Safety

All operations must be carried out by appropriately trained personnel.

Use all lifting facilities provided e.g. both lifting points, if fitted, or single lifting point, if fitted*.

Vertical lifting - Prevent uncontrolled rotation.

Lift machine - Do not lift other equipment with motor lifting points only.

Before installation check for fan cover damage, shaft damage, foot/mounting damage, and loose fasteners. Check nameplate details.

Ensure level mounting surface, balanced mounting, not misaligned.

Gaskets, and/or sealants, and guards must be correctly fitted.

Correct belt tension.

Please observe derating rules, see Design Guide

*Note: maximum hand lift is 20 kg below shoulder, but above ground level.

Max. weights:

- Frame size 80: 15 kg
- Frame size 90 & 100: 30 kg
- Frame size 112: 65 kg

The voltage on the FC motor is dangerous when the motor is connected to mains. Incorrect installation of the FC motor may lead to material damage or serious injury or it may be fatal.

Consequently, the instructions in this Quick Setup as well as national and local rules and safety regulations must be complied with.

Touching the electrical parts may be fatal, even after the mains supply has been disconnected. Wait at least 4 minutes.

- Installation must be fused and isolated correctly.

- Covers and cable entries must be fitted

NB!

It is the user's or certified electrician's responsibility to ensure correct earthing and protection in accordance with applicable national and local requirements and standards.

Safety regulations

1. The FC motor must be disconnected from mains if repair work is to be carried out. Check that the mains supply has been disconnected and that the necessary time has passed (4 minutes).

2. Correct protective earthing of the equipment must be established, the user must be protected against supply voltage, and the motor must be protected against overload in accordance with applicable national and local regulations.

   RCD's (ELCB relays), multiple protective earthing or earthing can be used as extra protection, provided that local safety regulations are complied with.

   In case of an earth fault, a DC content may develop in the fault current.

   If RCD's are used, local regulations must be observed. Relays must be suitable for protection of 3-phase equipment with a bridge rectifier and for a brief discharge on power-up.

3. The earth leakage currents are higher than 3.5 mA (approx. 7 mA). This means that the FC motor requires a fixed, permanent installation as well as reinforced protective earthing.

Warning against unintended start

1. The motor can be brought to a stop by means of digital commands, bus commands, or references, while the FC motor is connected to mains.
   If personal safety considerations make it necessary to ensure that no unintended start occurs, these stop functions are not sufficient.

2. While parameters are being changed, the motor may start.

3. A motor that has been stopped may start if faults occur in the electronics of the FC motor, or if a temporary overload or a fault in the supply mains or the motor connection ceases.

■ What if the motor does not start?

- Make sure no parameters have been changed from initial delivery status (factory setting). Use the Local Control Panel or serial port to reset to factory setting.
- Make sure no STOP command have been issued by the optional control panel keyboard (local stop) Control Panel STOP can only be restarted by the Control Panel START button.
- Remove lid to check the Light Emitting Diodes visible through a hole in the inside isolation cover (See the drawing), follow table below.

Warning:
Extreme care must be taken when operating the unit with open lid.

Green LED 302	Yellow LED 301	Red LED 300	Action
OFF	OFF	OFF	Apply power (see point ❷)
ON	OFF	OFF	Apply **start and reference** signals , (see figure 1 and point ❸)
ON	OFF	ON	Apply **reset** signal according to figure 1.
ON	ON	ON	Switch off power until all LED's have turned off. After power on reset signal is required.

For further information see the design guide and/or PROFIBUS manual.

VLT® DriveMotor FCM 300 Quick Setup

This Quick Setup gives information on safety and helps you to get your FCM 300 Series motors installed and running in factory setting, see fig. 1. For additional information, please see the Design Guide.

Before you start, please read the safety instructions on the back of this Quick Setup.

Tools for installation

1 cross-point screwdriver
1 large screwdriver
1 small screwdriver
Min. 2 glands:

Gland sizes

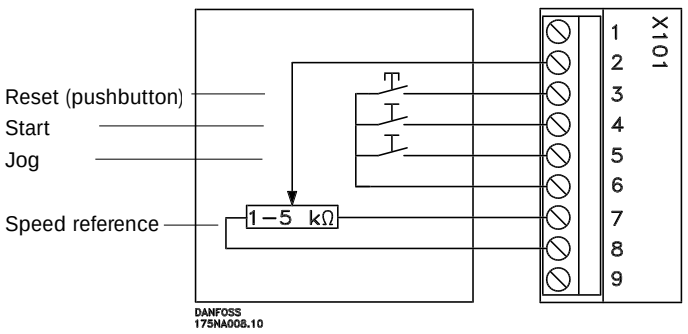
FCM 305-330	3X PG16
FCM 340-375	1X PG21, 2X PG16

1 mains cable
1 control cable

Max. cable cross section

Mains supply cable	4.0 mm²/10 AWG
Control cable	1.5 mm²/16 AWG
Serial communication cable	1.5 mm²/16 AWG

Factory setting



- *Reset* to be closed short time for resetting fault trips
- *Start* to be closed for changing to *run mode*
- *Jog* will run at fixed speed while closed (10 Hz)
- *Speed reference* (0-10 V) determines speed while in *run mode*

Terminals

1: Analogue input
2: Analogue input
3: Digital input
4: Digital input
5: Digital input
6: 24 V DC supply
7: 10 V DC supply
8: 0 V
9: Output

Fig. 1

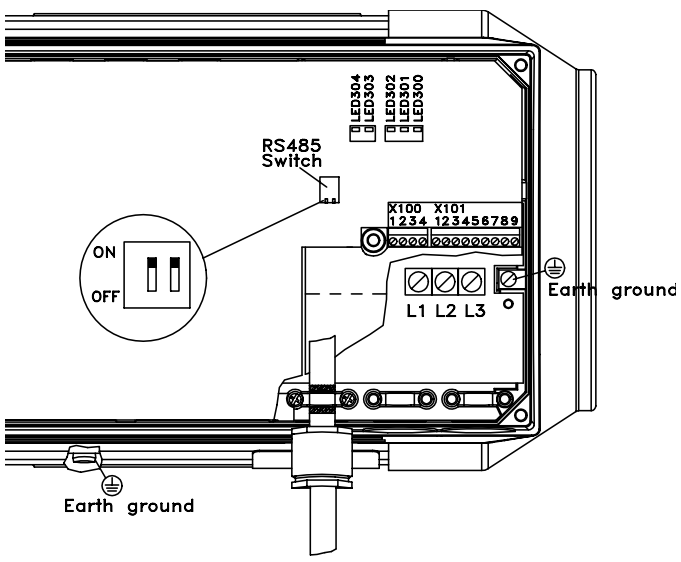


Fig. 2 The control cables must be screened cables.

X100: Terminal block for data communication

Terminal No.	Function	
1	P RS 485	for connection to
2	N RS 485	bus or PC
3	5 V DC	Supply for RS 485 bus
4	0 V DC	

Table A

X101: Terminal block for analog/digital control signals

Terminal No.	Function	Example
1	Analog input (0-20 mA)	Feedback signal
2	Analog (0-10 V)/digital input 2	Speed reference
3	Digital input (or pulse) 3	Reset
4	Digital input (or precise stop) 4	Start
5	Digital input (other) 5	Jog (fixed speed)
6	24 V DC supply for digital inputs (max. 50 mA)	
7	10 V DC supply for potentiometer (max. 15 mA)	
8	0 V for terminals 1-7 and 9	
9	Analog (0-20 mA)/digital output	Fault indication

Table B

❶ Mechanical installation

Install the FC motor with adequate access for routine maintenance. Adequate space, particularly at the fan inlet (50 mm), is necessary to facilitate airflow.

Where several FC motors are installed in close proximity, care must be taken to ensure that there is no recirculation of exhausted warm air.

NB!

Ambient temperature
To avoid the FC part getting overheated, the ambient temperature is not to exceed 40 °C and the 24-hour average temperature is not to exceed 35 °C. If the ambient temperature is in the range of 40 °C - 55 °C, a reduction of the service life of the FC part is to be expected. For further information, please see the section on derating in the Design Guide.

NB!

Bearings
Ball and roller bearings are despatched from the works fully charged with grease. Shielded bearings have sufficient grease for an operating life of at least two years in normal ambient temperatures, providing there is little or no leakage.

Tapping of fitments onto the motor shaft, with a hammer or mallet, causes bearing damage. This results in increased bearing noise and a significant reduction in bearing life.

❷ Electrical connections

Remove the inverter box cover, which is held by four screws, to obtain access to the terminals.

Remove the detachable terminal plugs from the terminal blocks X100 and X101 to obtain access to the mains terminals.

Lift only the corner of the black plastic cover by the cable entries to expose the mains terminals L_1, L_2 and L_3 (see fig. 2).

NB!

Do not lift or remove the entire plastic cover. The voltage on the FC motor is dangerous and may lead to material damage, serious injury or it may be fatal.

NB!

Mains terminals L_1, L_2 and L_3:
Make sure that your mains supply corresponds to the voltage required by the FC motor (see inverter label), TT and NT mains .

Connect the three mains phases to terminals L_1, L_2 and L_3 and the earth to the separate terminal provided.

Tightening Torques

L1, L2, L3	FCM 305-340	0,5-0,6 Nm
L1, L2, L3	FCM 355-375	1,2-1,5 Nm
Earth ground	FCM 305-375	3,4 Nm

NB!

You cannot change the rotation direction of the motor by shifting around the phases. The direction of rotation is clockwise by default. Another direction of rotation can be programmed, see the Design Guide.

Prefuses Max.

UL[1]	
FCM 305-322	10A
FCM 330-340	15A
FCM 355-375	25A
IEC[1]	
FCM 305-375	25A

[1] Type gG prefuses must be used. If you want to maintain UL/cUL you must use prefuses of the type Bussmann KTS-R 500 V or Ferraz Shawmut, type ATMR (max. 30A). The fuses must be placed for protection in a circuit that is capable of supplying a maximum of 100,000 amps RMS (symmetrical), 500 V maximum.

Control terminals

For information on terminal blocks X100 and X101, please see table A and B.

RS 485 switch

For terminating an RS 485 interface serial communication, the bus must be terminated by a resistor network at both ends. This is provided by setting both switches to ON.

LEDs

The FC motor has five LEDs which indicate the status of the FC motor:

LED 300 (red):	Fault trip
LED 301 (yellow):	Warning
LED 302 (green):	Power on
LED 303-304 (green):	Communication

EMC-correct installation

The control cables must be screened cables to ensure EMC-correct electrical installation.

Connect the screen to earth at both ends.

Avoid installation with twisted screen ends (pigtails), since this ruins the screening effect at high frequencies. Use cable clamps instead.

❸ Start the FC motor

Connect mains. LED 302 (green) lights up to indicate that the power is on. In Profibus versions, LED 303 will flash. For further information on Profibus, please see the Profibus manual.

Connect terminal 4 and 6 to the start button (see fig. 1).

Connect terminal 2, 7 and 8 to the potentiometer (see fig. 1).

Use the start button to start the FC motor and adjust the speed by means of the potentiometer.

The voltage on the FC motor is dangerous when the motor is connected to mains. Incorrect installation of the FC motor may lead to material damage or serious injury or it may be fatal.

❹

Mount the inverter box cover.

Fastening torque: 2.2 - 2.4 Nm