Parallel connection of SIMOREG DC MASTER converters

SIMOREG DC MASTER converters can be connected in parallel to increase their power output. The following boundary conditions must be met:

The terminal expansion option (CUD2) is required for each converter in the case of parallel connection. The terminal expansion contains the hardware and plug-in connectors required for transferring the firing pulses and the higher-level communication.

Up to 6 converters can be connected in parallel.
When several converters are connected in parallel, the master unit must be located in the middle to reduce signal runtime. The maximum cable length for the parallel interface cable between the master and slave units at one end of the bus is 15 m.

Separate commutating reactors (u_k min. 2 %) for the SIMOREG converters are needed for correct current distribution. The difference in tolerance between the reactors determines the current distribution. To avoid derating, a tolerance of 5 % or more is recommended.

Important

Only converters with the same DC current rating may be connected in parallel!

Permissible output current for parallel connection on compliance with the boundary conditions:

$$I_{max} = n \times I_{N(SIMOREG)}$$

n = number of SIMOREG units

Redundancy mode ("n+1 duty")

Redundancy mode can be implemented as a special duty type for parallel connection of the SIMOREG DC MASTER converters. In this mode, if one converter fails (e.g. due to fuse rupture in the power section), operation can be maintained by means of the remaining SIMOREG units.

The fully functional SIMOREG units continue to operate without interruption when one unit has failed. At the planning stage, it must be ensured that the power output from only n units (instead of n+1 units) must be sufficient for the application.

This mode is possible in the event of slave unit failure as well as master unit failure.

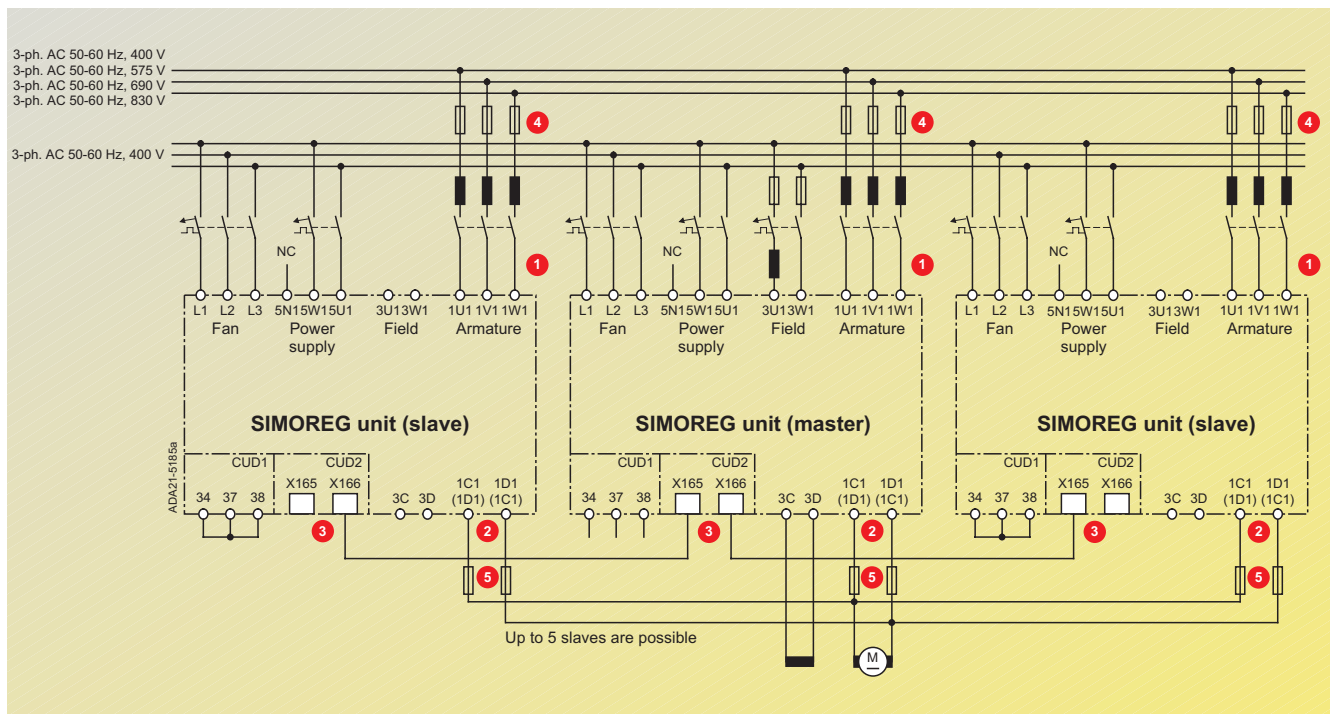## Diagram showing the terminal connections for the parallel connection of SIMOREG units

Fig. 5/37
Terminal connections for parallel connection

❶ It is essential that 1U1, 1V1 and 1W1 are in-phase.

❷ It is essential that 1C1 and 1D1 are in-phase.

❸ The units are interconnected using (8-core) shielded patch cable UTP CAT5 acc. to ANSI/ EIA/TIA 568 as used in PC network technology. A standard cable of 5 m in length can be ordered directly from Siemens

(Order No.: 6RY1707-0AA08).
To connect n units in parallel, (n-1) cables will be required.
When a unit is connected to the start or end of the bus, the bus termination must be activated (U805=1).

❹ These fuses are only to be inserted for units up to 850 A.

❺ Only for units up to 850 A in 4Q mode.