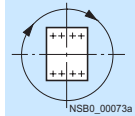
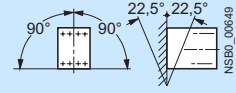
Technical specifications

Contactor	Type	3TH42/3TH43
Permissible mounting position		
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 acc. 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

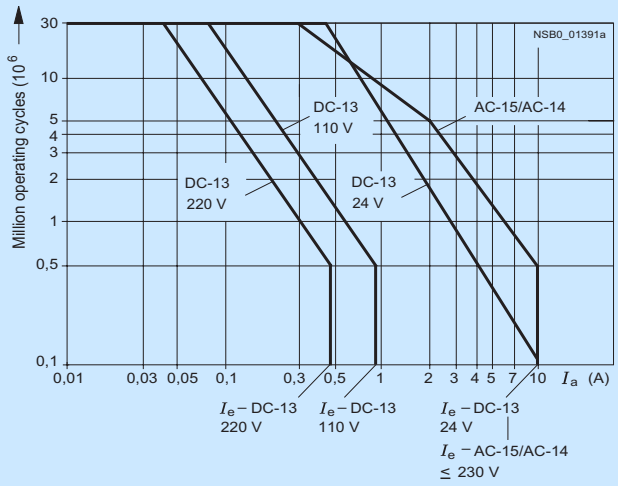
SUVA
Accident prevention regulations of the "Schweizer Unfallverhütungsanstalt" (Swiss Institute for Accident Insurance)

3TH4 contactor relays, 8- and 10-pole

Contactor	Type		3TH42/3TH43

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

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.



Legend:
I_a = Breaking current
I_e = Rated operational current

CSA and UL rated data

Basic units			
Rated control supply voltage U_S			Max. 600 V AC, 230 V DC (acc. to UL 240 V DC)
Rated voltage **Switching capacity**			600 V AC, 600 V DC 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 acc. to EN 60947-1, Appendix N		V	Up to 500
Permissible ambient temperature	During operation During storage	°C °C	-25 ... +55 -55 ... +80
Degree of protection acc. to EN 60947-1, Appendix C			IP20
Shock resistance			
Rectangular pulse	AC operation DC operation	*g*/ms *g*/ms	7.7/5 and 4.4/10 9.3/5 and 5.4/10
Sine pulse	AC operation DC operation	*g*/ms *g*/ms	12/5 and 6.8/10 14.7/5 and 8.5/10

Conductor cross-sections

Screw terminals			**Screw terminals**
Solid Finely stranded with end sleeve		mm^2 mm^2	2 x (0.5 ... 1)[1]; 2 x (1 ... 2.5)[1]; 1 x 4 2 x (0.75 ... 2.5)
Terminal screw			M3.5

Short-circuit protection

(weld-free protection at $I_k \geq 1$ kA)			
• Fuse links, gL/gG operational class	LV HRC Type 3NA DIAZED Type 5SB NEOZED Type 5SE, quick	A A A	16 16 20
• Miniature circuit breakers	C Characteristic B Characteristic	A A	16 16

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in the range specified. If identical cross-sections are used, this restriction does not apply.

3TH4 contactor relays, 8- and 10-pole

Contactor	Type		3TH42/3TH43
Control			
Magnetic coil operating range			
AC operation			0.8 ... 1.1 x U_s [1]
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 [2] Total break time = OFF-delay + 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)			
AC operation			
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
DC operation			
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 [2] **at 1.0 x U_s**			
AC operation			
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
DC operation			
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).

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
	440V	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
	440V	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
	440V	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
	440V	A	0.9
	600 V	A	0.8
Rated power of induction motors Acc. 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^{-1}	1000
	AC-2	h^{-1}	500
	AC-3	h^{-1}	1000
	AC-15/AC-14	h^{-1}	3600
	DC-13	h^{-1}	3600
	No-load switching frequency	h^{-1}	10000

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