# SIEMENS

MICROMASTER Drives 6SE92

Getting Started

Caution: Before installing and putting this equipment into operation, please read the Operating Instructions Manual for Safety Precautions and Warnings

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SIEMENS MICROMASTER ....

The MICROMASTER products are a range of frequency inverters for controlling the speed of three phase AC induction motors

Step 1   Connecting up the MICROMASTER

230V Single Phase	400V Three Phase
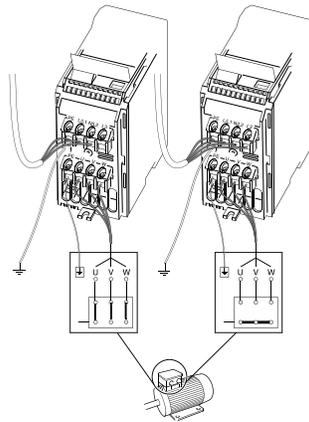
Delta connection for 230V 3 phase	Star connection for 400V 3 phase

Note: Motors above 11kW are usually configured 400V Delta / 690V Star.
In this case the motor should be connected in Delta.

Step 2   Getting the motor going

Press this green button (RUN button) to start the motor.

Forward/ reverse

This is the 'STOP' button

While the motor is turning, press this 'STOP' button and watch as the motor turns faster and the value in the display increases. It will keep increasing until it reaches 50Hz

When the inverter reaches 50Hz output, press this 'DOWN' button and watch the motor speed and display value decrease.

At any time, press the 'STOP' button and watch the motor stop.

Step 3   Changing the speed of the motor

The default output frequency of the drive is 5Hz (see **Hints and Tips** to convert this to RPM). This speed will probably be too low for most applications and a speed change may be required. The following steps will allow you to change the preset value of the inverter output to the required speed.

Step / Action	Display
Press the 'P' button to access the parameter settings.	P000
Press the ▲ button 5 times until the display reads P005.	P005
Press the 'P' button to display the current parameter value.	005.0
Press the ▲ button to change the value to 35Hz. (This number can be any number between 0 and 50Hz - default.)	035.0
Press the 'P' button to store the new value.	P005
Press the ▼ button until the display reads P000.	P000
Press the 'P' button to exit the parameterisation procedure. The display will alternate between the output frequency and the frequency set point.	000.0 035.0

The required speed has now been stored.

This method is used to access all parameters.

The drive can now be started by pressing the '**RUN**' button. It will ramp up to the frequency held in parameter **P005** and remain there. To stop the drive press the '**STOP**' button, the drive will then ramp down to 0Hz output.

Default Parameters:

Digital input	Terminal	Parameter	Default
1	5	P051 = 1	ON right
2	6	P052 = 2	ON left
3	7	P053 = 6	Fixed Frequency
Output Relay 1	10/11	P061 = 6	Fault Identification

Fault Codes:

F001	Overvoltage
F002	Overcurrent
F003	Overload
F005	Inverter overtemperature (internal PTC)
F074	Motor overtemperature by I^2t calculation
Other faults, see manual	

For further Technical Support Information, and to submit your suggestions for improvements, see our Web Site:

http://www.con.siemens.co.uk

Step 4 Controlling the motor speed with a potentiometer

A potentiometer can be used to control the running speed of the inverter. This is achieved by varying the voltage applied to the analogue input. Connect the potentiometer to the control terminals shown below. Starting and stopping of the motor may be achieved by connecting a switch to the digital input terminals shown.

The following parameter settings are required

P006 Set to 1 to allow analogue input
P007 Set to 0 to enable control via digital input

+10V 0V AIN+ AIN- DIN 1 DIN 2 DIN 3 +15V 0V RL1B RL1C

1 2 3 4 5 6 7 8 9 10 11

Start/Stop
Speed control potentiometer
Turn clockwise to increase frequency
Turn anti-clockwise to decrease frequency

$4.7k\Omega - 10k\Omega$
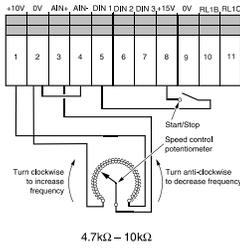
Telling the drive about your motor

To get the best performance from your drive, you should enter information from your motor ratings plate into certain parameters. The following diagram indicates the location of the information and the parameters which should be entered.

Commissioning MICROMASTER Basic

Display parameters	Basic parameters
Select display via P001	**Ramp-up time P002** 0-650 sec.
Display frequency, motor current and motor speed: P001 0 = output frequency 1 = frequency setpoint 2 = motor current 5 = Motor speed (RPM)	**Ramp-down time P003** 0-650 sec.
	Frequency setpoint P006 0 = digital 1 = analog 2 = fixed frequency
	Keypad control P007 0 = disable 1 = enable
	Parameter protection P009 0 = only P001-P009 can be altered 2, 3 = all can be altered.

P081   P084

3, Mot   1LA7053-2AA10
IEC 56   Nr. ED510 3053   12 022
IM B3   IP54   Rot KL 16   I.Cl.F
50Hz   230/400V Δ/Y   60Hz   440V Y
0.61/0.35A   0.34A
0.12kW   0.14kW
Cos φ0.81   Cos φ0.81
2800 /min   3360 /min
VDE 0530   S.F. – 1.15

P083 P082 P085

Motor parameters	Frequently used parameters
Nominal rating plate frequency for motor P081 0-400Hz	**Minimum motor frequency P012** 0-400Hz.
Nominal rating plate speed for motor P082 0-9999 RPM	**Maximum motor frequency P013** 0-400Hz
Nominal rating plate current for motor P083 0.1-99.9A	**Automatic restart after mains failure P015** 0 = disable 1 = enable
Nominal rating plate voltage for motor P084 0-1000V	**Start on the fly P016** 0 = disable 2 = enable
Nominal rating plate power for motor P085 0-100kW	**Analogue input P023** 0 = 0-10V 1 = 2-10V
Motor current limit P086 0-250%	**Fixed frequency operation P041-048** 0-400Hz
	Input terminal function P051-053
	Selection relay output P061
	DC injection braking P073 0-150%
	Pulse frequency P076 See Operator Manual
	Control mode P077 See Operator Manual
	Continuous boost P078 0-250%
	See Operator Manual for other parameters

Hints and Tips

- The direction of rotation of the motor can be reversed during commissioning by changing over two of the output connections on the inverter, or by pressing the Forward/Reverse button.

- Parameters **P000** to **P009** can always be read or set. Access to all other parameters is controlled by the contents of **P009**. The factory default value is '0' which only allows access to **P000** to **P009**. Changing its value to '3' allows all parameters to be accessed permanently. See Operator Manual for the function of other values of **P009**.

- In case there are problems with the parameter settings and wish to start again, change **P944** to '1'. This will perform a reset to the default values.

- The value displayed in **P000** is the output frequency of the inverter, this is the default setting but it can be changed by altering the value in **P001**. For example, changing **P001** to a value of '5' will cause the inverter to display the RPM of the motor in **P000**. See the Operator Manual for other settings of **P001**.

- The default value (0) of parameter **P006** ensures that the drive runs at the frequency set in **P005**. In order to control the output frequency by an analogue input signal, the value of **P006** should be set to '1'. For other methods of control using **P006**, see the Operator Manual.

- An **F002** fault is often caused by either too short a ramp up time or too much voltage boost. An increase in the value in **P002** will increase the ramp time. Alternatively lower the values in **P078** and **P079** to reduce the voltage boost. Please note that if **P078** falls below '100' (default value) then the motor may under-perform at low frequencies.

- An **F001** fault is often caused by attempting to stop the motor too quickly increasing the value in **P003** (ramp-down time) will reduce this possibility.

- If the display flashes during operation, the drive is registering a warning. Check **P931** for the cause.