

CI-TI™ Contactors and Motor Starters

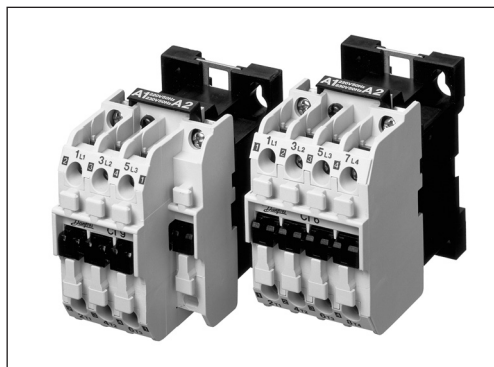
Type CI 6 - 50

Contents

Page

Ci 6 - 50.....	3
CI 6-30 with AMP connections	4
CI 9 EI - 30 EI	6
CI 9 DC - 30 DC.....	7
Auxiliary contact blocks CB and accessories for CI 6-50.....	8
ETB electronic clip-on timers	9
Thermal overload relays TI 16C, TI 25C and TI 30C	10
Thermal overload relays TI 80	11
Accessories for TI 16C - 30 C	11
Enclosures for CI range - BCI.....	12
Ordering of DOL motor starter components	12
Construction standards.....	13
Rated life / Approvals and Certificates.....	14
Electrical curves	15
Tripping graphs.....	16
Terminal marking	17-19
Loads/ Load category/ Power loss	19-24
UL/CSA specification.....	24
Clip-on Timer ETB	25
Dimensions.....	26-28

Description



Danfoss contactors CI 6-50 cover the power range 2.2-25 kW.

CI 6 is built up as a combined contactor/control relay.

CI 9 DC - 30 DC and CI 9 EI-30 EI are contactors for DC coil voltage within the power range 2.2-15 kW. The range CI 9 EI- CI 30 EI has built-in interface relay for PLC application with 24 V DC output.

Accessories include a wide selection of clip-on auxiliary contact blocks and timers, interface modules and RC links.

The CI 6-50 range also includes thermal overload relays for protection of squirrel-cage motors.

Ordering

Contactors CI 6-50 for AC coil voltage (no built-in auxiliary contacts)

AC-3 load			Main circuit				Auxiliary contacts	Code no. ¹⁾	Type
U_e 220-240 V kW	U_e 380-690 V kW	I_e A	$I_{th}^{4)}$ (AC-1) Open A	$I_{the}^{5)}$ (AC-1) Encl. A	Max. $I_{th}^{6)}$ (AC-1) Open A	Main contacts (make) Number	Add-on options Number		
1.5	2.2	6	20	16	-	3	1-4	037H0015	CI 6 ²⁾
1.5	2.2	6	20	16	-	4	1-4	037H0018	CI 6 ²⁾
2.2	4.0	9	25	16	-	3	1-4	037H0021	CI 9
2.2	4.0	9	25	16	-	4	1-4	037H0022	CI 9
3.0	5.5	12	25	20	-	3	1-4	037H0031	CI 12
3.0	5.5	12	25	20	-	4	1-4	037H0032	CI 12
4.0	7.5³⁾	16	25	20	30	3	1-4	037H0049	CI 15
4.0	7.5³⁾	16	25	20	30	4	1-4	037H0050	CI 15
4.0	7.5	16	40	25	45	3	1-4	037H0041	CI 16
5.5	10.0	20	40	25	45	3	1-4	037H0045	CI 20
5.5	11.0	25	40	25	45	3	1-4	037H0051	CI 25
8.5	15.0	32	40	30	50	3	1-4	037H0055	CI 30
8.5	15.0³⁾	32	63	63	-	3	1-4	037H0061	CI 32
10.0	18.5³⁾	37	80	63	-	3	1-4	037H0056	CI 37
11.0	22.0³⁾	45	80	80	90	3	1-4	037H0071	CI 45
15.0	25.0³⁾	52	80	80	90	3	1-4	037H0080	CI 50

¹⁾ Suffix defining coil voltage/frequency must be added to the Danfoss code no. (see table on page 5).

²⁾ AC-15 operation: max. 500 VA/6 A

³⁾ U_e max.: 500 V

⁴⁾ The thermal current value I_{th} represents the maximum load at 40°C, which corresponds to installing the contactor in air (open).

⁵⁾ The thermal current value I_{the} represents the maximum load at 60°C, corresponding installing the contactor inside an enclosure.

⁶⁾ Heat-resistant leads (min. 75°C) must be used.

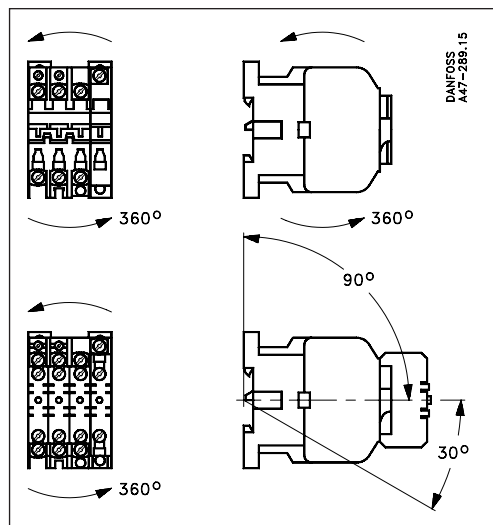
Environment

Type	Temperature compensated	Ambient temperature	Vibration	Shock perpendicular to contact system	Max. operations per hour
TI 16C	-5 to +40 °C	-50 to +60 °C	2 g at 200 Hz	9 g for 7.5 ms	30
TI 25C					
TI 30C					
TI 80					

Electromagnetic compatibility

Type	Emission	Immunity
CI 9DC - 30 DC	EN 50081-1	EN 50082-2
CI 9EI - 30 EI	EN 50081-1	EN 50082-2

Mounting direction



Rated life

Type	Mechanical life Operations	Electrical life AC-3 load Operations	Switching per hour AC-3 load Operations
CI 6-30	10 x 10 ⁶	1 x 10 ⁶	1200
CI 32	5 x 10 ⁶	1 x 10 ⁶	300
CI 37-50	5 x 10 ⁶	0.5 x 10 ⁶	300

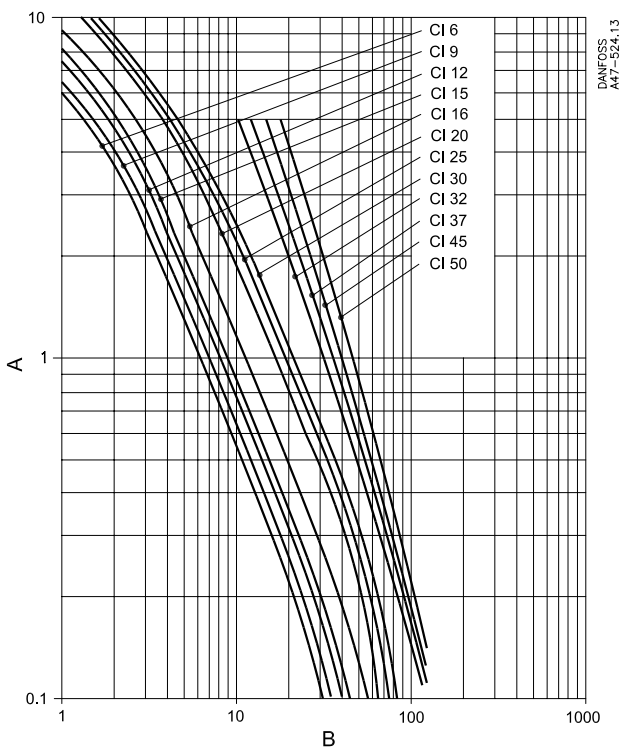
Approvals & Certificates

Approval authority / Product type	CE marked in accordance with LVD 2006/95/EC	cULus	GOST	DNV	LR
CI 6	●	●	●	●	□
CI 9	●	●	●	●	□
CI 12	●	●	●	●	□
CI 15	●	●	●	●	□
CI 16	●	●	●	●	□
CI 20	●	●	●	●	□
CI 25	●	●	●	●	□
CI 30	●	●	●	●	□
CI 32	●	●	●	●	□
CI 37	●	●	●	●	●
CI 45	●	●	●	●	●
CI 50	●	●	●	●	●
TI 16C/25C/30C	●	●	●	●	□
TI 80	●	●	●	●	□
CB-	●	●	●	●	□
ETB	●	●	●	●	□
CI 9DC - CI30 DC	●	●	●	□	□
CI 9EI - CI30 EI	●	●	●	□	□

● Approved
□ No approval applied

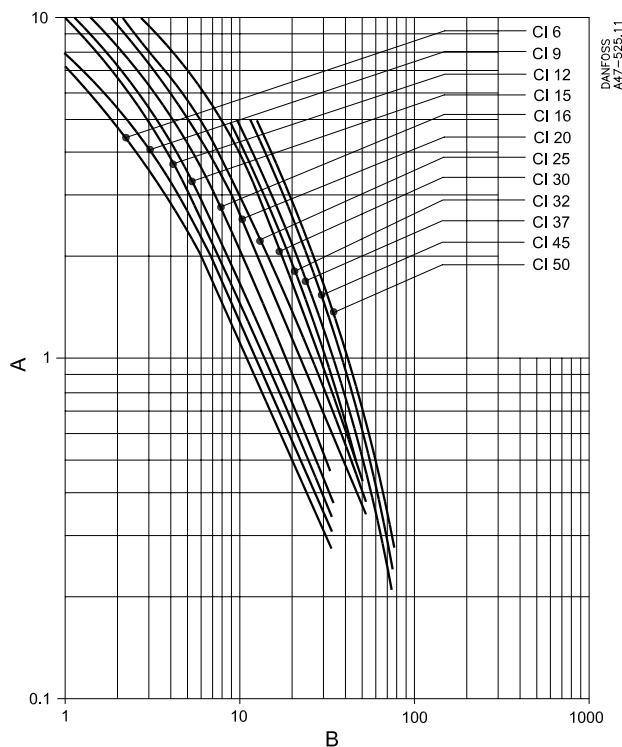
Electrical life curves

Contactors CI 6/9/12/15, CI 16/20/25/30, CI 37/45/50, load categories AC-3



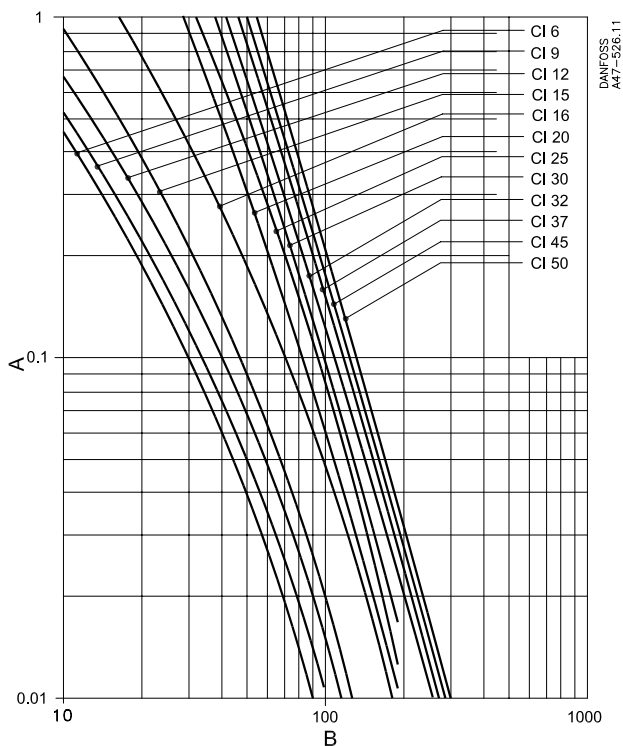
A: Electrical life in millions of make/break operations
B: Breaking current (A)

Contactors CI 6/9/12/15, CI 16/20/25/30, CI 37/45/50, load categories AC-1



A: Electrical life in millions of make/break operations
B: Breaking current (A)

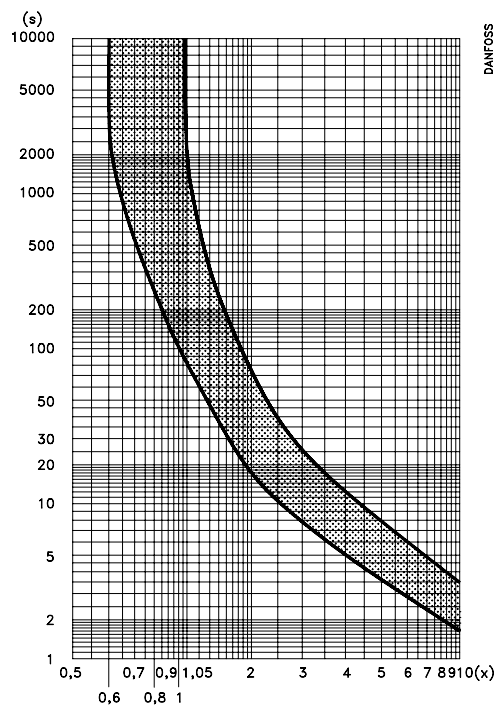
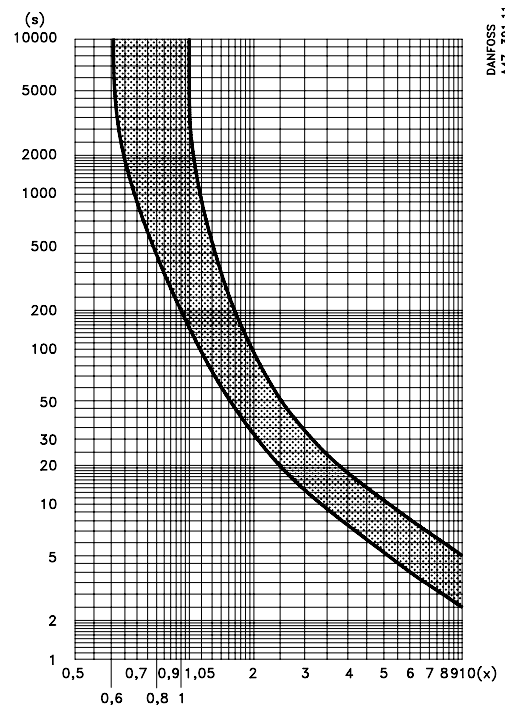
Contactors CI 6/9/12/15, CI 16/20/25/30, CI 37/45/50, load categories AC-4



A: Electrical life in millions of make/break operations
B: Breaking current (A)

Tripping graphs

TI16C, TI 25C, TI 30C


 DANFOSS
A47-392.12

 DANFOSS
A47-391.11

Explanation of graphs

Mean value curves

Upper curve: 3-phase tripping and asymmetric load tripping at min. setting.

Lower curve: Asymmetric load tripping at max. setting.

When tripping from the operationally warm condition, the tripping times are approx. 30% of the values shown. These values apply at an ambient temperature = 20°C.

$$\text{3-phase tripping: } x = \frac{\text{measured current}}{\text{rated motor current}}$$

$$\text{Asymmetric load tripping: } x = \frac{\text{measured current}}{\text{max. scale value on overload relay}}$$

 Tripping time $2 < T_p \leq 10$ s at $7.2 \times I_e$ class 10 A

Note! In general, the thermal overload relay is always set on motor full load current.

3-phase overload

- 1) Measure overload current
- 2) Find the overload factor (x) by dividing the measured value by the set value of the thermal overload relay (motor full load current).
- 3) Find (x) on the horizontal axis and follow a line vertically up until it intersects the upper curve.
- 4) From the intersection point, follow a horizontal line to the left and read off on the vertical axis the time that will elapse before the thermal overload relay cuts out the motor.

Asymmetric load tripping

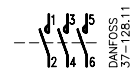
- 1) Measure the current the motor draws from one of the intact phases.
- 2) Find the overload factor (x) by dividing the measured value by the maximum scale value of the thermal overload relay.
- 3) Find (x) on the horizontal axis and follow a line vertically up until it intersects the lower curve.
- 4) From the intersection point, follow a horizontal line to the left and read off on the vertical axis the time that will elapse before the thermal overload relay switch off the motor.

Terminal marking

Terminal marking in Danfoss contactors conforms to **EN 50005**. The idea of this marking is as follows:

1. From the marking it is possible to read which terminals are associated and which functions the contacts have.
2. Control relays and contactors of different makes but with the same number of contacts must have identical terminal markings.

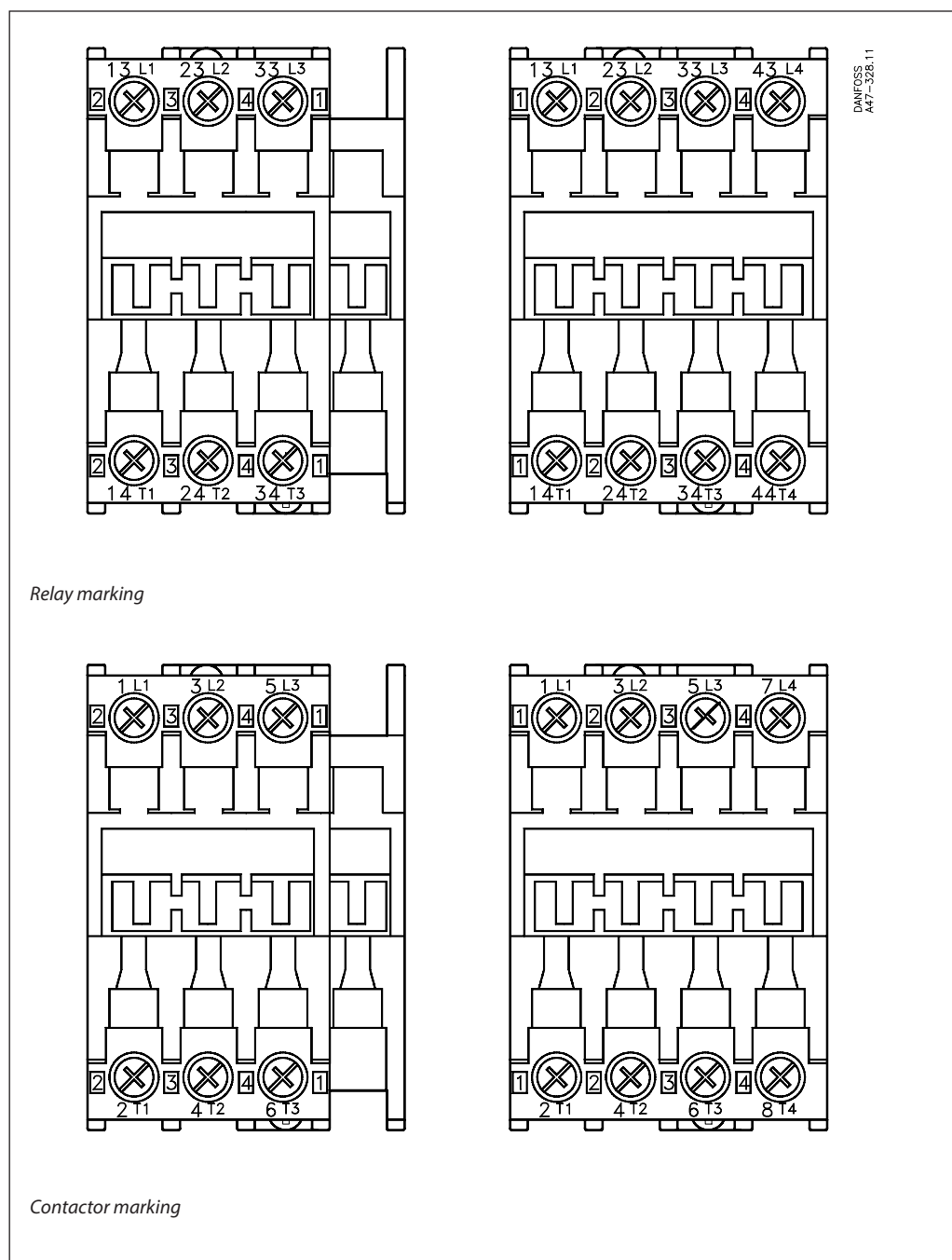
Terminal markings on *main contacts* must have a single-digit number.

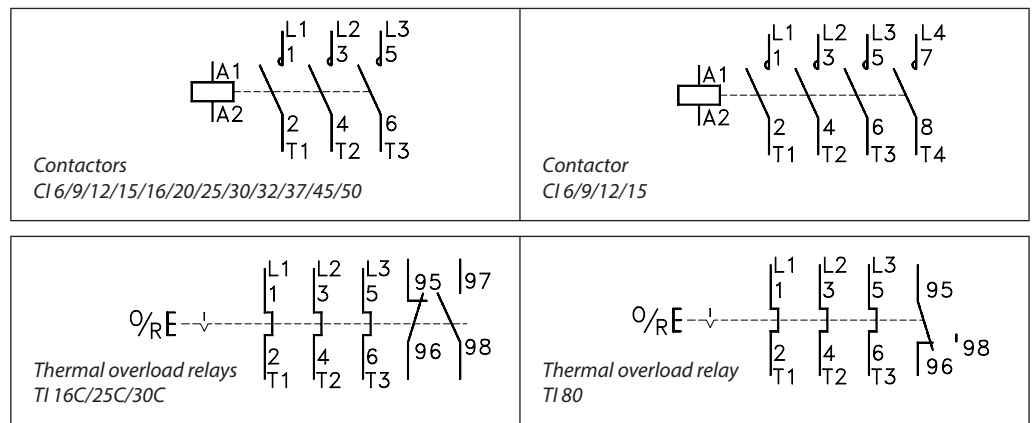


Contact set with three main contacts.



Thermal overload relay with three bimetal elements.




Loads
Connections, main contacts and contactor coils

Type	Connection method	Single core [mm ²]	Multi core		Recommended Tightening torque [Nm]
			without terminal sleeve [mm ²]	with terminal sleeve [mm ²]	
CI 6, CI 9, CI 12, CI 15	Screw and clamp washer	0.75 - 2.5	0.75 - 2.5	0.5 - 2.5	0.8 - 2
CI 16, CI 20, CI 25, CI 30	Screw and clamp washer	1.5 - 10	2.5 - 6	1.5 - 4	0.8 - 2.5
CI 32, CI 37, CI 45, CI 50	Box terminal	1.5 - 35	1.5 - 25	-	0.8 - 5
CI 9 DC, CI 15 DC	Screw and clamp washer	0.75 - 2.5	0.75 - 2.5	0.5 - 2.5	0.8 - 2
CI 25 DC, CI 30 DC	Screw and clamp washer	1.5 - 10	2.5 - 6	1.5 - 4	0.8 - 2.5
CI 9 EI, CI 15 EI	Screw and clamp washer	1.5 - 10	0.75 - 2.5	0.5 - 2.5	0.8 - 2
CI 25 EI, CI 30 EI	Screw and clamp washer	1.5 - 10	2.5 - 6	1.5 - 4	0.8 - 2.5
TI 16C, TI 25C, TI 30C	Screw and clamp washer	0.75 - 4	0.75 - 4	1 - 4	0.8 - 2
TI 80	Box terminal	1.5 - 35	1.5 - 25	-	0.8 - 3.5
Coils	Screw and clamp washer	0.75 - 1.5	0.75 - 1.5	0.75 - 1.5	0.5 - 1.4

Direct start, load categories AC-2, AC-3, AC-4

Type		Rated loads at 50-60 Hz					
		220-230 V	240 V	380-400 V	415 V	500 V	690 V
CI 6	A	6	6	6	6	4	2.7
	kW	1.5	1.5	2.2	2.2	2.2	2.2
CI 9	A	9	9	9	9	7	5
	kW	2.2	2.2	4	4	4	4
CI 9 EI/ DC	A	9	9	9	9	7	5
	kW	2.2	2.2	4	4	4	4
CI 12	A	12	12	12	12	9	7
	kW	3	3	5.5	5.5	5.5	5.5
CI 15	A	16	16	16	16	12	
	kW	4	4	7.5	7.5	7.5	
CI 15 EI/ DC	A	16	16	16	16	12	
	kW	4	4	7.5	7.5	7.5	
CI 16	A	16	16	16	16	12	9
	kW	4	4	7.5	7.5	7.5	7.5
CI 20	A	20	20	20	20	15	11
	kW	5.5	5.5	10	10	10	10
CI 25	A	25	25	25	25	18	14
	kW	5.5	5.5	11	11	11	11
CI 25 EI/ DC	A	25	25	25	25	18	14
	kW	5.5	5.5	11	11	11	11
CI 30	A	32	32	32	30	23	17
	kW	8.5	8.5	15	15	15	15
CI 30 EI/ DC	A	32	32	32	30	23	17
	kW	8.5	8.5	15	15	15	15
CI 32	A	32	32	32	30	25	
	kW	8.5	9	15	15	15	
CI 37	A	37	37	37	37	29	
	kW	10	11	18.5	18.5	18.5	
CI 45	A	45	45	45	45	35	
	kW	11	12.5	22	22	22	
CI 50	A	52	52	52	52	40	
	kW	15	16	25	25	25	

Table (continued)
Star-delta start, load categories AC-3

Type	Rated loads at 50-60 Hz						
		220-230 V	240 V	380-400 V	415 V	500 V	690 V
CI 6	A	10	10	10	10	7	5
	kW	2.2	2.2	4	4	4	4
CI 9	A	16	16	16	16	12	9
	kW	4	4	7.5	7.5	7.5	7.5
CI 9 EI/ DC	A	16	16	16	16	12	9
	kW	4	4	7.5	7.5	7.5	7.5
CI 12	A	21	21	21	21	16	12
	kW	5.5	5.5	10	10	10	10
CI 15	A	27	27	27	27	21	
	kW	7.5	7.5	11	11	11	
CI 15 EI/ DC	A	27	27	27	27	21	
	kW	7.5	7.5	11	11	11	
CI 16	A	27	27	27	27	21	16
	kW	7.5	7.5	11	11	11	11
CI 20	A	35	35	35	35	26	19
	kW	10	10	15	15	15	15
CI 25	A	43	43	43	43	31	24
	kW	11	11	22	22	22	22
CI 25 EI/ DC	A	43	43	43	43	31	24
	kW	11	11	22	22	22	22
CI 30	A	52	52	52	52	40	30
	kW	15	15	25	25	25	25
CI 30 EI/ DC	A	52	52	52	52	40	30
	kW	15	15	25	25	25	25
CI 32	A	56	56	56	56	43	
	kW	15	15	30	30	30	
CI 37	A	64	64	64	64	50	
	kW	18.5	18.5	33	33	33	
CI 45	A	78	78	78	78	55	
	kW	22	22	37	37	37	
CI 50	A	85	85	85	85	65	
	kW	25	25	45	45	45	

Three phase ohmic load, load category AC-1

Type	Operating temperature max. 40 °C (Open condition)						
		220-230 V	240 V	380-400 V	415 V	500 V	690 V
CI 6	A	20	20	20	20	20	20
	kW	8	8	14	14	17	22
CI 9/CI 12/CI 15	A	25	25	25	25	25	25
	kW	9	10	16	17	20	28
CI 9 EI/ DC CI 15 EI/ DC	A	25	25	25	25	25	25
	kW	9	10	16	17	20	28
CI 16/CI 20/ CI 25/CI 30	A	40	40	40	40	40	40
	kW	15	16	26	27	33	45
CI 25 EI/ DC CI 30 EI/ DC	A	40	40	40	40	40	40
	kW	15	16	26	27	33	45
CI 32	A	63	63	63	63	63	
	kW	23	24	41	43	51	
CI 37/CI 45/CI 50	A	80	80	80	80	80	
	kW	30	31	52	54	65	

Table (continued)

Three phase ohmic load, load category AC-1

Type	Operating temperature max. 60 °C (Enclosed condition)						
		220-230 V	240 V	380-400 V	415 V	500 V	690 V
CI 6/CI 9	A	16	16	16	16	16	16
	kW	6.4	6.7	11	12	14	18
CI 9 EI	A	16	16	16	16	16	16
CI 9 DC	kW	6.4	6.7	11	12	14	18
CI 12/CI 15	A	20	20	20	20	20	20
	kW	7	8	13	14	16	22
CI 15 EI	A	20	20	20	20	20	20
CI 15 DC	kW	7	8	13	14	16	22
CI 16/CI 20/ CI 25	A	25	25	25	25	25	25
	kW	9	10	16	17	20	28
CI 25 EI	A	25	25	25	25	25	25
CI 25 DC	kW	9	10	16	17	20	28
CI 30	A	30	30	30	30	30	30
	kW	11	12	19	20	24	35
CI 30 EI	A	30	30	30	30	30	30
CI 30 DC	kW	11	12	19	20	24	35
CI 32/CI 37	A	63	63	63	63	63	
	kW	23	24	41	43	51	
CI 45/CI 50	A	80	80	80	80	80	
	kW	30	31	52	54	65	

Three phase ohmic load, load category AC-1

Type	Operating temperature max. 40 °C (Open condition) Heat resistant cable only (min. 75 °C)						
		220-230 V	240 V	380-400 V	415 V	500 V	690 V
CI 15	A	30	30	30	30	30	30
	kW	11	12	19	20	24	34
CI 15 EI	A	30	30	30	30	30	30
CI 15 DC	kW	11	12	19	20	24	34
CI 16/CI 20/ CI 25	A	45	45	45	45	45	45
CI 25 EI	A	45	45	45	45	45	45
	kW	17	18	29	30	37	51
CI 25 DC	kW	17	18	29	30	37	51
CI 30	A	50	50	50	50	50	50
	kW	18	19	32	34	41	56
CI 30 EI	A	50	50	50	50	50	50
CI 30 DC	kW	18	19	32	34	41	56
CI 45/CI 50	A	90	90	90	90	90	
	kW	34	35	59	61	74	

Switching three phase power transformers (AC-6a)

Type	Transformer load, (factor n = 30, inrush current = n x rated transformer current)						
		220-230 V	240 V	380-400 V	415 V	500 V	690 V
CI 6	A	3	3	3	30	3	3
	kVA	1	1	2	2	2	3
CI 9	A	4	4	4	4	4	4
	kVA	1	1	2	2	3	4
CI 9 EI	A	4	4	4	4	4	4
CI 9 DC	kVA	1	1	2	2	3	4
CI 12	A	5	5	5	5	5	5
	kVA	2	2	3	3	4	5
CI 15	A	6	6	6	6	6	6
	kVA	2	2	4	4	5	7
CI 15 EI	A	6	6	6	6	6	6
CI 15 DC	kVA	2	2	4	4	5	7
CI 16	A	7	7	7	7	7	7
	kVA	2	2	4	5	6	8
CI 20	A	9	9	9	9	9	9
	kVA	3	3	6	6	7	10
CI 25	A	11	11	11	11	11	11
	kVA	4	4	7	7	9	13
CI 25 EI	A	11	11	11	11	11	11
CI 25 DC	kVA	4	4	7	7	9	13
CI 30	A	13	13	13	13	13	13
	kVA	5	5	9	9	11	15
CI 30 EI	A	13	13	13	13	13	13
CI 30 DC	kVA	5	5	9	9	11	15
CI 32	A	14	14	14	14	14	
	kVA	5	5	9	10	12	
CI 37	A	17	17	17	17	17	
	kVA	6	7	11	12	14	
CI 45	A	20	20	20	20	20	
	kVA	7	8	13	14	17	
CI 50	A	23	23	23	23	23	
	kVA	9	9	15	16	19	

Load category
Switching lighting

Type	Incandescent lamps (AC-5b) Max. operating current A	Fluorescent lamps, individually compensated (AC-5a)				
		Max. operat. current [A] at operat. temperature ¹⁾			Max. capacity [μ F] at $I_{cc} =$	
		40 °C	60 °C	10 kA	20 kA	50 kA
CI 6/9/12/15	12	20	12	1000	500	200
CI 9 EI/ 15 EI	12	20	12	1000	500	200
CI 9 DC/ 15 DC	12	20	12	1000	500	200
CI 16/20/25/30	20	33	22	2700	1350	540
CI 25 EI/ 30 EI	20	33	22	2700	1350	540
CI 25 DC/ 30 DC	20	33	22	2700	1350	540
CI 32	35	40	27	3200	1600	540
CI 37/45/50	45	47	33	3200	1600	640

¹⁾ 40°C is defined as non-enclosed installation
60°C is defined as enclosed installation

Switching capacitor loads, individual capacitors

 Inductance in leads between capacitors connected in parallel min. 6 μ H.

Type	Max. reactive power [kVAr] ¹⁾							
	220-240 V		380-415 V		500 V		690 V	
	40 °C	60 °C	40 °C	60 °C	40 °C	60 °C	40 °C	60 °C
CI 6/ 9/ 12/ 15	6	4	10	6	12	8	16	10
CI 9 EI/ 15 EI	6	4	10	6	12	8	16	10
CI 9 DC/ 15 DC	6	4	10	6	12	8	16	10
CI 16/ 20/ 25/ 30	10	6	16	10	22	15	30	20
CI 25 EI/ CI 30 EI	10	6	16	10	22	15	30	20
CI 25 DC/ CI 25 DC	10	6	16	10	22	15	30	20
CI 32	11	7	18	12	22	15		
CI 37/ 45/ 50	14	10	24	18	31	21		

¹⁾ 40°C is defined as non-enclosed installation
60°C is defined as enclosed installation

Switching capacitor loads, regulating capacitors

 Inductance in leads between parallel-connected capacitors must be min. 6 μ H

Type	Max. reactive power [kVAr] ¹⁾							
	220-240 V		380-415 V		500 V		690 V	
	40 °C	60 °C	40 °C	60 °C	40 °C	60 °C	40 °C	60 °C
CI 6/ 9/ 12/ 15	5	4	6	6	6	6	6	6
CI 9 EI/ 15 EI	5	4	6	6	6	6	6	6
CI 9 DC/ 15 DC	5	4	6	6	6	6	6	6
CI 16/ 20/ 25/ 30	10	6	12	11	12	11	12	11
CI 25 EI/ 30 EI	10	6	12	11	12	11	12	11
CI 25 DC/ 30 DC	10	6	12	11	12	11	12	11
CI 32	11	7	12	12	12	12		
CI 37/CI 45/CI 50	14	10	18	16	18	16		

¹⁾ 40°C is defined as non-enclosed installation
60°C is defined as enclosed installation

Switching direct current load

Load categories DC-3 and DC-5, contacts connected in series

Type	Max. operating current [A]									
	DC-3, 3-pole in series					DC-5, 3-pole in series				
	24 V	48 V	110 V	220 V	440 V	24 V	48 V	110 V	220 V	440 V
CI 6/CI 9	9	9	4.5	1.8	0.6	9	5	2	0.8	0.3
CI 9 EI/ 15 EI	9	9	4.5	1.8	0.6	9	5	2	0.8	0.3
CI 9 DC/ 15 DC	9	9	4.5	1.8	0.6	9	5	2	0.8	0.3
CI 12/CI 15	16	16	6.5	2.5	0.6	16	8	3	1.2	0.4
CI 15 EI	16	16	6.5	2.5	0.6	16	8	3	1.2	0.4
CI 15 DC	16	16	6.5	2.5	0.6	16	8	3	1.2	0.4
CI 16/CI 20/CI 25/CI 30	30	30	22	6	0.6	30	16	6	2.5	0.85
CI 25 EI/ 30 EI	30	30	22	6	0.6	30	16	6	2.5	0.85
CI 25 DC/ 30 DC	30	30	22	6	0.6	30	16	6	2.5	0.85

Switching direct current load

Load category DC-1, contacts connected in series

Type	Max. operating current [A]														
	24 V			48 V			110 V			220 V			440 V		
	1-pole	2-pole	3-pole	1-pole	2-pole	3-pole	1-pole	2-pole	3-pole	1-pole	2-pole	3-pole	1-pole	2-pole	3-pole
CI 6/CI 9	9	9	9	9	9	9	3.5	8	9	0.55	3.5	6	0.2	0.55	2
CI 9 EI	9	9	9	9	9	9	3.5	8	9	0.55	3.5	6	0.2	0.55	2
CI 9 DC	9	9	9	9	9	9	3.5	8	9	0.55	3.5	6	0.2	0.55	2
CI 12/CI 15	16	16	16	16	16	16	5.2	15	16	0.8	5.2	10	0.2	0.8	3
CI 15 EI	16	16	16	16	16	16	5.2	15	16	0.8	5.2	10	0.2	0.8	3
CI 15 DC	16	16	16	16	16	16	5.2	15	16	0.8	5.2	10	0.2	0.8	3
CI 16/CI 20/CI 25/CI 30	30	30	30	25	30	30	8	22	30	1.5	8	16	0.3	1.2	4.5
CI 25 EI/ 30 EI	30	30	30	25	30	30	8	22	30	1.5	8	16	0.3	1.2	4.5
CI 25 DC/ 30 DC	30	30	30	25	30	30	8	22	30	1.5	8	16	0.3	1.2	4.5

Power loss
Contact resistance and power losses

Type	Typical impedance pr pole mΩ	Power losses all 3 poles		Coil consumption a.c. W	Total power losses	
		AC-3	AC-1		AC-3	AC-1
		W	W		W	W
CI 6	2.1	0.2	2.5	2.7	2.9	5.2
CI 9	1.8	0.4	3.4	2.7	3.1	6.1
CI 12	1.6	0.7	3.0	2.7	3.4	5.7
CI 15	1.6	1.1	3.0	2.7	3.8	5.7
CI 16	1.1	0.8	5.3	2.7	3.5	8
CI 20	1.1	1.3	5.3	2.7	4	8
CI 25	1.1	2.1	5.3	2.7	4.8	8
CI 30	0.8	2.2	3.8	2.7	4.9	6.5
CI 32	0.9	2.8	11	3	5.8	14
CI 37	0.8	3.3	15	3	6.3	18
CI 45	0.8	4.9	15	3	7.9	18
CI 50	0.8	6.0	15	3	9	18
CI 9DC	1.8	0.4	3.4	1.5	1.9	5.3
CI 15DC	1.6	1.1	3	1.5	2.6	4.5
CI 25DC	1.1	2.1	5.3	1.5	3.6	6.8
CI 30DC	0.8	2.2	3.8	1.5	3.7	5.3
CI 9EI	1.8	0.4	3.4	1.5	1.9	5.3
CI 15EI	1.6	1.1	3	1.5	2.6	4.5
CI 25EI	1.1	2.1	5.3	1.5	3.6	6.8
CI 30EI	0.8	2.2	3.8	1.5	3.7	5.3

Type	Average power	
	Min. setting	Max. setting
TI 16C	typically 2.15 W	typically 4.87 W
TI 25C		
TI 30C		
TI 80	typically 5.17 W	typically 10.8 W

Short time withstand current I_{cw}

Type	Current transfer time in sec.							Min. cooling in min.
	0.2	1	2	4	10	100	1000	
	Short time withstand current in Amps (I_{cw})							
CI 6, CI 9, CI 12, CI 15	550	250	200	160	120	60	40	3
CI 9 EI, CI 15 EI	550	250	200	160	120	60	40	3
CI 9 DC, CI 15 DC	550	250	200	160	120	60	40	3
CI 16, CI 20, CI 25, CI 30	1000	700	500	360	240	110	80	6
CI 25 EI, CI 30 EI	1000	700	500	360	240	110	80	6
CI 25 DC, CI 30 DC	1000	700	500	360	240	110	80	6
CI 32		1000	800	580	380	200	100	12
CI 37, CI 45, CI 50		1300	1000	900	580	240	120	12

Connections, auxiliary contacts

Type	Connection method	Single core [mm ²]	Multi core		Tightening torque [Nm]
			without terminal sleeve [mm ²]	with terminal sleeve [mm ²]	
CB- for CI 6-50	Screw and clamp washer	0.75 - 2.5	0.75-2.5	0.75-1.5	1-1.5
TI 16C, TI 25C, TI 30C, TI 80	Screw and clamp washer	0.75 - 1.5	0.75-1.5	0.5 -1.5	0.3 -1

Coils, consumption and operating times

Type	Inrush power			Holding power			Pull-in voltage		Drop-out voltage		Make time		Break time	
	AC		DC	AC		DC	AC	DC	AC	DC	AC	DC	AC	DC
	VA	W	W	VA	W	W	V	V	V	V	ms	ms	ms	ms
CI 6...CI 30	75	65		9	2.7		$(0.85-1.1) \times U_s$		$(0.35-0.65) \times U_s$			10-17		8-10
CI 32...CI 50	140	80		11	3		$(0.85-1.1) \times U_s$		$(0.35-0.65) \times U_s$			9-16		7-13
CI 9DC...CI 30DC			65			1.5		0.7-1.33		0.4-0.55		12-18		80-120
CI 9 EI...CI 30 EI	50	65	3.5 mA	2.8	1.5	3.5 mA	$(0.75-1.1) \times U_s$	$(0.6-1.2) \times U_s$	$(0.4-0.55) \times U_s$	$(0.3-0.5) \times U_s$		12-18		10-16

RC Element (charge suppressor)

Type	Comments	Overvoltage factor $n = \frac{U_{max}}{U_n}$
RC	Suitable for contactors CI 6-30	1-1.5
RCB	Suitable for contactors CI 32-50	1-2.0

Max. load control circuit (contact system)

Type	Load		Max fuse	
	AC-15	DC-13	gl, gL, gG	BS 88 type T
TI 16C	500 V	250 V	4 A	6 A
TI 25C	2 A	2 A		
TI 30C	200 VA	20 W		
TI 80	500 V	250 V	4 A	6 A
	2 A	2 A		
	200 VA	20 W		

UL/CSA specifications
UL/CSA approved loads

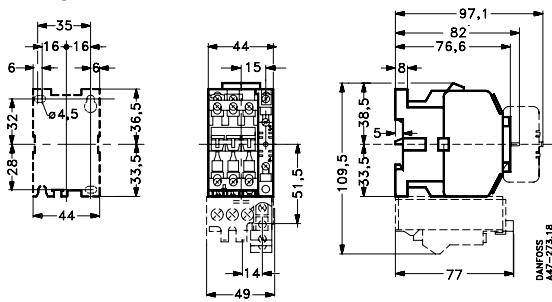
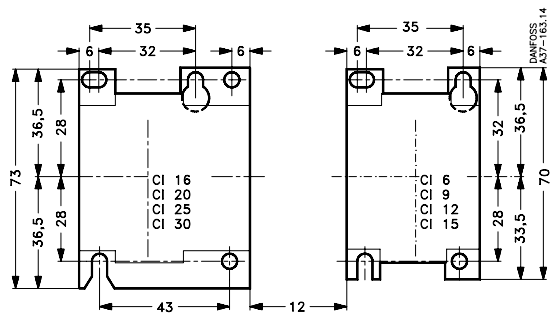
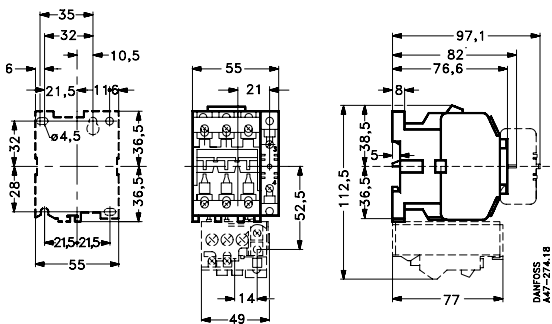
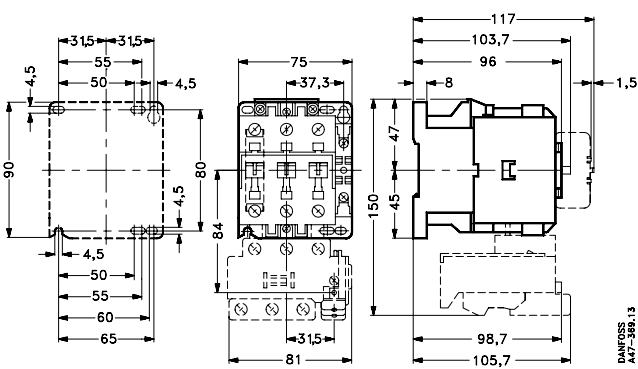
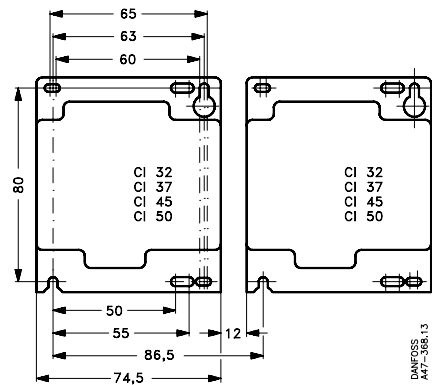
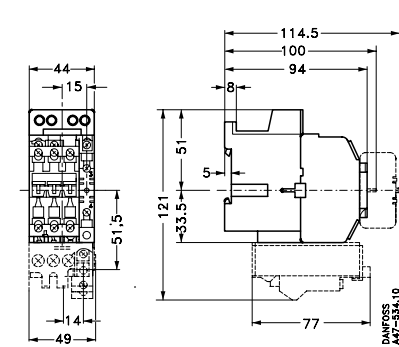
Type	Motor load (AC-3) [hp]						Other loads (AC-1) [A]			
	1-phase		3-phase				UL		CSA	
	115 V	230 V	200 V	240 V	460 V	575 V	40 °C ¹⁾	60 °C ¹⁾	40 °C ¹⁾	60 °C ¹⁾
CI 6	0.5	1	1.5	2	3	5	16	16	20	20
CI 9	0.5	1.5	2	3	5	7.5	16	16	20	20
CI 12	0.75	2	3	4	7.5	10	20	20	20	20
CI 15	1	3	3	5	10	10	25	25	25	25
CI 16	1	3	5	5	10	15	40	40	40	40
CI 20	1.5	3	5	5	10	15	40	40	40	40
CI 25	2	4	7.5	7.5	15	20	40	40	40	40
CI 30	2	5	10	10	20	20	40	40	40	40
CI 32	3	5	10	10	20	25	70	63	70	63
CI 37	3	7.5	15	15	25	30	80	70	80	70
CI 45	4	7.5	15	15	30	30	80	70	80	70
CI 50	5	10	15	15	30	40	80	70	80	70

¹⁾ 40 °C is defined as non-enclosed installation
60 °C is defined as enclosed installation

Auxiliary contacts, UL/CSA-approved loads

Type	Comments	Load capacity	
		AC	
		Category	VA
CB-	For contactors CI 6...CI 50	A600	720

Dimensions

Control relays, contactors and motor starters, CI 6, 9, 12, 15
Drilling dimensionsCI 6-30 with mechanical interlock
Drilling dimensionsContactors and motor starters CI 16, 20, 25, 30
Drilling dimensionsContactors and motor starters CI 32, 37, 45, 50
Drilling dimensionsCI 32-50 with mechanical interlock
Drilling dimensionsContactors and motor starters
CI 9EI, 15EI, 9DC, 15DCContactors and motor starters
CI 25EI, 30 EI, 25DC, 30DC