# Miniature contactors CE and CEC

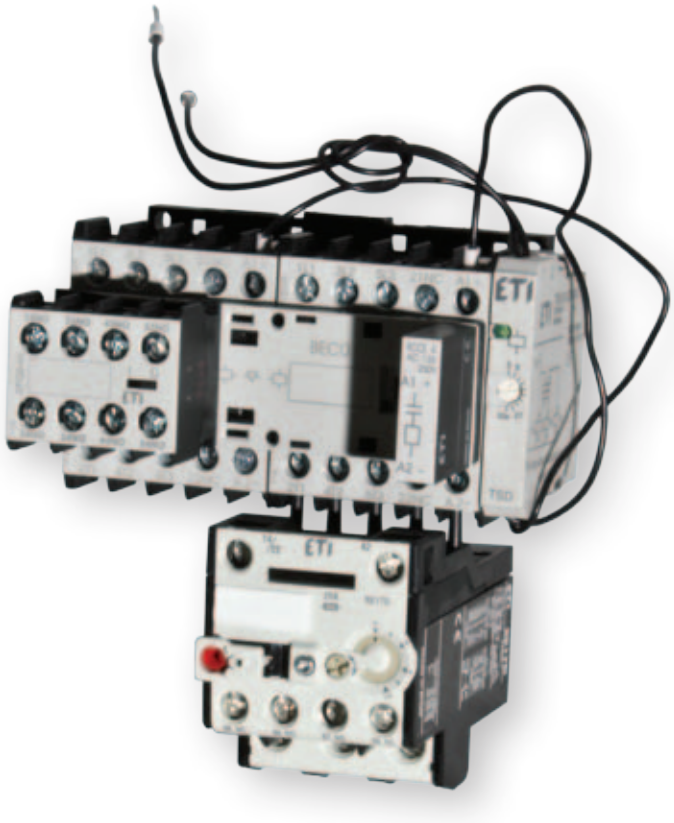
Application:

Miniature contactors are used to remotely control and protect (in combination with overload relays) electric motors and other electric loads with nominal power up to 7,5kW (at 400V AC3 duty), and auxiliary contactors are used for realizing a wide range of control circuits.

Advantages:

- Mounting on DIN rail and mounting plates
- Small size and high technical performance
- Low power loss (current heat loss)
- Protection against direct contact from front (IEC 536) IP20
- Wide range of accessories
- Surge suppressor (as option)
- Reversing starter with mechanical interlock
- Control voltage 24VAC, 48VAC, 110VAC, 230VAC, 400VAC

**Example of CEC configuration:**

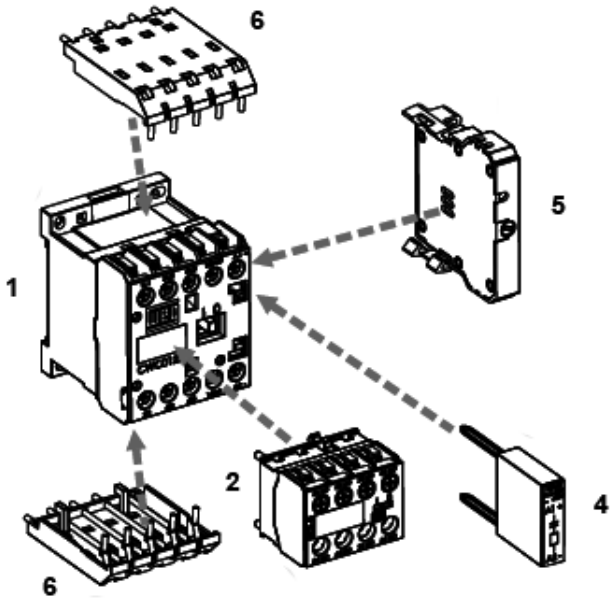


## Technical data

| Type | | | CE07 | CEC07 | CEC09 | CEC012 | CEC016 | CECA0 | CAE04 |
|---|---|---|---|---|---|---|---|---|---|
| Standards | | | IEC/EN 60 947, DIN VDE 0660, UL, CSA | | | | | | |
| **Rated insulation voltage $U_i$** according to IEC/EN 60947, DIN VDE 0660 | | V | 415 V | 690 V | | | | | 415 V |
| **Rated impulse withstand voltage $U_{imp}$** | | | 4 kV | | | | | | |
| **Rated operational frequency** | | | 25 - 400 Hz | | | | | | |
| **Degree of protection** | | | | | | | | | |
| Main circuits | | | IP20 | | | | | | |
| Control circuits and auxiliary contacts | | | IP20 | | | | | | |
| **Ambient temperature** | | | | | | | | | |
| Operating temperature | | | -55 ... +80°C | | | | | | |
| Storage temperature | | | -55 ... +80°C | | | | | | |
| **Altitude** | | | | | | | | | |
| Normal values | | | < 3000 m | | | | | | |
| 90% $I_e$/80% $U_e$ | | | 3000 ... 4000 m | | | | | | |
| 80% $I_e$/75% $U_e$ | | | 4000 ... 5000 m | | | | | | |
| **Overvoltage category / Pollution degree** | | | III/3 | | | | | | |
| Climatic proofing | | | IEC 60 680-2 | | | | | | |
| Number of main poles | | | 3 | 3 | | | | 4 | 4 |
| Rated operational voltage $U_e$ | | | 400-415 V | 690 V | | | | | 400-415 V |
| Conv. thermal current $I_{th}$ at < 55°C | | | | | | | | | |
| rated operational current $I_e$/AC-1 | | | 16 A | 18 A | 20 A | 22 A | 22 A | 10 A | 16 A |
| **AC3 Utilization category** | | | | | | | | | |
| Rated operational power | | | | | | | | | |
| **230 V** | | kW | 1,5 | 1,5 | 2,2 | 3 | 4 | - | - |
| **400/415 V** | | kW | 3 | 3 | 4 | 5,5 | 7,5 | - | - |
| **440 V** | | kW | - | 3,7 | 4,5 | 5,5 | 7,5 | - | - |
| **500 V** | | kW | - | 3,7 | 4,5 | 5,5 | 7,5 | - | - |
| **690 V** | | kW | - | 3,7 | 5,5 | 7,5 | 7,5 | - | - |
| **AC4 Utilization category** | | | | | | | | | |
| Rated operational current $I_e$ AC-4 ($U_e \leq 440V$) | | | | 2,8 | 3,5 | 4,5 | 5 | | |
| **Short circuit rating, max. fuse gG (A)** | | | 16 | 20 | 20 | 25 | 25 | 6 | 6 |
| **Max. electrical operating frequency** | | | | | | | | | |
| AC-1 | | Ops/h | 50 | 300 | | | | - | - |
| AC-3 | | Ops/h | 300 | 600 | | | | - | - |
| AC-4 | | Ops/h | 250 | 300 | | | | - | - |
| no load | | Ops/h | 2000 | 2500 | | | | 2500 | 2500 |
| **Mechanical life span** | | Ops x 106 | 10 | | | | | | |
| **Electrical life span** | | Ops x 106 | 0,8 | 1,4 | 1,3 | 1,2 | 1,1 | 1 | 1 |
| **Maximum number of auxiliary contacts** | | | - | 5 | | | | - | - |
| **Rated operational current $I_e$** | | | | | | | | | |
| AC-15 | 220-230 V | A | - | - | - | - | - | 10 | 6 |
| | 380-400 V | A | - | - | - | - | - | 6 | 4 |
| | 415 V | A | - | - | - | - | - | 5 | - |
| | 500 V | A | - | - | - | - | - | 4 | - |
| | 690 V | A | | | | | | 2 | |
| DC-13 | 24 V | A | - | - | - | - | - | 6,0 | 2,5 |
| | 48 V | A | - | - | | - | - | 4,0 | 1,5 |
| | 110 V | A | - | - | | - | - | 2 | 0,7 |
| | 220 V | A | - | - | | - | - | 0,7 | 0,35 |
| **Auxiliary contacts reliability** | | | | | | | | $U_e$ min=17 V, $I_e$ min=5 mA | $U_e$ min=24 V, $I_e$ min=30 mA |
| Terminal capacity | | $mm^2$ | 1 x / 2 x (0,5...2,5) | | | | | | |
| Tightening torque | | Nm | 0,8 | 1...1,5 | | | | | 0,8 |

**Technical data**

| Type | | | | CE07 | CEC07 | CEC09 | CEC012 | CEC016 | CECA0 | CAE04 |
|---|---|---|---|---|---|---|---|---|---|---|
| **Terminal capacity** | | | | | | | | | | |
| | | | $mm^2$ | 1 x / 2 x (0,5...2,5) | | | | | | |
| **Tightening torque** | | | Nm | 0,8 | 1...1,5 | | | | | 0,8 |
| **Control circuit** | | | | | | | | | | |
| Power consumption of the coil | AC | Closing | VA | 20 | 30 | | | | | 20 |
| | | Cosφ | | | 0,8 | | | | | |
| | | Operating | VA | 3,3...5,5 | 2...3 | | | | | 3,3...5,5 |
| | | Cosφ | | 0,2 | 0,27 | | | | | 0,2 |
| | DC | | W | - | 2,6...3,7 | | | | | - |
| Switching time | Closing/opening (AC) | | ms | 9...30 / 5...25 | 8...20 / 6...13 | | | | | 9...30 / 5...25 |
| | Closing/opening (DC) | | ms | - | 35...45 / 7...12 | | | | | - |
| | Coils rated voltage | | V | 12-660 VAC | 12-660 VAC / 12-440 VDC | | | | | 12-660 VAC |
| | Coil operational limits | | | | 0,85...1,1 | | | | | |




1 - Mini contactor

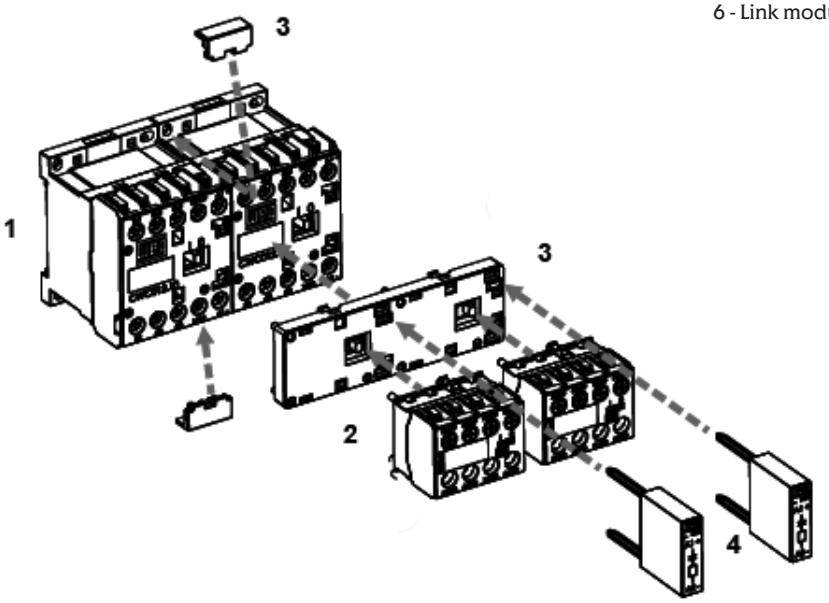
2 - Auxiliary frontal contacts block

3 - Mechanical interlock block

4 - Surge suppressor blocks

5 -Timer

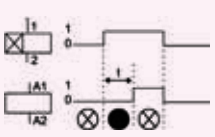
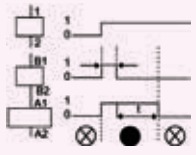
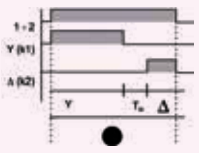
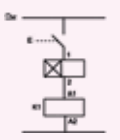
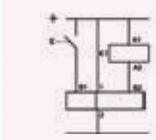
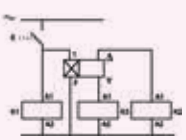
6 - Link module for printed circuit board



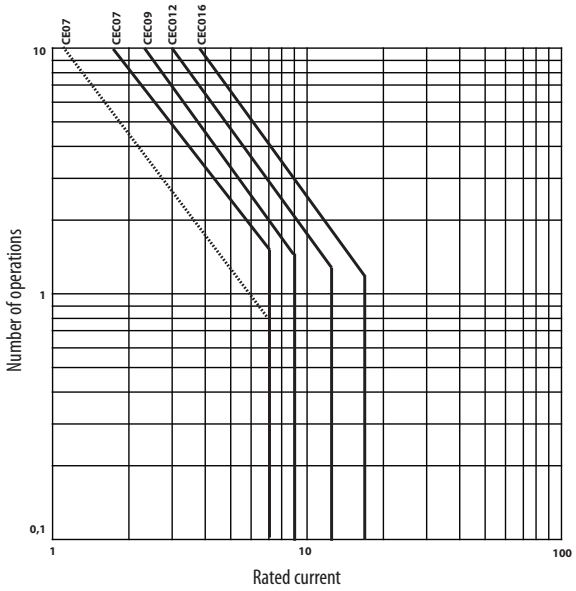
| Auxiliary contact block | | | |
|---|---|---|---|
| Standards | | | IEC 60947-5-1, IEC 60947-4-1 |
| Rated Insulation voltage Ui | IEC, VDE 0660 | | 1000 |
| Rated operational voltage Ue | IEC, VDE 0660 | (V) | 690 |
| Conv. thermal current Ith | | A | 10 |
| Rated operational current (Ie) | | | |
| AC-15(IEC 60947-5-1) | Ue ≤ 240V | (A) | 10 |
| | 380-400V | (A) | 6 |
| | 415-440V | (A) | 6 |
| | 500V | (A) | 4 |
| | 660-690V | (A) | - |
| UL, CSA 1) | | | A600 |
| DC-13(IEC 60947-5-1) | 24V | (A) | 1,5 |
| | 60V | (A) | 0,5 |
| | 110V | (A) | 0,4 |
| | 220-240V | (A) | 0,4 |
| UL, CSA 1) | | | Q600 |
| Short circuit protection max. fuse gL/gG | | (A) | 10 |
| Control circuit reliability | | (V / mA) | 17 / 5 |
| Electrical life span | | c. op. | 1.000.000 |
| Mechanical life span | | c. op. | 10.000.000 |
| Nr. of conductors and cross section | Stranded without end sleeve | $mm^2$ | 2x (0,5...2,5) |
| Tightening torque | | Nm | 0,8...1,5 |

| Electronic timer blocks TOE, TOD, TSD | | | | |
|---|---|---|---|---|
| Inputs | Rated insulation voltage ($U_i$) | | V | 300 |
| | Supply voltage ($U_e$) | 1 - 2 terminals | V | 24...240 V AC/DC 50/60 Hz (TOE) |
| | | | | 24...60 V AC/DC 50/60 Hz (TOD) |
| | | | | 100...60 V AC/DC 50/60 Hz (TOD) |
| | | | | 220-240 V AC 50/60 Hz (TSD) |
| | | | | 110-130 V AC (TSD) |
| | | | | 24-28 V AC 50/60 Hz (TSD) |
| | Command (Uc) (only TOD) | 2 - B1 terminals | V | 24...60 V AC/DC 50/60 Hz (TOD) |
| | | | | 100...240 V AC/DC 50/60 Hz (TOD) |
| | Voltage limits | | | 0,85 - 1,1 x $U_c$ for AC |
| | | | | 0,8 - 1,25 x $U_c$ for DC |
| | Consumption | | mA | ≤ 5 |
| Time adjustment | Min. time for Reset | | ms | 100 |
| | Min. command time (only TOD) | | ms | 50 |
| | Setting accuracy (% of the full scale value) | | % | +/-5 |
| | Repeat accuracy | | % | +/-1 |
| | Changeover time Y - Δ | | ms | 50 |

**Diagrams**

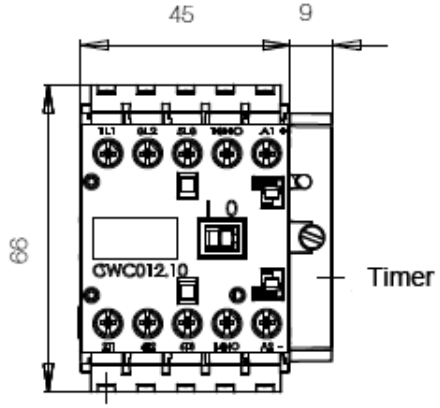
| Function | ON Delay TOE | | OFF Delay TOD | | Star - delta TSD | |
|---|---|---|---|---|---|---|
| Functional diagram | |  | |  | |  |
| LED on ● | | | | | | |
| LED off ⊗ | | | | | | |
| Schemes | Terminals |  | Terminals |  | Terminals |  |
| | 1 | | (+)1 | | 1 | |
| | 2 | | B1 | | 2 | |
| | | | (-)2 | | D | |
| | | | B2 | | Y | |

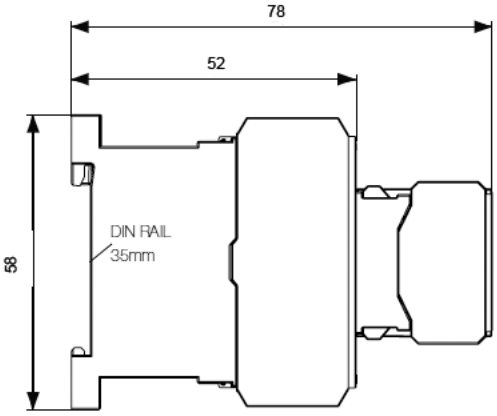
## Diagram

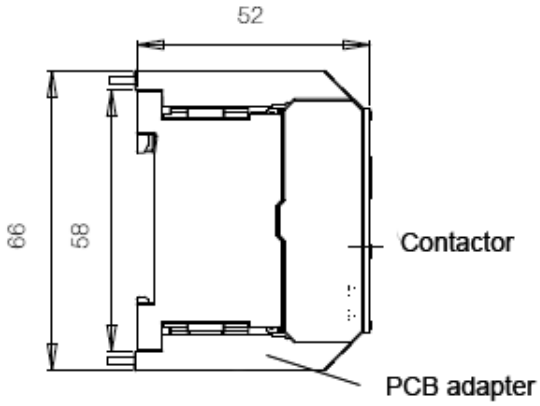



## Dimensions

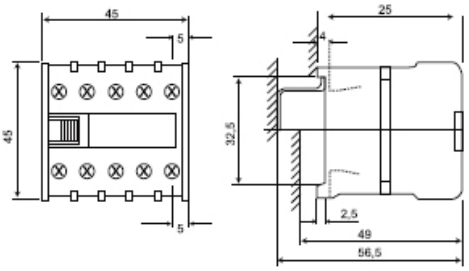
CEC - Dimensions with PCB adapter




CE07




## Mounting