SIMOREG CCP

PURE INNOVATION – New and unique
Are you tired of unplanned machine downtime because the fuse needs to be replaced or, in a worst case scenario, the power units need to be repaired?

SIEMENS has the solution: **SIMOREG CCP**

Protects the line-commutated converter 6RA70/ 6RA80 against the effects of commutation failure (blown fuses and damaged thyristors).

SIMOREG CCP – Converter Commutation Protector

Do you want to protect your gearing against high torque surges if a fault occurs?

Do you want to protect your motor against flashover on the commutator as a result of high short circuit currents if a fault occurs?

SIEMENS has the solution: SIMOREG CCP

The current in the armature circuit is switched off by the CCP before it reaches an excessively high value for the plant.
SIMOREG CCP – Converter Commutation Protector

Applications
- Main drives for printing machines
- Traction and lift drives for hoisting devices
- Lifts and cable car drives
- Rolling mill drives in the steel industry, coiler drives
- Shearing drives in the steel industry
- Paper machines
- Winding drives for film, paper, and wire
- Cross cutters
- Profile machines
- Loading machines for motors, turbines, or gearbox test bays
The SIMOREG 6RA70/ SINAMICS DCM senses the device current and, if it reaches 250% of the actual rated device current, sends a shutdown command to the CCP.

The CCP rapidly reduces the device current to zero and any overvoltages that occur are limited to permissible values for SIMOREG 6RA70/ SINAMICS DCM.

The SIMOREG 6RA70/ SINAMICS DCM current is switched off before the currents for the fuses, thyristors, and other plant components exceed permissible values.

A main contactor then disconnects the SIMOREG 6RA70/ SINAMICS DCM devices from the mains. When a number of SIMOREG 6RA70/ SINAMICS DCM converters are connected in parallel, the same number of CCPs is used.
The CCP may not be able to protect against the physical effects of commutation failure, but it can reliably prevent the fuse from blowing or damage to the semi-conductor.

Thanks to the CCP, the converter is ready for operation after 10 s. Depending on the inductance in the armature circuit of the motor, the overvoltage protection system integrated in the CCP requires a maximum cooling time of 20 minutes before the power can be applied again.

Time-wasting activities such as changing the fuse no longer need to be carried out, and the device pays for itself after only a few power failures by ensuring that the plant is available again within a few seconds or minutes.

As a result, production downtime is kept to a minimum.
A high-speed DC circuit breaker can also be used to protect against a blown fuse (this is the only way of protecting against a blown fuse if the CCP is not used).

Benefits of the CCP vis-à-vis the high-speed DC circuit breaker:

- Maintenance free
- More reliable
- Efficient even for low rated currents (as of rated current of 200 A of the SIMOREG 6RA70/ SINAMICS DCM)
- Simple, reliable configuration
- Lower peak currents and, therefore, lower torque surges if a fault occurs
- No air smoothing reactor required
**Example:**

Motor: 1G7405-5NJ40-1VV1
Un = 420 V; In = 1700 A
Ra = 12.7 mΩ; La = 0.2 mH
SIMOREG: 6RA7095-4DV62-0
CCP: 6RA7095-6FC00-0
With P076.01 = 70% load adjustment =>
In = 1400 A
x 2.5 = 3500 A =
CCP cut-off
High-speed DC circuit breaker:
required air smoothing reactor = 1.1 mH
Cut-off threshold 3000 A
Results in a peak current of 7300 A

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**Comparison with conventional solution**

High-speed DC circuit breaker:
required air smoothing reactor = 1.1 mH
Cut-off threshold 3000 A
Results in a peak current of 7300 A
SIMOREG CCP – Converter Commutation Protector

Type range CCP

<table>
<thead>
<tr>
<th>Device</th>
<th>Rtd current</th>
<th>Rated voltage</th>
<th>Order no.</th>
</tr>
</thead>
<tbody>
<tr>
<td>SIMOREG CCP 600 A / 460 V</td>
<td>600 A</td>
<td>460 V</td>
<td>6RA7085-6FC00-0</td>
</tr>
<tr>
<td>SIMOREG CCP 1200 A / 460 V</td>
<td>1200 A</td>
<td>460 V</td>
<td>6RA7091-6FC00-0</td>
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<tr>
<td>SIMOREG CCP 1000 A / 690 V</td>
<td>1000 A</td>
<td>690 V</td>
<td>6RA7090-6KC00-0</td>
</tr>
<tr>
<td>SIMOREG CCP 2000 A / 460 V</td>
<td>2000 A</td>
<td>460 V</td>
<td>6RA7095-6FC00-0</td>
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<tr>
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<td>2000 A</td>
<td>690 V</td>
<td>6RA7095-6KC00-0</td>
</tr>
</tbody>
</table>

Can be used when the rated current of SIMOREG 6RA70/ SINAMICS DCM is more than one third of or equal to the rated current of the CCP.

When a number of SIMOREG 6RA70/ SINAMICS DCM converters are connected in parallel, the same number of CCPs is used.
Application: gearbox test bay

Field test of the CCP on a Ford gearbox with 6RA7085-6DV62-0 and CCP: 6RA7085-6FC00-0

The CCP protects the gearbox against excessive torque surges if a fault occurs.