Contactors

CP1115-06, CP1130-06
CP2115-06, CP2130-06
CP3115-06, CP3130-06
CP1115-12, CP1130-12
CP2115-12, CP2130-12
CP3115-12, CP3130-12
CP1115-20, CP1130-20
CP2115-20, CP2130-20

1 pole bi-directional high-voltage contactors, disconnect switches, changeover switches for DC and AC

C40.en
Modular and compact switchgear for modern power converters

With the CP series Schaltbau is introducing once more an innovative concept to the switchgear market. The arc-handling is done exclusively by permanent-magnetic blowout. This patented technology ensures fully bi-directional breaking capability and a more compact design. By reducing dimensions and weight we save you valuable space. For the first time the universal devices can be configured as NO/NC contactor, disconnector or changeover switch. This enables us to react flexibly to changing customer requirements. The high switching functionality and reliability ensure practical and cost effective operation. The combination of innovative technology, compact design and high versatility makes the CP-power contactors particularly suitable for use in railway and industrial applications. Thanks to its unique modular design, the new product family includes a variety of possible configurations catering to a wide range of applications.

### Features

- **Innovative design**
  - Universally configurable as NO or NC contact, disconnector switch or changeover switch
  - DC bi-directional or AC up to 60 Hz max.
  - Effective arc handling – no critical current range and only reduced wear on the main contact system thanks to permanent magnetic blowout
  - High making capacity, also for disconnect switches and changeover switches
  - Modular, compact, low total cost of ownership (TCO)

- **Main contact system**
  - Conventional thermal current: 600 A, 1,200 A or 2,000 A
  - Nominal voltage: 1.5 kV or 3 kV
  - Double-break contacts

- **Easy maintenance**
  - Toolless inspection of main contact tips
  - Toolless replacement of the arc chamber

### Applications

- **Main contactor**, optional with pre-charging contactor and high-voltage discharging contact for
  - Traction converters
  - Inverters for auxiliary equipment

- **Switchgear for various mobile and stationary applications**
  - Locomotives and multiple-unit trains
  - Photovoltaic systems, wind turbines, cranes, welding systems, mining

- **Contactor for**
  - Activation of traction units
  - Activation of brake choppers for DC drives
  - Starter and compressor motors, solar cells

- **Switchgear for the configuration of electrical system**
  - Selection from among various energy sources
  - Filter configuration for multisystem operations
  - Connect/disconnect the DC link

### Normen

- IEC 60077-2
  Railway applications – Electric equipment for rolling stock – Part 2: Electrotechnical components; General rules

- IEC 62497-1
  Railway applications – Insulation coordination – Part 1: Basic requirements – Clearances and creepage distances for all electrical and electronic equipment

- IEC 62236-3-2
  Railway applications – Electromagnetic compatibility – Part 3-2: Rolling stock – Apparatus

- IEC 61373
  Railway applications – Rolling stock equipment – Shock and vibration tests

- IEC 60947-4-1
  Low-voltage switchgear and controlgear – Part 4-1: Contactors and motor-starters – Electromechanical contactors and motor-starters
**Configuration**  
A product tailored to your needs

**Configure your preferred device:**

Maximum modularity – whether as a contactor, disconnect switch or changeover switch: The CP series offers countless variation options and is the perfect fit for your application. A scalable power interface in combination with different extinguishing chambers according to the switching requirements make the switchgear universally applicable. In addition to various auxiliary switch groups, a high-voltage discharge contact and/or a precharging contactor can also be integrated.

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**Pre-charging contactor**

- 1x CPP1115/02, CP11xx-12 integrated
- 2x S826

**Auxiliary switches**

- 2x S870 a1/b0

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**Contactor**

<table>
<thead>
<tr>
<th>600 A</th>
<th>1,200 A</th>
<th>2,000 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>06 COP</td>
<td>1 x</td>
</tr>
<tr>
<td>NC</td>
<td>06 COP</td>
<td>1 x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 x</td>
</tr>
</tbody>
</table>

**Disconnect switch**

<table>
<thead>
<tr>
<th>600 A</th>
<th>1,200 A</th>
<th>2,000 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>NO</td>
<td>06 COP</td>
<td>1 x</td>
</tr>
<tr>
<td>NC</td>
<td>06 COP</td>
<td>1 x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 x</td>
</tr>
</tbody>
</table>

**Changeover switch**

<table>
<thead>
<tr>
<th>600 A</th>
<th>1,200 A</th>
<th>2,000 A</th>
</tr>
</thead>
<tbody>
<tr>
<td>CO</td>
<td>06 COP</td>
<td>1 x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>12 x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 x</td>
</tr>
<tr>
<td></td>
<td></td>
<td>20 x</td>
</tr>
</tbody>
</table>

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**Reliable, robust and economical**

Contactors of the CP series are designed for continuous currents up to 2,000 A. Among other features, the robust switchgear has a high making and breaking capacity and a high short-time withstand current. This ensures long operational reliability.

Depending on the application, there are different requirements for electromechanical components. The new DC contactors are very robust and by that able to withstand most shock and vibration requirements, EN 60077-2 is met anyway.

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Subject to change
### Ordering key

#### CP series

<table>
<thead>
<tr>
<th>Series, contact configuration</th>
<th>Pre-charging contactor(^*1)</th>
</tr>
</thead>
<tbody>
<tr>
<td>CP11 AC- and bi-directional DC NO contactor or disconnect switch, 1 pole</td>
<td>--- 0</td>
</tr>
<tr>
<td>CP21 AC- and bi-directional DC NC contactor or disconnect switch, 1 pole</td>
<td>--- 1</td>
</tr>
<tr>
<td>CP31 AC- and bi-directional DC CO contactor 1 pole</td>
<td>--- 2</td>
</tr>
</tbody>
</table>

#### Nominal voltage

<table>
<thead>
<tr>
<th>Voltage</th>
<th>(U_n)</th>
</tr>
</thead>
<tbody>
<tr>
<td>15 V</td>
<td>1,500 V</td>
</tr>
<tr>
<td>30 V</td>
<td>3,000 V</td>
</tr>
</tbody>
</table>

#### Conv. thermal current\(^*1\)

<table>
<thead>
<tr>
<th>Current</th>
<th>(I_{th})</th>
</tr>
</thead>
<tbody>
<tr>
<td>06 A</td>
<td>600 A: CP11... / CP21... / CP31... series</td>
</tr>
<tr>
<td>12 A</td>
<td>1,200 A: CP11... / CP21... / CP31... series</td>
</tr>
<tr>
<td>20 A</td>
<td>2,000 A: CP11... / CP21... series</td>
</tr>
</tbody>
</table>

#### Arc chamber

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>High-efficiency ceramic arc chamber</td>
</tr>
<tr>
<td>B</td>
<td>Efficient ceramic arc chamber</td>
</tr>
<tr>
<td>D</td>
<td>Cover cap main contact system</td>
</tr>
</tbody>
</table>

#### Magnetic drive

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>A</td>
<td>U_s = 24 V DC</td>
</tr>
<tr>
<td>B</td>
<td>U_s = 36 ... 48 V DC</td>
</tr>
<tr>
<td>C</td>
<td>U_s = 72 ... 110 V DC</td>
</tr>
</tbody>
</table>

#### Magnetic drive

<table>
<thead>
<tr>
<th>Type</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>M</td>
<td>Monostable (Standard)</td>
</tr>
<tr>
<td>N</td>
<td>Monostable with switching input for activation</td>
</tr>
<tr>
<td>B</td>
<td>Bistable with 2 switching inputs for activation (^*2)</td>
</tr>
</tbody>
</table>

#### Auxiliary switches, HV discharging contact: Mounting right

<table>
<thead>
<tr>
<th>Version</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>«1/A»</td>
<td>2x Snap-action switches S826, SPDT-DB, gold contacts, M3 screw-type terminals</td>
</tr>
<tr>
<td>«2/B»</td>
<td>2x Snap-action switches S826, SPDT-DB, silver contacts, M3 screw-type terminals</td>
</tr>
<tr>
<td>«Z»</td>
<td>1x Snap-action switch S826, position front, SPDT-DB, silver contacts, M3 screw-type terminals</td>
</tr>
</tbody>
</table>

#### Auxiliary switches, HV discharging contact: Mounting left

<table>
<thead>
<tr>
<th>Version</th>
<th>Description</th>
</tr>
</thead>
<tbody>
<tr>
<td>«1/A»</td>
<td>2x Snap-action switches S826, SPDT-DB, gold contacts, M3 screw-type terminals</td>
</tr>
<tr>
<td>«2/B»</td>
<td>2x Snap-action switches S826, SPDT-DB, silver contacts, M3 screw-type terminals</td>
</tr>
<tr>
<td>«Z»</td>
<td>1x Snap-action switch S826, position rear, SPDT-DB, silver contacts, M3 screw-type terminals</td>
</tr>
</tbody>
</table>

### Example

Example: CP1130-20-A-CM-020

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### Note

Presented in this catalogue are only stock items which can be supplied in short delivery time. For some variants minimum quantities apply. Please do not hesitate to ask for the conditions.

**Special variant:**

If you need a special variant of the contactor, please do not hesitate to contact us. Maybe the type of contactor you are looking for is among our many special designs. If not, we can also supply customized designs. In this case, however, minimum order quantities apply.

\(^*1\) Pre-charging contactor:

- CP11xx-20: Integrated, factory mounting
- CP11xx-12: Integrated, factory assembly
- CP11xx-06: Separate, mounting on customer side

\(^*2\) Only coil version bistable.

An auxiliary switch is required to monitor the switching status. Positions 1 or 5 are reserved for this, depending on whether the customer requires another auxiliary switch. The auxiliary switch on the left-hand side, rear position, is always permanently provided for monitoring the switching status and is not available to the customer.

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Subject to change
### Specifications - 1-pole power contactors for AC and DC, Uₙ up to 3,000 V and Iₜₜ up to 600 A

#### CP series

<table>
<thead>
<tr>
<th>Type of voltage</th>
<th>DC (bi-directional), AC (f ≤ 60 Hz)</th>
<th>DC (bi-directional), AC (f ≤ 60 Hz)</th>
<th>DC (bi-directional), AC (f ≤ 60 Hz)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of poles, configuration</td>
<td>1x, SPST-NO</td>
<td>1x, SPST-NC</td>
<td>1x, SPDT-DB</td>
</tr>
<tr>
<td></td>
<td>1</td>
<td>2</td>
<td>3</td>
</tr>
</tbody>
</table>

#### Electrical data according to IEC 60947-2

<table>
<thead>
<tr>
<th>Nominal voltage</th>
<th>Uᵣ</th>
<th>1,500 V</th>
<th>3,000 V</th>
<th>1,500 V</th>
<th>3,000 V</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rated operating voltage</td>
<td>Uᵢ</td>
<td>1,800 V</td>
<td>3,600 V</td>
<td>1,800 V</td>
<td>3,600 V</td>
</tr>
<tr>
<td>Rated insulation voltage</td>
<td>Uᵢₑ/Ur</td>
<td>3,000 V</td>
<td>4,800 V</td>
<td>3,000 V</td>
<td>4,800 V</td>
</tr>
<tr>
<td>Rated impulse withstand voltage</td>
<td>Uᵢₑ</td>
<td>15 kV</td>
<td>25 kV</td>
<td>15 kV</td>
<td>25 kV</td>
</tr>
<tr>
<td>Conventional thermal current</td>
<td>IₑA</td>
<td>400 A</td>
<td>600 A</td>
<td>600 A</td>
<td>600 A</td>
</tr>
<tr>
<td>Component category</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-circuit making capacity</td>
<td>NO / NC</td>
<td>8...10 kA / ---</td>
<td>--- / approx. 2 kA</td>
<td>8...10 kA / approx. 2 kA</td>
<td></td>
</tr>
<tr>
<td>Rated operating current (Iₑ/Iᵢ')</td>
<td>Arc chamber</td>
<td>200 A</td>
<td>200 A</td>
<td>200 A</td>
<td>200 A</td>
</tr>
<tr>
<td>Operational frequency C1</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T₂ = 15 ms, DC, Uᵢₑ/Ur = 1,800 V</td>
<td>A / B / D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time-out time typical</td>
<td>TₑA / IₑA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T₂ = 15 ms, DC, Uᵢₑ/Ur = 3,600 V</td>
<td>A / B / D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated short-circuit breaking capacity</td>
<td>Arc chamber</td>
<td>900 A / 430 A / 0 A²</td>
<td>tbd / tbd / 0 A²</td>
<td>tbd / tbd / 0 A²</td>
<td>tbd / tbd / 0 A²</td>
</tr>
<tr>
<td>Time-out time typical</td>
<td>TₑA / IₑA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T₂ = 15 ms, DC, Uᵢₑ/Ur = 1,800 V</td>
<td>A / B / D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Time-out time typical</td>
<td>TₑA / IₑA</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T₂ = 1 ms, DC, Uᵢₑ/Ur = 1,800 V</td>
<td>A / B / D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Approximate threshold voltage</td>
<td>IₑA / Iᵢ'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T₂ = 1 ms, DC, Uᵢₑ/Ur = 3,600 V</td>
<td>A / B / D</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Critical current range none / none</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Design</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact material</td>
<td>AgSnO₂</td>
<td>AgSnO₂</td>
<td>AgSnO₂</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminals / Torque 1x M10 / 16 ... 20 Nm</td>
<td>1x M10 / 16 ... 20 Nm</td>
<td>1x M10 / 16 ... 20 Nm</td>
<td>1x M10 / 16 ... 20 Nm</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary switches</td>
<td>Number max. (configuration)</td>
<td>4x max.¹⁰ / 4x, S870 (a1) + 4x, S870 (b0)</td>
<td>4x, S826²</td>
<td>4x, S826²</td>
<td></td>
</tr>
<tr>
<td>Contact material</td>
<td>Silver, gold</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching capacity</td>
<td>SPDT-DB S826, silver contacts</td>
<td>AC-15: 230 V AC / 0.1 A³</td>
<td>DC-13: 110 V DC / 0.5 A³</td>
<td>catalogue D26.en</td>
<td>catalogue D26.en</td>
</tr>
<tr>
<td></td>
<td>SPDT-DB S826, gold contacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPDT S870, silver contacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td>SPDT S870, gold contacts</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminals</td>
<td>Screw M3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pre-charging contactor, high-voltage discharging contact</td>
<td>1x, SPST-NO, UₑLₜ = 3,600 V, P&lt;sub&gt;D2&lt;/sub&gt;/Ω₂, Iₜₜ = 200 A, see catalogue C45.en</td>
<td>Integrated PWM module (electronic coil controller with suppressor diode)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>High-voltage discharging contact, CP</td>
<td>1x, SPST-NC, UₑLₜ = 3,600 V, P&lt;sub&gt;D2&lt;/sub&gt;/Ω₂, Iₜₜ = 200 A, see catalogue C45.en</td>
<td>850 A / 250 A (T = 1 ms, DC)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnetic drive</td>
<td>Coil voltage-range (design)</td>
<td>Uᵢₑ</td>
<td>24 / 36 ... 60 / 72 ... 110 V DC (mono or bistable with integrated PWM module)</td>
<td>8 ... 400 V / 1 m(A) (failsafe, version N only)</td>
<td></td>
</tr>
<tr>
<td>Control inputs (only coil version N, B)</td>
<td>Uᵢₑ / Iᵢ'</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution degree / overvoltage category</td>
<td>PD3 / OV3</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Power dissipation</td>
<td>Uᵢₑ</td>
<td>160 ms</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pull-in voltage</td>
<td>typical @ Tᵢₑ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pull-in time</td>
<td>typical @ Tᵢₑ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drop-off voltage</td>
<td>typical @ Tᵢₑ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drop-off time</td>
<td>typical @ Tᵢₑ</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of operation</td>
<td>@ 1.25 x Uᵢₑ and Tᵢₑ = 20°C</td>
<td>Mechanical: 240 operations/hour max. / electrical: 30 operations/hour max.</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Integrated PWM module</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>depending on configuration</td>
<td>approx. 6 ... 10 kg</td>
<td>approx. 6 ... 10 kg</td>
<td>approx. 12.2 kg</td>
<td></td>
</tr>
</tbody>
</table>

---

1. Ratings for IEC 60947-2; ratings for other standards on request.
2. Cover for main contact system, version ‘D’, breaking capacity: no load
3. On request
4. With high-voltage discharging contact, the number of auxiliary contacts is reduced to max. 2
5. With high-voltage discharging contact, the number of auxiliary contacts is reduced to max. 2
6. Values for bistable versions on request
7. The optional CPD contact limits the mechanical endurance to 600,000 operating cycles


### Specifications  - 1-pole power contactors for AC and DC, \(U_n\) up to 3,000 V and \(I_{th}\) up to 1,200 A

#### CP series

<table>
<thead>
<tr>
<th>Series</th>
<th>CP1115/12</th>
<th>CP1130/12</th>
<th>CP2115/12</th>
<th>CP2130/12</th>
<th>CP3115/12</th>
<th>CP3130/12</th>
</tr>
</thead>
<tbody>
<tr>
<td>Type of voltage</td>
<td>DC (bi-directional), AC (f ≤ 60 Hz)</td>
<td>DC (bi-directional), AC (f ≤ 60 Hz)</td>
<td>DC (bi-directional), AC (f ≤ 60 Hz)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number of poles, configuration</td>
<td>DC (bi-directional), AC (f ≤ 60 Hz)</td>
<td>DC (bi-directional), AC (f ≤ 60 Hz)</td>
<td>DC (bi-directional), AC (f ≤ 60 Hz)</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1-x, SPST-NO</td>
<td>1-x, SPST-NC</td>
<td>1-x, SPDT-DB</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>1</td>
<td>2</td>
<td>2</td>
</tr>
<tr>
<td>Electrical data according to IEC 60077-2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Nominal voltage</td>
<td>(U_n)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated operating voltage</td>
<td>(U_i)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated insulation voltage</td>
<td>(U_{i,\text{ins}})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated impulse withstand voltage</td>
<td>(U_{i,\text{imp}})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution degree / Overvoltage category</td>
<td>PD3 / OV3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Switching overvoltages @ (U_e/U_r = 1,800 \text{ V})</td>
<td>&lt; 3x (U_{i,\text{ins}})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Conventional thermal current</td>
<td>(I_{th})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component category</td>
<td>A2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Short-circuit making capacity</td>
<td>NO / NC</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated operating current (U_i/T)</td>
<td>Arc chamber</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Operational frequency (C1)</td>
<td>450 A / 450 A / 0 A &lt; 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated short-circuit breaking capacity</td>
<td>Arc chamber</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2 = 15 ms, DC, (U_e/U_r = 3,600 \text{ V})</td>
<td>2,000 A / 1,000 A / 0 A &lt; 2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2 = 15 ms, DC, (U_e/U_r = 3,600 \text{ V})</td>
<td>900 A / 140 A / 0 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2 = 1 ms, DC, (U_e/U_r = 3,600 \text{ V})</td>
<td>4,000 A / 2,500 A / 0 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>T2 = 1 ms, DC, (U_e/U_r = 3,600 \text{ V})</td>
<td>2,200 A / 800 A / 0 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cosφ = 0,8, AC, (U_e/U_r = 3,600 \text{ V})</td>
<td>tbd*5 / 1,800 A / 0 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cosφ = 0,8, AC, (U_e/U_r = 3,600 \text{ V})</td>
<td>tbd<em>5 / tbd</em>5 / 0 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>cosφ = 1, AC, (U_e/U_r = 3,600 \text{ V})</td>
<td>5,000 A / 2,300 A / 0 A</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Component category</td>
<td>A2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated impulse withstand voltage</td>
<td>(U_{i,\text{imp}})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated insulation voltage</td>
<td>(U_{i,\text{nm}})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated operating voltage</td>
<td>(U_{i,\text{nom}})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Rated short-time withstand current (I_{th})</td>
<td>NO / NC</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>Critical current range</td>
<td>none</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Auxiliary switches</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Number max. (configuration)</td>
<td>4x max.*6 / 1x, SPST-NO / 1x, SPST-NC / 1x, SPDT-DB</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Contact material</td>
<td>AgSnO2</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Terminals / Torque</td>
<td>2x M12 / 24 ... 30 Nm</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Magnetic drive</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coil voltage/range (design)</td>
<td>(U_i)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Control inputs (only coil version N, B)</td>
<td>(U_{i,N})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pollution degree / overvoltage category</td>
<td>PD3 / OV3</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coil tolerances</td>
<td>-30 % ... +25 % (U_{SN})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Coil power dissipation @ (U_i + T_0 = 20 °C)</td>
<td>Pull-in: 225 W max. @ 250 ms max. / hold: &lt; 10 W</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pull-in voltage</td>
<td>(U_i &lt; 0.7 \times U_{SN})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Pull-in time</td>
<td>(U_i &lt; 0.1 \times U_{SN})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drop-off voltage</td>
<td>(U_i &lt; 0.1 \times U_{SN})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Drop-off time</td>
<td>(U_i &lt; 0.1 \times U_{SN})</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Frequency of operation</td>
<td>@ 1.25 x (U_i) and (T_0 = 20 °C)</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical: 240 operations/hour max. / electrical: 30 operations/hour max.</td>
<td></td>
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</tr>
<tr>
<td>Weight</td>
<td>depending on configuration</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Degree of protection</td>
<td>IP66</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Mechanical endurance</td>
<td>@ Coil design, Monostable</td>
<td></td>
<td></td>
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<td></td>
</tr>
<tr>
<td>Vibration / shock</td>
<td>IEC 61373</td>
<td></td>
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<tr>
<td>Mounting position</td>
<td>Bistable</td>
<td></td>
<td></td>
<td></td>
<td></td>
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</tr>
<tr>
<td>Temperature and humidity</td>
<td>Operating temperature / Storage temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Altitude / Humidity (EN 50125-1)</td>
<td>Operating temperature / Storage temperature</td>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>Weight</td>
<td>approx. 10.8 ... 17.5 kg</td>
<td></td>
<td></td>
<td></td>
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<td></td>
</tr>
</tbody>
</table>

---

1. Ratings for IEC 60077-2; ratings for other standards on request.
2. Cover for main contact system, version “D”, breaking capacity: no load.
3. On request
4. With high-voltage discharging contact, the number of auxiliary contacts is reduced to max. 2.
5. Values for bistable versions on request
6. *4 With high-voltage discharging contact, the number of auxiliary contacts
7. *3 On request
8. The optional CPD contact limits the mechanical endurance to 600,000 operating cycles.

---

*1 Ratings for IEC 60077-2; ratings for other standards on request.
*2 Cover for main contact system, version “D”, breaking capacity: no load.
*3 On request
*4 With high-voltage discharging contact, the number of auxiliary contacts is reduced to max. 2.
### Specifications

1-pole power contactors for AC and DC, $U_n$ up to 3,000 V and $I_{th}$ up to 2,000 A

<table>
<thead>
<tr>
<th>Series</th>
<th>CP1115/20</th>
<th>CP1130/20</th>
<th>CP2115/20</th>
<th>CP2130/20</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Type of voltage</strong></td>
<td>DC (bi-directional), AC (f ≤ 60 Hz)</td>
<td>DC (bi-directional), AC (f ≤ 60 Hz)</td>
<td>DC (bi-directional), AC (f ≤ 60 Hz)</td>
<td></td>
</tr>
<tr>
<td><strong>Number of poles, configuration</strong></td>
<td>SPST-NO</td>
<td>SPST-NO</td>
<td>SPST-NO</td>
<td></td>
</tr>
<tr>
<td><strong>Electrical data according to IEC 60077-2</strong></td>
<td>1x, SPST-NO</td>
<td>1x, SPST-NC</td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

#### Nominal voltage
- $U_n$: 1,500 V / 3,000 V

#### Rated operating voltage
- $U$: 1,800 V / 3,600 V

#### Rated insulation voltage
- $U_{sn}$: 3,000 V / 4,800 V

#### Rated impulse withstand voltage
- $U_{ni}$: 15 kV / 25 kV

#### Pollution degree / Overvoltage category
- PD3 / OV3

#### Switching overvoltages
@ $U_e/U_r$ = 1,800 V: 2,000 A*1
@ $U_e/U_r$ = 3,600 V: 1.2 kA

#### Component category
- A2

#### Rated operating current
- I$_{e}$/I$_{r}$: NO / NC

#### Rated short-circuit breaking capacity
- Arc chamber

#### Rated impulse withstand voltage
- U$_{ni}$: 15 kV / 25 kV

#### Rated short-time withstand current
- NO / NC

#### Critical current range
- none

#### Design
- Contact material
  - AgSnO$_2$
  - AgSnO$_2$

#### Auxiliary switches
- Number max. (configuration)
  - 4x max. 4x / 1x, S870 (a1) + 1x, S870 (b0) + 2x, S826
- Contact material
  - Silver, gold
- Switching capacity
  - SPDT-DB 5826, silver contacts
  - AC-15: 230 V AC / 1.0 A
  - DC-13: 110 V DC / 0.5 A
  - see catalogue D26.en
- SPDT-DB 5826, gold contacts
  - AC-15: 230 V AC / 1.0 A
  - DC-13: 110 V DC / 0.5 A
  - see catalogue D26.en
- SPDT 5870, silver contacts
  - AC-15: 230 V AC / 1.5 A
  - DC-13: 110 V DC / 0.5 A
  - see catalogue D70.en
- SPDT 5870, gold contacts
  - AC-15: 230 V AC / 1.5 A
  - DC-13: 110 V DC / 0.5 A
  - see catalogue D70.en
- Terminals
  - 2x M12 / 24...30 Nm
  - 2x M12 / 24...30 Nm

#### Pre-charging contactor, high-voltage discharging contact
- Pre-charging contactor, CP1115/02
  - $U_{sn}$, $I_{th}$: 3,600 V, 200 A
  - see catalogue C45.en
- High-voltage discharging contact, CPD
  - $U_{sn}$, $I_{th}$: 3,600 V, 80 A
  - see catalogue D70.en

#### Magnetic drive
- Coil power dissipation
  - $U_S$: 225 W max. @ 250 ms max. / hold: < 10 W
- Pull-in voltage
  - $U_I$: 0.7 x $U_{sn}$ / 160 ms
- Pull-in time
  - $U_I$: 0.7 x $U_{sn}$ / ≤ 40 ms
- Drop-off voltage
  - $U_I$: 0.7 x $U_{sn}$ / ≤ 40 ms
- Drop-off time
  - $U_I$: 0.7 x $U_{sn}$ / ≤ 40 ms
- Frequency of operation
  - 1.25 x $U_I$ and $T_2$: 2400 A / 1.000 A / 0 A
  - Mechanical: 240 operations/hour max. / electrical: 30 operations/hour max.

#### Weight
- approx. 12 ... 19 kg

---

*1 Ratings for IEC 60077-2; ratings for other standards on request.
*2 Cover for main contact system, version "D", breaking capacity: no load
*3 On request
*4 With high-voltage discharging contact, the number of auxiliary contacts is reduced to max. 2
*5 a1 and b0 according to IEC 60077-2 (auxiliary contact b0 "well open" or mirror contact for feedback circuits of safety-relevant control systems according to EN 3849-1)
*6 Values for bistable versions on request
*7 The optional CPD contact limits the mechanical endurance to 600,000 operating cycles

---

Subject to change
### Dimension diagram CP1115-06-A, CP1130-06-A

1 pole SPST-NO | $U_n = 1,500/3,000$ V | $I_{th} = 600$ A | Breaking capacity: high

1 pole SPST-NC | $U_n = 1,500/3,000$ V | $I_{th} = 600$ A | Breaking capacity: high

#### High-efficiency ceramic arc chamber
Arc chamber with permanent-magnetic blowout. Configuration for frequent switching of high loads, "A" version

#### Arc chamber interlock

#### Main contact system
- SPST-NO: Version as NO contact, 1-pole
- SPST-NC: Version as NC contact, 1-pole

#### Switching state indicator
- ON: Main contact system switched on
- OFF: Main contact system switched off

#### Main contact terminals
2x M10 screw, tightening torque 16...20 Nm

#### Pre-charging contactor CPP
1-pole NO contactor for precharging, mounting separately

#### Auxiliary switches
2x Snap-action switches, silver- or gold-contacts, M3 screws

#### Integrated PWM module
Electronic coil control with 10 pole terminal block

#### Minimum distances in [mm]

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
<td>60</td>
<td>30</td>
<td>60</td>
<td>110</td>
</tr>
</tbody>
</table>

1: To earth potential, 2: To insulate parts, 3: For disassembly arc chamber

### Dimension diagram CP1115-06-B, CP1130-06-B

1 pole SPST-NO | $U_n = 1,500/3,000$ V | $I_{th} = 600$ A | Breaking capacity: medium

1 pole SPST-NC | $U_n = 1,500/3,000$ V | $I_{th} = 600$ A | Breaking capacity: medium

#### Efficiency ceramic arc chamber
Arc chamber with permanent-magnetic blowout. Configuration for frequent switching of low loads, "B" version

#### Arc chamber interlock

#### Main contact system
- SPST-NO: Version as NO contact, 1-pole
- SPST-NC: Version as NC contact, 1-pole

#### Main contact terminals
2x M10 screw, tightening torque 16...20 Nm

#### Switching state indicator
- ON: Main contact system switched on
- OFF: Main contact system switched off

#### Pre-charging contactor CPP
1-pole NO contactor for precharging, mounting separately

#### Auxiliary switches
2x Snap-action switches, silver- or gold-contacts, M3 screws

#### Integrated PWM module
Electronic coil control with 10 pole terminal block

#### Minimum distances in [mm]

<table>
<thead>
<tr>
<th></th>
<th>A</th>
<th>B</th>
<th>A</th>
<th>B</th>
<th>C</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>50</td>
<td>60</td>
<td>30</td>
<td>60</td>
<td>110</td>
</tr>
</tbody>
</table>

1: To earth potential, 2: To insulate parts, 3: For disassembly arc chamber

Dimensions in mm / Subject to change
Dimension diagram CP1115-06-D, CP1130-06-D
- 1 pole SPST-NO | Un = 1,500/3,000 V | Ith = 600 A | Breaking capacity: none
- 1 pole SPST-NC | Un = 1,500/3,000 V | Ith = 600 A | Breaking capacity: none

Cover cap
main contact system
Configuration as disconnect switch for loadless switching, Version «D»

Main contact system
SPST-NO: Version as NO contact, 1-pole
SPST-NC: Version as NC contact, 1-pole

Main contact terminals
2x M10 screw, tightening torque 16 ... 20 Nm

Switching state indicator
ON: Main contact system switched on
OFF: Main contact system switched off

Auxiliary switches
2x Snap-action switches, silver- or gold-contacts, M3 screws

Integrated PWM module
Electronic coil control with 10 pole terminal block

Dimension diagram CP3115-06-D, CP3130-06-D
- 1 pole SPDT-DB | Un = 1,500/3,000 V | Ith = 600 A | Breaking capacity: none

Cover cap
main contact system
Configuration as disconnect switch for loadless switching, Version «D»

Main contact system
SPDT-DB: 1 pole CO
NC: 1 ... 2
NO: 1 ... 2

Switching state indicator
ON: Main contact system switched on
OFF: Main contact system switched off

Main contact terminals
2x M10 screw, tightening torque 16 ... 20 Nm

Auxiliary switches
2x Snap-action switches, silver- or gold-contacts, M3 screws

Integrated PWM module
Electronic coil control with 10 pole terminal block
Dimension diagram CP1115-12-A, CP1130-12-A  
1 pole SPST-NO | Un = 1,500/3,000 V | Ith = 1,200 A | Breaking capacity: high
1 pole SPST-NC | Un = 1,500/3,000 V | Ith = 1,200 A | Breaking capacity: high

Dimension diagram CP1115-12-B, CP1130-12-B  
1 pole SPST-NO | Un = 1,500/3,000 V | Ith = 1,200 A | Breaking capacity: medium
1 pole SPST-NC | Un = 1,500/3,000 V | Ith = 1,200 A | Breaking capacity: medium

High-efficiency ceramic arc chamber
Arc chamber with permanent-magnetic blowout. Configuration for frequent switching of high loads, "A" version

Arc chamber interlock
Main contact system
SPST-NO: Version as NO contact, 1-pole
SPST-NC: Version as NC contact, 1-pole

Switching state indicator
ON: Main contact system switched on
OFF: Main contact system switched off

Main contact terminals
2x M12 screw each, tightening torque 24...30 Nm

Pre-charging contactor CPP
Integrated 1-pole NO contactor for pre-charging

Auxiliary switches
2x Snap-action switches, silver- or gold-contacts, M3 screws

Integrated PWM module
Electronic coil control with 10 pole terminal block

Efficiency ceramic arc chamber
Arc chamber with permanent-magnetic blowout. Configuration for frequent switching of low loads, "B" version

Arc chamber interlock
Main contact system
SPST-NO: Version as NO contact, 1-pole
SPST-NC: Version as NC contact, 1-pole

Main contact terminals
2x M12 screw each, tightening torque 24...30 Nm

Switching state indicator
ON: Main contact system switched on
OFF: Main contact system switched off

Pre-charging contactor CPP
Integrated 1-pole NO contactor for pre-charging

Auxiliary switches
2x Snap-action switches, silver- or gold-contacts, M3 screws

Integrated PWM module
Electronic coil control with 10 pole terminal block

Minimum distances in [mm]

1 2 2 3 1 2 2
A B A B C D E F G H

1. To earth potential
2. To insulated parts
3. For disassembly arc chamber
High-efficiency ceramic arc chamber
Arc chamber with permanent-magnetic blowout. Configuration for frequent switching of high loads, "A" version

Arc chamber interlock

Main contact system
SPST-NO: Version as NO contact, 1-pole
SPST-NC: Version as NC contact, 1-pole

Switching state indicator
ON: Main contact system switched on
OFF: Main contact system switched off

Main contact terminals
2x M12 screw each, tightening torque 24 ... 30 Nm

Pre-charging contactor CPP
integrated 1-pole NO contact for pre-charging

Auxiliary switches
2x Snap-action switches, silver- or gold-contacts, M3 screws

Integrated PWM module
Electronic coil control with 10 pole terminal block

Minimum distances in [mm]

1 2 3 4 5 6 7 8 9
A 80 70 40 70 120 30 70 20 70
B 80 70 40 70 120 30 70 20 70

1 To earth potential, 2 To insulate parts, 3 For disassembly arc chamber

Efficiency ceramic arc chamber
Arc chamber with permanent-magnetic blowout. Configuration for frequent switching of low loads, "B" version

Arc chamber interlock

Main contact system
SPST-NO: Version as NO contact, 1-pole
SPST-NC: Version as NC contact, 1-pole

Switching state indicator
ON: Main contact system switched on
OFF: Main contact system switched off

Main contact terminals
2x M12 screw each, tightening torque 24 ... 30 Nm

Pre-charging contactor CPP
integrated 1-pole NO contact for pre-charging

Auxiliary switches
2x Snap-action switches, silver- or gold-contacts, M3 screws

Integrated PWM module
Electronic coil control with 10 pole terminal block

Minimum distances in [mm]

1 2 3 4 5 6 7 8 9
A 80 70 40 70 120 30 70 20 70
B 80 70 40 70 120 30 70 20 70

1 To earth potential, 2 To insulate parts, 3 For disassembly arc chamber

Dimensions in mm / Subject to change
### Dimension diagram CP1115-20-D, CP1130-20-D

**CP2115-20-D, CP2130-20-D**

1 pole SPST-NO | \(U_n = 1,500/3,000\) V | \(I_{th} = 2,000\) A | Breaking capacity: none

1 pole SPST-NC | \(U_n = 1,500/3,000\) V | \(I_{th} = 2,000\) A | Breaking capacity: none

---

**Cover cap**
- main contact system
- Configuration as CO for loadless switching, Version "D"

**Main contact system**
- SPST-NO: Version as NO contact, 1-pole
- SPST-NC: Version as NC contact, 1-pole

**Switching state indicator**
- ON: Main contact system switched on
- OFF: Main contact system switched off

**Main contact terminals**
- 2x M12 screw each, tightening torque 24 ... 30 Nm

**Auxiliary switches**
- 2x Snap-action switches, silver- or gold-contacts, M3 screws

**Integrated PWM module**
- Electronic coil control with 10 pole terminal block

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### Mounting holes

The mounting holes for mounting frames or mounting plates can be either tapped holes for threaded screws or through holes for threaded screws and nuts.

- **CP11xx-06, CP21xx-06, CP31xx-06 series**
- **CP11xx-12, CP21xx-12, CP31xx-12 series, CP11xx-20, CP21xx-20, CP31xx-20 series**

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**Minimum clearances:**
The minimum distances to earth potential or to insulating parts specified in the dimension diagrams must be observed!
The contactors can be mounted horizontally or vertically on a prepared mounting plate. Further mounting positions upon request.

**Mounting instructions** CPxxxx-xx-A, CPxxxx-xx-B

**CP series**

**Circuit diagram**

**Magnetic drive: Coil design, terminals**

<table>
<thead>
<tr>
<th>Terminal block «X1»</th>
<th>10x cage clamp terminal, pin assignment depends on configuration on the configuration</th>
</tr>
</thead>
<tbody>
<tr>
<td>X1:10</td>
<td>Col terminal U1+</td>
</tr>
<tr>
<td>X1:9</td>
<td>Col terminal U1−</td>
</tr>
<tr>
<td>X1:8</td>
<td>Col terminal U2+</td>
</tr>
<tr>
<td>X1:7</td>
<td>Col terminal U2−</td>
</tr>
<tr>
<td>X1:6</td>
<td>Version «N»: control input enable U22+</td>
</tr>
<tr>
<td>X1:5</td>
<td>Version «B»: control input close U32+</td>
</tr>
<tr>
<td>X1:4</td>
<td>Version «N»: control input enable U22−</td>
</tr>
<tr>
<td>X1:3</td>
<td>Version «B»: control input close U32−</td>
</tr>
<tr>
<td>X1:2</td>
<td>Pre-charging contactor coil terminal U1+</td>
</tr>
<tr>
<td>X1:1</td>
<td>Pre-charging contactor coil terminal U1−</td>
</tr>
</tbody>
</table>

**Main contacts**

<table>
<thead>
<tr>
<th>Pre-charging contactor, aux. contacts, HV discharging contact*1</th>
</tr>
</thead>
<tbody>
<tr>
<td>Version «1 ... 8»</td>
</tr>
<tr>
<td>CP11xx-12 factory-integrated at CP11xx-12 and CP11xx-20, external mount. at CP11xx-06</td>
</tr>
</tbody>
</table>

**Version «N»**

- Monostable (standard)
- 1x SPST-NO

**Version «1»/«A»**

- 2x S826 Ag/Au contacts

**Version «B»**

- Bistable with 2 switching inputs for activation
- 2x S870 Ag/Au contacts

**Version «Z»**

- 1x CPD HV discharging contact

**Version «N»**

- Monostable with switching input for activation
- 1x SPST-NO

**Version «1»/«A»**

- 2x S826 Ag/Au contacts

**Version «4»/«5»**

- 1x S826 Ag/Au contacts

**Version «2»/«B»**

- 2x S870 Ag/Au contacts

**Version «Z»**

- 1x CPD HV discharging contact

**Version «B»**

- Bistable with 2 switching inputs for activation
- 2x S870 Ag/Au contacts

**Terminal block «X1»**

- Coil terminal Us+
- Coil terminal Us−
- Version «N»: control input enable U22+
- Version «B»: control input close U32+
- Version «N»: control input enable U22−
- Version «B»: control input close U32−
- Version «B»: control input open U31+
- Version «B»: control input open U31−
- Pre-charging contactor coil terminal U1+
- Pre-charging contactor coil terminal U1−

**Note:**

- All auxiliary contacts and the high-voltage discharging contact are shown for the variants normally open and changeover contactor variants. For the NC contactor, the designations have been adapted accordingly due to the inverse control (not shown here).

- Wiring of coil connections X1:1 and X1:2 only if precharging contactor integrated. The option applies to make contactors CP11xx-12 and CP11xx-20, and saves mounting effort. The precharging contactor is included with the CP11xx-06 NO contactors and must be mounted by the customer.

- Wiring of switching inputs X1:5 and X1:6 only for bistable coil versions «B». An auxiliary contact S826 is additionally required for monitoring the switching state (version «3» or «5»). This auxiliary contact is not available on the customer side.

- Wiring only if precharging contactor CP integrated.

- Coil control and auxiliary contacts can optionally be led out via a separate connector. We will also be pleased to supply customer-specific versions if the corresponding number of units is available. Please contact us!
Defective contactors or parts (e.g. arc chambers, auxiliary switches) must be replaced immediately!

Maintenance and safety instructions

Safety instructions:
- The device must be used according to the intended purpose as specified in the technical documentation. You are obliged to observe all specifications depending on operating temperature, degree of pollution etc. that are relevant to your application.
- Contactors are only suitable for use in cable cars and lifts with separate safety consideration by the system integrator.
- Without further safety measures the contactors are not suited for use in potentially explosive atmospheres.
- In case of malfunction of the device or uncertainties stop using it any longer and contact the manufacturer instantly.
- Tampering with the device can seriously affect the safety of people and equipment. This is not permitted and leads to an exclusion of liability and warranty.
- Coil suppression for reducing surges when the coil is switched off is optimally attuned to the contactors switching behaviour. The existing opening characteristic must not be negatively influenced by parallel connection with an external diode.
- Contactors running permanently may heat up. So make sure that the contactor has sufficiently cooled down before you start any inspection or maintenance work.
- When installing contactors with magnetic blowout make sure to do it in such a way that no magnetizable parts can be attracted by the permanent magnets that are also capable of destroying all data of swipe cards.
- Strong electromagnetic induction caused when switching off can influence other components installed near the contactor.
- Improper handling of the contactor, e.g. when hitting the floor with some impact, can result in breakage, visible cracks and deformation.

Maintenance:
- CP series contactors are basically maintenance free.
- Make regular in-depth visual inspections once or twice a year.

For detailed maintenance, safety and mounting instructions please refer to our operating manuals C40-M.en!
Connectors
- Connectors manufactured to industry standards
- Connectors to suit the special requirements of communications engineering (MIL connectors)
- Charging connectors for battery-powered machines and systems
- Connectors for railway engineering, including UIC connectors
- Special connectors to suit customer requirements

Snap-action switches
- Snap-action switches with positive opening operation
- Snap-action switches with self-cleaning contacts
- Snap-action switch made of robust polyetherimide (PEI)
- Snap-action switch with two galvanically isolated contact bridges
- Special switches to suit customer requirements

Contactors
- Single and multi-pole DC contactors
- High-voltage AC/DC contactors
- Contactors for battery powered vehicles and power supplies
- Contactors for railway applications
- Terminal bolts and fuse holders
- DC emergency disconnect switches
- Special contactors to suit customer requirements

Electrics for rolling stock
- Equipment for driver's cab
- Equipment for passenger use
- High-voltage switchgear
- High-voltage heaters
- High-voltage roof equipment
- Equipment for electric brakes
- Design and engineering of train electrics to customer requirements