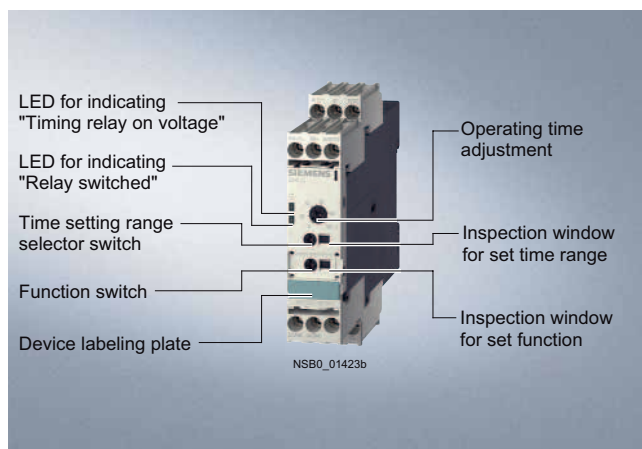


3RP, 3RT19 Timing Relays

**3RP15 timing relays
in industrial enclosure, 22.5 mm**

Overview



Standards

The timing relays comply with:

- EN 60721-3-3 "Environmental conditions"
- EN 61812-1/DIN VDE 0435 Part 2021 "Electrical relays, timing relays"
- EN 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- EN 60947-5-1; (VDE 0660 Part 200)
"Low-voltage controlgear"

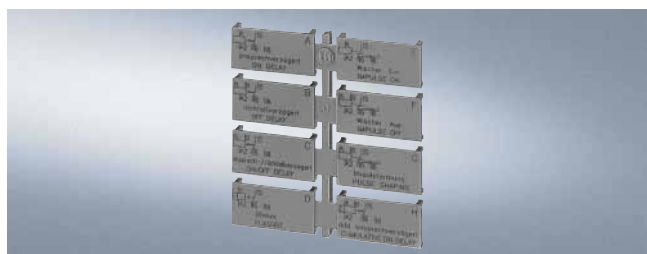
Accessories



Push-in lugs for screw mounting



Sealable cover



Label set for marking the multifunction relay

Application

Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

Enclosure version

All timing relays are suitable for snap-on mounting onto TH 35 standard mounting rails according to EN 60715 or for screw mounting.

3RP, 3RT19 Timing Relays

3RP15 timing relays in industrial enclosure, 22.5 mm

Selection and ordering data

Solid-state timing relays for general use in control systems and mechanical engineering with:

- 1 changeover contact or 2 changeover contacts

- Single or selectable time setting ranges
- Switch position indication by LED
- Voltage indication by LED

Version	Time setting range t adjustable by rotary switch to	Rated control supply voltage U_s		DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		AC 50/60 Hz	DC		Order No.	Price per PU			kg
		V	V						

3RP15 05 timing relays, multifunction, 15 time setting ranges

The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP15 05 timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.¹⁾



3RP15 05-1BP30

With LED and										
1 CO contact, 8 functions	0.05 ... 1 s	--	12	A	▶	3RP15 05-1AA40	1	1 unit	101	0.125
	0.15 ... 3 s	24/100 ... 127	24		▶	3RP15 05-1AQ30	1	1 unit	101	0.140
	0.5 ... 10 s	24/200 ... 240	24		▶	3RP15 05-1AP30	1	1 unit	101	0.141
	1.5 ... 30 s	24 ... 240 ⁶⁾	24 ... 240 ³⁾		▶	3RP15 05-1AW30	1	1 unit	101	0.136
2 CO contacts, 16 functions	0.05 ... 1 min	24/100 ... 127	24		▶	3RP15 05-1BQ30	1	1 unit	101	0.162
	5 ... 100 s	24/200 ... 240	24		▶	3RP15 05-1BP30	1	1 unit	101	0.161
	0.15 ... 3 min	24 ... 240 ⁶⁾	24 ... 240 ³⁾		▶	3RP15 05-1BW30	1	1 unit	101	0.168
	0.5 ... 10 min	400 ... 440	-	A	▶	3RP15 05-1BT20	1	1 unit	101	0.169
	1.5 ... 30 min	24 ... 240	24 ... 240		▶	3RP15 05-1RW30	1	1 unit	101	0.169
2 CO contacts, positively driven and hard gold-plated, 8 functions ⁴⁾⁵⁾	0.05 ... 1 h									
	5 ... 100 min									
	0.15 ... 3 h									
	0.5 ... 10 h									
	1.5 ... 30 h									
5 ... 100 h	∞ ²⁾									

3RP15 1. timing relays, ON-delay, 1 time setting range



3RP15 11-1AP30

With LED and 1 CO contact									
0.5 ... 10 s	24/100 ... 127	24		▶	3RP15 11-1AQ30	1	1 unit	101	0.108
	24/200 ... 240	24		▶	3RP15 11-1AP30	1	1 unit	101	0.108
1.5 ... 30 s	24/100 ... 127	24		▶	3RP15 12-1AQ30	1	1 unit	101	0.107
	24/200 ... 240	24		▶	3RP15 12-1AP30	1	1 unit	101	0.104
5 ... 100 s	24/100 ... 127	24		▶	3RP15 13-1AQ30	1	1 unit	101	0.107
	24/200 ... 240	24		▶	3RP15 13-1AP30	1	1 unit	101	0.108

3RP15 25 timing relays, ON-delay, 15 time setting ranges



3RP15 25-1BW30

With LED and										
1 CO contact	0.05 ... 1 s	24/100 ... 127	24		▶	3RP15 25-1AQ30	1	1 unit	101	0.109
	0.15 ... 3 s	24/200 ... 240	24		▶	3RP15 25-1AP30	1	1 unit	101	0.104
2 CO contacts	0.5 ... 10 s	42 ... 48/60	42 ... 48/60 ⁶⁾	A	▶	3RP15 25-1BR30	1	1 unit	101	0.152
	1.5 ... 30 s									
	0.05 ... 1 min	24/100 ... 127	24		▶	3RP15 25-1BQ30	1	1 unit	101	0.152
	5 ... 100 s	24/200 ... 240	24		▶	3RP15 25-1BP30	1	1 unit	101	0.155
	0.15 ... 3 min	24 ... 240 ⁶⁾	24 ... 240 ³⁾		▶	3RP15 25-1BW30	1	1 unit	101	0.159
	0.5 ... 10 min									
	1.5 ... 30 min									
	0.05 ... 1 h									
	5 ... 100 min									
	0.15 ... 3 h									
	0.5 ... 10 h									
	1.5 ... 30 h									
	5 ... 100 h	∞ ²⁾								

3RP15 27 timing relays, ON-delay, two-wire design, 4 time setting ranges



3RP15 27-1EM30

1 NO contact (semiconductor)	0.05 ... 1 s	24 ... 66	24...66 ⁶⁾	A	▶	3RP15 27-1EC30	1	1 unit	101	0.099
	0.2 ... 4 s	90 ... 240	90...240 ⁶⁾		▶	3RP15 27-1EM30	1	1 unit	101	0.100
	1.5 ... 30 s									
	12 ... 240 s									

¹⁾ For functions, see 3RP19 01-0. label set.

²⁾ With switch position ∞ , no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

³⁾ Operating range 0.7 ... 1.1 x U_s .

⁴⁾ Positively driven: NO and NC are never closed simultaneously; contact gap ≥ 0.5 mm is ensured, minimum make-break capacity 12 V, 3 mA.

⁵⁾ The changeover contacts are actuated simultaneously, as a result of which only 8 functions are selectable (no wye-delta, no instantaneous contact).

⁶⁾ Operating range 0.8 ... 1.1 x U_s .

3RP, 3RT19 Timing Relays

3RP15 timing relays in industrial enclosure, 22.5 mm

Solid-state timing relays for general use in control systems and mechanical engineering with

- 1 changeover contact or 2 changeover contacts

- Single or selectable time setting ranges
- Switch position indication by LED
- Voltage indication by LED

Version	Time setting range t adjustable by rotary switch to	Rated control supply voltage U_s		DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		AC 50/60 Hz	DC		Order No.	Price per PU			kg
		V	V						

3RP15 05 timing relays, multifunction, 15 time setting ranges

The functions can be adjusted by means of rotary switches. Insert labels can be used to adjust different functions of the 3RP15 05 timing relay clearly and unmistakably. The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.¹⁾



3RP15 05-2BP30

With LED and									
1 CO contact, 8 functions	0.05 ... 1 s	24/100 ... 127	24	C	3RP15 05-2AQ30	1	1 unit	101	0.125
	0.15 ... 3 s	24/200 ... 240	24	A	3RP15 05-2AP30	1	1 unit	101	0.126
	0.5 ... 10 s	24 ... 240 ⁶⁾	24 ... 240 ³⁾	A	3RP15 05-2AW30	1	1 unit	101	0.132
2 CO contacts, 16 functions	1.5 ... 30 s	24/100 ... 127	24	A	3RP15 05-2BQ30	1	1 unit	101	0.142
	0.05 ... 1 min	24/200 ... 240	24	A	3RP15 05-2BP30	1	1 unit	101	0.137
	5 ... 100 s	24 ... 240 ⁶⁾	24 ... 240 ³⁾	A	3RP15 05-2BW30	1	1 unit	101	0.143
2 CO contacts, positively driven and hard gold-plated, 8 functions ⁴⁾⁵⁾	0.15 ... 3 min	24 ... 240	24 ... 240	A	3RP15 05-2RW30	1	1 unit	101	0.143
	0.5 ... 10 min								
	1.5 ... 30 min								
	0.05 ... 1 h								
	5 ... 100 min								
	0.15 ... 3 h								
	0.5 ... 10 h								
1.5 ... 30 h									
5 ... 100 h									
∞ ²⁾									

3RP15 1. timing relays, ON-delay, 1 time setting range



3RP15 11-2AP30

With LED and 1 CO contact									
0.5 ... 10 s	24/100 ... 127	24	C	3RP15 11-2AQ30	1	1 unit	101	0.092	
	24/200 ... 240	24	A	3RP15 11-2AP30	1	1 unit	101	0.092	
1.5 ... 30 s	24/100 ... 127	24	C	3RP15 12-2AQ30	1	1 unit	101	0.092	
	24/200 ... 240	24	A	3RP15 12-2AP30	1	1 unit	101	0.097	
5 ... 100 s	24/100 ... 127	24	C	3RP15 13-2AQ30	1	1 unit	101	0.094	
	24/200 ... 240	24	C	3RP15 13-2AP30	1	1 unit	101	0.094	

3RP15 25 timing relays, ON-delay, 15 time setting ranges



3RP15 25-2BW30

With LED and									
1 CO contact	0.05 ... 1 s	24/100 ... 127	24	C	3RP15 25-2AQ30	1	1 unit	101	0.095
	0.15 ... 3 s	24/200 ... 240	24	A	3RP15 25-2AP30	1	1 unit	101	0.093
2 CO contacts	0.5 ... 10 s	24/100 ... 127	24	C	3RP15 25-2BQ30	1	1 unit	101	0.128
	1.5 ... 30 s	24/200 ... 240	24	A	3RP15 25-2BP30	1	1 unit	101	0.127
	0.05 ... 1 min	24 ... 240 ⁶⁾	24 ... 240 ³⁾	A	3RP15 25-2BW30	1	1 unit	101	0.134
	5 ... 100 s								
	0.15 ... 3 min								
	0.5 ... 10 min								
	1.5 ... 30 min								
	0.05 ... 1 h								
	5 ... 100 min								
	0.15 ... 3 h								
	0.5 ... 10 h								
	1.5 ... 30 h								
	5 ... 100 h								
	∞ ²⁾								

3RP15 27 timing relays, ON-delay, two-wire design, 4 time setting ranges



3RP15 27-2EM30

1 NO contact (semiconductor)	0.05 ... 1 s	24 ... 66	24...66 ⁶⁾	C	3RP15 27-2EC30	1	1 unit	101	0.090
	0.2 ... 4 s	90 ... 240	90...240 ⁶⁾	C	3RP15 27-2EM30	1	1 unit	101	0.090
	1.5 ... 30 s								
	12 ... 240 s								

1) For functions, see 3RP19 01-0. label set.

2) With switch position ∞ , no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

3) Operating range 0.7 ... 1.1 x U_s .

4) Positively driven: NO and NC are never closed simultaneously; contact gap ≥ 0.5 mm is ensured, minimum make-break capacity 12 V, 3 mA.

5) The changeover contacts are actuated simultaneously, as a result of which only 8 functions are selectable (no wye-delta, no instantaneous contact).

6) Operating range 0.8 ... 1.1 x U_s .






3RP, 3RT19 Timing Relays

3RP15 timing relays in industrial enclosure, 22.5 mm

Solid-state timing relays for general use in control systems and mechanical engineering with

- 1 changeover contact or 2 changeover contacts

- Single or selectable time setting ranges
- Switch position indication by LED
- Voltage indication by LED

Version	Time setting range t adjustable by rotary switch to	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.		
		AC 50/60 Hz	DC	Order No.	Price per PU			kg		
		V	V							
3RP15 3. timing relays, OFF-delay, with auxiliary voltage, 1 time setting range										
	With LED and 1 CO contact	0.5 ... 10 s	24/100 ... 127 24/200 ... 240	24 24	A	▶	3RP15 31-1AQ30 3RP15 31-1AP30	1 1 unit 1 1 unit	101 101	0.140 0.140
	The same potential must be applied to terminals A and B	1.5 ... 30 s	24/100 ... 127 24/200 ... 240	24 24	A	▶	3RP15 32-1AQ30 3RP15 32-1AP30	1 1 unit 1 1 unit	101 101	0.138 0.139
		5 ... 100 s	24/100 ... 127 24/200 ... 240	24 24	A	▶	3RP15 33-1AQ30 3RP15 33-1AP30	1 1 unit 1 1 unit	101 101	0.139 0.140
3RP15 33-1AP30										
3RP15 40 timing relays, OFF-delay, without auxiliary voltage, 7 time setting ranges¹⁾										
	With LED and 1 CO contact	0.05 ... 1 s	24	24 ²⁾	▶	3RP15 40-1AB30	1 1 unit	101	0.116	
		0.15 ... 3 s	100 ... 127	100...127 ³⁾	▶	3RP15 40-1AJ30	1 1 unit	101	0.119	
		0.3 ... 6 s	200 ... 240	200...240 ³⁾	▶	3RP15 40-1AN30	1 1 unit	101	0.120	
		0.5 ... 10 s	24	24 ²⁾	▶	3RP15 40-1BB30	1 1 unit	101	0.159	
	2 CO contacts	1.5 ... 30 s	100 ... 127	100...127 ³⁾	A	3RP15 40-1BJ30	1 1 unit	101	0.161	
		3 ... 60 s	200 ... 240	200...240 ³⁾	▶	3RP15 40-1BN30	1 1 unit	101	0.161	
		5 ... 100 s								
3RP15 40-1BB30										
3RP15 55 timing relays, clock-pulse relays, 15 time setting ranges										
	With LED and 1 CO contact	0.05 ... 1 s	42 ... 48/60	42...48/ 60 ⁵⁾	A	▶	3RP15 55-1AR30	1 1 unit	101	0.111
		0.15 ... 3 s								
		0.5 ... 10 s	24/100 ... 127	24	▶	3RP15 55-1AQ30	1 1 unit	101	0.111	
		1.5 ... 30 s	24/200 ... 240	24	▶	3RP15 55-1AP30	1 1 unit	101	0.111	
		0.05 ... 1 min								
		5 ... 100 s								
		0.15 ... 3 min								
		0.5 ... 10 min								
		1.5 ... 30 min								
		0.05 ... 1 h								
		5 ... 100 min								
		0.15 ... 3 h								
		0.5 ... 10 h								
		1.5 ... 30 h								
		5 ... 100 h								
∞ ⁴⁾										
3RP15 55-1AP30										
3RP15 60 timing relays, wye-delta function, dead interval 50 ms and overtravel time, 1 time setting range										
	3 NO contacts ³⁾ (common contact root terminal 17)	wye-delta	24/100 ... 127 24/200 ... 240	24 24	A	▶	3RP15 60-1SQ30 3RP15 60-1SP30	1 1 unit 1 1 unit	101 101	0.172 0.175
		1 ... 20 s, overtravel time (idling) 30 ... 600 s								
3RP15 60-1SP30										
3RP15 7. timing relays, wye-delta function⁶⁾, dead interval 50 ms, 1 time setting range										
	1 NO contact instantaneous and 1 NO contact delayed (common contact root terminal 17)	1 ... 20 s	24/100 ... 127 24/200 ... 240	24 24	▶	3RP15 74-1NQ30 3RP15 74-1NP30	1 1 unit 1 1 unit	101 101	0.113 0.113	
		200 ... 240/ 380 ... 440	--	B	▶	3RP15 74-1NM20	1 1 unit	101	0.113	
		3 ... 60 s	24/100 ... 127 24/200 ... 240	24 24	▶	3RP15 76-1NQ30 3RP15 76-1NP30	1 1 unit 1 1 unit	101 101	0.112 0.113	
	200 ... 240/ 380 ... 440	--	B	▶	3RP15 76-1NM20	1 1 unit	101	0.113		
	3RP15 76-1NP30									

1) Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control voltage once results in contact changeover to the correct setting.

2) Operating range $0.7 \dots 1.25 \times U_s$.

3) Operating range $0.85 \dots 1.1 \times U_s$.

4) With switch position ∞ , no timing. For test purposes (ON/OFF function) on site. For dead time "infinite", the relay is always off. For pulse time "infinite", the relay is always on.

5) Operating range $0.8 \dots 1.1 \times U_s$.

6) For example circuit see Technical Information LV 1 T, "Schematics".






3RP, 3RT19 Timing Relays

3RP15 timing relays in industrial enclosure, 22.5 mm

Solid-state timing relays for general use in control systems and mechanical engineering with

- 1 changeover contact or 2 changeover contacts

- Single or selectable time setting ranges
- Switch position indication by LED
- Voltage indication by LED

Version	Time setting range t adjustable by rotary switch to	Rated control supply voltage U_s		DT	Spring-loaded terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.		
		AC 50/60 Hz	DC		Order No.	Price per PU						
3RP15 3. timing relays, OFF-delay, with auxiliary voltage, 1 time setting range												
	With LED and 1 CO contact	0.5 ... 10 s	24/100 ... 127	24	C	3RP15 31-2AQ30	1	1 unit	101	0.124		
			24/200 ... 240	24	A	3RP15 31-2AP30	1	1 unit	101	0.122		
	The same potential must be applied to terminals A and B	1.5 ... 30 s	24/100 ... 127	24	C	3RP15 32-2AQ30	1	1 unit	101	0.125		
			24/200 ... 240	24	C	3RP15 32-2AP30	1	1 unit	101	0.121		
	5 ... 100 s	24/100 ... 127	24	C	3RP15 33-2AQ30	1	1 unit	101	0.123			
		24/200 ... 240	24	C	3RP15 33-2AP30	1	1 unit	101	0.125			
3RP15 33-2AP30												
3RP15 40 timing relays, OFF-delay, without auxiliary voltage, 7 time setting ranges ¹⁾												
	With LED and 1 CO contact	0.05 ... 1 s	24	24 ²⁾	A	3RP15 40-2AB30	1	1 unit	101	0.105		
			0.15 ... 3 s	100 ... 127	100...127 ³⁾	A	3RP15 40-2AJ30	1	1 unit	101	0.108	
			0.3 ... 6 s	200 ... 240	200...240 ³⁾	A	3RP15 40-2AN30	1	1 unit	101	0.110	
	2 CO contacts	0.5 ... 10 s	24	24 ²⁾	A	3RP15 40-2BB30	1	1 unit	101	0.136		
			100 ... 127	100...127 ³⁾	C	3RP15 40-2BJ30	1	1 unit	101	0.136		
		3 ... 60 s	200 ... 240	200...240 ³⁾	C	3RP15 40-2BN30	1	1 unit	101	0.136		
			5 ... 100 s	200 ... 240	200...240 ³⁾	C	3RP15 40-2BN30	1	1 unit	101	0.136	
	3RP15 40-2BB30											
	3RP15 55 timing relays, clock-pulse relays, 15 time setting ranges											
		With LED and 1 CO contact	0.05 ... 1 s	42 ... 48/60	42...48/60 ⁵⁾	C	3RP15 55-2AR30	1	1 unit	101	0.102	
0.15 ... 3 s			24/100 ... 127	24	C	3RP15 55-2AQ30	1	1 unit	101	0.100		
0.5 ... 10 s			24/200 ... 240	24	A	3RP15 55-2AP30	1	1 unit	101	0.104		
1.5 ... 30 s												
0.05 ... 1 min												
5 ... 100 s												
0.15 ... 3 min												
0.5 ... 10 min												
1.5 ... 30 min												
0.05 ... 1 h												
5 ... 100 min												
0.15 ... 3 h												
0.5 ... 10 h												
1.5 ... 30 h												
5 ... 100 h												
∞ ⁴⁾												
3RP15 55-2AP30												
3RP15 60 timing relays, wye-delta function, dead interval 50 ms and overtravel time, 1 time setting range												
	3 NO contacts ³⁾ (common contact root terminal 17)	wye-delta 1 ... 20 s, overtravel time (idling) 30 ... 600 s	24/200 ... 240	24	C	3RP15 60-2SP30	1	1 unit	101	0.152		
3RP15 60-2SP30												
3RP15 7. timing relays, wye-delta function ⁶⁾ , dead interval 50 ms, 1 time setting range												
	1 NO contact instantaneous and 1 NO contact delayed (common contact root terminal 17)	1 ... 20 s	24/200 ... 240	24	A	3RP15 74-2NP30	1	1 unit	101	0.104		
			200 ... 240/ 380 ... 440		B	3RP15 74-2NM20	1	1 unit	101	0.100		
	3 ... 60 s	24/100 ... 127	24	24/200 ... 240	24	C	3RP15 76-2NQ30	1	1 unit	101	0.102	
				200 ... 240/ 380 ... 440	24	A	3RP15 76-2NP30	1	1 unit	101	0.104	
		200 ... 240/ 380 ... 440	24/200 ... 240	24	200 ... 240/ 380 ... 440	24	B	3RP15 76-2NM20	1	1 unit	101	0.100

¹⁾ Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control voltage once results in contact changeover to the correct setting.

²⁾ Operating range $0.7 \dots 1.25 \times U_s$.

³⁾ Operating range $0.85 \dots 1.1 \times U_s$.

⁴⁾ With switch position ∞ , no timing. For test purposes (ON/OFF function) on site. For dead time "infinite", the relay is always off. For pulse time "infinite", the relay is always on.

⁵⁾ Operating range $0.8 \dots 1.1 \times U_s$.

⁶⁾ For example circuit, see Technical Information LV 1 T, "Schematics".

3RP, 3RT19 Timing Relays

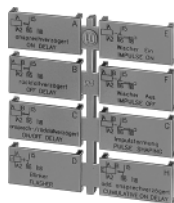
3RP15 timing relays in industrial enclosure, 22.5 mm

Accessories

Version	Function	Identification letter	Use	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
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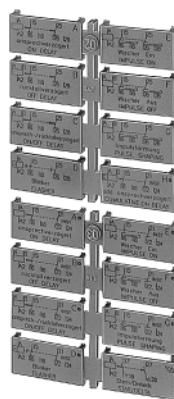
Label sets

Accessory for 3RP15 05 (not included in the scope of supply).
The label set offers the possibility of labeling timing relays with the set function in English and German.



3RP19 01-0A

1 label set (1 unit) with 8 functions	With ON-delay OFF-delay with auxiliary voltage ON-delay and OFF-delay with auxiliary voltage Flashing, starting with interval Passing make contact Passing break contact with auxiliary voltage Pulse-forming with auxiliary voltage Additive ON-delay with auxiliary voltage	A B C D E F G H	for devices with 1 CO contact and 3RP15 05-.. RW30	▶	3RP19 01-0A		1	5 units	101	0.003
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3RP19 01-0B

1 label set (1 unit) with 16 functions	With ON-delay OFF-delay with auxiliary voltage ON-delay and OFF-delay with auxiliary voltage Flashing, starting with interval Passing make contact Passing break contact with auxiliary voltage Pulse-forming with auxiliary voltage Additive ON-delay with auxiliary voltage and instantaneous contact ON-delay and instantaneous contact OFF-delay with auxiliary voltage and instantaneous contact ON-delay and OFF-delay with auxiliary voltage and instantaneous contact Flashing, starting with interval, and instantaneous contact Passing make contact and instantaneous contact Passing break contact with auxiliary voltage and instantaneous contact Pulse-forming with auxiliary voltage and instantaneous contact Wye-delta function	A B C D E F G H• A• B• C• D• E• F• G• YΔ	for devices with 2 CO contacts	▶	3RP19 01-0B		1	5 units	101	0.006
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Blank labels

Blank labels, 20 mm x 7 mm, pastel turquoise ¹⁾				C	3RT19 00-1SB20		100	340 units	101	22.000
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Covers and push-in lugs



3RP19 03

Push-in lugs
For screw mounting,
2 units are required for each device

for devices with 1 or 2 CO contacts

▶ **3RP19 03**

1 10 units 101 0.002



3RP19 02

Sealable covers
For securing against unauthorized adjustment of setting knobs

for devices with 1 or 2 CO contacts

▶ **3RP19 02**

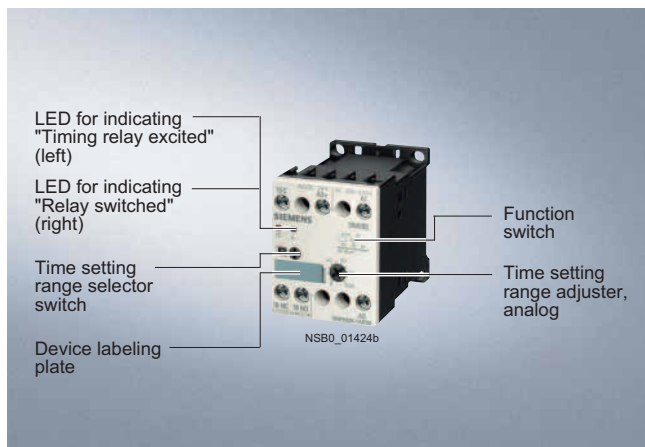
1 5 units 101 0.004

¹⁾ Computer labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH.

3RP, 3RT19 Timing Relays

3RP20 timing relays, 45 mm

Overview



Application

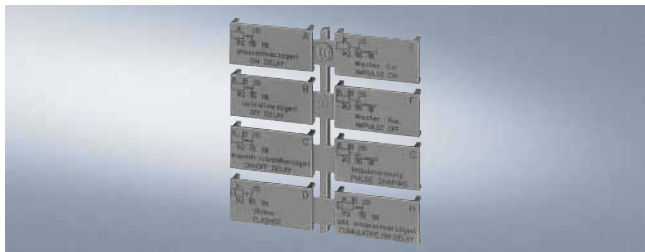
Timing relays are used in control, starting, and protective circuits for all switching operations involving time delays. They guarantee a high level of functionality and a high repeat accuracy of timer settings.

Standards

The timing relays comply with:

- EN 60721-3-3 "Environmental conditions"
- EN 61812-1/DIN VDE 0435 Part 2021 "Electrical relays, timing relays"
- EN 61000-6-2 and EN 61000-6-4 "Electromagnetic compatibility"
- EN 60947-5-1 (VDE 0660 Part 200) "Low-voltage controlgear"
- EN 61140 "Safe electrical isolation"

Accessories



Label set for marking the multifunction relay

3RP, 3RT19 Timing Relays


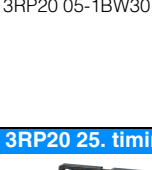

3RP20 timing relays, 45 mm

Selection and ordering data

Multifunction

The functions can be adjusted by means of rotary switches¹⁾. Insert labels can be used to adjust different functions of the 3RP20 05 timing relay clearly and unmistakably.

The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.

Version	Time setting range t	Rated control supply voltage U_s		DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
		AC 50/60 Hz	DC		Order No.	Price per PU			kg	
3RP20 05 timing relays, multifunction, 15 time setting ranges										
 3RP20 05-1BQ30	With LED and 1 CO contact, 8 functions ¹⁾²⁾	0.05 ... 1 s	24/100 ... 127	24	▶ 3RP20 05-1AQ30		1	1 unit	101	0.118
		0.15 ... 3 s	24/200 ... 240	24	▶ 3RP20 05-1AP30		1	1 unit	101	0.119
 3RP20 05-1BW30	With LED and 2 CO contacts, 16 functions ¹⁾	0.5 ... 10 s								
		1.5 ... 30 s	24 ... 240 ⁴⁾	24 ... 240 ⁵⁾	▶ 3RP20 05-1BW30		1	1 unit	101	0.128
		0.05 ... 1 min								
		5 ... 100 s								
		0.15 ... 3 min								
		0.5 ... 10 min								
		1.5 ... 30 min								
		0.05 ... 1 h								
		5 ... 100 min								
		0.15 ... 3 h								
		0.5 ... 10 h								
		1.5 ... 30 h								
		5 ... 100 h								
		∞ ³⁾								
	3RP20 25. timing relays, ON-delay, 15 time setting ranges									
 3RP20 25-1AP30	With LED and 1 CO contact ²⁾	0.05 ... 1 s	24/100 ... 127	24	▶ 3RP20 25-1AQ30		1	1 unit	101	0.106
		0.15 ... 3 s	24/200 ... 240	24	▶ 3RP20 25-1AP30		1	1 unit	101	0.106
		0.5 ... 10 s								
		1.5 ... 30 s								
		0.05 ... 1 min								
		5 ... 100 s								
		0.15 ... 3 min								
		0.5 ... 10 min								
		1.5 ... 30 min								
		0.05 ... 1 h								
		5 ... 100 min								
		0.15 ... 3 h								
		0.5 ... 10 h								
		1.5 ... 30 h								
		5 ... 100 h								
	∞ ³⁾									

¹⁾ For functions see 3RP19 01-0. label set.

²⁾ Units with safe electrical isolation.

³⁾ With switch position ∞ , no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

⁴⁾ Operating range $0.8 \dots 1.1 \times U_s$.

⁵⁾ Operating range $0.7 \dots 1.1 \times U_s$.



3RP, 3RT19 Timing Relays

3RP20 timing relays, 45 mm

Multifunction

The functions can be adjusted by means of rotary switches¹⁾. Insert labels can be used to adjust different functions of the 3RP20 05 timing relay clearly and unmistakably.

The corresponding labels can be ordered as an accessory. The same potential must be applied to terminals A. and B.

Version	Time setting range t	Rated control supply voltage U_s	DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
		AC 50/60 Hz DC		Order No.	Price per PU			kg	
		V V							
3RP20 05 timing relays, multifunction, 15 time setting ranges									
 3RP20 05-2BW30	With LED and 1 CO contact, 8 functions ¹⁾²⁾	0.05 ... 1 s	24/ 100 ... 127 24	D	3RP20 05-2AQ30	1	1 unit	101 0.120	
		0.15 ... 3 s	24/ 200 ... 240 24	▶	3RP20 05-2AP30	1	1 unit	101 0.121	
		0.5 ... 10 s							
	With LED and 2 CO contacts, 16 functions ¹⁾	1.5 ... 30 s	24 ... 240 ⁴⁾	24 ... 240 ⁵⁾	D	3RP20 05-2BW30	1	1 unit	101 0.131
		0.05 ... 1 min							
		5 ... 100 s							
		0.15 ... 3 min							
		0.5 ... 10 min							
		1.5 ... 30 min							
		0.05 ... 1 h							
	5 ... 100 min								
	0.15 ... 3 h								
	0.5 ... 10 h								
	1.5 ... 30 h								
	5 ... 100 h								
	∞ ³⁾								
3RP20 25 timing relays, ON-delay, 15 time setting ranges									
 3RP20 25-2AP30	With LED and 1 CO contact ²⁾	0.05 ... 1 s	24/ 100 ... 127 24	▶	3RP20 25-2AQ30	1	1 unit	101 0.110	
		0.15 ... 3 s	24/ 200 ... 240 24	▶	3RP20 25-2AP30	1	1 unit	101 0.108	
		0.5 ... 10 s							
		1.5 ... 30 s							
		0.05 ... 1 min							
		5 ... 100 s							
		0.15 ... 3 min							
		0.5 ... 10 min							
		1.5 ... 30 min							
		0.05 ... 1 h							
	5 ... 100 min								
	0.15 ... 3 h								
	0.5 ... 10 h								
	1.5 ... 30 h								
	5 ... 100 h								
	∞ ³⁾								

1) For functions see 3RP19 01-0. label set.

2) Units with safe electrical isolation.

3) With switch position ∞ , no timing. For test purposes (ON/OFF function) on site. Relay is constantly on when activated, or relay remains constantly off when activated. Depending on which function is set.

4) Operating range $0.8 \dots 1.1 \times U_s$.

5) Operating range $0.7 \dots 1.1 \times U_s$.

3RP, 3RT19 Timing Relays

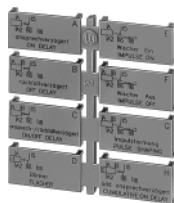
3RP20 timing relays, 45 mm

Accessories

Version	Function	Identification letter	Use	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
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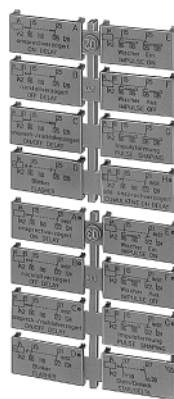
Label sets

Accessory for 3RP20 (not included in the scope of supply). The label set offers the possibility of labeling timing relays with the set function in English and German.



3RP19 01-0A

1 label set (1 unit) with 8 functions	With ON-delay OFF-delay with auxiliary voltage ON-delay and OFF-delay with auxiliary voltage Flashing, starting with interval Passing make contact Passing break contact with auxiliary voltage Pulse-forming with auxiliary voltage Additive ON-delay with auxiliary voltage	A B C D E F G H	for devices with 1 CO contact and 3RP15 05-.. RW30		3RP19 01-0A		1	5 units	101	0.003
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3RP19 01-0B

1 label set (1 unit) with 16 functions	With ON-delay OFF-delay with auxiliary voltage ON-delay and OFF-delay with auxiliary voltage Flashing, starting with interval Passing make contact Passing break contact with auxiliary voltage Pulse-forming with auxiliary voltage Additive ON-delay with auxiliary voltage and instantaneous contact ON-delay and instantaneous contact OFF-delay with auxiliary voltage and instantaneous contact ON-delay and OFF-delay with auxiliary voltage and instantaneous contact Flashing, starting with interval, and instantaneous contact Passing make contact and instantaneous contact Passing break contact with auxiliary voltage and instantaneous contact Pulse-forming with auxiliary voltage and instantaneous contact Wye-delta function	A B C D E F G H• A• B• C• D• E• F• G• YΔ	for devices with 2 CO contacts		3RP19 01-0B		1	5 units	101	0.006
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Blank labels



Blank labels, 20 mm x 7 mm, pastel turquoise ¹⁾				C	3RT19 00-1SB20		100	340 units	101	22.000
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¹⁾ Computer labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH.

3RP, 3RT19 Timing Relays

3RT19 16, 3RT19 26 timing relays
for mounting onto contactors

Selection and ordering data

For con- tactors	Version	Time setting range t	Rated control supply voltage U_s	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.		
					Order No.	Price per PU						
Type		s	V							kg		
For size S00¹⁾												
Terminal designations according to EN 46199 Part 5												
• ON-delay (varistor integrated)												
 3RT19 16-2...	3RT10 1, 3RH11	1 NO + 1 NC	0.05 ... 1	24 AC/DC	▶	3RT19 16-2EJ11		1	1 unit	101	0.090	
			0.5 ... 10			▶	3RT19 16-2EJ21		1	1 unit	101	0.090
			5 ... 100			▶	3RT19 16-2EJ31		1	1 unit	101	0.090
		0.05 ... 1	100 ... 127 AC	C	▶	3RT19 16-2EC11		1	1 unit	101	0.090	
		0.5 ... 10			▶	3RT19 16-2EC21		1	1 unit	101	0.090	
		5 ... 100			▶	3RT19 16-2EC31		1	1 unit	101	0.090	
		0.05 ... 1	200 ... 240 AC	D	▶	3RT19 16-2ED11		1	1 unit	101	0.090	
		0.5 ... 10			▶	3RT19 16-2ED21		1	1 unit	101	0.090	
		5 ... 100			▶	3RT19 16-2ED31		1	1 unit	101	0.090	
	• OFF-delay without auxiliary voltage (varistor integrated) ²⁾											
		1 NO + 1 NC	0.05 ... 1	24 AC/DC	▶	3RT19 16-2FJ11		1	1 unit	101	0.090	
			0.5 ... 10			▶	3RT19 16-2FJ21		1	1 unit	101	0.090
			5 ... 100			▶	3RT19 16-2FJ31		1	1 unit	101	0.090
			0.05 ... 1	100 ... 127 AC	C	▶	3RT19 16-2FK11		1	1 unit	101	0.090
			0.5 ... 10			▶	3RT19 16-2FK21		1	1 unit	101	0.090
		5 ... 100			▶	3RT19 16-2FK31		1	1 unit	101	0.090	
		0.05 ... 1	200 ... 240 AC	D	▶	3RT19 16-2FL11		1	1 unit	101	0.090	
		0.5 ... 10			▶	3RT19 16-2FL21		1	1 unit	101	0.090	
		5 ... 100			▶	3RT19 16-2FL31		1	1 unit	101	0.090	
• OFF-delay with auxiliary voltage												
	1 CO	0.5 ... 10	24 AC/DC	B	▶	3RT19 16-2LJ21		1	1 unit	101	0.090	
			100 ... 127 AC	B	▶	3RT19 16-2LC21		1	1 unit	101	0.090	
			200 ... 240 AC	C	▶	3RT19 16-2LD21		1	1 unit	101	0.090	
• Wye-delta function (varistor integrated)												
	1 NO, delayed +	1.5 ... 30	24 AC/DC	▶	3RT19 16-2GJ51		1	1 unit	101	0.090		
	1 NO, instantaneous,		100 ... 127 AC	D	▶	3RT19 16-2GC51		1	1 unit	101	0.090	
	dead time 50 ms		200 ... 240 AC	▶	3RT19 16-2GD51		1	1 unit	101	0.090		
For sizes S0 to S12³⁾												
Terminal designations according to EN 46199 Part 5												
• ON-delay												
 3RT19 26-2...	3RT10 2, 3RT10 3, 3RT10 4	1 NO + 1 NC	0.05 ... 1	24 AC/DC	D	3RT19 26-2EJ11		1	1 unit	101	0.090	
			0.5 ... 10			▶	3RT19 26-2EJ21		1	1 unit	101	0.090
			5 ... 100			▶	3RT19 26-2EJ31		1	1 unit	101	0.090
		0.05 ... 1	100 ... 127 AC	C	▶	3RT19 26-2EC11		1	1 unit	101	0.090	
		0.5 ... 10			▶	3RT19 26-2EC21		1	1 unit	101	0.090	
		5 ... 100			▶	3RT19 26-2EC31		1	1 unit	101	0.090	
		0.05 ... 1	200 ... 240 AC	D	▶	3RT19 26-2ED11		1	1 unit	101	0.090	
		0.5 ... 10			▶	3RT19 26-2ED21		1	1 unit	101	0.090	
		5 ... 100			▶	3RT19 26-2ED31		1	1 unit	101	0.090	
	• OFF-delay without auxiliary voltage ²⁾											
		1 NO + 1 NC	0.05 ... 1	24 AC/DC	▶	3RT19 16-2FJ11		1	1 unit	101	0.090	
			0.5 ... 10			▶	3RT19 16-2FJ21		1	1 unit	101	0.090
			5 ... 100			▶	3RT19 16-2FJ31		1	1 unit	101	0.090
			0.05 ... 1	100 ... 127 AC	C	▶	3RT19 16-2FK11		1	1 unit	101	0.090
			0.5 ... 10			▶	3RT19 16-2FK21		1	1 unit	101	0.090
		5 ... 100			▶	3RT19 16-2FK31		1	1 unit	101	0.090	
		0.05 ... 1	200 ... 240 AC	D	▶	3RT19 16-2FL11		1	1 unit	101	0.090	
		0.5 ... 10			▶	3RT19 16-2FL21		1	1 unit	101	0.090	
		5 ... 100			▶	3RT19 16-2FL31		1	1 unit	101	0.090	
• Wye-delta function (varistor integrated)												
	1 NO, delayed +	1.5 ... 30	24 AC/DC	▶	3RT19 16-2GJ51		1	1 unit	101	0.090		
	1 NO, instantaneous,		100 ... 127 AC	D	▶	3RT19 16-2GC51		1	1 unit	101	0.090	
	dead time 50 ms		200 ... 240 AC	▶	3RT19 16-2GD51		1	1 unit	101	0.090		







¹⁾ The terminals for the rated control supply voltage are connected to the contactor beneath by the integrated spring-type contacts of the solid-state time-delay auxiliary switch block when mounting.

²⁾ Setting of output contacts in as-supplied state not defined (bistable relay). Application of the control voltage once results in contact changeover to the correct setting.

³⁾ The terminals A1 and A2 for the rated control supply voltage of the solid-state time-delay auxiliary switch block must be connected to the corresponding contactor by connecting cables.

3RP, 3RT19 Timing Relays

3RT19 16, 3RT19 26 timing relays for mounting onto contactors

For con- tactors	Version	Time setting range t	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.					
Type		s			Order No.	Price per PU			kg					
For size S00, with semiconductor output														
For mounting onto the front of contactors														
The electrical connection between the time-relay block and the contactor beneath is established automatically when it is snapped on.														
• ON-delay, two-wire version (varistor integrated)														
	3RT1. 1, 3RH11	0.05 ... 1	24 ... 66 AC/DC	B	3RT19 16-2CG11		1	1 unit	101	0.050				
		0.5 ... 10		▶	3RT19 16-2CG21						1	1 unit	101	0.050
		5 ... 100		B	3RT19 16-2CG31						1	1 unit	101	0.050
	3RT19 16-2C...	0.05 ... 1	90 ... 240 AC/DC	D	3RT19 16-2CH11		1	1 unit	101	0.050				
		0.5 ... 10		▶	3RT19 16-2CH21						1	1 unit	101	0.050
		5 ... 100		▶	3RT19 16-2CH31						1	1 unit	101	0.050
• OFF-delay with auxiliary voltage (varistor integrated)														
	3RT19 16-2D...	0.05 ... 1	24 ... 66 AC/DC	C	3RT19 16-2DG11		1	1 unit	101	0.060				
		0.5 ... 10		B	3RT19 16-2DG21						1	1 unit	101	0.060
		5 ... 100		B	3RT19 16-2DG31						1	1 unit	101	0.060
	3RT19 16-2D...	0.05 ... 1	90 ... 240 AC/DC	D	3RT19 16-2DH11		1	1 unit	101	0.060				
		0.5 ... 10		▶	3RT19 16-2DH21						1	1 unit	101	0.060
		5 ... 100		B	3RT19 16-2DH31						1	1 unit	101	0.060
For sizes S0 to S3, with semiconductor output														
For mounting onto coil terminals on top of the contactors														
The electrical connection between the relay block and the corresponding contactor is established by screwing the two connecting pins of the time-relay block to coil terminals A1/A2 on top of the contactor.														
• ON-delay, two-wire version (varistor integrated)														
	3RT10 2, 3RT10 3, 3RT10 4 ¹⁾	0.05 ... 1	24 ... 66 AC/DC	D	3RT19 26-2CG11		1	1 unit	101	0.050				
		0.5 ... 10		B	3RT19 26-2CG21						1	1 unit	101	0.050
		5 ... 100		D	3RT19 26-2CG31						1	1 unit	101	0.050
	3RT19 26-2C...	0.05 ... 1	90 ... 240 AC/DC	▶	3RT19 26-2CH11		1	1 unit	101	0.050				
		0.5 ... 10		▶	3RT19 26-2CH21						1	1 unit	101	0.050
		5 ... 100		▶	3RT19 26-2CH31						1	1 unit	101	0.050
• OFF-delay with auxiliary voltage (varistor integrated)														
	3RT19 26-2D...	0.05 ... 1	24 ... 66 AC/DC	D	3RT19 26-2DG11		1	1 unit	101	0.050				
		0.5 ... 10		D	3RT19 26-2DG21						1	1 unit	101	0.050
		5 ... 100		D	3RT19 26-2DG31						1	1 unit	101	0.050
	3RT19 26-2D...	0.05 ... 1	90 ... 240 AC/DC	C	3RT19 26-2DH11		1	1 unit	101	0.050				
		0.5 ... 10		D	3RT19 26-2DH21						1	1 unit	101	0.050
		5 ... 100		C	3RT19 26-2DH31						1	1 unit	101	0.050

1) Not for 3RT10 4 contactor with 24 ... 42 V rated control supply voltage.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Line monitoring

Overview



Solid-state line monitoring relays provide maximum protection for mobile machines and plants or for unstable networks. Network and voltage faults can be detected early and rectified before far greater damage ensues.

Depending on the version, the relays monitor phase sequence, phase failure with and without N conductor monitoring, phase unbalance, undervoltage or overvoltage.

Phase unbalanced is evaluated as the difference between the greatest and the smallest phase voltage relative to the greatest phase voltage. Undervoltage or overvoltage exists when at least one phase voltage deviates by 20 % from the set rated system voltage or the directly set limit values are overshot or undershot. The rms value of the voltage is measured.

With the 3UG46 17 or 3UG46 18 relay, a wrong direction of rotation can also be corrected automatically.

Benefits

- Can be used without auxiliary voltage in any network from 160 ... 600 V AC worldwide thanks to wide voltage range
- Variably adjustable to overvoltage, undervoltage or window monitoring
- Freely configurable delay times and reset response
- Width 22.5 mm
- Permanent display of ACTUAL value and network fault type on the digital variants
- Automatic correction of the direction of rotation by distinguishing between power system faults and wrong phase sequence
- All versions with removable terminals
- All versions with screw terminals or alternatively with innovative spring-loaded terminals

Application

The relays are used above all for mobile equipment, e.g. air conditioning compressors, refrigerating containers, building site compressors and cranes.

Function	Application
Phase sequence	<ul style="list-style-type: none"> • Direction of rotation of the operating mechanism
Phase failure	<ul style="list-style-type: none"> • A fuse has tripped • Failure of the control supply voltage • Broken cable
Phase unbalance	<ul style="list-style-type: none"> • Overheating of the motor due to asymmetrical voltage • Detection of asymmetrically loaded networks
Undervoltage	<ul style="list-style-type: none"> • Increased current on a motor with corresponding overheating • Unintentional resetting of a device • Network collapse, particularly with battery power
Overvoltage	<ul style="list-style-type: none"> • Protection of a plant against destruction due to overvoltage

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Line monitoring

Selection and ordering data



3UG45 11-1AP20



3UG46 15-1CR20



3UG46 16-1CR20



3UG46 17-1CR20



3UG46 18-1CR20

Hysteresis	Under-voltage detection	Over-voltage detection	ON-delay	Tripping delay	Version of auxiliary contacts	Rated control supply voltage $U_s^{1)}$	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
			s	s	CO	V		Order No.	Price per PU			kg
Monitoring of phase sequence												
Auto-RESET												
--	No	No	--	--	1	160 ... 260 AC	A	3UG45 11-1AN20	1	1 unit	101	0.147
					2		A	3UG45 11-1BN20	1	1 unit	101	0.147
					1	320 ... 500 AC	A	3UG45 11-1AP20	1	1 unit	101	0.147
					2		A	3UG45 11-1BP20	1	1 unit	101	0.147
					1	420 ... 690 AC	A	3UG45 11-1AQ20	1	1 unit	101	0.147
					2		A	3UG45 11-1BQ20	1	1 unit	101	0.147
Monitoring of phase sequence, phase failure and phase unbalance												
Auto-RESET, closed-circuit principle, unbalance threshold 10 %												
--	No	No	--	--	1	160 ... 690 AC	A	3UG45 12-1AR20	1	1 unit	101	0.147
					2		A	3UG45 12-1BR20	1	1 unit	101	0.147
Monitoring of phase sequence, phase failure, unbalance and undervoltage												
Analogically adjustable, Auto-RESET, closed-circuit principle, fixed unbalance threshold 20 %												
5 % of set value	Yes	No	--	0.1 ... 20	2	160 ... 690 AC	A	3UG45 13-1BR20	1	1 unit	101	0.147
Digitally adjustable, Auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5 ... 20 %												
Adjustable	Yes	No	0.1 ... 20	0.1 ... 20	2	160 ... 690 AC	A	3UG46 14-1BR20	1	1 unit	101	0.147
1 ... 20 V												
Monitoring of phase sequence, phase failure, overvoltage and undervoltage												
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle												
Adjustable	Yes	Yes	--	0.1 ... 20 ²⁾	2 ²⁾	160 ... 690 AC	A	3UG46 15-1CR20	1	1 unit	101	0.147
1 ... 20 V												
Monitoring of phase sequence, phase and N conductor failure, overvoltage and undervoltage												
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle												
Adjustable	Yes	Yes	--	0.1 ... 20 ²⁾	2 ²⁾	AC 90... 400	A	3UG46 16-1CR20	1	1 unit	101	0.147
1 ... 20 V against N												
Automatic correction of the direction of rotation in case of wrong phase sequence, phase failure, phase unbalance, overvoltage and undervoltage												
Digitally adjustable, Auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5...20 %												
Adjustable	Yes	Yes	--	0.1 ... 20	2 ³⁾	160 ... 690 AC	A	3UG46 17-1CR20	1	1 unit	101	0.147
1 ... 20 V												
Automatic correction of the direction of rotation in case of wrong phase sequence, phase and N conductor failure, phase unbalance, overvoltage and undervoltage												
Digitally adjustable, Auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5...20 %												
Adjustable	Yes	Yes	--	0.1 ... 20	2 ³⁾	AC 90... 400	A	3UG46 18-1CR20	1	1 unit	101	0.147
1 ... 20 V against N												

1) Absolute limit values.

2) 1 CO contact each and 1 tripping delay time each for U_{min} and U_{max} .

3) 1 CO contact each for power system fault and for phase sequence correction.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Line monitoring



3UG45 11-2BP20 3UG45 12-2BR20

Hysteresis	Under-voltage detection	Over-voltage detection	ON-delay	Tripping delay	Version of auxiliary contacts	Rated control supply voltage $U_s^{1)}$	DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
			s	s	CO	V		Order No.	Price per PU			kg	
Monitoring of phase sequence													
Auto-RESET													
--	No	No	--	--	1	160 ... 260 AC	A	3UG45 11-2AN20		1	1 unit	101	0.147
					2		A			1	1 unit	101	0.147
					1	320 ... 500 AC	A	3UG45 11-2AP20		1	1 unit	101	0.147
					2		A			1	1 unit	101	0.147
					1	420 ... 690 AC	A	3UG45 11-2AQ20		1	1 unit	101	0.147
					2		A			1	1 unit	101	0.147
Monitoring of phase sequence, phase failure and phase unbalance													
Auto-RESET, closed-circuit principle, unbalance threshold 10 %													
--	No	No	--	--	1	160 ... 690 AC	A	3UG45 12-2AR20		1	1 unit	101	0.147
					2		A			1	1 unit	101	0.147
Monitoring of phase sequence, phase failure, unbalance and undervoltage													
Analogically adjustable, Auto-RESET, closed-circuit principle, unbalance threshold 20 %													
5 % of set value	Yes	No	--	0.1 ... 20	2	160 ... 690 AC	A	3UG45 13-2BR20		1	1 unit	101	0.147
Digitally adjustable, Auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5 ... 20 %													
Adjustable	Yes	No	0 ... 20	0.1 ... 20	2	160 ... 690 AC	A	3UG46 14-2BR20		1	1 unit	101	0.147
1 ... 20 V													
Monitoring of phase sequence, phase failure, overvoltage and undervoltage													
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle													
Adjustable	Yes	Yes	--	0.1 ... 20 ²⁾ 2 ²⁾		160 ... 690 AC	A	3UG46 15-2CR20		1	1 unit	101	0.140
1 ... 20 V													
Monitoring of phase sequence, phase and N conductor failure, overvoltage and undervoltage													
Digitally adjustable, Auto-RESET or manual RESET, open-circuit or closed-circuit principle													
Adjustable	Yes	Yes	--	0.1 ... 20 ²⁾ 2 ²⁾		AC 90... 400	A	3UG46 16-2CR20		1	1 unit	101	0.147
1 ... 20 V						against N							
Automatic correction of the direction of rotation in case of wrong phase sequence, phase failure, phase unbalance, overvoltage and undervoltage													
Digitally adjustable, Auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5...20 %													
Adjustable	Yes	Yes	--	0.1 ... 20	2 ³⁾	160 ... 690 AC	A	3UG46 17-2CR20		1	1 unit	101	0.147
1 ... 20 V													
Automatic correction of the direction of rotation in case of wrong phase sequence, phase and N conductor failure, phase unbalance, overvoltage and undervoltage													
Digitally adjustable, Auto or manual RESET, open-circuit or closed-circuit principle, unbalance threshold 0 or 5 ... 20 %													
Adjustable	Yes	Yes	--	0.1 ... 20	2 ³⁾	AC 90... 400	A	3UG46 18-2CR20		1	1 unit	101	0.147
1 ... 20 V						against N							

1) Absolute limit values.

2) 1 CO contact each and 1 tripping delay time each for U_{min} and U_{max} .

3) 1 CO contact each for power system fault and for phase sequence correction.



* You can order this quantity or a multiple thereof.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Line monitoring

Accessories

Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Blank labels								
	Blank labels, 20 mm x 7 mm, pastel turquoise ¹⁾	C	3RT19 00-1SB20		100	340 units	101	22.000
Push-in lugs and covers								
	For devices with 1 or 2 CO contacts	Push-in lugs For screw mounting, 2 units are required for each device	▶ 3RP19 03		1	10 units	101	0.002
3RP19 03								
	For devices with 1 or 2 CO contacts	Sealable covers For securing against unauthorized adjustment of setting knobs	▶ 3RP19 02		1	5 units	101	0.004
3RP19 02								

¹⁾ Computer labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Voltage monitoring

Overview



The relays monitor single-phase AC voltages (rms value) and DC voltages against the set threshold value for overshoot and undershoot. The devices differ with regard to their power supply (internal or external).

Benefits

- Variants with wide voltage supply range
- Variably adjustable to overvoltage, undervoltage or window monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display of ACTUAL value and status messages
- All versions with removable terminals
- All versions with screw terminals or alternatively with innovative spring-loaded terminals

Application

- Protection of a plant against destruction due to overvoltage
- Switch-on of a plant at a defined voltage and higher
- Protection against overloaded supply voltages, particularly with battery power
- Threshold switch for analog signals from 0.1 ... 10 V

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Voltage monitoring

Selection and ordering data

Measuring range	Hysteresis	Rated control supply voltage U_s ¹⁾	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
V	V	V		Order No.	Price per PU			kg

Internal power supply without auxiliary voltage, ON-delay and tripping delay can be adjusted separately 0.1 ... 20 s

Digitally adjustable, LCD display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact								
17 ... 275 AC/DC	0.1...150	17 ... 275 AC/DC	A	3UG46 33-1AL30		1	1 unit	101 0.147

Supplied from an external auxiliary voltage, tripping delay adjustable 0.1 ... 20 s

Digitally adjustable, LCD display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact								
0.1 ... 60 AC/DC	0.1...30	24 AC/DC	A	3UG46 31-1AA30		1	1 unit	101 0.147
10 ... 600 AC/DC	0.1...300		A	3UG46 32-1AA30		1	1 unit	101 0.147
0.1 ... 60 AC/DC	0.1...30	24 ... 240 AC/DC	A	3UG46 31-1AW30		1	1 unit	101 0.147
10 ... 600 AC/DC	0.1...300		A	3UG46 32-1AW30		1	1 unit	101 0.147

Measuring range	Hysteresis	Rated control supply voltage U_s ¹⁾	DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
V	V	V		Order No.	Price per PU			kg

Internal power supply without auxiliary voltage, ON-delay and tripping delay can be adjusted separately 0.1 ... 20 s

Digitally adjustable, LCD display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact								
17 ... 275 AC/DC	0.1 ... 150	17 ... 275 AC/DC	A	3UG46 33-2AL30		1	1 unit	101 0.147



3UG46 33-2AL30

Supplied from an external auxiliary voltage, tripping delay adjustable 0.1 ... 20 s

Digitally adjustable, LCD display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact								
0.1 ... 60 AC/DC	0.1 ... 30	24 AC/DC	A	3UG46 31-2AA30		1	1 unit	101 0.147
10 ... 600 AC/DC	0.1 ... 300		A	3UG46 32-2AA30		1	1 unit	101 0.147
0.1 ... 60 AC/DC	0.1 ... 30	24 ... 240 AC/DC	A	3UG46 31-2AW30		1	1 unit	101 0.147
10 ... 600 AC/DC	0.1 ... 300		A	3UG46 32-2AW30		1	1 unit	101 0.147

¹⁾ Absolute limit values.



Accessories

Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
								kg

Blank labels

Blank labels, 20 mm x 7 mm, pastel turquoise ¹⁾	C	3RT19 00-1SB20		100	340 units	101	22.000
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Push-in lugs and covers

	For devices with 1 or 2 CO contacts	Push-in lugs For screw mounting, 2 units are required for each device	▶	3RP19 03		1	10 units	101 0.002
	For devices with 1 or 2 CO contacts	Sealable covers For securing against unauthorized adjustment of setting knobs	▶	3RP19 02		1	5 units	101 0.004

3RP19 02

¹⁾ Computer labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Current monitoring

Overview



The relays monitor single-phase AC currents (rms value) and DC currents against the set threshold value for overshoot and undershoot. They differ with regard to their measuring ranges and supply voltage types.

Application

- Overcurrent and undercurrent monitoring
- Monitoring the functionality of electrical loads
- Open-circuit monitoring
- Threshold switch for analog signals from 4 ... 20 mA

Benefits

- Variants with wide voltage supply range
- Variably adjustable to overvoltage, undervoltage or window monitoring
- Freely configurable delay times and RESET response
- Width 22.5 mm
- Display of ACTUAL value and status messages
- All versions with removable terminals
- All versions with screw terminals or alternatively with innovative spring-loaded terminals

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Current monitoring

Selection and ordering data

Measuring range	Hysteresis	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				Order No.	Price per PU			
							V	kg

Monitoring of undercurrent and overcurrent, ON-delay and tripping delay can be adjusted separately 0.1 ... 20 s

Digitally adjustable, LCD display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact								
AC/DC 3 ... 500 mA	0.1 ... 250 mA	24 AC/DC ¹⁾	A	3UG46 21-1AA30	1	1 unit	101	0.147
AC/DC 0.05 ... 10 A	0.01 ... 5 A		A	3UG46 22-1AA30	1	1 unit	101	0.147
AC/DC 3 ... 500 mA	0.1 ... 250 mA	24 ... 240 AC/DC ²⁾	A	3UG46 21-1AW30	1	1 unit	101	0.147
AC/DC 0.05 ... 10 A	0.01 ... 5 A		A	3UG46 22-1AW30	1	1 unit	101	0.147

Measuring range	Hysteresis	Rated control supply voltage U_s	DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				Order No.	Price per PU			
							V	kg

Monitoring of undercurrent and overcurrent, ON-delay and tripping delay can be adjusted separately 0.1 ... 20 s



3UG46 22-2AW30

Digitally adjustable, LCD display, Auto-RESET or manual RESET, open-circuit or closed-circuit principle, 1 CO contact								
AC/DC 3 ... 500 mA	0.1 ... 250 mA	24 AC/DC ¹⁾	A	3UG46 21-2AA30	1	1 unit	101	0.147
AC/DC 0.05 ... 10 A	0.01 ... 5 A		A	3UG46 22-2AA30	1	1 unit	101	0.147
AC/DC 3 ... 500 mA	0.1 ... 250 mA	24 ... 240 AC/DC ²⁾	A	3UG46 21-2AW30	1	1 unit	101	0.147
AC/DC 0.05 ... 10 A	0.01 ... 5 A		A	3UG46 22-2AW30	1	1 unit	101	0.147

¹⁾ No electrical isolation. Load supply voltage 24 V.

²⁾ Electrical isolation between control circuit and measuring circuit.
Load supply voltage for safe isolation max. 300 V, for simple isolation max. 500 V.

Accessories

Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
								kg

Blank labels

Blank labels, 20 mm x 7 mm, pastel turquoise ¹⁾	C	3RT19 00-1SB20	100	340 units	101	22.000
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Push-in lugs and covers



3RP19 03

For devices with 1 or 2 CO contacts

Push-in lugs
For screw mounting, 2 units are required for each device

3RP19 03	1	10 units	101	0.002
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3RP19 02

For devices with 1 or 2 CO contacts

Sealable covers
For securing against unauthorized adjustment of setting knobs

3RP19 02	1	5 units	101	0.004
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¹⁾ Computer labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Power factor and active current monitoring

Overview



The 3UG46 41 power factor and active current monitoring device enables the load monitoring of motors.

Whereas power factor monitoring is used above all for monitoring no-load operation, the active current monitoring option can be used to observe and evaluate the load factor over the entire torque range.

Application

- No-load monitoring and load shedding, such as in the event of a V-belt tear
- Underload monitoring in the low performance range, e.g. in the event of pump no-load operation
- Monitoring of overload, e.g. due to a dirty filter system
- Simple power factor monitoring in networks for control of compensation equipment
- Broken cable between control cabinet and motor

Benefits

- Can be used world-wide thanks to wide voltage range from 90 ... 690 V¹⁾
- Monitoring of even small single-phase motors with a no-load supply current below 0.5 A
- Simple determination of threshold values through the direct collection of measured variables on motor loading
- Window monitoring and active current measurement enable detection of cable breaks between control cabinets and motors, as well as phase failures
- Power factor or active current can be selected as measurement principle

¹⁾ Absolute limit values.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Power factor and active current monitoring

Selection and ordering data

Relay for monitoring the power factor and the active current ($\text{p.f.} \times I_{\text{res}}$), overshoot, undershoot or window monitoring, single and three-phase, overall width 22.5 mm

Digitally adjustable, with LCD display



- Upper and lower threshold value can be adjusted separately
- 1 changeover contact each for undershoot/overshoot
- Permanent display of actual value and tripping state

Measuring range		Hysteresis		ON-delay	OFF-delay	Rated control supply voltage $U_s^{1)}$	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
For power factor	For active current I_{res}	For power factor	For active current I_{res}			AC 50/60 Hz							
p.f.	A	p.f.	A	s	s	V		Order No.	Price per PU			kg	
0.10 ... 0.99	0.2 ... 10.0	0.1	0.1 ... 2.0	0 ... 99	0.1 ... 20.0	90 ... 690	A	3UG46 41-1CS20		1	1 unit	101	0.147

Measuring range		Hysteresis		ON-delay	OFF-delay	Rated control supply voltage $U_s^{1)}$	DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
For power factor	For active current I_{res}	For power factor	For active current I_{res}			AC 50/60 Hz							
p.f.	A	p.f.	A	s	s	V		Order No.	Price per PU			kg	
0.10 ... 0.99	0.2 ... 10.0	0.1	0.1 ... 2.0	0 ... 99	0.1 ... 20.0	90 ... 690	A	3UG46 41-2CS20		1	1 unit	101	0.147

1) Absolute limit values.

Accessories

Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
								kg	
Blank labels									
	Blank labels, 20 mm x 7 mm, pastel turquoise ¹⁾	C	3RT19 00-1SB20		100	340 units	101	22.000	
Push-in lugs and covers									
 3RP19 03	For devices with 1 or 2 CO contacts	Push-in lugs For screw mounting, 2 units are required for each device	▶	3RP19 03		1	10 units	101	0.002
 3RP19 02	For devices with 1 or 2 CO contacts	Sealable covers For securing against unauthorized adjustment of setting knobs	▶	3RP19 02		1	5 units	101	0.004

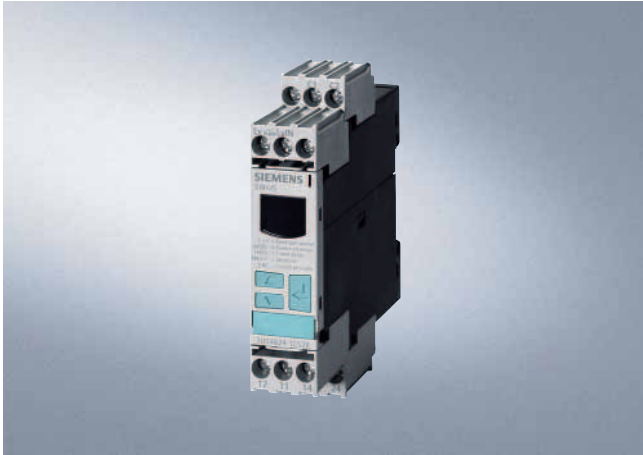
1) Computer labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Residual-current monitoring
Residual-current monitoring relays

Overview



The 3UG46 24 residual-current monitoring relay is used together with the 3UL22 summation current transformer for plant monitoring.

Application

- Plant monitoring

Selection and ordering data

Residual-current monitoring relays

Standard rail mounting

Width 22.5 mm

Relay for monitoring residual currents for 3UL22 summation current transformers with rated residual current $I_{\Delta n}$ 0.3 ... 40 A

- Digitally adjustable with three buttons, illuminated LCD
- Adjustable limit value and warning threshold
- Permanent display of actual value and tripping state
- 1 CO contact each for limit violation and warning threshold

Display range	Setting range	Hysteresis Limit value	Warning value	ON / tripping delay time	Rated control supply voltage $U_s^{(2)}$	DT	Screw terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	A	A	A	s	V	A	3UG46 24-1CS20		1	1 unit	101	kg
10 ... 120 % of $I_{\Delta n}$	10 ... 100 % of $I_{\Delta n}$	LSB ¹⁾ up to 50 % of $I_{\Delta n}$	5 % of $I_{\Delta n}$	0.1 ... 20	90 ... 690	A						0.147
Display range	Setting range	Hysteresis Limit value	Warning value	ON / tripping delay time	Rated control supply voltage $U_s^{(2)}$	DT	Spring-loaded terminals Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
A	A	A	A	s	V	A	3UG46 24-2CS20		1	1 unit	101	kg
10 ... 120 % of $I_{\Delta n}$	10 ... 100 % of $I_{\Delta n}$	LSB ¹⁾ up to 50 % of $I_{\Delta n}$	5 % of $I_{\Delta n}$	0.1 ... 20	90 ... 690	A						0.130

For 3UL22 summation current transformers see page 7/55.

¹⁾ LSB: Smallest adjustable value, transformer-dependent, $\leq 1\%$ of $I_{\Delta n}$.



²⁾ Absolute limit values.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Residual-current monitoring Residual-current monitoring relays

Accessories

Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Blank labels								
	Blank labels, 20 mm x 7 mm, pastel turquoise ¹⁾	C	3RT19 00-1SB20		100	340 units	101	22.000
Push-in lugs and covers								
	For devices with 1 or 2 CO contacts	Push-in lugs For screw mounting, 2 units are required for each device	▶ 3RP19 03		1	10 units	101	0.002
3RP19 03								
	For devices with 1 or 2 CO contacts	Sealable covers For securing against unauthorized adjustment of setting knobs	▶ 3RP19 02		1	5 units	101	0.004
3RP19 02								

¹⁾ Computer labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Residual-current monitoring
Summation current transformers

Overview



The 3UL22 summation current transformers sense fault currents in machines and plants. Together with the 3UG46 24 residual-current monitoring relay or the SIMOCODE 3UF motor management and control device they enable residual-current and ground-fault monitoring.

Application

- Plant monitoring

Selection and ordering data

Feed-through opening diameter mm	Rated insulation voltage U_i V	Rated fault current $I_{\Delta n}$ A	DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
				Order No.	Price per PU				
Summation current transformers (essential accessory for 3UG46 24 or SIMOCODE 3UF)									
40	690	0.3	B	3UL22 01-1A		1	1 unit	101	0.571
		0.5	B	3UL22 01-2A		1	1 unit	101	0.408
		1	C	3UL22 01-3A		1	1 unit	101	0.324
65	690	0.3	B	3UL22 02-1A		1	1 unit	101	0.900
		0.5	B	3UL22 02-2A		1	1 unit	101	0.713
		1	B	3UL22 02-3A		1	1 unit	101	0.568
		6	C	3UL22 02-1B		1	1 unit	101	0.561
		10	C	3UL22 02-2B		1	1 unit	101	0.563
		16	C	3UL22 02-3B		1	1 unit	101	0.573
		25	C	3UL22 02-4B		1	1 unit	101	0.575
40	C	3UL22 02-5B		1	1 unit	101	0.564		
120	1000	0.3	B	3UL22 03-1A		1	1 unit	101	3.435
		0.5	B	3UL22 03-2A		1	1 unit	101	2.810
		1	B	3UL22 03-3A		1	1 unit	101	1.965
		6	C	3UL22 03-1B		1	1 unit	101	1.955
		10	C	3UL22 03-2B		1	1 unit	101	1.990
		16	C	3UL22 03-3B		1	1 unit	101	1.917
		25	C	3UL22 03-4B		1	1 unit	101	1.851
40	C	3UL22 03-5B		1	1 unit	101	1.905		



3UL22

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Insulation monitoring for ungrounded AC networks

Overview



Relay for monitoring the insulation resistance between the ungrounded single or three-phase AC supply and a protective conductor

- Measuring principle with superimposed DC voltage
- Two selectable measuring ranges of 1 ... 110 kΩ
- Stepless setting within the measuring range
- Selectable:
 - auto reset function with fixed hysteresis or
 - storage of the tripping operation
- Test function with test button and terminal connections on the front
- Switching output: 1 CO contact
- Insulation fault indication with a red LED
- Supply voltage indication with a green LED
- Electro-magnetically compatible according to EN 50081 and EN 61000-6-2

Application

The 3UG30 81 monitoring device is suitable for insulation monitoring of AC systems with one or three phases in ungrounded networks (IT networks).

Supply voltage


The 3UG30 81-1AK20 has alternative voltage terminals. Only one supply voltage is permitted to be connected to it! Terminals A1 and A2 are used to connect 230 V AC and terminals A1 and B2 are used to connect 115 V AC.

The 3UG30 81-1AW30 has a wide-range input of 24 V ... 240 V AC/DC on terminals A1 and A2.

Selection and ordering data

Measuring range U_e	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
kΩ	V		Order No.	Price per PU			kg

Insulation monitors for ungrounded AC networks

 3UG30 81-1AK20	1 ... 110	115 / 230 AC	A	3UG30 81-1AK20	1	1 unit	101	0.327
		24 ... 240 AC/DC	B	3UG30 81-1AW30	1	1 unit	101	0.242

Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
							kg

Covers

Sealable, transparent covers	C	3UG32 08-1A		1	1 unit	101	0.010
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Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Insulation monitoring
for ungrounded DC networks

Overview



Relay for monitoring the insulation resistance between ungrounded purely DC networks and a protective conductor

- Measuring principle for residual current measurement
- Response value can be adjusted steplessly from 10 ... 110 k Ω
- Selectable
 - auto reset function with hysteresis or
 - storage of the tripping operation
- Front selector switch for open-circuit and closed-circuit principle for the output relay
- Test function with test buttons on the front for L+ and L- and over terminal connections
- Switching output: 1 CO contact
- Insulation fault indicator for L+ and L- through two red LEDs
- Supply voltage indication with a green LED
- Electro-magnetically compatible acc. to EN 50081 and EN 61000-6-2

Application

The 3UG30 82 monitoring relay has been designed for insulation monitoring in ungrounded, purely DC networks with or without filtering.

It is mainly used to monitor ungrounded DC networks as well as to monitor battery-powered systems.

Supply voltage

Due to the electrical isolation of the supply voltage and the measuring circuit, the relay can be used for DC networks in which the auxiliary voltage is either supplied externally or where the network to be monitored also serves as the power supply.

Note:

If the monitoring relay is supplied with an external voltage, then the terminals A1 and L+ as well as A2 and L- must not be connected with each other!

Selection and ordering data

Measuring range U_e	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
k Ω	V		Order No.	Price per PU			kg

Insulation monitors for ungrounded DC networks



3UG30 82-1AW30

10 ... 110	24 ... 240 AC/DC	B	3UG30 82-1AW30		1	1 unit	101	0.233
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Accessories

Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
							kg

Covers

Sealable, transparent covers	C	3UG32 08-1A		1	1 unit	101	0.010
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Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Level monitoring Level monitoring relays

Overview



The 3UG45 01 level monitoring relay is used together with 2 or 3-pole sensors to monitor the levels of conductive liquids.

Application

- Single-point and two-point level monitoring
- Overflow protection
- Dry running protection
- Leak monitoring

Selection and ordering data

Standard rail mounting
Width 22.5 mm
Relay for monitoring the level of conductive liquids

- Single-point and two-point control
- Analogically adjustable sensitivity
- Analogically adjustable tripping delay time
- Control principle: inlet or outlet monitoring per rotary switch (UNDER/OVER)
- 1 yellow LED for indicating the relay state
- 1 green LED for indicating the applied control supply voltage
- 1 CO contact

Sensitivity	Tripping delay time	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
$k\Omega$	s	V		Order No.	Price per PU			kg
2 ... 200	0.5 ... 10	24 ¹⁾ 24 ... 240	A A	3UG45 01-1AA30 3UG45 01-1AW30	1 1	1 unit 1 unit	101 101	0.110 0.120

Sensitivity	Tripping delay time	Rated control supply voltage U_s	DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
$k\Omega$	s	V		Order No.	Price per PU			kg
2 ... 200	0.5 ... 10	24 ¹⁾ 24 ... 240	A A	3UG45 01-2AA30 3UG45 01-2AW30	1 1	1 unit 1 unit	101 101	0.110 0.120

For level monitoring sensors see page 7/60.



¹⁾ The rated control supply voltage and the measuring circuit are not electrically isolated.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Level monitoring
Level monitoring relays

Accessories

Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Blank labels								
	Blank labels, 20 mm x 7 mm, pastel turquoise ¹⁾	C	3RT19 00-1SB20		100	340 units	101	22.000
Push-in lugs and covers								
	For devices with 1 or 2 CO contacts	Push-in lugs For screw mounting, 2 units are required for each device	▶ 3RP19 03		1	10 units	101	0.002
3RP19 03								
	For devices with 1 or 2 CO contacts	Sealable covers For securing against unauthorized adjustment of setting knobs	▶ 3RP19 02		1	5 units	101	0.004
3RP19 02								






¹⁾ Computer labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Level monitoring Level monitoring sensors

Selection and ordering data

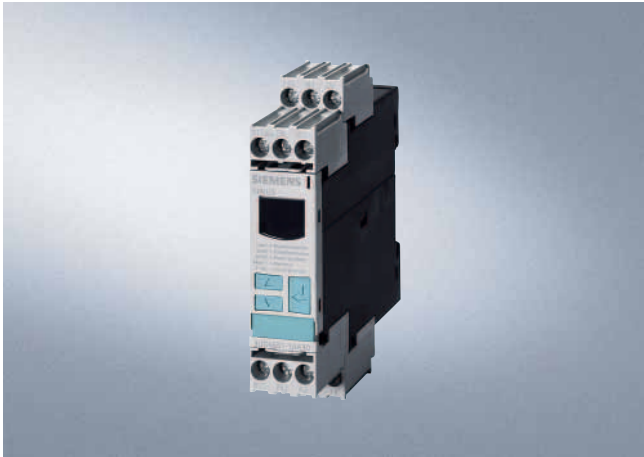
Version	Assignment		Application	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
	Cable	Electrode								
Level monitoring sensors (essential accessory)										
 3UG32 07-3A	Three-pole wire electrodes 500 mm long, with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting cable, 3 x 0.5 mm ² , 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	Brown	Center electrode	The electrodes can be cut or bent to the required length before or after installation. The Teflon insulation must be removed over a length of approx. 5 mm. Applications: For 2-point liquid level control in an insulating tank. One electrode each for the min. and max. value and a common reference electrode.	▶	3UG32 07-3A	1	1 unit	101	0.254
		White Green	Not assignable							
 3UG32 07-2A	Two-pole wire electrodes 500 mm long, with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting cable, 3 x 0.5 mm ² , 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	Brown White	Not assignable	For installation see 3UG32 07-3A Application: For alarm indication in the event of overflow or low level and for 2-point liquid level control, when the conductive tank is used as the reference electrode.	▶	3UG32 07-2A	1	1 unit	101	0.230
 3UG32 07-2B	Two-pole bow electrodes with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting cable, 3 x 0.5 mm ² , 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	Brown White Green	Gland Not assignable	Thanks to the small space requirements due to lateral fitting, ideal for use in small containers and pipes, as a leak monitor and level monitor or for warning of water entering an enclosure.	▶	3UG32 07-2B	1	1 unit	101	0.128
 3UG32 07-1B	Single-pole bow electrodes for lateral fitting with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting cable, 3 x 0.5 mm ² , 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	Brown White	Gland Electrode	As a max. value electrode for lateral fitting or for alarm indication in conductive tanks or pipes.	▶	3UG32 07-1B	1	1 unit	101	0.122
 3UG32 07-1C	Single-pole rod electrodes for lateral fitting with Teflon insulation (PTFE), screw-in gland width A/F 22, 3/8 inch thread, PVC connecting cable, 3 x 0.5 mm ² , 2 m long, max. operating temperature 90 °C, max. operating pressure 10 bar	Brown White	Gland Electrode	For high flow velocities or for intensively sparkling fluids.	C	3UG32 07-1C	1	1 unit	101	0.144

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Speed monitoring

Overview



The 3UG46 51 monitoring relay is used together with a sensor to monitor operating mechanisms for overspeed and/or underspeed.

Furthermore, this relay is ideal for all functions where a continuous pulse signal needs to be monitored (e.g. belt travel monitoring, completeness monitoring, passing monitoring, clock-time monitoring).

Application

- Slip or tear of a belt drive
- Overload monitoring
- Transport monitoring for completeness

Selection and ordering data

Standard mounting rail and screw mounting
Width 22.5 mm
Relay for speed monitoring in rpm^{-1}

- Input frequency 0.1 ... 2200 pulses min^{-1} (0.0017 ... 36.7 Hz)
- Overshoot, undershoot or window monitoring
- Integrated sensor supply 24 V DC/50 mA
- 2-wire NAMUR sensor can be connected
- Upper and lower threshold value
- Permanent display of actual value and tripping state
- With or without enable signal for the operating mechanism to be monitored
- Auto, manual or remote RESET options after tripping
- Number of pulses per revolution can be adjusted
- 1 CO contact

Measuring range	Hysteresis	ON-delay time	Tripping delay time	Pulses per revolution	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
rpm	rpm	s	s		V		Order No.	Price per PU			kg	
0.1 ... 2200	OFF, 0.1 ... 99.9	0 ... 900	0.1 ... 99.9	1 ... 10	24 ¹⁾ 24 ... 240	A A	3UG46 51-1AA30 3UG46 51-1AW30		1 1	1 unit 1 unit	101 101	0.120 0.130

Measuring range	Hysteresis	ON-delay time	Tripping delay time	Pulses per revolution	Rated control supply voltage U_s	DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
rpm	rpm	s	s		V		Order No.	Price per PU			kg	
0.1 ... 2200	OFF, 0.1 ... 99.9	0 ... 900	0.1 ... 99.9	1 ... 10	24 ¹⁾ 24 ... 240	A A	3UG46 51-2AA30 3UG46 51-2AW30		1 1	1 unit 1 unit	101 101	0.120 0.130



¹⁾ The rated control supply voltage and the measuring circuit are not electrically isolated.

Monitoring Relays

3UG Monitoring Relays for Electrical and Additional Measurements

Speed monitoring

Accessories

Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Blank labels								
	Blank labels, 20 mm x 7 mm, pastel turquoise ¹⁾	C	3RT19 00-1SB20		100	340 units	101	22.000
Push-in lugs and covers								
	For devices with 1 or 2 CO contacts	Push-in lugs For screw mounting, 2 units are required for each device	▶ 3RP19 03		1	10 units	101	0.002
3RP19 03								
	For devices with 1 or 2 CO contacts	Sealable covers For securing against unauthorized adjustment of setting knobs	▶ 3RP19 02		1	5 units	101	0.004
3RP19 02								

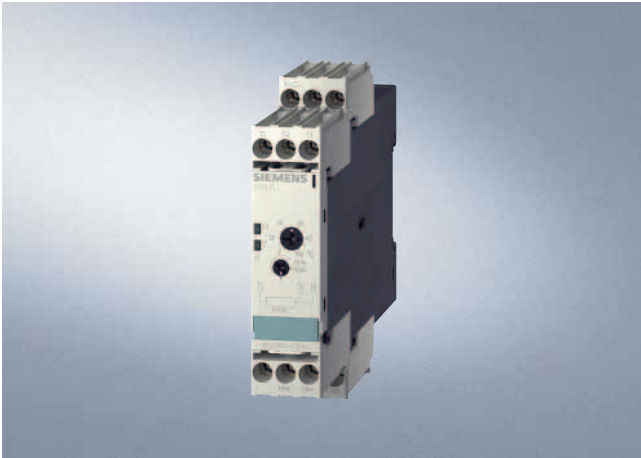
¹⁾ Computer labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH.

Monitoring Relays

3RS10, 3RS11 Temperature Monitoring Relays

Relays, analogically adjustable, for 1 sensor

Overview



The 3RS10/3RS11 analog temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is sensed by the sensors in the medium, evaluated by the device and monitored for overshoot or undershoot. When the threshold values are reached, the output relay switches on or off depending on the parameterization.

Benefits

- All devices except for 24 V AC/DC feature electrical isolation
- Extremely easy operation using a rotary potentiometer
- Adjustable hysteresis
- Adjustable working principle for devices with 2 threshold values
- All versions with removable terminals
- All versions with screw terminals, many versions alternatively with innovative spring-type connections

Application

The analogically adjustable SIRIUS 3RS10/3RS11 temperature monitoring relays can be used in almost any application in which temperature overshoot or undershoot is not permitted, e.g. in the monitoring of set temperature limits and the output of alarm messages for:

- Motor and system protection
- Control cabinet temperature monitoring
- Freeze monitoring
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

Monitoring Relays

3RS10, 3RS11 Temperature Monitoring Relays



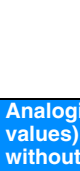




Relays, analogically adjustable, for 1 sensor

Selection and ordering data

Analogically adjustable evaluation units with one and two threshold values

For analogically adjustable units, the threshold values and the hysteresis of 2 ... 20 % are set using a rotary potentiometer. For units with 2 threshold values, the adjustable hysteresis only applies to threshold value 1. For the second threshold value, a

fixed hysteresis of 5 % applies. The product range has been developed for applications where a setting accuracy of ± 5 % is sufficient.

Sensor	Function	Measuring range	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.			
		°C	V		Order No.	Price per PU			kg			
Analogically adjustable, 1 threshold value, width 22.5 mm; closed-circuit principle; without memory; 1 NO + 1 NC												
	PT100 (resistance sensor)	Overshoot	- 50 ... + 50	24 AC/DC 110/230 AC	B	3RS10 00-1CD00	1	1 unit	101	0.150		
			0 ... + 100	24 AC/DC 110/230 AC	B	3RS10 00-1CK00	1	1 unit	101	0.190		
		Undershoot	0 ... + 100	24 AC/DC 110/230 AC	B	3RS10 00-1CD10	1	1 unit	101	0.145		
			0 ... + 200	24 AC/DC 110/230 AC	A	3RS10 00-1CK10	1	1 unit	101	0.189		
			0 ... + 100	24 AC/DC 110/230 AC	B	3RS10 00-1CD20	1	1 unit	101	0.145		
			0 ... + 200	24 AC/DC 110/230 AC	A	3RS10 00-1CK20	1	1 unit	101	0.186		
	Type J (thermo-element)	Overshoot	- 50 ... + 50	24 AC/DC 110/230 AC	B	3RS10 10-1CD00	1	1 unit	101	0.150		
			0 ... + 100	24 AC/DC 110/230 AC	B	3RS10 10-1CK00	1	1 unit	101	0.186		
		Undershoot	0 ... + 100	24 AC/DC 110/230 AC	B	3RS10 10-1CD10	1	1 unit	101	0.150		
			0 ... + 200	24 AC/DC 110/230 AC	B	3RS10 10-1CK10	1	1 unit	101	0.190		
			0 ... + 100	24 AC/DC 110/230 AC	B	3RS10 10-1CD20	1	1 unit	101	0.150		
			0 ... + 200	24 AC/DC 110/230 AC	B	3RS10 10-1CK20	1	1 unit	101	0.191		
	Type K (thermo-element)	Overshoot	0 ... + 200	24 AC/DC 110/230 AC	B	3RS11 00-1CD20	1	1 unit	101	0.150		
			0 ... + 600	24 AC/DC 110/230 AC	B	3RS11 00-1CK20	1	1 unit	101	0.190		
		Undershoot	0 ... + 200	24 AC/DC 110/230 AC	B	3RS11 00-1CD30	1	1 unit	101	0.149		
			0 ... + 600	24 AC/DC 110/230 AC	B	3RS11 00-1CK30	1	1 unit	101	0.190		
			0 ... + 200	24 AC/DC 110/230 AC	B	3RS11 01-1CD20	1	1 unit	101	0.150		
			0 ... + 600	24 AC/DC 110/230 AC	B	3RS11 01-1CK20	1	1 unit	101	0.190		
	Type K (thermo-element)	Overshoot	0 ... + 200	24 AC/DC 110/230 AC	B	3RS11 01-1CD30	1	1 unit	101	0.150		
			0 ... + 600	24 AC/DC 110/230 AC	B	3RS11 01-1CK30	1	1 unit	101	0.190		
		Undershoot	+ 500 ... + 1000	24 AC/DC 110/230 AC	B	3RS11 01-1CD40	1	1 unit	101	0.150		
			+ 500 ... + 1000	24 AC/DC 110/230 AC	B	3RS11 01-1CK40	1	1 unit	101	0.190		
			Analogically adjustable for warning and disconnection (2 threshold values), 22.5 mm width, open/closed-circuit principle switchable; without memory; 1 NO + 1 CO									
				PT100 (resistance sensor)	Overshoot	- 50 ... + 50	24 AC/DC 24 ... 240 AC/DC	B	3RS10 20-1DD00	1	1 unit	101
0 ... + 100	24 AC/DC 24 ... 240 AC/DC	B				3RS10 20-1DW00	1	1 unit	101	0.175		
Undershoot	0 ... + 100	24 AC/DC 24 ... 240 AC/DC			B	3RS10 20-1DD10	1	1 unit	101	0.164		
	0 ... + 200	24 AC/DC 24 ... 240 AC/DC			B	3RS10 20-1DW10	1	1 unit	101	0.175		
	0 ... + 200	24 AC/DC 24 ... 240 AC/DC			B	3RS10 20-1DD20	1	1 unit	101	0.166		
	0 ... + 100	24 AC/DC 24 ... 240 AC/DC			B	3RS10 20-1DW20	1	1 unit	101	0.175		
	Type J (thermo-element)	Overshoot	- 50 ... + 50	24 AC/DC 24 ... 240 AC//DC	B	3RS10 30-1DD00	1	1 unit	101	0.165		
			0 ... + 100	24 AC/DC 24 ... 240 AC/DC	B	3RS10 30-1DW00	1	1 unit	101	0.174		
		Undershoot	0 ... + 100	24 AC/DC 24 ... 240 AC/DC	B	3RS10 30-1DD10	1	1 unit	101	0.166		
			0 ... + 200	24 AC/DC 24 ... 240 AC/DC	B	3RS10 30-1DW10	1	1 unit	101	0.175		
			0 ... + 100	24 AC/DC 24 ... 240 AC/DC	B	3RS10 30-1DD20	1	1 unit	101	0.163		
			0 ... + 200	24 AC/DC 24 ... 240 AC/DC	B	3RS10 30-1DW20	1	1 unit	101	0.173		
	Type K (thermo-element)	Overshoot	0 ... + 200	24 AC/DC 24 ... 240 AC/DC	B	3RS11 20-1DD20	1	1 unit	101	0.165		
			0 ... + 600	24 AC/DC 24 ... 240 AC/DC	B	3RS11 20-1DW20	1	1 unit	101	0.175		
		Undershoot	0 ... + 600	24 AC/DC 24 ... 240 AC/DC	B	3RS11 20-1DD30	1	1 unit	101	0.167		
			+ 500 ... + 1000	24 AC/DC	B	3RS11 20-1DW30	1	1 unit	101	0.175		
			0 ... + 200	24 ... 240 AC/DC	B	3RS11 21-1DW20	1	1 unit	101	0.179		
			0 ... + 600	24 ... 240 AC/DC	B	3RS11 21-1DW30	1	1 unit	101	0.176		
		+ 500 ... + 1000	24 AC/DC	B	3RS11 21-1DD40	1	1 unit	101	0.167			

Monitoring Relays



3RS10, 3RS11 Temperature Monitoring Relays

Relays, analogically adjustable, for 1 sensor



Analogically adjustable evaluation units with one and two threshold values

For analogically adjustable units, the threshold values and the hysteresis of 2 ... 20 % are set using a rotary potentiometer. For units with 2 threshold values, the adjustable hysteresis only applies to threshold value 1.

For the second threshold value, a fixed hysteresis of 5 % applies. The product range has been developed for applications where a setting accuracy of $\pm 5\%$ is sufficient.

Sensor	Function	Measuring range	Rated control supply voltage U_s AC 50/60 Hz	DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
		°C	V		Order No.	Price per PU			kg	
Analogically adjustable, 1 threshold value, width 22.5 mm; closed-circuit principle; without memory; 1 NO + 1 NC										
	PT100 (resistance sensor)	Over-shoot	- 50 ... + 50	24 AC/DC 110/230 AC	B	3RS10 00-2CD00	1	1 unit	101	0.125
			0 ... + 100	24 AC/DC 110/230 AC	B	3RS10 00-2CK00	1	1 unit	101	0.163
			0 ... + 200	24 AC/DC 110/230 AC	B	3RS10 00-2CD10	1	1 unit	101	0.125
					B	3RS10 00-2CK10	1	1 unit	101	0.165
	Type J (thermo-element)	Overshoot	0 ... + 200	24 AC/DC	B	3RS10 00-2CD20	1	1 unit	101	0.121
				B	3RS10 00-2CK20	1	1 unit	101	0.165	
3RS10 00-2CD10										
Analogically adjustable for warning and disconnection (2 threshold values), 22.5 mm width, open/closed-circuit principle switchable; without memory; 1 NO + 1 CO										
	PT100 (resistance sensor)	Overshoot	0 ... + 200	24 ... 240 AC/DC	B	3RS10 20-2DW20	1	1 unit	101	0.153
		Undershoot	0 ... + 200	24 AC/DC	B	3RS10 30-2DD20	1	1 unit	101	0.145
	Type J (thermo-element)	Overshoot	0 ... + 200	24 AC/DC	B	3RS11 20-2DD20	1	1 unit	101	0.140
3RS11 20-2DD20										

Accessories

Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
								kg
Blank labels								
	Blank labels, 20 mm x 7 mm, pastel turquoise ¹⁾	C	3RT19 00-1SB20		100	340 units	101	22.000
Push-in lugs and covers								
	For devices with 1 or 2 CO contacts	Push-in lugs For screw mounting, 2 units are required for each device	3RP19 03		1	10 units	101	0.002
		For devices with 1 or 2 CO contacts	Sealable covers For securing against unauthorized adjustment of setting knobs	3RP19 02		1	5 units	101
3RP19 03								
3RP19 02								

¹⁾ Computer labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH.

Monitoring Relays

3RS10, 3RS11 Temperature Monitoring Relays

Relays, digitally adjustable, for 1 sensor

Overview



The 3RS10/3RS11 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is sensed by the sensor in the medium, evaluated by the device and monitored for overshoot or undershoot or for staying within an operating range (window function).

The relays are also an excellent alternative to temperature controllers in the low-end performance range (2 or 3-point closed-loop control).

Benefits

- Very simple operation without complicated menu selections
- 2 or 3-point closed-loop control can be configured quickly
- All versions with removable terminals
- All versions with screw terminals or alternatively with innovative spring-loaded terminals

Application

The 3RS10 40, 3RS10 42, 3RS11 40, 3RS11 42, 3RS20 40 and 3RS21 40 temperature monitoring relays can be used in almost any application in which temperature overshoot or undershoot is not permitted, e.g. in the monitoring of set temperature limits and the output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Temperature limits for district heating plants
- Exhaust temperature monitoring
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

The short-circuit and open-circuit detection as well as the measuring range is limited, depending on the sensor type.

Measuring range in °C for thermoelements

Sensor type	Short-circuit	Open circuit	3RS11 40 Measuring range in °C	3RS11 42 Measuring range in °C
J	--	✓	-99 ... +999	-99 ... +1200
K	--	✓	-99 ... +999	-99 ... +1350
T	--	✓	-99 ... +400	-99 ... +400
E	--	✓	-99 ... +999	-99 ... +999
N	--	✓	-99 ... +999	-99 ... +999
S	--	✓	--	0 ... 1750
R	--	✓	--	0 ... 1750
B	--	✓	--	400 ... 1800

- ✓ Detection possible
- Detection not possible

Measuring range in °C for resistance sensors

Sensor type	Short-circuit	Open circuit	3RS10 40/41 Measuring range in °C	3RS10 42 Measuring range in °C
PT100	✓	✓	-50 ... +500	-50 ... +750
PT1000	✓	✓	-50 ... +500	-50 ... +500
KTY 83-110	✓	✓	-50 ... +175	-50 ... +175
KTY 84	✓	✓	-40 ... +300	-40 ... +300
NTC ¹⁾	✓	--	80 ... 160	80 ... 160

- ✓ Detection possible
- Detection not possible

¹⁾ Not for NTC B57227-K333-A1 (100 °C: 1.8 kΩ; 25 °C: 32.762 kΩ).

Monitoring Relays

3RS10, 3RS11 Temperature Monitoring Relays

Relays, digitally adjustable, for 1 sensor

Selection and ordering data


Digitally adjustable evaluation units

The digitally adjustable temperature monitoring relays are very simple to operate. The three-digit LED display always shows the current temperature. A separate relay with an NO contact is included for sensor monitoring. The relay is switched off in parameterization mode.

The following parameters can be adjusted:

- Sensor type
- 2 threshold values, ϑ_1 , ϑ_2
- 1 hysteresis; applies to both thresholds (0 ... 99 K)
- 1 delay time; applies to both thresholds (0 ... 999 s)
- Open/closed-circuit principle switchable
- Manual/remote RESET
- Function: overshoot or undershoot or window monitoring

Wide-range voltage versions are electrically isolated.
The temperature ranges depend on the sensor type.

Sensor	Measuring range (measuring range limit depends on the sensor)	Rated control supply voltage U_s AC 50/60 Hz	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
				Order No.	Price per PU			kg	
Temperature monitoring relays, digitally adjustable, 2 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, memory function possible with external jumper, device parameters are non-volatile									
 3RS10 40-1GD50	PT100/1000; KTY83/84; NTC	-50 ... +500 °C	24 AC/DC	A	3RS10 40-1GD50	1	1 unit	101	0.317
			24 ... 240 AC/DC	A	3RS10 40-1GW50	1	1 unit	101	0.329
	(resistance sensors) ¹⁾	-50 ... +932 °F	24 AC/DC	B	3RS20 40-1GD50	1	1 unit	101	0.189
			24 ... 240 AC/DC	B	3RS20 40-1GW50	1	1 unit	101	0.186
	TYPE J, K, T, E, N (thermoelement)	-99 ... +999 °C	24 AC/DC	A	3RS11 40-1GD60	1	1 unit	101	0.318
			24 ... 240 AC/DC	B	3RS11 40-1GW60	1	1 unit	101	0.329
	-99 ... +1830 °F	24 AC/DC	B	3RS21 40-1GD60	1	1 unit	101	0.317	
		24 ... 240 AC/DC	B	3RS21 40-1GW60	1	1 unit	101	0.317	
Temperature monitoring relays, digitally adjustable, 2 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, tripping state and device parameters are non-volatile									
	PT100/1000; KTY83/84; NTC	- 50 ... + 750 °C	24 AC/DC	B	3RS10 42-1GD70	1	1 unit	101	0.317
	(resistance sensors) ¹⁾		24 ... 240 AC/DC	B	3RS10 42-1GW70	1	1 unit	101	0.331
	TYPE J, K, T, E, N, R, S, B (thermoelement)	- 99 ... +1800 °C	24 AC/DC	B	3RS11 42-1GD80	1	1 unit	101	0.318
		24 ... 240 AC/DC	B	3RS11 42-1GW80	1	1 unit	101	0.329	

¹⁾ NTC type: B57227-K333-A1 (100 °C: 1.8 k Ω ; 25 °C: 32.762 k Ω).

Monitoring Relays

3RS10, 3RS11 Temperature Monitoring Relays

Relays, digitally adjustable, for 1 sensor

Digitally adjustable evaluation units

The digitally adjustable temperature monitoring relays are very simple to operate. The three-digit LED display always shows the current temperature. A separate relay with an NO contact is included for sensor monitoring. The relay is switched off in parameterization mode.

The following parameters can be adjusted:


- Sensor type
- 2 threshold values, ϑ_1 , ϑ_2
- 1 hysteresis; applies to both thresholds (0 ... 99 K)
- 1 delay time; applies to both thresholds (0 ... 999 s)
- Open/closed-circuit principle switchable
- Manual/remote RESET
- Function: overshoot or undershoot or window monitoring

Wide-range voltage versions are electrically isolated. The temperature ranges depend on the sensor type.

Sensor	Measuring range (measuring range limit depends on the sensor)	Rated control supply voltage U_s AC 50/60 Hz	DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				Order No.	Price per PU			kg
V								
Temperature monitoring relays, digitally adjustable, 2 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, memory function possible with external jumper, device parameters are non-volatile								
PT100/1000; KTY83/84; NTC (resistance sensors) ¹⁾	-50 ... +500 °C	24 AC/DC	B	3RS10 40-2GD50	1	1 unit	101	0.267
		24 ... 240 AC/DC	B	3RS10 40-2GW50	1	1 unit	101	0.281
	-50 ... +932 °F	24 AC/DC	C	3RS20 40-2GD50	1	1 unit	101	0.100
		24 ... 240 AC/DC	C	3RS20 40-2GW50	1	1 unit	101	0.100
TYPE J, K, T, E, N (thermoelement)	-99 ... +999 °C	24 AC/DC	B	3RS11 40-2GD60	1	1 unit	101	0.269
		24 ... 240 AC/DC	B	3RS11 40-2GW60	1	1 unit	101	0.300
	-99 ... +1830 °F	24 AC/DC	C	3RS21 40-2GD60	1	1 unit	101	0.100
		24 ... 240 AC/DC	C	3RS21 40-2GW60	1	1 unit	101	0.100
Temperature monitoring relays, digitally adjustable, 3 threshold values, width 45 mm; 1 CO + 1 CO + 1 NO, tripping state and device parameters are non-volatile								
PT100/1000; KTY83/84; NTC (resistance sensors) ¹⁾	-50 ... +750 °C	24 AC/DC	C	3RS10 42-2GD70	1	1 unit	101	0.267
		24 ... 240 AC/DC	C	3RS10 42-2GW70	1	1 unit	101	0.281
TYPE J, K, T, E, N, R, S, B (thermoelement)	-99 ... +1800 °C	24 AC/DC	C	3RS11 42-2GD80	1	1 unit	101	0.269
		24 ... 240 AC/DC	C	3RS11 42-2GW80	1	1 unit	101	0.300

¹⁾ NTC type: B57227-K333-A1 (100 °C: 1.8 k Ω ; 25 °C: 32.762 k Ω).

Accessories

Design	Language used for labels	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
								kg
Blank labels								
Blank labels, 20 x 7 mm, pastel turquoise ¹⁾		C	3RT19 00-1SB20		100 340 units		101	22.000
Replaceable cover labels for digital devices								
Replaceable cover labels for digital devices according to DIN 3440	German English	B B	3RS19 01-1A 3RS19 01-1C		1 5 units 1 5 units		101	0.005 0.005
Push-in lugs								
 3RP19 03	Push-in lugs for screw mounting, 2 units are required for each device	▶	3RP19 03		1 10 units		101	0.002

Matching sensors can be found on the Internet at www.siemens.com/temperature

¹⁾ Computer labeling system for individual inscription of unit labeling plates available from: murrplastik Systemtechnik GmbH.

* You can order this quantity or a multiple thereof.

Monitoring Relays

3RS10, 3RS11 Temperature Monitoring Relays

Relays, digitally adjustable for up to 3 sensors

Overview



The 3RS10 41 temperature monitoring relays can be used for measuring temperatures in solid, liquid and gas media. The temperature is sensed by the sensor in the medium, evaluated by the device and monitored for overshoot or undershoot or for staying within an operating range (window function). The evaluation unit can evaluate up to 3 resistance sensors at the same time and is specially designed for monitoring motor windings and bearings.

Benefits

- Very simple operation without complicated menu selections
- Space-saving with 45 mm width
- All devices are available alternatively with spring-loaded terminals
- 2- or 3-point closed-loop control can be configured quickly
- All versions with removable terminals
- All versions with screw terminals or alternatively with innovative spring-loaded terminals

Application

The 3RS10 41 temperature monitoring relays can be used in almost any application in which several temperatures have to be monitored simultaneously for overshoot or undershoot or within a range.

Monitoring of set temperature limits and output of alarm messages for:

- Plant and environment protection
- Temperature limits for process variables e.g. in the packaging industry or electroplating
- Controlling equipment and machines such as heating, climate and ventilation systems, solar collectors, heat pumps or warm water supplies
- Motor, bearing and gear oil monitoring
- Monitoring of coolants

The short-circuit and open-circuit detection as well as the measuring range is limited, depending on the sensor type.

Measuring range in °C for resistance sensors

Sensor type	Open-circuit	Short-circuit	Measuring range in °C
PT100	✓	✓	-50 ... +500
PT1000	✓	✓	-50 ... +500
KTY 83-110	✓	✓	-50 ... +175
KTY 84	✓	✓	-40 ... +300
NTC	--	✓	+80 ... +160

- ✓ Detection possible
- Detection not possible

Monitoring Relays

3RS10, 3RS11 Temperature Monitoring Relays

Relays, digitally adjustable for up to 3 sensors

Selection and ordering data

Digitally adjustable evaluation units

The digitally adjustable temperature monitoring relays are very simple to operate. The three-digit LED display always shows the current temperature. A separate relay with an NO contact is included for sensor monitoring. The relay is switched off in parameterization mode.

The following parameters can be adjusted:

- Sensor type
- 2 threshold values, ϑ_1 , ϑ_2
- 1 hysteresis; applies to both thresholds (0 ... 99 K)
- 1 delay time; applies to both thresholds (0 ... 999 s)
- Open/closed-circuit principle
- Function: Overshoot or undershoot or window monitoring

Wide-range voltage versions are electrically isolated.
The temperature ranges depend on the sensor type.

Sensor	Number of sensors	Measuring range	Rated control supply voltage U_s	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		°C	V		Order No.	Price per PU			kg

Motor monitoring relays, digitally adjustable for up to 3 sensors, width 45 mm; 1 CO + 1 CO + 1 NO



PT100/1000; 1 ... 3 KTY83/84; sensors NTC (resistance sensors) ¹⁾		-50 ... +500	24 ...240 AC/DC	A	3RS10 41-1GW50		1	1 unit	101	0.333
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3RS10 41-1GW50

¹⁾ NTC type: B57227-K333-A1 (100 °C: 1.8 k Ω ; 25 °C: 32.762 k Ω).

Sensor	Number of sensors	Measuring range	Rated control supply voltage U_s	DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
		°C	V		Order No.	Price per PU			kg

Motor monitoring relays, digitally adjustable for up to 3 sensors, width 45 mm; 1 CO + 1 CO + 1 NO

PT100/1000; 1 ... 3 KTY83/84; sensors NTC (resistance sensors) ¹⁾		-50 ... +500	24 ...240 AC/DC	B	3RS10 41-2GW50		1	1 unit	101	0.283
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¹⁾ NTC type: B57227-K333-A1 (100 °C: 1.8 k Ω ; 25 °C: 32.762 k Ω).

Accessories

Design	Language used for labels	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
								kg

Blank labels

Blank labels, 20 x 7 mm, pastel turquoise ¹⁾		C	3RT19 00-1SB20		100	340 units	101	22.000
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Replaceable cover labels for digital devices

Replaceable cover labels for digital devices according to DIN 3440	German	B	3RS19 01-1B		1	5 units	101	0.005
	English	B	3RS19 01-1D		1	5 units	101	0.005

Push-in lugs



Push-in lugs for screw mounting, 2 units are required for each device		▶	3RP19 03		1	10 units	101	0.002
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3RP19 03

Matching sensors can be found on the Internet at www.siemens.com/temperature

¹⁾ Computer labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH

Monitoring Relays

3RN1 Thermistor Motor Protection

For PTC sensors

Overview



Thermistor motor protection devices are used for direct monitoring of the motor winding temperature. For this purpose, the motors are equipped with temperature-dependent resistors (PTC) that are directly installed in the motor winding and abruptly change their resistance at their limit temperature.

Benefits

- Thanks to direct motor protection, overdimensioning of the motors is not necessary
- No additional overload protection equipment is necessary
- No settings on the device are necessary
- Solid-state time-delay output thanks to variants with hard gold-plated contacts
- Rapid error diagnosis thanks to variants that indicate open- and short-circuit in the sensor circuit
- All versions with removable terminals
- All versions with screw terminals or alternatively with innovative spring-loaded terminals

Application

Direct motor protection through temperature monitoring of the motor winding offers 100 % motor protection even under the most difficult ambient conditions, without the need to make adjustments on the device. Versions with hard gold-plated contacts ensure, in addition, a high switching reliability that is even higher than an electronic control.

Motor protection:

- At increased ambient temperatures
- For high switching frequency
- For long start-up and braking procedures
- Used together with frequency converters (low speeds)

ATEX approval for operation in areas subject to explosion hazard

The SIRIUS 3RN1 thermistor motor protection relay for PTC sensors is certified according to ATEX Ex II (2) G and GD for gases and dust.

See "Appendix" --> "Standards and approvals" -->

"Type overview of approved devices for explosion-protected areas (ATEX Explosion Protection)".

Monitoring Relays



3RN1 Thermistor Motor Protection

For PTC sensors

Selection and ordering data

Thermistor motor protection relays for PTC thermistors (Type A PTCs)

- Monostable version with closed-circuit principle, triggers in the event of control supply voltage failure
- PTB01 ATEX approval
See "Appendix" --> "Standards and approvals" --> "Type overview of approved devices for potentially explosive areas (ATEX explosion protection)".
- 3RN10 13-.BW01: bistable version, does not trigger in the event of control supply voltage failure
- All devices except for 24 V AC/DC feature electrical isolation

RESET	Contacts	Rated control supply voltage U_s 50/60 Hz	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.
				Order No.	Price per PU			kg
V								
Compact signal evaluation units, width 22.5 mm, 1 LED								
	Terminal A1 is jumpered with the root of the changeover contact							
Auto	1 CO	24 AC/DC 110 AC 230 AC	▶ A ▶	3RN10 00-1AB00 3RN10 00-1AG00 3RN10 00-1AM00	1 1 1	1 unit 1 unit 1 unit	101 101 101	0.114 0.157 0.156
Standard evaluation units, width 22.5 mm, 2 LEDs								
	Auto	1 NO + 1 NC	▶ ▶ ▶ ▶	3RN10 10-1CB00 3RN10 10-1CG00 3RN10 10-1CM00 3RN10 10-1CW00	1 1 1 1	1 unit 1 unit 1 unit 1 unit	101 101 101 101	0.134 0.174 0.175 0.146
		2 CO	A A A	3RN10 10-1BB00 3RN10 10-1BG00 3RN10 10-1BM00	1 1 1	1 unit 1 unit 1 unit	101 101 101	0.162 0.213 0.213
		2 CO, gold-plated	B	3RN10 10-1GB00	1	1 unit	101	0.154
	Manual/ Remote ¹⁾	1 NO + 1 NC	▶ ▶	3RN10 11-1CB00 3RN10 11-1CK00	1 1	1 unit 1 unit	101 101	0.147 0.188
		Short-circuit detection for sensor circuit						
	Manual/ Remote ¹⁾	2 CO	A B A	3RN10 11-1BB00 3RN10 11-1BG00 3RN10 11-1BM00	1 1 1	1 unit 1 unit 1 unit	101 101 101	0.163 0.214 0.212
		2 CO, gold-plated	B	3RN10 11-1GB00	1	1 unit	101	0.165
	Non-volatile ²⁾							
	Manual/ Auto/ Remote	1 NO + 1 NC	▶ ▶	3RN10 12-1CB00 3RN10 12-1CK00	1 1	1 unit 1 unit	101 101	0.148 0.188
	3RN10 13-1BB00	Non-volatile ²⁾ , short-circuit detection in sensor circuit						
	Manual/ Auto/ Remote	2 CO	B B A	3RN10 12-1BB00 3RN10 12-1BG00 3RN10 12-1BM00	1 1 1	1 unit 1 unit 1 unit	101 101 101	0.164 0.214 0.216
	2 CO, gold-plated	B	3RN10 12-1GB00	1	1 unit	101	0.155	
	Non-volatile ²⁾ , short-circuit and open-circuit detection and indication in sensor circuit; wide-range voltage with screw terminal with safe isolation							
	Manual/ Auto/ Remote	2 CO	▶ ▶	3RN10 13-1BB00 3RN10 13-1BW10	1 1	1 unit 1 unit	101 101	0.160 0.172
	2 CO, gold-plated	B	3RN10 13-1GW10	1	1 unit	101	0.168	
Evaluation units for 2 sensor circuits, warning and disconnection, width 22.5 mm, 3 LEDs								
	Test / RESET button, non-volatile ²⁾							
Manual/ Auto/ Remote	1 NO + 1 CO	▶	3RN10 22-1DW00	1	1 unit	101	0.173	
Evaluation units for 6 sensor circuits, multiple motor protection, width 45 mm, 8 LEDs								
	Test / RESET button, non-volatile ²⁾							
Manual/ Auto/ Remote	1 NO + 1 NC	▶	3RN10 62-1CW00	1	1 unit	101	0.296	
Bistable evaluation units, width 22.5 mm								
	Test / RESET button, non-volatile ²⁾ , short-circuit and open-circuit detection and indication in sensor circuit							
Manual/ Auto/ Remote	2 CO	▶	3RN10 13-1BW01	1	1 unit	101	0.169	

¹⁾ The unit can be reset with the RESET button or by disconnecting the control supply voltage.

²⁾ For more information on protection against voltage failure see Technical Information LV 1 T.


Monitoring Relays

3RN1 Thermistor Motor Protection

For PTC sensors

Thermistor motor protection relays for PTC thermistors (Type A PTCs)

- Monostable version with closed-circuit principle, triggers in the event of control supply voltage failure
- PTB01 ATEX approval
See "Appendix" --> "Standards and approvals" --> "Type overview of approved devices for potentially explosive areas (ATEX explosion protection)".
- 3RN10 13-.BW01: bistable version, does not trigger in the event of control supply voltage failure
- All devices except for 24 V AC/DC feature electrical isolation

RESET	Contacts	Rated control supply voltage U_s 50/60 Hz	DT	Spring-loaded terminals	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx.	
		V		Order No.	Price per PU			kg	
Compact signal evaluation units, width 22.5 mm, 1 LED									
	Terminal A1 is jumpered with the root of the changeover contact								
Auto	1 CO	24 AC/DC 110 AC 230 AC	A B B	3RN10 00-2AB00 3RN10 00-2AG00 3RN10 00-2AM00	1 1 1	1 unit 1 unit 1 unit	101 101 101	0.104 0.153 0.153	
Standard evaluation units, width 22.5 mm, 2 LEDs									
	Auto	1 NO + 1 NC	24 AC/DC 110 AC 230 AC 24 ... 240 AC/DC	▶ B A A	3RN10 10-2CB00 3RN10 10-2CG00 3RN10 10-2CM00 3RN10 10-2CW00	1 1 1 1	1 unit 1 unit 1 unit 1 unit	101 101 101 101	0.116 0.153 0.159 0.127
		2 CO	24 AC/DC 110 AC 230 AC	C C C	3RN10 10-2BB00 3RN10 10-2BG00 3RN10 10-2BM00	1 1 1	1 unit 1 unit 1 unit	101 101 101	0.137 0.139 0.190
		2 CO, gold-plated	24 AC/DC	C	3RN10 10-2GB00	1	1 unit	101	0.139
	Manual/ Remote ¹⁾	1 NO + 1 NC	24 AC/DC 110/230 AC	A A	3RN10 11-2CB00 3RN10 11-2CK00	1 1	1 unit 1 unit	101 101	0.125 0.164
	Short-circuit detection for sensor circuit	2 CO	24 AC/DC 110 AC 230 AC	C C B	3RN10 11-2BB00 3RN10 11-2BG00 3RN10 11-2BM00	1 1 1	1 unit 1 unit 1 unit	101 101 101	0.138 0.190 0.192
		2 CO, gold-plated	24 AC/DC	C	3RN10 11-2GB00	1	1 unit	101	0.154
	Non-volatile ²⁾	1 NO + 1 NC	24 AC/DC 110/230 AC	A B	3RN10 12-2CB00 3RN10 12-2CK00	1 1	1 unit 1 unit	101 101	0.125 0.161
	Non-volatile ²⁾ , short-circuit detection in sensor circuit	2 CO	24 AC/DC 110 AC 230 AC	C C C	3RN10 12-2BB00 3RN10 12-2BG00 3RN10 12-2BM00	1 1 1	1 unit 1 unit 1 unit	101 101 101	0.130 0.130 0.181
		2 CO, gold-plated	24 AC/DC	C	3RN10 12-2GB00	1	1 unit	101	0.140
	Non-volatile ²⁾ , short-circuit and open-circuit detection and indication in sensor circuit	2 CO	24 AC/DC 24 ... 240 AC/DC	A A	3RN10 13-2BB00 3RN10 13-2BW00	1 1	1 unit 1 unit	101 101	0.140 0.151
		2 CO, gold-plated	24 ... 240 AC/DC	C	3RN10 13-2GW00	1	1 unit	101	0.143
	Evaluation units for 2 sensor circuits, warning and disconnection, width 22.5 mm, 3 LEDs								
Test/RESET button, non-volatile ²⁾	1 NO + 1 CO	24 ... 240 AC/DC	B	3RN10 22-2DW00	1	1 unit	101	0.147	
Evaluation units for 6 sensor circuits, multiple motor protection, width 45 mm, 8 LEDs									
Test/RESET button, non-volatile ²⁾	1 NO + 1 NC	24 ... 240 AC/DC	B	3RN10 62-2CW00	1	1 unit	101	0.251	
Bistable evaluation units, width 22.5 mm									
Test/RESET button, non-volatile ²⁾ , short-circuit and open-circuit detection and indication in sensor circuit	2 CO	24 ... 240 AC/DC	B	3RN10 13-2BW01	1	1 unit	101	0.139	

¹⁾ The unit can be reset with the RESET button or by disconnecting the control supply voltage.


²⁾ For more information on protection against voltage failure see Technical Information LV 1 T.

Monitoring Relays

3RN1 Thermistor Motor Protection

For PTC sensors

Accessories

Use	Version	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG	Weight per PU approx. kg
Blank labels								
	Blank labels, 20 mm x 7 mm, pastel turquoise ¹⁾	C	3RT19 00-1SB20		100	340 units	101	22.000
Push-in lugs								
 3RP19 03	For devices with 1 or 2 CO contacts	Push-in lugs For screw mounting, 2 units are required for each device	3RP19 03		1	10 units	101	0.002

¹⁾ Computer labeling system for individual inscription of unit labeling plates available from:
murrplastik Systemtechnik GmbH.