Industrial Controls

Catalog IC 10 · 2012

SIRIUS

Answers for industry.

SIEMENS

3TH4 contactor relays, 8- and 10-pole

Overview

Standards

IEC 60947-1, EN 60947-1,
IEC 60947-5-1, EN 60947-5-1

The 3TH42 and 3TH43 contactor relays are suitable for use in any climate. They are finger-safe according to EN 50274.

Terminal designations acc. to EN 50011

In terms of their terminal designations, identification numbers and identification letters, the 3TH42/3TH43 contactor relays conform to standard EN 50011 for Specific Contactor Relays.

Contact reliability

High contact stability at low voltages and currents thanks to the use of moving double-break contacts, suitable for solid-state circuits with currents ≥ 1 mA at a voltage of ≥ 17 V.

Surge suppression

The 3TH42 and 3TH43 contactor relays can be equipped with RC elements, varistors, diodes or diode assemblies (combination of a diode and a Zener diode) for damping opening surges. The surge suppressors can be mounted directly on the coil (see "Accessories", page 5/22).

Note:

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 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Technical specifications

Contactor relays	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 or freewheel diodes are suitable as protective measures for the circuits.

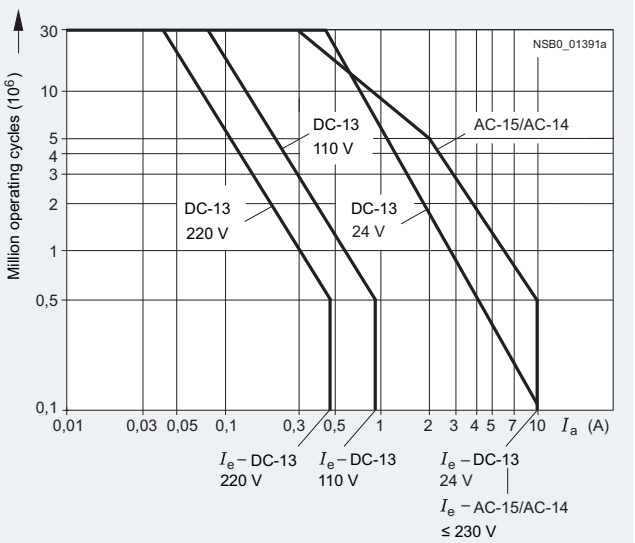
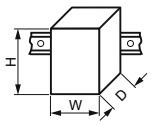
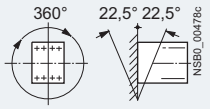
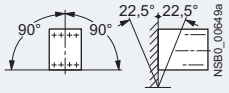


Diagram legend:
P_{rated} = Rated power for squirrel-cage motors at 400 V
I_a = Breaking current
I_e = Rated operational current

Type			**3TH42**	**3TH43**
Dimensions (W x H x D)				
• AC operation		mm	45 x 78 x 97	55 x 78 x 97
• DC operation		mm	45 x 78 x 130	55 x 78 x 130
General technical specifications				
Permissible mounting positions				
The contactor relays are designed for operation on a vertical mounting surface.				
• AC operation				
• DC operation				
Upright mounting position				
AC and DC operation			 Special version required	
Mechanical endurance	Basic units	Operating cycles	30 million	
Rated insulation voltage U_i (pollution degree 3)		V	690	
Rated impulse withstand voltage U_{imp}		kV	8	
Protective separation between the coil and the main contacts acc. to IEC 60947-1, Appendix N		V	Up to 500	
Permissible ambient temperature				
• During operation		°C	-25 ... +55	
• During storage		°C	-55 ... +80	
Degree of protection acc. to IEC 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	
Short-circuit protection				
• Short-circuit test with fuse links of gG operational class: Short-circuit current I_k = 1 kA acc. to IEC 60947-5-1				
- LV HRC, type 3NA		A	16	
- DIAZED, type 5SB		A	16	
- NEOZED Type 5SE, quick		A	20	
• Short-circuit test with miniature circuit breaker up to 230 V: Short-circuit current I_k = 400 A acc. to IEC 60947-5-1				
- C Characteristic		A	16	
- B Characteristic		A	16	
cULus and cULus 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			600 V AC, 600 V DC	
Switching capacity			A 600, P 600	
Conductor cross-sections				
			Screw terminals	
• Solid		mm^2	2 x (0.5 ... 1)[1]; 2 x (1 ... 2.5)[1]; 1 x 4	
• Finely stranded with end sleeve		mm^2	2 x (0.75 ... 2.5)	
• Terminal screw			M3.5	

[1] If two different conductor cross-sections are connected to one clamping point, both cross-sections must lie in one of the ranges specified.

3TH4 contactor relays, 8- and 10-pole

Contactor relays	Type		3TH42, 3TH43
Control circuits			
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 solenoid 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, Japan			
- Closing		VA/p.f.	80/0.8
- Closed		VA/p.f.	10.7/0.29
• AC operation, 60 Hz, Japan			
- 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] **for 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 contacts and the ON-delay of the NC contacts are increased if the contactor coils are attenuated against voltage peaks (noise suppression diode 6 to 9 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

Contactor relays	Type		3TH42, 3TH43
Load side			
AC capacity			
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
Rated power of induction motors Acc. to utilization categories 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
Load rating with DC			
Rated operational currents I_e			
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
• 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
• 3 conducting paths in series			
	Up to 48 V	A	10
	110 V	A	10
	220 V	A	10
	440 V	A	1.3
DC-13, for rated operational voltage U_e			
• 1 conducting path			
	Up to 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			
	Up to 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			
	Up to 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
Switching frequency			
Switching frequency z[1] in operating cycles/hour			
For rated operation	AC-12/DC-12	h^{-1}	1000
For utilization category	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.

3TH4 contactor relays, 8- and 10-pole

Selection and ordering data

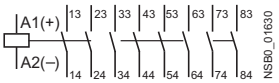
8-pole contactor relays

3TH42 ..-0...

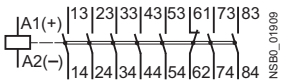
Contacts	Rated operational current I_e/AC-15/AC-14 at				Contacts					DT	Screw terminals		PU (UNIT, SET, M)	PS*	PG
	230/ 220 V	400/ 380 V	500 V	690/ 660 V	Ident. No. acc. to EN 50011	Version					Order No.	Price per PU			
Number	**A**	A	A	A		NO	NC	NO	NC						
For screw fixing and snap-on mounting onto TH 35 standard mounting rail															
AC operation, rated control supply voltage U_s = 50 Hz 230/220 V AC[1]															
8	**10**	6	4	2	**80 E**	8	--	--	--	▶	**3TH42 80-0AP0**		1	1 unit	41A
					71 E	7	1	--	--	▶	**3TH42 71-0AP0**		1	1 unit	41A
					62 E	6	2	--	--	D	**3TH42 62-0AP0**		1	1 unit	41A
					53 E	5	3	--	--	▶	**3TH42 53-0AP0**		1	1 unit	41A
					44 E	4	4	--	--	▶	**3TH42 44-0AP0**		1	1 unit	41A
					44 E, U	3	3	1	1	▶	**3TH42 93-0AP0**		1	1 unit	41A
DC operation · DC solenoid system, rated control supply voltage U_s = 24 V DC															
8	**10**	6	4	2	**80 E**	8	--	--	--	▶	**3TH42 80-0BB4**		1	1 unit	41A
					71 E	7	1	--	--	▶	**3TH42 71-0BB4**		1	1 unit	41A
					62 E	6	2	--	--	▶	**3TH42 62-0BB4**		1	1 unit	41A
					53 E	5	3	--	--	▶	**3TH42 53-0BB4**		1	1 unit	41A
					44 E	4	4	--	--	▶	**3TH42 44-0BB4**		1	1 unit	41A
					44 E, U	3	3	1	1	▶	**3TH42 93-0BB4**		1	1 unit	41A

Terminal designations according to EN 50011

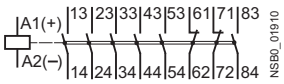
8 NO, Ident. No. **80E**



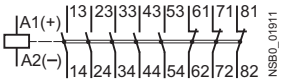
7 NO + 1 NC, Ident. No. **71E**



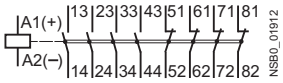
6 NO + 2 NC, Ident. No. **62E**



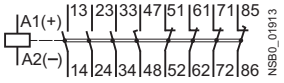
5 NO + 3 NC, Ident. No. **53E**



4 NO + 4 NC, Ident. No. **44E**



3 NO + 3 NC and 1 NO + 1 NC make-before-break, Ident. No. **44E, U**



[1] Operating range at 220 V: 0.85 to 1.1 x U_s; lower operating range limit according to IEC 60947.

Other voltages according to page 5/22 on request.

Accessories see pages 5/22 and 5/23.

Note:

The solenoid coils of the 3TH42 contactor relays are available in various voltages as spare parts (on request).

- AC operation: 3TY7 403-0A..
- DC operation: 3TY4 803-0B..

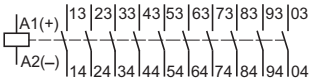
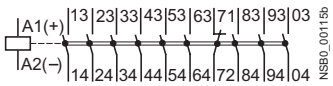
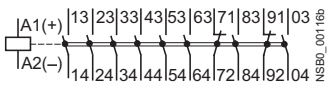
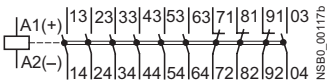
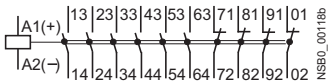
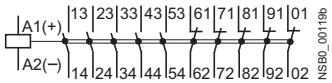
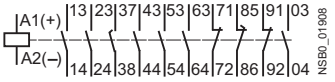
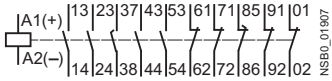
The contacts cannot be replaced on 3TH42 contactor relays.

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate

10-pole contactor relays

3TH43 ..-0A..

3TH43 ..-0B..

Contacts	Rated operational current I_e/AC-15/AC-14 at				Contacts					DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	230 V	400 V	500 V	690 V	Ident. No. acc. to EN 50011	Version					Order No. Price per PU			
Number	**A**	A	A	A		NO	NC	NO	NC					
For screw fixing and snap-on mounting onto TH 35 standard mounting rail														
Terminal designations according to EN 50011														
10 NO, Ident. No. **100E**														
														
9 NO + 1 NC, Ident. No. **91E**														
														
8 NO + 2 NC, Ident. No. **82E**														
														
7 NO + 3 NC, Ident. No. **73E**														
														
6 NO + 4 NC, Ident. No. **64E**														
														
5 NO + 5 NC, Ident. No. **55E**														
														
6 NO + 2 NC and 1 NO + 1 NC make-before-break, Ident. No. **63E, 11U**														
														
4 NO + 4 NC and 1 NO + 1 NC make-before-break, Ident. No. **44E, 11U**														
														
AC operation, rated control supply voltage U_s = 50 Hz 230/220 V AC[1]														
10	**10**	6	4	2	**100 E**	10	--	--	--	▶	**3TH43 10-0AP0**	1	1 unit	41A
					91 E	9	1	--	--	▶	**3TH43 91-0AP0**	1	1 unit	41A
					82 E	8	2	--	--	▶	**3TH43 82-0AP0**	1	1 unit	41A
					73 E	7	3	--	--	▶	**3TH43 73-0AP0**	1	1 unit	41A
					73 E, U	6	2	1	1	▶	**3TH43 46-0AP0**	1	1 unit	41A
					64 E	6	4	--	--	▶	**3TH43 64-0AP0**	1	1 unit	41A
					55 E	5	5	--	--	▶	**3TH43 55-0AP0**	1	1 unit	41A
					55 E, U	4	4	1	1	▶	**3TH43 94-0AP0**	1	1 unit	41A
DC operation · DC solenoid system, rated control supply voltage U_s = 24 V DC[1]														
10	**10**	6	4	2	**100 E**	10	--	--	--	▶	**3TH43 10-0BB4**	1	1 unit	41A
					91 E	9	1	--	--	▶	**3TH43 91-0BB4**	1	1 unit	41A
					82 E	8	2	--	--	▶	**3TH43 82-0BB4**	1	1 unit	41A
					73 E	7	3	--	--	▶	**3TH43 73-0BB4**	1	1 unit	41A
					73 E, U	6	2	1	1	▶	**3TH43 46-0BB4**	1	1 unit	41A
					64 E	6	4	--	--	▶	**3TH43 64-0BB4**	1	1 unit	41A
					55 E	5	5	--	--	▶	**3TH43 55-0BB4**	1	1 unit	41A
					55 E, U	4	4	1	1	▶	**3TH43 94-0BB4**	1	1 unit	41A

[1] Operating range at 220 V: 0.85 to 1.1 x U_s; lower operating range limit according to IEC 60947.

Other voltages according to page 5/22 on request.

Accessories see pages 5/22 and 5/23.

Note:

The solenoid coils of the 3TH42 contactor relays are available in various voltages as spare parts (on request).

- AC operation: 3TY7 403-0A..
- DC operation: 3TY4 803-0B..

The contacts cannot be replaced on 3TH42 contactor relays.

3TH4 contactor relays, 8- and 10-pole

Options

Rated control supply voltages (the 10th and 11th position of the order number must be changed)

Rated control supply voltage U_s	Contactor type Control supply voltage at	3TH42/3TH43
AC operation		
Solenoid coils for AC 50 Hz		
50 Hz	**60 Hz**	
24 V AC	29 V AC	B0
36 V AC	42 V AC	G0
42 V AC	50 V AC	D0
48 V AC	58 V AC	H0
60 V AC	72 V AC	E0
110 V AC	132 V AC	F0
125/127 V AC	150/152 V AC	L0
230/220 V AC	276 V AC	P0 [1]
240 V AC	288 V AC	U0
400/380 V AC	480/460 V AC	V0 [1]
415 V AC	500 V AC	R0
500 V AC	600 V AC	S0
For Japan		
100 V AC	100-110 V AC	G6 [2]
200 V AC	200-220 V AC	N6 [2]
For USA and Canada		
110 V AC	120 V AC	K6 [2]
220 V AC	240 V AC	P6 [2]

[1] Operating range at 220 V or 380 V: 0.85 to 1.1 x U_s

[2] Operating range at 60 Hz: 0.85 to 1.1 x U_s

Rated control supply voltage U_s	Contactor type 3TH42/3TH43
Solenoid coils for AC 50 and 60 Hz	
50/60 Hz	
24 V AC	C2
42 V AC	D2
110 V AC	G2
115 V AC	J2
120 V AC	K2
220 V AC	N2
230 V AC	L2
240 V AC	P2
440 V AC	R2
DC operation	
12 V DC	A4
24 V DC	B4
30 V DC	C4
36 V DC	V4
42 V DC	D4
48 V DC	W4
60 V DC	E4
110 V DC	F4
125 V DC	G4
220 V DC	M4
230 V DC	P4
240 V DC	Q4

Accessories

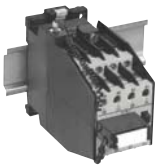
Version	Rated control supply voltage U_s AC V	DC V	DT	Order No.	Price per PU	PU (UNIT, SET, M)	PS*	PG
Surge suppressors [1] for 3TH4 contactor relays								
 3TX7 402-3. **Noise suppression diodes** with line spacer, for mounting onto the coil terminal	--	24 ... 250	A	**3TX7 402-3A**		1	1 unit	41B
Diode assemblies (diode and Zener diode) with line spacer, DC operation, for mounting onto the coil terminal	--	24 ... 250	A	**3TX7 402-3D**		1	1 unit	41B
Varistors [2] with line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	A	**3TX7 402-3G**		1	1 unit	41B
	48 ... 127	70 ... 150	A	**3TX7 402-3H**		1	1 unit	41B
	127 ... 240	150 ... 250	A	**3TX7 402-3J**		1	1 unit	41B
	240 ... 400	--	C	**3TX7 402-3K**		1	1 unit	41B
	400 ... 600	--	C	**3TX7 402-3L**		1	1 unit	41B
RC elements with line spacer, for mounting onto the coil terminal	24 ... 48	24 ... 70	A	**3TX7 402-3R**		1	1 unit	41B
	48 ... 127	70 ... 150	A	**3TX7 402-3S**		1	1 unit	41B
	127 ... 240	150 ... 250	A	**3TX7 402-3T**		1	1 unit	41B
	240 ... 400	--	C	**3TX7 402-3U**		1	1 unit	41B
	400 ... 600	--	C	**3TX7 402-3V**		1	1 unit	41B
Covers for switch position indicator	--	--	B	**3TX4 210-0P**		1	1 unit	41B

[1] 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 10 times; diode assembly 2 to 6 times, varistor +2 to 5 ms).

[2] Includes the peak value of the alternating voltage on the DC side.

* You can order this quantity or a multiple thereof.
Illustrations are approximate

3TH4 contactor relays, 8- and 10-pole

	For contactors	Version	Rated control supply voltage U_s AC 50/60 Hz	Time setting range (minimum times)	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
	Type		V	s		Order No. / Price per PU			
ON-delay devices									
 3TX4 180-0A	3TH42, 3TH43	**NTC thermistors** Time tolerance +100 %, -50 %	220 ... 230	0.1	B	**3TX4 180-0A**	1	1 unit	41A
Coupling links for control by PLC for 3TH4 contactor relays									
 3TX4 090 mounted to contactor	3TH42, 3TH43	Operating range: 17 to 30 V DC Power consumption: 0.5 W at 24 V DC							
		• For mounting directly to contactor coil **without** surge suppressor			A	**3TX4 090-0C**	1	1 unit	41B
		• For mounting directly to contactor coil **with** surge suppressor			A	**3TX4 090-0D**	1	1 unit	41B

	For contactors	Rated control supply voltage U_s		OFF-delay (minimum times)	DT	Screw terminals	PU (UNIT, SET, M)	PS*	PG
		50/60 Hz AC	DC			Order No. / Price per PU			
	Type	V	V	s					
OFF-delay devices for contactors with DC operation									
	Bridging of voltage interruptions up to 1.2 sec								
 3TX4 701-0AN1	3TH42 . .-0BF4 3TH43 . .-0BF4	110	--	0.15 or 0.3	A	**3TX4 701-0AN1**	1	1 unit	41B
	3TH42 . .-0BM4 3TH43 . .-0BM4	220	--	0.6 or 1.2	A	**3TX4 701-0AN1**	1	1 unit	41B
	3TH42 . .-0BP4 3TH43 . .-0BP4	230	--	0.6 or 1.2	A	**3TX4 701-0AN1**	1	1 unit	41B
	3TH42 . .-0BB4 3TH43 . .-0BB4	--	24	0.4 or 0.8	B	**3TX4 701-0BB4**	1	1 unit	41B

*** You can order this quantity or a multiple thereof.**
Illustrations are approximate