

CAPACITOR CONTACTORS type CNNK 10..N - CNNK 30..N - New Series

Features

- In conformity with: IEC 60947-1, IEC 60947-4
- Switching of 3 phase capacitors
- Ambient temperature of 55 °C
- Available in other AC voltages on request
- Maximum permissible peak current $I \leq 200 I_e$



New series

- 5 sizes up to: 15kVAr; 20kVAr; 30kVAr; 60kVAr; 75kVAr
- New precharging resistors for increased service life
- Space saving: 45mm width up to 30kVAr
55mm width up to 60kVAr
70mm width up to 75kVAr

Selection and ordering data

1



| AC-6b utilization category For switching three-phase capacitors | | | | Auxiliary contacts | | Type | Weights kg |
|--|------------------|-----------------------------------|--|--------------------|---|----------------|---------------|
| Capacitor rating at operating voltage 50 Hz | | I _e (A) 400 V/50 Hz |   | | | | |
| 230 V kVAr | 400/440V kVAr | | 690 V kVAr | NO | NC | | |
| 5 | 10 | 15 | 14 | 2 0 1 1 0 2 | CNNK 10 20N CNNK 10 11N CNNK 10 02N | 0.320 | |
| 6,7 | 12.5 | 18 | 18 | 2 0 1 1 0 2 | CNNK 12 20N CNNK 12 11N CNNK 12 02N | 0.320 | |
| 8.5 | 15 | 22 | 22 | 2 0 1 1 0 2 | CNNK 15 20N CNNK 15 11N CNNK 15 02N | 0.325 | |
| 11 | 20 | 30 | 29 | 1 0 0 1 | CNNK 20 10N CNNK 20 01N | 0.333 | |
| 14 | 25 | 35 | 36 | 1 0 1 0 0 1 | CNNK 25E 10N* CNNK 25 10N CNNK 25 01N | 0.450 0.520 | |
| 20 | 30 | 40 | 44 | 1 0 0 1 | CNNK 30 10N CNNK 30 01N | 0.525 | |

* Without terminal blocks (see page 1/54 and 1/56)

Precharging resistors are an integral component of the CNNK..N contactors, equipped with early-make contacts. This special type of contact has the purpose of connecting for a very brief interval, 2-3ms, during the contactor closing, resistors which limit the connecting current of the capacitors. These resistors are then excluded when the closing operation is complete and the current capacity is conveyed to the main contacts. With this type of circuit, it is possible to obtain minor wear of all the components of the system especially fuses and capacitors ensuring a longer life and better reliability. Suitable for capacitors with and without reactor protection.

CAPACITOR CONTACTORS type CNNK 40..N - CNNK 75..N - New Series

Features



- In conformity with: IEC 60947-1, IEC 60947-4
- Switching of 3 phase capacitors
- Ambient temperature of 55 °C
- Available in other AC voltages on request
- Maximum permissible peak current $I \leq 200 I_e$

New series

- 5 sizes up to: 15kVAr; 20kVAr; 30kVAr; 60kVAr; 75kVAr
- New precharging resistors for increased service life
- Space saving: 45mm width up to 30kVAr
55mm width up to 60kVAr
70mm width up to 75kVAr

1

Selection and ordering data

| AC-6b utilization category For switching three-phase capacitors | | | | Auxiliary contacts | Type | Weights | |
|--|------------------|---------------|-------------|---|--------|--|-------|
| Capacitor rating at operating voltage 50 Hz | | | I_e (A) |   | | kg | |
| 230 V kVAr | 400/440V kVAr | 690 V kVAr | 400 V/50 Hz | NO | NC | | |
| 25 | 40 | 58 | 58 | 1 0 | 0 1 | CNNK 40 10N CNNK 40 01N | 0.943 |
| 29 | 50 | 70 | 72 | 1 0 | 0 1 | CNNK 50 10N CNNK 50 01N | 0.945 |
| 32 | 60 | 80 | 87 | 1 0 | 0 1 | CNNK 60 10N CNNK 60 01N | 0.97 |
| 32 | 60 | 85 | 87 | 1 0 | 0 1 | CNNK 60N 10N CNNK 60N 01N | 1.35 |
| 35 | 70 | 90 | 101 | 1 0 | 0 1 | CNNK 70 10N CNNK 70 01N | 1.40 |
| 38 | 75 | 105 | 108 | 1 0 | 0 1 | CNNK 75 10N CNNK 75 01N | 1.50 |



Precharging resistors are an integral component of the CNNK..N contactors, equipped with early-make contacts. This special type of contact has the purpose of connecting for a very brief interval, 2-3ms, during the contactor closing, resistors which limit the connecting current of the capacitors. These resistors are then excluded when the closing operation is complete and the current capacity is conveyed to the main contacts. With this type of circuit, it is possible to obtain minor wear of all the components of the system especially fuses and capacitors ensuring a longer life and better reliability. Suitable for capacitors with and without reactor protection.

TECHNICAL INFORMATION

CAPACITOR CONTACTORS type CNNK 10..N - CNNK 30..N

In conformity with: IEC 60947-1, IEC 60947-4

Special contactors for power factor correction

Main characteristics

These contactors are equipped with early - make contacts. This special type of contact has the purpose of connecting for a very brief interval, 2-3 ms, during the contactor closing, resistances which limit the connecting current of the capacitors. These resistances are then excluded when the closing operation is complete and the current capacity is conveyed to the main contacts. Maximum permissible peak current $1 \leq 200$ times the nominal rms current of the switched capacitor.

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| Type designation | CNNK 10 20N CNNK 10 11N CNNK 10 02N | CNNK 12 20N CNNK 12 11N CNNK 12 02N | CNNK 15 20N CNNK 15 11N CNNK 15 02N | CNNK 20 10N CNNK 20 01N | CNNK 25E 10N CNNK 25E 01N | CNNK 25 10N CNNK 25 01N | CNNK 30 10N CNNK 30 01N |
|--|---|---|---|----------------------------|------------------------------|----------------------------|----------------------------|
| Capacitor rating 230V kVAr | 5 | 6.7 | 8.5 | 11 | 14 | 14 | 20 |
| at operating voltage 400-440V kVAr | 10 | 12.5 | 15 | 20 | 25 | 25 | 30 |
| 500-550V kVAr | 12.5 | 15 | 18 | 24 | 30 | 30 | 35 |
| 660-690V kVAr | 15 | 18 | 22 | 30 | 35 | 35 | 40 |
| Rated operational current I _e /AC-6b at 400V A | 15 | 18 | 22 | 29 | 36 | 36 | 44 |
| Rated operational current I _{th} at 400V A | 30 | 30 | 30 | 40 | 50 | 60 | 60 |
| Insulation rating U _i V | 690 | | | | | | |
| Permissible ambient temperature °C | - 25 to + 55 | | | | | | |
| Rated impulse withstand voltage U _{imp} kV | 8 | | | | | | |
| Consumption of electromagnet in cold state with U _n AC operated | | | | | | | |
| closing VA | 62 | | | 65 | | | |
| p.f. | 0,75 | | | 0,75 | | | |
| closed VA | 7 | | | 8 | | | |
| p.f. | 0,3 | | | 0,3 | | | |
| Voltage tolerances | 0,85 - 1,1 U _n | | | | | | |
| Coil Tightening torque Nm | 0,8 | | | | | | |
| Terminal screw/Screw head | M3,5/PZ2 | | | | | | |
| Degree of protection | IP 20 | | | | | | |
| Maximum permissible fuse ratings main circuit gL/gG A | 25 | 35 | 50 | 50 | 63 | 63 | 80 |
| auxiliary circuit A | 16 | 16 | 16 | 16 | 16 | 16 | 16 |
| Frequency of switching operations s/h | 240 | | | 120 | | | |
| Electrical endurance min. | 250.000 | | | 175.000 | 125.000 | | |
| Sizes of connecting conductors - main circuit | | | | | | | |
| multi-wire conductor mm ² | 1.5-6 | 1.5-6 | 1.5-6 | 2.5-10 | 2.5-10 | 6-25 | 6-25 |
| multi-wire conductor with cable shoe mm ² | | | | | | | |
| Terminal screw | M4 | M4 | M4 | M4 | M4 | M5 | M5 |
| Screw head | PZ2 | PZ2 | PZ2 | PZ2 | PZ2 | Hexagon socket 2.5 | |
| Tightening torque Nm | 1,2 | 1,2 | 1,2 | 1,4 | 1,6 | 2 | 2 |
| - auxiliary circuit | | | | | | | |
| multi-wire conductor mm ² | 1-2,5 | | | | | | |
| multi-wire conductor with cable shoe mm ² | 0,75-1,5 | | | | | | |
| Terminal screw | M3,5 | | | | | | |
| Screw head | PZ2 | | | | | | |
| Tightening torque Nm | 0,8 | | | | | | |
| Loadability of auxiliary contacts rated continuous current 35°C | | | | | | | |
| AC rated operational current I _e /AC15 A | 10 | | | | | | |
| for 230V A | 6 | | | | | | |
| 400V A | 4 | | | | | | |
| 500V A | 2 | | | | | | |
| 690V A | 1 | | | | | | |

TECHNICAL INFORMATION

CAPACITOR CONTACTORS type CNNK 40..N - CNKM 80

In conformity with: IEC 60947-1, IEC 60947-4

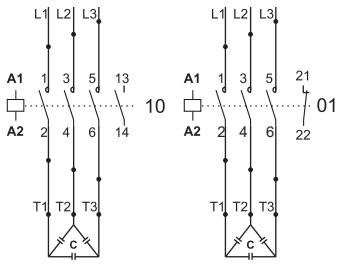
Special contactors for power factor correction

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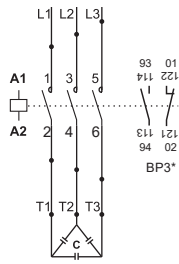
| Type designation | CNNK 40 10N CNNK 40 01N | CNNK 50 10N CNNK 50 01N | CNNK 60 10N CNNK 60 01N | CNNK 60N 10N CNNK 60N 01N | CNNK 70 10N CNNK 70 01N | CNNK 75 10N CNNK 75 01N | CNKM 80 22 | |
|---|----------------------------|----------------------------|----------------------------|------------------------------|----------------------------|----------------------------|--|--|
| Capacitor rating at operating voltage | 25 | 29 | 32 | 32 | 35 | 36 | 45 | |
| 230V kVAr | | | | | | | | |
| 400-440V kVAr | 40 | 50 | 60 | 60 | 70 | 75 | 80 | |
| 50/60Hz | | | | | | | | |
| 500-550V kVAr | 50 | 60 | 70 | 70 | 75 | 80 | 100 | |
| 660-690V kVAr | 58 | 70 | 80 | 85 | 90 | 100 | 115 | |
| Rated operational current I_e/AC-6b et 400 V | A | 58 | 72 | 87 | 87 | 101 | 108 | |
| Rated operational current I _{th} at 400V | A | 85 | 100 | 125 | 135 | 135 | 150 | |
| Insulation rating U _i | V | 1000 | | | | | | |
| Permissible ambient temperature | °C | - 25 to + 55 | | | | | | |
| Rated impuls withstand voltage U _{imp} | kV | 8 | | | | | | |
| Consumption of electromagnet in cold state with U _n AC operated | | | | | | | | |
| closing VA | | 155 | | | 204 | | 310 | |
| p.f. | | 0,6 | | | 0,54 | | 0,5 | |
| closed VA | | 12 | | | 16 | | 26 | |
| p.f. | | 0,29 | | | 0,26 | | 0,24 | |
| Voltage tolerances | | 0,85 - 1,1 U _n | | | | | | |
| Coil Tightening torque | Nm | 0,8 | | | | | | |
| Terminal screw/Screw head | | M3,5/PZ2 | | | | | | |
| Degree of protection | | IP 20 | | | | | | |
| Maximum permissible fuse ratings main circuit gL/gG | A | 100 | 125 | 160 | 160 | 200 | 200 | |
| auxilliary circuit | A | 16 | 16 | 16 | 16 | 16 | 16 | |
| Frequency of switching operations | s/h | 100 | | | | | | |
| Electrical endurance | min. | 125.000 | | | | 100.000 | | |
| Sizes of connecting conductors - main circuit | | | | | | | | |
| multi-wire conductor | mm ² | 16-35 | 16-35 | 16-35 | 25-50 | | 35-50 (with IP 20)/ 50-70 (without IP 20) | |
| multi-wire conductor with cable shoe | mm ² | | | | | | | |
| Terminal screw | | M6 | | | M8 | | M6 (with IP 20)/ M8 (without IP 20) | |
| Screw head | | PZ2 | | | □4 | | | |
| Tightening torque | Nm | 3 - 4 | | | 4 - 4.5 | 5 - 6 | 3.5/6 | |
| - auxiliary circuit | | | | | | | | |
| multi-wire conductor | mm ² | 1-2,5 | | | | | | |
| multi-wire conductor with cable shoe | mm ² | 0,75-1,5 | | | | | | |
| Terminal screw | | M3,5 | | | | | | |
| Screw head | | PZ2 | | | | | | |
| Tightening torque | Nm | 0,8 | | | | | | |
| Loadability of auxiliary contacts rated continuous current I _{th} ; 35°C | A | 16 | | | | | | |
| AC rated operational current I _e /AC15 | | | | | | | | |
| I _{th} ; for 230V | A | 10 | | | | | | |
| 400V | A | 6 | | | | | | |
| 500V | A | 4 | | | | | | |
| 690V | A | 2 | | | | | | |

CONNECTION DIAGRAMS AND TERMINAL MARKINGS FOR SINGLE COMPENSATION

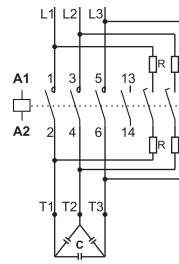
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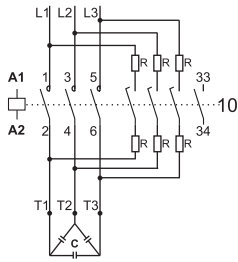
CANNK 2.5, CANNK 5



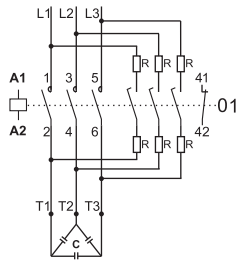
**CANNK 7,5 00
CANNK 7,5 11*
CANNK 16 00
CANNK 16 11***



CANNK 10..N, CANNK 12..N, CANNK 15..N,



**CANNK 20..N, CANNK 25E..N, CANNK 25..N, CANNK 30..N, CANNK 40..N
CANNK 50..N, CANNK 60..N, CANNK 60N..N, CANNK 70..N, CANNK 75..N**



CANNK 80

VERY IMPORTANT NOTES:

For single compensation air coils or 3 - phase reactors (coils with magnetic core and air gap) are not necessary.

When the contactor is used for group compensation it's recommendable to use appropriate 3-phase filter circuit reactors (coils with magnetic core and air gap). This will reduce the value of higher harmonics and will prevent resonant current to prevail.

At single compensation the power of selected contactor is according to capacitor rated power.

At group and central compensation, when reactors are not in use, one step higher rating of the contactor is recommendable.



Maximum permissible peak current $1 \leq 200$ times the nominal rms current of the switched capacitor.

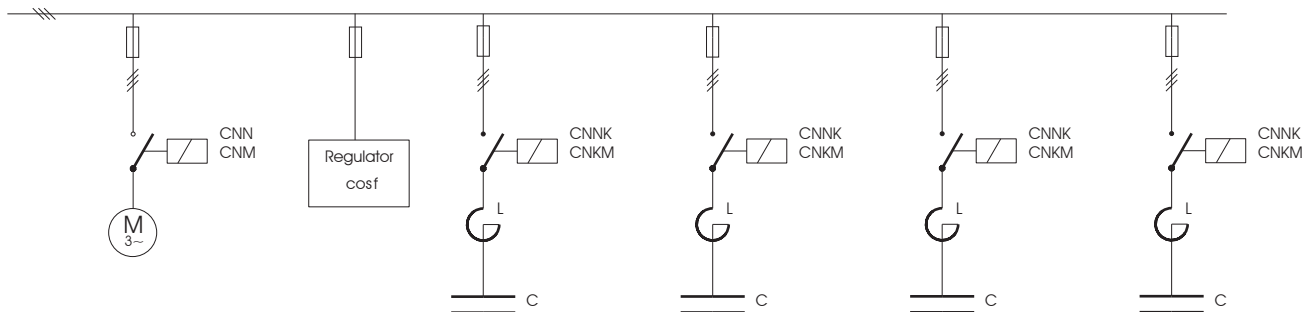
Switching onto discharged capacitors is permitted with CANNK..N contactors. (the voltage at the terminals must be < 50 V).



Manual operation for function tests is not permitted. The series resistors must not be removed. During exploitation, current value must not exceed the declared values.

CONNECTION DIAGRAM FOR GROUP (CENTRAL) COMPENSATION

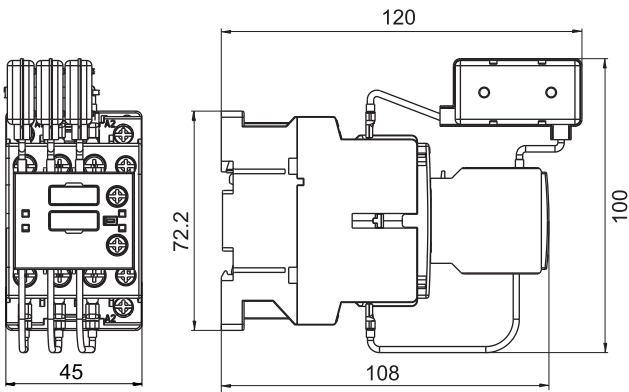
380/400 V / 50Hz



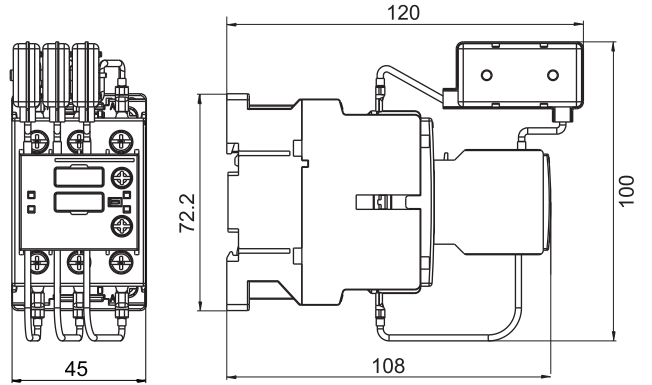
DIMENSION DRAWINGS (mm) - New Series

1

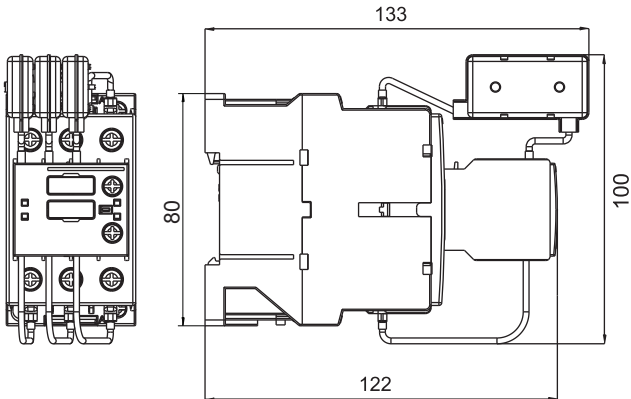
CNNK 10..N; CNNK 12..N; CNNK 15..N



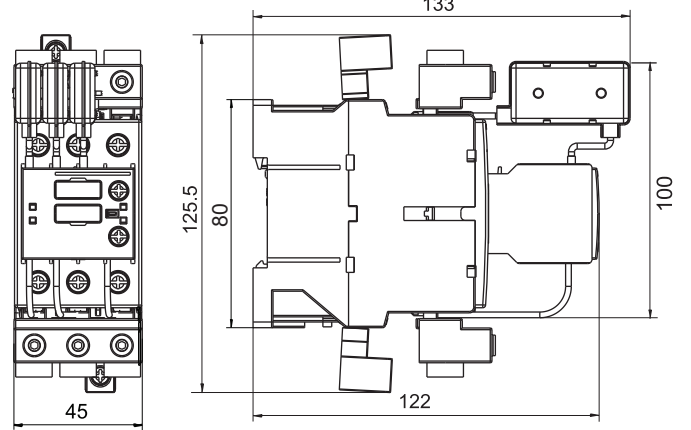
CNNK 20..N



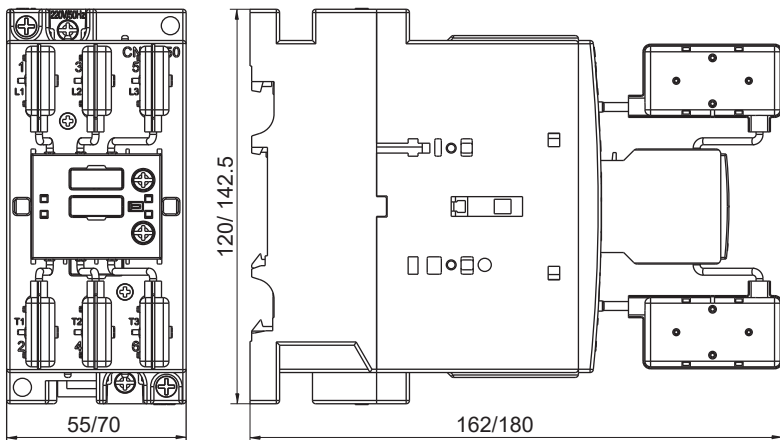
CNNK 25E..N



CNNK 25..N; CNNK 30..N

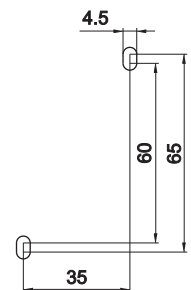


CNNK 40..N, CNNK 50..N, CNNK 60..N, CNNK 60N..N / CNNK 70..N, CNNK 75..N



Drilling plan (mm)

CNNK 10..N; CNNK 12..N
CNNK 15..N; CNNK 20..N



CNNK 25E..N; CNNK 25..N,
CNNK 30..N

