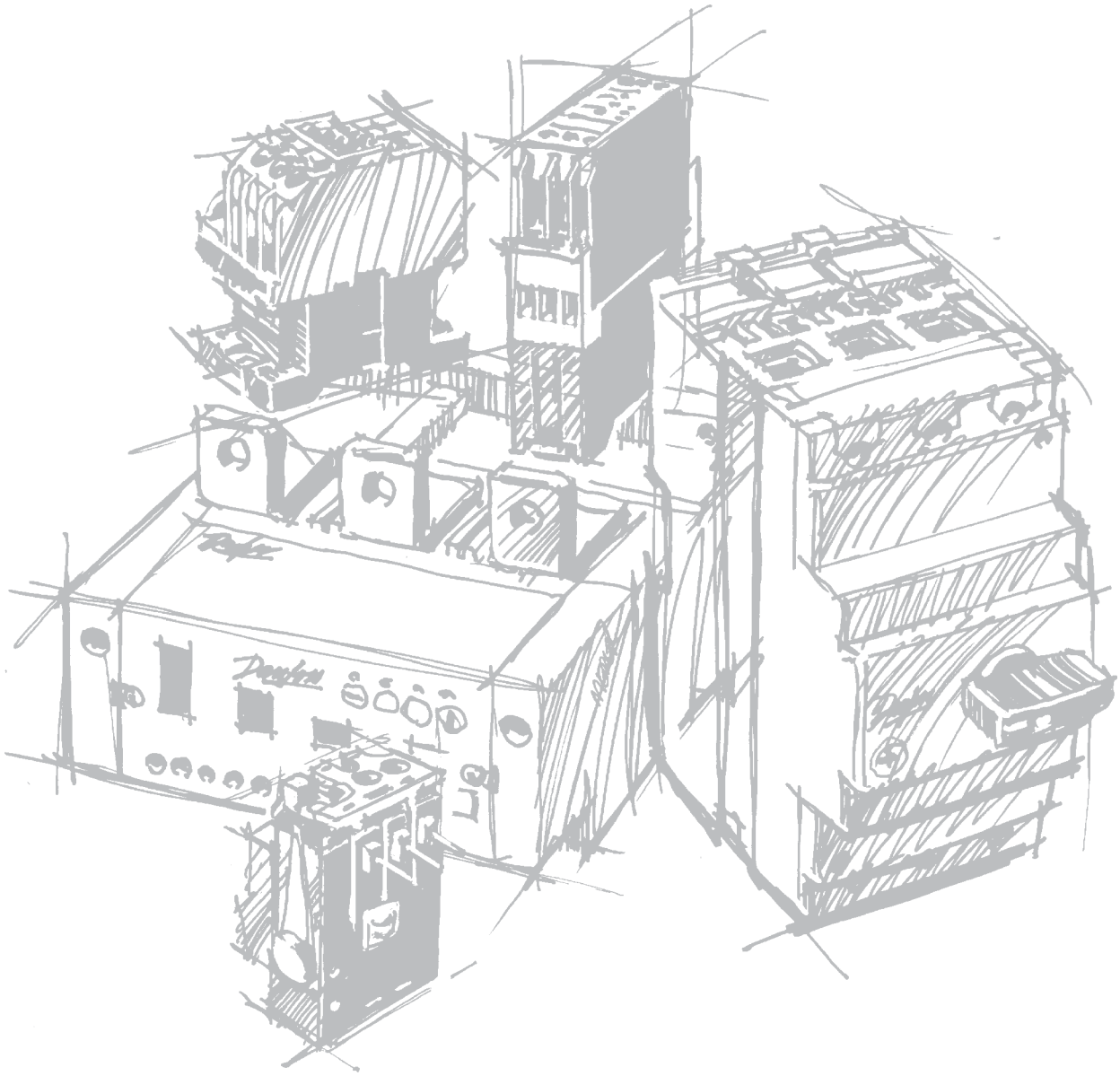
Data sheet



# CI-TI ™ Contactors and Motor Starters

## Contactors CI 61 - 86

## Introduction

Contactors CI 61, CI 73 and CI 86 switch powers of up to 30 kW, 37 kW and 45 kW respectively under 3 x 380 V AC-3 loads. Overload relays TI 80 and TI 86 together with current rail set 037H0108 fit on the three contactor types.
Accessories include a wide selection of auxiliary contacts, mechanical interlocks and RC elements. Auxiliary contacts for mounting on the side or top are available. The auxiliary contacts have force-actuated contacts and can form part of safety switching.

## Ordering

*Contactors CI 61, CI 73, CI 86*

| Main circuit | | | | | | Add-on options | Code no. [1] | Type |
|---|---|---|---|---|---|---|---|---|
| AC-3 load | | | $I_{th}$ [2] | $I_{the}$ [3] | Main contacts (make) | | | |
| $U_e$ 220-240 V kW | $U_e$ 380-690 V kW | $I_e$ A | (AC-1) Open A | (AC-1) Encl. A | Number | Number | | |
| 18.5 | 30 | 60 | 100 | 100 | 3 | 1-8 | **037H3061** | CI 61 |
| 22 | 37 | 72 | 100 | 100 | 3 | 1-8 | **037H3062** | CI 73 |
| 25 | 45 | 85 | 100 | 100 | 3 | 1-8 | **037H3063** | CI 86 |

[1]) Coil voltage/frequency or Suffix no. (see table below) must be added to the Danfoss code no.
[2]) The thermal current $I_{th}$ gives the maximum load at 40°C, which corresponds to installing the contactor in air (open).
[3]) The thermal current $I_{the}$ gives the maximum load at 60°C, which corresponds to installing the contactor in an enclosure.

*Coil voltages and coils for CI 61, CI 73, CI 86*

| Coil voltage[1]) | Suffix no. | Code no. |
|---|---|---|
| 24 V, 50/60 Hz | 13 | **037H3364** |
| 48 V, 50/60 Hz | 15 | **037H3365** |
| 110 V, 50/60 Hz | 23 | **037H3366** |
| 220-230 V, 50/60 Hz | 32 | **037H3367** |
| 380-400 V, 50/60 Hz | 39 | **037H3368** |

[1])Standard voltage tolerance –15%, +10%

CBD 11

CBD 22

CBD S-

Mechanical interlock

RCD-

Clip-on marker

*Auxiliary contact block CBD for CI 61, CI 73, CI 86 contactors*

| Contact function[1] | Load $I_e$ (AC-15) A | $I_{th}$[2] (AC-1) Open A | $I_{the}$[3] (AC-1) Ecl. A | $U_e$ V | **Code no.** | Type |
|---|---|---|---|---|---|---|
| 1 make (NO) + 1 break (NC) | 5.5 | 10 | 6 | 690 | **037H3064** | CBD-11 |
| 2 make (NO) + 2 break (NC) | 5.5 | 10 | 6 | 690 | **037H3065** | CBD-22 |
| 1 break (NC) | 3 | 10 | 6 | 690 | **037H3066** | CBD S-NC |
| 1 make (NO) | 3 | 10 | 6 | 690 | **037H3067** | CBD S-NO |
| 2 break (NC) | 3 | 10 | 6 | 690 | **037H3068** | CBD S-02 |
| 1 make (NO) + 1 break (NC) | 3 | 10 | 6 | 690 | **037H3069** | CBD S-11 |
| 2 make (NO) | 3 | 10 | 6 | 690 | **037H3070** | CBD S-20 |

1) Force-actuated contacts suitable for safety switching.
2) The thermal current $I_{th}$ gives the maximum load at 40°C, which corresponds to installing the contactor in air (open).
3) The thermal current $I_{the}$ gives the maximum load at 60°C, which corresponds to installing the contactor in an enclosure.

In CBD auxiliary contact the silver tips are cross-stamped.
In CBD S auxiliary contact the silver tips are H-shaped.
Both contact types are PLC-compatible.
Min. load 24 V, 10 mA.

*Accessories for contactors CI 61, 73, 86*

| Description | Comments | **Code no.** |
|---|---|---|
| Mech. interlock | Mech. interlock can be established between pairs | **037H3074** |
| RC element | Reduces overvoltage on de-energisation of coils | |
| | Type RCD 48 (24-48 V, 50/60 Hz) | **037H3071** |
| | Type RCD 280 (110-280 V, 50/60 Hz) | **037H3072** |
| | Type RCD 480 (380-480 V, 50/60 Hz) | **037H3073** |
| Clip-on markers | Rating plate with cover | **037H3142** |

## Introduction

Thermal overload relays TI 80-86 are used with contactors type CI 61, CI 73 and CI 86 to give overload protection of squirrel-cage motors of 30 kW to 45 kW.
The relays trip under asymmetric load, i.e. accelerated release if phase drop-out occurs.

Other features of TI 80 and TI 86:
- stop/reset button
- manual/automatic reset
- test button
- double scale for direct start or Y/D start
- signal contact with changeover

## Ordering

*Thermal overload relays TI 80 og TI 86*

| Range | | Max. fuse [1]) | | Code no. | Type |
|---|---|---|---|---|---|
| Motor starter A | Y/D starter A | gI, gL, gG type 2 A | BS 88, type T type 2 A | | |
| 42 - 63 | 75 - 109 | 100 | 100 | **047H1016** | TI 80 |
| 60 - 80 | 105 - 138 | 125 | 125 | **047H1017** | |
| 74 - 85 | 130 - 147 | 125 | 125 | **047H1018** | TI 86 |

[1]) To IEC 947-4 coordination types 1 and 2:
Coordination type 1: Any type of damage to the motor starter is permissible. If the motor starter is in an enclosure, no external damage to the enclosure is permissible. After a short-circuit the thermal overload relay shall be partially or wholly replaced.
Coordination type 2: No damage to the motor starter is permissible, but slight contact burning and welding is permissible.

*Selection of thermal overload relay*
The selection of a thermal overload relay must be based on the motor full load current and the method of starting:
- With direct start the motor starter range applies.
- With star-delta start Y/D starter range applies.

*Example:*
Full load current: 85 A
- With direct start, the suitable motor starter range is 74-85 A, i.e. thermal overload relay **047H1018.**
- With star-delta start, the suitable Y/D starter range is 75-109 A, i.e. thermal overload relay **047H1016**.

*Accessories for thermal overload relays TI 80-86*

| Description | Comments | Code no. |
|---|---|---|
| Clip-on markers | For mounting on TI 80-86 (250-off) | **037H0105** |
| BaseFor separate mounting of TI 80-86 | | **047L0456** |
| Pushbutton extension | For TI 9C-86 (3 mm) | **047L0406** |
| Current rail set | For direct mounting of TI 80/TI 86 on contactors CI 61-73-86 (set of 3 ) | **037H0108** |

Base

Push button extension

Current rail set

## Construction standards

Contactors, thermal overload relays and accessories are designed and tested in accordance with IEC 947/EN 60947.

*Environment*

Temperate climate

Tested and passed in accordance with DIN 50 016 and 40 046 part 38 and IEC 68

Max. installation height: 2000 NN, in accordance with IEC 947

*Pulse voltage*

| Type | $U_{imp}$ |
|---|---|
| CI 61-73-86 | 8 kV |

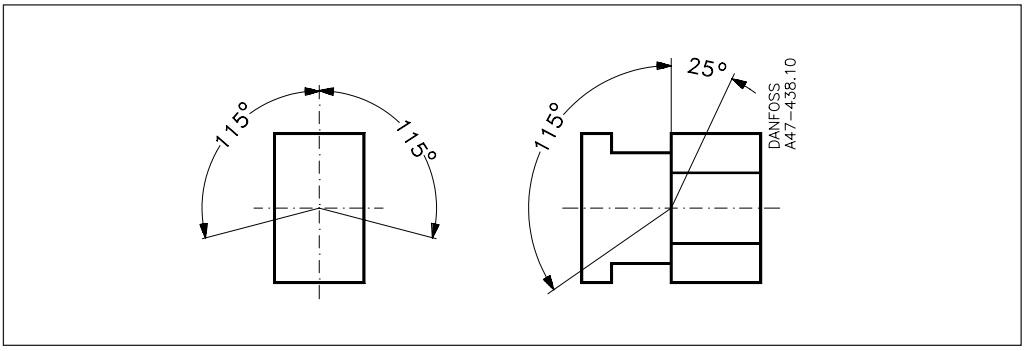
*Ambient temperature*

| Type | Ambient temperature | |
|---|---|---|
| | Operation | Storage/Transport |
| CI 61-73-86 | –25 °C ··· +60 °C | –55 °C ··· +80 °C |

*Environment*

| Type | Temperature compensated | Ambient temperature | Vibration | Shock perpendicular to contact system | Max. operations per hour |
|---|---|---|---|---|---|
| TI 86 | –5 to +40 °C | –50 to +60 °C | 2 g at 200 Hz | 9 g for 7.5 ms | 30 |

*Mounting direction*




## Approvals

| Product type \ Approval authority | CE EN 60947 | UL-recognized UL-listed CSA, Canada | Lloyds Register of Shipping, UK | Germanischer Lloyd, Tyskland | Bureau Veritas Frankrig | VERITAS Norge |
|---|---|---|---|---|---|---|
| CI 61 | ● | ● | ❍ | ❍ | ❍ | ❍ |
| CI 73 | ● | ● | ● | ❍ | ❍ | ❍ |
| CI 86 | ● | ● | ● | ❍ | ❍ | ❍ |
| TI 80 | ● | ● | ● | ● | ● | ● |
| TI 86 | ● | ● | ❍ | ❍ | ❍ | ❍ |

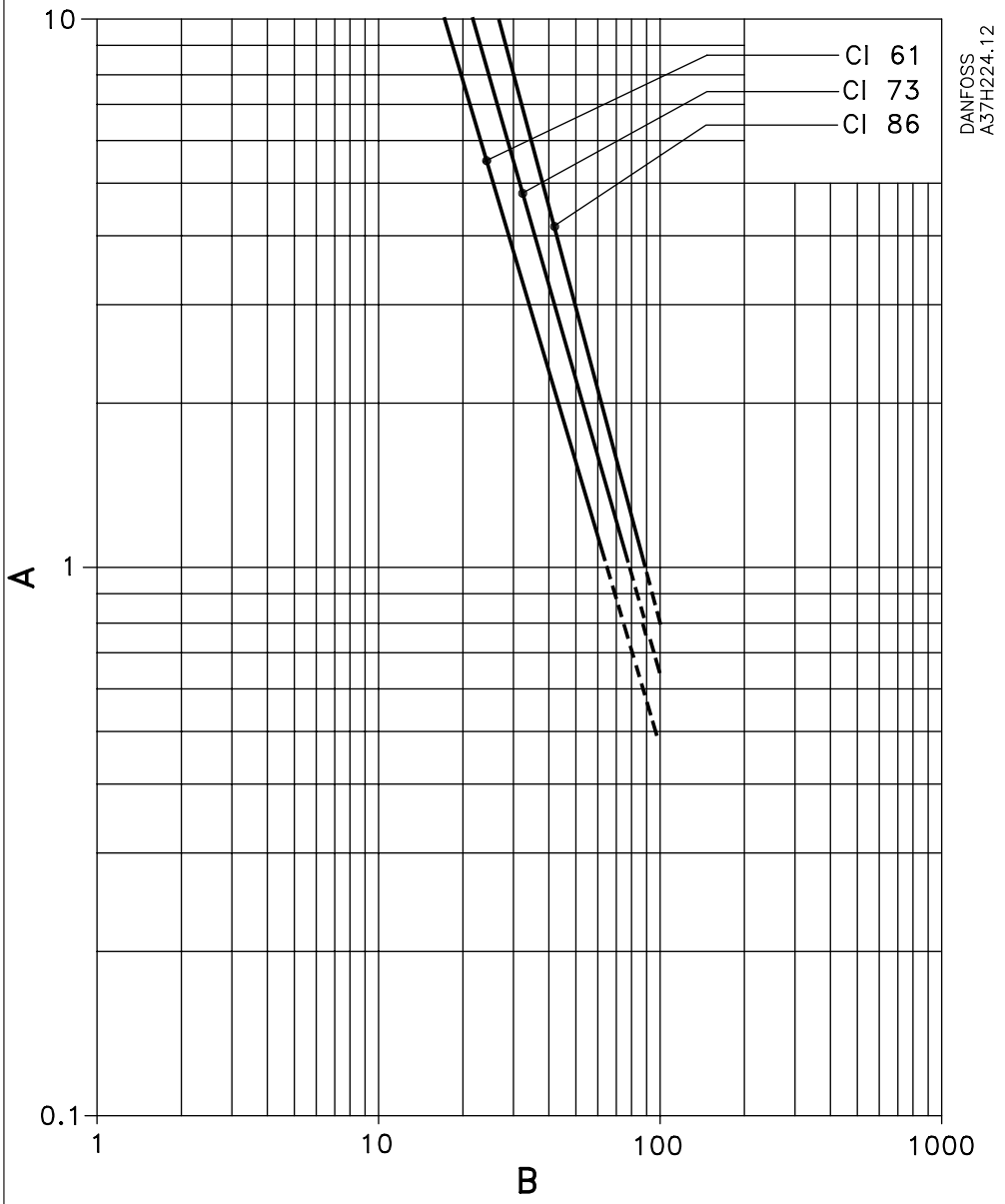
● Approved
❍ No approval applied

## Rated life

| Type | Mechanical life Operations | Electrical life AC-3 Operations | Duty cycles per hour AC-3 load Operations |
|---|---|---|---|
| CI 61-73-86 | 10 x $10^6$ | 1 x $10^6$ | 300 |

## Electrical life curves

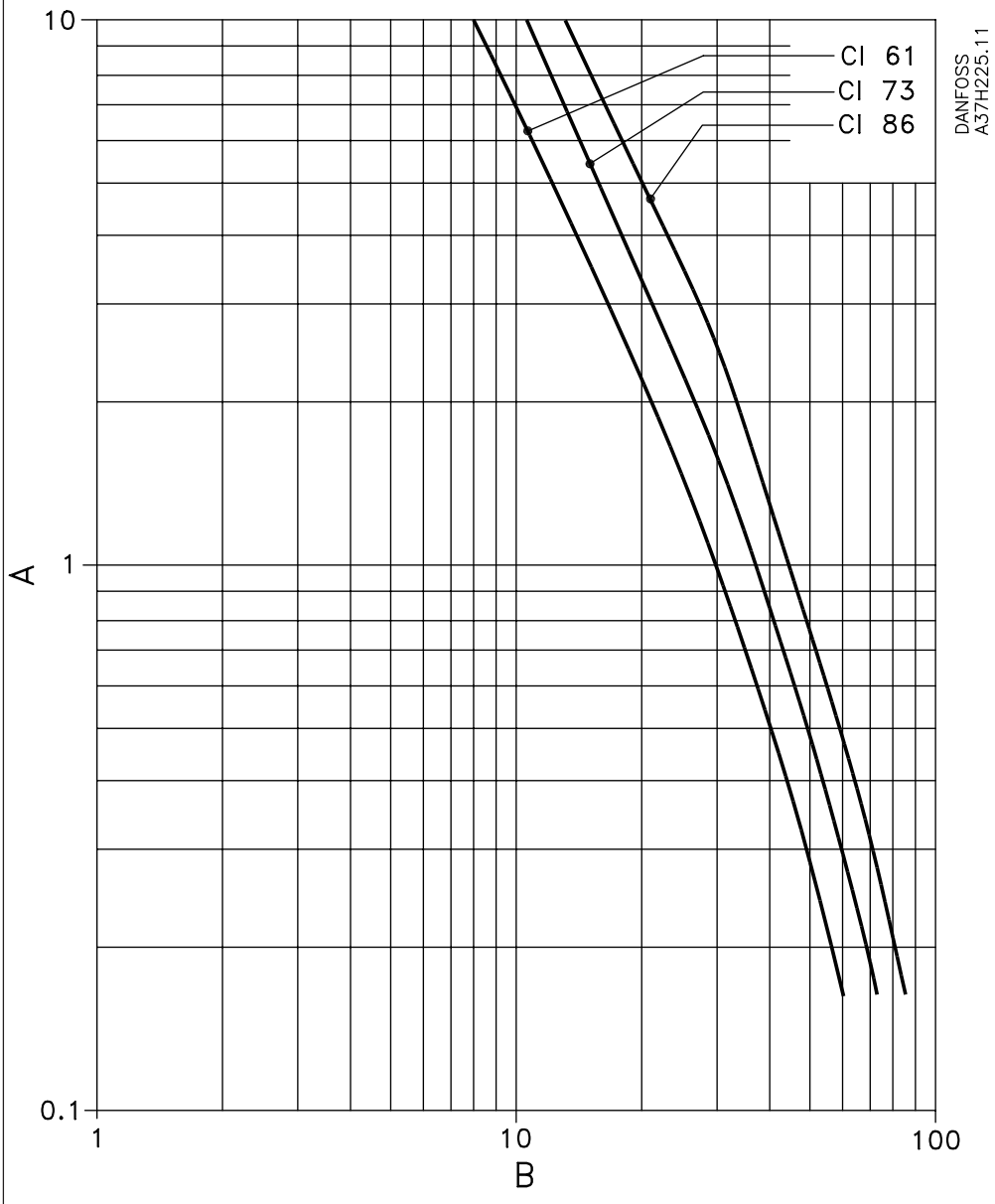
*Contactors CI 61-73-86, load categories AC-3, AC-1*




**A**: Electrical life in millions of make/ breakoperations
**B:** Breaking current (A)

## Electrical life curves

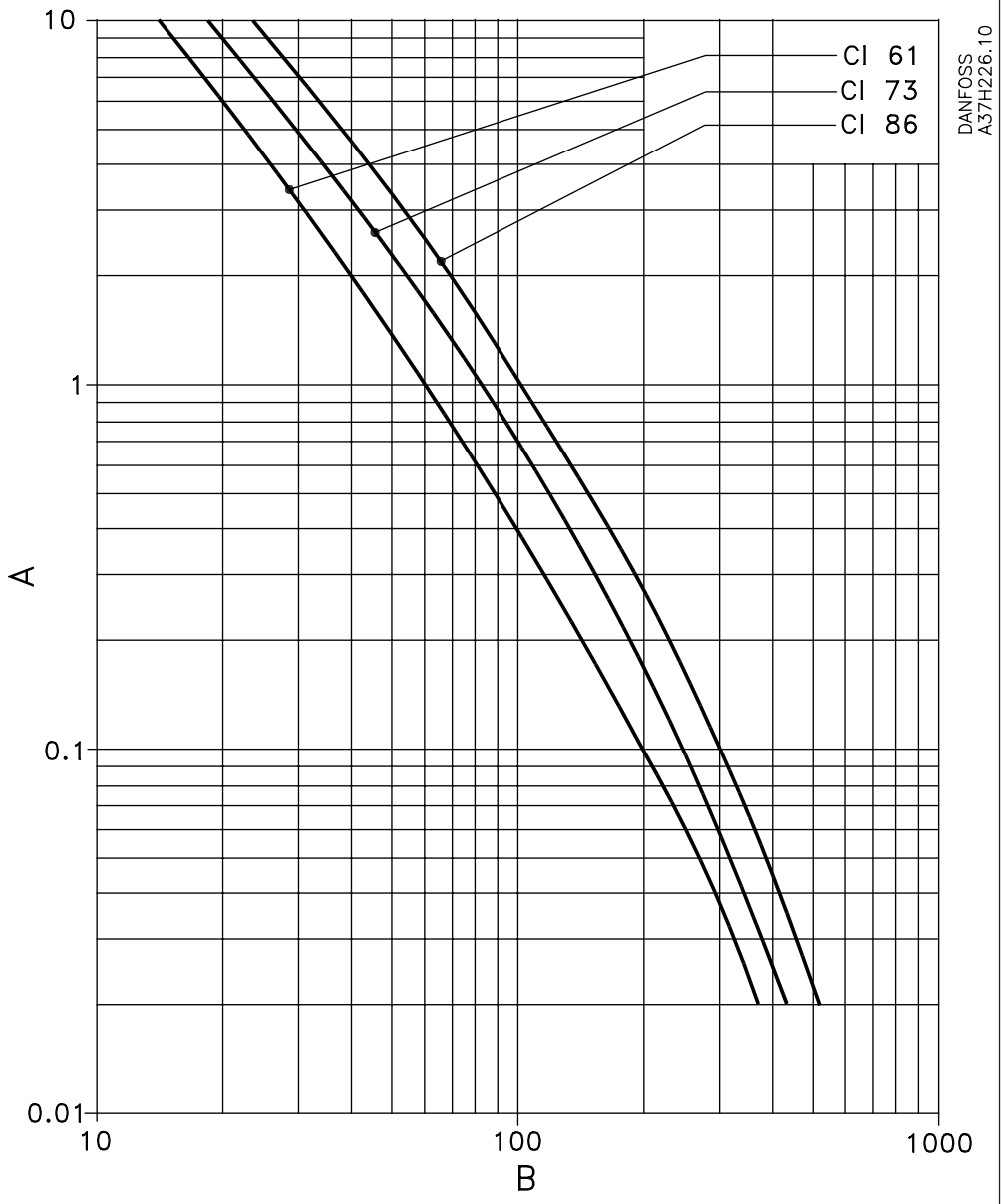
*Contactors CI 61-73-86, load categories AC-3, 10% AC-4*




**A**: Electrical life in millions of make/ breakoperations
**B:** Breaking current (A)

## Electrical life curves

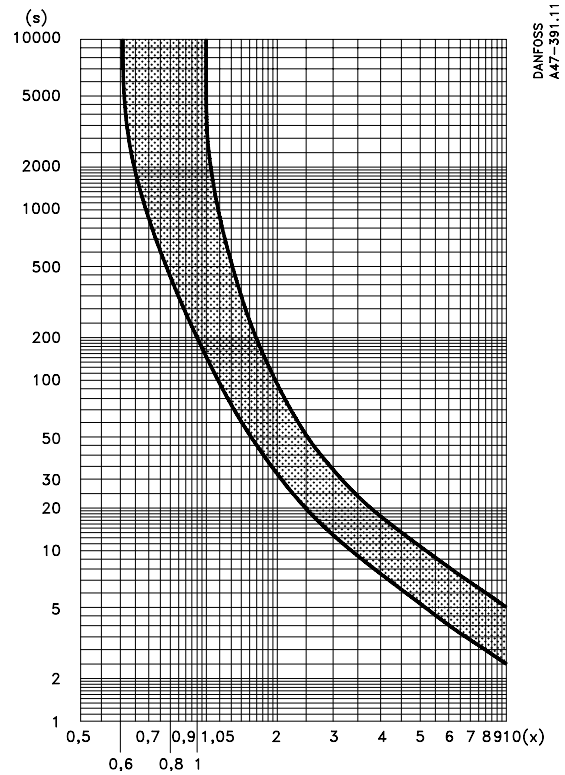
*Contactors CI 61-73-86, load categories AC-4*




**A**: Electrical life in millions of make/ breakoperations
**B:** Breaking current (A)

## Tripping graphs

*TI 80 / 86*




*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.

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

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

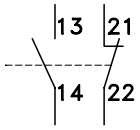
Tripping time $2 < T_p \leq 10$ s at 7.2 x $I_e$ class 10 A
*Note!* In general, the thermal overload relay is always set on motor full load current.

*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.

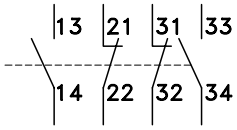
*Asymmetric load tripping*
1) Measure the current the motor draws from one of the intact phases.
2) Find the overload factor (x) by dividing the measured value by the maximum scale value of the thermal overload relay.
3) Find (x) on the horizontal axis and follow a line vertically up until it intersects 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.

## Contact symbols and terminal marking

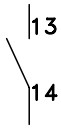
*Auxiliary contacts*

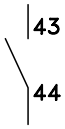



Auxiliary contacts
CBD - 11

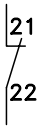


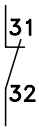

Auxiliary contacts
CBD - 22



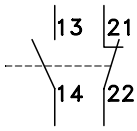



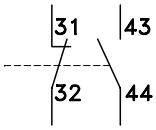

Auxiliary contacts
CBD S - NO



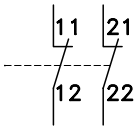



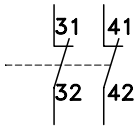

Auxiliary contacts
CBD S - NC



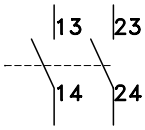



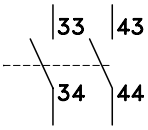

Auxiliary contacts
CBD S - 11



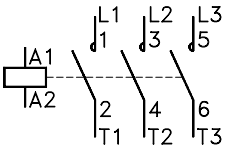

Auxiliary contacts
CBD S - 02



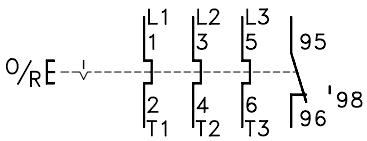




Auxiliary contacts
CBD S - 20

Contactors and thermal overload relay




Contactors
CI 61/73/86




Thermal overload relay
TI 80/86

*Connections, main contacts*

| Type | Connection method | EN 60947 | | | Tightening torque |
|---|---|---|---|---|---|
| | | Single or multi-core | High capacity | | |
| | | | without terminal sl. | with terminal sleeve | |
| | | [mm²] | [mm²] | [mm²] | [Nm] |
| CI 61, CI 73, CI 86 | Screw and box terminal | 2.5 - 50 | 2.5 - 35 | - | 2 - 6 |
| TI 80, TI 86 | Screw and box terminal | 1.5 - 35 | 1.5 - 25 | - | 0.8 - 3.5 |

## Loads

*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 61 | A | 62 | 60 | 60 | 58 | 50 | 34 |
| | kW | 18.5 | 18.5 | 30 | 30 | 30 | 30 |
| CI 73 | A | 72 | 70 | 72 | 69 | 56 | 42 |
| | kW | 22 | 22 | 37 | 37 | 37 | 37 |
| CI 86 | A | 85 | 82 | 85 | 82 | 68 | 49 |
| | kW | 25 | 25 | 45 | 45 | 45 | 45 |

*Star-delta start, load category AC-3*

| Type | | Rated loads at 50-60 Hz | | | | | |
|---|---|---|---|---|---|---|---|
| | | 220-230 V | 240 V | 380-400 V | 415 V | 500 V | 690 V |
| CI 61 | A | 107 | 104 | 104 | 100 | 87 | 59 |
| | kW | 33 | 34 | 58 | 58 | 60 | 56 |
| CI 73 | A | 125 | 121 | 125 | 120 | 97 | 73 |
| | kW | 39 | 39 | 69 | 69 | 67 | 70 |
| CI 86 | A | 147 | 142 | 147 | 142 | 118 | 85 |
| | kW | 47 | 47 | 82 | 82 | 82 | 81 |

*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 61, CI 73, CI 86 | A | 100 | 100 | 100 | 100 | 100 | 100 |
| | kW | 40 | 42 | 69 | 72 | 87 | 120 |

*Three-phase ohmic load, load category AC-1*

| Type | | Operating temperature max. 60 °C (Encl. condition) Heat-resistant cable only (min. 75 °C) | | | | | |
|---|---|---|---|---|---|---|---|
| | | 220-230 V | 240 V | 380-400 V | 415 V | 500 V | 690 V |
| CI 61, CI 73, CI 86 | A | 100 | 100 | 100 | 100 | 100 | 100 |
| | kW | 40 | 42 | 69 | 72 | 87 | 120 |

*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 61 | A | 28 | 28 | 27 | 26 | 23 | 15 |
| | kVA | 11 | 11 | 19 | 19 | 19 | 18 |
| CI 73 | A | 32 | 32 | 32 | 31 | 25 | 19 |
| | kVA | 13 | 13 | 22 | 22 | 22 | 23 |
| CI 86 | A | 38 | 37 | 38 | 37 | 31 | 22 |
| | kVA | 15 | 15 | 27 | 27 | 27 | 26 |

**Table** (continued)

*Switching lighting*

| Type | Incandescent lamps (AC-5b) | Fluorescent lamps, individually compensated (AC-5a) | | | | |
|---|---|---|---|---|---|---|
| | Max. operating current | Max. operat. current [A] at operat. temp. [1] | | Max. capacity [µF] | | |
| | A | 40 °C | 60 °C | 10 kA | at $I_{cc}$ = 20 kA | 50 kA |
| CI 61 | 60 | 81 | 65 | 4000 | 2000 | 800 |
| CI 73 | 60 | 81 | 65 | 4000 | 2000 | 800 |
| CI 86 | 70 | 90 | 76 | 4700 | 2350 | 940 |

*Switching capacitor loads, individual capacitors (AC-6b)*
*Inductance in leads between capacitors connected in parallel min. 6µH*

| Type | [1]Max reactive power (kVAr) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 220-240 V | | 380 - 415 V | | 500 V | | 690V | |
| | 40°C | 60°C | 40°C | 60°C | 40°C | 60°C | 40°C | 60°C |
| CI 61 | 28 | 28 | 48 | 42 | 50 | 42 | 50 | 42 |
| CI 73 | 28 | 28 | 48 | 48 | 55 | 50 | 55 | 50 |
| CI 86 | 28 | 28 | 48 | 48 | 60 | 55 | 60 | 55 |

*Switching capacitor loads, regulating capacitors (AC-6b)*
*Inductance in leads between parallel-connected capacitors must be min.6µH*

| Type | [1]Max reactive power (kVAr) | | | | | | | |
|---|---|---|---|---|---|---|---|---|
| | 220-240 V | | 380 - 415 V | | 500 V | | 690V | |
| | 40°C | 60°C | 40°C | 60°C | 40°C | 60°C | 40°C | 60°C |
| CI 61 | 28 | 28 | 40 | 40 | 50 | 40 | 40 | 40 |
| CI 73 | 28 | 28 | 48 | 48 | 50 | 50 | 50 | 50 |
| CI 86 | 28 | 28 | 48 | 48 | 50 | 50 | 50 | 50 |

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

*Switching direct current load at 60°C ambient temperature*
*Load categories DC-3 and DC-5, contacts connected in series*

| Type | Max. operating power (A) | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | DC-3, 3 poles in series | | | | | DC-5, 3 poles in series | | | | |
| | 24 V | 48 V | 110 V | 220 V | 440 V | 24 V | 48 V | 110 V | 220 V | 440 V |
| CI 61 | 90 | 70 | 70 | 25 | 0.6 | 90 | 70 | 70 | 25 | 0.6 |
| CI 73 | 90 | 70 | 70 | 25 | 0.6 | 90 | 70 | 70 | 25 | 0.6 |
| CI 86 | 100 | 80 | 80 | 30 | 0.6 | 100 | 80 | 80 | 30 | 0.6 |

*Switching direct current load at 60°C ambient temperature*
*Load category C-1, contacts connected in series*

| Type | Max. operating power (A) | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | 24 V | | | 48 V | | | 110 V | | | 220V | | | 440 V | | |
| | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 | 1 | 2 | 3 |
| | pole | poles | poles | pole | poles | poles | pole | poles | poles | pole | poles | poles | pole | poles | poles |
| CI 61 | 70 | 70 | 90 | 40 | 70 | 90 | 11 | 70 | 90 | 2 | 15 | 70 | 0.5 | 1.5 | 5 |
| CI 73 | 80 | 80 | 90 | 40 | 80 | 90 | 11 | 80 | 90 | 2 | 15 | 80 | 0.5 | 1.5 | 5 |
| CI 86 | 80 | 80 | 100 | 40 | 80 | 100 | 11 | 80 | 100 | 2 | 15 | 80 | 0.5 | 1.5 | 5 |

*Contact resistance and power loss*

| Type | Typical impedance per pole mΩ | Power loss all 3 poles AC-3 W | Power loss all 3 poles AC-1 W | Coil consumption a.c. W | Total power loss AC-3 W | Total power loss AC-1 W |
|---|---|---|---|---|---|---|
| CI 61 | 0.9 | 9.7 | 21.9 | 4.5 | 14.2 | 26.4 |
| CI 73 | 0.9 | 14 | 21.9 | 4.5 | 18.5 | 26.4 |
| CI 86 | 0.9 | 19.5 | 27 | 4.5 | 24 | 31.5 |

| Type | Average power | |
|---|---|---|
| | Min. setting | Max. setting |
| TI 80, TI 86 | typically 5.17 W | typically 10.8 W |

*Short-time withstand current $I_{cw}$*

| Type | Current transfer time in sec. | | | | | | | Min. cooling time(min.) |
|---|---|---|---|---|---|---|---|---|
| | 1 | 4 | 10 | 15 | 60 | 240 | 900 | |
| | Short-time withstand current in Amps ($I_{cw}$) | | | | | | | |
| CI 61 | 1100 | 820 | 640 | 560 | 350 | 190 | 108 | 20 |
| CI 73 | 1150 | 860 | 680 | 600 | 270 | 190 | 108 | 20 |
| CI 86 | 1250 | 910 | 740 | 620 | 380 | 200 | 120 | 20 |

**Table** (continued)

*Connections, auxiliary contacts*

| Type | | Connection method | Single and multi core [mm²] | High capacity without term. sleeve [mm²] | High capacity with term. sleeve [mm²] | Tightening torque [Nm] |
|---|---|---|---|---|---|---|
| CBD-, CBD S- | for CI 61-73-86 | Screw and clamp washer | 0.75 - 2.5 | 1 - 2.5 | 1 - 2.5 | 1 - 1.5 |
| TI 80, TI 86 | | Screw and clamp washer | 0.75 - 1.5 | 0.75 - 1.5 | 0.5 - 1.5 | 0.3 - 1 |

*Auxiliary contacts, load categories AC-15 and AC-1*

| Type | Comments | | Max. Operating current [A] | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|
| | | | AC-15 | | | | | | AC-1 | |
| | | | 220-230 V | 240 | 380-400 V | 415 V | 500 V | 690 V | 40 °C [1]) | 60 °C [1]) |
| CBD- | For contactors | CI 61-73-86 | 5.5 | 5 | 3 | 2.5 | 1.6 | 1 | 10 | 6 |
| CBD S- | For contactors | CI 61-73-86 | 3 | 3 | 2 | 2 | 1.6 | 0.75 | 10 | 6 |

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

*Auxiliary contacts, load categories DC-12, DC-13, and DC-14*

| Type | Comments | | Max. operating current [A] | | | | | | | | | | | | | | |
|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|---|
| | | | DC-12 | | | | | DC-13 | | | | | DC-14 | | | | |
| | | | 24 V | 48 V | 110 V | 220 V | 440 V | 24 V | 48 V | 110 V | 220 V | 440 V | 24 V | 48 V | 110 V | 220 V | 440 V |
| CBD- | For contactors | CI 61-73-86 | 12 | 9 | 3.5 | 0.55 | 0.2 | 5 | 2 | 0.7 | 0.25 | 0.12 | 9 | 5 | 2 | 0.4 | 0.16 |
| CBD S- | For contactors | CI 61-73-86 | 6 | 3 | 0.45 | 0.18 | 0.1 | 3 | 1.5 | 0.6 | 0.3 | 0.2 | 2 | 1.6 | 0.3 | 0.12 | 0.15 |

*Coils, consumption and operating times*

| Type | Inrush power | | Holding power | | Pull-in voltage | Drop-out voltage | Make time | Break time |
|---|---|---|---|---|---|---|---|---|
| | a.c. | | a.c. | | a.c. | a.c. | a.c. | a.c. |
| | VA | W | VA | W | V | V | ms | ms |
| CI 61-73-86 | 200 | 110 | 16 | 4.5 | $(0.85\text{-}1.1) \times U_s$ | $(0.3\text{-}0.6) \times U_s$ | 18.5-30 | 10-60 |

*RC Element (charge suppressor)*

| Type | Comments | Overvoltage factor $n = \frac{U_{max}}{U_n}$ |
|---|---|---|
| RCD | Suitable for contactors CI 61-73-86 | 1- 3 |

*Max. load control circuit (contact system)*

| Type | Load | | Max fuse | |
|---|---|---|---|---|
| | AC-15 | DC-13 | gI, gL, gG | BS 88 type T |
| TI 80 | 500 V<br>2 A<br>200 VA | 250 V<br>2 A<br>20 W | 4 A | 6 A |
| TI 86 | | | | |

## UL / CSA Specifikationer

*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 61 | 5 | 10 | 15 | 20 | 40 | 50 | 90 | 90 | 90 | 90 |
| CI 73 | 5 | 15 | 20 | 25 | 50 | 60 | 90 | 90 | 90 | 90 |
| CI 86 | 7.5 | 15 | 25 | 30 | 60 | 60 | 100 | 100 | 100 | 100 |

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

*Auxiliary contacts, UL/CSA approved loads*

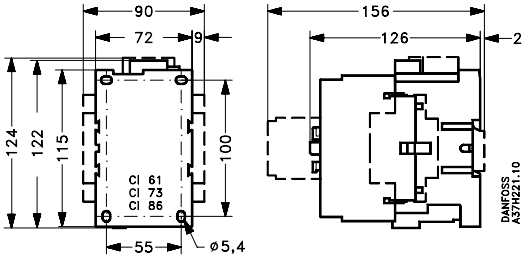
| Type | Comments | | Load capacity | | | |
|---|---|---|---|---|---|---|
| | | | a.c. | | d.c. | |
| | | | Category | VA | Category | W |
| CBD- and CBD S- | For contactors | CI 61-73-86 | A600 | 720 | Q600 | 69 |

*Connections, main contacts*

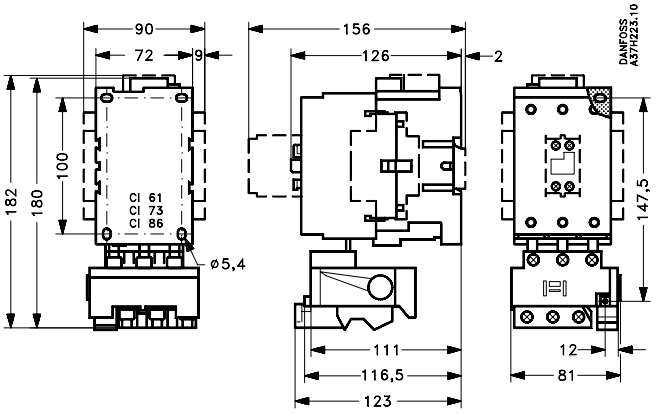
| Type | Connection method | Single and multi core (AWG) | Tightening torque (lb-in) |
|---|---|---|---|
| CI 61, CI 73, CI 86 | Screw and clamp washer | 14 - 2 | 18 - 52 |
| TI 80, TI 86 | Screw and clamp washer | 16 - 3 | 7 - 30 |

## Dimensions

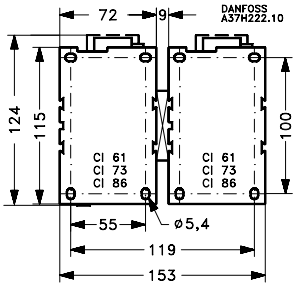
Contactor CI 61,73,86



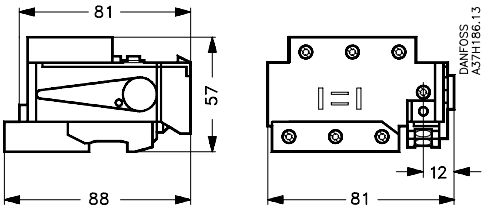

Contactor CI 61, 73, 86 built together with thermal overload relay TI 80-86




Drilling dimensions
CI 61, 73, 86 with mechanical interlock




*Thermal overload relays TI 80 and TI 86 for contactors CI 61, 73, 86*




Thermal overload relay TI 80/ TI 86 on base plate