Chatillon
force measurement
AMETEK

# CS2Plus

## Advanced Force Test System

### 225 lbf (1kN) & 1100 lbf (5kN)



# 2 Force Measurement Has Never Been Easier

The Chatillon® CS2Plus digital force testers are revolutionary systems optimized for production testing applications, including medical devices, plastics, packaging, textiles, rubber and electronics to name a few. No personal computer is required; no proprietary software is required; no knowledge of programming languages is required. This easy, flexible and affordable Tester uses a 2 in 1 Laptop Console in both Production and Laboratory environments.

Two options are available. Both the CS2Plus-225 and CS2Plus-1100 provide an easy-to-use, intuitive and straight-forward method for tensile, compression, sheer, flexural, peel, or advanced multi-stage testing that conform to ISO or ASTM testing procedures.  With the CSPlus Series you can perform:

- Limit testing to load, displacement, height or time
- Break testing – sharp or percentage
- Multi-stage, cyclic tests and height measurements
- Peel testing
- Spring Testing
- Capture 2nd Peak
- RS-232 Auto Result Export

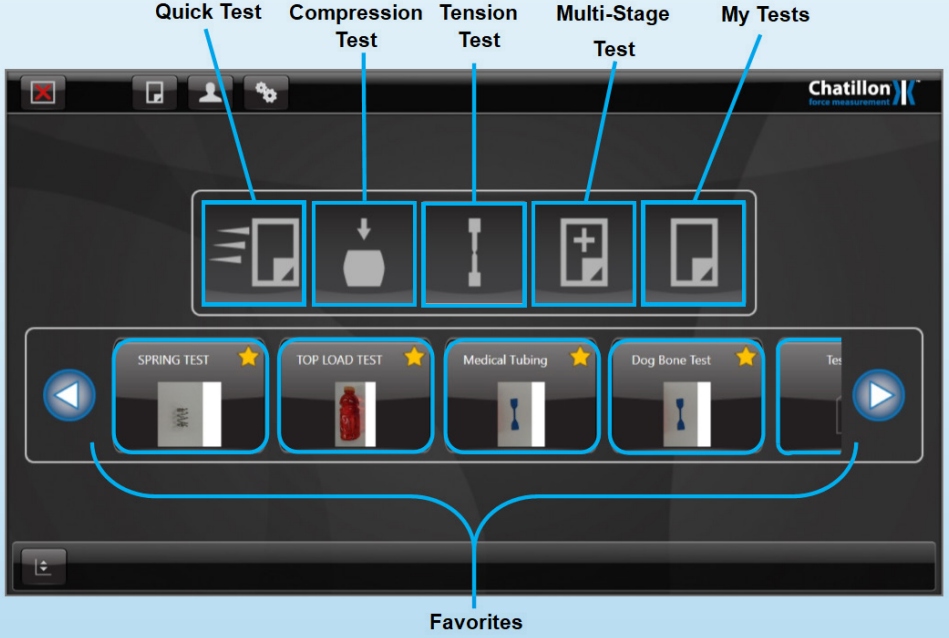
When repetitive testing and exporting of results is important, but you don't need advanced materials test functionality, the CS2Plus is an excellent choice.

## A 2-in-1 Laptop Console with Built-in Flexibility for Production and Lab Environments

The CS2Plus uses a 2-in-1 Laptop Console with an 11 inch touch screen for easy and continuous operation in a production environment. The touch screen is also easy to operate, making it the perfect interface for users regardless of their skill level. A few touches are all it takes to setup a test, select the test runs and export reports. The Laptop Console may also be unfolded and setup using the keyboard as a laptop beside the CS2Plus.

With the CS2Plus you can:

- Define your favorite, frequently-used tests for immediate access and insert a sample picture as an Icon for unambiguous test selection.
- Switch seamlessly during test batch execution between individual test graphs, batch results and statistics.
- Print and export data directly from the screen or use automatic data archiving.

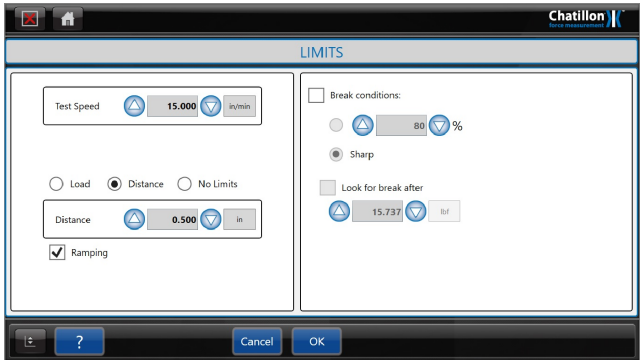


# 3 Tests Features & Functionality

## Limit and Break Testing

Setup a test based on a load, displacement, height, or time limit in both tensile and compression directions. Similarly, a break or rupture can be defined as a sharp break or percentage drop from the peak load measured.

As an added feature, a quick test button (compression or tension) allows the user to define and execute a test with only a few clicks, reducing setup time for trial and error testing.



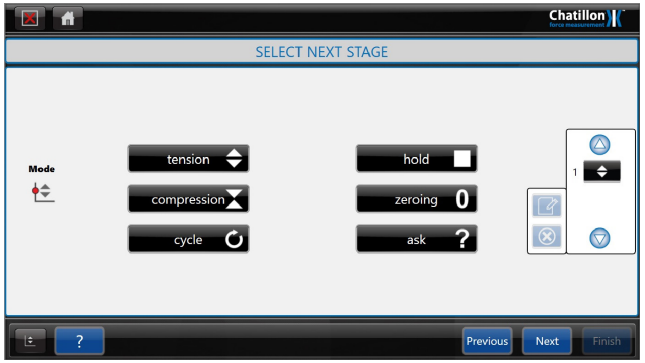



*Conduct a quick test by simply entering the type of test, pre-load (if any) and limits.*

## Multi-Stage & Cycle Testing

The multi-stage setup allows users to configure virtually any type of test setup imaginable. Each part of a test is defined as a “stage”. Each stage can be set up with its own independent load or displacement characteristic and speed. The touch screen interface with stage specific icons provides an excellent overview and makes it is easy to add, edit or delete a stage.

Multi-stage testing can be used for cycle, hold, insertion/extraction, snap-on/off, switch toggle, or other sophisticated test methods. Users have total freedom to create the test movement required, using their sample without the need for expensive 3rd-party software applications or validation requirements.




*Electro-mechanical testing systems can be used for short-term cycle and hold tests. Consult your sales person for your specific application requirements.*

## Height Mode

The CS2Plus includes a height mode of operation that allows the user to perform pre-conditioning and then measure height at specific loads. The system has an automatic datum routine that defines the reference point for height measurements. An Absolute Distance Feature allows driving to a specific distance in reference to zero.

## Peel Testing

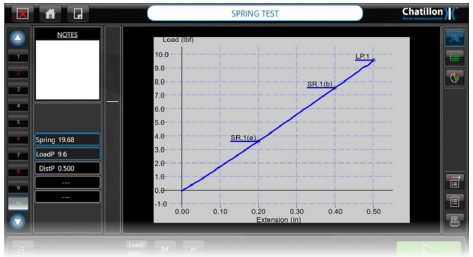
Determine the maximum and average peeling force of various materials between two points that you define in the test program setup.

# 4 Tests Features & Functionality

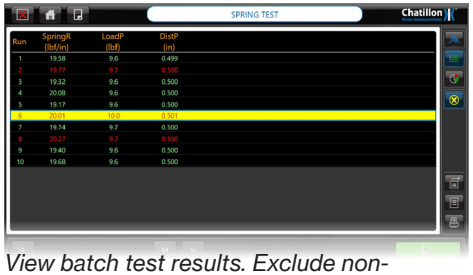
## Key Features

- **Force measurements made easy**
  Accurate results, easy programming, maximum throughput and minimal operator training.
- **One-click operation**
  Simple and intuitive; with one-click access to favorite tests as well as test results.
- **Modern design & technology**
  Linear guide technology, pre-loaded ball screws, and advanced software compensation ensures high displacement measurement precision.

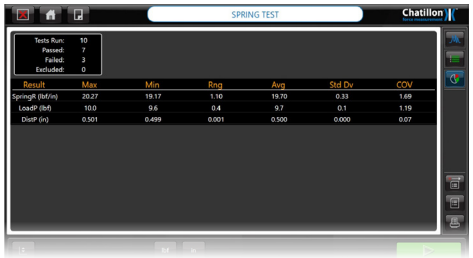
  11 Inch 2-in-1 Laptop Console and easy to use, touchscreen or keyboard.
- **Large, flexible work area**
  Up to 180 mm throat depth for large specimens and a wide range of grips and fixtures available.
- **Sample testing and quality assurance**
  Immediate pass/fail output, automatic data export, controlled access levels and barcode scanning functionality
- **Security**
  Two levels of user access: supervisor and operator. Both can be password protected
- **Plug & play**
  A self-contained 2-in-1 Laptop Console using Windows 10/11. Just turn on the power and you're ready to start your test.



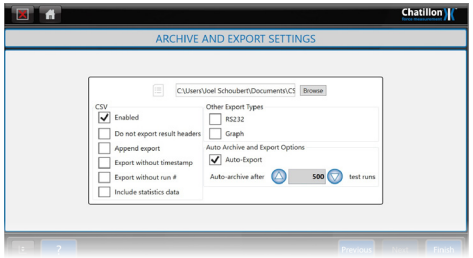

*Switch between load and distance view in graph mode. Add notes to tests.*




*View batch test results. Exclude non-compliant test runs.*




*Choose statistic results to display for complete batch tests.*




*Specify your desired time interval or number of test runs before auto archiving.*

## Test Results

Test results are displayed in various views, either as a graph (single result)
or in tabular format showing multiple test results. Measured results are available for all test types. Simply select the results (up to 10) you want displayed, such as; load at limit, peak load, displacement at break, Spring Ratio etc. You can then Label the test results to adhere to your preferred terminology.

Embedded statistical process control (SPC) calculations for statistical results come standard and can be viewed in the statistics view. Test results and statistics are available for export and printing as well.

## Saving, Archiving, Exporting Data

Test results are automatically saved and can be recalled to analyze results or to continue testing a batch run.

Test results are stored as CSV files and can automatically be exported to a USB device,  a local or remote drive, via an Ethernet connection (with an optional USB to Ethernet Adaptor), or WiFi communication. The results can also be exported via RS-232 (with a USB RS-232 adapter cable) ideal for production environments linked to a corporate Data Acquisition Management System. In addition, the software features a standard report in PDF format that can be saved or printed directly from the Laptop Console. The PDF report automatically incorporates the test parameters, results and statistics selected for the test. Furthermore, the report can be configured with your company logo.

The CS2Plus also boasts an auto-archive function. In order to secure your data and results, the system can be configured to archive your results  in the same manner as exporting a CSV file. Just specify the frequency of your Auto-Archiving and it's done.

# 5 Tests Features & Functionality

## Effortless Communication

The CS2Plus has been designed to integrate seamlessly into your systems and to obtain the best possible test efficiency. The units accept bar code scanners to quickly import product ID or other relevant information and correlate this with the specific test run. You can transfer to a USB device, local or remote drive, via an Ethernet connection (with an optional USB to Ethernet Adaptor), or WiFi communication. The results can also be exported via RS-232 (with a USB
RS-232 adapter cable) ideal for production environments linked to a corporate Data Acquisition Management System.

## Secure Access

The user interface features two levels of user access: supervisor and operator. Both levels can be password protected. The supervisor level has complete system access, while the operator level can be configured to limited specified tests or test functions. To enhance ease of use, specific tests can be defined as favorites to be displayed on the Home screen for immediate testing.

## Language Choice

The CS2Plus features multiple languages so operators can configure and perform tests in the language they are most comfortable using. English, French, German, Spanish,
Chinese and Turkish are all supplied as standard.

## Flexible Mounting

The T-slot table contains multiple through holes for mounting various types of threaded fixtures and eye-end adapters. The fixture mounting block can be easily positioned to ensure proper alignment with the load measuring sensor.

You can choose from a wide range of standard grips and fixtures as well as custom-designed versions for use with the CS2Plus. Some examples are: Wedge action grips that self-tighten • Pneumatic action grips for faster sample clamping •Vice action grips for film and semi-rigid materials • Compression platens available in many sizes • 3- and 4-point bending fixtures • Self-tightening grips to reduce operator fatigue • Bollard grips for wire and rope testing







## Exceptional Service & Calibration

For over 75 years, Chatillon has provided customers worldwide with service and calibration. Chatillon maintains an NIST traceable calibration laboratory for verification and calibration of force. Contact your local distributor or AMETEK Regional Sales Office for more information on installation, training, and on-site calibration services.

# 6 Specifications

## System Specifications

### Test Setups

- Load limit
- Displacement limit
- Height limit
- Time limit
- Break or rupture
- Cycle and loop
- Multi-stage (define test as a combination of the above)
- Tensile
- Compression
- Peel

### Load Measurement System

- CLC Series load sensors
- Auto-recognition, “plug & test”
- Sensor overload history log
- On-site field calibration using traceable master load cells in combination with deadweights.

Load measuring system meets or exceeds the following: ASTM E4, BS 1610, DIN 51221, ISO 7500-1, EN 10002-2, AFNOR A03-501. (AMETEK recommends system verification on-site at the time of installation by an authorized Chatillon Service Provider, as required by ASTM E4 and ISO 7500-1.)

### Data Output, Ports, and Slots

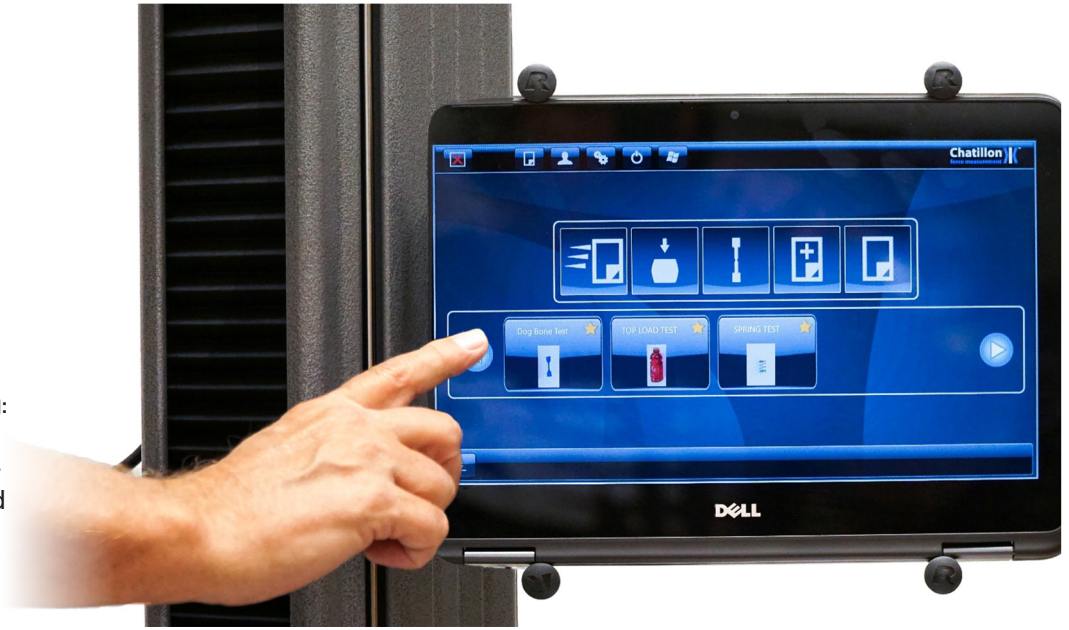
- Two USB 2.0 ports and one USB 3.0 port available for USB connections as: Ethernet, RS-232 and Barcode Readers when used with adaptors.
- WiFi connectivity
- Save data locally to 128 Gb Hard drive.
- Connect a Large Screen monitor for remote viewing through the HDMI connection.
- Export data and results to CSV file
- Export Test Report to PDF file with Graph

### Displacement Measurement

- Displacement measurement meets or exceeds the following: ASTM E83, BS 3846, ISO 9513, EN 10002-4
- The system can apply displacement compensation as a standard function to compensate for system deflection.

### Operating System

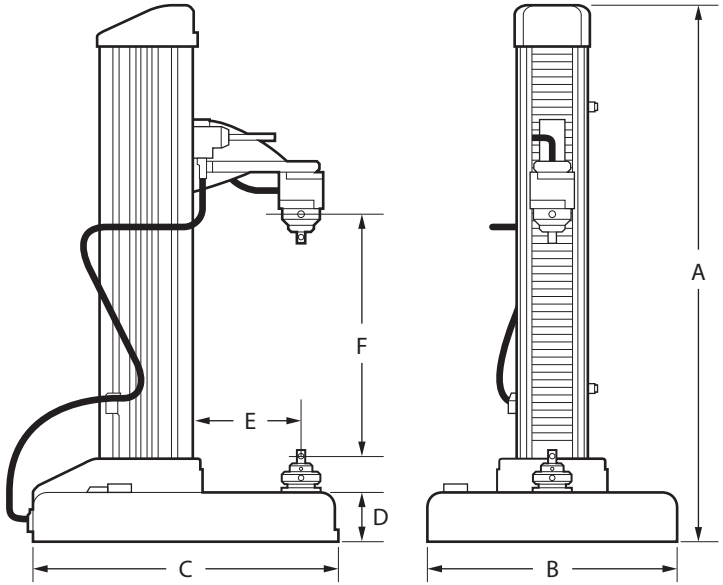
- Windows Professional 11 – which includes multiple user configurations for added security and networking.



# 7 Specifications

## Technical Specifications

### Dimensions




| | | | |
|---|---|---|---|
| A | Height | CS2+225 | 39.4 in / 1001 mm |
| | | CS2+1100 | 51.6 in / 1310 mm |
| B | Width (excluding console) | CS2+225 | 18.1 in / 460 mm |
| | | CS2+1100 | 18.1 in / 460 mm |
| C | Depth | CS2+225 | 21.9 in / 557 mm |
| | | CS2+1100 | 21.9 in / 557 mm |
| D | Base Height | CS2+225 | 4.3 in / 108 mm |
| | | CS2+1100 | 4.3 in / 108 mm |
| E | Throat Depth | CS2+225 | 7.1 in / 180 mm |
| | | CS2+1100 | 5.9 in / 150 mm |
| F | Crosshead Travel | CS2+225 | 19.7 in / 500 mm |
| | | CS2+1100 | 31.5 in / 800 mm |

| Force Capacity | |
|---|---|
| CS2+225 | 225 lbf / 1000 N |
| CS2+1100 | 1124 lbf / 5000 N |

| Maximum Crosshead Travel (between the eye ends) | |
|---|---|
| CS2+225 | 19.7 in/500 mm |
| CS2+1100 | 31.5 in/800 mm |

| Throat Depth | |
|---|---|
| CS2+225 | 7.1 in / 180 mm |
| CS2+1100 | 5.9 in / 150 mm |

| Crosshead Speed Range (at full load) | |
|---|---|
| CS2+225 | 0.001 to 50 in/min / 0.01 to 1270 mm/min |
| CS2+1100 | 0.001 to 40 in/min / 0.01 to 1016 mm/min |

| Maximum Return Speed | |
|---|---|
| CS2+225 | 50 in/min / 1270 mm/min |
| CS2+1100 | 40 in/min / 1016 mm/min |

| Speed Accuracy (unloaded) |
|---|
| ± 1% of selected speed |

2% to 100% of maximum speed.

| Crosshead Displacement Accuracy (unloaded) |
|---|
| ± 0.25% of reading |

2% to 100% of maximum travel.

| Displayed Displacement Resolution |
|---|
| 0.001 in / 0.01 mm |

| Load Cell Force Accuracy (non-dedicated) |
|---|
| ± 0.25% full scale of load cell capacity |

| Load Cell Force Accuracy (dedicated) |
|---|
| ± 0.10 % full scale of load cell capacity |

| Useable Data Sampling Rate |
|---|
| 1000 Hz |

| Relative Humidity (non-condensing) |
|---|
| 20 to 85% |

| Operating Temperature |
|---|
| 5 to 35° C / 41 to 95° F |

| Storage Temperature |
|---|
| -17 to 54° C / 1 to 129° F |

| Supply Voltage (± 10%) |
|---|
| 115 VAC/230 VAC, 50 to 60 Hz |

| Power Rating | |
|---|---|
| CS2+225 | 115 VAC @ 3.15 A or 230 VAC @ 3.15 A |
| CS2+1100 | 115 VAC @ 6.3 A or 230 VAC @ 6.3 A |

| Weight of Machine | |
|---|---|
| CS2+225 | 115 lb/52 kg |
| CS2+1100 | 145 lb/66 kg |

All systems conform to relevant EU standards and are CE marked.

On site verification as per ASTM E4 and ISO 7500-1 is recommended.

| Order Number—CSPlus Machines | | |
|---|---|---|
| CS2+225- | CS2Plus-225 Series test machine, 225 lbf | |
| CS2+1100- | CS2Plus-1100 Series test machine, 1100 lbf | |
| | 115 V | 115 V, US Power Cord |
| | 230 V | 230 V, Uk Power Cord |
| | 230 V CNAU | 230 V, China/Australia Power Cord |

| Options | |
|---|---|
| 01/3909 | Protective cover |
| CBT/1400/00 | RS232 cable with PCB for exporting data to PC |

| Order Number—Load Cells and Resolutions | | | | | |
|---|---|---|---|---|---|
| **Model** | **ozf** | **gf** | **lbf** | **kgf** | **N** |
| CLC-250G | 8 x 0.002 | 250 x 0.05 | 0.5 x 0.0001 | 0.25 x 0.0001 | 2.5 x 0.0005 |
| CLC-0002 | 32 x 0.005 | 1000 x 0.1 | 2 x 0.0002 | 1 x 0.0001 | 10 x 0.001 |
| CLC-0005 | 72 x 0.01 | 2000 x 0.2 | 4.5 x 0.0005 | 2 x 0.0002 | 20 x 0.002 |
| CLC-0010 | 160 x 0.02 | 5000 x 0.5 | 10 x 0.001 | 5 x 0.0005 | 50 x 0.005 |
| CLC-0020 | 320 x 0.05 | 10,000 x 1 | 20 x 0.002 | 10 x 0.001 | 100 x 0.01 |
| CLC-0050 | 800 x 0.1 | 25,000 x 2 | 50 x 0.005 | 25 x 0.002 | 250 x 0.02 |
| CLC-0100 | 1600 x 0.2 | 50,000 x 5 | 100 x 0.01 | 50 x 0.005 | 500 x 0.05 |
| CLC-0200 | 3200 x 0.5 | 100,000 x 10 | 200 x 0.02 | 100 x 0.01 | 1000 x 0.1 |
| CLC-0500 | 8000 x 1 | 250,000 x 20 | 500 x 0.05 | 250 x 0.02 | 2500 x 0.2 |
| CLC-1000 | 16000 x 2 | 500,000 x 50 | 1000 x 0.1 | 500 x 0.05 | 5000 x 0.5 |

All values are maximum force rating and smallest resolution.

As standard your CLC load cell is calibrated to 0.25% of FS from the factory. A dedicated load cell can be supplied that is calibrated to 0.1% of FS. Please indicate this option with a DED notation after the ordering number, i.e. CLC-0010-DED.

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Chatillon force measurement AMETEK

For detailed specifications go to the Data Sheet at ametektest.com

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