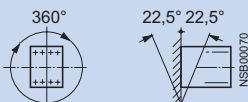



Contactors Relays

SIRIUS contactor relays, 4- and 8-pole

Technical specifications

Contactor	Type Size	3RH1 S00
Permissible mounting position		
The contactors are designed for operation on a vertical mounting surface.	AC and DC operation	
Upright mounting (only for 3RH11/3RH12/3RH14)	AC operation	 <p>Special design required: The 13th to 16th position of the Order No. must be replaced with -1AA0.</p> <p>Standard version (for coupling relays and contactor relays with extended operating range 3RH11 22-2K.40, please ask)</p>
	DC operation	

Positively-driven operation of contacts in contactor relays

RH1:

Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (removable) according to:

- ZH 1/457
- IEC 60947-5-1, Amendment 2, Annex L, Edition 10.1999

3RH12:

Yes, in the basic unit and the auxiliary switch block as well as between the basic unit and the snap-on auxiliary switch block (fixed) according to:

- ZH 1/457
- IEC 60947-5-1, Amendment 2, Annex L, Edition 10.1999
- SUVA

Note

3RH19 11-.NF. solid-state compatible auxiliary switch blocks have no positively-driven contacts.

Explanation:

There is positively-driven operation if it is ensured that the NC and NO contacts cannot be closed at the same time.

ZH1/457

Safety rules for control units on power-operated presses in the metal-working industry.

IEC 60947-5-1, Amendment 2, Annex L, Edition 10.1999

Low-voltage controlgear, control equipment, and switching elements. Special requirements for positively-driven contacts

SUVA

Accident prevention regulations of the Schweizer Unfallverhütungsanstalt (Swiss Institute for Accident Insurance)

Contact reliability

Contact reliability at 17 V, 1 mA acc. to DIN 19240

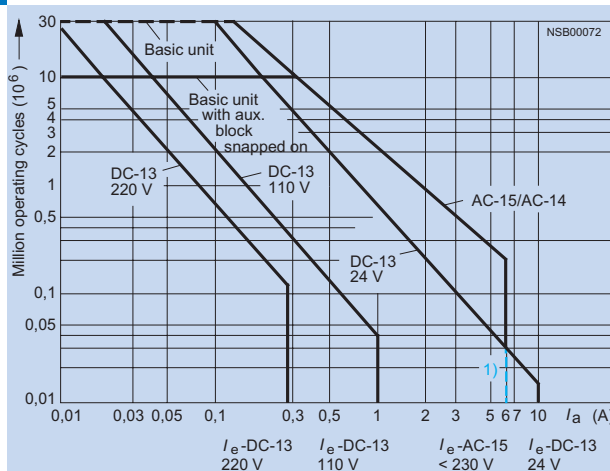
Frequency of contact faults < 10^{-8} , i.e. < 1 fault per 100 million operating cycles

Contact endurance for AC-15/AC-14 and DC-13 utilization categories

The contact endurance is mainly dependent on the breaking current. The conditions are arbitrary i.e. control stations that do not switch synchronously to the phase angle of the network. If magnetic circuits other than the contactor coil systems or solenoid valves are present, e.g. magnetic brakes, protective measures for the load circuits are necessary. RC elements and freewheel diodes would be suitable as protective features.

The characteristic curves apply to:

- 3RH11, 3RH12 contactor relays
- 3RH14 latched contactor relays
- 3RH19 11 auxiliary switch blocks.



Legend:

I_a = Breaking current

I_e = Rated operating current

1) Snap-on auxiliary switch blocks I_e/DC-13 max. 6 A.

Contactors Relays

SIRIUS contactor relays, 4- and 8-pole

Contactors	Type Size	3RH11, 3RH12 S00	3RH14 S00
CSA and UL rated data			
Basic units and auxiliary switch blocks			
Rated control supply voltage	AC V	max. 600	
Rated voltage	AC V	600	
Switching capacity		A 600, Q 600	
Continuous current at AC 240 V	A	10	
General data			
Mechanical endurance	Basic units	Operating cycles	30 million
	Basic unit with snap-on auxiliary switch block	Operating cycles	10 million
	Solid-state compatible auxiliary switch block	Operating cycles	5 million
Rated insulation voltage U_i (pollution degree 3)	V	690	
Rated impulse withstand voltage U_{imp}	kV	6	
Safe isolation between coil and contacts in the basic unit (acc. to DIN VDE 0106 Part 101 and A1 [draft 02/89])	V	400	
Permissible ambient temperature	in operation when stored	°C °C	-25 ... +60 -55 ... +80
Degree of protection acc. to IEC 60947-1 and IEC 60529	IP20, coil assembly IP40		
Shock resistance			
Rectangular pulse	AC/DC operation	g/ms	10/5 and 5/10
Sine pulse	AC/DC operation	g/ms	15/5 and 8/10
Conductor cross-sections			
Screw terminal (1 or 2 conductors connectable)	Auxiliary conductor and coil terminals		
	• Solid	mm ²	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5) to IEC 60947; max. 2 x (1 ... 4)
	• Finely stranded with end sleeve	mm ²	2 x (0.5 ... 1.5); 2 x (0.75 ... 2.5)
	• Solid or stranded AWG conductors	AWG	2 x (20 ... 16); 2 x (18 ... 14); 1 x 12
	• Terminal screws		M 3
	- Tightening torque	N/m	0.8 ... 1.2 (7 ... 10.3 lb.in)
Cage Clamp terminal (1 or 2 conductors connectable)	Auxiliary conductor and coil terminals		
	• Solid	mm ²	2 x (0.25 ... 2.5)
	• Finely stranded with end sleeve	mm ²	2 x (0.25 ... 1.5)
	• Finely stranded without end sleeve	mm ²	2 x (0.25 ... 2.5)
	• Solid or stranded AWG conductors	AWG	2 x (24 ... 14)
Short-circuit protection			
(weld-free protection at $I_k \geq 1$ kA)			
• Fuse links, operational class gL/gG			
- DIAZED Type 5SB	A	10	
- NEOZED Type 5SE	A	10	
• or miniature circuit-breakers with C characteristic (short-circuit current $I_k < 400$ A)	A	6	

For associated 8WA2 803/8WA2 804 opening tool, see Page 2/191.

An "insulation stop" must be used for conductor cross-sections ≤ 1 mm², see accessories on Page 2/191.

Max. outer diameter of conductor insulation: 3.6 mm.

Contactors Relays

SIRIUS contactor relays, 4- and 8-pole

Contactors	Type Size	3RH1 . S00	
Control circuit			
Coil operating range			
AC operation		at 50 Hz at 60 Hz	0.8 ... 1.1 x U_s 0.85 ... 1.1 x U_s
DC operation		at +50 °C at +60 °C	0.8 ... 1.1 x U_s 0.85 ... 1.1 x U_s
Power consumption of magnetic coil (when coil is cold and 1.0 x U_s)			
AC operation, 50/Hz	• closing • closed	VA/p.f. VA/p.f.	27 / 0.8 4.6 / 0.27
AC operation, 60/Hz	• closing • closed	VA/p.f. VA/p.f.	24 / 0.75 3.5 / 0.27
DC operation	closing = closed	W	3.2
Permissible residual current of the electronics (with 0 signal)			
	for AC operation ¹⁾	mA	< 3 mA x (230 V/ U_s)
	for DC operation	mA	< 10 mA x (24 V/ U_s)
Operating times Total break time = Opening time + Arcing time ²⁾			
<u>AC operation</u> Values apply with coil in cold state and at operating temperature for operating range			
<u>Closing</u>			
• ON-delay of NO contact	0.8 ... 1.1 x U_s 1.0 x U_s 3RH14 minimum operating time	ms ms ms	8 ... 35 10 ... 25 ≥ 35
• OFF-delay of NC contact	0.8 ... 1.1 x U_s 1.0 x U_s	ms ms	6 ... 20 7 ... 20
<u>Opening</u>			
• OFF-delay of NO contact	0.8 ... 1.1 x U_s 1.0 x U_s 3RH14 minimum operating time	ms ms ms	4 ... 30 5 ... 30 ≥ 30
• ON-delay of NC contact	0.8 ... 1.1 x U_s 1.0 x U_s	ms ms	5 ... 30 7 ... 20
<u>DC operation</u>			
<u>Closing</u>			
• ON-delay of NO contact	0.8 ... 1.1 x U_s 1.0 x U_s 3RH14 minimum operating time	ms ms ms	25 ... 100 30 ... 50 ≥ 100
• OFF-delay of NC contact	0.8 ... 1.1 x U_s 1.0 x U_s	ms ms	20 ... 90 25 ... 45
<u>Opening</u>			
• OFF-delay of NO contact	0.8 ... 1.1 x U_s 1.0 x U_s 3RH14 minimum operating time	ms ms ms	7 ... 10 7 ... 9 ≥ 30
• ON-delay of NC contact	0.8 ... 1.1 x U_s 1.0 x U_s	ms ms	13 ... 16 13 ... 15
Arcing time		ms	10 ... 15

1) The 3RT19 16-1GA00 additional load module is recommended for higher residual currents, see accessories on Page 2/188.

2) The opening times of the NO contacts and the closing times of the NC contacts increase if the contactor coils are protected against voltage peaks (suppression diode 6 to 10 times, diode assemblies 2 to 6 times, varistor +2 to 5 ms).

Contactors Relays

SIRIUS contactor relays, 4- and 8-pole

Contactors	Type Size	3RH1. S00	
Load side			
Rated operating currents I_e			
AC-12		A	10
AC-15/AC-14	up to 230 V	A	6
For rated operating voltage U_e	400 V	A	3
	500 V	A	2
	690 V	A	1
DC-12			
For rated operating voltage U_e			
• 1 conducting path	24 V	A	10
	60 V	A	6
	110 V	A	3
	220 V	A	1
	440 V	A	0.3
	600 V	A	0.15
• 2 series-connected conducting paths	24 V	A	10
	60 V	A	10
	110 V	A	4
	220 V	A	2
	440 V	A	1.3
	600 V	A	0.65
• 3 series-connected conducting paths	24 V	A	10
	60 V	A	10
	110 V	A	10
	220 V	A	3.6
	440 V	A	2.5
	600 V	A	1.8
DC-13			
For rated operating voltage U_e			
• 1 conducting path	24 V	A	10 ¹⁾
	60 V	A	2
	110 V	A	1
	220 V	A	0.3
	440 V	A	0.14
	600 V	A	0.1
• 2 series-connected conducting paths	24 V	A	10
	60 V	A	3.5
	110 V	A	1.3
	220 V	A	0.9
	440 V	A	0.2
	600 V	A	0.1
• 3 series-connected conducting paths	24 V	A	10
	60 V	A	4.7
	110 V	A	3
	220 V	A	1.2
	440 V	A	0.5
	600 V	A	0.26
Operating frequency z			
• in operating cycles/hour	AC-12/DC-12	h ⁻¹	1000
for rated operation	AC-15/AC-14	h ⁻¹	1000
for utilization category	DC-13	h ⁻¹	1000
• No-load operating frequency		h ⁻¹	10000
Dependence of the operating frequency z' on the operating current I and operating voltage U' $z' = z \cdot I_e / I \cdot (U_e / U')^{1.5}$ 1/h			

1) Snap-on auxiliary switch blocks 6 A.