

PRODUCT DESCRIPTION

Testing Has Never Been Easier

The TCD225 tester has been optimized for the production environment. It features sophisticated firmware that allows you to perform virtually any type of test WITHOUT a personal computer or software. With the TCD225, you can perform any of the following test types:

- Load Limit Test
- Distance/Deflection/Time Limit Test
- Load Average Test
- Break Test
- Rupture Test
- CycleTest
- Loop Test
- Creep Test
- Load Hold Test

Hardware Architecture

The TCD225 tester has three main components: TCD Console, TCD225 Frame and TLC Sensors.

Metronics Innovation- The TCD Console
AMETEK partnered with Metronics, Inc. in developing our proprietary console for the TCD Series System. Metronics is a world leader in user interfaces for sophisticated measurement and metrology systems. We worked with Metronics to create the new TCD Console expressly for use with our new TCD System platform. The TCD Console will serve as the primary user interface for the TCD225 System. It features:

- Large, Color, Graphical Displays
 - Tabular Numeric Results
 - Graphical Results
- Intuitive User Interface
 - Menus
 - Prompts
 - Lists of Values
- Display Languages

The TCD Console firmware includes a menu of "stages" or "moves" that can be used and linked to create simple, single-stage test setups or sophisticated "multi-stage" test setups.

All-New TCD225 Frame

The TCD225 frame is an all-new design that is superior to any other Chatillon frame ever made. We optimized the frame to deliver outstanding speed control and precise distance measurements. Speed is controlled with an advanced closed-loop PID control algorithm that ensures a consistent speed accuracy of better than 0.2%.

The TCD frame features include:

- 0.001 to 50 in/min (0.01 to 1270 mm/min) Adjustable Speeds
- 20 inch (500 mm) Travel
- Deflection Compensation
- Independent Return Speed
- T-Slot Platform

TLC Series Load Cells

The TLC Series load cells are the exact same load cells used with the DFS-R-ND force gauge. The only difference, and the reason we call them a TLC instead of an SLC is because they calibrate slightly different on a TCD Console compared to a DFS-R-ND gauge. The electronics and microprocessor in the TCD Console is considerably faster than the DFS gauge, therefore, we use the TLC name to distinguish one from the other.

YES- YES- YES you can use an SLC load cell on a TCD System (but you have to recalibrate) and YES- YES- YES- you can use a TLC load cell on a DFS-R-ND gauge (but you have to recalibrate using the gauge).

The TCD Console maintains an overload history on all TLC sensors similar to but better than the DFS gauges.

Software Architecture

The TCD Console contains the TCD System firmware. The firmware is used to create tests and analyse results.

Stages- The Basic Building Blocks

The TCD225 Console can store up to 10 test setups in local memory. Each test setup is comprised of various "stages" or "moves" that cause the system to move in a direction; take a load reading, etc. Every stage has its own configurable and independent characteristics. The firmware consists of the following "stage" types:

- Tension Stage
- Compression Stage
- Cycle Stage
- Hold Stage
- 0 (Zero) Stage
- ? (Ask) Stage

A test setup can have as many stages as needed (there are no limits). However, the system can only report up to 10 results for any test (I don't know of any tests where you would need ten independent results).

Tension Stage

The tension stage causes the crosshead to move in a tensile direction (upward). You may have multiple tension stages in a given test setup. Each tension stage can be defined with its own independent speed.

Each tension stage may be defined by a load or distance (move to a load setpoint or move to a distance setpoint).

Compression Stage

The compression stage causes the crosshead to move in a compression direction (downward). It is identical to the tension stage with an independent speed, load or distance characteristic. You may have multiple compression stages in a test setup.

Cycle Stage

The cycle stage allows you to cycle between two stages in a test setup. You can use the cycle stage for preconditioning a spring or for performing validation testing over time. Because you build a cycle stage with individual tension and compression stage, each stage in the cycle can have an independent setpoint (load or distance) and independent speed. For example, you could have one speed that ramps upward, another speed that ramps downward and a final return speed. A cycle can provide you with the peak of the first cycle and last cycle. You can have a cycle counter based on a preset number of cycles or based on time. A countdown timer shows the time elapsed during the test.

Loop Stage

A loop stage is similar to the cycle stage except that data is reported for every stage change in the cycle. If you have 10 stages in your cycle, you can have 10 independent results for each stage. This allows you to more closely examine and analyze various stages within the loop.

Hold Stage

The hold stage can be used for constant load and creep testing, or for relaxation testing. A hold can be applied to any stage, so you can construct complex test setups such as a ramp to a load, hold for a period of time at that load, ramp to another load, hold for a period of time, then return to zero.

Zero Stage

You can establish multiple zero points within a test by adding a zero stage.

Ask Stage

You can add comments or notations during a test setup that instruct the user what to do next, or to confirm a procedure within the test.



Operating Modes

The TCD System has two operating modes: Normal and Height mode.

Normal mode is the most common operation. This mode is used when you aren't concerned about the sample's height.

Height mode is used when the sample's height is important. You can use height mode to operate the TCD225 as a height indicator. Or, you can use height mode for testing springs, foams or other materials where you need to measure the physical changes in height during a test setup. The height mode contains an automatic datum procedure. Simply place the TCD System in height mode and the system will determine the datum based on absolute zero (the lowest the crosshead can travel). All measurements will be referenced from the absolute position to within 0.001 inch (0.02 mm).

Data Acquisition

A major strength of the TCD System is the data acquisition capability. Users can set a sampling rate from 1 Hz to 1000 Hz. This data can be used to draw graphs or automatically downloaded to a USB flash drive. We provide a 1GB flash drive with every system ordered. Users can then import the data from their flash drive to a personal computer. The data can be directly uploaded into Excel or any OLE2 compatible application using the "Open With" command in Windows.

Security

The TCD System has one security level called SUPERVISOR. The supervisor can restrict access to the test setup menu and can use a "Mark Deletions" option. This will allow a user to delete a test data so that it isn't used to calculate statistics. The test data is maintained.

The AUTORUN function is the ultimate in security. It allows the TCD System to operate from the USB flash drive containing the test setup. For example, the test setup could be created on a development system. This test setup would be saved to the USB flash drive. The supervisor could provide this to an authorized user who could automatically run the test setup and save the data directly to the flash drive. The TCD System could be setup to allow the test to only be performed from the flash drive.



The new TCD Console with color graphic display.



For more info go to: <http://www.dmm.ca/chatillon-tcd225-digital-force-tester.htm>

