Chatillon
force measurement

DFS II Series

DFS II / DFS II-R / DFS II-R-ND
Digital Force Gauge

AMETEK®
SENSORS, TEST & CALIBRATION

Functions and Features

Easy-to-Read Display

A large, easy-to-read full color LCD can display readings, icons and visually indicate gauge or test status using various colors. The high resolution display features brightness adjustments and can be inverted when required. The display can even be "hidden" at the press of a button. A load bargraph indicating load direction, measured load and safe load and helps prevent overloads: the load bar changes from green to red to indicate proximity to load cell capacity. The integral loadcells feature mechanical overload protection at 150% Full Scale.

Single Touch Operation

The rubber keypad features dedicated and dynamic function keys. The function keys correspond to displayed options and guide the user during operation. A navigation pod lets you navigate through the menus and to scroll and change values quickly. The innovative "i" key can be used to display critical information on the gauge such as gauge capacity and resolution, battery life remaining, loadcell overload history, even service information including last calibration date, or the location of service centers.

Dependable Measurements

The DFS II Series features an integral loadcell sensor that delivers repeatable, accurate results. The innovative load bargraph shows dynamic load, direction of load and warns you of pending overload conditions. Smart technology in the gauge even keeps track of overload history to aide in maintenance and troubleshooting.

DFS II Series

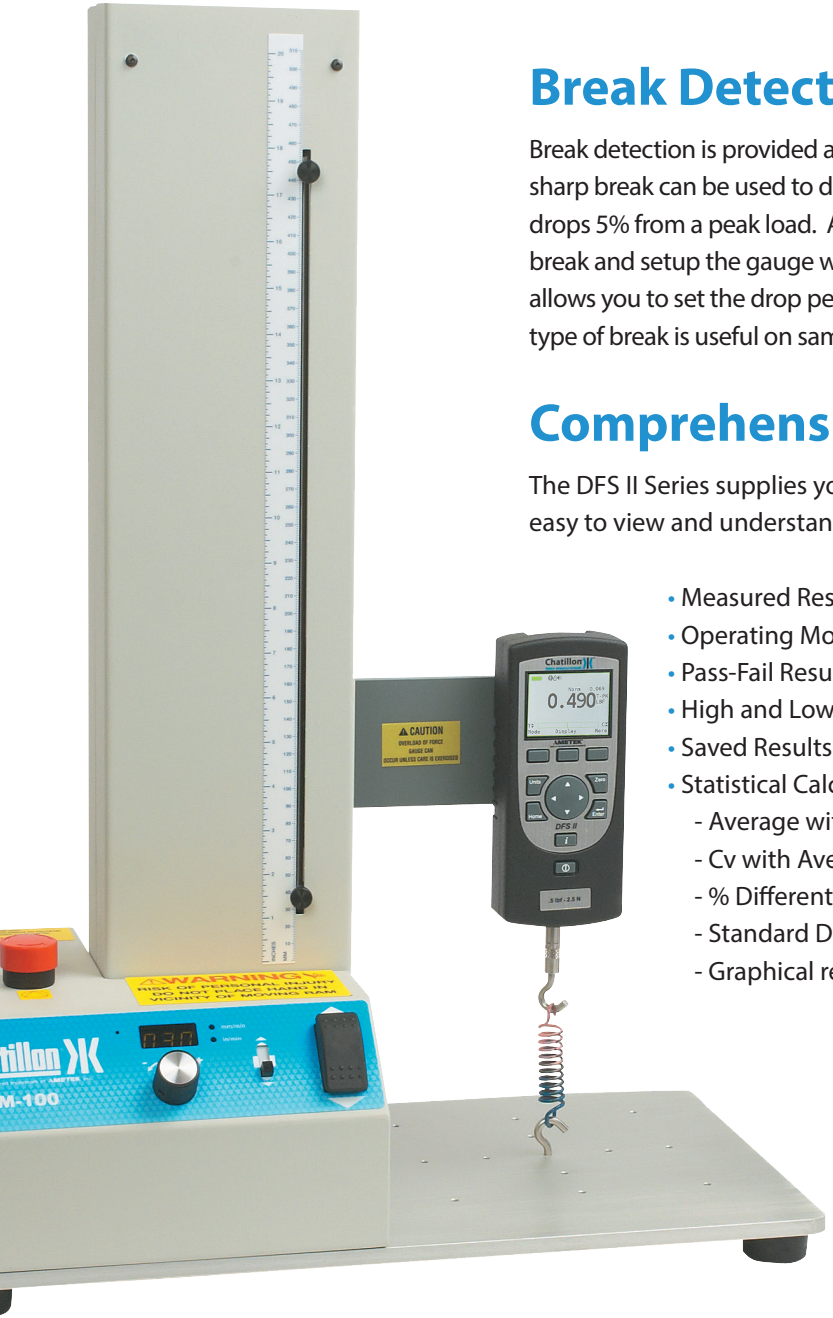
The DFS II Series offers the best price performance of any digital force gauge available today.

This compact, easy-to-use force gauge is designed for basic and complex applications. Ideal for handheld or test stand applications, the DFS II may be equipped with integral loadcells or smart remote sensors for load measurement or torque measurement.

Measurement accuracy is better than 0.1% full scale in integral load cell or dedicated remote models. A large, easy-to-read, high resolution, full color dot matrix LCD display supports a variety of standard gauge functions including normal and peak readings, high/low limits, setpoints, pass/fail results, statistical results, load averaging, load comparisons, % and sharp break detection, loadcell actuation and direction. Loads are displayed in ozf, gf, lbf, kgf and N units. The display can be inverted and displayed results may be "hidden" from the operator. The DFS II also offers password protection for gauge set ups.

AMETEK®
SENSORS, TEST & CALIBRATION

DFS II Series



Break Detection

Break detection is provided and two types of breaks are supported. A sharp break can be used to detect whenever the load measurement drops 5% from a peak load. Alternatively, you may override the sharp break and setup the gauge with a % break detector. The % break detector allows you to set the drop percentage that is used to define a break. This type of break is useful on samples with high elastic characteristics.

Comprehensive Results

The DFS II Series supplies you with comprehensive results that are easy to view and understand. The gauge displays:

- Measured Result with Units
- Operating Mode
- Pass-Fail Result
- High and Low Load Results
- Saved Results
- Statistical Calculations
  - Average with MIN and MAX Results
  - Cv with Average and Standard Deviation
  - % Differentiation between Successive Results
  - Standard Deviation
  - Graphical representation of saved results

Outputs

The DFS II Series comes standard with digital and analog outputs. RS232 outputs are supported with baud rates from 9600 to 115,600. Simply select the baud rate and whether or not you want to gauge to transmit with our without units. The unit also is supplied with USB communications capability. You may select the Mitutoyo output when communicating with a Mitutoyo device. Or, you may use the ±2V analog output to drive alarms or other ancillary devices. The DFS II features protocols for Chatillon test stands, Mitutoyo devices and an Alternate protocol.

Calibrate and Verify Status

The DFS II Series incorporates flash memory and hosts a set of self-diagnostic functions for monitoring the display, keypad and electronics. Using the "i" key, you have immediate access to battery conditions, including estimated battery life remaining. You can also view loadcell status, including the number of overloads that have been applied to the gauge. Zero offset verification is standard and a step-by-step calibration procedure is built-in allowing you to calibrate your DFS II gauge with certified standards.

Time Method

The Time method allows you to establish your load averaging based on a load threshold and time duration. The load threshold determines the start of the averaging, while the time duration defines the length of the test period. The gauge will begin taking readings when the threshold is reached and will continue to take and average readings until the time duration has expired.

Automate with ForceTest

Chatillon force measurement

Expand Functionality

The ForceTest software expands the functionality of your Chatillon DFS II force gauge. This easy-to-use Windows based software interfaces directly to your digital force gauge enabling you to automatically perform tests and graphs using a personal computer.

Test results can be followed directly on the screen while the test is running.

Intuitive User Interface

The colorful and intuitive user interface ensures that tension, compression, torque, peel and friction tests are simple to set up. Custom chart colors can be set for easy viewing.

Units of measure, fonts, titles and force measurement resolution can also be customized through the ForceTest software.

Wide Variety of Options

Force at maximum, at break, in a time window, average force and much more can be captured using the ForceTest software.

Basic force measurement such as tensile and compression test formats, including pull to break, pull to limit, compress to rupture and compress to limit are performed by clicking just a few buttons.

Reduce Setup Time

To reduce setup time the ForceTest software offers pre-set test methods. Once a template is created, it also empowers its user to auto load the latest test performed, and to open previously saved tests for use as template for new tests.

Easy Export and Reporting

Test results are presented in a spreadsheet format allowing you to analyze and manipulate data and perform common mathematical and statistical calculations.

Results may be displayed graphically versus time. Tabular results are displayed and can be used to create relationships, queries or used to produce reports.

Test results can be exported to a .csv format. Graphs and test results can also be exported directly to PDF and Word formats.

AMETEK®
SENSORS, TEST & CALIBRATION

SLC Remote Load Cells

Chatillon force measurement

Dedicated SLC Remote Load Cells

The DFS II with dedicated remote load cells is the ideal solution for applications that require a measurement where there is no room for the gauge. The gauge may be handheld our remotely mounted and the load cell may be placed right where it needs to be to take the reading. This is the answer if one load cell will address all of the testing needs or if multiple gauges will be used. The user can have the gauge where it needs to be so that a reading may be easily taken or so that it is not interfering with the test being performed. The gauge will operate the same as if it were an integral load cell and all functions will operate normally.

Accuracy of the Dedicated Remote Models

If the dedicated remote load cell is chosen, the accuracy in the ranges of the standard integral load cells applies. The load cell is dedicated to that model and may be calibrated specifically for that gauge. These units carry an accuracy of ±0.10% of full scale: a highly accurate device.

Non-Dedicated SLC Remote Load Cells

If you need flexibility in your applications, the DFS II with non-dedicated remote load cells is the answer. As is the case with the dedicated load cells, the gauge may be handheld or remotely mounted and the load cell may be placed right where it needs to be to take the reading. However, this configuration also gives the user the flexibility of having interchangeable load cells that may be used with a single gauge.

This is the unit to select if there is a need for multiple ranges of measurements required: one unit can do it all. It is also more economical to purchase the DFS II-R-ND with SLC load cells than purchasing several individual gauges for the different range applications. The SLC load cells for the non-dedicated models are also available in higher ranges, to 10,000 lbf, allowing for a wider range of applications.

Accuracy of the Non-Dedicated Remote Models

There is a small price to pay for the additional range and economical flexibility of having non-dedicated remote load cells. If the non-dedicated remote load cell is chosen, the load cell is not dedicated to that model so the calibration is such that it allows for some variance when connected to different gauges. These units carry an accuracy of ±0.25% of full scale for standard ranges and ±0.50% of full scale for the extended ranges making this an accurate tool given the flexibility.

AMETEK®
SENSORS, TEST & CALIBRATION

STS Remote Torque Sensors

Non-Dedicated STS Remote Torque Sensors

In addition to the force measurement capability of the DFS II Series with non-dedicated remote load cells, Chatillon also offers the STS Series of remote torque sensors. When combined with the DFS II-R-ND Series, these rugged and accurate sensors turn your force gauge into a torque measurement device: no need to purchase another gauge. As is the case with the dedicated load cells, the gauge may be handheld our remotely mounted and the torque sensor may be manipulated to take the reading. This configuration also gives the user the flexibility of having force and torque measurement in a single gauge. This is the unit to select for maximum flexibility: one unit and interchangeable sensors can do it all. The STS series of torque sensors is available in ranges from 3 in-lb to 200 in-lb. The gauge will operate the same as if it were an integral load cell and all functions will operate normally.

Accuracy of the STS Remote Torque Sensors

There is a small price to pay for the additional range and economical flexibility of having non-dedicated remote torque sensors. If the non-dedicated remote torque sensor is chosen the torque sensor is not dedicated to that model so the calibration is such that it allows for some variance when connected to different gauges. These units carry an accuracy of ±0.30% of full scale for standard ranges making this an accurate tool given the flexibility.

Ordering

Chatillon force measurement

DFS II Series					
Model	**ozf**	**lbf**	**gf**	**kgf**	**N**
DFS2-250G	8 x 0.002	0.5 x 0.0001	250 x 0.05	1 x 0.0001	2.5 x 0.0005
DFS2-002	32 x 0.005	2 x 0.0002	1000 x 0.1	1 x 0.0001	10 x 0.001
DFS2-010	160 x 0.02	10 x 0.001	5000 x 0.5	5 x 0.0005	50 x 0.005
DFS2-025	400 x 0.05	25 x 0.002	10000 x 1	10 x 0.001	100 x 0.01
DFS2-050	800 x 0.1	50 x 0.005	25000 x 2	25 x 0.002	250 x 0.02
DFS2-100	1600 x 0.2	100 x 0.01	50000 x 5	50 x 0.005	500 x 0.05
DFS2-200	-	200 x 0.02	-	100 x 0.01	1000 x 0.1
DFS2-500	-	500 x 0.05	-	250 x 0.02	2500 x 0.2
DFS2-R-250G	8 x 0.002	0.5 x 0.0001	250 x 0.05	1 x 0.0001	2.5 x 0.0005
DFS2-R-002	32 x 0.005	2 x 0.0002	1000 x 0.1	1 x 0.0001	10 x 0.001
DFS2-R-010	160 x 0.02	10 x 0.001	5000 x 0.5	5 x 0.0005	50 x 0.005
DFS2-R-025	400 x 0.05	25 x 0.002	10000 x 1	10 x 0.001	100 x 0.01
DFS2-R-050	800 x 0.1	50 x 0.005	25000 x 2	25 x 0.002	250 x 0.02
DFS2-R-100	1600 x 0.2	100 x 0.01	50000 x 5	50 x 0.005	500 x 0.05
DFS2-R-200	-	200 x 0.02	-	100 x 0.01	1000 x 0.1
DFS2-R-500	-	500 x 0.05	-	250 x 0.02	2500 x 0.2
DFS2-R-1000	-	1000 x 0.01	-	500 x 0.05	5000 x 0.2
DFS2-R-ND	-	-	-	-	-

Note: This is the gauge body only without sensors. Order SLC Series load cells and STS torque sensors seperately.

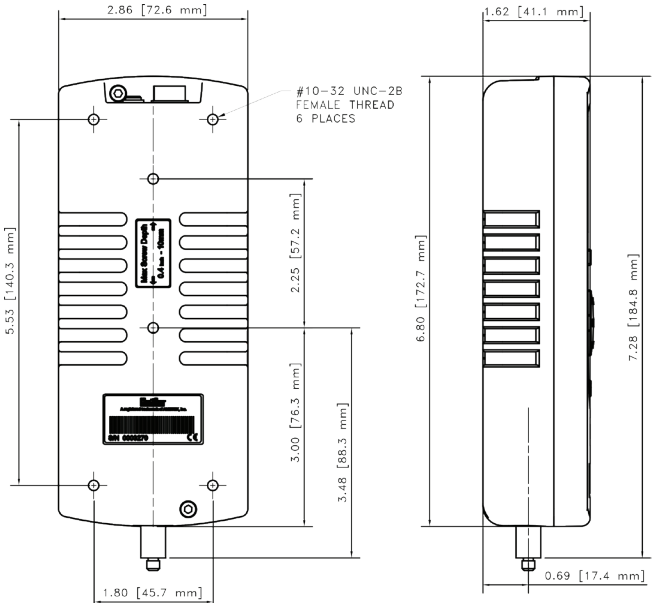
Supplied Ready-To-Go

Regardless of the configuration, your DFS II is supplied ready-to-go. The gauge and accessories are supplied in a durable carrying case that is designed for all components including adapters, load cells, software, and battery charger. The units are delivered with a long life rechargeable NiMH battery cell. The charger is universal: no need for adapters for different power supplies. The compliment of adapters is comprehensive and includes a hook, compression tip, extension rod, pointed tip, chisel tip, and a notch tip: everything that you need to get started.

Accessories			
Part No.	**Description**	**DFS II**	**DFS-R II**
SPK-FMG-008A	Chisel Point, 110 lbf	■	■
SPK-FMG-008B	Chisel Point, 550 lbf	■	■
SPK-FMG-009A	Point Adapter, 110 lbf	■	■
SPK-FMG-009B	Point Adapter, 550 lbf	■	■
SPK-FMG-010A	Notch Adapter, 110 lbf	■	■
SPK-FMG-010B	Notch Adapter, 550 lbf	■	■
SPK-FMG-011A	Flat Adapter, 110 lbf	■	■
SPK-FMG-011B	Flat Adapter, 550 lbf	■	■
SPK-FMG-012A	Hook, 50 lbf	■	■
SPK-FMG-012B	Hook, 110 lbf	■	■
SPK-FMG-012C	Hook, 550 lbf	■	■
SPK-FMG-013A	Extension Rod, 6" (152mm), #10-32	■	■
SPK-FMG-013B	Extension Rod, 6" (152mm), 5/16-18	■	■
SPK-DF2-UNIV	Battery Charger, Universal	■	■
SPK-DF-118	Carrying Case	■	■
P-10020	#10-32 to 5/16-18 Adapter	•	•
SPK-DF-HANDLE	Handle Assembly	•	•
SPK-DF-RS232	RS232 Cable, 10' (3m)	■	■
SPK-FMG-141	Pistol Grip	•	•
ML3867	Swivel Hook, 50 lbf	•	•
ML3850	Swivel Hook, 110 lbf	•	•
ML3869	Swivel Hook, 225 lbf	•	•
ML3868	Swivel Hook, 550 lbf	•	•
NC002500	Hook, Latch	•	•
NC003164-D	TCD WEDGE Software	■	■
SPK-FMG-USB	USB Cable for use with PC	•	•

Dimensions and Specifications

Specifications	
Accuracy	±0.1% of Full Scale Non dedicate remote cells and torque sensors are 0.25% and 0.3%
Maximum Overload	150% of Rated Capacity
Tare Capacity	10% of Rated Capacity
Resolution	10,000:1
Peak Capture Rate	10,000 Hz
Data Sampling	10 KHz
Display Update Rate	10 Hz
Data Save	Up to 100 Results
Power	Battery (Nickel Metal Hydride) or direct AC 120/230Vac
Battery Life	With dimming ON: 20 Hours With dimming OFF: 16 Hours
Operating Temperature	40 to 110°F (5 to 45°C)
Instrument Weight	1.5 lbs (0.7 kg)
Shipping Weight	4 lbs (2 kg)



ISO 9001/2000
ISO/IEC17025
Manufacturer

© 2017 AMETEK Inc.
Pub code: SS-DFS II-Series Issue: 1708

Information in this documents is subject to change without notice. No part of this document may be reproduced or modified in any form or by any means, electronic or mechanical, without express written permission from AMETEK Sensors, Test & Calibration.

USA, Florida
Tel +1 (800) 527 9999
chatillon.fl-lar@ametek.com

Chatillon® force measurement

www.ametektest.com

AMETEK®
SENSORS, TEST & CALIBRATION