

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 nonwearing 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 (Unom)	230 VAC	
Output voltage range	12 – 240 VAC	
Reverse voltage	1000 Vrrm	
Peak reverse voltage	1100 Vrsm	
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 @ Unom	15 A	
Response/Release time	20 ms	
Limit load	1800 A ² 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 ²	
Ingress protection degree	IP 20	
Mounting	DIN rail T <s35< td=""><td></td></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 nonwearing 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.

Switching elementThyristorNumbers of phases1Nominal voltage (U_{nom})230 VACOutput voltage range12 – 240 VACReverse voltage1000 VrmPeak reverse voltage1000 VrmPeak reverse voltage100 VrsmMin. load10 mAMax. leakage current1 mAMax. inrush current AC-1/51 @ U _{nom} 30 AOperation current AC-1/51 @ U _{nom} 20 AOperation current AC-55b @ U _{nom} 20 AOperation current AC-56a @ U _{nom} 15 AResponse/Release time20 msLimit Load1800 A ² tInput1000 VrmVoltage24 – 230 VAC/VDCMin. voltage20.4 VAC/VDCMax. outage253 VAC/VDCMin. voltage20.4 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operation-20 – 80°C / -5 – 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulation voltage4 kVDielectric strength660 V	Output		
Numbers of phases1Nominal voltage (U_{nom}) 230 VACOutput voltage range12 - 240 VACReverse voltage1000 VrmPeak reverse voltage1100 VrsmMin. load10 mAMax. leakage current1 mAMax. inrush current30 AOperation current AC-1/51 @ U_{nom}30 AOperation current AC-3 @ U_{nom}15 AOperation current AC-56a @ U_{nom}20 AOperation current AC-56a @ U_{nom}1800 A ² tInputVoltage24 - 230 VAC/VDCMin. voltage20,4 VAC/VDCMax. voltage253 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operation-20 - 80°C / -5 - 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulation voltage4 kVDelectric strength660 V	Switching element	Thyristor	
Nominal voltage (U_{nom}) 230 VACOutput voltage range12 – 240 VACReverse voltage1000 VrmPeak reverse voltage1100 VrsmMin. load10 mAMax. leakage current1 mAMax. inrush current30 AOperation current AC-1/51 @ U _{nom} 30 AOperation current AC-56a @ U _{nom} 15 AOperation current AC-56a @ U _{nom} 15 AResponse/Release time20 msLimit load1800 A²tInputVoltage24 – 230 VAC/VDCMax. voltage253 VAC/VDCMax. voltage253 VAC/VDCMax. voltage7.2 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operationAmbient temperature storage/operation-20 – 80°C / -5 – 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulation voltage4 kVDielectric strength660 V	Numbers of phases	1	
Output voltage range $12 - 240 \text{ VAC}$ Reverse voltage1000 VrmPeak reverse voltage1100 VrsmMin. load10 mAMax. leakage current1 mAMax. inrush current30 AOperation current AC-1/51 @ U _{nom} 30 AOperation current AC-3 @ U _{nom} 15 AResponse/Release time20 msLimit load1800 A²tInputVoltage24 - 230 VAC/VDCMin. voltage24 - 230 VAC/VDCMin. voltage253 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operationAmbient temperature storage/operation-20 - 80°C / -5 - 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulation voltage4 kVDielectric strength660 V	Nominal voltage (U _{nom})	230 VAC	
Reverse voltage 1000 Vrm Peak reverse voltage 1100 Vrsm Min. load 10 mA Max. leakage current 1 mA Max. inush 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 A²t Input Voltage 24 – 230 VAC/VDC Max. voltage 253 VAC/VDC Max. current 6 mA General Specifications Ambient temperature storage/operation -20 – 80°C / -5 – 40°C Connection terminals Screw terminal 10 mm² Ingress protection degree IP 20 Mounting DIN rail TS35 Housing material PPE Noryl SE1 / Aluminium Weight 650 g Insulation voltage 4 kV Dielectric strength 660 V	Output voltage range	12 – 240 VAC	
Peak reverse voltage1100 VrsmMin. load10 mAMax. leakage current1 mAMax. inrush current30 AOperation current AC-1/51 @ U _{nom} 30 AOperation current AC-55b @ U _{nom} 20 AOperation current AC-56a @ U _{nom} 15 AResponse/Release time20 msLimit load1800 A ² tInputVoltage24 - 230 VAC/VDCMax. voltage20,4 VAC/VDCMax. voltage253 VAC/VDCMax. voltage7,2 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operationP20NortingMountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulation voltage4 kVDielectric strength660 V	Reverse voltage	1000 Vrrm	
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-56 @ U _{nom} 20 A Operation current AC-56 @ U _{nom} 15 A Response/Release time 20 ms Limit load 1800 A ² t Input Voltage 24 - 230 VAC/VDC Max. voltage 253 VAC/VDC Max. voltage 253 VAC/VDC Max. voltage 7.2 VAC/VDC Max. voltage 7.2 VAC/VDC Max. voltage 20 - 80°C / -5 - 40°C Connection terminals Screw terminal 10 mm ² Ingress protection degree IP 20 Mounting DIN rail TS35 Housing material PPE Noryl SE1 / Aluminium Weight 650 g Insulation 660 V	Peak reverse voltage	1100 Vrsm	
Max. leakage current1 mAMax. inrush current30 AOperation current AC-1/51 @ U _{nom} 30 AOperation current AC-3 @ U _{nom} 15 AOperation current AC-55b @ U _{nom} 20 AOperation current AC-56a @ U _{nom} 15 AResponse/Release time20 msLimit load1800 A ² tInputVoltage24 - 230 VAC/VDCMax. voltage253 VAC/VDCMax. voltage253 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operationAmbient temperature storage/operation-20 - 80°C / -5 - 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulation4 kVDielectric strength660 V	Min. load	10 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 ² t Input Voltage 24 - 230 VAC/VDC Max. voltage 253 VAC/VDC Max. 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 ² Ingress protection degree IP 20 Mounting DIN rail TS35 Housing material PPE Noryl SE1 / Aluminium Weight 650 g Insulation 4 kV Dielectric strength 660 V	Max. leakage current	1 mA	
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 ² 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 ² Ingress protection degree IP 20 Mounting DIN rail TS35 Housing material PPE Noryl SE1 / Aluminium Weight 650 g Insulation 660 V	Max. inrush current	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 ² 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 ² Ingress protection degree IP 20 Mounting DIN rail TS35 Housing material PPE Noryl SE1 / Aluminium Weight 650 g Insulation 600 V	Operation current AC-1/51 @ U _{nom}	30 A	
Operation current AC-55b @ Unom20 AOperation current AC-56a @ Unom15 AResponse/Release time20 msLimit load1800 A²tInputVoltageVoltage24 – 230 VAC/VDCMax. voltage253 VAC/VDCMax. voltage7,2 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operation-20 – 80°C / -5 – 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulation4 kVDielectric strength660 V	Operation current AC-3 @ U _{nom}	15 A	
Operation current AC-56a @ U15 AResponse/Release time20 msLimit load1800 A²tInputVoltageVoltage24 – 230 VAC/VDCMin. voltage20,4 VAC/VDCMax. voltage253 VAC/VDCRelease voltage7,2 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operation-20 – 80°C / -5 – 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulation1Insulation voltage4 kVDielectric strength660 V	Operation current AC-55b @ Unom	20 A	
Response/Release time20 msLimit load1800 A²tInputInputVoltage24 - 230 VAC/VDCMin. voltage20,4 VAC/VDCMax. voltage253 VAC/VDCRelease voltage7,2 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operation-20 - 80°C / -5 - 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulationInsulationInsulation voltage4 kVDielectric strength660 V	Operation current AC-56a @ Unom	15 A	
Limit load 1800 A ² t Input Voltage 24 – 230 VAC/VDC Min. voltage 20,4 VAC/VDC Max. voltage 253 VAC/VDC Max. voltage 7,2 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 ² 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	Response/Release time	20 ms	
InputVoltage24 - 230 VAC/VDCMin. voltage20,4 VAC/VDCMax. voltage253 VAC/VDCMax. voltage7,2 VAC/VDCRelease voltage7,2 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operation-20 - 80°C / -5 - 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulationInsulation voltageInsulation voltage4 kVDielectric strength660 V	Limit load	1800 A ² t	
Voltage24 – 230 VAC/VDCMin. voltage20,4 VAC/VDCMax. voltage253 VAC/VDCRelease voltage7,2 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operation-20 – 80°C / -5 – 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulation voltage4 kVDielectric strength660 V	Input		
Min. voltage20,4 VAC/VDCMax. voltage253 VAC/VDCRelease voltage7,2 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operation-20 – 80°C / -5 – 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulationInsulation voltageInsulation voltage4 kVDielectric strength660 V	Voltage	24 – 230 VAC/VDC	
Max. voltage253 VAC/VDCRelease voltage7,2 VAC/VDCMax. current6 mAGeneral SpecificationsAmbient temperature storage/operation-20 – 80°C / -5 – 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulationInsulation voltageInsulation voltage4 kVDielectric strength660 V	Min. voltage	20,4 VAC/VDC	
Release voltage 7,2 VAC/VDC Max. current 6 mA General Specifications -20 - 80°C / -5 - 40°C Connection terminals Screw terminal 10 mm² Ingress protection degree IP 20 Mounting DIN rail TS35 Housing material PPE Noryl SE1 / Aluminium Weight 650 g Insulation voltage 4 kV Dielectric strength 660 V	Max. voltage	253 VAC/VDC	
Max. current6 mAGeneral SpecificationsAmbient temperature storage/operation-20 - 80°C / -5 - 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulationInsulation voltageInsulation voltage4 kVDielectric strength660 V	Release voltage	7,2 VAC/VDC	
General SpecificationsAmbient temperature storage/operation-20 - 80°C / -5 - 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulationInsulation voltageInsulation voltage4 kVDielectric strength660 V	Max. current	6 mA	
Ambient temperature storage/operation-20 - 80°C / -5 - 40°CConnection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulationInsulation voltageInsulation voltage4 kVDielectric strength660 V	General Specifications		
Connection terminalsScrew terminal 10 mm²Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulationInsulation voltageInsulation voltage4 kVDielectric strength660 V	Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	
Ingress protection degreeIP 20MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulationInsulation voltageDielectric strength660 V	Connection terminals	Screw terminal 10 mm ²	
MountingDIN rail TS35Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulationInsulationDielectric strength4 kV660 V	Ingress protection degree	IP 20	
Housing materialPPE Noryl SE1 / AluminiumWeight650 gInsulationInsulation voltageInsulation voltage4 kVDielectric strength660 V	Mounting	DIN rail TS35	
Weight650 gInsulation4 kVInsulation voltage4 kVDielectric strength660 V	Housing material	PPE Noryl SE1 / Aluminium	
InsulationInsulation voltage4 kVDielectric strength660 V	Weight	650 g	
Insulation voltage4 kVDielectric strength660 V	Insulation		
Dielectric strength 660 V	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 nonwearing 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 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	1		
Nominal voltage (U _{nom})	230 VAC 12 – 240 VAC 1000 Vrrm 1100 Vrsm 10 mA 1 mA		
Output voltage range			
Reverse voltage			
Peak reverse voltage			
Min. load			
Max. leakage current			
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 15 A		
Operation current AC-56a @ Unom			
Response/Release time	20 ms		
Limit load	1800 A ² 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 ²		
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]







Solid State Contactor – CC1H415 (one phase)

Type: CC1H415

The CC series solid-state contactors are suitable for the contactless and nonwearing 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 Vrrm	
Peak reverse voltage	1300 Vrsm	
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 @ Unom	15 A	
Response/Release time	20 ms	
Limit load	1800 A ² t	C
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 ²	
Ingress protection degree	IP 20	Di
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





onnection diagram



imensions [mm]





Technical approvals, conformities

Solid State Contactor – CC1H450 (one phase)

Type: CC1H450

The CC series solid-state contactors are suitable for the contactless and nonwearing 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 1		
Numbers of phases			
Nominal voltage (U _{nom})	400 VAC		
Output voltage range	24 – 480 VAC		
Reverse voltage	1200 Vrrm		
Peak reverse voltage	1300 Vrsm 10 mA 1 mA 50 A		
Min. load			
Max. leakage current			
Max. inrush current			
Operation current AC-1/51 @ U _{nom}	50 A 15 A		
Operation current AC-3 @ U _{nom}			
Operation current AC-55b @ U _{nom}	20 A		
Operation current AC-56a @ U _{nom}	15 A 20 ms		
Response/Release time			
Limit load	1800 A ² 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 ²		
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]







Solid State Contactor – CC2H230 (two phase)

Type: CC2H230

The CC series solid-state contactors are suitable for the contactless and nonwearing 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 _{nom})	230 VAC		
Output voltage range	12 – 240 VAC		
Reverse voltage	1000 Vrrm		
Peak reverse voltage	1100 Vrsm 10 mA 1 mA 30 A 30 A 15 A 20 A 15 A		
Min. load			
Max. leakage current			
Max. inrush current			
Operation current AC-1/51 @ U _{nom}			
Operation current AC-3 @ U _{nom}			
Operation current AC-55b @ U _{nom}			
Operation current AC-56a @ U _{nom}			
Response/Release time	20 ms		
Limit load	1800 A ² 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 ²		
Ingress protection degree	ction degree IP 20		
Mounting	ting DIN rail TS35		
sing material PPE Noryl SE1 / Aluminium			
Housing material	PPE Noryl SE1 / Aluminium		
Housing material Weight	PPE Noryl SE1 / Aluminium 650 g		
Housing material Weight Insulation	PPE Noryl SE1 / Aluminium 650 g		
Housing material Weight Insulation Insulation voltage	PPE Noryl SE1 / Aluminium 650 g 4 kV		

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 nonwearing 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 Vrrm	
Peak reverse voltage	1300 Vrsm	
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 @ Unom	10 A	
Operation current AC-56a @ U _{nom}	5 A	
Response/Release time	20 ms	
Limit load	1800 A ² 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 ²	
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 nonwearing 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 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 Vrrm 1300 Vrsm		
Peak reverse voltage			
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 @ Unom	5 A 20 ms		
Response/Release time			
Limit load	1800 A ² 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		
nnection terminals Screw terminal 10 mm ²			
Ingress protection degree	IP 20		
Mounting	DIN rail TS35		
Housing material	PPE Noryl SE1 / Aluminium		
Weight	1050 g		
Insulation			
Insulation voltage	4 kV		

Standard type

Dielectric strength

Starting Torque Limiter

CC3H420

660 V





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 nonwearing 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 Vrrm		
Peak reverse voltage	1300 Vrsm		
Min. load	10 mA 1 mA		
Max. leakage current			
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} Operation current AC-56a @ U _{nom} Response/Release time	10 A 5 A		
	Limit load	6300 A ² t	С
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 ²		
Ingress protection degree	IP 20	D	
Mounting	DIN rail TS35	U	
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]







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

Type: CR11H210

The CR series solid-state contactors are suitable for the contactless and nonwearing 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 1 230 VAC Nominal voltage (U_{nom}) Output voltage range 12 - 240 VAC 1000 Vrrm Reverse voltage Peak reverse voltage 1100 Vrsm 10 mA Min. load Max. leakage current 1 mA Max. inrush current 10 A Operation current AC-1/51 @ Unom 10 A Response/Release time 20 ms 180 A²t Limit load Input

mput
Voltage
Min. voltage
Max. voltage
Release voltage
Max. current

General Specifications

Ambient temperature storage/operation
Connection terminals
Ingress protection degree
Mounting
Housing material
Weight
Insulation
Insulation voltage
Dielectric strength

Standard type

Starting Torque Limiter

Screw terminal 6 mm² IP 20 DIN rail TS35 PPE Noryl SE1 / Aluminium 270 g 4 kV 660 V

-20 - 80°C / -5 - 40°C

24 - 230 VAC/VDC

20,4 VAC/VDC 253 VAC/VDC 7,2 VAC/VDC

8 mA

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 nonwearing 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 Vrrm	
Peak reverse voltage	1300 Vrsm	
Min. load	10 mA	
Max. leakage current	1 mA	
Max. inrush current	30 A	
Operation current AC-1/51 @ Unom	30 A	
Response/Release time	20 ms	
Limit load	610 A ² t	
Input		
Voltage	24 – 230 VAC/VDC	
Min. voltage	20,4 VAC/VDC	Connection diagram
Max. voltage	253 VAC/VDC	
Release voltage	7,2 VAC/VDC	
Max. current	8 mA	1/L1 (
General Specifications		
Ambient temperature storage/operation	-20 – 80°C / -5 – 40°C	
Connection terminals	Screw terminal 10 mm ²	
Ingress protection degree	IP 20	
Mounting	DIN rail TS35	2/11
Housing material	PPE Noryl SE1 / Aluminium	
Weight	650 g	Dimensione [mm]
Insulation		Dimensions [mm]
Insulation voltage	4 kV	
Dielectric strength	660 V	- 3
Standard type		

Starting Torque Limiter

CR11H430







ensions [mm]







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

Type: CR11H480

The CR series solid-state contactors are suitable for the contactless and nonwearing 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 Vrrm Peak reverse voltage 1300 Vrsm 10 mA Min. load Max. leakage current 1 mA Max. inrush current 80 A Operation current AC-1/51 @ Unom 80 A Response/Release time 20 ms 25300 A²t Limit load Input 24 - 230 VAC/VDC Voltage 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 mm² IP 20 Ingress protection degree Mounting DIN rail TS35 PPE Noryl SE1 / Aluminium Housing material Weight 1050 g Insulation Insulation voltage 4 kV

Standard type

Dielectric strength

Starting Torque Limiter

CR11H480

660 V

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 nonwearing 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 Vrrm
Peak reverse voltage	1300 Vrsm
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 ² t
Input	
Voltage	24 – 230 VAC/VDC
Min. voltage	20,4 VAC/VDC
Max. voltage	253 VAC/VDC

General Specifications

Release voltage

Max. current

Ambient temperature storage/operation Connection terminals Ingress protection degree Mounting Housing material Weight Insulation Insulation voltage Dielectric strength

Standard type

Starting Torque Limiter

CR11H4125

7,2 VAC/VDC 8 mA

IP 20

1050 g

4 kV

660 V

DIN rail TS35

-20 - 80°C / -5 - 40°C

Screw terminal 35 mm²

PPE Noryl SE1 / Aluminium

WORLD OF RELAYS



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 nonwearing 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 24 - 480 VAC Output voltage range Reverse voltage 1200 Vrrm Peak reverse voltage 1300 Vrsm 10 mA Min. load Max. leakage current 1 mA Max. inrush current 30 A Operation current AC-1/51 @ Unom 30 A Response/Release time 20 ms 25300 A²t Limit load

Input

Voltage
Min. voltage
Max. voltage
Release voltage
Max. current

General Specifications

Ambient temperature storage/operation Connection terminals Ingress protection degree Mounting Housing material Weight Insulation Insulation voltage Dielectric strength

Standard type

Starting Torque Limiter

-20 – 80°C / -5 – 40°C Screw terminal 10 mm² IP 20 DIN rail TS35 PPE Noryl SE1 / Aluminium 650 g 4 kV 660 V

24 - 230 VAC/VDC

20,4 VAC/VDC 253 VAC/VDC 7,2 VAC/VDC

8 mA

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 nonwearing 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 Vrrm								
Peak reverse voltage	1300 Vrsm								
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 ² 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 ²								

age/operation -20 – 8 Screw IP 20 DIN rail PPE No 1050 g 4 kV 660 V

Standard type

Insulation voltage

Dielectric strength

Mounting Housing material

Insulation

Weight

Starting Torque Limiter

Ingress protection degree

Screw terminal 10 mm² IP 20 DIN rail TS35 PPE Noryl SE1 / Aluminium 1050 g

660 V

CR33H420





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

3	
400 VAC	
24 – 480 VAC	199
1200 Vrrm	
1300 Vrsm	
50 mA	
5 mA	
60 – 70 A	
10 A	
10 A	
20 ms	
610 A ² t	
24 – 230 VAC/VDC	
20,4 VAC/VDC	
253 VAC/VDC	Connection dia
7,2 VAC/VDC	
6 mA	1/11 3/1
-20 – 80°C / -5 – 40°C	
Screw terminal 6 mm ²	
IP 20	
DIN rail TS35	لا ک 2/T1 //T
PPE Noryl SE1 / Aluminium	2/11 4/1
650 g	
4 kV	Dimensions [m
660 V	
	400 VAC 24 - 480 VAC 1200 Vrrm 1300 Vrsm 50 mA 5 mA 60 - 70 A 10 A 10 A 20 ms 610 A ² t 24 - 230 VAC/VDC 20,4 VAC/VDC 253 VAC/VDC 7,2 VAC/VDC 6 mA -20 - 80°C / -5 - 40°C Screw terminal 6 mm ² IP 20 DIN rail TS35 PPE Noryl SE1 / Aluminium 650 g 4 kV 660 V

Standard type

Starting Torque Limiter

CCR3H410





gram



m]





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.

480 VAC

24 VAC/VDC

12 VAC/VDC

35 VAC/VDC

12 VAC/VDC

10 kOhm

IP 20

650 g

4 kV 660 V

DIN rail TS35

CPC1230

0 - 10 V, 4 - 20 mA

-20 - 80°C / -5 - 40°C Screw terminal 2.5 mm²

PPE Noryl SE1 / Aluminium

Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage (U _{nom})	230 VAC
Output voltage range	380 - 480
Reverse voltage	1000 Vrrm
Peak reverse voltage	1100 Vrsm
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 ² t

Input

Voltage Min. voltage Max. voltage Release voltage Control signal Potentiometer

General Specifications

Ambient temperature storage/operation Connection terminals Ingress protection degree Mounting Housing material Weight Insulation Insulation voltage Dielectric strength

Standard type

Starting Torque Limiter

Connection diagram







Dimensions [mm]







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 Vrrm	
Peak reverse voltage	1300 Vrsm	
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 ² t	
Input		
Voltage	24 VAC/VDC	
Min. voltage	12 VAC/VDC	1e
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 ²	
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	

CPC1430

Standard type

Starting Torque Limiter

Connection diagram







Dimensions [mm]







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.

24 VAC/VDC

12 VAC/VDC

35 VAC/VDC

12 VAC/VDC

10 kOhm

IP 20

1050 g

CPC1450

4 kV 660 V

DIN rail TS35

0 - 10 V, 4 - 20 mA

 $-20-80^\circ\text{C} \ / \ -5-40^\circ\text{C}$ Screw terminal 2,5 mm²

PPE Noryl SE1 / Aluminium

Output

Switching element	Thyristor
Numbers of phases	1
Nominal voltage (U _{nom})	400 VAC
Output voltage range	380 – 480 VAC
Reverse voltage	1200 Vrrm
Peak reverse voltage	1300 Vrsm
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 @ Unom	non uL
Response/Release time	20 ms
Limit load	1800 A ² t

Input

Voltage Min. voltage Max. voltage Release voltage Control signal Potentiometer

General Specifications

Ambient temperature storage/operation Connection terminals Ingress protection degree Mounting Housing material Weight **Insulation** Insulation voltage Dielectric strength

Standard type

Starting Torque Limiter

Connection diagram







Dimensions [mm]









Notes

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