



PHENIX
TECHNOLOGIES

HIGH POWER MOTOR TEST SYSTEMS



Model MTS1000R-750 AC/DC Motor Test System

VISION

PHENIX Technologies is recognized the world over as the leading manufacturer of Motor Test Systems. For over twenty years we have been introducing new innovations and technology that leave our competitors years behind. We have, in fact, supplied more Motor Test Systems than all of the other leading manufacturers combined.

But it does not end there. We pride ourselves on after sales support. We will be there for you years after the sale. Each High Power Motor Test System may include on-site commissioning and operator training. This assures proper operation and trained test technicians right from the start.

We have a complete Engineering and Production facility, where all systems are designed and manufactured at one location. PHENIX Technologies will build a system to meet your specific needs. The following information contains our standard system designs. For other requirements, please consult with a PHENIX Technologies Sales Representative.

MOTOR TESTING AT THE EXACT RATED VOLTAGE

Of all the different parameters associated with motor testing, an incorrect voltage will result in the most significant change in performance. The Deviation Chart illustrates some of the different parameters affected by voltage. Note that for a +10% change in the voltage, the full load current will swing from 7% low to 11% high. All PHENIX Technologies test systems provide a continuously variable output from 0 to 100% of the rated tap voltage.

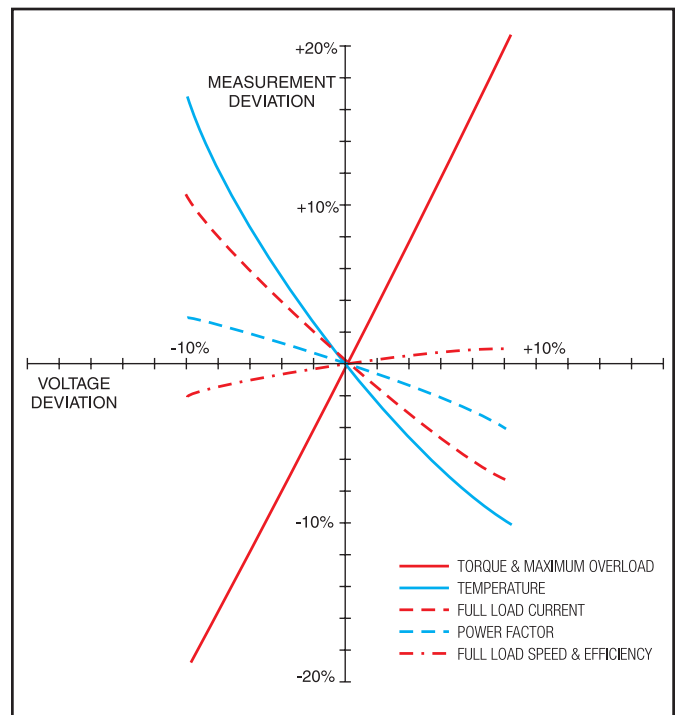
Deviation Chart—Motors must be tested to their rated voltage to obtain accurate performance data.

QUALITY CONSTRUCTION ASSURES SUPERIOR PERFORMANCE

PHENIX Technologies standard test systems are housed in a high strength steel cabinet with welded box tube framing. It is finished with an extremely durable texture coat paint.

Housed in this tough cabinet are all of the controls, power supplies, metering, and safety/protection devices necessary to perform no-load testing and, when used in conjunction with an external dynamometer, load testing.

The following information will assist you in choosing the supplies, features, and options to custom-design a system to meet your specific needs. Please note that if you choose an AC only system, it will be necessary to select the field supply option to have the capabilities necessary to test synchronous motors.



PRECISE VOLTAGE REGULATION

TWO OPTIONS FOR REGULATION

PHENIX Technologies supplies two basic styles of Motor Test Systems. These are identified by the method of regulation of the three phase AC output. The following is a description of each. For recommendation of which supply meets your particular needs, consult a PHENIX Technologies Representative.

SCR Regulation [S]

All of the output taps can be regulated from near zero to their full voltage rating by adjusting a ten-turn potentiometer. The output phases can be balanced to compensate for an unbalanced line. Other features of this type of regulation include Current Limit, which limits the output current by limiting the output voltage, and Surge On, which assists in tap starting large motors.

Column-Type Regulation [R]

This type of test system is our most popular and utilizes the PHENIX Column Type Variable Transformer (CTVT) to vary the output from near zero to the full voltage rating of each tap. This CTVT uses unique roller brushes and a low turn-to-turn voltage, 0.7 volts, to provide very fine regulation and the least required maintenance of any regulator available. The output is a true sinewave throughout the entire range. This system may be used to test motors as well as transformers. *[Transformer testing may require a higher accuracy measurement system. Please consult factory.]*



1250 kVA Motor Testing System with Dyno Integration and Remote Control Console.



INSTRUMENTATION

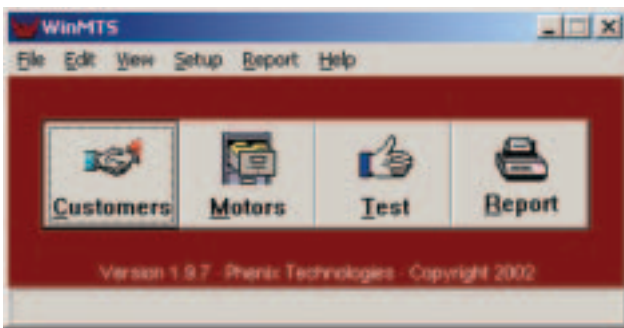
TEST SYSTEM CONFIGURATION

PLC Based Controls

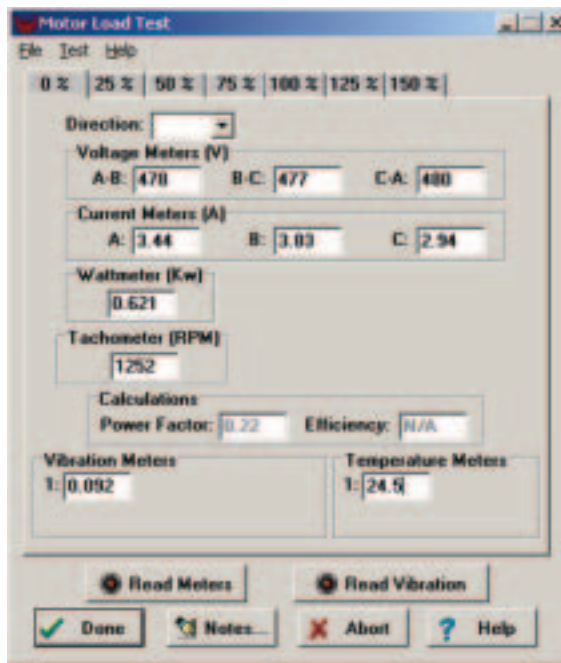
Our standard Motor Test Systems incorporate a state of the art PLC based control system for years of trouble free operation. This control system allows greater reliability without sacrificing the flexibility that is required to satisfy each customer's specific needs.

Windows Based Testing Software

Combining this control system with our optional Windows based testing software creates a very user friendly system which provides complete documentation and reporting for each motor tested. Two data bases are created, one of all of your clients and a second of all motors. This allows much less data input than previously required.



The Main Screen of WinMTS provides direct access to your customer and motor records.



The Standard Test should be used for most of your no-load testing.



The Motors Form enables you to add a motor configuration, modify a motor, delete a motor, or browse motors.

OID

OPTIONAL OPERATOR INTERFACE DISPLAY

PHENIX Technologies OPERATOR INTERFACE DISPLAY (OID) is the heart of our control system and provides the most advanced man-machine interface offered today on motor testing equipment. The OID provides numerous automated features as well as over 40 status messages relating to test procedures and test set operating conditions. This provides the operator with information which makes the test process faster and safer than ever before.

The OID replaces individual displays for all instrumentation and individual screens only show the meters required for the specific test being performed. For example, if an AC induction motor is being tested only the AC volt and amp meters will be displayed on the OID. If you are testing a compound DC motor then the volt and amp meters for the armature and field supplies will be displayed. This makes a very clean and easy to read instrumentation system. The OID uses a intuitive color display which provides critical information in Red, important information in Yellow and general information in Gray. All instruments are displayed in Blue and function keys in Light Blue.



Color Operator Interface Display provides easy-to-read instrumentation for all tests.

STANDARD OID FEATURES

- Automatic Voltage Control—The operator can preset a required voltage for a test, the OID will then step-start the motor and ramp the voltage up to the desired level. It will be automatically maintained at this level regardless if a load is applied to the motor.
- Safety Limits—The operator has many settable limits which provide protection for the motors under test. Limits are set prior to testing and if this level is exceeded the OID will warn the operator or abort the test. Settable limits include:
 - AC Output Current
 - Armature Supply Current
 - Field Supply Current
 - % of rated kVA of test set
 - Vibration Limits
 - Temperature Limits
 - RPM Limits
- High Voltage Interlock Level—The customer can set the maximum voltage available to the operators. If higher levels are required, the operator must ask for permission and have the interlock removed.
- Microprocessor Based Calibration—The calibration is now done through the OID, so in place of numerous potentiometers used in the past, the system calibration is performed by changing a calibration factor on the calibration screen. This provides improved accuracy and long term stability of the measurement system.
- Time of Day Limits—Output kVA limits of the test system can be set for two periods of the day. This feature prevents the test set from being run at high output levels during peak demand periods.
- Output Kilowatt Hour Meter—This feature is available if the optional Wattmeter circuit is purchased. The system will then record the power provided to the motor under testing for both AC and DC motors. This provides kWh of electricity used to test this motor and can be used for information on actual testing costs.
- Temperature measurement via motor RTDs—With added options the OID can make available RTD type configuration. The inputs can be configured to accept the following RTD types:
 - Platinum (385) 100, 200, 500, 1000 ohm (0.5 or 2.0 mA excitation)
 - Platinum (3916) 100, 200, 500, 1000 ohm (0.5 or 2.0 mA excitation)
 - Copper (426) 10 ohm (2.0 mA excitation only)
 - Nickel (618) 120 ohm (0.5 or 2.0 mA excitation)
 - Nickel (672) 120 ohm (0.5 or 2.0 mA excitation)
 - Nickel Iron (518) 604 ohm (0.5 or 2.0 mA excitation)

CUSTOM DESIGNED

STANDARD AC VOLTAGE/CURRENT OUTPUT

KVA	Input* Current	240V	480V	600V	1200V	2300V	3300V	4160V	Opt. 6600V	Opt. 7200V	Opt. 13.8 kV	AC Testing Capability	
												Full Load	No Load
300	375	400A	361A	289A	144A	75A	52A	42A	26A	24A	12A	300HP	1500HP
500	625	800	600	481	240	125	87	70	43	40	20	500	2500
750	925	900	900	721	361	188	131	104	65	60	31	750	3750
1000	1250	N/A	1000	960	480	250	175	140	87	80	41	1000	5000
1250	1575	N/A	N/A	1200	601	314	219	173	109	100	52	1250	6250
1500	1875	N/A	N/A	1200	722	376	262	208	131	120	62	1500	7500
2000	2400	N/A	N/A	1200	962	502	350	277	175	160	83	2000	10000
2500	3150	N/A	N/A	1200	1200	627	437	346	218	200	104	2500	12500

The three phase AC supply is rated for continuous duty and has a one minute rating at 250% to allow for high inrush currents during motor start-up.

*Current shown assumes 480V, 3-phase supply (must be Wye configured for SCR regulated systems). A separate 115/220V, 1-phase supply is also required for control power. Specifications subject to change without notice.

MOTOR TEST SYSTEM SIZING

PHENIX Motor Test Systems will typically run 1 horsepower per kVA of power fully loaded and 5 horsepower per kVA no-load. For example, a 1000 kVA motor test system is capable of approximate full load testing of a 1000 HP motor and no-load testing of a 5000 HP motor.

Testing capabilities are approximate and depend on type and style of the motor to be tested.

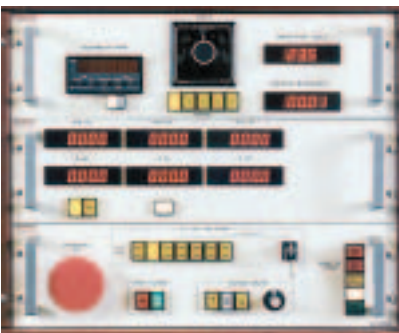
DC SUPPLIES

The DC supplies include an Armature supply, as well as a Field supply. Both supplies have overcurrent trip protection, redundant fusing and thermal protection.

The Field supply includes undercurrent protection, which senses for field loss to protect against runaway when testing compound motors. A bypass is provided for testing series DC motors without having to energize the Field supply.

*MTS1000S-750
AC/DC Motor
Test System
(right)*

Standard Instrumentation



OTHER PHENIX MOTOR TESTING PRODUCTS

- Core Loss Testers
- Dynamometers
- Insulation Analyzers
- AC Hipots
- DC Hipots
- Megohmmeters



Core Loss Testers are available for testing from fractional to 16,000 HP motors.



Water Brake Dynamometers are available for practically any rating.

OPTIONAL FEATURES AVAILABLE

- Higher Output Voltages
- Physical Measurement Instrumentation, including Temperature, Vibration and/or RPM
- Swivel Boom for Output Leads
- Wattage Measurement Circuit
- Computer Interface with Windows Based Testing Software
- Input Voltmeter and/or Ammeter
- Remote Control Console with Writing Desk
- Dynamometer Interface/Control Mounting
- Synchronous Motor Switch
- Series Field Supply
- Computer Controlled Test Systems with Custom Operating Software



PHENIX manufactures a complete line of AC, DC Hipots, Megohmmeters, and Insulation Analyzers.

COMPANY PROFILE

PHENIX TECHNOLOGIES is a leading manufacturer of high voltage, high current, and high power test systems and components. Our test systems are in operation around the world satisfying the testing requirements of our customers.

Our 65,000 square foot headquarters is a modern manufacturing facility where all the major components of our systems are produced. All aspects of electrical and mechanical design, software design and actual production are performed in this facility and controlled by an ISO9001 quality program. Our engineers offer a unique blend of theoretical knowledge and practical experience. Our ever-expanding Service and Calibration Department stands ready to assist you during and after installation to insure years of trouble-free service.

Our engineering resources, manufacturing capability, and commitment to flexibility have earned us the reputation as the supplier of choice. From portable test equipment to large, cutting edge automated test systems, PHENIX Technologies provides solutions for your testing needs. You owe it to yourself to discuss your testing requirements with PHENIX Technologies today.

THE PHENIX TECHNOLOGIES PRODUCT LINE

- High Voltage AC Dielectric Test Sets
- Resonant Test Sets
- Variable Frequency Resonant Test Sets
- DC Hipots and Insulation Test Sets
- Automatic Insulating Material Testers (D149)
- Microhmmeters
- Liquid Dielectric Test Sets
- Megohmmeters
- AC/DC Kilovoltmeters
- Partial Discharge Detector
- Vacuum/Oil Interrupter Testers
- Bucket Truck Testers
- High-Frequency Cable Aging Test Sets
- Heat Cycling Test Sets
- Rubber Goods-Protective Equipment Testers
- Core Loss Testers
- AC, DC and AC/DC Motor Test Sets
- Water Brake Dynamometers
- Transformer Test Sets
- Frequency Response Analyzer
- High Current / Circuit Breaker Test Sets
- Recloser Test Sets
- DC Power Supplies
- High Voltage DC Cable Thumpers
- High Voltage Terminations
- High Power Column-Type Variable Transformers
- High Power Thoma-Type Variable Transformers
- Voltage and Current Stabilizers
- Impulse Generators/Standard Capacitors/
Coupling Capacitors

Your Local Representative is:



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