Brochure | Contactors

DC and AC contactors for Industry, Rolling Stock and Electric Mobility

More information: schaltbau.com
WE CONTROL ELECTRIC ARCS RELIABLY

The quality of a contactor is best seen when switching off. Electric arcs are ignited between the contacts as they open – just like lightning bolts in a thundercloud. In order to extinguish these arcs we have developed a patented contactor concept by which the arc is driven into the arc chute and extinguished within a few milliseconds. Thus Schaltbau can offer real equipment safety. For the innovative contactor technology prevents the contacts from welding or burning and the equipment from being totally destroyed as a result of a component failure.

For more information visit www.schaltbau.info/contactors

AC and DC contactors for critical applications

With renewable energies and the introduction of DC networks in manufacturing, the switching of high DC loads is gaining in significance.

With our experiences from railway technology, we are developing reliable contactors for all fields of use in which load circuits have to be switched on and disconnected securely. Our variety of DC and AC contactors extends from contactors for low-voltage to power contactors of 4,800 volts and 2,000 amps.
The contact opens when the switch is actuated. A decrease of withstand voltage and/or surface resistance. Note: When the switch is actuated the contact is interrupted between COM and NC and closed in the circuit under operating conditions with pertaining control, measuring, protection and regulating devices. The contactor is the very voltage which insulating tests and creepage distances are determined in. The maximum withstand voltage of the non-enclosed device is lower than the one of the non-enclosed device which is supplied to the power supply terminals of the control device and actuated mechanically by the switching device. For AC current the making capacity is determined by the rms value of the symmetrical current component. For DC current the making capacity is determined by the r.m.s.-value of the symmetrical current component. The breaking capacity of a switchgear device is the very voltage which transient overvoltages to the next lowest category. The conventional free air thermal current must equal at least the making capacity of a switching device. The making capacity of a switching device is approximated voltage value suitable for identification of a device which the contact opening is not determined in given operating conditions. The rated insulation voltage is the very voltage which insulating tests and creepage distances are determined by. The maximum rated operating current of the non-enclosed device which can differ from Uc due to built-in transformers, rectifiers, energy storage systems or the transient overvoltages to the next lowest category. The conventional thermal current of a contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category.

Glossary

Rated insulation voltage: The rated insulation voltage of a device is the very voltage which insulating tests and creepage distances are determined by. The maximum rated operating current of the non-enclosed device which can differ from Uc due to built-in transformers, rectifiers, energy storage systems or the transient overvoltages to the next lowest category. The conventional thermal current of a contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The conventional thermal current of a contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category. The contactor is the very voltage which transient overvoltages to the next lowest category.
Compact 1-pole bi-directional NO contactors for DC up to 1,500 volts

The extremely compact bi-directional DC contactors C300 are designed for switching high powers. They ensure safe disconnection of high loads regardless of the direction of the current and provide reliable protection in the event of a system fault. Full bi-directionality is indispensable in battery storage systems and electric vehicles.

Typical applications include use as the main contactor in battery management systems for HV vehicle batteries, in charging stations for modern electric vehicles, e.g. as main contactor in traction and auxiliary converters of battery and hybrid vehicles or as isolating contactor in battery circuits with high currents.

The very efficient ceramic arc chamber, double contact interruption and high breaking capacity are important features of the new switchgear. The very efficient ceramic arc chamber, double contact interruption and high breaking capacity are important features of the new switchgear. The very efficient ceramic arc chamber, double contact interruption and high breaking capacity are important features of the new switchgear.

### FEATURES

- Power range
  - Nominal voltage 60 volts to 1,500 volts
  - Thermal current 150–300–500 amps
  - Efficient extinguishing chamber with permanent magnetic blowout
  - High making and breaking capacity
  - High rated short-time withstand current
  - High resistance to shock and vibration
  - 1 auxiliary switch with mirror contact function
  - Low energy consumption, thanks to PWM controller
  - Tested according to EN 60947-4-1, UL 60947-4-1, GB/T 14048.4 in progress

- Power range
  - Nominal voltage 60 volts to 1,500 volts
  - Thermal current 1,000 amps
  - Efficient extinguishing chamber with permanent magnetic blowout
  - High making and breaking capacity
  - High rated short-time withstand current
  - High resistance to shock and vibration
  - Max. 2 auxiliary switches with mirror contact function
  - Low energy consumption, thanks to PWM controller
  - Tested according to EN 60947-4-1, UL 60947-4-1, GB/T 14048.4

### SPECIFICATIONS

#### Type of voltage

<table>
<thead>
<tr>
<th>C300-500</th>
<th>C310K–C315A–C315S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contact</td>
<td>DC, bi-directional</td>
</tr>
<tr>
<td>Number of configuration</td>
<td>1x NO</td>
</tr>
<tr>
<td>Rated operational voltage Ue/U0</td>
<td>1,000 Vp/pD3 / 1,500 Vp/pD3</td>
</tr>
<tr>
<td>Rated impulse withstand voltage Uimp</td>
<td>10/4 kV</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>PD2 / PD3</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>OV3</td>
</tr>
<tr>
<td>Cone free arc thermal current Ith</td>
<td>500 A @ 20 ms</td>
</tr>
<tr>
<td>Rated short-time withstand current Icw</td>
<td>3,000 A</td>
</tr>
<tr>
<td>Auxiliary contacts</td>
<td>1 NC with mirror contact function</td>
</tr>
<tr>
<td>Magnetic drive</td>
<td>Non-monostable 12 / 24 VDC</td>
</tr>
<tr>
<td>Rated control voltage supply U0</td>
<td>Non-monostable 12 / 24 VDC</td>
</tr>
</tbody>
</table>

#### Type of voltage

<table>
<thead>
<tr>
<th>C320K–C320T</th>
<th>C360K–C360A–C360S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contact</td>
<td>DC, bi-directional / AC, f ≤ 60 Hz</td>
</tr>
<tr>
<td>Number of configuration</td>
<td>1x NO</td>
</tr>
<tr>
<td>Rated operational voltage Ue/U0</td>
<td>1,000 Vp/pD3 / 1,500 Vp/pD3</td>
</tr>
<tr>
<td>Rated impulse withstand voltage Uimp</td>
<td>10/4 kV</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>PD2 / PD3</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>OV3</td>
</tr>
<tr>
<td>Cone free arc thermal current Ith</td>
<td>1,000 A</td>
</tr>
<tr>
<td>Rated short-time withstand current Icw</td>
<td>4,200 A @ 100 ms</td>
</tr>
<tr>
<td>Auxiliary contacts</td>
<td>2x Snap-action switches 5880 max. (SPDT) with mirror contact function</td>
</tr>
<tr>
<td>Magnetic drive</td>
<td>Monostable 24 DC</td>
</tr>
</tbody>
</table>

#### Type of voltage

<table>
<thead>
<tr>
<th>C200K–C200T</th>
<th>C600K–C600A–C600S</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contact</td>
<td>DC, bi-directional / AC, f ≤ 60 Hz</td>
</tr>
<tr>
<td>Number of configuration</td>
<td>1x NO</td>
</tr>
<tr>
<td>Rated operational voltage Ue/U0</td>
<td>1,000 Vp/pD3 / 1,500 Vp/pD3</td>
</tr>
<tr>
<td>Rated impulse withstand voltage Uimp</td>
<td>10/4 kV</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>PD2 / PD3</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>OV3</td>
</tr>
<tr>
<td>Cone free arc thermal current Ith</td>
<td>1,000 A</td>
</tr>
<tr>
<td>Rated short-time withstand current Icw</td>
<td>3,000 A @ 1 s</td>
</tr>
<tr>
<td>Auxiliary contacts</td>
<td>4x Snap-action switches 5880 max. (SPDT) max. 2 with mirror contact function</td>
</tr>
<tr>
<td>Magnetic drive</td>
<td>Monostable 24 / 22...110 VDC</td>
</tr>
</tbody>
</table>

---

* with integrated PWM module
* with integrated PWM module, input 0...500 mA

---

SCHALTBau Contact Contact Control
has an electrical life that is above average. Proven to be a transportation system component of high reliability which is best suited for the harsh environment of public transport, the C193 has capacity for DC applications up to 1,000 volts.

Compact single pole NO contactors for voltages up to 1,000 volts

Single pole high-voltage contactor of compact design: Notwithstanding its small size, the C193 series contactor features an extraordinary switching capacity for DC applications up to 1,000 volts. Best suited for the harsh environment of public transport, the C193 has a high breaking capacity thanks to double contact interruption in a largely closed contact chamber.

FEATURES
- Power range:
  - Nominal voltage up to 1,000 volts
  - Thermal current 120 amps
- Suitable for years of continuous duty
- Intended for high ambient temperatures
- Double-break contacts
- Versions for DC and AC operation
- DC versions with blowout magnets
- Difficult mount option
- Tested to railway standard IEC 60677, GB/T 14048.4, UL/IEC 60947-4-1

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Type of voltage</th>
<th>DC, uni-directional / AC, f ≤ 60 Hz</th>
<th>DC, uni-directional (C195 X) / DC, f ≤ 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contacts</td>
<td>1x NO</td>
<td>1x NO or 1x CD</td>
</tr>
<tr>
<td>Nominal voltage U_L</td>
<td>1,000 V / 1,200 V</td>
<td>C195: NO max. 1,000 V / CD 200 V / C195 X: 1,000 V</td>
</tr>
<tr>
<td>Rated insulation voltage U_M</td>
<td>8 kV</td>
<td>C195 NO: 1,200 V / CD 400 V / C195 X: 1,000 V</td>
</tr>
<tr>
<td>Rated impulse withstand voltage U_IW</td>
<td>90 kA p-i-T &lt; 70°C / 1,500 kA p-i-T &lt; 100 ms</td>
<td>C195: 250 kA p-i-T &lt; 70°C / C195 X: 320 kA p-i-T &lt; 70°C / 230 kA p-i-T &lt; 100 ms</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>PD3</td>
<td>PD3</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>OV3</td>
<td>OV3</td>
</tr>
<tr>
<td>Conventional thermal current I_th</td>
<td>120 A / T &lt; 70°C / 1,500 A / T &lt; 100 ms</td>
<td>40 A / T &lt; 70°C / 1,200 A / T &lt; 100 ms</td>
</tr>
<tr>
<td>Rated short-time withstand current I_ST</td>
<td>1,800 A @ T = 70°C</td>
<td>1,500 A @ T = 100 ms</td>
</tr>
<tr>
<td>Auxiliary contacts</td>
<td>1x Snap-action switch S870 max. (SPDT)</td>
<td>2x Snap-action switches S870 max. (SPDT)</td>
</tr>
<tr>
<td>Number of Configuration</td>
<td>1x Snap-action switch S870 max. (SPDT)</td>
<td>2x Snap-action switches S870 max. (SPDT)</td>
</tr>
</tbody>
</table>

Double pole NO contactors for voltages up to 1,000 volts

Double pole high-voltage contactor of compact design: Notwithstanding its small size, the C294 series contactor features an extraordinary switching capacity for DC applications up to 1,000 volts. Best suited for the harsh environment of public transport, the C294 has proven to be a transportation system component of high reliability which has an electrical life that is above average.

FEATURES
- Power range:
  - Nominal voltage up to 1,000 volts
  - Thermal current 40 amps
- Very compact design
- Intended for high ambient temperatures
- Double-break contacts
- Arc extinguishing with blow magnets
- Higher switching capacity resulting from main contacts connected in series
- Parallel connection results in longer electrical life
- Tested to railway standard IEC 60677, GB/T 14048.4, UL/IEC 60947-4-1

SPECIFICATIONS

<table>
<thead>
<tr>
<th>Type of voltage</th>
<th>DC, uni-directional / AC, f ≤ 60 Hz</th>
<th>DC, uni-directional (C295 X) / DC, f ≤ 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contacts</td>
<td>2x NO</td>
<td>2x NO</td>
</tr>
<tr>
<td>Nominal voltage U_L</td>
<td>750 V / 1,200 V / 200 V / 1,000 V</td>
<td>2x NO</td>
</tr>
<tr>
<td>Thermal current I_th</td>
<td>8 kV</td>
<td>8 kV</td>
</tr>
<tr>
<td>Rated impulse withstand voltage U_IW</td>
<td>96 kA p-i-T &lt; 70°C</td>
<td>96 kA p-i-T &lt; 70°C</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>PD3</td>
<td>PD3</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>OV3</td>
<td>OV3</td>
</tr>
<tr>
<td>Conventional thermal current I_th</td>
<td>120 A / T &lt; 70°C / 1,500 A / T &lt; 100 ms</td>
<td>120 A / T &lt; 70°C / 1,500 A / T &lt; 100 ms</td>
</tr>
<tr>
<td>Rated short-time withstand current I_ST</td>
<td>1,800 A @ T = 70°C</td>
<td>1,500 A @ T = 100 ms</td>
</tr>
<tr>
<td>Auxiliary contacts</td>
<td>1x Snap-action switch S870 max. (SPDT)</td>
<td>2x Snap-action switches S870 max. (SPDT)</td>
</tr>
<tr>
<td>Number of Configuration</td>
<td>1x Snap-action switch S870 max. (SPDT)</td>
<td>2x Snap-action switches S870 max. (SPDT)</td>
</tr>
</tbody>
</table>

With its compact size and efficient arc chute, our C295 series contactor allows the handling of voltages up to 1,200 volts and currents of 120 amps max. Switching high amperage even at significant inductance can be achieved by series connection of the main contacts. Typical applications are to be found in traffic engineering equipment and conversion engineering of complex power supplies.
The CH1130 AC and DC contactor replaces the CH high-voltage contactors that have been tried and tested for decades. Following the CT series, the design has been completely revised. Accordingly, permanent magnets and ceramic elements are also used for arc extinguishing in the CH1130; but without the electromagnets of the CT series, the CH is significantly more compact. The contactor is used as a precharging contactor in power supply systems or as a main contactor in heating and air conditioning systems.

### FEATURES
- Power range: 
  - Nominal voltage up to 750 volts
  - Thermal current 300 amps
- Compact 3 kV contactor for AC and DC
- Semi-bi-directional DC version
- Compact, robust design
- Double-break contacts
- Permanent magnets and ceramic elements for arc extinguishing
- Tool-free visual check of contact status
- Easy to replace switching elements
- Low energy consumption and low heating thanks to innovative application-dependent arc chamber design
- Magnetic drive
- Coil saving circuit
- Monostable: 24 V DC

### SPECIFICATIONS
- **Type of Voltage**
  - DC, uni-directional / AC, f ≤ 60 Hz
  - DC, semi-bi-directional / AC, f ≤ 60 Hz

- **Main Contacts**
  - Number of contacts: 2x NO or/and NC
  - Rated load current: 200 A
  - Rated load voltage: 720 V
  - Rated impulse withstand voltage: 20 kV

- **Pollution Degree**
  - Overvoltage category: PD3
  - Rated short-time withstand current: 200 A @ 70°C

- **Auxiliary Contacts**
  - Number of contacts: 2x NO or/and NC

- **Magnetic Drive**
  - Nominal voltage: 24 V DC

### CF3-15 – CF3-30

- **Type of Voltage**
  - DC, uni-directional / AC, f ≤ 60 Hz
  - AC, f ≤ 400 Hz

- **Main Contacts**
  - Number of contacts: 2x NO or/and NC
  - Rated load current: 200 A
  - Rated load voltage: 720 V
  - Rated impulse withstand voltage: 20 kV

- **Pollution Degree**
  - Overvoltage category: PD3
  - Rated short-time withstand current: 200 A

- **Auxiliary Contacts**
  - Number of contacts: 2x NO or/and NC

- **Magnetic Drive**
  - Nominal voltage: 24 V DC

### Multi-pole AC contactors for higher frequencies in the power class up to 3,000 volts

The start for Schaltbau's modern modular CF contactors is a compact 3-pole AC version in the power class up to 600 amps and 3,000 volts for inverter-fed AC drives with higher frequencies. A special feature are the newly developed switching chambers. These can be universally configured as normally open, normally closed or in combination as changeover contacts. An efficient electronic economy circuit reduces power consumption and heat loss and saves costs.

### SPECIFICATIONS
- **Type of Voltage**
  - DC, uni-directional / AC, f ≤ 60 Hz
  - AC, f ≤ 400 Hz

- **Main Contacts**
  - Number of contacts: 2x NO or/and NC
  - Rated load current: 200 A
  - Rated load voltage: 720 V
  - Rated impulse withstand voltage: 20 kV

- **Pollution Degree**
  - Overvoltage category: PD3
  - Rated short-time withstand current: 200 A

- **Auxiliary Contacts**
  - Number of contacts: 2x NO or/and NC

- **Magnetic Drive**
  - Nominal voltage: 24 V DC

### Multi-pole DC contactors for voltages up to 750 volts or battery voltages

Long-proven contactors with S306, S307 or S310 cam-operated switching elements and main contact configurations as NC, NO or in combination. Permanemagnetic blowout and arc chamber for DC operation. Versatile series. Well proven as line contactor, changeover unit and reverser. Suitable for use in control circuits of electric equipment for rolling stock and industrial applications as well as for battery powered vehicles.

### FEATURES
- Power range:
  - Nominal voltage: 1,500-3,000 volts, frequencies up to 400 hertz
  - Thermal current 200–300–600 amps by parallel connection of two main contacts each
  - Combination of main contacts and NO contacts
  - Easy to replace switching elements
  - Double-break contacts
  - Small thermal current
  - Low energy consumption and low heating thanks to sophisticated coil saving circuit

### SPECIFICATIONS
- **Type of Voltage**
  - DC, uni-directional / AC, f ≤ 60 Hz
  - AC, f ≤ 400 Hz

- **Main Contacts**
  - Number of contacts: 2x NO or/and NC
  - Rated load current: 200 A
  - Rated load voltage: 720 V
  - Rated impulse withstand voltage: 20 kV

- **Pollution Degree**
  - Overvoltage category: PD3
  - Rated short-time withstand current: 200 A

- **Auxiliary Contacts**
  - Number of contacts: 2x NO or/and NC

- **Magnetic Drive**
  - Nominal voltage: 24 V DC
**FEATURES**

- **Power range:**
  - Nominal voltage 1,500–3,000 volts
  - Thermal current 400–800–1,100 amps
  - Combination of permanent magnetic and electromagnetical blowout
  - Reliable disconnection of small currents at high voltages
  - No critical current range
  - Compact and rugged, 1 and 2 pole versions
  - Double-break contacts
  - Extended coil tolerances
  - Tested to railway standard IEC 60977

- **Rated short-time withstand current Icw**
  - No critical current range

- **Rated impulse withstand voltage UNi**
  - No critical current range

- **Rated insulation voltage UNm**
  - No critical current range

- **Number of, Configuration**
  - 1x NO or 1x NC or 1x CO

- **Number of, Configuration**
  - 1 Snap-action switch or 2 Snap-action switches with 1 or 2 auxiliary contacts or 3 Snap-action switches with 2 or 3 auxiliary contacts

- **Magnetic drive coil voltage Ua**
  - No critical current range

---

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Type of voltage</th>
<th>DC bi-directional / AC, f = 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contact</td>
<td>Number of configuration</td>
</tr>
<tr>
<td>Nominal voltage Ua</td>
<td>1x5780 (a1) + 1x5780 (b0) + 2x S826 / 4x S826*</td>
</tr>
<tr>
<td>Rated impulse withstand voltage Uir</td>
<td>4x S826 / 4x S826*</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>Overvoltage category</td>
</tr>
<tr>
<td>PD3</td>
<td>400 A / 800 A / 1300 A / 3600 A</td>
</tr>
<tr>
<td>PD3</td>
<td>63 A / 86 A / 98 A @ T = 100°C</td>
</tr>
<tr>
<td>Auxiliary contacts</td>
<td>Number of Configuration</td>
</tr>
<tr>
<td>Magnetic drive coil voltage Ua</td>
<td>2 Snap-action switches 5x70 max. (SPDT)</td>
</tr>
<tr>
<td>Monostable 24 / 36 / 48 / 72 / 110 V DC</td>
<td>1x S870 (a1) + 1x S870 (b0) + 2x S826 / 4x S826*</td>
</tr>
</tbody>
</table>

---

**CT1115 – CT1215 – CT1130 – CT1230**

1- and 2-pole AC and bi-directional DC NO contactors, Power class up to 3,000 volts / 1,100 amps

The switching devices are designed for switching and carrying large currents at high rated voltages. The use of additional permanent magnets also reliably extinguishes switching arcs even at very low currents. The CT does not have a critical current range.

With the CA series contactors, Schaltbau provides an efficient switchgear concept for the safe disconnection of inverter-fed drive motors in electrically powered multiple units. However, the switchgear is equally suitable as a universal NO or NC contactor. Among other things, it is used in battery test benches. There, the devices are ideally suited as interlocked or separate precharging contactors for the large Schaltbau CP and CT contactors.

Other applications for the NC contactor variant include discharging the capacitor in the DC link of converters in railway vehicles or in industrial test systems.

**FEATURES**

- **Power range:**
  - Nominal voltage 1,500–2,000 volts
  - Thermal current 600–2,000A–2,000A
  - Configurable as NO or NC or as disconnect or changover switch
  - Effective permanent magnetic blowout – no critical current range
  - Double-break contacts
  - Precharging contactor and earthing contact can be integrated optionally

- **Rated short-time withstand current Icw**
  - No critical current range

- **Rated impulse withstand voltage UNi**
  - No critical current range

- **Rated insulation voltage UNm**
  - No critical current range

- **Number of, Configuration**
  - 1 Snap-action switch or 2 Snap-action switches with 1 or 2 auxiliary contacts or 3 Snap-action switches with 2 or 3 auxiliary contacts

- **Magnetic drive coil voltage Ua**
  - No critical current range

---

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Type of voltage</th>
<th>DC bi-directional / AC, f = 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contacts</td>
<td>Number of configuration</td>
</tr>
<tr>
<td>Nominal voltage Ua</td>
<td>1x5780 (a1) + 1x5780 (b0) + 2x S826 / 4x S826*</td>
</tr>
<tr>
<td>Rated impulse withstand voltage Uir</td>
<td>4x S826 / 4x S826*</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>Overvoltage category</td>
</tr>
<tr>
<td>PD3</td>
<td>400 A / 800 A / 1300 A / 3600 A</td>
</tr>
<tr>
<td>PD3</td>
<td>63 A / 86 A / 98 A @ T = 100°C</td>
</tr>
<tr>
<td>Auxiliary contacts</td>
<td>Number of Configuration</td>
</tr>
<tr>
<td>Magnetic drive coil voltage Ua</td>
<td>2 Snap-action switches 5x70 max. (SPDT)</td>
</tr>
<tr>
<td>Monostable 24 / 36 / 48 / 72 / 110 V DC</td>
<td>1x S870 (a1) + 1x S870 (b0) + 2x S826 / 4x S826*</td>
</tr>
</tbody>
</table>

---

**CT1115 – CT1215**

1- and 3-pole AC contactors for higher frequencies, Power class up to 3,000 volts / 800 amps

The extremely compact DC contactors of the CPP series are the smallest switching devices in the power class up to 200 amps and suitable for nominal voltages up to 1,500 volts. The single-pole switching device is available as a universal NO or NC contactor. Among other things, it is used in battery test benches. There, the devices are ideally suited as interlocked or separate precharging contactors for the large Schaltbau CP and CT contactors.

Other applications for the NC contactor variant include discharging the capacitor in the DC link of converters in railway vehicles or in industrial test systems.

**FEATURES**

- **Power range:**
  - Nominal voltage 1,500–3,000 volts
  - Thermal current 600–2,000A–2,000A
  - Configurable as NO or NC or as disconnect or changover switch
  - Effective permanent magnetic blowout – no critical current range
  - Double-break contacts
  - Precharging contactor and earthing contact can be integrated optionally

- **Rated short-time withstand current Icw**
  - No critical current range

- **Rated impulse withstand voltage UNi**
  - No critical current range

- **Rated insulation voltage UNm**
  - No critical current range

- **Number of, Configuration**
  - 1 Snap-action switch or 2 Snap-action switches with 1 or 2 auxiliary contacts or 3 Snap-action switches with 2 or 3 auxiliary contacts

- **Magnetic drive coil voltage Ua**
  - No critical current range

---

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Type of voltage</th>
<th>DC bi-directional / AC, f = 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contacts</td>
<td>Number of configuration</td>
</tr>
<tr>
<td>Nominal voltage Ua</td>
<td>1x5780 (a1) + 1x5780 (b0) + 2x S826 / 4x S826*</td>
</tr>
<tr>
<td>Rated impulse withstand voltage Uir</td>
<td>4x S826 / 4x S826*</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>Overvoltage category</td>
</tr>
<tr>
<td>PD3</td>
<td>400 A / 800 A / 1300 A / 3600 A</td>
</tr>
<tr>
<td>PD3</td>
<td>63 A / 86 A / 98 A @ T = 100°C</td>
</tr>
<tr>
<td>Auxiliary contacts</td>
<td>Number of Configuration</td>
</tr>
<tr>
<td>Magnetic drive coil voltage Ua</td>
<td>2 Snap-action switches 5x70 max. (SPDT)</td>
</tr>
<tr>
<td>Monostable 24 / 36 / 48 / 72 / 110 V DC</td>
<td>1x S870 (a1) + 1x S870 (b0) + 2x S826 / 4x S826*</td>
</tr>
</tbody>
</table>

---

**CT1115 – CT1215**

1- and 3-pole AC contactors for higher frequencies, Power class up to 3,000 volts / 800 amps

The extremely compact DC contactors of the CPP series are the smallest switching devices in the power class up to 200 amps and suitable for nominal voltages up to 1,500 volts. The single-pole switching device is available as a universal NO or NC contactor. Among other things, it is used in battery test benches. There, the devices are ideally suited as interlocked or separate precharging contactors for the large Schaltbau CP and CT contactors.

Other applications for the NC contactor variant include discharging the capacitor in the DC link of converters in railway vehicles or in industrial test systems.

**FEATURES**

- **Power range:**
  - Nominal voltage 1,500–3,000 volts
  - Thermal current 600–2,000A–2,000A
  - Configurable as NO or NC or as disconnect or changover switch
  - Effective permanent magnetic blowout – no critical current range
  - Double-break contacts
  - Precharging contactor and earthing contact can be integrated optionally

- **Rated short-time withstand current Icw**
  - No critical current range

- **Rated impulse withstand voltage UNi**
  - No critical current range

- **Rated insulation voltage UNm**
  - No critical current range

- **Number of, Configuration**
  - 1 Snap-action switch or 2 Snap-action switches with 1 or 2 auxiliary contacts or 3 Snap-action switches with 2 or 3 auxiliary contacts

- **Magnetic drive coil voltage Ua**
  - No critical current range

---

**SPECIFICATIONS**

<table>
<thead>
<tr>
<th>Type of voltage</th>
<th>DC bi-directional / AC, f = 60 Hz</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contacts</td>
<td>Number of configuration</td>
</tr>
<tr>
<td>Nominal voltage Ua</td>
<td>1x5780 (a1) + 1x5780 (b0) + 2x S826 / 4x S826*</td>
</tr>
<tr>
<td>Rated impulse withstand voltage Uir</td>
<td>4x S826 / 4x S826*</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>Overvoltage category</td>
</tr>
<tr>
<td>PD3</td>
<td>400 A / 800 A / 1300 A / 3600 A</td>
</tr>
<tr>
<td>PD3</td>
<td>63 A / 86 A / 98 A @ T = 100°C</td>
</tr>
<tr>
<td>Auxiliary contacts</td>
<td>Number of Configuration</td>
</tr>
<tr>
<td>Magnetic drive coil voltage Ua</td>
<td>2 Snap-action switches 5x70 max. (SPDT)</td>
</tr>
<tr>
<td>Monostable 24 / 36 / 48 / 72 / 110 V DC</td>
<td>1x S870 (a1) + 1x S870 (b0) + 2x S826 / 4x S826*</td>
</tr>
</tbody>
</table>
### C110B Contactors

**Single pole battery contactors to meet the requirements of battery-electric industrial trucks**

C110B series contactors offer an economical solution for carrying DC currents from 60 amps to 250 amps and for battery voltages up to 48 volts. The contactors are equipped with DC coils featuring coil tolerances as required for traction batteries of industrial trucks and other battery-powered vehicles.

- **Power range:**
  - Nominal voltage up to 48–80 volts
  - Thermal current 100–150–210 amps
  - Compact, rugged design
  - Single-pole DC contactors
  - Auxiliary switch, optional
  - Tested according to IEC 60947, EN 1175-1, UL/IEC 60947-4-1

### AFS Contactors

**NO, NC, changeover and reversing contactors for battery-electric industrial trucks**

AFS series contactors are designed for use with all kinds of electric vehicles in material handling. Coming with double-break contacts, the DC changeover and reversing contactors are designed for switching resistive, capacitive and inductive loads. Especially in the after-sales market the contactors are in great demand as replacement contactors for most leading brands of trucks.

- **Power range:**
  - Nominal voltage up to 110 volts
  - Thermal current 40–80–140 amps
  - Compact design
  - Double-break contacts
  - Easy to replace main contacts
  - Blowout magnets
  - 1 Auxillary switch optional
  - Tested to railway standard IEC 60077, GB/T 14048.4, UL/IEC 60947-4-1

### CS115 Contactors

**4 pole universal contactors for battery voltages up to 800 volts**

The CS115 4-pole contactors complement the range with a universal contactor for battery voltages up to 800 volts. The contactor is available in 4 main contact configurations and can optionally be combined with up to 4 snap-on auxiliary switches. They are especially suitable for control tasks of small and medium loads in battery networks, such as switching on/off, interlocking, signalling as well as control of power contactors.

- **Power range:**
  - Nominal voltage up to 800 volts
  - Thermal current 20 amps
  - Compact, rugged design, DIN rail mounting
  - Double-break contacts
  - Blowout magnets
  - Possible configuration of main contacts: 4 NO, 3 NO/1 NC or 2 NO/2 NC
  - Max. 4 optional auxiliary switches as NC or NO contacts
  - Tested to railway standard IEC 60077

### Specifications

<table>
<thead>
<tr>
<th>Type of Voltage</th>
<th>C110B/180 – C110B/240 – C137 – C164 – C110B/300</th>
<th>AFS11 – AFS15 – AFS17 – AFS19 – AFS7xx – AFS9xx</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contacts</td>
<td>DC bi-directional / DC uni-directional</td>
<td>DC uni-directional / AC(3) x 48H0</td>
</tr>
<tr>
<td>Number of contacts</td>
<td>1x NO</td>
<td>1x NO</td>
</tr>
<tr>
<td>Rated operational voltage Ue</td>
<td>48V</td>
<td>48V / magnetic blowout / 48V with magnetic blowout</td>
</tr>
<tr>
<td>Rated impulse withstand voltage Uimp</td>
<td>1.5 kV</td>
<td>0.8 kV / magnetic blowout / 1.5 kV with magnetic blowout</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>PD2, PD1</td>
<td>PD3</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>OV8</td>
<td>OV2</td>
</tr>
<tr>
<td>Rated thermal current In</td>
<td>100 A – 250 A - 400 A @ 40°C</td>
<td>100 A – 150 A – 200 A @ 40°C</td>
</tr>
<tr>
<td>Rated short-time withstand current Ith</td>
<td>800 A @ 100 ms</td>
<td>800 A @ 100 ms</td>
</tr>
<tr>
<td>Auxiliary contacts</td>
<td>1x SPDT, optional</td>
<td>1x SPDT, optional</td>
</tr>
<tr>
<td>Magnetic drive</td>
<td>24 / 48V DC</td>
<td>24 / 48V DC</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Type of Voltage</th>
<th>C137 – C164 – CS115</th>
<th>C110B/80 – C110B/120 – C110B/240 – C110B/300</th>
</tr>
</thead>
<tbody>
<tr>
<td>Main contacts</td>
<td>DC, uni-directional / AC(3) x 48H0</td>
<td>DC, uni-directional / AC(3) x 48H0</td>
</tr>
<tr>
<td>Number of contacts</td>
<td>4 NO</td>
<td>4 NO</td>
</tr>
<tr>
<td>Rated operational voltage Ue</td>
<td>110 V</td>
<td>110 V</td>
</tr>
<tr>
<td>Rated impulse withstand voltage Uimp</td>
<td>800V</td>
<td>800V</td>
</tr>
<tr>
<td>Pollution degree</td>
<td>PD3</td>
<td>PD3</td>
</tr>
<tr>
<td>Overvoltage category</td>
<td>OV3</td>
<td>OV3</td>
</tr>
<tr>
<td>Rated thermal current In</td>
<td>250 A</td>
<td>250 A</td>
</tr>
<tr>
<td>Rated short-time withstand current Ith</td>
<td>800 A @ 100 ms</td>
<td>800 A @ 100 ms</td>
</tr>
<tr>
<td>Auxiliary contacts</td>
<td>1x SPDT, optional</td>
<td>1x, 4 NO (AFS115/10) and/or NC (AFS115/01) optional</td>
</tr>
<tr>
<td>Magnetic drive</td>
<td>24 / 48V DC</td>
<td>24 / 48V DC</td>
</tr>
</tbody>
</table>

### Features

- **Power range:**
  - Nominal voltage up to 48 volts
  - Thermal current 60–100–150–250 amps
  - Compact, rugged design
  - Double-break contacts
  - Extra wide coil tolerance
  - Tested according to IEC 60947, EN 1175-1, GB/T 14048.4

- **Power range:**
  - Nominal voltage up to 110 volts
  - Thermal current 40–80–140 amps
  - Compact design
  - Double-break contacts
  - Easy to replace main contacts
  - Blowout magnets
  - 1 Auxillary switch optional
  - Tested to railway standard IEC 60077, GB/T 14048.4, UL/IEC 60947-4-1

- **Power range:**
  - Nominal voltage up to 800 volts
  - Thermal current 20 amps
  - Compact, rugged design, DIN rail mounting
  - Double-break contacts
  - Blowout magnets
  - Possible configuration of main contacts: 4 NO, 3 NO/1 NC or 2 NO/2 NC
  - Max. 4 optional auxiliary switches as NC or NO contacts
  - Tested to railway standard IEC 60077
Schaltbau GmbH

For detailed information on our products and services visit our website – or give us a call!

Schaltbau GmbH
Hollerithstrasse 5
81829 Munich
Germany
Phone +49 89 30 05-0
Fax +49 89 30 05-350
Internet www.schaltbau.com
e-Mail contact@schaltbau.de

Electrical Components and Systems for Railway Engineering and Industrial Applications

- 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 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

- 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

- 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

We reserve the right to make technical alterations without prior notice.
For updated product information visit www.schaltbau.com