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## Multiple Backup Protection

Central backup protection and breaker failure protection with SIPROTEC 7SJ85

[www.siemens.com/siprotec](http://www.siemens.com/siprotec)

### Central backup protection and breaker failure protection as well as busbar protection for up to seven feeders

The SIPROTEC 7SJ85 overcurrent protection device is part of the SIPROTEC 5 series. Combined with the DIGSI 5 engineering software, the modular and flexible SIPROTEC 7SJ85 is perfectly suited for protection, control and monitoring tasks in electrical power systems.

As most devices of the SIPROTEC 5 family, SIPROTEC 7SJ85 allows detecting one or more current or voltage measuring points and defining multiple protection function groups. So each bay of the substation can be assigned a protection function group, in which the respective backup protection functions (directional overcurrent protection, breaker failure protection) are executed.

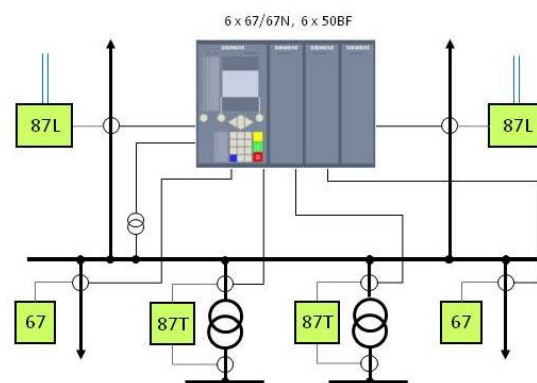
### The "multiple backup protection" application is ideally used in ring systems or meshed systems.

Power systems in which the tie lines between substations are covered by differential protection require a sophisticated backup protection scheme.

The clear spatial delimitation of the protected zones in case of differential protection devices frequently raises the question of the necessity of a separate backup protection device. Upstream protection devices can often assume backup protection functions, however to the disadvantage of trip time and/or selectivity.

### A central backup protection means hardware redundancy for all feeder protection devices

The central backup protection is a healthy compromise in terms of hardware redundancy and fully satisfies the backup protection scheme.



### Substation (busbar) protection scheme – reverse interlocking:

The SIPROTEC 7SJ85 can be configured to measure the currents of up to seven feeders in addition to the busbar voltage. It is parameterized to provide one protection function group with the required backup protection functions for each feeder. They are parameterized in the same way as for independent protection devices.

The directional pickup indications of the overcurrent protection allow setting up a simple busbar protection with reverse interlocking within 7SJ85. No ring feeders are needed in this configuration! The signal exchange of the "virtual" overcurrent protection devices is implemented internally by means of a configuration matrix and the CFC logic program.

# Modular and flexible

## Easily expandable by additional fields

The protection scheme and the device hardware are very easy to expand if necessary. This is accomplished by retrofitting expansion modules and activating additional protection function groups.



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