Step by Step installation guidelines

MICROMASTER 4

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Question

Is there a detailed step by step guide to commissioning my MM4 inverter?

Answer

The instructions and notes listed in this document provide a detailed answer to this question.

Table of content

1 Step by Step commissioning guidelines

In addition to the Getting Started Guide which contains descriptions of the parameters required for Quick Commissioning, the following steps should help set up an inverter from scratch:

NOTE IF the drive has been previously configured skip to step 3 below:

1.1 Step 1: Set DIP switch for 50/60 Hz

MM420 = DIP switch is next to the terminal block.

DIP switch 2 OFF = 50hz, ON = 60 Hz.

MM440 = DIP switch is located beneath the I/O (terminal) card. This card must be removed to expose the DIP switch bank for setting 50/60 Hz.

DIP switch 2 OFF = 50 Hz, ON = 60 Hz.

(On MM440 the switch located next to the terminal block is used for setting up analog inputs for 0 to 10 volts or 0 to 20 mA)

Further information on this topic:

“Are there differences when making the 50 / 60Hz changeover for MICROMASTER 4 and SINAMICS G120?” 23995735

1.2 Step 2: Default the drive to factory settings after setting 50/60 Hz switch

Set the following parameters to reset unit to factory settings ...

P0010 = 30

P0970 = 1

… will receive a message that drive is BUSY – When complete message will go away.

1.3 Step 3: Set access level of parameters

Typically will set P0003 = 2, Extended:

1.4 Step 4: Take Drive to Quick Commissioning Mode

Set the following parameter:

P0010 = 1

1.5 Step 5: Setup in Quick Commissioning Mode

Below is a list of the parameters that you will set in Quick Commissioning.

P0100 = 1 Will be default to 1 for 60 Hz

Will be default to 0 for 50 Hz

Should not have to change this parameter, should be set dependant on DIP switch setting. If not correct will need to start over at Step 1.

P0300 = 1 = Asynchronous rotational motor

2 = Synchronous rotational motor

This will default to 1 and is typical setting

The following parameters should be set from the Motor Plate: (P0304 – P0311)

P0304 = Rated motor voltage [Volts]

P0305 = Rated motor current [Amps]

P0307 = Rated motor power [Hp or kW]

P100 = 1 Hp rating

P100 = 0 kW rating

P0309 = Rated motor efficiency [%]

Setting 0 causes the drive to calculate a value – Strongly recommend using the rating from the motor plate, problems have been seen when you let the drive calculate a value.

P0310 = Rated motor frequency [Hz]

P0311 = Rated motor speed [RPM]

P0335 = Motor cooling

Generally will be 0

0 – Self cooled

1 – Force cooled

2 – Self-cooled and internal fan

3 – Force cooled and internal fan

P0640 = Motor overload factor [%]

Default is 150%, generally this is good for initial setting, may have to adjust at later time.

P0700 = Selection of Command Source

Recommend initial setting of 1 if using BOP (This is to allow easy control of Stator calculation, plus good idea to test drive with motor before bringing other factors into the equation. Can change to correct setting for application later.)

1 – BOP

2 – Terminal (digital inputs)

4 – USS on BOP link (Setting for AOP control or PC Inverter installed)

5 – USS on COM link (485 connection on terminal block)

6 – CB on COM link (Profibus module installed)

P1000 = Selection of frequency setpoint

Recommend initial setting of 1 if using BOP (This is to test the drive with the motor before bringing other factors into the equation. Can change to correct setting for application later.)

1 – MOP Setpoint (BOP & AOP Setting)

2 – Analog Setpoint 1

3 – Fixed Frequency

4 – USS on BOP link (PC Inverter installed)

5 – USS on COM link (485 connection on terminal block)

6 – CB on COM link (Profibus module installed)

7 – Analog setpoint 2 (MM440 only)

*Other setting refer to parameter list

P1080 = Min motor frequency

Generally will be 0 Hz

P1082 = Max motor frequency

Generally will be 50 or 60 Hz

P1120 = Ramp Up Time – default 10 seconds

P1121 = Ramp Down Time – default 10 seconds

P1135 = OFF3 ramp-down time – default 5.0 seconds

Have to configure a Digital input for OFF3 – The input will be active HI, when input goes LOW the OFF3 command is issued.

P1300 = Control Mode

0 – V/f with linear characteristic – default setting

1 – V/f with FCC

2 – V/f with parabolic characteristic

20 – Sensorless vector control – MM440 only

*Other setting refer to parameter list – these are the ones generally used.

P1500 = Selection of torque setpoint – MM440 only

Application specific – generally will not need to set.

P1910 = 1 - Select motor data identification

Setting to 1 will do automatic stator resistance and other motor calculations, will reset to 0 when completed.

This will generate an Alarm code of A0541 (motor identification active).

Even though you have the Alarm you can still go to the next parameter P3900.

P3900 = 1 - End of Quick Commissioning with Default – Do this is 1st time Configure

P3900 = 3 - End of Quick Comm. Without Default – Do this if Control setup is already done.

Setting P3900 will save the configuration set in quick commissioning.

You will receive a BUSY signal. This will last 30 seconds up to a few minutes. When this is complete the BUSY signal will go away and you will be toggling between P3900 and A0541. The unit is ready to do the Stator calculation at this time.

1.6 Step 6: Stator Calculation

To initiate the Stator calculation, use the GREEN Start key on the keypad.

This will start the stator calculation, you may hear some current being pulsed from the drive to the motor, and possibly you will be able to hear the motor whine a little. This will also take 30 seconds to a few minutes, when it is complete you will stop receiving the A0541, P3900 will be displayed.

Now it is possible to test the operation of the drive together with the motor.

Further information on this topic:

How is the stator resistance set? 5126936