Mecmesin

Digital force and torque gauges

Sales brochure



PHYSICAL PROPERTIES TESTERS GROUP

Explore our digital force and torque gauges

Measure the tensile and compressive strength of components and assemblies with the Mecmesin range of accurate and affordable digital force and torque gauges.



VFG

touchscreen digital force gauge

A versatile handheld touchscreen instrument built for tough environments that delivers accuracy and reliability. Compatible with our range of external plug-and-play 'Smart Sensors' (using a Smart Adaptor) for a wide range of tension, compression and torsion testing.

Connects to our manual and motorised test stands for greater control of test conditions such as speed and force.

A dual-zone display has an upper region showing the peak readings in all common units, whilst the lower zone provides either a live graphical plot of the force or torque applied, to identify critical events, or a statistical overview of stored readings.

Discover your next Mecmesin force gauge online - visit mecmesin.com/vfg



Sensors
Choose from a range of interchangable 'Smart' force and torque sensors, The VFG automatically recognises calibration data

Touchscreen
Easy to use icons and customisable interfaces - swipe or press and hold to access menus and options

Battery life
Fast-charging lithium-ion battery for more testing and less charging (compared with NiMH batteries)

Statistics
Use onboard statistics to save peak readings and perform basic statistical analysis onscreen

Alarms
Enhanced alarm configurations - including a 'pre-alert' warning for operators as load is applied

Visualisation
Powerful data analysis with live graphing and configurable values - pinch or drag to zoom or pan test result graphs

Capacities
Choice of 10 models from 2.5 N - 2.5 kN

Connectivity
USB-C connectivity for charging, RS232 interfacing with VectorPro Lite data capture and analysis, external printers and data loggers

Expansion
Up to 32GB external storage with dynamic data logging via Micro-SDHC card. All data points are saved in CSV format to suit common applications e.g. Excel





- Accuracy ±0.1% of full-scale
- 10 capacities - from 2.5 N to 2500 N
- Touchscreen - intuitive and customisa
- Graphing - live graphical plot of the te
- Data output - RS232 interfacing to Ve
- Onboard statistics - save readings an
- Wide range of grips and fixtures

VFG Specification Table – Capacity

Resolution - Up to 1:50,000 resolution depending on loadcell capacity (e.g. 2500 N x

Model	Part No.	mN	N	kN	gf	kgf
VFG 2.5	850-600	2500	2.5	-	250	-
VFG 5	850-601	5000	5	-	500	0.5
VFG 10	850-602	10000	10	-	1000	1
VFG 25	850-603	25000	25	-	2500	2.5
VFG 50	850-604	50000	50	-	5000	5
VFG 100	850-605	-	100	-	10000	10
VFG 250	850-606	-	250	-	25000	25
VFG 500	850-607	-	500	-	50000	50
VFG 1000	850-608	-	1000	1	-	100
VFG 2500	850-609	-	2500	2.5	-	250

- Accuracy ±0.1% of full scale*
- Full scale deflection of loadcell typically 0.5 mm
- Operating temperature 10°C - 35°C

* See mecmesin.com for more information

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VFTI

touchscreen force & torque indicator

The VFTI Touchscreen Force & Torque Indicator is a high specification touchscreen display unit, with all the features and benefits of the VFG, for use with Mecmesin 'Smart' force and torque sensors. These 'plug and play' sensors connect to the VFTI via a 'Smart' adapter enabling the calibration parameters of the sensor to be automatically recognised without the need for any operator input.

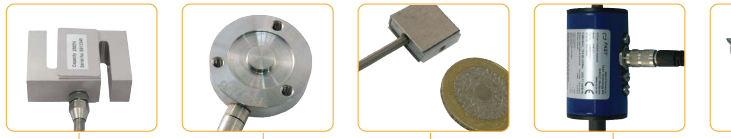
This versatility make the VFTI ideal for a variety of test applications requiring force or torque sensors.

Discover your next Mecmesin force gauge online - visit mecmesin.com/vfti



These sensors are ideal for mounting onto your own test rigs and jigs to monitor loa
used for checking calibration of your machinery to assess whether it is applying the

Force



Sensors
Choose from a range of interchangable 'Smart' force and torque sensors. The VFTI automatically recognises calibration data

Battery life
Fast-charging lithium-ion battery for more testing and less charging (compared with NiMH batteries)

Alarms
Enhanced alarm configurations - including a 'pre-alert' warning for operators as load is applied

Statistics
Use onboard statistics to save peak readings and perform basic statistical analysis onscreen

Visualisation
Powerful data analysis with live graphing and configurable values - pinch or drag to zoom or pan test result graphs

Touchscreen
Easy to use icons and customisable interfaces - swipe or press and hold to access menus and options



Discover Mecmesin range of sensors online

Mecmesin

AFG

The advanced force gauge

The Advanced Force Gauge (AFG) can be used hand-held or fixed to a motorised test stand to allow testing under controlled speed conditions. The AFG is fitted with a high-precision "internal" loadcell accurate to ±0.1% of full scale. For added flexibility the AFG is able to recognise data from a range of external 'Smart' force and torque sensors, so you can use it as a universal display for remote applications



Discover your next Mecmesin force gauge online - visit mecmesin.com/gauges

RS232, Mitutoyo, Analogue data output for easy data transmission. A calibrated analogue output can be supplied as an option

Audible & visual pass/fail alarms set a threshold for immediate alert when limits are exceeded.

Measurements made in N, kN, mN, lbf, ozf, kgf and gf with a sampling rate of 5000 Hz

Recognises data from a range of external 'Smart' force & torque sensors

Reversible display - view readings even when the gauge is positioned away from you



View the 1st peak and ultimate peak readings On-board memory stores up to 500 readings

Rugged metal housing ideal for factory or outdoor use

Internal loadcell stud for quick and easy



- Accuracy ±0.1% of full-scale
- 10 capacities - from 2.5 N to 2500 N
- Peak capture - Ultimate max + 1st pea
- Data output - RS232, digimatic and ar
- Pass/Fail Alarms - audible and visual
- Overload warning with trend bar
- Wide range of grips and fixtures

AFG Specification Table – Capacity

Resolution - Up to 1:5,000 resolution depending on load cell capacity (e.g. 2500 N x 0

Model	Part No.	mN	N	kN	gf	kgf
AFG 2.5	850-412	2500 x 0.5	2.5 x 0.0005	-	250 x 0.05	-
AFG 5	850-413	5000 x 1	5 x 0.001	-	500 x 0.1	0.5
AFG 10	850-414	10000 x 2	10 x 0.002	-	1000 x 0.2	1 x
AFG 25	850-415	25000 x 5	25 x 0.005	-	2500 x 0.5	2.5
AFG 50	850-416	50000 x 10	50 x 0.01	-	5000 x 1	5 x
AFG 100	850-417	-	100 x 0.02	-	10000 x 2	10 x
AFG 250	850-418	-	250 x 0.05	-	25000 x 5	25 x
AFG 500	850-419	-	500 x 0.1	-	50000 x 10	50 x
AFG 1000	850-420	-	1000 x 0.2	1 x 0.0002	-	100
AFG 2500	850-421	-	2500 x 0.5	2.5 x 0.0005	-	250

- Accuracy ±0.1% of full scale*
- Full scale deflection of loadcell typically 0.5 mm
- Operating temperature 10°C - 35°C

* See Mecmesin.com for more information



AFTI

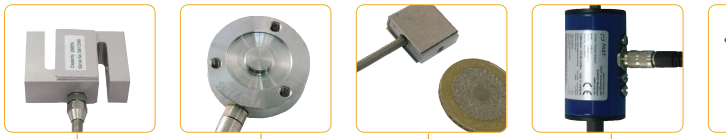
The advanced force & torque indicator

The Advanced Force & Torque Indicator (AFTI) is a high-specification display unit with all the features and benefits of the AFG, for use with Mecmesin 'Smart' force and torque sensors. These plug one-at-a-time into the AFTI enabling it to automatically register either force or torque sensors for a variety of test applications. 'Smart' sensors may also be used with Mecmesin's Advanced Force Gauge (AFG).



These sensors are ideal for mounting onto your own test rigs and jigs to moni
also be used for checking calibration of your machinery to assess whether it is

Force



Fully interchangeable 'Smart' sensors - No need for additional calibration of display or sensor, just 'Plug & Play'

RS232, Digimatic, Analogue data output for easy data transmission



Tension, compression and torque measurement with full unit conversion of displayed value

View the 1st peak and ultimate peak

Rugged metal housing ideal for factory or outdoor use

Select from a wide range of Smart loadcells & torque sensors to connect to your AFTI and start measuring.

- Sensor automatically recognised by AFTI display
- Sensor supplied with 1.5m cable and calibration certificate
- AFTI displays reading with 1 : 5,000 resolution
- AFTI alerts user with audible and visual limit signals

Sensors

For AFG/AFTI and VFG/VFTI gauges

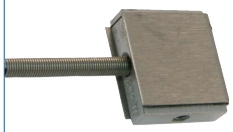
Mecmesin provides a wide choice of 'Smart' force and torque sensors for connection to its range of AFG and VFG force gauges plus the dedicated AFTI and VFTI display units.

The capacity and calibration parameters of these 'Smart' sensors is hosted within the sensor plug and are automatically recognised by these instruments allowing true 'plug-and-play'. Each Smart sensor is supplied with its own calibration certificate traceable to national standards.

Smart sensors are available in different types for measuring tension, compression, static torque and rotary torque. For further details on Smart sensors please visit mecmesin.com.



Tension and Compression Sensors



Junior S-Beam

The Junior S-beam is suitable for measuring tension and compression in applications where space is limited. Available in 9 capacities from 1 N to 500 N, its height is less than 20 mm and dedicated fixtures can be fitted via a single M3 threaded hole.

Part No.	Capacity		
870 – 101	1 N	100 gf	3.5 ozf
870 – 102	2.5 N	250 gf	9 ozf
870 – 103	5 N	500 gf	18 ozf
870 – 104	10 N	1 kgf	2.2 lbf
870 – 105	25 N	2.5 kgf	5.5 lbf
870 – 106	50 N	5 kgf	11 lbf
870 – 107	100 N	10 kgf	22 lbf
870 – 108	250 N	25 kgf	55 lbf
870 – 109	500 N	50 kgf	110 lbf

• Accuracy ±0.25% of full scale



S-Beam

The S-Beam provides an economical solution to general force measurement applications where space is not restricted. Available in 10 capacities from 100 N to 100 kN, it has a threaded hole at each end for fitting of fixtures - sensor height and thread size varying according to capacity.

Part No.	Capacity		
870 – 002	100 N	10 kgf	22 lbf
870 – 004	200 N	20 kgf	44 lbf
870 – 009	500 N	50 kgf	110 lbf
870 – 001	1000 N	100 kgf	220 lbf
870 – 006	2500 N	250 kgf	550 lbf
870 – 008	5000 N	500 kgf	1100 lbf
870 – 003	10 kN	1000 kgf	2200 lbf
870 – 007	25 kN	2500 kgf	5500 lbf

Cylindrical

Part No.	Capacity		
870 – 011	*50 kN	5000 kgf	11 000 lbf
870 – 010	*100 kN	10 000 kgf	22 000 lbf

Compression Sensors



Load Button Cell

The Load Button Cell is a sensor for compression measurement only where the available space is very limited. For optimum results apply compressive load to the top of the sensors central dome. It is available in 2 designs and varying load capacities. The Miniature series features 3 threaded holes for fixing the Load Button to a base and is typically larger and taller than the Sub-Miniature series which has a low-profile design without fixing holes.

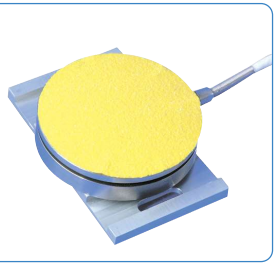
Part No.	
	Mi
878 – 008	100 N
878 – 009	250 N
878 – 010	500 N
878 – 011	1000 N
878 – 012	2500 N
878 – 013	5000 N
878 – 014	10 kN
878 – 015	20 kN
878 – 016	50 kN
	Sub-M
878 – 002	100 N
878 – 003	250 N
878 – 004	500 N
878 – 005	1000 N
878 – 005	5000 N

• Accuracy ±1% of full scale*

In addition to the standard range of compression-only sensors, Mecme
Smart loadcells dedicated to specific compression ap



Hand Gripper (1000 N)



Pedal Force Sensor (500 N & 1000 N)



Static Torque Sensors



TT-ST Torque Transducer 'Smart'

The TT-ST Torque Transducer is a sensor for static torque measurement below 2 N.m in clockwise (CW) and counter-clockwise (CCW) directions. Available in 5 capacities, the torque is applied via a 3mm diameter bore hole or ¼" hex socket. Fixing holes in the sensor body allow it to be mounted to a bench or integrated into a test rig.

Model	Part No.	Capacity					
TT-ST0.05	872 - 030	50	mN.m	500	gf.cm	7	ozf.in
TT-ST0.20	872 - 032	200	mN.m	2000	gf.cm	28	ozf.in
TT-ST0.50	872 - 033	500	mN.m	5	kgf.cm	4.5	lbf.in
TT-ST1	872 - 034	1	N.m	10	kgf.cm	9	lbf.in
TT-ST2	872 - 035	2	N.m	20	kgf.cm	18	lbf.in

• Accuracy ±0.5% of full scale

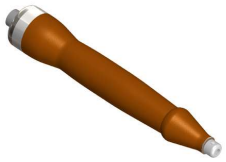


TT-ST Torque Transducer 'Smart'

The ST Torque Transducer is a sensor for static torque measurement in clockwise (CW) and counter-clockwise (CCW) directions. Available in 9 capacities from 1.5 N.m to 1,000 N.m, the sensor is equipped with a male square drive for easy fitting of adaptors to apply torque. Fixing holes in the sensor body allow it to be mounted to a bench or integrated into a test rig.

Model	Part No.	Capacity					
ST1.5	872 - 001	1.5	N.m	15	kgf.cm	13	lbf.in
ST6	872 - 009	6	N.m	60	kgf.cm	53	lbf.in
ST10	872 - 004	10	N.m	100	kgf.cm	90	lbf.in
ST15	872 - 006	15	N.m	150	kgf.cm	133	lbf.in
ST60	872 - 008	60	N.m	600	kgf.cm	530	lbf.in
ST100	872 - 003	100	N.m	1000	kgf.cm	870	lbf.in
ST150	872 - 005	150	N.m	1500	kgf.cm	1300	lbf.in
ST600	872 - 007	600	N.m	6000	kgf.cm	5200	lbf.in
ST1000	872 - 002	1000	N.m	10000	kgf.cm	8850	lbf.in

• Accuracy ±0.5% of full scale



TTH 'Mini' Torque Screwdriver – 'Smart'

The TTH Mini Torque Screwdriver is designed for hand-held applications requiring the measurement of very fine static torque below 1 N.m. Available in 6 capacities, the torque is applied via a 3mm diameter bore hole or ¼" hex socket.

Model	Part No.	Capacity					
TTH0.01	871 - 100	10	mN.m	100	gf.cm	1	ozf.in
TTH0.05	871 - 101	50	mN.m	500	gf.cm	7	ozf.in
TTH0.10	871 - 102	100	mN.m	1000	gf.cm	14	ozf.in
TTH0.20	871 - 105	200	mN.m	2000	gf.cm	28	ozf.in
TTH0.50	871 - 103	500	mN.m	5	kgf.cm	4.5	lbf.in
TTH1	871 - 104	1	N.m	10	kgf.cm	9	lbf.in

• Accuracy ±0.5% of full scale

Note: not suitable for applications which require multiple rotations of the sensor (see Rotary Torque Sensors)



TS Torque Screwdriver – 'Smart'

The TS Torque Screwdriver is designed for hand-held applicatio
a bench stand for stationary use. Available in 5 capacities from
the torque is applied via a male square drive or an interchangea

Model	Part No.	Capacity			
TS0.3	871-004	0.3	N.m	3	kgf.cm
TS1.5	871-002	1.5	N.m	15	kgf.cm
TS3	871-003	3	N.m	30	kgf.cm
TS3	871-005	6	N.m	60	kgf.cm
TS10	871-001	10	N.m	100	kgf.cm

• Accuracy ±0.5% of full scale

Note: not suitable for applications which require multiple rotations of the sensor (see R

Rotary Torque Sensors



TTR 'Mini' Rotary Torque Transducers – 'Smart'

The TTR range of Torque Transducers is designed for applicatio
of very fine rotary torque below 1 N.m. Available in 5 capacities
held allowing the central round shaft to rotate as torque is appl
multiple revolutions (eg cassette spool mechanism, fine gears)

Model	Part No.	Capacity			
TTR0.05	877 - 030	50	mN.m	500	gf.cm
TTR0.10	877 - 031	100	mN.m	1000	gf.cm
TTR0.20	877 - 032	200	mN.m	2000	gf.cm
TTR0.50	877 - 033	500	mN.m	5	kgf.cm
TTR1	877 - 034	1	N.m	10	kgf.cm

• Accuracy ±0.5% of full scale



FAST Rotary Torque Transducers – 'Smart'

The FAST range of Torque Transducers is designed for applica
of rotary torque from 2 N.m to 150 N.m. The outer housing sh
shaft to rotate as torque is applied. Shaft fittings are either ro
torque applications with multiple revolutions typically up to spe

Model	Part No.	Capacity			
FAST 2 N.m sq	877 - 020	2	N.m	20	kgf.cm
FAST 2 N.m rd	877 - 021	2	N.m	20	kgf.cm
FAST 6 N.m sq	877 - 022	6	N.m	60	kgf.cm
FAST 6 N.m rd	877 - 023	6	N.m	60	kgf.cm
FAST 15 N.m sq	877 - 024	15	N.m	150	kgf.cm
FAST 15 N.m rd	877 - 025	15	N.m	150	kgf.cm
FAST 60 N.m sq	877 - 026	60	N.m	600	kgf.cm
FAST 60 N.m rd	877 - 027	60	N.m	600	kgf.cm
FAST 150 N.m sq	877 - 028	150	N.m	15.3	kgf.cm
FAST 150 N.m rd	877 - 029	150	N.m	15.3	kgf.cm

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BFG

The basic force gauge

The Basic Force Gauge (BFG) is designed for easy operation and provides outstanding tension and compression measurement performance and reliability at an affordable price.

Supplied as standard with calibration certificate traceable to national standards.

Constructed in a rigid yet lightweight aluminium housing, with its ergonomically attractive shape, the BFG can be used as a hand-held instrument, or alternatively it can be mounted to manual or motorised test stands to allow testing under more controlled conditions.



Discover your next Mecmesin force gauge online - visit mecmesin.com/gauges

RS232, Digimatic, Analogue data output for easy data transmission

'Live' display mode for applications requiring loads to be continuously monitored

Measurements made in N, kN, mN, lbf, ozf, kgf and gf with a sampling rate of 1000 Hz

Accurate to ±0.25% full-scale



Captures peak readings in tension or compression

Rugged metal housing ideal for factory or outdoor use

Internal loadcell stud for quick and easy



- Accuracy ±0.25% of full range
- 6 capacities - from 10 N up to 2500 N
- Peak capture - in tension and compres
- Wide range of grips and fixtures

BFG Specification Table – Capacity

Resolution - Up to 1:5,000 resolution depending on load cell capacity (e.g. 2500 N x 0

Model	Part No.	mN	N	kN	gf	kgf
BFG 10	853-410	10000 x 2	10 x 0.002	-	1000 x 0.2	1 x
BFG 50	853-411	50000 x 10	50 x 0.01	-	5000 x 1	5 x
BFG 200	853-412	-	200 x 0.05	-	20000 x 5	20 x
BFG 500	853-413	-	500 x 0.1	-	50000 x 10	50 x
BFG 1000	853-414	-	1000 x 0.2	1 x 0.0002	-	100
BFG 2500	853-417	-	2500 x 0.5	2.5 x 0.0005	-	250

- Accuracy ±0.25% of full scale
- Full scale deflection of loadcell typically 0.5 mm
- Operating temperature 10°C - 35°C
- See Mecmesin.com for more information



CFG+

the compact force gauge

The Compact Force Gauge+ (CFG+) is a pocket-sized, lightweight force gauge designed for elementary tension and compression measurement. Powered by disposable AA batteries, the CFG+ is delivered with a Declaration of Conformity as standard. A Calibration Certificate can be ordered separately.

The CFG+ provides a simple digital alternative to traditional analogue spring balances. It is ideal for users with a limited budget, who only measure on an occasional basis for non-critical applications.



CFG+ Specification Table – Capacity

Resolution - Up to 1:1000 resolution depending on loadcell capacity (e.g. 500 N x 0.5 N)

Model	Part No.	N	kgf	lbf
CFG+ 50	860-021	50 x 0.05	5 x 0.005	11 x 0.01
CFG+ 200	860-022	200 x 0.2	20 x 0.02	44 x 0.05
CFG+ 500	860-023	500 x 0.5	50 x 0.05	110 x 0.1

- Accuracy ±0.5% of full scale

All CFG+ models are supplied with:

- Carrying case
- Set of standard accessories

Calibration Certificate optional extra

Peak readings captured at 500 Hz with an accuracy of ±0.5% of full scale

Measurements made in N, lbf, ozf, kgf and gf with a resolution of 1:1000



Housed in a lightweight plastic case

RS232 output for easy data transmission

Loadcell stud 10-32 UNF male

Explore our range of accessories

A wide selection of accessories exclusive to Mecmesin are available. See our Accessory Catalogue for an extensive range of grips and fixtures, to enable you to complete thousands of different tests. Alternatively make use of our experienced team of engineers to provide a customised grip to solve your particular problem.

Discover your next Mecmesin force gauge online - visit mecmesin.com/accessories



VectorPro®

Lite Data Acquisition Software

VectorPro Lite is an advanced data-acquisition and plotting software package available as an optional extra to Mecmesin's Digital Force Gauges (VFG, AFG, BFG and CFG+ and VFTI/AFTI Digital Force & Torque Indicators.

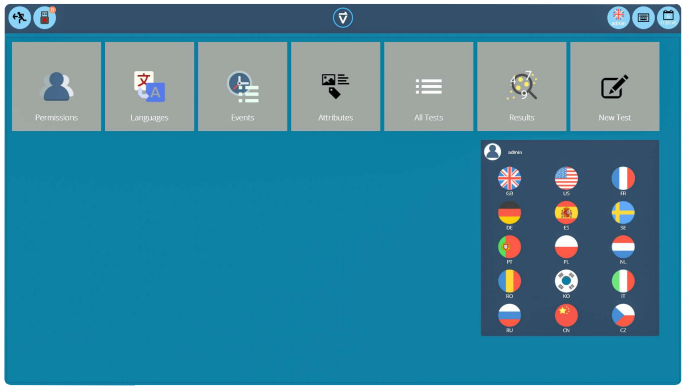
It captures load and time data from the instruments and plots it live in a graph. This makes it ideal for applications where you need to know more from a test than just the peak load shown on the force gauge display. When an AFG or VFG force gauge is combined with a MultiTest-dV test stand, it will also plot the load vs displacement data captured by this configuration.

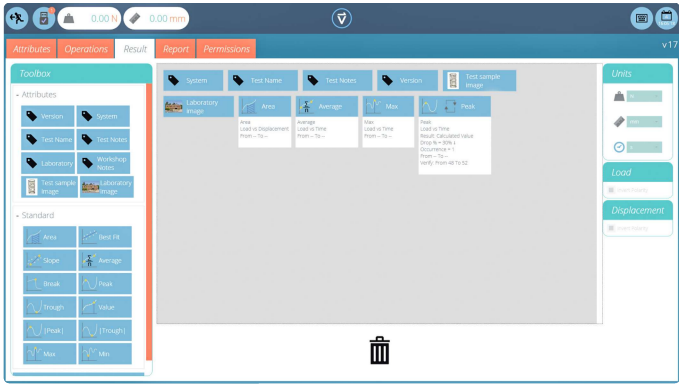
Its innovative drag-and-drop interface makes VectorPro Lite a powerful tool yet remains easy to use for experienced and novice operators alike.

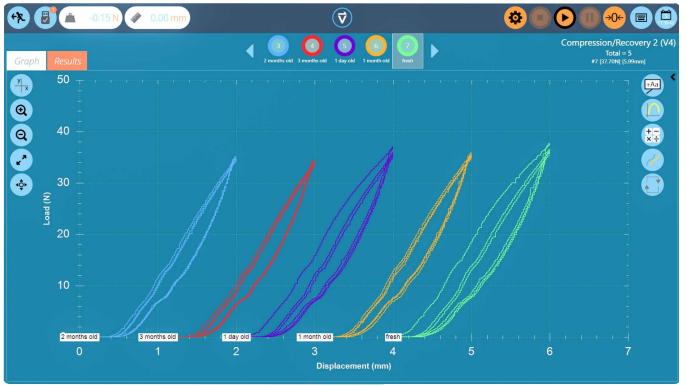
It provides standard calculations against which samples can be immediately flagged up to the operator as Pass or Fail. From the collected data it provides test results from pre-defined calculations, generates a basic statistical analysis and allows you to create a customised report for submission to your customers. The test routines and their associated results are automatically stored together so you can recall and make comparisons between different batches.



Powered by VectorPro®
Testing software







Mecmesin

Comparison table











FEATURES/GAUGES	VFG	AFG	BFG	CFG+	VFTI	AF
Technical Specifications						
Housing material	Aluminium	Aluminium	Aluminium	Plastic	Aluminium	
Battery type	Lithium Ion (Fast Charge)	NiMH - Rechargeable	NiMH - Rechargeable	Alkaline	Lithium Ion (Fast Charge)	
Models and Capacity	10 (2.5 N to 2500 N)	10 (2.5 N to 2500 N)	6 (10 N to 2500 N)	3 (50 N to 500 N)	n/a	
Accuracy	0.1%	0.1%	0.25%	0.5%	n/a	
Load resolution	1:50,000	1:5,000	1:5,000	1:1,000	1:50,000	
Sampling rate	5,000,000 Hz	5,000 Hz	1,000 Hz	500 Hz	5,000,000 Hz	
Smart Port for additional sensors	✓	✓	– –	– –	✓	
Display						
Display type/Operation	5" Colour Touchscreen / capacitive	4.5 digit LCD/Keypad	4.5 digit LCD/Keypad	4.5 digit LCD/Keypad	5" Colour Touchscreen / capacitive	
Graphical display of data	✓ (Pan/Zoom)	⊗	⊗	⊗	✓ (Pan/Zoom)	
Invert display	✓	✓	⊗	⊗	✓	
User-configurable display	✓ (advanced)	⊗	⊗	⊗	✓ (advanced)	
On-board statistics mode	✓	⊗	⊗	⊗	✓	
Password protection	✓	✓	⊗	⊗	✓	
Display modes	Live, Max, 1st & 2nd Peak, Break detect, Coefficient	Live, Max, 1st Peak, Average, Coefficient	Live, Max	Live, Max	Live, Max, 1st & 2nd Peak, Coefficient	
Alarms for Pass / Fail	✓ (visual with pre-alert)	✓ (audible & visual)	⊗	⊗	✓ (visual with pre-alert)	
Communications & Control						
Output formats	RS232	RS232, Digimatic, Analog	RS232, Digimatic, Analog	RS232	RS232	
Bi-directional communication commands	✓	✓	⊗	⊗	✓	
Memory Storage (internal)	✓	✓	⊗	⊗	✓	
Memory Storage (external)	✓ (Micro SD card)	⊗	⊗	⊗	✓ (Micro SD card)	
Control commands for motorised test stand	✓	✓	⊗	⊗	✓	
Overload & Calibration						
Overload warning symbol	✓	✓	✓	✓	✓	

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