119	
EN 50042			

For ambient conditions data, see p.36, Table 1.

Note: The relays have a **green** LED that lights when the relay is energized (flashing during the timing) and a **red** LED that lights when the output contact is made.



DINIL-02 - Liquid level detector relay for simultaneous control of well and tank

DINIL-02E - Liquid level detector relay for simultaneous control of well and tank (plug-in)

Functions

DINIL-02 and DINIL-02E are devices to control levels of conductive liquids which perform the following functions:

Filling control

The contact between 11-14 (DINIL-02) or 1-3 (DINIL-02E) closes when the tank to be checked drops below a minimum, fixed by the position of probe Z23 (DINIL-02) or probe 6 (DINIL-02E), which starts up the pumping system. When the maximum filling level is reached, fixed by the position of probe Z22 (DINIL-02) or probe 7 (DINIL-02E), the contact between 11-14 (DINIL-02) or 1-3 (DINIL-02E) opens and the pumping system stops.

Draining control

The contact 11-14 (DINIL-02) or 1-3 (DINIL-02E) closes if the level liquid goes above a maximum (fixed by the position of probe Z12 (DINIL-02) or probe 9 (DINIL-02E), which starts up the drain pumping system. When the level drops below a minimum, fixed by the position of probe Z13 (DINIL-02) or probe 8 (DINIL-02E), the contact 11-14 (DINIL-02) or 1-3 (DINIL-02E) opens and stops the pumping system, which prevents the pump from losing its prime.

Simultaneous filling and draining control

The system starts up whenever the tank requires liquid and the well has sufficient level to supply it. The system stops when the liquid reaches its maximum level in the tank or when the well reaches its minimum level.

Note

In all the above applications, the contact between 11-14 (DINIL-02) or 1-3 (DINIL-02E) is used as a permanent contact for starting and stopping the pump starter, whether it is direct-on-line, start-delta or any other type of starter.

Technical characteristics

Type	DINIL-02	DINIL-02E
Number of selectable NO-NC contacts	1	
Output contacts		
Rated insulation voltage U_i	AC	400V
	DC	250V
Thermal current I_{th}	6A	
Utilization category AC15		
Rated voltage U_e	120/240V	
Rated current I_e	2.5/1.3A	
Utilization category DC13		
Rated voltage U_e	110/220V	
Rated current I_e	0.2/0.1A	
Supply voltages U_n		
AC (with transformer) (V)	380-400, 240	380-400/220-230
	220-230, 125	(two voltages) 240,
	110, 48, 24	125, 110, 48, 24
Frequency	50/60 Hz	
Permissible supply voltage variation	+10% / -15%	
Consumption	3 VA	
Input circuit test voltage (between input, output circuit and earth)	4 kV	
Voltage between probes and common	6-18 V ef.	
Max. consumption of probes	0.18 mA ef.	
Max. resistance between probes (Resistance of controlled liquid)	200 k Ω	
Switch ON response time	1 s	
Switch OFF response time	1 s	
Repeat accuracy with 0.85 - 1.1 U_n	2 %	
Weight	0.275, .60 lbs.	0.195, .42 lbs.

Conformity to standards

DINIL-02

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508
EN 50005	IEC 947.5.1	

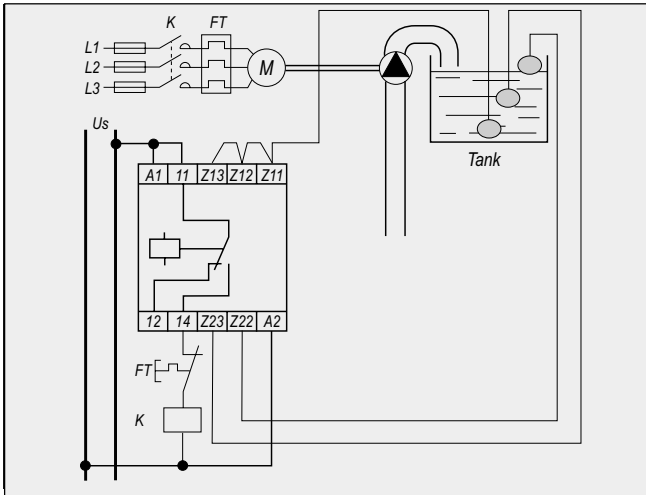
DINIL-02E

VDE 0106	IEC 947.5.1	UNE 20119
UL508		

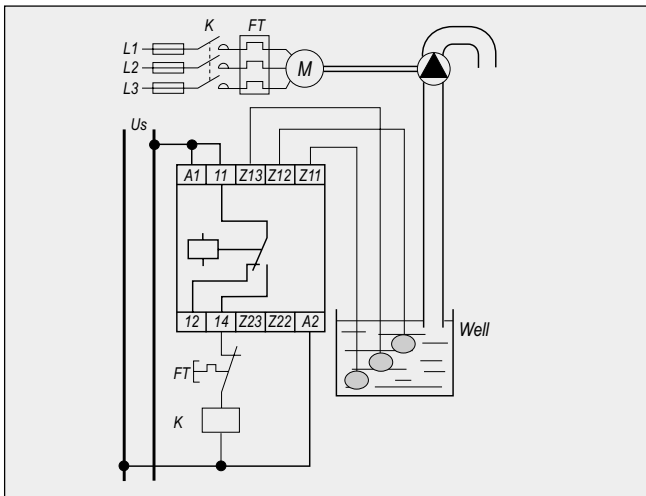


DINIL-02

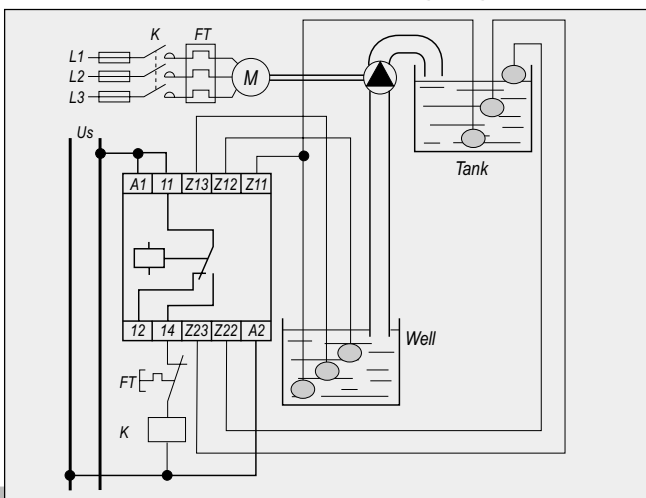
Pump-IN control wiring diagram



Pump-OUT wiring diagram

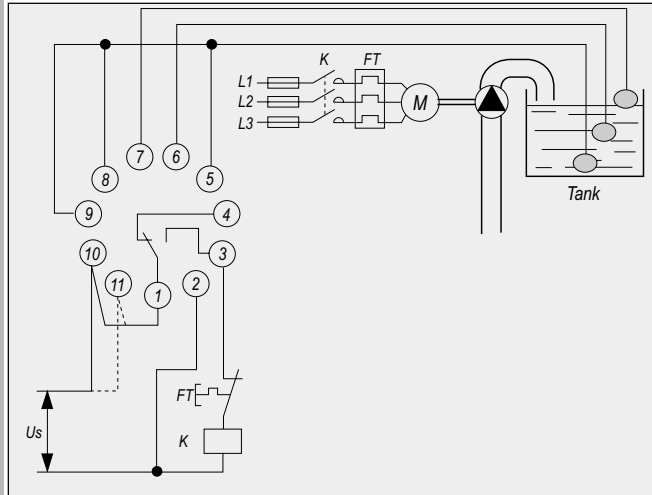


Pump-IN and Pump-OUT control wiring diagram

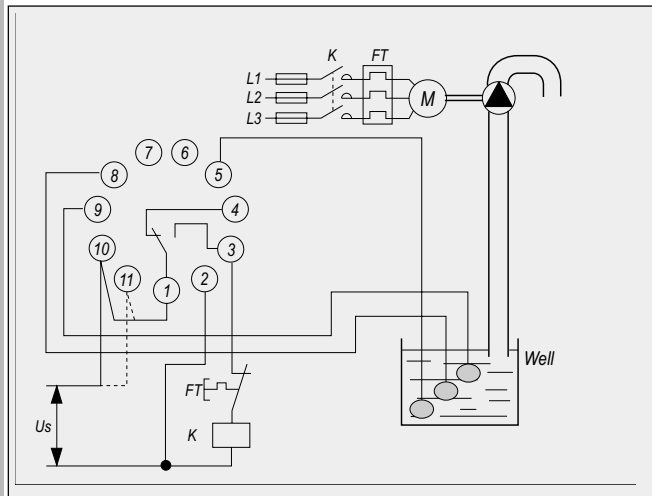


DINIL-02E

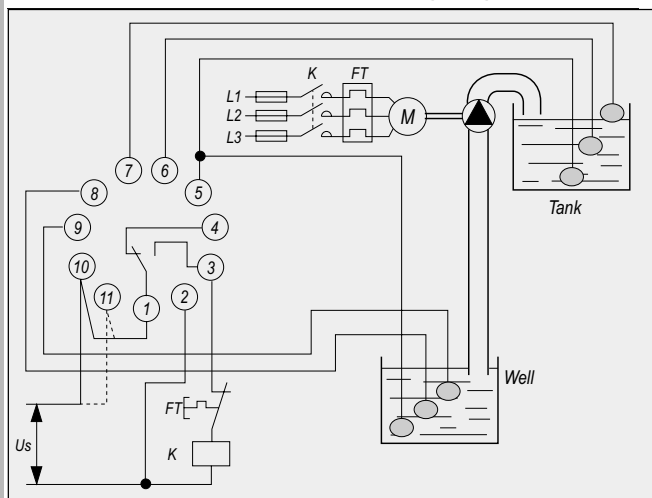
Pump-IN control wiring diagram



Pump-OUT wiring diagram



Pump-IN and Pump-OUT control wiring diagram



Control voltage

Single voltage
Terminals 2-10

Dual voltage
220-230Vac (Terminals 2-10)
380-400Vac (Terminals 2-11)



DINIL-03 - Liquid level detector relay for control of well or tank

DINIL-03E - Liquid level detector relay for control of well or tank (plug-in)

Functions

DINIL-03 and DINIL-03E are devices to control levels of conductive liquids. They can control the pump-in and pump-out of wells or tanks, but not both simultaneously. They are similar to DINIL-02 / DINIL-02E. The contact 11-14 (DINIL-03) or 1-3 (DINIL-03E), makes if the level is above or equal to the level fixed by probe Z2 (DINIL-03) or probe 9 (DINIL-03E), and breaks if the level falls below the level fixed by probe Z3 (DINIL-03) or probe 8 (DINIL-03E).

Filling control:

The contact 11-12 (DINIL-03) or 1-4 (DINIL-03E) is used for permanent control of the start of the pump.

Draining control:

The contact 11-14 (DINIL-03) or 1-3 (DINIL-03E) is used for permanent control of the pump starting.

Note:

The "common" probe must be slightly lower than the "low level" probe and can be connected to the well or tank frame if it is metallic. Sensitivity is adjusted by means of a front potentiometer, and its adjustment position depends on liquid resistivity.

Technical characteristics

Type	DINIL-03	DINIL-03E
Number of selectable NO-NC contacts	1	
Output contacts		
Rated insulation voltage U_i	AC	400V
	DC	250V
Thermal current I_{th}	6A	
Utilization category AC15		
Rated voltage U_e	120/240V	
Rated current I_e	2.5/1.3A	
Utilization category DC13		
Rated voltage U_e	110/220V	
Rated current I_e	0.2/0.1A	
Supply voltages U_n		
AC (with transformer) (V)	380-400, 240	380-400/220-230 (two voltages) 240, 125, 110, 48, 24
	220-230, 125	
	110, 48, 24	
Frequency	50/60 Hz	
Permissible supply voltage variation	+10% / -15%	
Consumption	3 VA	
Input circuit test voltage (between input, output circuit and earth)	4 kV	
Voltage between probes and common	6-18 V ef.	
Max. consumption of probes	0.18 mA ef.	
Max. resistance between probes (Resistance of controlled liquid)	200 k Ω	
Switch ON response time	1 s	
Switch OFF response time	1 s	
Repeat accuracy with 0.85 - 1.1 U_n	2 %	
Weight	0.275, .60 lbs.	0.195, .42 lbs.

Conformity to standards

DINIL-03

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508
EN 50005	IEC 947.5.1	

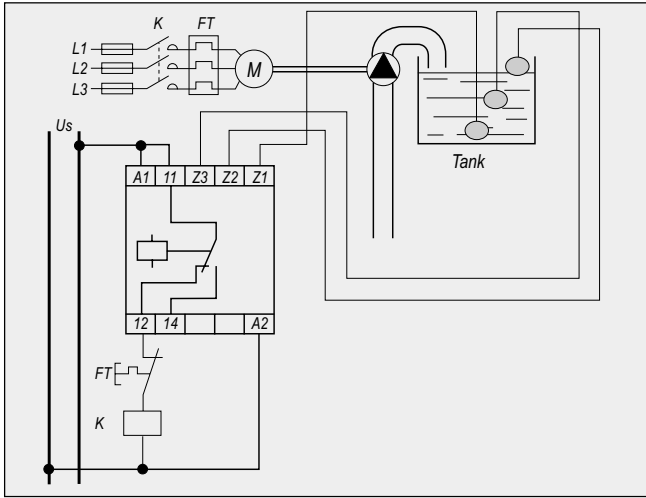
DINIL-03E

VDE 0106	IEC 947.5.1	UNE 20119
UL508		

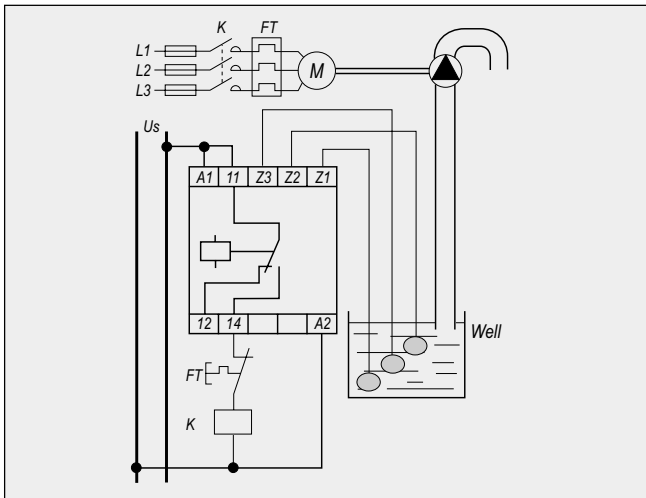


DINIL-03

Pump-IN control wiring diagram

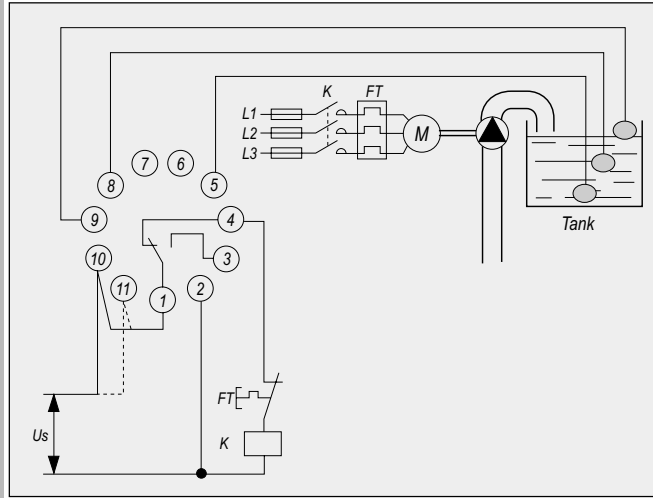


Pump-OUT control wiring diagram

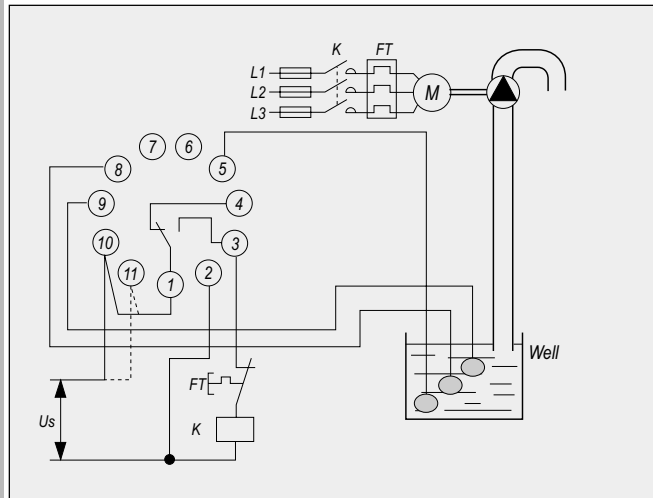


DINIL-03E

Pump-IN control wiring diagram



Pump-OUT control wiring diagram



Control voltage

Single voltage
Terminals 2-10

Dual voltage
220-230Vac (Terminals 2-10)
380-400Vac (Terminals 2-11)



- RDH - Ground fault with manual reset, without test**
- RDHT - Ground fault with manual reset, with test**
- RDHA - Ground fault with automatic reset, with test**

Function

RDH, RDHT and RDHA are ground fault detectors for industrial networks with neutral connected to earth, used with WKA (without test) and WKAT (with test) differential transformers. Tripping is produced when leakage current exceeds a threshold which is adjustable by means of a front mounted potentiometer. Tripping ranges are shown in the table below. RDH and RDHT keep memory of tripping even in the absence of voltage to A1-A2 and hand resetting is obtained from a push-button. RDHA is self resetting in the absence of control voltage to A1-A2 or when leakage disappears. RDHT and RDHA have a push-to-test button. It is also possible to fit an outside push-to-test button for control from the panel door, and therefore these relays should always be used with WKAT transformers with test winding. All relays have a timer which allows trip delay (external adjustment on RDHA and internal adjustment on RDH and RDHT).

RDH1-...	Sensitivity	Transformers	Ø
... 1,2	0.2 - 1.2A	WKA-35 1.2A/2V	35
		WKA-70 1.2A/2V	70
		WKA-105 1.2A/2V	105
		WKA-140 1.2A/2V	140
		WKA-210 1.2A/2V	210
... 10	1 - 10A	WKA-35 10A/2V	35
		WKA-70 10A/2V	70
		WKA-105 10A/2V	105
		WKA-140 10A/2V	140
		WKA-210 10A/2V	210

RDHT1-... RDHA1-...	Sensitivity	Transformers	Ø
... 1,2	0.2 - 1.2A	WKAT-35 1.2A/2V	35
		WKAT-70 1.2A/2V	70
		WKAT-105 1.2A/2V	105
		WKAT-140 1.2A/2V	140
		WKAT-210 1.2A/2V	210
... 10	1 - 10A	WKAT-35 10A/2V	35
		WKAT-70 10A/2V	70
		WKAT-105 10A/2V	105
		WKAT-140 10A/2V	140
		WKAT-210 10A/2V	210

Technical characteristics

Type	RDH1-...	RDHT1-...	RDHA1-...
Number of selectable NO-NC contacts	1		
Output contacts			
Rated insulation voltage U_i	AC	400V	
	DC	250V	
Thermal current I_{th}	6A		
Utilization category AC-15			
Rated voltage U_e	120/240V		
Rated current I_e	2.5/1.3A		
Utilization category DC-13			
Rated voltage U_e	110/220V		
Rated current I_e	0.2/0.1A		
Supply voltages U_n			
AC (with transformer) (V)	380-400,240	380-400,240	380-400,240
	220-230,125	220-230,125	220-230,125
	110,48	110,48,24	110,48
DC/AC (direct) (V)	24	-	24
Frequency	50/60 Hz		
Supply voltage tolerance	+10 / -15 %		
Repeat accuracy with 0.85 - 1.1 U_n	2 %		
Consumption	3 VA		
Input circuit test voltage	4 kV		
Switch ON response time (can be delayed up to 5 sec.) (ms)	150-200	150-200	100
Weight	0.290	0.310	0.250
	.63 lbs.	.68 lbs.	.55 lbs.

Conformity to standards

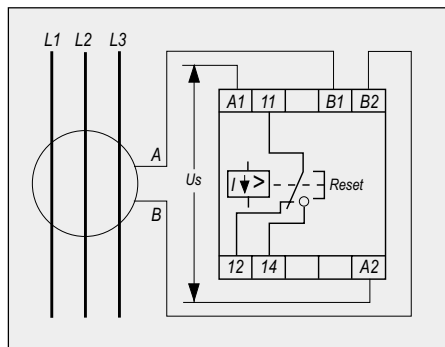
RDH, RDHT

VDE 0106	EN 5001	UNE 20-119
EN 50001	DIN 46199	
EN 50005	IEC 947.5.1	

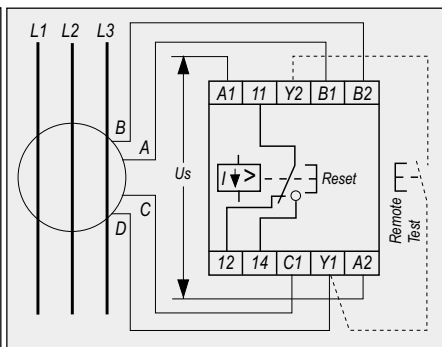
RDHA

VDE 0106	EN 5001	UNE 20-119
EN 50001	DIN 46199	UL508
EN 50005	IEC 947.5.1	

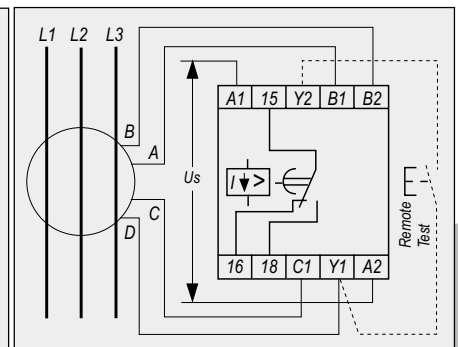
RDH



RDHT



RDHA



For ambient conditions data, see p.36, Table 1.



RDFFF1 - Integral protection relay for three-phase lines

Function

Protection against:

- Phase failure
- Phase sequence
- Phase unbalance
- Low line voltage
- High line voltage

Relay operates by phase angle detection between voltages and not by voltage levels and therefore will drive satisfactorily even with feedback from other motors.

These relays connect only when all conditions are normal (contact 15-18 closes) and disconnect on any fault including supply voltage. The relays will not connect if the phase sequence is incorrect, preventing motors from starting in the wrong direction.

Unbalance adjustment

Phase unbalance, and therefore single phase is very dangerous for the life of a motor. The graph below shows temperature rise in a three-phase motor with phase unbalance (NEMA MG 1-1433 and 34). The percent unbalance is obtained as follows:

$$\% \text{ unbalance} = \frac{\text{max. voltage deviation from average voltage}}{\text{average voltage}} \times 100$$

Tripping is adjustable between 2.5 and 10 %.

Consequently protection is provided for motors working closely adjusted to rated power, to others more generously sized, and even power lines.

In any case adjustments should be made so that on failure of one phase, the relay will disconnect.

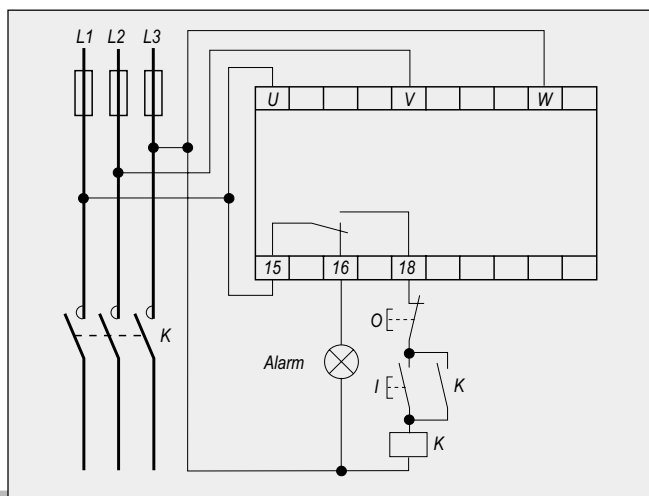
Voltage adjustment

Voltage tripping is adjustable from -5 to -20 % and +5 to +15 % maximum. Tripping for these causes is delayed approximately 1 second.

Tripping indication

Relays incorporate LED diode tripping indication. When phase sequence is incorrect, both "phase sequence" and "unbalance" light up. Phase unbalance and single phasing with feedback are indicated by the "unbalance" light alone.

Diagram

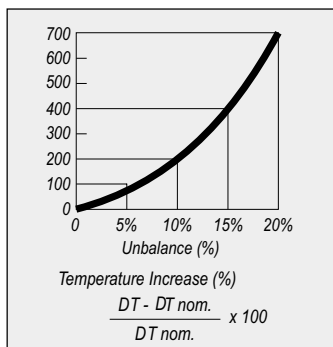


Technical characteristics

Type	RDFFF1-50	RDFFF1-60
Number of selectable NO-NC contacts	1	
Output contacts		
Rated insulation voltage (Ui)	AC	400V
	DC	250V
Thermal current I _{th}	6 A	
Utilization category AC-15		
Rated voltage U _e	120/240V	
Rated current I _e	2.5/1.3 A	
Utilization category DC-13		
Rated voltage U _e	110/220V	
Rated current	0.2/0.1 A	
Supply voltages U _n	AC	500V, 440V, 380V, 240V, 220V
Frequency	50 Hz	60 Hz
Permissible supply voltage variation	+15 / -20 %	
Repeat accuracy	2 %	
Consumption	3 VA	
Input circuit test voltage	4 kV	
Unbalance tripping (adjustable)	2.5 to 10 % U _n	
Low voltage tripping (adjustable)	5 to 20 % U _n	
Overvoltage tripping (adjustable)	5 to 15 % U _n	
Switch ON response time	200 ms	
Reset hysteresis (% of tripping value)	5 approx.	
Weight	0.370, .81 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508 ⁽¹⁾
EN 50005	IEC 947.5.1	





RPDF - Unbalance and phase failure protection relay for three-phase lines

Function

The RPDF-electronic relay is intended for the protection of lines or electronic motors against unbalance between phases or failure of one or more phases. Detection of unbalance or phase failure is done by measuring phase change and not by voltage levels. This guarantees proper operation even when there are return paths due to motors running which are connected to the main network to be protected.

The relay is made when all conditions are normal (contact 11-14 closed); the contacts open in the event of a failure. In this way, any failure, including that of the relay supply voltage, will cause disconnection and prevent the supply from being left unprotected.

Setting unbalance

The unbalance of phases is a limiting factor in the life of an electric motor. The graph below shows the percentage temperature increase in a three-phase motor as a function of the degree of unbalance (See standards NEMA MG 1-1433 and 34).

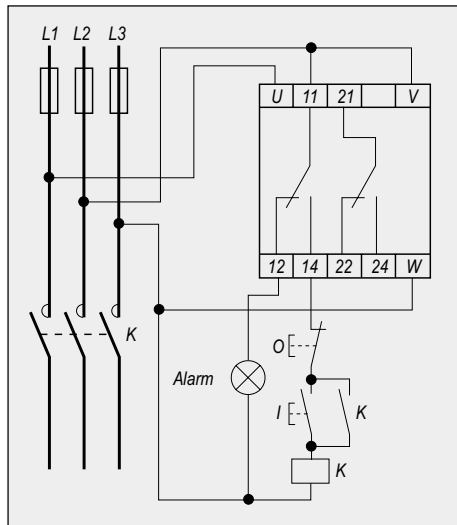
The percent unbalance is calculated as follows:

$$\% \text{ unbalance} = \frac{\text{max. voltage deviation from average voltage}}{\text{average voltage}} \times 100$$

The trip is adjustable between 2.5 % and 10 %. Consequently protection is provided for motors working closely adjusted to rated power, to others more generously sized, and even power lines.

In any case, the adjustment must be such that the loss of a phase produces the opening of the relay.

Diagram

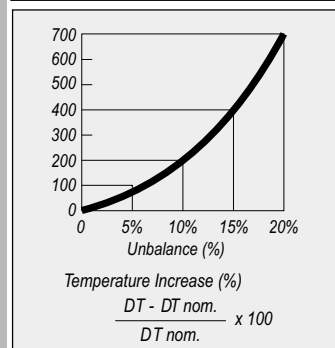


Technical characteristics

Type	RPDF 1-50	RPDF 1-60	RPDF 2-50	RPDF 2-60
Number of selectable NO-NC contacts	1		2	
Output contacts				
Rated insulation voltage	AC	400V		
	DC	250V		
Thermal current I _{th}	6 A			
Utilization category AC-15				
Rated voltage U _e	120/240V			
Rated current I _e	2.5/1.3 A			
Utilization category DC-13				
Rated voltage U _e	110/220V			
Rated current I _e	0.2/0.1 A			
Supply voltages U _n (w/transformer)	500V, 440V, 380V, 240V, 220V			
Frequency	50 Hz	60 Hz	50 Hz	60 Hz
Permissible supply voltage variation	+10 / -20 %			
Repeat accuracy	2 %			
Consumption	3 VA			
Input circuit test voltage	4 kV			
Unbalance tripping (adjustable)	2.5 to 10 % U _n			
Switch ON response time	100 ms			
Reset hysteresis (% of tripping value)	2 %			
Weight	0.250, .55 lbs.			

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508 ⁽¹⁾
EN 50005	IEC 947.5.1	





RDMT1 - Phase failure, unbalance and three-phase minimum voltage protection relay

Function

The RDMT1 electronic relay is intended for the protection of three phase lines or electric motors against failure of one or more phases, unbalance between phases or low voltage.

Detection of unbalance or phase failure is done by measuring phase change and not by voltage levels, which guarantees proper operation even when there are return paths due to motors running which are connected to the main network to be protected.

The low voltage detector measures the mean value of the voltage in the three phases.

The relay is made when all conditions are normal (contact 15-18 closed); the contacts open with a delay of 3 seconds in the event of a failure lasting more than this time delay. In this way, any failure, including that of the relay supply voltage, will cause disconnection and prevent the supply from being left unprotected.

Setting unbalance

The unbalance of phases is a limiting factor in the life of an electric motor. The graph (bottom right) shows the percentage temperature increase in a three-phase motor as a function of the degree of unbalance. (See standards NEMA MG 1-1433 and 34).

The percentage unbalance is calculated as follows:

$$\% \text{ unbalance} = \frac{\text{max. difference with respect to mean voltage}}{\text{mean value of three phases}} \times 100$$

The trip is adjustable between 2.5 % and 10 %, consequently protection is provided for motors ranging from closely adjusted to rated power, to the motors generously sized, and even power lines. In any case, the adjustment must be such that the loss of a phase produces the opening of the relay.

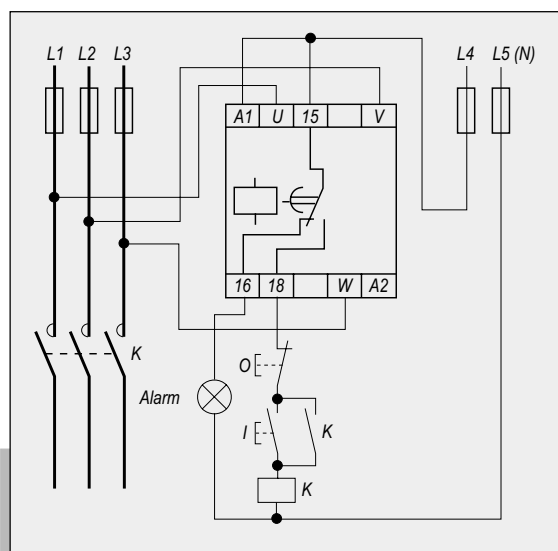
Setting undervoltage

The trip setting is adjustable between 0 % and -20 % of the rated input voltage.

Tripping indication

The relay incorporates a LED diode tripping indicator. When phase sequence is incorrect, both phase sequence and unbalance light up. Phase unbalance and single phasing with feedback are indicated by the "unbalance" light alone.

Diagram

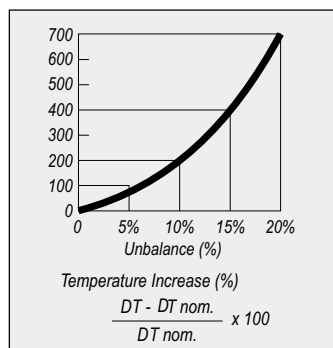


Technical characteristics

Type	RDMT 1	
Number of selectable NO-NC contacts	1	
Output contacts		
Rated insulation voltage	AC	400V
	DC	250V
Thermal current I _{th}	6 A	
Utilization category AC-15		
Rated voltage U _e	120/240V	
Rated current I _e	2.5/1.2 A	
Utilization category DC-13		
Rated voltage U _e	110/220V	
Rated current I _e	0.2/0.1 A	
Supply voltages U _n (w/ transf.)	AC	380V, 220V three phase
Control supply voltage (A1-A2)	AC	220V single phase
Frequency	50 Hz	
Permissible supply voltage variation	+15 / -20 %	
Repeat accuracy	2 %	
Consumption	3 VA	
Input circuit test voltage	4 kV	
Unbalance (adjustable)	2.5 to 10 %	
Low voltage (adjustable)	0 to -20 %	
Tripping hysteresis	5 approx. %	
Switch-ON response time	200 ms	
Switch-OFF response time	3.5 ± 1.5 s	
Weight	0.250, .55 lbs.	

Conformity with standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508 ⁽¹⁾
EN 50005	IEC 947.5.1	



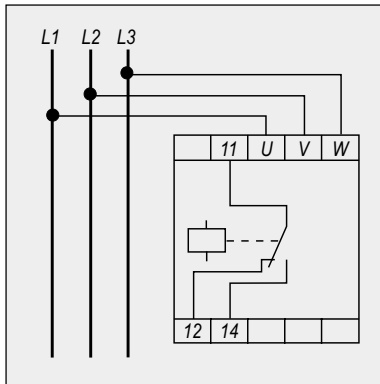


RSFF - Phase sequence and phase failure protection relay for three-phase lines

Function

The RSFF relay is designed to detect phase sequence errors and/or phase failures in three phase lines by measuring the three phase voltage angle and amplitude. An external potentiometer is used to adjust the level of acceptable unbalance (2.5% to 10.0%).

Diagram



Technical characteristics

Type	RSFF1-50	RSFF1-60
Number of selectable NO-NC contacts	1	
Output contacts		
Rated insulation voltage	AC	400V
	DC	250V
Thermal current I _{th}	6 A	
Utilization category AC-15		
Rated voltage U _e	120/240V	
Rated current I _e	2.5/1.3 A	
Utilization category DC-13		
Rated voltage U _e	110/220V	
Rated current I _e	0.2/0.1 A	
Supply voltages U _n (w/transf.)	AC	440V, 380-400V, 220-230V
Frequency	50 Hz	60 Hz
Permissible supply voltage variation	+15 / -20 %	
Repeat accuracy	2 %	
Consumption	3 VA	
Input circuit test voltage	4 kV	
Switch ON response time	200 ms	
Switch OFF response time	1 s	
Weight	0.230, .50 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508 ⁽¹⁾
EN 50005	IEC 947.5.1	

For ambient conditions data, see p.36, Table 2.

Note: The relay has one LED that lights when the output contact is made.

(1) For supply voltage less than 300V.

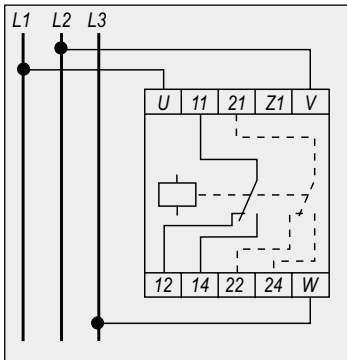


RTMM - Maximum and minimum voltage protection relay for three-phase lines

Function

The RTMM electronic relay is voltage sensitive and has one or two selectable output contacts. The relay remains closed (contact between 11-14 or between 21-24 closed) while the voltage is within the tolerance limits and opens when these limits are surpassed. The relays can be used for low voltage or over-voltage detection in three-phase lines. Trip values, for maximum and minimum voltage, are set by means of two independent potentiometers mounted on the relay front cover.

Diagram



Technical characteristics

Type	RTMM1	RTMM2
Number of selectable NO-NC contacts	1	2
Output contacts		
Rated insulation voltage (Ui)	AC 400V	DC 250V
Thermal current Ith	6 A	
Utilization category AC-15		
Rated voltage Ue	120/240V	
Rated current Ie	2.5/1.3 A	
Utilization category DC-13		
Rated voltage Ue	110/220V	
Rated current Ie	0.2/0.1 A	
Supply voltages Un	AC	500V, 440V, 400V, 380V, 240V, 220V, 125V, 110V
Frequency	50/60 Hz	
Permissible supply voltage variation	+20 / -20 %	
Repeat accuracy	2 %	
Consumption	3 VA	
Input circuit test voltage	4 kV	
Low voltage tripping (adjustable)	-5 to -20 %	
Overvoltage tripping (adjustable)	+5 to +15 %	
Switch ON response time	100 ms	
Reset hysteresis (% of tripping value)	2 %	
Weight	0.250, .55 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508 ⁽¹⁾
EN 50005	IEC 947.5.1	

For ambient conditions data, see p.36, Table 2.

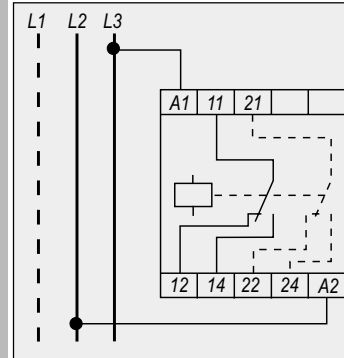
Note: The relay has one LED that lights when the output contact is made.

RMM - Maximum and minimum voltage relay for single-phase lines

Function

These voltage-sensitive relays with one or two selectable output contacts remain closed (contact between 11-14 or between 21-24) when voltage is within tolerance limits, and open when voltage surpasses these limits. The relays can be used to detect low or over voltage in balanced single or three-phase systems, and maximum and minimum tripping values are adjustable by means of two potentiometers.

Diagram



Technical characteristics

Type	RMM 1	RMM 2
Number of selectable NO-NC contacts	1	2
Output contacts		
Rated insulation voltage (Ui)	AC 400V	DC 250V
Thermal current Ith	6 A	
Utilization category AC-15		
Rated voltage Ue	120/240V	
Rated current Ie	2.5/1.3 A	
Utilization category DC-13		
Rated voltage Ue	110/220V	
Rated current Ie	0.2/0.1 A	
Supply voltages Un	(w/transf.) AC 500V, 440V, 400V, 380V, 240V, 220V, 125V, 110V, 24V	(direct) DC 24V
Frequency	50/60 Hz	
Permissible supply voltage variation	+15 / -20 %	
Repeat accuracy	2 %	
Consumption	3 VA	
Input circuit test voltage	4 kV	
Low voltage tripping (adjustable)	-5 to -20 %	
Over voltage tripping (adjustable)	+5 to +15 %	
Reset hysteresis (% of tripping value)	5 approx. %	
Switch ON response time	100 ms	
Weight	0.250, .55 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508 ⁽¹⁾
EN 50005	IEC 947.5.1	

(1) For supply voltage less than 300V.

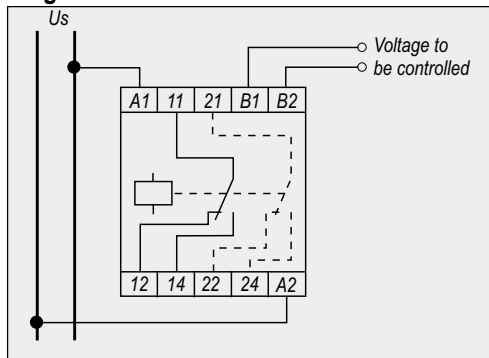


RDT - Voltage detector relay

Function

The output contact in this relay connects when the voltage between terminals B1-B2 exceeds a certain adjustable threshold, and will disconnect with a voltage 10% below the setting value. Trip values are set by means of a potentiometer. The relay requires voltage supply between A1-A2. Control voltage can be either direct (DC) or alternating (AC).

Diagram



Technical characteristics

Type	RDT1-...	RDT2-...
Number of selectable NO-NC contacts	1	2
Output contacts		
Rated insulation voltage (Ui)	AC	400V
	DC	250V
Thermal current Ith	6 A	
Utilization category AC-15		
Rated voltage Ue	120/240V	
Rated current Ie	2.5/1.3 A	
Utilization category DC-13		
Rated voltage Ue	110/220V	
Rated current Ie	0.2/0.1 A	
Supply voltages Un (w/transf.)AC	380-400V, 240V, 220-230V, 125V, 110V, 48V	
	(direct) DC/AC ⁽¹⁾	24V
Frequency	50/60 Hz	
Permissible supply voltage variation	+10 / -15 %	
Consumption	3.7 VA	
Input circuit test voltage	2.5 kV	
Reset hysteresis (% of tripping value)	10 %	
Switch ON response time	100 ms	
Weight	0.240, .52 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508 ⁽²⁾
EN 50005	IEC 947.5.1	

(1) Use only in applications with galvanic insulation between terminals B1-B2 and A1-A2 (i.e.: current transformers)

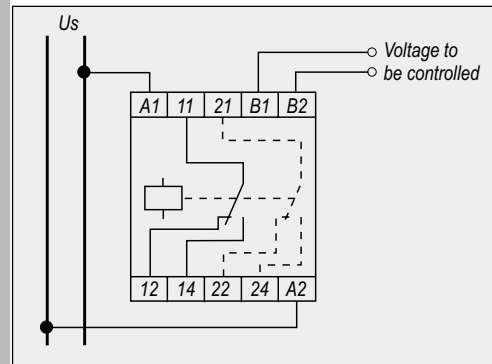
(2) For supply voltage less than 300V.

RDTA - Voltage detector relay

Function

The RDTA relay is similar to the RDT relay, however, it incorporates internal isolation between terminals B1-B2 and A1-A2. This relay is for direct current applications when the control voltage and the voltage to be measured are from the same supply.

Diagram



Technical characteristics

Type	RDTA1-...	RDTA2-...
Number of selectable NO-NC contacts	1	2
Output contacts		
Rated insulation voltage (Ui)	AC	400V
	DC	250V
Thermal current Ith	6 A	
Utilization category AC-15		
Rated voltage Ue	120/240V	
Rated current Ie	2.5/1.3 A	
Utilization category DC-13		
Rated voltage Ue	110/220V	
Rated current Ie	0.2/0.1 A	
Supply voltages Un (direct) DC	24V	
Permissible supply voltage variation	+10 / -15 %	
Consumption	3.7 VA	
Input circuit test voltage	2,5 kV	
Reset hysteresis (% of tripping value)	10 %	
Switch ON response time	100 ms	
Weight	0.240, .52 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508
EN 50005	IEC 947.5.1	

For ambient conditions data, see p.36, Table 2.

Note: The relay has a **green** LED which lights when the supply is between A1 and A2, and a **red** LED when the contact is made (11-14).

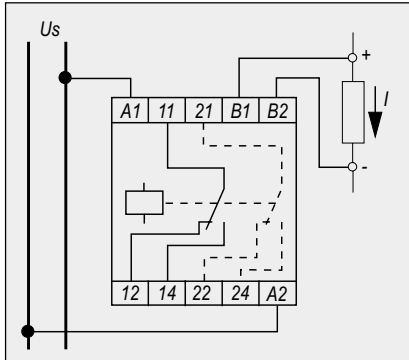


RDI - Current detector relay

Function

The output contact in this relay connects when current passing through terminals B1 and B2 exceeds a certain adjustable threshold, and disconnects with a current 10 % below the setting value. It can detect either alternating or direct current. The relay requires rated supply voltage between A1 and A2. The RDT... 0.2V relay uses a customer supplied shunt resistor to provide a maximum 200 mV drop for the current to be measured.

Diagram



Technical characteristics

Type	RDI1-...	RDI2-...
Number of selectable NO-NC contacts	1	2
Output contacts		
Rated insulation voltage (Ui)	AC 400V	DC 250V
Thermal current Ith	6 A	
Utilization category AC-15		
Rated voltage Ue	120/240V	
Rated current Ie	2.5/1.3 A	
Utilization category DC-13		
Rated voltage Ue	110/220V	
Rated current Ie	0.2/0.1 A	
Supply voltages Un (w/transf.) AC	380-400V, 240V, 220-230V, 125V, 110V, 48V	
(direct) AC/DC ⁽¹⁾	24V	
Frequency	50/60 Hz	
Permissible supply voltage variation	+10 / -15 %	
Repeat accuracy with 0.85 - 1.1 Un	2 %	
Consumption	3 VA	
Input circuit test voltage	4 kV	
Switch ON response time	100 ms	
Switch OFF response time	100 ms	
Reset time between 2 cycles	100 ms	
Weight	0.240, .52 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508 ⁽²⁾
EN 50005	IEC 947.5.1	

(1) Use only in applications with galvanic insulation between terminals B1-B2 and A1-A2 (i.e. current transformers)

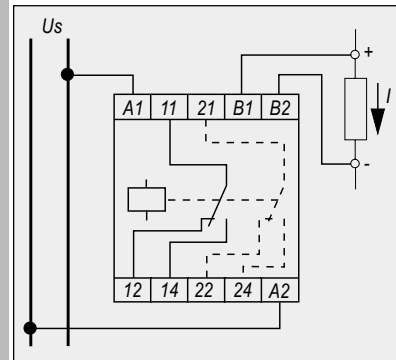
(2) For supply voltage less than 300V.

RDIA - Current detector relay

Function

The RDIA relay is similar to the RDI relay, however, it incorporates internal isolation between terminals B1-B2 and A1-A2. This relay is for direct current applications when the control voltage and the current to be measured are from the same supply.

Diagram



Technical characteristics

Type	RDIA1-...	RDIA2-...
Number of selectable NO-NC contacts	1	2
Output contacts		
Rated insulation voltage (Ui)	AC 400V	DC 250V
Thermal current Ith	6 A	
Utilization category AC-15		
Rated voltage Ue	120/240V	
Rated current Ie	2.5/1.3 A	
Utilization category DC-13		
Rated voltage Ue	110/220V	
Rated current Ie	0.2/0.1 A	
Supply voltages (direct) DC	24V	
Permissible supply voltage variation	+10 / -15 %	
Repeat accuracy with 0.85 - 1.1 Un	2 %	
Consumption	3 VA	
Input circuit test voltage	4 kV	
Switch ON response time	100 ms	
Switch OFF response time	100 ms	
Reset time between 2 cycles	100 ms	
Weight	0.240, .52 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508
EN 50005	IEC 947.5.1	

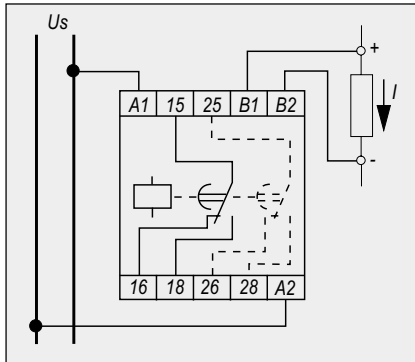


RDIT - Current detector relay with delay (0.5-15 seconds)

Function

This relay is similar to the RDI except that it incorporates an adjustable time delay from 0.5 to 15 secs. If the current falls below the threshold setting before the completion of the time delay sequence, the relay automatically resets. For higher currents, current transformers or shunts of suitable ratios can be used. The relay RDIT... 0.2V should be used with a shunt.

Diagram



Technical characteristics

Type	RDIT1-...	RDIT2-...
Number of selectable NO-NC contacts	1	2
Output contacts		
Rated insulation voltage (Ui)	AC	400V
	DC	250V
Thermal current Ith		6 A
Utilization category AC-15		
Rated voltage Ue		120/240V
Rated current Ie		2.5/1.3 A
Utilization category DC-13		
Rated voltage Ue		110/220V
Rated current Ie		0.2/0.1 A
Supply voltages Un (w/transf.) AC	380-400V, 240V, 220-230V, 125V, 110V, 48V	
	(direct) AC/DC	
	24V	
Frequency	50/60 Hz	
Permissible supply voltage variation	+10 / -15 %	
Repeat accuracy with 0.85 - 1.1 Un	2 %	
Consumption	3 VA	
Input circuit test voltage	4 kV	
Switch OFF response time	0.5 to 15 s	
Reset time between 2 cycles	100 ms	
Weight	0.260, .57 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508 ⁽²⁾
EN 50005	IEC 947.5.1	

(1) Use only in applications with galvanic insulation between terminals B1-B2 and A1-A2 (i.e. current transformers)

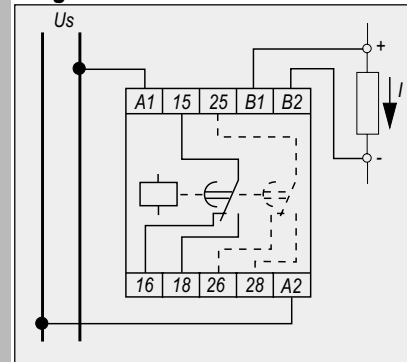
(2) For supply voltage less than 300V.

RDITA - Current detector relay with delay

Function

This RDITA relay is similar to the RDIT relay, however, it incorporates internal isolation between terminals B1-B2 and A1-A2. This relay is for direct current applications when the control voltage and the current to be measured are from the same supply.

Diagram



Technical characteristics

Type	RDITA1-...	RDITA2-...
Number of selectable NO-NC contacts	1	2
Output contacts		
Rated insulation voltage (Ue)	AC	400V
	DC	250V
Thermal current Ith		6 A
Utilization category AC-15		
Rated voltage Ue		120/240V
Rated current Ie		2.5/1.3 A
Utilization category DC-13		
Rated voltage Ue		110/220V
Rated current Ie		0.2/0.1 A
Supply voltages Un (direct) DC		24V
Permissible supply voltage variation		-10 / -15%
Repeat accuracy with 0.85 - 1.1 Un		2 %
Consumption		3 VA
Input circuit test voltage		4 kV
Switch-OFF response time		0.5 to 15 s
Reset time between 2 cycles		100 ms
Weight		0.260, .57 lbs.

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508
EN 50005	IEC 947.5.1	



RS01N - Thermistor relay

Function

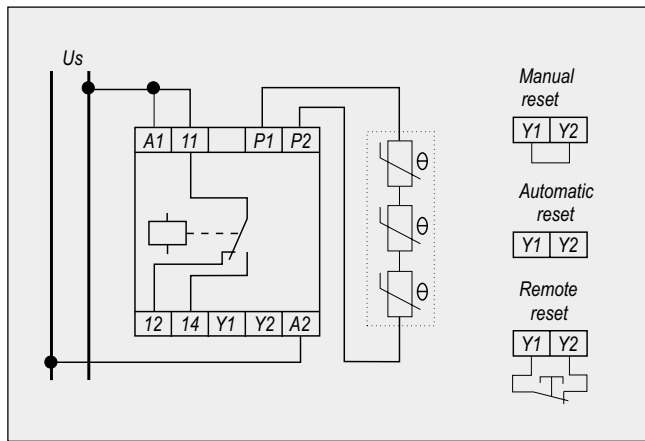
This thermal probe relay is sensitive to the resistance of several thermal probes (thermistors, RTD) connected to P1 and P2 and detects overheating in motor windings, transformers, etc.

The relay disconnects when probe resistance exceeds 2500 ohms and cannot reset until resistance is lower than 1500 ohms.

The absence of control voltage to the A1 and A2 terminals causes the relay to trip. When the relay trips due to motor overheating, it can be reset either manually, automatically or remotely.

The RS01N detects those cases of shortcircuited probe cables (resistance lower than 20 ohms) or cut probe cables (resistance higher than 2.5 Kohms). The resistance at 77°C of the probe circuit must be within a range of 40 to 600 ohms.

Diagram



Technical characteristics

Type	RS01N	
Number of selectable NO-NC contacts	1	
Output contacts		
Rated insulation voltage (Ue)	AC	400V
	DC	250V
Thermal current Ith	6 A	
Utilization category AC-15		
Rated voltage Ue	120/240V	
Rated current Ie	2.5/1.3 A	
Utilization category DC-13		
Rated voltage Ue	110/220V	
Rated current Ie	0.2/0.1 A	
Supply voltages Un (w/transf.) AC	380-400V, 240V, 220-230V, 125V, 110V, 48V	
	(direct) AC/DC	24V
Frequency	50/60 Hz	
Permissible supply voltage variation	+10 / -15 %	
Repeat accuracy with 0.85 - 1.1 Un	2 %	
Consumption	3 VA	
Input circuit test voltage	4 kV	
Switch OFF response time	100 ms	
Hysteresis	1 K ohms	
Probe resistance min. (at 25°C)	40 Ohms	
Probe resistance max. (at 25°C)	600 Ohms	
Max. voltage in terminals P1-P2 for R=2.5kV	< 1.6 V	
Weight	0.250, .55 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	IEC 947.5.1
EN 50005	DIN VDE 0660-303	IEC 34-11-2
UL508		

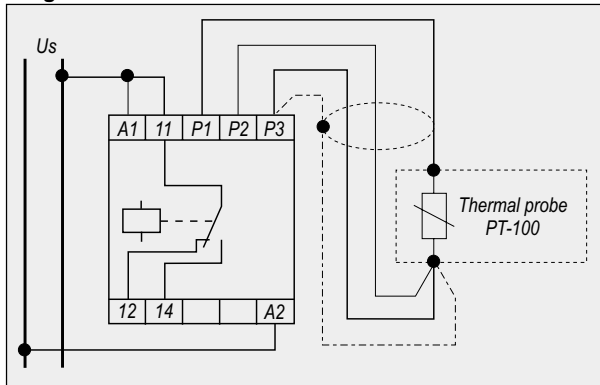


RSR1 - Adjustable thermistor relay

Function

This relay has been designed for temperature control by type PT100 temperature probes. The relay is normally ON (contacts 11-14 closed). The relay turns OFF (1) when the detected temperature exceeds the threshold value, (2) if the probe wires are cut or (3) if the control voltage is interrupted.

Diagram



Technical characteristics

Type	RSR1-...	
Number of selectable NO-NC contacts	1	
Output contacts		
Rated insulation voltage (Ui)	AC	400V
	DC	250V
Thermal current Ith	6 A	
Utilization category AC-15		
Rated voltage Ue	120/240V	
Rated current Ie	2.5/1.3 A	
Utilization category DC-13		
Rated voltage Ue	110/220V	
Rated current Ie	0.2/0.1 A	
Supply voltages Un (w/transf.) AC	380-400V, 240V, 220-230V, 125V, 110V, 48V	
	(direct) AC/DC	24V
Frequency	Hz	50/60 Hz
Permissible supply voltage variation	+10 / -15 %	
Repeat accuracy with 0.85 - 1.1 Un	2 %	
Consumption	3 VA	
Input circuit test voltage	4 kV	
Switch OFF response time	100 ms	
Hysteresis	10 %	
Weight	0.260, .57 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508 ⁽¹⁾
EN 50005	IEC 947.5.1	

For ambient conditions data, see p.36, Table 2.

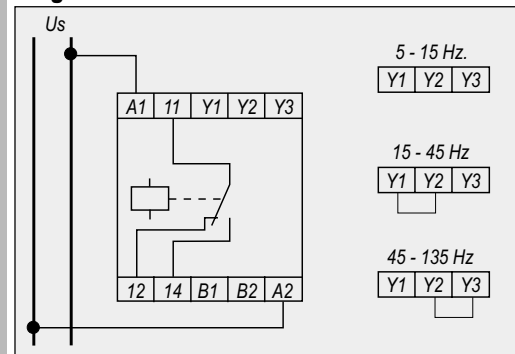
Note: The relay has one LED that lights when the output contact is made.

RCF-1 - Frequency control relay

Function

The frequency control relay is sensitive to the frequency of the signal applied to terminals B1 and B2. The output contacts close when the frequency falls below the selected threshold (adjustable by potentiometer). There are three frequency setting ranges: 5-15 Hz, 15-45 Hz, 45-135 Hz. Switching is independent of the input signal's amplitude being monitored at B1-B2. The signal's wave form can be sinusoidal, square, triangular, etc. This relay is suitable for suppression of rotor resistance in slip-ring asynchronous motor starters, speed reversal detector in wound rotor motors and frequency control in generating sets.

Diagram



Technical characteristics

Type	RCF-1	
Number of selectable NO-NC contacts	1	
Output contacts		
Rated insulation voltage (Ui)	AC	400V
	DC	250V
Thermal current Ith	6 A	
Utilization category AC-15		
Rated voltage Ue	120/240V	
Rated current Ie	2.5/1.3 A	
Utilization category DC-13		
Rated voltage Ue	110/220V	
Rated current Ie	0.2/0.1 A	
Supply voltages Un (w/transf.) AC	380-400V, 240V, 220-230V, 125V, 110V, 48V, 24V	
Frequency	50/60 Hz	
Permissible supply voltage variation	+10 / -15 %	
Voltage between B1-B2 terminals	15V to 500V	
Repeat accuracy with 0.85 - 1.1 Un	2 %	
Consumption	3 VA	
Input circuit test voltage	4 kV	
Switch ON response time	100 ms	
Switch OFF response time	800 ms	
Hysteresis	1,5 Hz approx.	
Weight	0.280, .61 lbs.	

Conformity to standards

VDE 0106	EN 50011	UNE 20119
EN 50001	DIN 46199	UL508 ⁽¹⁾
EN 50005	IEC 947.5.1	

(1) For supply voltage less than 300V.

Note: The relay has one LED that lights when the output contact is closed.



Ambient conditions Table 1

Storage Temperature	-10°C to +85°C, 14°F to 185°F
Operating Temperature	0°C to +50°C, 32°F to 122°F
Relative Humidity	95% (without condensation)
Maximum operating altitude	2,000 m, 6,652 ft.
Degree of protection	IP40 (terminals IP20)
Operating positions	Any position

Ambient conditions Table 2

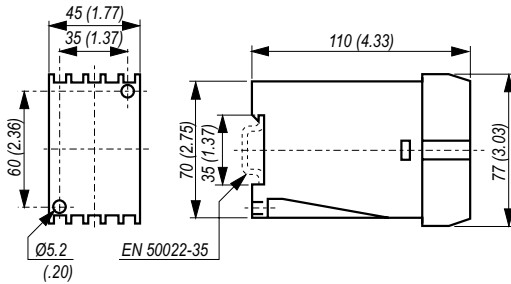
Storage Temperature	-10°C to +85°C, 14°F to 185°F
Operating Temperature	-5°C to +50°C, 23°F to 122°F
Relative Humidity	95% (without condensation)
Maximum operating altitude	2,000 m, 6,652 ft.
Degree of protection	IP40 (terminals IP20)
Operating positions	Any position



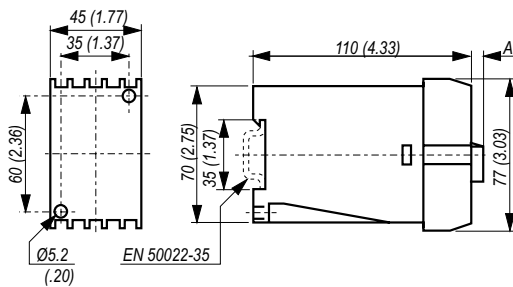
Protective relays

RSFF, RSF

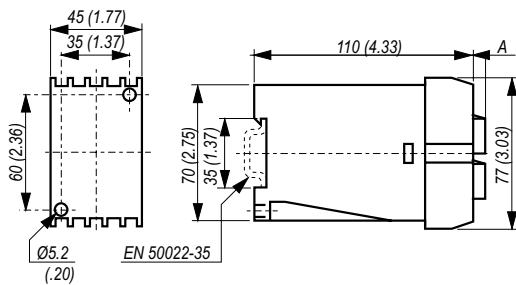
mm (in)



Types	A
RET, RTC, RTCI, RRD, RTD, RIC, RCR, DINIL-02, DINIL-03, RTMM, RDI, RDIA RSR, RCF	4 (.15)
RS01N	8 (.31)

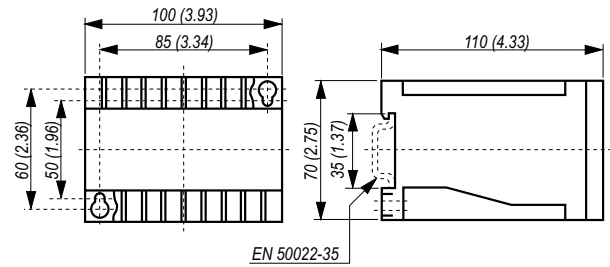


Types	A
RDMT, RPDF, RMM, RDT, RDTA, RDIT, RDITA	4 (.15)
RDH, RDHT, RDHA	12 (.47)

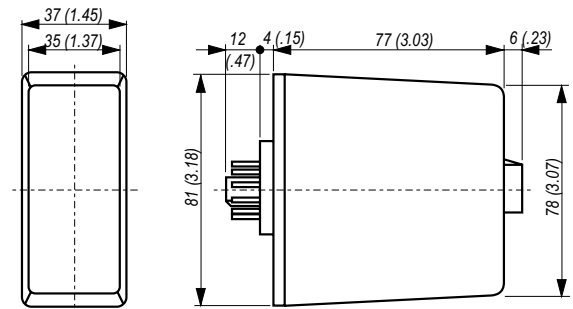


RDFE

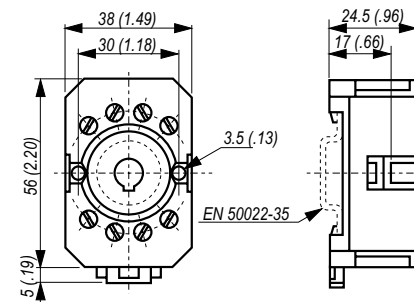
mm (in)



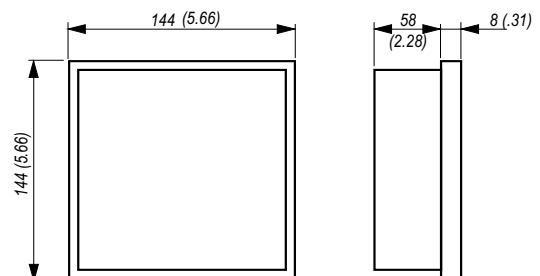
DINIL-02E, DINIL-03E



H6SZ13EFT

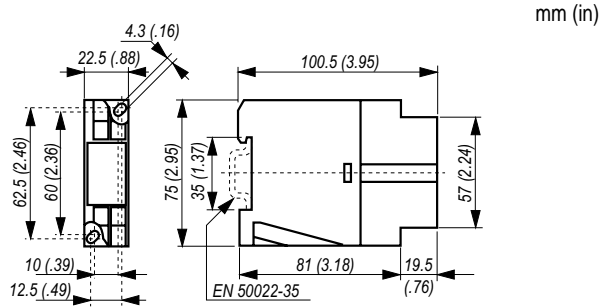


RPRB-6V



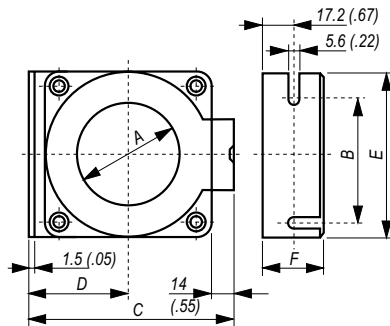


Multivoltage electronic timers



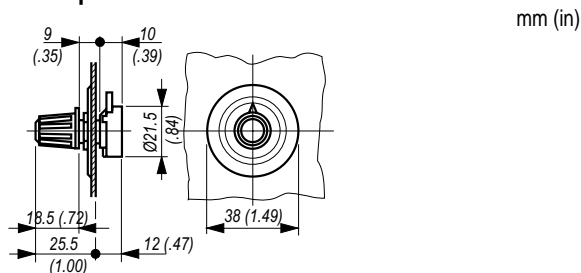
Differential transformers

Note: For use with RDH, RDHT and RDHA ground fault relays. mm (in)



Type	A	B	C	D	E	F
WKA-35	35 (1.37)	75 (2.95)	99 (3.89)	42 (1.65)	92 (3.62)	33.5 (1.31)
WKA-70	70 (2.75)	98 (3.85)	132 (5.19)	60.5 (2.38)	115 (4.52)	33.5 (1.31)
WKA-105	105 (4.13)	141 (5.55)	175 (6.88)	82 (3.22)	158 (6.22)	33.5 (1.31)
WKA-140	140 (5.51)	183 (7.20)	218 (8.58)	103.5 (4.07)	200 (7.87)	33.5 (1.31)
WKA-210	210 (8.26)	270 (10.62)	309 (12.16)	150 (5.90)	290 (11.41)	43 (1.69)
WKAT-35	35 (13.7)	75 (2.95)	99 (3.89)	42 (1.65)	92 (3.62)	33.5 (1.31)
WKAT-70	70 (2.75)	98 (3.85)	132 (5.19)	60.5 (2.38)	115 (4.52)	33.5 (1.31)
WKAT-105	105 (4.13)	141 (5.55)	175 (6.88)	82 (3.22)	158 (6.22)	33.5 (1.31)
WKAT-140	140 (5.51)	183 (7.20)	218 (8.58)	103.5 (4.07)	200 (7.87)	33.5 (1.31)
WKAT-210	210 (8.26)	270 (10.62)	309 (12.16)	150 (5.90)	290 (11.41)	43 (1.69)

Remote potentiometer





Notes



Notes



GE Industrial Systems