

■ Connecting more than one motor

When connecting more than one motor to a VLT, the question rises? How shall I protect the motors and cables against overload?

A common practice is to mount a MCCB (moulded case circuit breaker) in front of each motor. It is however not a reliable solution. The MCCB can be overheated by the high harmonics in the PWM switch pattern. Therefore there are no manufactures of MCCB's who will support this type of application. A simple and cheap solution is to use a Thermal overload relays like T1 X (Danfoss) or motor starter as CI+T1 or CIM XX (Danfoss).

Fig. 1 is an application with two motors, protected with T1 X overload relays. It works in the following way:

When one of the overload relays F2 or F3 opens, the VLT stops. Both the overload relay and the VLT offer many possibilities for stop and restart, this is not a subject in this note. If it is inconvenient that all the motors are stopped, when one is overloaded, a motor starter is an alternative solution.

The cable squares can be selected after the following rules:

Cable "a" is short circuit and overload protected by F1.

Cable "b" is short circuit and overload protected by the VLT. The cable is to be expected to be loaded with the maximal continuous output current from the VLT or the sum of the setting of F2 and F3. A good hint is to use the same square as "a".

Cable "c" is overload protected by F2 or F3. The VLT and F1 are the short circuit protection.

Please remember that the leads between terminal 12, 27, 98 and 95 are on PELV level. For EMC/I they must be in a separate cable or conduit.

In applications where cable "b" is less than 20 m and cable "c" is more than 20 m, the setting of F2 and F3 has to be increased with 0,5 A. The reason is, that the capacitive current is flowing, which increases the current through F2 and F3 with 0,5 A.

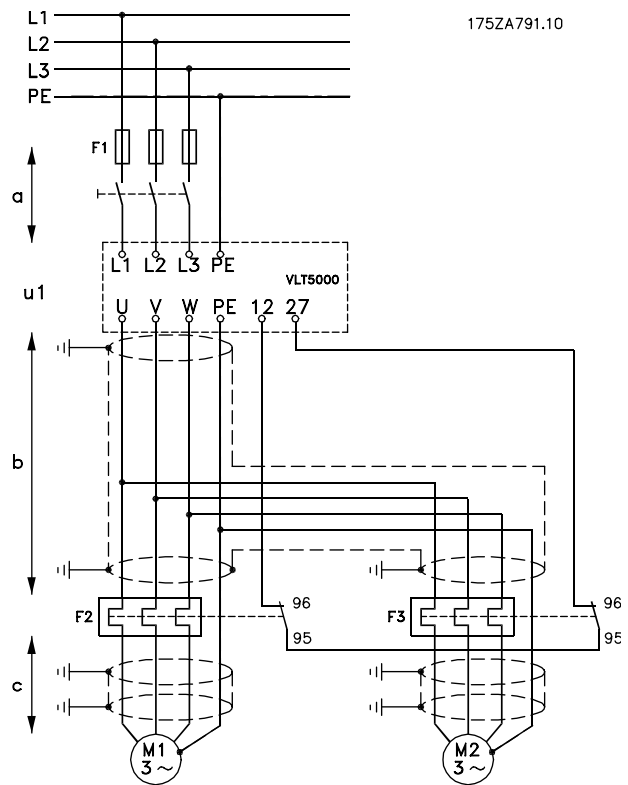


Fig. 1