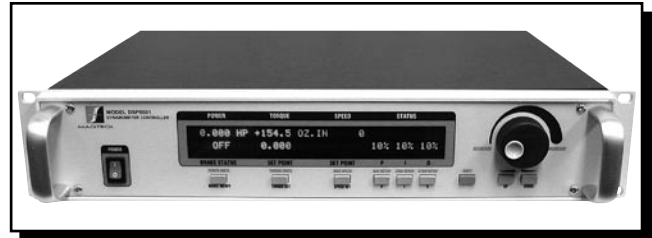# MAGTROL

DSP6001 High-Speed Programmable Dynamometer Controller

FEATURES

- **Two Channels:** Enable the unit to support up to two testing instruments with independent or tandem configurations.

- **Built-in Alarm System:** For power, speed, torque, temperature, air flow, water flow, electrical overload and external inputs

- **Torque/Speed Analog Outputs:** For interface with a data acquisition system or strip chart recorder

- **Interfaces:** RS-232 and IEEE-488

- **High Speed Data Acquisition:** 120 torque and speed points per second via IEEE bus (approx. 60/sec. via RS-232)

- **High Quality, Easy-to-Read Vacuum Fluorescent Readout:** Displays torque, speed, power, auxiliary and PID (proportional gain, integral and derivative) values

- **Fast Full-Curve Data Acquisition:** Free-run to locked rotor in seconds

- **Speed & Torque Operating Modes:** Provide independent PID settings for improved Dynamometer control

- **Built-in Current-Regulated Supply:** For use with Hysteresis Dynamometer only

- **Adjustable Torque Units:** English, Metric and SI are standard

- **Dynamometer Overload Protection**

- **Digital Filter:** Removes undesired noise from torque signals

- **Cross Loop Function:** Allows closed loop control of brake via torque transducer

- **Programmable Digital PID Values:** Controlled and stored via M-Test Software or controlled manually

- **Saving:** Saves programmed values within configuration

- **Auxiliary ± 10 V DC Analog Input:** For additional transducer

- **Single or Multi-point Torque and Speed Stabilized Testing:** Via M-TEST 5.0 Software

- **Closed Box Calibration**

- **Rack Mounting:** 19" (482.6 mm) with handles

DESCRIPTION

Magtrol's Model DSP6001 High Speed Programmable Dynamometer Controller employs state-of-the-art Digital Signal Processing Technology to provide superior motor testing capabilities. Designed for use with any Magtrol Hysteresis, Eddy-Current or Powder Dynamometer, Magtrol In-Line Torque Transducer or auxiliary instrumentation, the DSP6001 can provide complete PC control via the IEEE-488 or RS-232 interface. With 120 readings per second, the DSP6001 is ideally suited for both the test lab and the production line.

APPLICATIONS

In the laboratory, the DSP6001's high sample rate provides superior resolution for data acquisition and curve plotting. This allows for capturing more usable motor test data during switching, breakdown and other transitional areas of the motor test curve. For production and incoming inspection, the DSP6001 displays torque, speed and power at all times, allowing the Controller to be used as a manual stand alone unit or as part of a complete PC system.

MOTOR TESTING SOFTWARE

Magtrol's M-TEST 5.0 Software (*sold separately*) is a state-of-the-art motor testing program for Windows®-based data acquisition. Used with the Magtrol DSP6001 Controller, Magtrol M-TEST 5.0 Software provides the control of any Magtrol Dynamometer and runs test sequences in a manner best suited to the overall accuracy and efficiency of the Magtrol Motor Test System. The data that is generated by Magtrol's Motor Testing Software can be stored, displayed and printed in tabular or graphic formats, and can be easily imported into a spreadsheet.
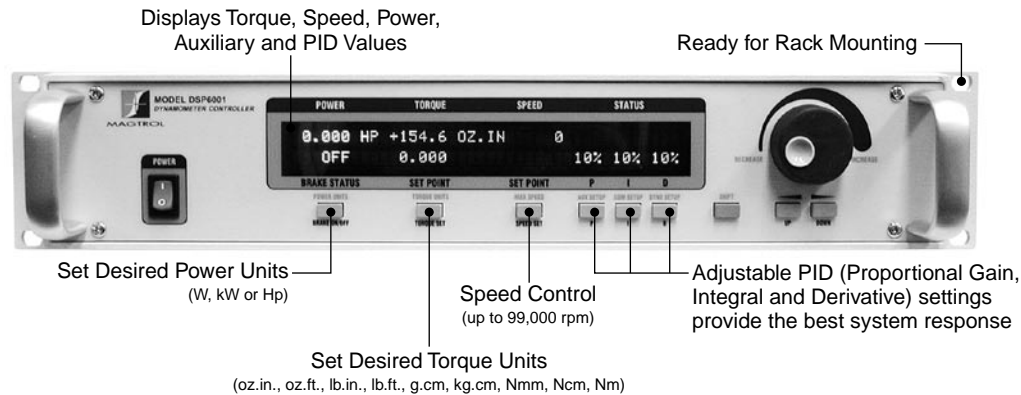
Written in LabVIEW™, M-TEST 5.0 has the flexibility to test a majority of motor types in a variety of ways. Because of LabVIEW's versatility, obtaining data from other sources (e.g. thermocouples), controlling motor power and providing audio/visual indicators is relatively easy.

Magtrol's M-TEST 5.0 Software is ideal for simulating loads, cycling the unit under test and motor ramping. Because it is easy to gather data and duplicate tests, the software is ideal for use in engineering labs, production testing and incoming/outgoing inspection.
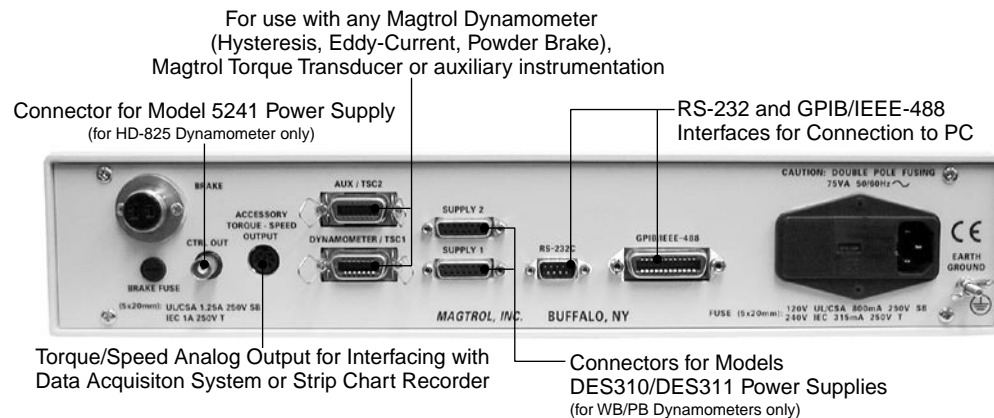
DSPM Industria
sensori & trasduttori

Via Paolo Uccello 4 20148 Milano
Tel +39 02 48 009 757 Fax +39 02 48 002 070 info@dspmindustria.it www.dspmindustria.it   1

MEASUREMENT CHARACTERISTICS	
Maximum Torque	10,000 units, ±5 V TSC1, ±10 V TSC2
Maximum Speed	99,999 rpm
Accuracy	Speed: 0.01% of reading from 10 rpm to 100,000 rpm TSC1: 0.02% of range (±1 mV) TSC2: 0.02% of range (±2 mV)

ELECTRICAL CHARACTERISTICS						
Fuses (5 × 20 mm)	Brake:	UL/CSA	1.25	A	250 V	SB
		IEC	1.00	A	250 V	T
	Power (120 V):	UL/CSA	800	mA	250 V	SB
	Power (240 V):	IEC	315	mA	250 V	T
Power Requirements	75 VA					
Voltage Requirements	120/240 V 60/50 Hz					
Max. Compliance Voltage	45 V DC, Brake Output					

INPUTS AND OUTPUTS	
Maximum Torque Input	TSC1: ±5 V DC TSC2: ±10 V DC
Accessory Torque/Speed Output	Torque: ±10 V DC Speed: ±10 V DC
Ctrl Out	0–3 V DC

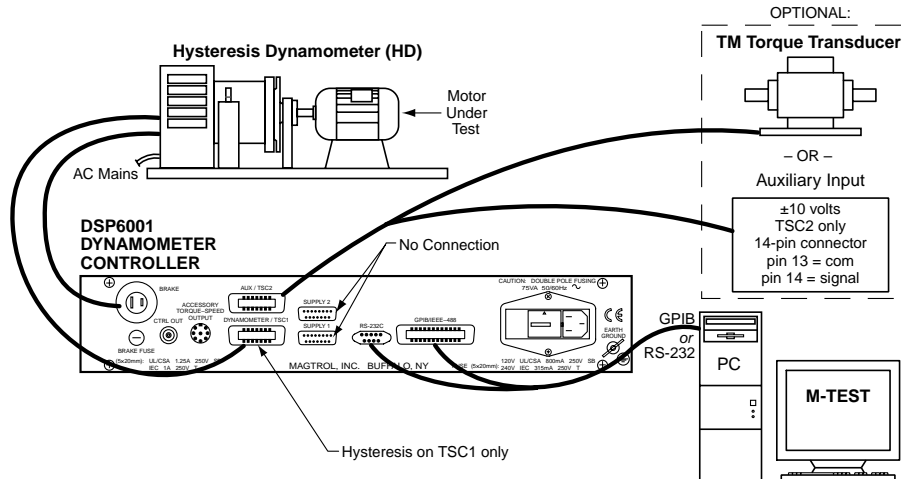| ENVIRONMENT	
Operating Temperature	5 ºC to 40 ºC
Relative Humidity	< 80%
Temperature Coefficient	0.004% of range/°C of 5 V DC for both channels

DIMENSIONS		
Width	19.0 in	483 mm
Height	3.5 in	89 mm
Depth with handles	12.4 in 13.8 in	315 mm 351 mm
Weight	16.73 lb	7.58 kg

FRONT PANEL

Displays Torque, Speed, Power, Auxiliary and PID Values

Ready for Rack Mounting

Set Desired Power Units
(W, kW or Hp)

Speed Control
(up to 99,000 rpm)

Adjustable PID (Proportional Gain, Integral and Derivative) settings provide the best system response

Set Desired Torque Units
(oz.in., oz.ft., lb.in., lb.ft., g.cm, kg.cm, Nmm, Ncm, Nm)

REAR PANEL

For use with any Magtrol Dynamometer (Hysteresis, Eddy-Current, Powder Brake), Magtrol Torque Transducer or auxiliary instrumentation

Connector for Model 5241 Power Supply
(for HD-825 Dynamometer only)

RS-232 and GPIB/IEEE-488 Interfaces for Connection to PC

Torque/Speed Analog Output for Interfacing with Data Acquisiton System or Strip Chart Recorder

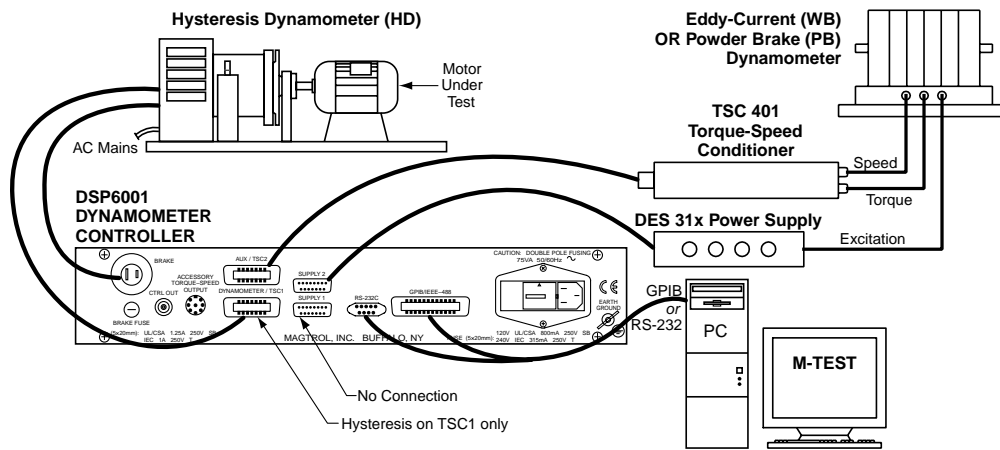Connectors for Models DES310/DES311 Power Supplies
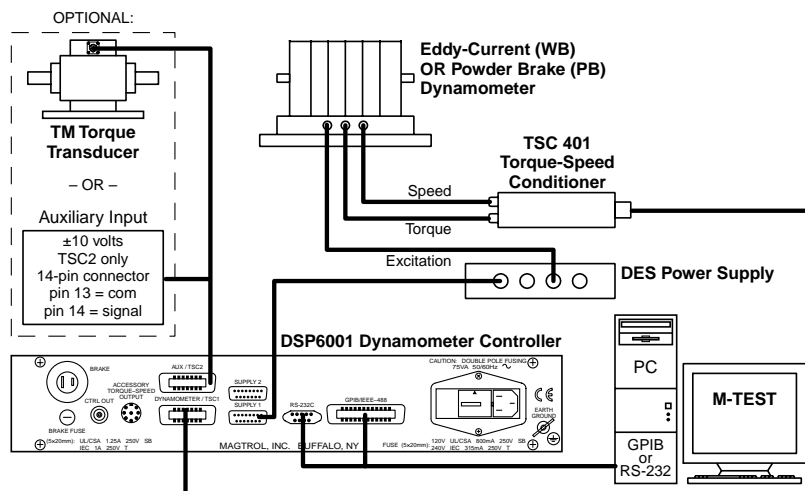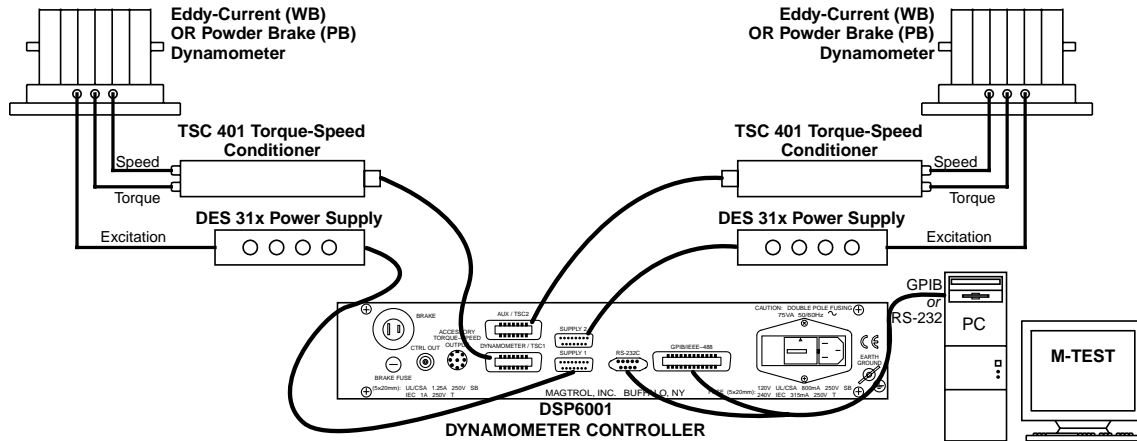(for WB/PB Dynamometers only)

DSP6001 Connected to Hysteresis Dynamometer with Optional Auxiliary Input or In-Line Torque Transducer
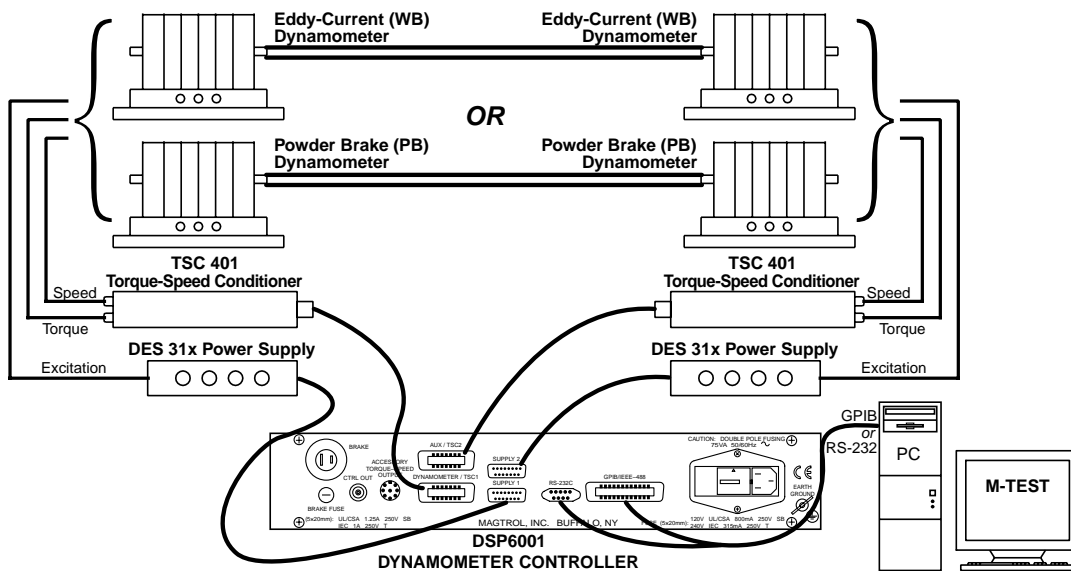

DSP6001 Connected to Hysteresis Dynamometer and Eddy-Current or Powder Brake Dynamometer
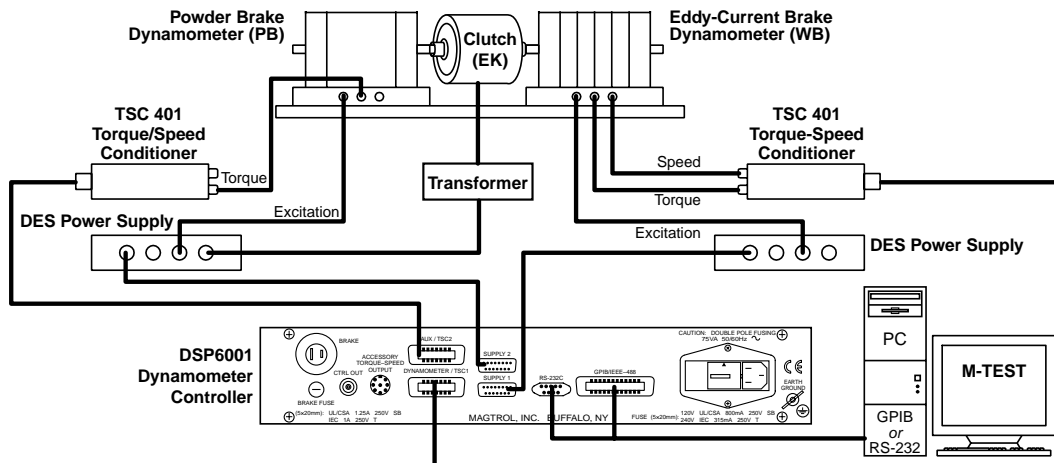

**DSP6001 Connected to Eddy-Current or Powder Brake Dynamometer (WB/PB)
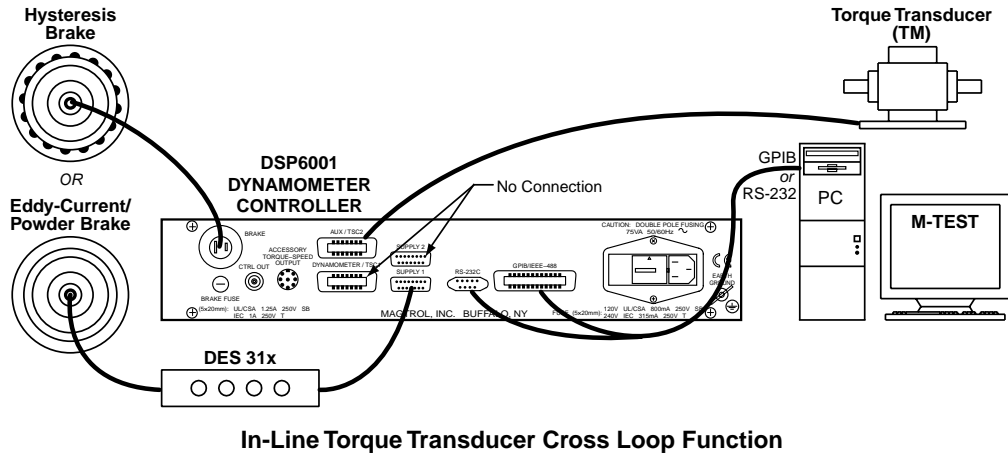with Optional Auxiliary Input or In-Line Torque Transducer**

DSP6001 Connected to 2 Eddy-Current or Powder Brake Dynamometers (Independent Setup)

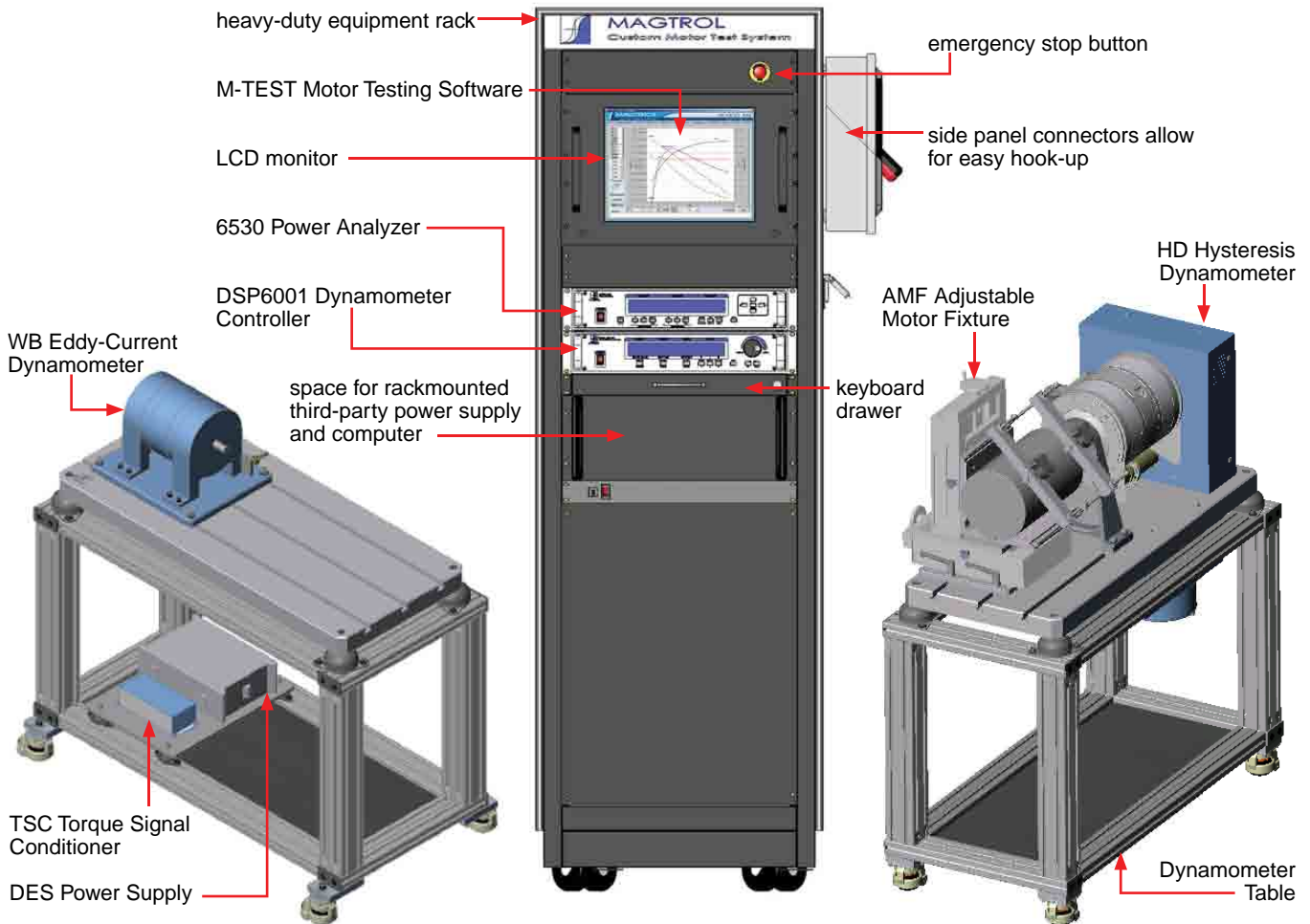**DSP6001 Connected to 2 Eddy-Current or 2 Powder Brake Dynamometers (Tandem Setup)**

DSP6001 Connected to Eddy-Current and Powder Brake Dynamometer (Tandem Setup)

Hysteresis Brake

OR

Eddy-Current/ Powder Brake

DSP6001 DYNAMOMETER CONTROLLER

No Connection

Torque Transducer (TM)

GPIB *or* RS-232

PC

M-TEST

BRAKE

ACCESSORY TORQUE–SPEED OUTPUT

CTRL OUT

BRAKE FUSE

AUX / TSC2

DYNAMOMETER / TSC

SUPPLY 2

SUPPLY 1

RS-232C

GPIB/IEEE–488

CAUTION: DOUBLE POLE FUSING 75VA 50/60Hz

(5x20mm): UL/CSA 1.25A 250V SB IEC 1A 250V T

MAGTROL, INC. BUFFALO, NY

120V UL/CSA 800mA 250V SB 240V IEC 315mA 250V T

Fuse (5x20mm)

DES 31x

In-Line Torque Transducer Cross Loop Function

CUSTOM MOTOR TEST SYSTEM

The DSP6001 can be incorporated into a Customized Motor Test System. These PC based, turn-key systems are custom designed and built to meet specific user requirements.

heavy-duty equipment rack

M-TEST Motor Testing Software

LCD monitor

6530 Power Analyzer

DSP6001 Dynamometer Controller

WB Eddy-Current Dynamometer

space for rackmounted third-party power supply and computer

TSC Torque Signal Conditioner

DES Power Supply

MAGTROL Custom Motor Test System

emergency stop button

side panel connectors allow for easy hook-up

AMF Adjustable Motor Fixture

HD Hysteresis Dynamometer

keyboard drawer

Dynamometer Table

ORDERING INFORMATION ————————————————

| DSP6001 | High-Speed Programmable Dynamometer Controller 120 VAC |
| DSP6001A | High-Speed Programmable Dynamometer Controller 240 VAC |

SYSTEM OPTIONS AND ACCESSORIES ————————————

CATEGORY	DESCRIPTION	MODEL / PART #
TESTING DEVICES	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
SOFTWARE	M-TEST 5.0 Motor Testing Software	SW-M-TEST5.0-WE
	Temperature Testing Hardware	HW-TTEST
POWER SUPPLIES	Closed-Loop Speed Control/Power Supply	6100
	Power Supply	5200
	Current-Regulated Power Supply	5210
	Power Amplifier *(required for HD-825 Dynamometer only)*	5241
	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
MISC.	Torque/Speed Conditioner *(required for connecting WB/PB Series Dynamometers to DSP6001)*	TSC 401
CARDS & CABLES	GPIB Interface Card (PCI)	73-M023
	GPIB Cable, 1 meter	88M047
	GPIB Cable, 2 meters	88M048
	Torque Transducer Connector Cable	EB 113/01

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

www.magtrol.com

6