M-TEST 5.0
Motor Testing Software

NEW FEATURES WITH M-TEST 5.0

- **New Graphical User Interface**: Tabbed pages for quick navigation.
- **Temperature/Sensor Measurement:** Temperature testing capabilities are now included in standard program.
- **Multiple Language Support:** Switch to/from English, French, German or Spanish at any point during the program. Additional language dictionaries can be created/edited by the user.
- **More Graphing Options:** Display up to three different 1-axis graphs (one for each tested parameter) in the same window.
- **Compare Test Data:** Overlay data from two separate tests on the same graph.
- **Rapid Graph Plotting:** Change both the X- and Y-axis to display additional test curves, without having to exit the graph.
- **Cursor Tools:** Obtain the X and Y coordinates of any point on a curve. Magnify any section of the graph.
- **Simplified PID Scaling:** New slider controls set both coarse and fine gain adjustment simultaneously.
- **Single or Multi-User Login:** Enable password protection and assign user access rights for specific program functions.
- **Loads Most Recently Saved Setup File Upon Startup:** Provides valuable time savings for users who repeatedly run only one type of test.
- **Automatic GPIB Device/Address Detection:** Displayed within program to easily check communication parameters.

M-TEST 5.0 Hardware Configuration

M-TEST 5.0 Graphical Data Output

DESCRIPTION

Magtrol's new M-TEST 5.0 is a state-of-the-art motor testing program for PC (Windows® 2000/XP) based data acquisition. Used with a Magtrol Programmable Dynamometer Controller, M-TEST 5.0 works with any Magtrol Dynamometer or In-Line Torque Transducer to help determine the performance characteristics of a motor under test. Up to 22 parameters are calculated and displayed utilizing M-TEST 5.0's feature-rich testing and graphing capabilities.

An integral component of any Magtrol Motor Test System, M-TEST 5.0 performs ramp, curve, manual and pass/fail tests in a manner best suited to the overall efficiency of the test rig. Written in LabVIEW™, M-TEST 5.0 has the flexibility to test a variety of motors in a multitude of configurations. The data generated from this user-friendly program can be stored, displayed and printed in tabular or graphical formats, and is easily imported into a spreadsheet.

Magtrol can also make custom modifications to the software to meet additional motor testing requirements.

SENSOR INPUT MEASUREMENT

Temperature measurement—previously an add-on feature that had to be purchased separately—is now included in M-TEST 5.0. Up to 32 thermocouples or analog sensors can be read and monitored during a motor test. Heat rise curves on the bearings, windings and housing of a motor can be performed and air flow/exhaust efficiencies can be measured with an air tool or internal combustion engine. M-TEST 5.0, with its complete dynamometer control, even allows for sensor measurement while performing load simulation for duty cycle and life testing.

APPLICATIONS

M-TEST 5.0—besides being well-suited for simulating loads, cycling the unit under test and motor ramping—is also ideal for production line and inspection applications, due to its pass/fail test function. Another time-saving feature, that engineering labs will benefit from, is the ability to duplicate tests and run them automatically. This versatile program is extremely valuable to anyone involved in motor testing.

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STANDARD FEATURES

- **Multiple Testing Options:**

  Ramp: Select from average ramp down/up or ramp down with inertia correction factor. Also allows extrapolation of free-run and locked-rotor data, plus interpolation of specific speed or torque data points.

  Curve: Test speed, torque, amps, watts input, watts output and open loop parameters. Capable of adjusting sampling rate and using step or ramp from one load point to the next.

  Manual: Runs test from front panel of the Dynamometer Controller while computer acquires data. Allows adjustment of sampling rate.

  Pass/Fail: Checks amps, input watts (with optional Power Analyzer), speed, torque and output watts against user-defined values.

- **Displays 22 Tested and Calculated Parameters:** Torque, speed and auxiliary input are displayed from the DSP6000/6001, 5240 or 4629B Controller; amps, volts and watts from an (optional) power analyzer. Calculated values including horsepower, efficiency, power factor, output watts and time can also be displayed.

- **Three-Phase Power Analyzer Data Acquisition:** Obtain data on each individual phase and/or the sum used in the chosen parameters (amps, volts, input watts and power factor).

- **Motor Shaft Direction Indicator:** Indicates if the motor is turning clockwise or counterclockwise.

- **IEEE-488 and RS-232 Interface:** Computer interface with National Instruments™ PCI-GPIB. RS-232 available with DSP6001 and DSP6000 only.

- **Automatic Load Defaults Option**: Downloads testing instrument parameters based on model number.

- **Dynamic PID Scaling:** Provides consistent control loop results throughout motor speed range during ramp test (for DSP6001 only).

- **PID Adjustment Routines:** Helps adjust the system for ramp and step functions.

- **Graphing Capabilities**: Display up to 5 test curves in a single graph or view as (up to 3) separate 1-axis graphs; easy-to-read colored and labeled plots with several graph formatting options; manual or auto scaling.

- **Curve Fitting:** A curve fitting routine can be applied to most motor test curves. Raw data and curve fit data can also be displayed simultaneously.

- **Customized Reports:** Allows user to produce a one-page motor test summary, which can include the motor's serial number; maximum torque, speed, power and current values; operator name; time and date of test; motor direction; 32 data points; and an X-Y plot.

- **Save/Load Setup Function:** Test procedure configurations may be stored and recalled using standard Windows® file structure.

SYSTEM CONFIGURATION

A Magtrol Dynamometer provides motor loading with a Magtrol Programmable Dynamometer Controller acting as the interface between the PC running M-TEST 5.0 and the dynamometer. If motor electrical parameters are to be measured or used to determine load points, a Magtrol Power Analyzer is also required. Interfacing between the computer and electronic instrumentation is via the National Instruments™ PCI-GPIB card or RS-232 serial interface (when using a DSP6000 or DSP6001).

M-TEST 5.0 is equipped to work in conjunction with any of the following Magtrol motor testing instruments:

- Dynamometer Controller (DSP6001/6000, 5240, 4629B)
- Hysteresis, Eddy-Current or Powder Dynamometer (HD, WB, PB)
- In-Line Torque Transducer (TM, TMB, TMHS)
- Power Analyzer (6530, 6510*e*, 6510, 6550, 5100, 5300)

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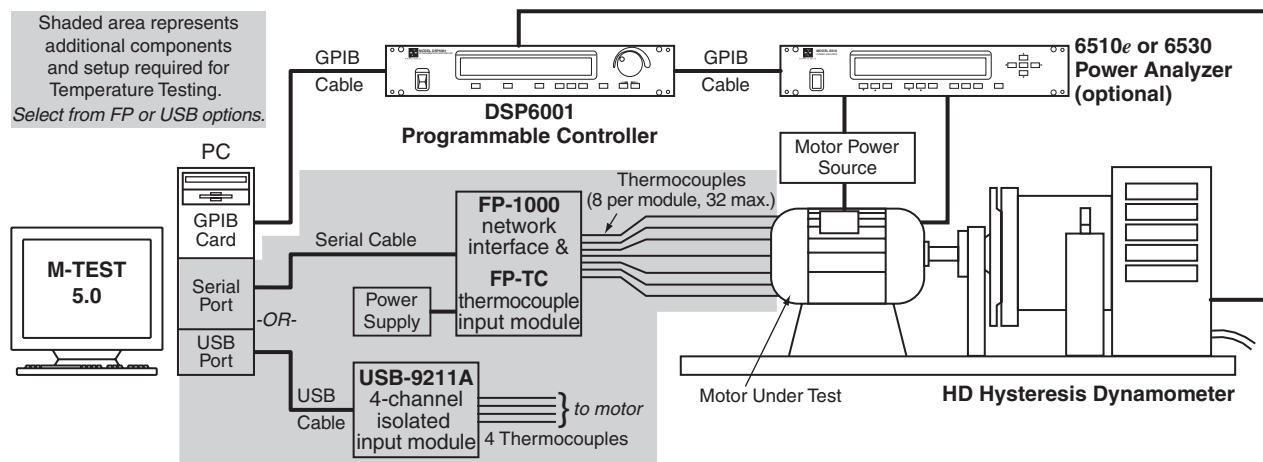
SYSTEM REQUIREMENTS

- Personal computer with Intel® Pentium® IV processor (or equivalent)
- Microsoft® Windows® 2000/XP
- 1 GB of RAM
- 1.6 GB of available hard drive space
- VGA color monitor with minimum screen resolution of 1024 × 768

- National Instruments™ PCI-GPIB card (available from Magtrol)
- RS-232 serial interface can be used, instead of GPIB card, for interfacing with Magtrol DSP6000 or DSP6001 Controllers
- National Instruments™ FieldPoint™ or USB-9211A hardware: Required only if temperature testing/sensor input function will be used

SYSTEM OPTIONS AND ACCESSORIES

CATEGORY	DESCRIPTION	MODEL / PART #
TEMPERATURE TESTING HARDWARE	FieldPoint 8-Channel Isolated Input Module (FP-TC-120-X), Network Interface (FP-1000), 120 V Power Supply and Serial Cable	HW-TTEST-FP
	FieldPoint 8-Channel Isolated Input Module (FP-TC-120-X), Network Interface (FP-1000), 240 V Power Supply and Serial Cable	HW-TTEST-FP-A
	Additional FieldPoint 8-Channel Thermocouple Module (includes mounting base)	004968
	USB 4-Channel Isolated Input Module (USB-9211A) and USB Cable (1 m)	HW-TTEST-USB
CONTROLLERS	High Speed Programmable Dynamometer Controller	DSP6001
TESTING INSTRUMENTS	Hysteresis Dynamometers	HD series
	Eddy-Current Dynamometers	WB series
	Powder Brake Dynamometers	PB series
	In-Line Torque Transducers	TM/TMHS/TMB series
POWER ANALYZERS	High Speed Single-Phase Power Analyzer	6510*e*
	High Speed Three-Phase Power Analyzer	6530
POWER SUPPLIES	Closed-Loop Speed Control and Power Supply	6100
	Power Supply for WB & PB Dynamometers series 2.7 and 43	DES 310
	Power Supply for WB & PB Dynamometer series 65, 115 and 15	DES 311
	Power Amplifier—required for all HD-825 Dynamometers	5241
MISC	Torque/Speed Conditioner	TSC 401
CARDS	GPIB Interface Card (PCI)	73-M023
	Relay Actuator Card (for controlling motor power via M-TEST 5.0)	73-M052
CABLES	GPIB Cable, 1 meter	88M047
	GPIB Cable, 2 meters	88M048
	Torque Transducer Connector Cable	ER 113/01

For information on the most current software release available, refer to Magtrol's Web site at
www.magtrol.com/motortest/mtest.htm

Due to the continual development of our products, we reserve the right to modify specifications without forewarning.