Magtrol M-TEST 5.0 Installation Instructions

This installation guide provides detailed instructions for installing M-TEST 5.0 Motor Testing Software and related computer hardware. For complete information regarding the operation of Magtrol's M-TEST 5.0 Motor Testing Software, refer to the M-TEST 5.0 User's Manual

1.0 INSTALLATION PROCEDURE

The general installation order is as follows.

1. Install M-TEST 5.0 product software and drivers.
2. Install National Instruments™ NI-DAQ™mx Data Acquisition Software.
3. Install PCI-GPIB interface board. (If only using a DSP6000/6001, the RS-232 serial interface may be used.)
4. Install National Instruments™ FieldPoint™ or USB-9211A if using temperature measurement/sensor input function.
5. Install (optional) National Instruments™ NI 6521 relay actuator card to control motor power via M-TEST 5.0.

2.0 INSTALLING M-TEST 5.0 PRODUCT SOFTWARE AND DRIVERS

1. Exit all other programs before installing M-TEST 5.0.
2. Insert the M-TEST 5.0 CD in your CD-ROM drive. The M-Test 5.0 Installation Wizard will begin automatically.

☞ Note: If AutoRun is disabled on your computer, the installation process must be started manually. On the taskbar, click the **Start** button, and then click **Run**. Click **Browse** to locate the CD-Rom drive where the M-TEST 5.0 installation CD is inserted. From the M-TEST CD root directory, select **setup.exe** then click **Open**.
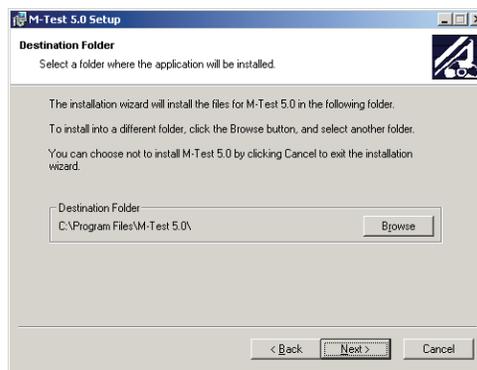
3. Click **Next**.

Figure 1 M-TEST 5.0 Software Installation

4. Select the Destination Folder then click **Next**. The default is C:\Program Files\M-Test 5.0\. To install into a different folder, click the Browse button and select another folder.

5. After installation is complete, the (MS-DOS) command prompt will open and run in the background. The M-TEST 5.0 Setup window will indicate that the program has been successfully installed.
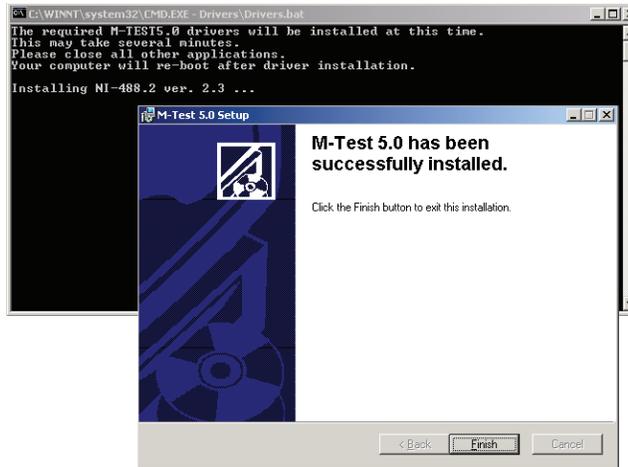

Figure 2 Installation Complete

6. Click **Finish**. The required M-TEST 5.0 drivers will be automatically installed at this time. National Instruments' Measurement & Automation Explorer software will also be automatically installed.

Note: Measurement & Automation Explorer (MAX) provides access to your National Instruments GPIB and FieldPoint devices. With MAX, you can:
- Configure your National Instruments hardware and software
- Create and edit channels, tasks, interfaces, scales and virtual instruments
- Execute system diagnostics
- View devices and instruments connected to your system
- Update your National Instruments software

7. While these remaining two processes are running, the Installer Information message box may appear notifying that "You must restart your system for the configuration changes made to M-TEST 5.0 to take effect." If this message box appears, click "Cancel." (Your system will re-boot later – *see step 8*.)

8. After the installation of the M-TEST 5.0 drivers and NI Measurement & Automation software is complete, your computer will automatically re-boot. Please note that this may take several minutes.

3.0   INSTALLING NI-DAQmx DATA ACQUISITION DRIVER SOFTWARE

The National Instruments™ NI-DAQ™mx Data Acquisition Driver Software must be installed at this time.

1. Insert the National Instruments NI-DAQmx for Windows CD in your CD-ROM drive. The CD is supplied with M-TEST 5.0. The software can also be downloaded from National Instruments' Web site at www.ni.com.

☞   Note: The NI-DAQ 8.x installer should open automatically. If not, select **Start** >> **Run**. Enter *x*:\autorun.exe, where *x* is the letter of the CD drive.
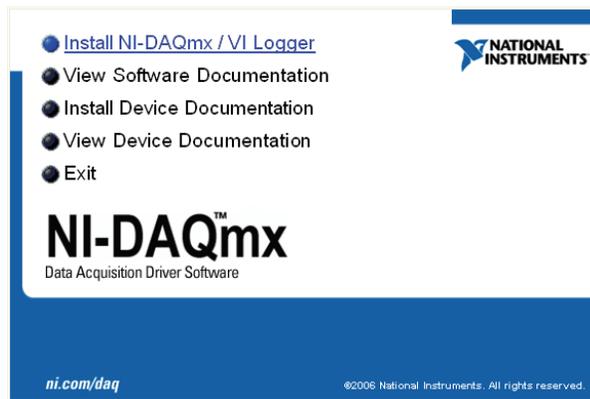

Figure 3 NI-DAQmx Data Acquisition Driver Software Installer

2. Click **Install NI-DAQmx / VI Logger**. The "Welcome" message will appear and the installer will begin initializing. This will take a few moments.

3. When this step is complete, the Product Information dialog box will appear. After reading the displayed information, click **Next**.

4. Select the Destination Folder then click **Next**. The default is C:\Program Files\ National Instruments\. To install into a different folder, click the Browse button and select another folder.

5. The Features dialog box will appear. All of the features required to install/run M-TEST 5.0 should be selected by default. It is recommended to keep the default settings.

6. Click **Next**.

7. The License Agreement will appear. In order to proceed, the displayed license(s) must be accepted by selecting the corresponding option button.

8. Click **Next**.

9. The Start Installation dialog box will appear. Review the displayed summary then click **Next**.

10. The installer has been configured. Click **Next** to begin installation.

11. After several minutes, the Installation Complete dialog box will appear. Click **Next**.

12. When prompted to restart, shut down or restart later, select **Shut Down** (in preparation for interface board installation).

☞   Note: If you choose to "restart later", please note that you must restart your computer before running any National Instruments software.

4.0   INTERFACE SETUP

The GPIB interface board (National Instruments™ PCI-GPIB), purchased through Magtrol or directly from National Instruments, must be installed at this time. The National Instruments PCI-GPIB is a high-performance plug-and-play IEEE 488 interface for PCs and workstations equipped with PCI expansion slots.

☞   Note: If only using a DSP6001 or DSP 6001 Dynamometer Controller in the test configuration, the RS-232 serial interface may be used.

4.1   INSTALLING THE GPIB BOARD

1. Shut down your computer.
2. Install the PCI-GPIB controller board in an available PCI expansion slot according to National Instruments' user documentation.
3. Turn on your computer. The new hardware will automatically be installed and the NI-488.2 Getting Started Wizard will appear.

Figure 4 NI-488.2 Getting Started Wizard

4. Click **Verify your hardware and software installation**. The NI-488.2 Troubleshooting Wizard will appear.
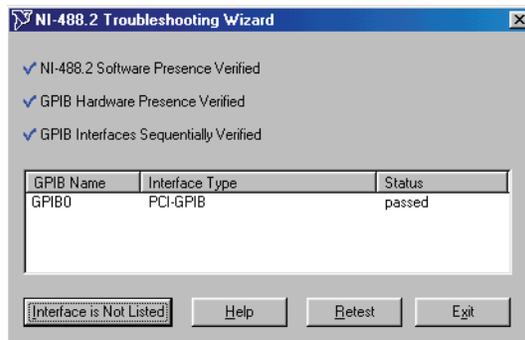

Figure 5 NI-488.2 Troubleshooting Wizard

5. When the software, hardware and interfaces have been verified, as shown in *Figure 4 NI-488.2 Troubleshooting Wizard*, click **Exit**.
6. Select the **Do not show at Windows startup** check box.
7. Click **Exit** to close the NI-488.2 Getting Started Wizard.

4.2   CONFIGURING **GPIB** DEVICES

1. Run the GPIB Configuration utility in Measurement and Automation Explorer. On the taskbar, click the **Start** button, and then click **Run**. Click **Browse** to locate **C:\Program Files\National Instruments\NI-488.2\Bin\GpibConf.exe**, then click **Open**.
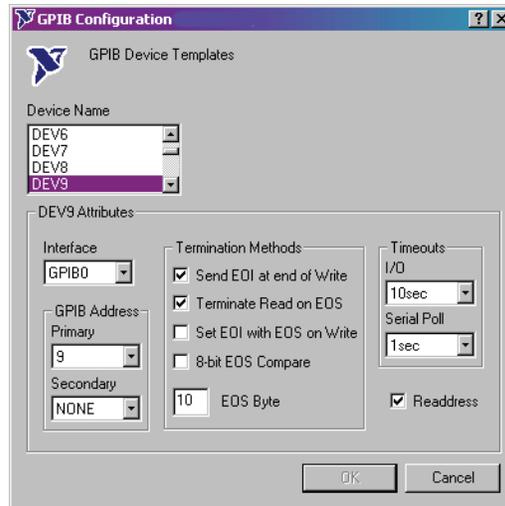

Figure 6 GPIB Configuration

2. Under Device Name, select **DEV9**.
3. Set DEV9 Attributes to the following:

☞   Note: The only DEV attributes that need to be changed are those that are outlined below. All other settings should remain in their original format.

a. Under Termination Methods:
   1.) Select the **Terminate Read on EOS** check box.
   2.) Change **EOS Byte** to "**10**".
b. Select the **Readdress** check box.
4. Select **DEV12**.
5. Set DEV12 Attributes by repeating steps 3a–3b.
6. Select **DEV14**.
7. Set DEV12 Attributes by repeating steps 3a–3b.
8. Click **OK.**
9. The GPIB device configuration is complete.

4.3   **RS-232** SERIAL INTERFACE

M-TEST 5.0 will communicate with the DSP6000/6001 Dynamometer Controller using an RS-232 Serial Interface. Connection diagrams and instructions can be found in the following User's Manuals:

• *DSP6000 – Section 5.7–Select the Baud Rate for the RS-232 Interface*
• *DSP6001 – Section 8.2–About the RS-232 Interface*

5.0   SENSOR INPUT/TEMPERATURE MEASUREMENT

M-TEST 5.0 allows the user to perform temperature measurement testing. The feature provides complete dynamometer control, allowing for temperature measurement while performing load simulation for duty cycle and life testing. The options, which may be purchased from either Magtrol or National Instruments, include:

- National Instruments™ FieldPoint™
- National Instruments™ USB-9211A

5.1   NATIONAL INSTRUMENTS FIELDPOINT

Features:

- 8 thermocouple inputs per module × 4 modules = 32 thermocouples maximum
- Built-in voltage isolation on all channels
- Filtering reduces electrical noise associated with attaching thermocouples to motors
- Connects to computer through RS-232 serial port

5.1.1   Installing Hardware

1. Shut down your computer.
2. Connect the FP-1000 RS-232/RS-485 network interface to the FP-TC 8-channel thermocouple input module(s).
3. Connect a power supply to the network interface with the positive lead to the V terminal and the negative lead to the C terminal.
4. Connect the serial cable from the network interface to COM1 serial port on the computer.

5.1.2   Thermocouple Connections

1. Install thermocouples beginning at Channel 0.

   Following is a list of channels with the corresponding terminals.

Channels	IN+ (positive terminal)	IN- (negative terminal)
0	1	2
1	3	4
2	5	6
3	7	8
4	9	10
5	11	12
6	13	14
7	15	16

5.1.3   Thermocouple Type and Temperature Unit Changes

1. On the taskbar, click **Start** button and then click **Explore** to open Windows Explorer.
2. Locate directory where M-TEST 5.0 is installed (default: C:\ProgramFiles\M-Test 5.0\).
3. Double-click **MT5CFG.iak** to open FieldPoint Explorer.
4. Expand **Devices and Interfaces** folder.
5. Right-click **FP@com1**.
6. Select **Find Devices**.

7. Expand **FP@com1** folder.
8. Expand **FP-1000@0Bank**.
9. Click **FP-TC-120@X** (X represents 1, 2, 3 or 4—the module to be configured).
10. Click **Channel Configuration** tab.
11. Select check box for the channel to be configured.
12. Select temperature range in either °F or °C.
13. Under Channel Attributes, select thermocouple type in Value box.
14. Repeat steps 11-13 for each channel.

☞ | Note: | If all channels use the same thermocouple type, deselect **One channel at a time** check box and click the **All** button. This will allow changes to be made to all the channels at once.

15. Click **Apply**.

☞ | Note: | If additional TC modules are installed, steps 8 through 16 will need to be repeated for modules FP-TC-120-2, FP-TC-120@3 and FP-TC-120@4 (where applicable).

16. Close FieldPoint Explorer. The program will prompt you to "save changes to untitled."
17. Select **Yes**.
18. Close Windows Explorer.

5.2   **NATIONAL INSTRUMENTS USB-9211A**

Features:
   • 4 thermocouple inputs
   • Built-in isolation on all channels
   • Connects to computer through USB port

5.2.1   Installing Hardware
   1. Plug in USB cable.

6.0   NATIONAL INSTRUMENTS NI 6521 RELAY ACTUATOR CARD

As an option, Magtrol offers the National Instruments™ NI 6521 relay actuator card for controlling motor power via M-TEST 5.0. The relay actuator, used in conjunction with a contactor, serves as an ON/OFF switch for supplying power to the motor under test.

When the relay actuator is enabled (see *Section 5.4–Power Supply in the complete M-TEST 5.0 User's Manual*), M-TEST 5.0 automatically closes the relay at the beginning of each test. Relay closure allows power to be applied to the contactor which, in turn, applies power to the motor. When the test is completed, the relay automatically opens and the contactor and motor are switched off.

The National Instruments NI- 6521 relay actuator card is rated at 150 V AC/DC, 2 amps, 60 VA max. Please refer to the included manufacturer's specifications for additional ratings.

6.1   INSTALLING THE RELAY CARD

1. Shut down your computer.
2. Install the National Instruments NI 6521 card in an available PCI expansion slot according to National Instruments' user documentation.
3. Turn on your computer. If installation was successful, Windows will detect the device and display the Found New Hardware message.
4. Connect the motor contactor to relay 0 (R0) of the NI 6521 connector, following the pin diagram in the user documentation.

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