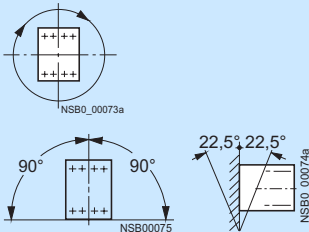



## Technical specifications

Contactors	Type	3TH42/3TH43
<b>Permissible mounting position</b>		
The contactors are designed for operation on a vertical mounting surface.	AC operation	
	DC operation	
Upright mounting position	AC and DC operation	 Special version required

## Positively-driven operation in contactor relays with 8 and 10 contacts

### 3TH42/3TH43:

**Yes**, the contactor relays comply with the conditions for positively-driven operation according to:

- ZH 1/457
- EN 60947-5-1, Appendix L
- SUVA

Explanations:

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.

### EN 60947-5-1, Appendix L

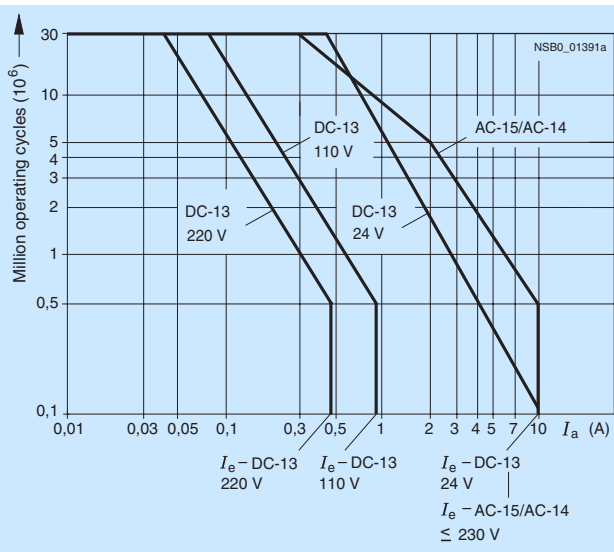
Low-voltage controlgear, control equipment, and switching elements. Special requirements for positively-driven contacts

### SUVA

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

# 3RH, 3TH Contactor Relays

## 3TH4 contactor relays, 8- and 10-pole

Contactors	Type	3TH42/3TH43	
Contact endurance for AC-15/AC-14 and DC-13 utilization categories		 <p>Legend: <math>I_a</math> = Breaking current <math>I_e</math> = Rated operational current</p>	
The contact endurance is mainly dependent on the breaking current. It is assumed that the operating mechanisms are switched randomly, i.e. not synchronized with the phase angle of the supply system. 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 measures.			
CSA and UL rated data			
Basic units			
Rated control supply voltage $U_s$		Max. 600 V AC, 230 V DC (according to UL 240 V DC)	
Rated voltage		600 V AC, 600 V DC	
Switching capacity		A 600, P 600	
General data			
Mechanical endurance	Basic units	Operating cycles	30 million
Rated insulation voltage $U_i$ (degree of pollution 3)		V	690
Rated impulse withstand voltage $U_{imp}$		kV	8
Safe isolation between the coil and the main contacts according to EN 60947-1, Appendix N		V	Up to 500
Permissible ambient temperature		°C	-25 ... +55
		°C	-55 ... +80
Degree of protection according to EN 60947-1, Appendix C		IP20	
Shock resistance			
Rectangular pulse	AC operation	g/ms	7.7/5 and 4.4/10
	DC operation	g/ms	9.3/5 and 5.4/10
Sine pulse	AC operation	g/ms	12/5 and 6.8/10
	DC operation	g/ms	14.7/5 and 8.5/10
Conductor cross-sections			
Screw terminals		M3.5	
Solid		mm <sup>2</sup>	2 x (0.5 ... 1) <sup>1)</sup> ; 2 x (1 ... 2.5) <sup>1)</sup> ; 1 x 4
Finely stranded with end sleeve		mm <sup>2</sup>	2 x (0.75 ... 2.5)
Short-circuit protection			
(weld-free protection at $I_k \geq 1$ kA)			
• Fuse links, gL/gG operational class	LV HRC Type 3NA	A	16
	DIAZED Type 5SB	A	16
	NEOZED Type 5SE, quick	A	20
• Miniature circuit breakers	Characteristic C	A	16
	Characteristic B	A	16

<sup>1)</sup> If two different conductor cross-sections are connected at one clamping point, then the two cross-sections must lie within the range quoted. If identical cross-sections are used, this restriction does not apply.

# 3RH, 3TH Contactor Relays

## 3TH4 contactor relays, 8- and 10-pole

Contactactor	Type	3TH42/3TH43	
Control			
Magnetic coil operating range			
AC operation		0.8 ... 1.1 x $U_s$ <sup>1)</sup>	
DC operation (except 24 V)		0.8 ... 1.1 x $U_s$	
• At 24 V DC		0.8 ... 1.2 x $U_s$	
Power consumption of the magnetic coils (when coil is cold and 1.0 x $U_s$ )			
AC operation, 50 Hz, standard version			
• Closing	VA/p.f.	68/0.82	
• Closed	VA/p.f.	10/0.29	
AC operation, 50/60 Hz, standard version			
• Closing, 50 Hz	VA/p.f.	77/0.81	
• Closed, 50 Hz	VA/p.f.	11/0.28	
• Closing, 60 Hz	VA/p.f.	71/0.75	
• Closed, 60 Hz	VA/p.f.	9/0.27	
AC operation, 50 Hz, USA/Canada			
• Closing	VA/p.f.	68/0.82	
• Closed	VA/p.f.	10/0.29	
AC operation, 60 Hz, USA/Canada			
• Closing	VA/p.f.	75/0.76	
• Closed	VA/p.f.	9.4/0.29 ... 0.3	
AC operation, 50 Hz, standard version			
• Closing	VA/p.f.	80/0.8	
• Closed	VA/p.f.	10.7/0.29	
AC operation, 60 Hz, standard version			
• Closing	VA/p.f.	75 ... 90/0.73	
• Closed	VA/p.f.	8.5 ... 10.7/0.29 ... 0.3	
DC operation up to 250 V	Closing = Closed	W	6.2
Permissible residual current of the electronics (with 0 signal)			
For AC operation		≤ 8 mA x (220 V/ $U_s$ )	
For DC operation		≤ 1.25 mA x (220 V/ $U_s$ )	
Operating times <sup>2)</sup>			
Total break time = opening time + arcing time (the values apply up to and including 20 % undervoltage, 10 % overvoltage, and with the coil in the cold state and at operating temperature)			
<u>AC operation</u>			
Closing			
• ON-delay NO	ms	8 ... 35	
• OFF-delay NC	ms	6 ... 20	
Opening			
• OFF-delay NO	ms	4 ... 18	
• ON-delay NC	ms	5 ... 30	
Arcing time	ms	10	
<u>DC operation</u>			
Closing			
• ON-delay NO	ms	20 ... 170	
• OFF-delay NC	ms	18 ... 110	
Opening			
• OFF-delay NO	ms	10 ... 25	
• ON-delay NC	ms	15 ... 30	
Arcing time	ms	10	
Operating times <sup>2)</sup> at 1.0 x $U_s$			
<u>AC operation</u>			
Closing			
• ON-delay NO	ms	10 ... 25	
• OFF-delay NC	ms	7 ... 20	
Opening			
• OFF-delay NO	ms	5 ... 18	
• ON-delay NC	ms	7 ... 20	
<u>DC operation</u>			
Closing			
• ON-delay NO	ms	30 ... 70	
• OFF-delay NC	ms	28 ... 65	
Opening			
• OFF-delay NO	ms	10 ... 20	
• ON-delay NC	ms	15 ... 25	

1) Coils for USA, Canada and Japan: 0.85 ... 1.1  $U_s$  at 60 Hz.

2) The OFF-delay of the NO contact and the ON-delay of the NC contact are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 9 times; diode assemblies 2 to 6 times, varistor +2 to 5 ms).

# 3RH, 3TH Contactor Relays

## 3TH4 contactor relays, 8- and 10-pole

Contactor	Type	3TH42/3TH43	
Load side			
Rated operational currents $I_e$			
AC-12	A	16	
AC-15/AC-14 for rated operational voltage $U_e$			
	230 V	A	10
	400 V	A	6
	500 V	A	4
	690 V	A	2
DC-12, for rated operational voltage $U_e$			
• 1 conducting path	up to 48 V	A	10
	110 V	A	2.1
	220 V	A	0.8
	440 V	A	0.6
	600 V	A	0.6
• 2 conducting paths in series	up to 48 V	A	10
	110 V	A	10
	220 V	A	1.6
	440 V	A	0.8
	600 V	A	0.7
• 3 conducting paths in series	up to 48 V	A	10
	110 V	A	10
	220 V	A	10
	440 V	A	1.3
	600 V	A	1
DC-13, for rated operational voltage $U_e$			
• 1 conducting path	24 V	A	10
	48 V	A	5
	110 V	A	1
	220 V	A	0.45
	440 V	A	0.25
	600 V	A	0.2
• 2 conducting paths in series	24 V	A	10
	48 V	A	10
	110 V	A	2.5
	220 V	A	0.75
	440 V	A	0.5
	600 V	A	0.4
• 3 conducting paths in series	24 V	A	10
	48 V	A	10
	110 V	A	10
	220 V	A	2
	440 V	A	0.9
	600 V	A	0.8
Rated power of induction motors			
According to utilization category AC-2 and AC-3, 50 Hz			
	230/220 V	kW	2.4
	400/380 V	kW	4
	500 V	kW	4
	690/660 V	kW	4
Switching frequency $z^{1)}$			
Operating cycles per hour during normal duty for utilization category	AC-12/DC-12	h <sup>-1</sup>	1000
	AC-2	h <sup>-1</sup>	500
	AC-3	h <sup>-1</sup>	1000
	AC-15/AC-14	h <sup>-1</sup>	3600
	DC-13	h <sup>-1</sup>	3600
No-load switching frequency	h <sup>-1</sup>	10000	

1) Dependence of the switching frequency  $z'$  on the operational current  $I'$  and operational voltage  $U'$ :  $z' = z \cdot I_e/I' \cdot (U_e/U')^{1.5} \cdot 1/h$ .