APPLICATION NOTE

Product redundancy – COMPACT range

Ensuring service continuity through the integrated backup controller

Note: Product redundancy is available on all controllers in the **COMPACT** range, except for the **BAT COMPACT.**

Document index	Comments	Update date	Author
Initial version of the document	-	04/2026	DS

Why redundancy?

In critical installations (hospitals, data centers, industrial sites, telecommunications), **a controller failure can lead to a total loss of the electrical power supply**. The consequences can be serious: production downtime, data loss, risks to people's safety.
To address this challenge, CRE Technology has developed a **product redundancy function** built into the controllers of the **COMPACT** range. This function makes it possible to deploy a backup controller (slave) that automatically takes over in the event of a failure of the main controller (master), thereby ensuring **uninterrupted service continuity**.

Operating principle

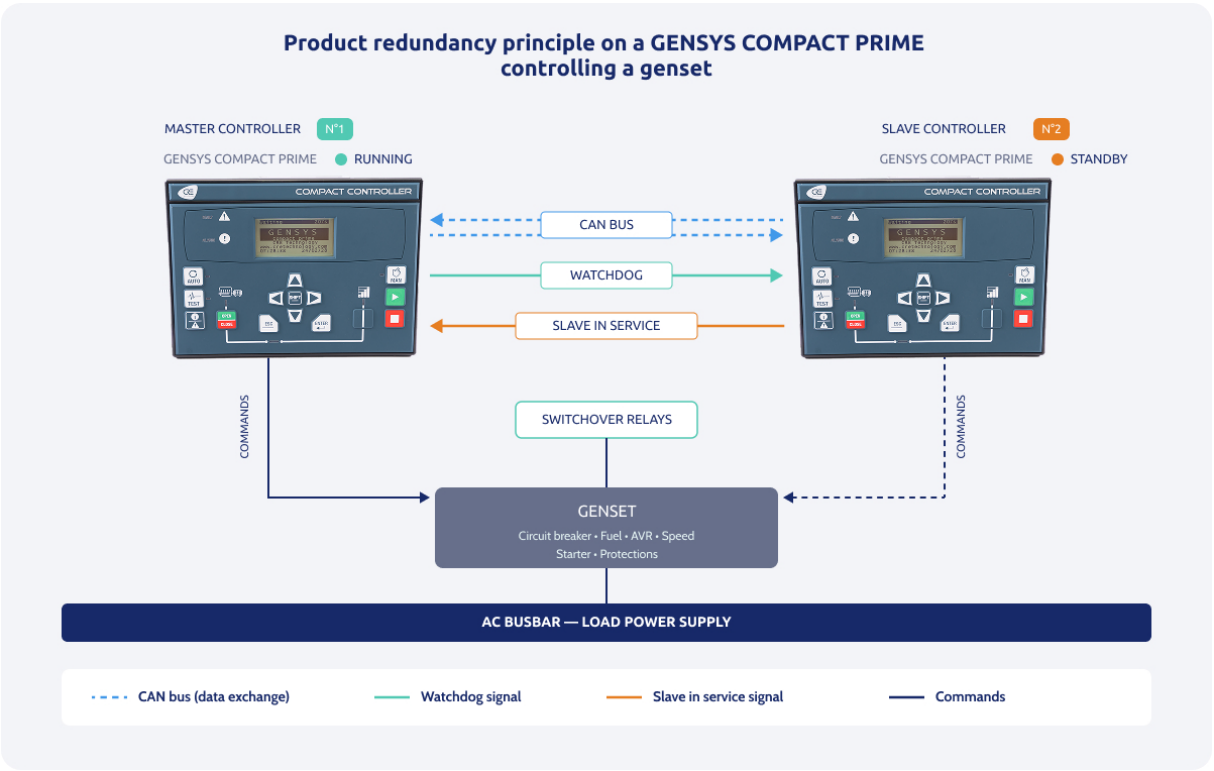
The principle relies on a **Master / Slave** architecture using two controllers from the COMPACT range:

MASTER controller (No. 1)	SLAVE controller (No. 2)
This is the **main controller** that operates the power plant on a daily basis. It manages the energy source, the circuit breakers, the protections and all the installation's commands. It continuously sends a "**Watchdog**" signal to the Slave to confirm that it is working properly.	This is the **backup controller**, on permanent standby. It continuously monitors the Master via the Watchdog signal and the CAN bus. If the Watchdog signal disappears (failure, software freeze, loss of power), the Slave immediately takes over control.

Redundancy architecture

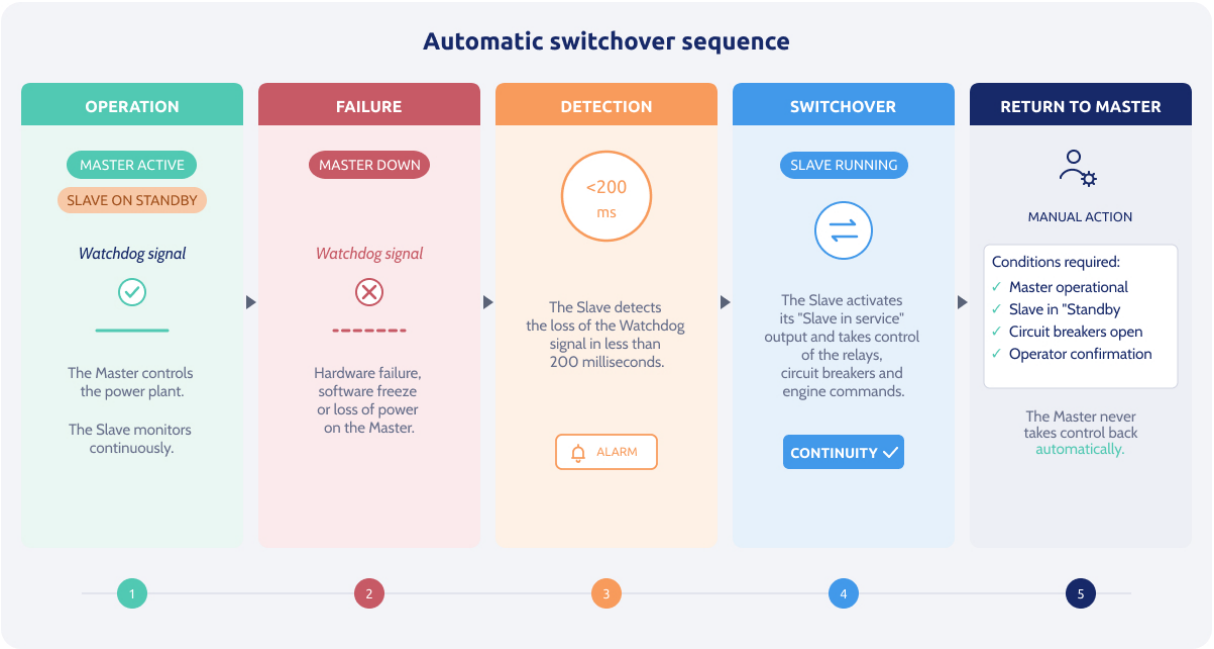
The diagram below shows the links between the Master controller, the Slave controller and the installation. Three types of connections enable redundancy to operate:

- **The CAN bus** enables real-time exchange of data and statuses between the two controllers.
- **The Watchdog signal** is a dedicated physical line: the Master sends a continuously active signal. If this signal drops to 0, the Slave knows that the Master has failed.
- **The "Slave in service" signal** informs the Master (and the installation) that the Slave has taken over. It also controls the switchover relays for the engine and circuit-breaker commands.



Switchover sequence

In the event of a Master failure, the switchover to the Slave takes place in 5 steps. The detection time is less than 200 ms, ensuring a near-instantaneous response.



Key points for implementation

- Both controllers must have strictly identical settings (with the exception of the redundancy settings).
- Each controller (master and slave) must have its own set of CTs for current measurement; the three-phase voltage measurement, on the other hand, is jumpered between the two controllers.
- The circuit breakers and the fuel/gas control must be in Pulse or self-holding mode for an uninterrupted switchover.

For the J1939 protocol, the ECU must tolerate a CAN signal loss of 200 ms maximum during the switchover.

130 Allée Charles Victor Naudin,
06410 Biot, France

info@cretechnology.com
+33 4 92 38 86 82
www.cretechnology.com