SIEMENS

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FAQ for 6SE70 Master Drives
Rectifying-regenerative feedback unit

Question:
How can I protect the device against shoot-through?

Answer:

Have you had enough of unplanned machine downtimes to replace fuses, and in the worst case to replace the power unit?

Siemens has the solution: the **OCP (Over Current Protector)**

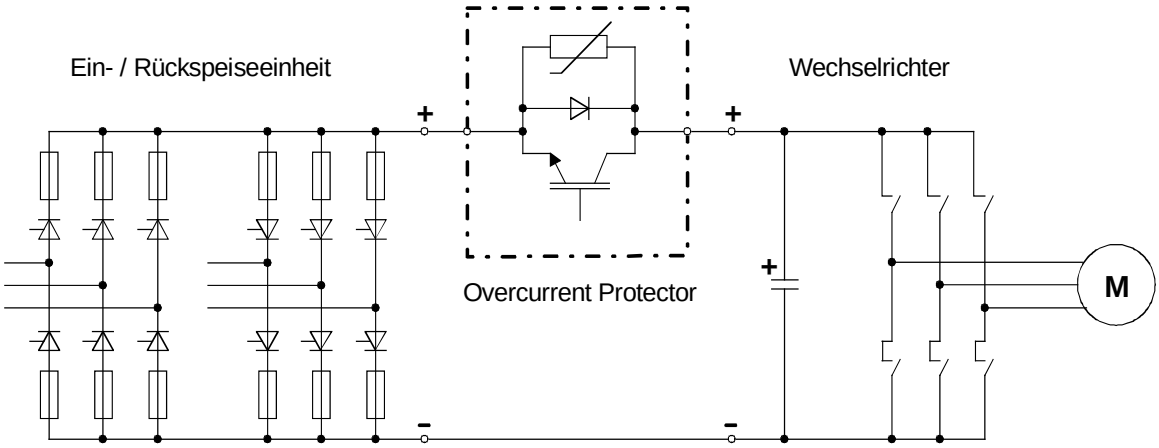
The OCP protects the line-commutated converter, the 6SE70 rectifying-regenerative feedback unit, against the effects of shoot-through, such as blown fuses and damage to the thyristors.

The current in the DC circuit is switched off by the OCP before it can reach a value that is impermissibly high for the device. (see Operating Instructions in the Annex).

If the rectifying-regenerative feedback unit is in regenerative feedback mode and a excessive line undervoltage (or a power failure) happens, shoot-through will occur and the current can no longer be commutated on the downstream valve; a high short-circuit current builds up. The physical effect of the shoot-through cannot be prevented by the OCP, however the consequences such as blown fuses and possible damage to the semiconductors can be reliably prevented.

This eliminates time-consuming changing of fuses or necessary repair of equipment, and the OCP pays for itself after just a few power failures by ensuring that the system is available again within a few seconds or minutes. This minimizes loss of production.

OCP type	R/R unit	R/R unit
6SE7041-0TS85-5JA0	6SE7038-2EH85-1AA0	
6SE7041-0TS85-5JA0	6SE7041-0EH85-1AA0	
6SE7041-8TS85-5JA0	6SE7041-3EK85-1AA0	
6SE7041-8TS85-5JA0	6SE7041-8EK85-1AA0	
6SE7041-0WS85-5JA0	6SE7037-7HH85-1AA0	6SE7037-7FH85-1AA0
6SE7041-0WS85-5JA0	6SE7041-0HH85-1AA0	6SE7041-0FH85-1AA0
6SE7042-0WS85-5JA0	6SE7041-3HK85-1AA0	6SE7041-3FK85-1AA0
6SE7042-0WS85-5JA0	6SE7041-5HK85-1AA0	6SE7041-5FK85-1AA0
6SE7042-0WS85-5JA0	6SE7041-8HK85-1AA0	6SE7041-8FK85-1AA0



OPC retrofit is also possible in existing systems; the OPC can be fitted on the top of the cabinet, for example.

See also catalog DA65.10, Chapter 3.

The following measures can be used to minimize shoot-through

1) Select a step ratio for the autotransformer > 1,2
2) For the given autotransformer step ratio (for example 1,2), reduce the Vd value (e. g. P318 = 90%, P571 = 1) although autotransformer is present
3) For operation without autotransformer, set the Vd reduction to more than the 80% factory setting (e. g. P318 = 70 %, P571 = 1).
4) Measures that prevent regenerative feedback when it is not absolutely necessary (for example, no-load operation or inverters disabled)
   Disable – regenerative feedback at the R/R unit (via STW1, Bit12, P572) if the inverter should currently not be feeding back regenerative energy.
   Set P317 = -1.5%
   Set P774 = -5.0%
   Set P797 = xx1x
5) Where expedient, apply strong filtering to the calculated load current (set P320 = 10 ms)
6) Reduce the dynamics of the speed and current controllers in the inverter