

SIMOREG CCP

PURE INNOVATION – New and unique



SIMOREG CCP – Converter Commutation Protector

SIEMENS

Benefit

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?

Applications

Mode of operation

Comparison with conventional solution

SIEMENS has the solution: **SIMOREG CCP**

Type range

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

Application example

For an article on the physical effect of commutation failure, go to

<http://support.automation.siemens.com/WW/view/en/24120447>

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Benefit

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

Applications

Mode of operation

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

Comparison with conventional solution

Type range

SIEMENS has the solution: SIMOREG CCP

Application example

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

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Benefit

Applications

Mode of operation

Comparison with
conventional
solution

Type range

Application
example

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

SIMOREG CCP – Converter Commutation Protector



Benefit

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.

Applications

Mode of operation

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

Comparison with conventional solution

Type range

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

Application example

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.

SIMOREG CCP – Converter Commutation Protector



Benefit

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.

Applications

Mode of operation

Thanks to the CCP, the converter is ready for operation after 10 s.

Comparison with conventional solution

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.

Type range

Application example

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.

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Benefit

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).

Applications

Mode of operation

Comparison with
conventional
solution

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

Type range

- 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

Application
example

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Benefit

Applications

Mode of operation

Comparison with
conventional
solution

Type range

Application
example

Example:

Motor: 1GG7405-5NJ40-1VV1

$U_n = 420 \text{ V}$; $I_n = 1700 \text{ A}$

$R_a = 12.7 \text{ m}\Omega$; $L_a = 0.2 \text{ mH}$

SIMOREG: 6RA7095-4DV62-0

CCP: 6RA7095-6FC00-0

With P076.01 = 70% load adjustment =>

$I_n = 1400 \text{ A}$

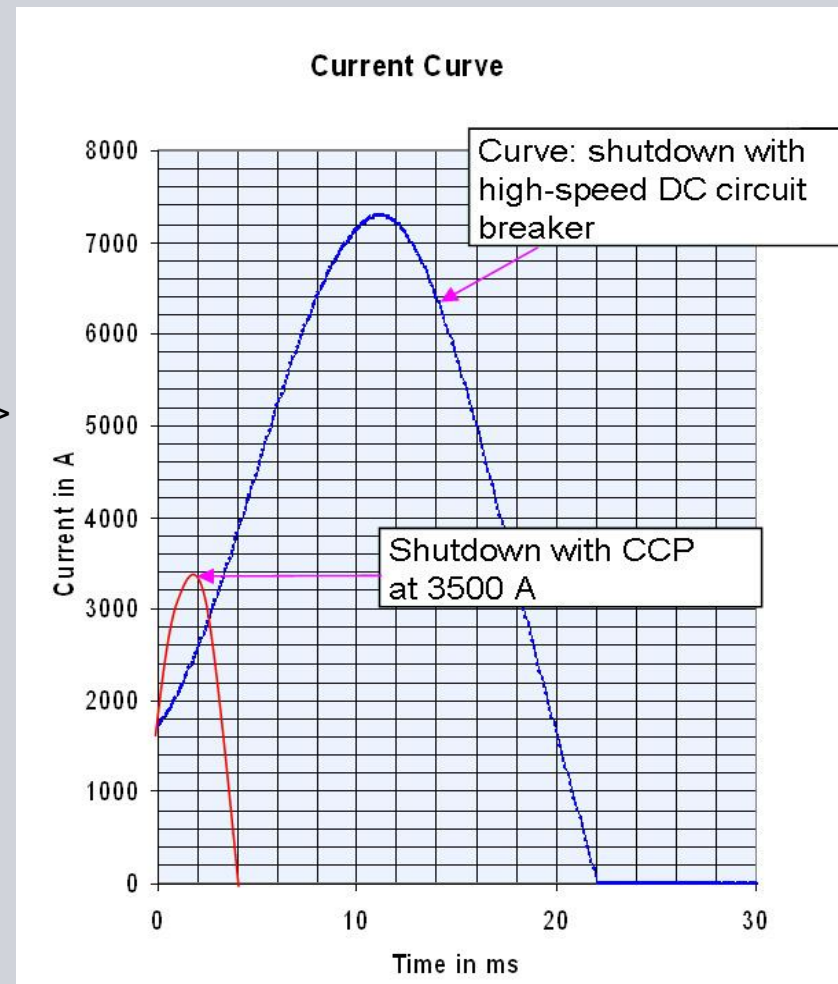
$\times 2.5 = 3500 \text{ A} =$

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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SIMOREG CCP – Converter Commutation Protector



Benefit

Applications

Mode of operation

Comparison with
conventional
solution

Type range

Application
example

Type range CCP

| Device | Rtd current | Rated voltage | Order no. |
|----------------------------|-------------|---------------|-----------------|
| SIMOREG CCP 600 A / 460 V | 600 A | 460 V | 6RA7085-6FC00-0 |
| SIMOREG CCP 1200 A / 460 V | 1200 A | 460 V | 6RA7091-6FC00-0 |
| SIMOREG CCP 1000 A / 690 V | 1000 A | 690 V | 6RA7090-6KC00-0 |
| SIMOREG CCP 2000 A / 460 V | 2000 A | 460 V | 6RA7095-6FC00-0 |
| SIMOREG CCP 2000 A / 690 V | 2000 A | 690 V | 6RA7095-6KC00-0 |

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.

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Benefit

Applications

Mode of operation

Comparison with
conventional
solution

Type range

**Application
example**

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.**