



Technical Data

General Data			Unit			
Mechanical life	Basic unit Basic unit with mounted auxiliary contact block Basic unit with mounted electronically compatible auxiliary contact block			30 million operating cycles 10 million operating cycles 5 million operating cycles		
Rated operational voltage U_i	(pollution severity 3)		V	690		
Safe isolation	between coil and main contacts (acc. to DIN VDE 0106 Part 101 and A1 [draft 2/89])		V	400		
Permissible ambient temperature	in operation when stored		°C (°F) °C (°F)	−25 to +60 (−13 to +140) −55 to +80 (−67 to +176)		
Degree of protection acc. to IEC 947-1 and DIN 40 050				IP 20, coil system IP 40		
Shock resistance	Rectangular pulse	AC coil DC coil	g/ms	10/5 and 5/10		
	Sine pulse	AC coil DC coil	g/ms	15/5 and 8/10 15/5 and 8/10		
Conductor Cross-Sections						
Screw connection (1 or 2 conductor connections possible)	solid finely stranded with end sleeve AWG conductor connections, solid or stranded Terminal screws Tightening torque		mm ² mm ² mm ² AWG Nm (in-lbs)	2 × (0.5 to 1.5) acc. to IEC 947; max. 2 × (0.75 to 4) 2 × (0.5 to 1.5); 2 × (0.75 to 2.5) 2 × (18 to 14) M3 0.8 to 1.2 (7 to 10.3)		
Cage Clamp connection (1 or 2 conductor connections possible)	Auxiliary conductor and coil terminals: solid finely stranded with end sleeve finely stranded without end sleeve AWG conductor connections, solid or stranded		mm ² mm ² mm ² AWG	2 × (0.5 to 2.5) 2 × (0.5 to 1.5) 2 × (0.5 to 2.5) 2 × (18 to 14)		
For conductor cross-sections ≤ 1 mm ² an "insulation-stop" has to be used, 3RT1916-4JA02						
Relay Control						
Coil voltage tolerance	AC operation			at 50Hz: 0.8 to 1.1 × U_s at 60Hz: 0.85 to 1.1 × U_s		
	DC operation			at +50°C: 0.8 to 1.1 U_s at +60°C: 0.85 to 1.1 U_s		
Power consumption of the coils (with cold coil and 1.0 × U_s)						
AC coil	inrush p.f. sealed p.f.		VA	50Hz: 27 60Hz: 24		
			VA	0.8 4.6 0.27		
DC coil	inrush = sealed		W	0.75 3.5 0.27 3.2		
Permissible residual current of the electronics (at 0 signal)						
	AC operation		mA	$< 3\text{mA} \times \left(\frac{230\text{V}}{U_s}\right)$		
	DC operation		mA	$< 10\text{mA} \times \left(\frac{24\text{V}}{U_s}\right)$		
Operating times[ⓐ] The values are valid with the coil in cold state and at operating temperature for coil voltage tolerance Break-time = opening time + arcing time						
AC coil	Closing	ON-delay OFF-delay	Coil voltage tolerance NO NC	ms	$0.8 \text{ to } 1.1 \times U_s$	$1.0 \times U_s$
					8 to 35	10 to 25
					6 to 20	7 to 20
					4 to 18	5 to 18
					5 to 30	7 to 20
Opening	ON-delay OFF-delay	NO NC	ms	10 to 15		
Arcing time			ms			
DC coil	Closing	ON-delay OFF-delay	Coil voltage tolerance NO NC	ms	$0.85 \text{ to } 1.1 \times U_s$	$1.0 \times U_s$
					25 to 100	30 to 50
					20 to 90	25 to 45
					7 to 10	7 to 9
					13 to 16	13 to 15
Opening	ON-delay OFF-delay	NO NC	ms			

ⓐThe opening time of the NC contacts and the closing time of the NO contacts are increased when the contactor coil is protected against voltage peaks (diode 6 to 10 times; diode combination 2 to 6 times; varistor +2 to 5 ms).

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Logic Control



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AC/DC Load Ratings		Unit					
UL and CSA switching capacity	AC 600V maximum NEMA A600		24V	120V	240V	480V	600V
	make break	A A	60 6	60 6	30 3	15 1.5	12 1.2
Continuous current AC: 10 Amp DC:	DC 600V maximum NEMA P600		24V	125V	250V	300V	600V
	make / break	A	1.1	1.1	0.55	0.2	0.2
Rated operational currents							
I_e / AC-12 I_e / AC-15/AC-14 at U_s at rated operational voltage U_e	up to 230V	A	10				
	400V	A	6				
	500V	A	3				
	600V	A	2				
	690V	A	1				
			Current paths in series				
			1	2	3		
I_e / DC-12 at rated operational voltage U_e	24V	A	10	10	10		
	60V	A	6	10	10		
	110V	A	3	4	10		
	220V	A	1	2	3.6		
	440V	A	0.2	1.3	2.5		
	600V	A	0.15	0.65	1.8		
I_e / DC-13 at rated operational voltage U_e	24V	A	10	10	10		
	60V	A	2	3.5	4.7		
	110V	A	1	1.3	3		
	220V	A	0.25	0.9	1.2		
	440V	A	0.1	0.2	0.5		
	600V	A	0.075	0.1	0.26		
Switching frequency z' in operating cycles per hour (1/h) at rated operation for utilization duty		No-load operation AC-12 / DC-12 AC-15 / AC-14 DC-13	1/h 1/h 1/h 1/h	10000 1000 1000 1000			
Permissible mounting position							
<p>The relays are designed for operation on vertical mounting surface.</p>							
Positively driven contacts							
<p>The contactor relays fulfill the conditions for positively driven operations as required by the safety rules for control units on power-operated presses in the metal-working industry (ZH 1/457) or correspond to the accident prevention regulations of the Schweizer Unfallversicherungsanstalt (Swiss Institute for accident insurance).</p> <p>There is positively driven operation if it is insured that the NC and NO contacts cannot be closed at the same time.</p>							
Type 3RH11	Basic unit	Basic unit with 3RH1911 plug-on block					
		Lower level	Upper level		Different levels		
	ZH1 / 457, SUVA	ZH1 / 457, SUVA	ZH1 / 457, SUVA		ZH1 / 457, SUVA		
Contact reliability							
Contact reliability at 17V, 1mA, acc. to DIN 19 240				Contact frequency < 10 ⁶ , i.e. less than 1 fault per 100 million operating cycles			



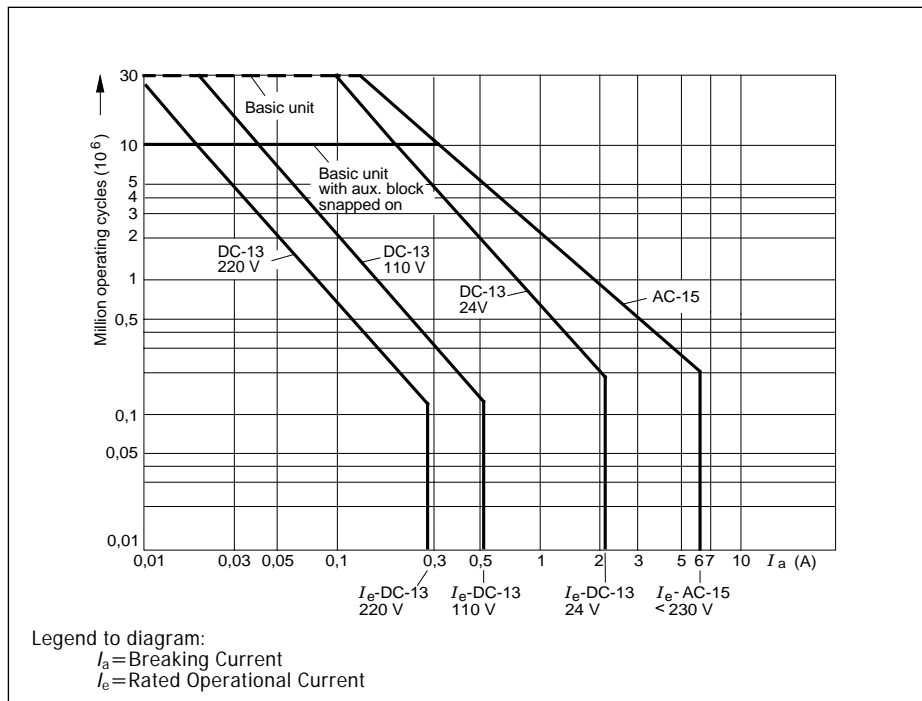
Technical Data

Electrical life of relay contacts

The electrical life is mainly dependent on the breaking current, provided the command devices are operating randomly, i.e. not synchronized with the phase angle of the supply system.

The characteristic curves are applied for:

- 3RH11 control relays
- Auxiliary contact blocks, type 3RH1911, 3RH1921, for contactors of the sizes 3RT101 to 3RT104.



3RH11 Interface Relays

Technical Data^①

Relay		3RT101.-1HB4.	3RT101.-1JB4.	3RT101.-1KB4.	3RT102.-1KB4.		
Mechanical life	operating cycles	30 million					
Coil voltage tolerance		0.7 to $1.35 \times U_S = 17$ to 32V					
Power consumption of the coils (with cold coil)	at U_S 17V	1.2W			2.1W		
	24V	2.3W			4.2W		
	30V	3.6W			6.6W		
closing = closed							
Permissible residual current of the electronics (with 0 signal)		$<10\text{mA} \times \left(\frac{24\text{V}}{U_S}\right)$			$<6\text{mA} \times \left(\frac{24\text{V}}{U_S}\right)$		
Surge suppression of the coil		without overvoltage protection	with diode	with varistor	with varistor		
Operating times of the coupling relays							
Closing	at 17V	ON-delay	NO	40 to 120 ms	40 to 120 ms	40 to 120 ms	93 to 270 ms
		OFF-delay	NC	30 to 70 ms	30 to 70 ms	30 to 70 ms	83 to 250 ms
	at 24V	ON-delay	NO	30 to 60 ms	30 to 60 ms	30 to 60 ms	64 to 87 ms
		OFF-delay	NC	20 to 40 ms	20 to 40 ms	20 to 40 ms	55 to 76 ms
	at 30V	ON-delay	NO	20 to 50 ms	20 to 50 ms	20 to 50 ms	53 to 64 ms
		OFF-delay	NC	15 to 30 ms	15 to 30 ms	15 to 30 ms	45 to 56 ms
Opening	at 17 to 30V	ON-delay	NO	7 to 17 ms	40 to 60 ms	7 to 17 ms	18 to 19 ms
		OFF-delay	NC	22 to 30 ms	60 to 70 ms	22 to 30 ms	24 to 25 ms
Safe isolation	acc. to DIN VDE 0106 Part 101 A1 (draft 02/89) between coil and contacts	400V					

^①Any technical data not given in this table are identical to those of the 3RH11 control relays from pages 592 and 593.

The 3RH11 interface relays cannot be expanded by auxiliary contact blocks.