

# Danfoss VLT MicroDrive FC 51

480V VFD 0.5 HP



**New Danfoss 480VAC VFD option for Marksman, so all AC Voltages will be that of 480VAC systems for this VFD.**

**This model can create the third phase from single phase, but it cannot increase the voltage. It will also shorten the life of a VFD to have to create a phase without making the drive larger (2X)**

# Danfoss VLT Micro Drive FC 51 Settings

Settings Changed from Default

Setting	Parameter Number	Value	Explanation
Region Setting	0-03	1	Region = US
Max Reference	3-03	65.0	Maximum Reference
Acceleration Time	3-41	0.05	The time to ramp from 0 to 100% speed
Deceleration Time	3-42	0.05	The time to ramp from 100 to 0% speed
Motor Speed High Limit	4-14	70	High Frequency motor cut off
Low Current Setting	6-12	4	Set low current to 4mA
High Reference	6-15	65	High Analog Reference
Terminal 53 Mode	6-19	1	Use 4-20mA Input for speed command

Settings that can be changed for specific situations, but are not going to be default settings

Setting	Parameter Number	Value	Explanation
Restart Mode			No Parameter needed on Danfoss, the drive handles this correctly out of box

# Changing Settings on Danfoss Micro Drive FC 51

## 3.4 Main Menu

The Main Menu gives access to all parameters.

1. To enter the Main Menu, press [Menu] key until indicator in display is placed above *Main Menu*.
2. Press [▲] [▼] to browse through the parameter groups.
3. Press [OK] to select a parameter group.
4. Press [▲] [▼] to browse through the parameters in the specific group.
5. Press [OK] to select the parameter.
6. Press [▲] [▼] to set/change the parameter value.
7. Press [OK] to accept the value.
8. To exit, press either [Back] twice to enter *Quick Menu*, or press [Menu] once to enter *Status*.



Illustration 3.10 Indicating Main Menu Mode

### 3 Programming

#### 3

#### 3.1 How to Programme

##### 3.1.1 Programming with MCT 10 Set-up Software

The frequency converter can be programmed from a PC via RS485 com-port by installing the MCT 10 Set-up Software.

This software can either be ordered using code number 130B1000 or downloaded from the Danfoss Web site: [www.danfoss.com/BusinessAreas/DrivesSolutions/software-download](http://www.danfoss.com/BusinessAreas/DrivesSolutions/software-download)

Refer to VLT® Motion Control Tools MCT 10 Set-up Software, Operating Instructions.

##### 3.1.2 Programming with the LCP 11 or LCP 12

The LCP is divided into four functional groups:

1. Numeric display.
2. Menu key.
3. Navigation keys.
4. Operation keys and indicator lights (LEDs).

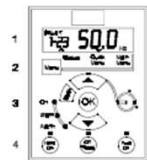


Illustration 3.1 LCP 12 with Potentiometer

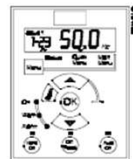


Illustration 3.2 LCP 11 without Potentiometer

#### The display

Different information can be read from the display.

Set-up number shows the active set-up and the edit set-up. If the same set-up acts as both active and edit set-up, only that set-up number is shown (factory setting). When active and edit set-up differ, both numbers are shown in the display (Set-up 12). The number flashing, indicates the edit set-up.



Illustration 3.3 Indicating Set-up

The small digits to the left are the selected parameter number.



Illustration 3.4 Indicating Selected Parameter Number

The large digits in the middle of the display show the value of the selected parameter.



Illustration 3.5 Indicating Value of Selected Parameter

The right side of the display shows the unit of the selected parameter. This can be either Hz, A, V, kW, hp, %, s or RPM.

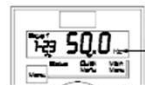


Illustration 3.6 Indicating Unit of Selected Parameter

# Danfoss Micro Drive FC 51 Fault Codes

## 6 Troubleshooting

### 6.1 Warnings and Alarms

A warning or an alarm is signalled by the relevant LED on the front of the frequency converter and indicated by a code on the display.

A warning remains active until its cause is no longer present. Under certain circumstances operation of the motor may still be continued. Warning messages may be critical, but are not necessarily so.

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In the event of an alarm, the frequency converter will have tripped. Alarms must be reset to restart operation once their cause has been rectified.

This may be done in 4 ways:

1. By pressing [Reset].
2. Via a digital input with the "Reset" function.
3. Via serial communication.

#### **NOTICE**

After a manual reset press [Reset], [Auto On] or [Hand On] to restart the motor.

If an alarm cannot be reset, the reason may be that its cause has not been rectified, or the alarm is trip-locked (see also *Table 6.1*).

Alarms that are trip-locked offer additional protection, means that the mains supply must be switched off before the alarm can be reset. After being switched back on, the frequency converter is no longer blocked and may be reset as described above once the cause has been rectified. Alarms that are not trip-locked can also be reset using the automatic reset function in *14-20 Reset Mode* (Warning: automatic wake-up is possible!)

If a warning and alarm is marked against a code in the *Table 6.1*, this means that either a warning occurs before an alarm, or it can be specified whether it is a warning or an alarm that is to be displayed for a given fault. This is possible, for instance, in *1-90 Motor Thermal Protection*. After an alarm or trip, the motor carries on coasting, and the alarm and warning flash on the frequency converter. Once the problem has been rectified, only the alarm continues flashing.

After a manual reset press [Reset], [Auto On] or [Hand On] to restart the motor.

No.	Description	Warning	Alarm	Trip Lock	Error	Parameter Reference
2	Live zero error	(X)	(X)			6-01
4	Mains phase loss	(X)	(X)	(X)		14-12
7	DC over voltage	X	X			
8	DC under voltage	X	X			
9	Inverter overloaded	X	X			
10	Motor ETR over temperature	(X)	(X)			1-90
11	Motor thermistor over temperature	(X)	(X)			1-90
12	Torque limit	(X)				4-16, 4-17
13	Over Current	X	X	X		
14	Earth fault	X	X	X		
16	Short Circuit		X	X		
17	Control word timeout	(X)	(X)			8-04
25	Brake resistor short-circuited		X	X		
27	Brake chopper short-circuited		X	X		
28	Brake Check		X			
29	Power board over temp	X	X	X		
30	Motor phase U missing		(X)	(X)		4-58
31	Motor phase V missing		(X)	(X)		4-58
32	Motor phase W missing		(X)	(X)		4-58
38	Internal fault		X	X		
44	Earth fault 2		X	X		
47	Control Voltage Fault		X	X		
51	AMT check $U_{nom}$ and $I_{nom}$		X			
52	AMT low $I_{nom}$		X			
53	AMT motor too big		X			



Troubleshooting

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No.	Description	Warning	Alarm	Trip Lock	Error	Parameter Reference
54	AMT motor too small		X			
55	AMT Parameter out of range		X			
59	Current limit	X				
63	Mechanical Brake Low		X			
80	Drive Initialized to Default Value		X			
84	The connection between drive and LCP is lost				X	
85	Button disabled				X	
86	Copy fail				X	
87	LCP data invalid				X	
88	LCP data not compatible				X	
89	Parameter read only				X	
90	Parameter database busy				X	
91	Parameter value is not valid in this mode				X	
92	Parameter value exceeds the min/max limits				X	

Table 6.1 Alarm/Warning Code List

00 Dependent on parameter

A trip is the action when an alarm has appeared. The trip will coast the motor and can be reset by pressing [Reset] or make a reset by a digital input (parameter group 5-1\* [1]). The original event that caused an alarm cannot damage the frequency converter or cause dangerous conditions. A trip lock is an action when an alarm occurs, which may cause damage to frequency converter or connected parts. A trip lock situation can only be reset by a power cycling.

Warning	yellow
Alarm	flashing red

Table 6.2 LED Indication

The alarm words, warning words and extended status words can be read out via serial bus or optional fieldbus for diagnosis. See also 16-90 Alarm Word, 16-92 Warning Word and 16-94 Ext. Status Word.