

MODEL 3200

LABMASTER PROFESSIONAL

- 4-channel data acquisition & signal conditioning
- Analog and Digital I/O Signals for drive motor control
- Windows-based fastener testing & plotting software
- USB port to interface with Windows® PC

TYPICAL APPLICATIONS

- Fastener Torque-Tension Testing
- Prevailing Torque Testing
- Underhead and Thread Friction Coefficients Determination
- Yield Determination
- Angular Ductility/Rotational Capacity Testing
- Power Tool Testing and Analysis

TORQUE-ANGLE-TENSION TESTING & ANALYSIS OF THREADED FASTENER COMPONENTS

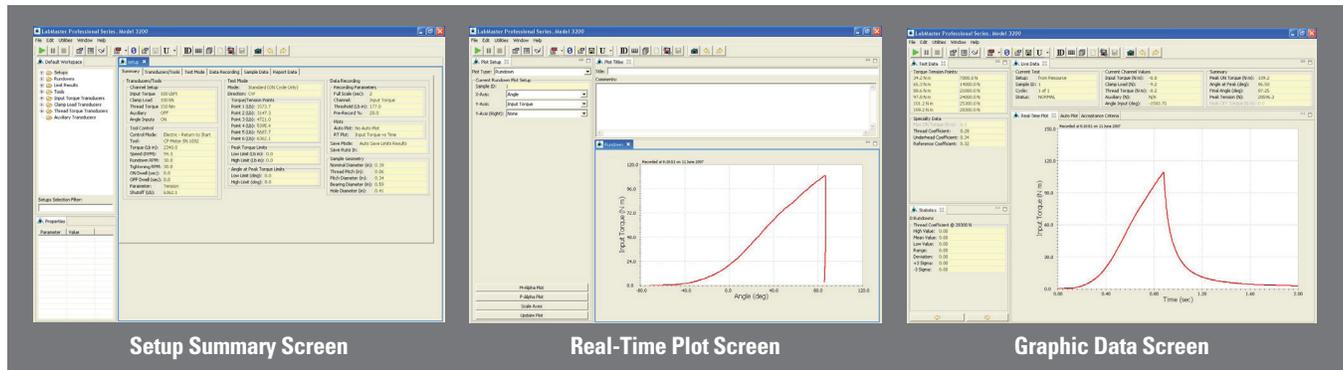
PCB Load & Torque Division's RS Technologies Model 3200 LabMaster Professional is the key part of a fastener torque-tension test system. It provides complete data acquisition of applied torque, angle of fastener rotation, clamp load and thread torque. This system allows graphing of any input versus any other such as torque vs. angle, torque vs. clamp load, etc., and also provides multiple plotting capabilities so that plots of several tests can be overlaid. When thread torque is measured, the LabMaster Professional can calculate underhead and thread friction coefficients to help determine fastener performance.

RS Technologies provides calibration services for this and their other torque and force products at its A2LA Accredited Calibration Laboratory in Farmington Hills, Michigan.

As with all PCB® instrumentation, these products are complemented with toll-free applications assistance, 24-hour technical service, and are backed by a no-risk policy that guarantees total customer satisfaction, or your money refunded.

TEST, ANALYZE, CERTIFY

The LabMaster Professional is an advanced, multi-purpose system designed to test threaded fasteners, analyze bolted joints, and certify power tools. It's comprised of two components: the LabMaster Professional module that contains data acquisition and drive motor interface capabilities, and a laptop or desktop PC running the LabMaster for Windows® testing software. The module and computer interface using a USB port.



SIMPLE TEST SETUP

LabMaster for Windows® software provides a user-friendly graphic interface. Program the desired shutoff based on torque, angle of turn, clamp load, or yield; and program drive tool speed for multi-stage tightening. Quickly revive existing test setups, select different sensors, or adjust the built-in test modes to meet specific test requirements. The test setup directory simplifies testing by providing access to all pertinent setup files as well as previously recorded graphic and numeric data.

EASY OPERATION

Once the test is set up, the LabMaster Professional module conducts all motor control and data acquisition operations. A special drive motor override safety feature terminates the test if transducer or load cell capacities are exceeded. Recorded data is then displayed and managed via PC for access to network printers, archiving, and communications.

COMPREHENSIVE DATA

A LabMaster Professional system, with a torque-tension research head and a torque-angle sensor, can measure and calculate the following metrics. Friction coefficients are calculated per DIN946 and ISO 16047.

- Input torque
- Clamp force
- Thread friction torque
- Underhead friction torque
- Angle of fastener rotation
- Torque tension coefficient (K from $T=KDF$)
- Thread friction coefficient
- Underhead friction coefficient
- Reference, or total, friction coefficient

MULTIPLE INPUTS

Four analog inputs are available on the LabMaster Professional module to accept data signals from the following:

- Transducers
- Strain gages
- Load cells
- Torque cells
- Force washers
- Bolt extensometers
- Ultrasonic devices
- Any 10 V analog device

MEASUREMENTS SIMPLIFIED

- **High Speed Sampling** – A data acquisition card provides high-speed sampling of up to 4000 Hz (software selectable). Sampling can be done versus a time or angle basis.
- **Statistical Calculations** – Provides variety of statistical reports in numeric and graphic form are available. Statistical plots of ± 3 sigma mean curves offer an insightful data summary.
- **Real-Time Display** – The LabMaster Professional and the LabMaster for Windows® testing software provide real-time display during the test. A user-selectable automatic data save feature for both numeric and graphic data speeds testing time.
- **Variety of Plots** – After the test is completed, rundown data and plots may be viewed on the computer display, printed as hard copy, and/or saved for later data analysis. Numerous configurable plots can be generated.
- **Complete Test Systems** – A complete torque-tension test system will typically include a rotary torque-angle transducer, a thread torque-tension research head, a DC electric tool and controller, and a printer for numeric and graphic data reports, all of which are available from RS Technologies.
- **Options** – Optional features include an auxiliary input for an ultrasonic interface, and a tabletop or mobile test cart.

ADVANCED MOTION CONTROL

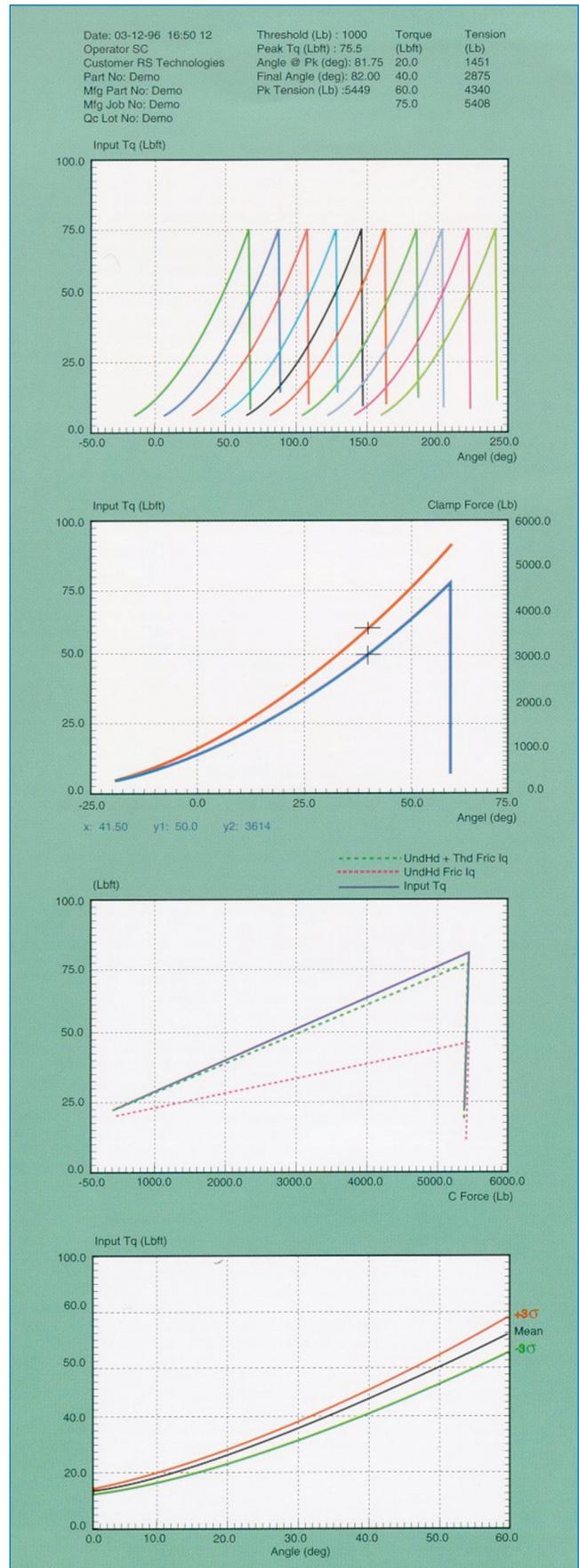
Several built-in test modes provide the framework for most commonly required test specifications for threaded fasteners. These include standard tightening and tightening/loosening, several prevailing torque locknut tests for both automotive and aerospace test specs, and for yield determination. The user can easily set up to 10 torque vs. tension or tension vs. torque test points to pick off specific test data point.

ON SCREEN OR PRINTOUT TEST PLOTS

- Input Torque vs. Time
- Input Torque vs. Angle
- Input Torque & Angle vs. Time
- Clamp Force vs. Angle
- Clamp Force & Input Torque vs. Angle
- Clamp Force vs. Input Torque
- Clamp Force & Input Torque vs. Time
- Clamp Force & K vs. Input Torque
- Tool RPM vs. Time
- M-Alpha (tightening angle according to torque)
- F-Alpha (tightening angle according to force measurement)

RESEARCH PLOTS

- Underhead Friction Torque vs. Angle or Force
- Thread Friction Torque vs. Angle or Force
- Torque-Tension Coefficient vs. Angle or Force
- Input Torque, Thread Torque, Underhead Torque vs. Angle or Force
- Input Torque, Thread Friction Torque and/or Underhead Friction Torque vs. Angle or Force
- Thread Friction Coefficient and Underhead Friction Coefficient and references, or total, friction coefficient according to DIN 946/ISO 16047



MODEL 3200 SPECIFICATIONS

LabMaster Professional

4-channel High-speed Data Acquisition Card
 Servo Control Card
 Four Inputs for Transducers, Load Cells, or Other Devices
 USB Port for Connection to Desktop or Laptop Computer Running LabMaster for Windows® Software

Analog Input

Number of Channels	4
Signal Conditioning	Full Bridge Strain Gage Transducer Compatible
Sensitivity	1 - 4 mV/V, and ±10 VDC
Excitation	10 VDC

Encoder Input

Number of Channels	1
Counter Resolution	32-bit
Input Frequency	1000 kHz Maximum
Excitation	5 VDC

Digital I/O

Outputs	7-bits
Inputs	8-bits
Compatibility	TTL
Optical Isolation	Available

Computer Requirements

Windows® XP, 7, or 10
 6 GB RAM
 60 GB Hard Drive
 CD-ROM Drive
 USB 2.0 Port

Supplied Accessories

Power Cord, USB Cable, Testing Software Installation Discs, Instruction Manual, A2LA Accredited Calibration Certificate

Recommended Accessories

Rotary Torque Angle Transducers, Thread Torque Clamp Force Load Cell, DC Drive Motor & Controller, Fixture Assembly, Portable Test Cart



Portable Fastener Test System



Back Panel



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