



LabMaster Professional

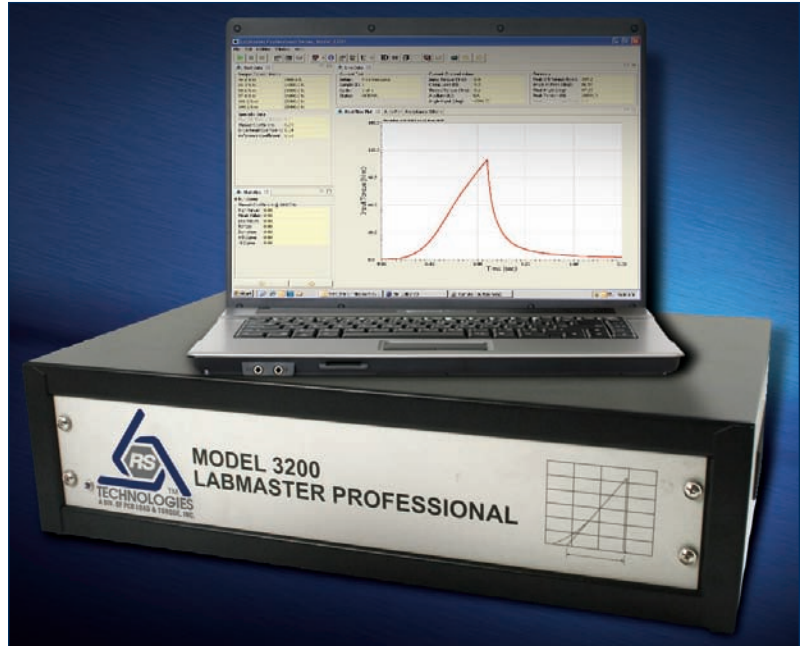
For Complete Torque-Angle-Tension Testing & Analysis of Threaded Fastener Components

Highlights

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

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



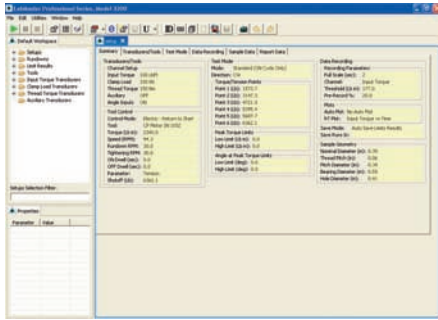
PCB Load & Torque Division's RS Technologies Model 3200 LabMaster Professional is the key part of a fastener torque-tension test system. It provides complete data acquisition of applied torque, angle of fastener rotation, clamp load and thread torque. This system allows graphing of any input versus any 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 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.

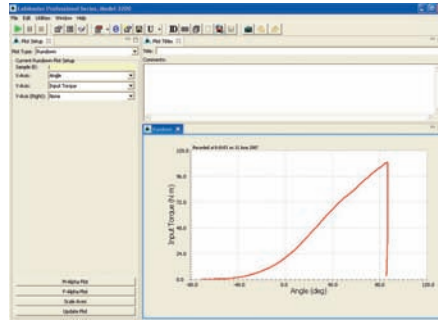
As with all PCB® instrumentation, these products are complemented with toll-free applications assistance, 24-hour technical service, and are backed by a no-risk policy that guarantees total customer satisfaction, or your money refunded.



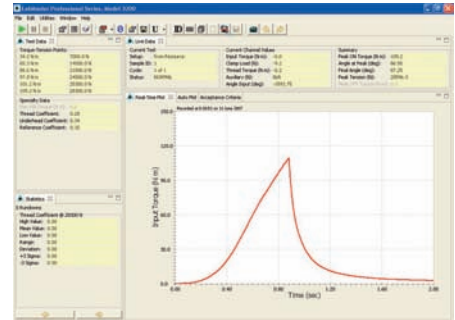
Portable Fastener Test System



Setup Summary Screen



Real-Time Plot Screen



Graphic Data Screen

Three-In-One System:

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

Employing full Windows® functionality with drop-down menus and point-and-click features, the LabMaster for Windows® software provides a user-friendly graphic interface. Operator can program the desired shutoff based on torque, angle of turn, or clamp load; tool torque output; and tool speed. The operator can also quickly make changes to existing test setups, easily select different tools and transducers, or view results of previous tests. An easily accessed transducer parameter and test setup directory further simplifies testing setup.

Easy Operation

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

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

High Speed Sampling

The LabMaster Professional includes a data acquisition card which provides high-speed sampling of up to 4000 Hz (software selectable). Sampling can be done versus a time or angle basis.

Comprehensive Data

A LabMaster Professional system, with a torque-tension research head and a torque-angle sensor, can measure and calculate the following:

- 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

Statistical Calculations

The LabMaster Professional offers a variety of statistical reports in numeric and graphic form. Statistical plots of ±3 sigma mean curves provide 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 technician 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

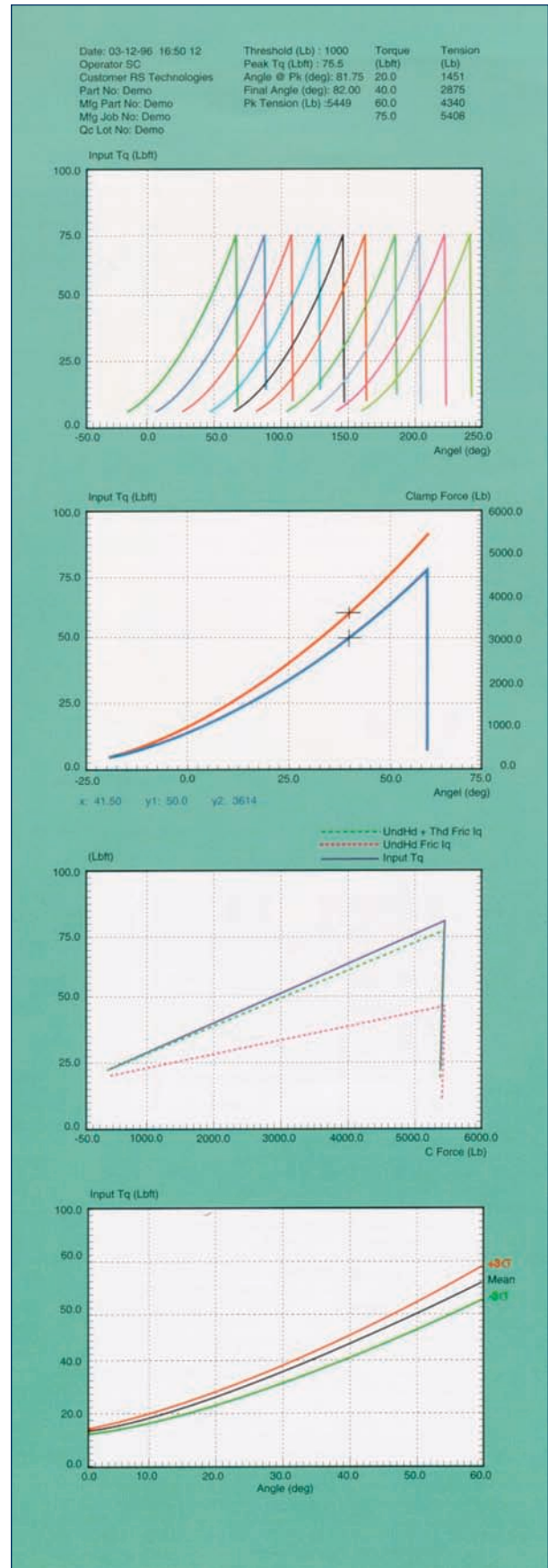
1. Standard Test Mode
2. Locknut-No Clamp Load Attained
3. Locknut-Attaining Clamp Load
4. Locknut-IFI Specification
5. Locknut-Chrysler Specification
6. Yield Determination
7. Set Torque-Tension Points: Specify up to 6 Tension Points & Obtain 6 Torque Points; or Specify 6 Torque Points & Obtain up to 6 Tension Points

Data appearing on screen or printout can include the following Test Plots

1. Input Torque vs. Time
2. Input Torque vs. Angle
3. Input Torque & Angle vs. Time
4. Clamp Force vs. Angle
5. Clamp Force & Input Torque vs. Angle
6. Clamp Force vs. Input Torque
7. Clamp Force & Input Torque vs. Time
8. Clamp Force & K vs. Input Torque
9. Tool RPM vs. Time
10. M-Alpha (tightening angle according to torque)
11. F-Alpha (tightening angle according to force measurement)

Research Plots

1. Underhead Friction Torque vs. Angle or Force
2. Thread Friction Torque vs. Angle or Force
3. Torque-Tension Coefficient vs. Angle or Force
4. Input Torque, Thread Torque, Underhead Torque vs. Angle or Force
5. Input Torque, Thread Friction Torque and/or Underhead Friction Torque vs. Angle or Force
6. Thread Friction Coefficient and Underhead Friction Coefficient according to DIN 946





Model 3200 LabMaster Professional

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 to 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® 2000, XP, or 7
- 2 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, and Portable Test Cart



Back Panel

PCB's Line of Fastener Test Products (formerly the RS Technologies product line) includes test systems and threaded fastener torque/angle/tension systems ideal for use in the Automotive, Aerospace & Defense, Power Generation industries, and for product assembly by manufacturers or processors of threaded fasteners or other companies that use threaded fasteners to assemble their products.

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