

## 1.9 Solid State Contactors



- For frequent switching without contact bounce
- No wear and tear and silent operation thanks to semiconductor technology
- Non-hazardous switching of inductive loads
- Reduction of switch-on current thanks to zero voltage switching
- Clear LED status display
- Integrated overload protection
- DIN rack or screw assembly
- Space-saving: standard module width from 22.5 to 90 mm
- Integrated cooling element with optional thermal protector

## Solid State Contactors

Three phase AC motors have proven themselves for the operation of pumps, conveyor belts, compressors and countless other drive technology applications. The direct start or the star-delta starter cause impact on the mechanical components in the drive train. This leads to signs of wear, damage and premature failures. On the other hand, abrupt starts lead to voltage drops which burden the power supply network and affect the surrounding components.

Softstarter by Comat Releco prevents disruptions and ensures a smooth start-up with a reduced starting torque and slow breaking sequences without loading the drive system. Thanks to modern semiconductor power amplifiers and fanless design, you can enjoy absolutely wear-free. The compact construction with integrated cooling element only requires little space in the control cabinet.

Softstarter by Comat Releco is available in four series:

The CCL range has been developed for the operation of heat pumps and compressors. Intelligent current limitation during start-up reduces the drive power by up to 65%. The integrated motor protection allows the adjustment of the nominal power and replaces an additional motor protection switch. Thanks to an integrated bypass relay, there are no additional costs for external bridging.

The CCM range is available with two or three switched phases and is designed for a large number of switching cycles per hour. The bypass is integrated in accordance with the version. Separate potentiometers allow the adjustment of start-up and breaking times, as well as the kick-start function, and the start-up torque can be limited to 0 to 85 % of the nominal value. The CCMB range also offers a dynamic break function with automatic standstill detection.

The starting torque limiters of the CTC range are activated via an upstream contactor. The start-up torque can be limited to 1 to 85 % of the nominal torque. Typical applications are blowers and smaller machinery.



## Solid State Contactor – CC1H215 (one phase)

### Type: CC1H215

The CC series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

#### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	230 VAC
Output voltage range	12 – 240 VAC
Reverse voltage	1000 V <sub>rrm</sub>
Peak reverse voltage	1100 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	15 A
Operation current AC-1/51 @ $U_{nom}$	15 A
Operation current AC-3 @ $U_{nom}$	15 A
Operation current AC-55b @ $U_{nom}$	15 A
Operation current AC-56a @ $U_{nom}$	15 A
Response/Release time	20 ms
Limit load	1800 A <sup>2</sup> t

#### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA

#### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 6 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail T<S35
Housing material	PPE Noryl SE1 / Aluminium
Weight	270 g

#### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

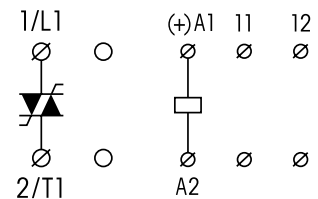
#### Standard type

Starting Torque Limiter

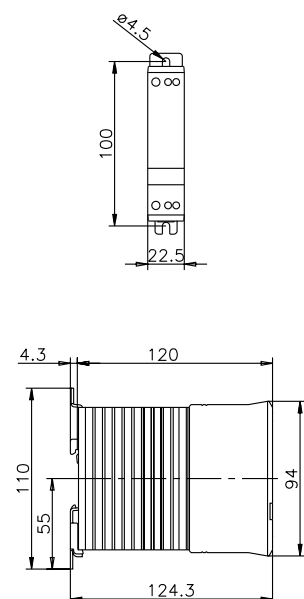
**CC1H215**



#### Connection diagram



#### Dimensions [mm]



#### Technical approvals, conformities



# Solid State Contactor – CC1H230 (one phase)

## Type: CC1H230

The CC series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	230 VAC
Output voltage range	12 – 240 VAC
Reverse voltage	1000 V <sub>rrm</sub>
Peak reverse voltage	1100 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	30 A
Operation current AC-1/51 @ $U_{nom}$	30 A
Operation current AC-3 @ $U_{nom}$	15 A
Operation current AC-55b @ $U_{nom}$	20 A
Operation current AC-56a @ $U_{nom}$	15 A
Response/Release time	20 ms
Limit load	1800 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	650 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

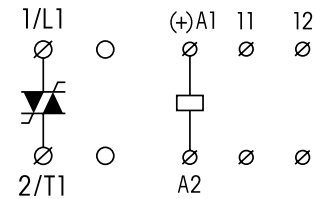
### Standard type

Starting Torque Limiter

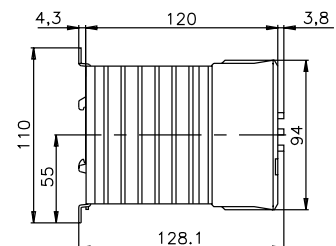
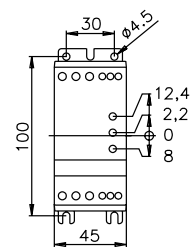
**CC1H230**



### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



# Solid State Contactor – CC1H250 (one phase)

## Type: CC1H250

The CC series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	230 VAC
Output voltage range	12 – 240 VAC
Reverse voltage	1000 V <sub>rrm</sub>
Peak reverse voltage	1100 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	50 A
Operation current AC-1/51 @ $U_{nom}$	50 A
Operation current AC-3 @ $U_{nom}$	15 A
Operation current AC-55b @ $U_{nom}$	20 A
Operation current AC-56a @ $U_{nom}$	15 A
Response/Release time	20 ms
Limit load	1800 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	1050 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

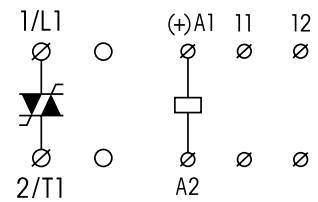
### Standard type

Starting Torque Limiter

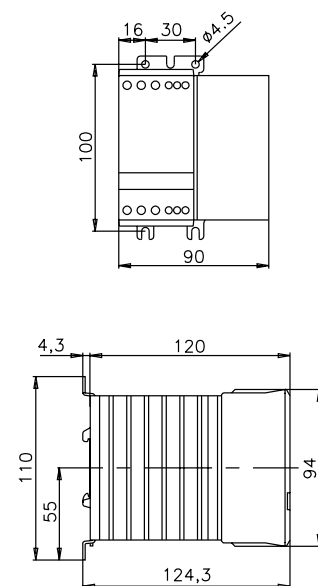
**CC1H250**



### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



# Solid State Contactor – CC1H415 (one phase)

## Type: CC1H415

The CC series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	15 A
Operation current AC-1/51 @ $U_{nom}$	15 A
Operation current AC-3 @ $U_{nom}$	15 A
Operation current AC-55b @ $U_{nom}$	15 A
Operation current AC-56a @ $U_{nom}$	15 A
Response/Release time	20 ms
Limit load	1800 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 6 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	270 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

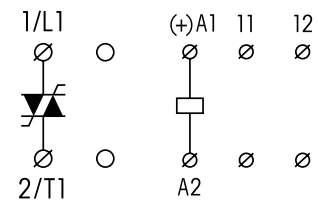
### Standard type

Starting Torque Limiter

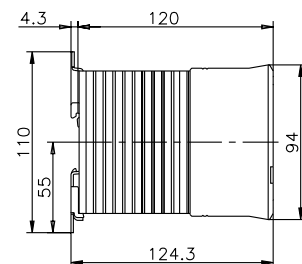
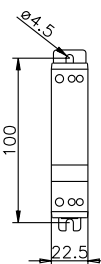
**CC1H415**



### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



# Solid State Contactor – CC1H450 (one phase)

## Type: CC1H450

The CC series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	50 A
Operation current AC-1/51 @ $U_{nom}$	50 A
Operation current AC-3 @ $U_{nom}$	15 A
Operation current AC-55b @ $U_{nom}$	20 A
Operation current AC-56a @ $U_{nom}$	15 A
Response/Release time	20 ms
Limit load	1800 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	1050 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

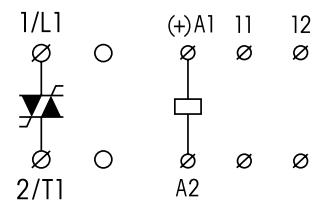
### Standard type

Starting Torque Limiter

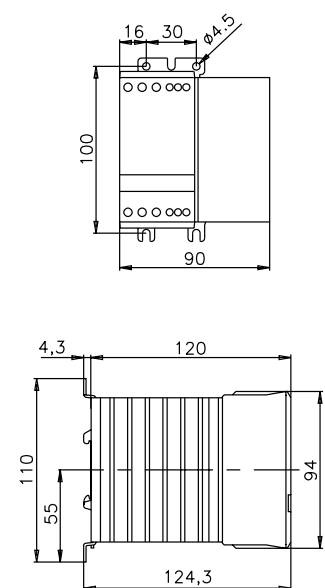
**CC1H450**



### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



# Solid State Contactor – CC2H230 (two phase)

**Type: CC2H230**

The CC series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

**Output**

Switching element	Thyristor
Numbers of phases	2
Nominal voltage (U <sub>nom</sub> )	230 VAC
Output voltage range	12 – 240 VAC
Reverse voltage	1000 V <sub>rrm</sub>
Peak reverse voltage	1100 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	30 A
Operation current AC-1/51 @ U <sub>nom</sub>	30 A
Operation current AC-3 @ U <sub>nom</sub>	15 A
Operation current AC-55b @ U <sub>nom</sub>	20 A
Operation current AC-56a @ U <sub>nom</sub>	15 A
Response/Release time	20 ms
Limit load	1800 A <sup>2</sup> t

**Input**

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA

**General Specifications**

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	650 g

**Insulation**

Insulation voltage	4 kV
Dielectric strength	660 V

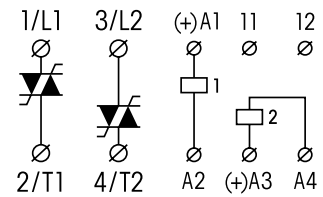
**Standard type**

Starting Torque Limiter

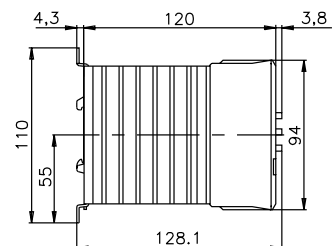
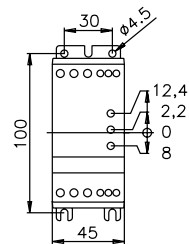
**CC2H230**



**Connection diagram**



**Dimensions [mm]**



**Technical approvals, conformities**





## Solid State Contactor – CC3H410 (three phase)

### Type: CC3H410

The CC series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600VAC and nominal current up to 50A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	3
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	10 A
Operation current AC-1/51 @ $U_{nom}$	10 A
Operation current AC-3 @ $U_{nom}$	10 A
Operation current AC-55b @ $U_{nom}$	10 A
Operation current AC-56a @ $U_{nom}$	5 A
Response/Release time	20 ms
Limit load	1800 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 6 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	650 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

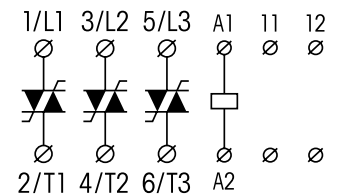
### Standard type

Starting Torque Limiter

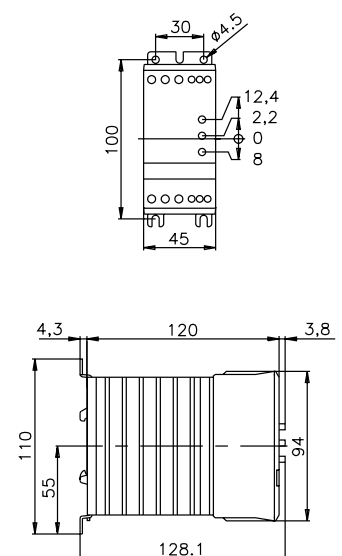
**CC3H410**



### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



# Solid State Contactor – CC3H420 (three phase)

## Type: CC3H420

The CC series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	3
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	20 A
Operation current AC-1/51 @ $U_{nom}$	20 A
Operation current AC-3 @ $U_{nom}$	10 A
Operation current AC-55b @ $U_{nom}$	10 A
Operation current AC-56a @ $U_{nom}$	5 A
Response/Release time	20 ms
Limit load	1800 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	1050 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

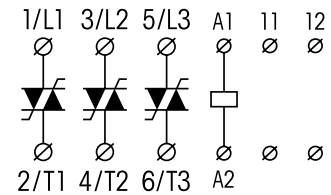
### Standard type

Starting Torque Limiter

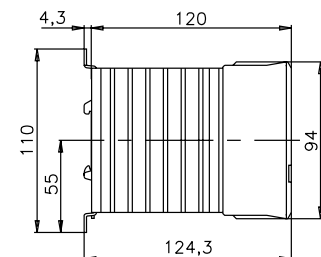
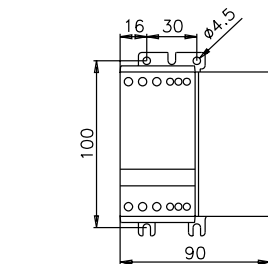
**CC3H420**



### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



## Solid State Contactor – CC3H610 (three phase)

### Type: CC3H610

The CC series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 600 VAC and nominal current up to 50 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

#### Output

Switching element	Thyristor
Numbers of phases	3
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	10 A
Operation current AC-1/51 @ $U_{nom}$	10 A
Operation current AC-3 @ $U_{nom}$	10 A
Operation current AC-55b @ $U_{nom}$	10 A
Operation current AC-56a @ $U_{nom}$	5 A
Response/Release time	20 ms
Limit load	6300 A <sup>2</sup> t

#### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA

#### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 6 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	650 g

#### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

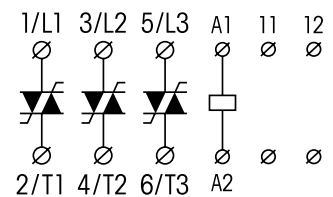
#### Standard type

Starting Torque Limiter

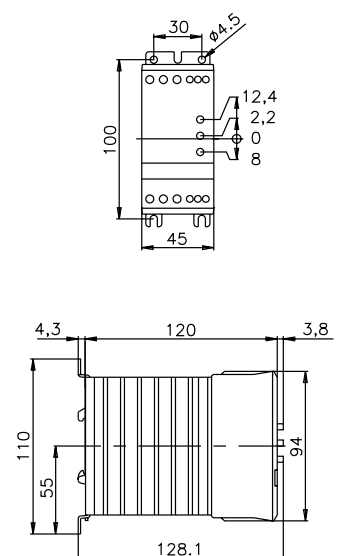
**CC3H610**



#### Connection diagram



#### Dimensions [mm]



#### Technical approvals, conformities



# Solid State Contactor, switching of ohmic – CR11H210 (one phase)

## Type: CR11H210

The CR series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	230 VAC
Output voltage range	12 – 240 VAC
Reverse voltage	1000 V <sub>rrm</sub>
Peak reverse voltage	1100 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	10 A
Operation current AC-1/51 @ $U_{nom}$	10 A
Response/Release time	20 ms
Limit load	180 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	8 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 6 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	270 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

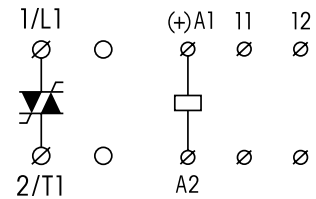
### Standard type

Starting Torque Limiter

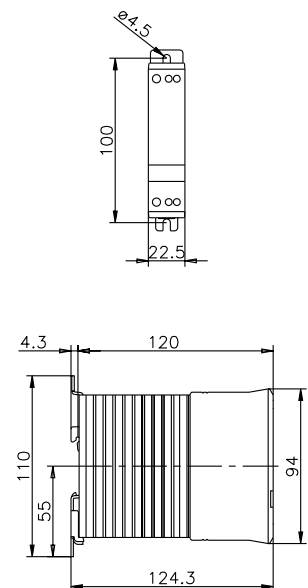
**CR11H210**



### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



## Solid State Contactor, switching of ohmic – CR11H430 (one phase)

### Type: CR11H430

The CR series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	30 A
Operation current AC-1/51 @ $U_{nom}$	30 A
Response/Release time	20 ms
Limit load	610 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	8 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	650 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

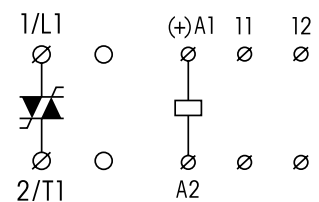
### Standard type

Starting Torque Limiter

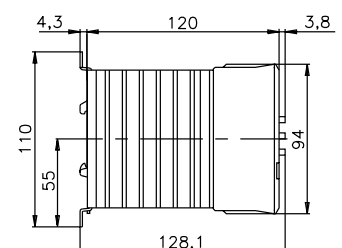
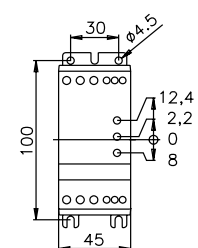
**CR11H430**



### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



# Solid State Contactor, switching of ohmic – CR11H480 (one phase)

## Type: CR11H480

The CR series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	80 A
Operation current AC-1/51 @ $U_{nom}$	80 A
Response/Release time	20 ms
Limit load	25300 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	8 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 35 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	1050 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

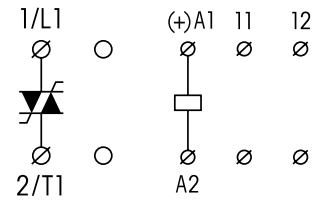
### Standard type

Starting Torque Limiter

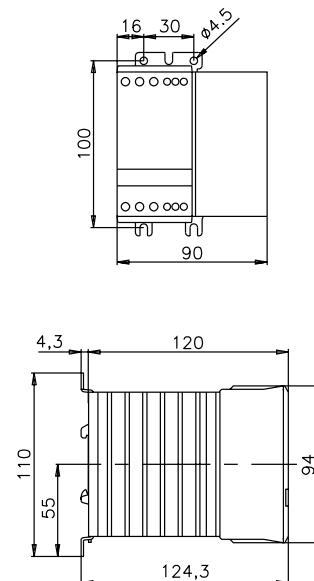
**CR11H480**



### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



# Solid State Contactor, switching of ohmic – CR11H4125 (one phase)

**Type: CR11H4125**

The CR series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	125 A
Operation current AC-1/51 @ $U_{nom}$	125 A
Response/Release time	20 ms
Limit load	25300 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	8 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 35 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	1050 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

### Standard type

Starting Torque Limiter

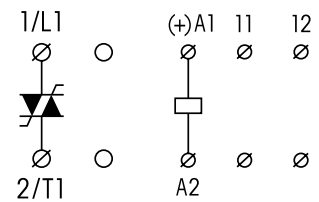
**CR11H4125**



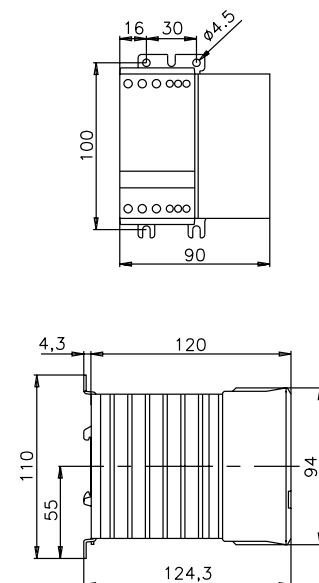
Relays 1.9

1

### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



# Solid State Contactor, switching of ohmic – CR22H430 (two phase)

Type: CR22H430

The CR series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	2
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	30 A
Operation current AC-1/51 @ $U_{nom}$	30 A
Response/Release time	20 ms
Limit load	25300 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	8 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	650 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

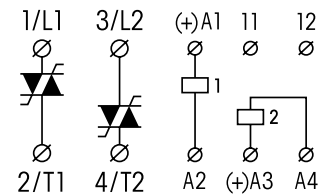
### Standard type

Starting Torque Limiter

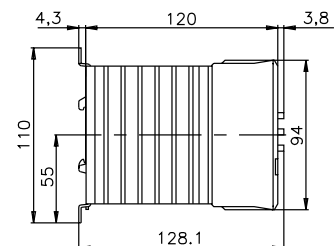
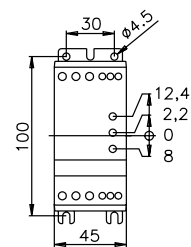
**CR22H430**



### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities





# Solid State Contactor, switching of ohmic – CR33H420 (three phase)

**Type: CR33H420**

The CR series solid-state contactors are suitable for the contactless and non-wearing switching of ohmic and inductive AC loads at high switching frequency. They come with an operating voltage up to 400 VAC and nominal current up to 63 A with two and three phases. They come with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	3
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	20 A
Operation current AC-1/51 @ $U_{nom}$	20 A
Response/Release time	20 ms
Limit load	610 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	8 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 10 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	1050 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

### Standard type

Starting Torque Limiter

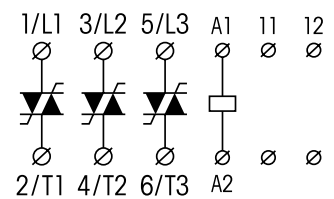
**CR33H420**



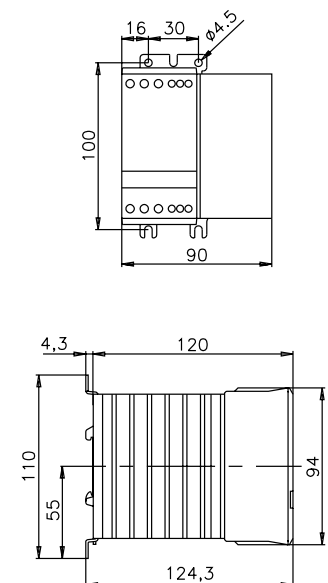
Relays 1.9

1

### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



# Reversing Contactor – CCR3H410 (three phase)

## Type: CCR3H410

The CCR is a reversing contactor for asynchronous motors up to 10 A / 400 VAC. It has two separate electric control inputs for right and left motion that are interlocked. It comes with control voltages of either 5–24 VDC or 24–230 VAC/VDC.

### Output

Switching element	Thyristor
Numbers of phases	3
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	24 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	50 mA
Max. leakage current	5 mA
Max. inrush current	60 – 70 A
Operation current AC-1/51 @ $U_{nom}$	10 A
Operation current AC-53 @ $U_{nom}$	10 A
Response/Release time	20 ms
Limit load	610 A <sup>2</sup> t

### Input

Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC
Release voltage	7,2 VAC/VDC
Max. current	6 mA

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 6 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	650 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

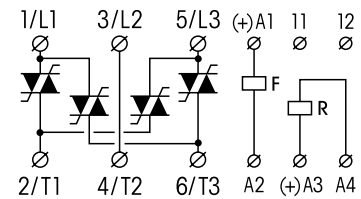
### Standard type

Starting Torque Limiter

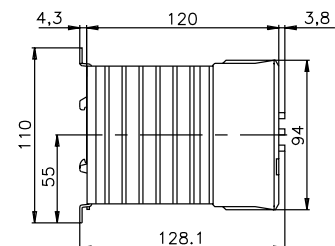
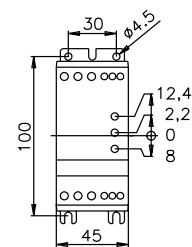
**CCR3H410**



### Connection diagram



### Dimensions [mm]



### Technical approvals, conformities



# Performance Regulator – CPC1230 (one phase)

**Type: CPC1230**

The one-phase solid-state performance regulator CPC is suitable for triggering heating elements, lamps and transformers up to 50 A. Performance is controlled through a potentiometer or analogue standard signal. It has a 24 VDC voltage supply.

### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	230 VAC
Output voltage range	380 – 480 VAC
Reverse voltage	1000 V <sub>rrm</sub>
Peak reverse voltage	1100 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	—
Operation current AC-1/51 @ $U_{nom}$	30 A
Operation current AC-53 @ $U_{nom}$	non uL
Response/Release time	20 ms
Limit load	1800 A <sup>2</sup> t

### Input

Voltage	24 VAC/VDC
Min. voltage	12 VAC/VDC
Max. voltage	35 VAC/VDC
Release voltage	12 VAC/VDC
Control signal	0 – 10 V, 4 – 20 mA
Potentiometer	10 kOhm

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 2.5 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	650 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

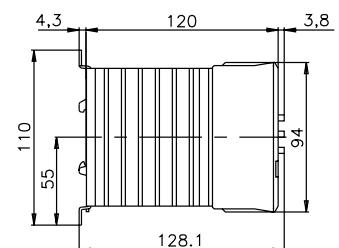
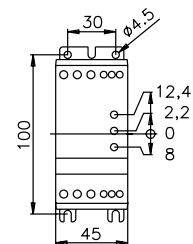
### Standard type

Starting Torque Limiter

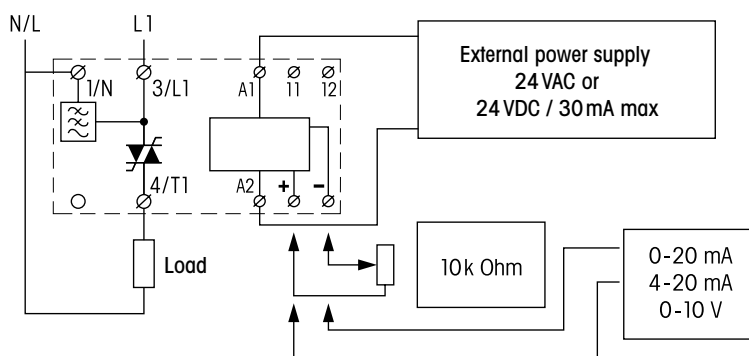
**CPC1230**



### Dimensions [mm]



### Connection diagram



### Technical approvals, conformities



# Performance Regulator – CPC1430 (one phase)

## Type: CPC1430

The one-phase solid-state performance regulator CPC is suitable for triggering heating elements, lamps and transformers up to 50 A. Performance is controlled through a potentiometer or analogue standard signal. It has a 24 VDC voltage supply.

### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	380 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	—
Operation current AC-1/51 @ $U_{nom}$	30 A
Operation current AC-53 @ $U_{nom}$	non uL
Response/Release time	20 ms
Limit load	1800 A <sup>2</sup> t

### Input

Voltage	24 VAC/VDC
Min. voltage	12 VAC/VDC
Max. voltage	35 VAC/VDC
Release voltage	12 VAC/VDC
Control signal	0 – 10 V, 4 – 20 mA
Potentiometer	10 kOhm

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 2,5 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	650 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

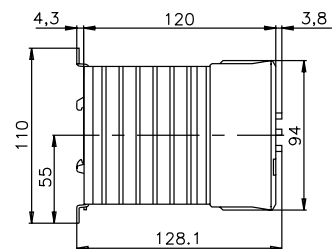
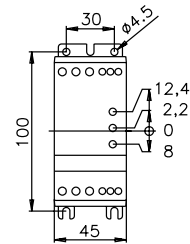
### Standard type

Starting Torque Limiter

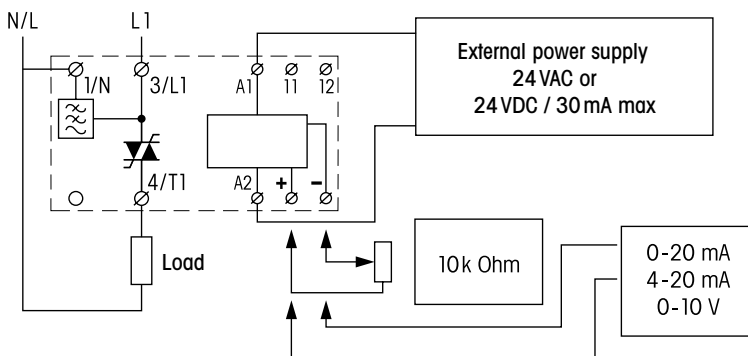
**CPC1430**



### Dimensions [mm]



### Connection diagram



### Technical approvals, conformities



# Performance Regulator – CPC1450 (one phase)

**Type: CPC1450**

The one-phase solid-state performance regulator CPC is suitable for triggering heating elements, lamps and transformers up to 50 A. Performance is controlled through a potentiometer or analogue standard signal. It has a 24 VDC voltage supply.

### Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage ( $U_{nom}$ )	400 VAC
Output voltage range	380 – 480 VAC
Reverse voltage	1200 V <sub>rrm</sub>
Peak reverse voltage	1300 V <sub>rsm</sub>
Min. load	10 mA
Max. leakage current	1 mA
Max. inrush current	—
Operation current AC-1/51 @ $U_{nom}$	50 A
Operation current AC-53 @ $U_{nom}$	non uL
Response/Release time	20 ms
Limit load	1800 A <sup>2</sup> t

### Input

Voltage	24 VAC/VDC
Min. voltage	12 VAC/VDC
Max. voltage	35 VAC/VDC
Release voltage	12 VAC/VDC
Control signal	0 – 10 V, 4 – 20 mA
Potentiometer	10 kOhm

### General Specifications

Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C
Connection terminals	Screw terminal 2,5 mm <sup>2</sup>
Ingress protection degree	IP 20
Mounting	DIN rail TS35
Housing material	PPE Noryl SE1 / Aluminium
Weight	1050 g

### Insulation

Insulation voltage	4 kV
Dielectric strength	660 V

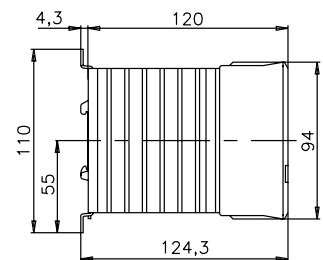
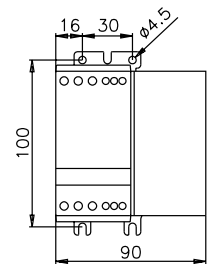
### Standard type

Starting Torque Limiter

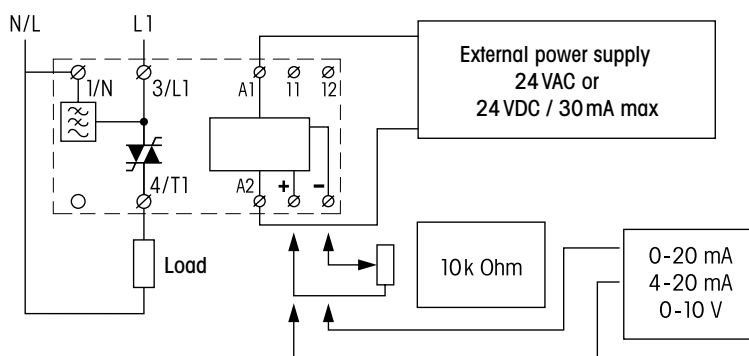
**CPC1450**



### Dimensions [mm]



### Connection diagram



### Technical approvals, conformities



## Notes

