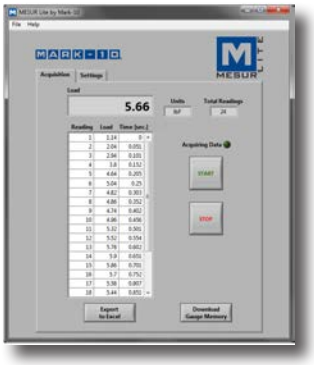
Data Sheet Professional Digital Force Gauges Series 7



Series 7 professional digital force gauges are designed with a number of sophisticated features for the most demanding tension and compression measurement applications, up to 500 lbF (2500 N). The gauges feature ±0.1% accuracy and a blazingly fast sampling rate of 14,000 Hz, producing reliable results for extremely quick-action tests.

Series 7 gauges include all the functions of Series 5 gauges, with several additional features, including high speed continuous data capture and storage, with memory for up to 5,000 readings at an acquisition rate of up to 14,000 Hz. The gauges also feature programmable footswitch sequencing, break detection, and 1st / 2nd peak detection. Series 7 includes a coefficient of friction unit of measurement and user-defined unit of measurement. For productivity enhancement, the gauges also feature automatic data output, data storage, and zero functions upon the completion of break detection, averaging, external trigger, and 1st / 2nd peak detection.



MESUR™ Lite data acquisition software is included with Series 7 gauges



Shown with an ESM303 test stand and G1061 wedge grips

Series 7 force gauges are directly compatible with Mark-10 motorized test stands, to permit functions such as break testing, tensile testing, compression testing, dynamic load holding, PC control capability, and many other applications.

Features

- High-speed 14,000 Hz sampling rate
- Continuous data capture of up to 5,000 data points, at up to 14,000 Hz, downloadable to a PC
- Individual data point memory for up to 5,000 readings, downloadable to a PC
- USB, RS-232, Mitutoyo, and analog outputs
- Sample break detection with auto functions, including stopping movement of a motorized test stand
- Automatic output / data storage / zeroing upon various event completions
- 1st / 2nd peak detection
- 5 units of measurement, plus Coefficient of Friction and user-defined unit with configurable name
- Programmable footswitch command string
- Programmable set points, with indicators and outputs
- Averaging mode - calculates average readings over time
- External trigger mode - for switch contact testing or remotely stopping display update
- Password protection, configurable for individual keys and calibration

Display Indicators



MARK-10

35 ANIVERSARIO CIENTEC
Acatempan No. 2112,
Chapultepec Country 44620
Guadalajara, Jalisco, México.
Tel. (33)38170140
ventas@cientec.com.mx www.cientec.com.mx

3 YEAR WARRANTY

Focus on Engineering: Specialized Gauge Functions

Series 7 gauges feature several functions typically found in more complex instruments, such as materials testers, data acquisition systems, and PLCs. The following unique features are highlighted:

High Speed Data Capture & Storage

> Series 7 can capture and store up to 5,000 continuous data points at a rate of up to 14,000 readings per second. This unique function is ideal for capturing switch activation forces, sharp breaks, and other short-duration applications. Configurable start and stop triggers are provided. The data acquisition rate is variable and can be slowed to also capture longer events, such as structure relaxation, material expansion, and others.

Data from the storage buffer can be exported to data collection software such as MESUR™gauge for further analysis and graphing. Using a Series 7 gauge could replace cumbersome and expensive data acquisition hardware and software.





Footswitch Command String

> Integrate your footswitch / automation system with a Series 7 gauge to improve testing ergonomics and efficiency; no need for multiple key presses. Up to three steps may be programmed for a single footswitch activation.

Select from several commands, including request peak reading, zero the display, save to memory, and others. Time delays can be inserted between each step.

Automatic Data Output / Save / Zero / I/O Pin Toggle

> Upon completion of several event types, Series 7 can perform the following automatic functions: (1) Save the peak reading to memory, (2) Transmit the peak reading via USB, RS-232, or Mitutoyo output, (3) Zero the display, and (4) Toggle an I/O pin, for example to stop movement of motorized test stand.

Applicable events include:
(1) Sample break detection (also applicable to samples which slip, click, or otherwise reach a peak, then fall), (2) Completion of an averaging sequence, (3) External trigger (ex. switch activation), and (4) 1st / 2nd peak capture (ex. tensile testing).





User-defined Unit of Measurement

> Series 7 gauges display 6 standard units of measurement. One additional user-defined unit is provided for unique applications. A base unit is specified, along with a multiplier, and 5-character name.

Typical applications:
(1) To measure the torque produced by pressing on a lever in a mechanical assembly, configure the multiplier based on the length of the lever, thereby converting a unit such as N into Ncm.

(2) To measure the pressure produced by a circular compression plate on a foam sample, configure the multiplier based on the area of the plate, thereby converting a unit such as lbF into psi.

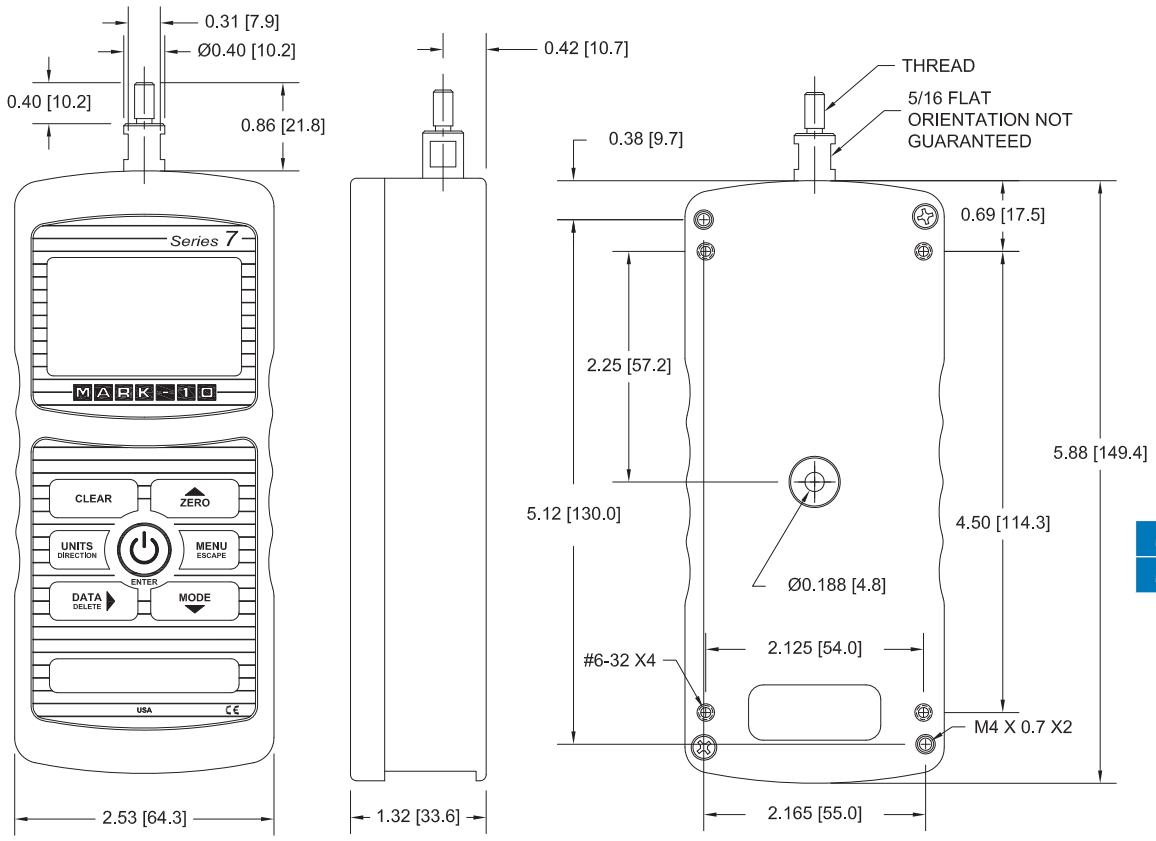
35 ANIVERSARIO CIENTEC
Acatempan No. 2112,
Chapultepec Country 44620
Guadalajara, Jalisco, México.
Tel. (33)38170140
ventas@cientec.com.mx www.cientec.com.mx

3 YEAR WARRANTY

Specifications

Accuracy:	±0.1% of full scale
Sampling Rate:	14,000 Hz, pulse response of 1/7,000 sec. minimum
Power:	AC or rechargeable battery. Multi-step low battery indicator is displayed, gauge shuts off automatically when power is too low.
Battery life:	**Backlight on / off:** up to 7 / 24 hours of continuous use
Outputs:	**USB / RS-232:** Configurable up to 115,200 baud. Auomatic output available up to 250 Hz. Includes Gauge Control Language 2 for full computer control. **Mitutoyo (Digimatic):** Serial BCD suitable for all Mitutoyo SPC-compatible devices. **Analog:** ±1 VDC, ±0.25% of full scale at capacity, **General purpose:** Three open drain outputs, one input. **Set points:** Three open drain lines.
Safe overload:	200% of full scale (display shows "OVER" at 110% and above)
Weight:	**M7-012 - M7-100:** 1.0 lb [0.45 kg] **M7-200 - M7-500:** 1.2 lb [0.54 kg]
Load cell deflection:	All models 0.010 [0.25], except 0.005 [0.13] for M7-012
Environmental requirements:	40 - 100°F, max. 96% humidity, non-condensating
Warranty:	3 years (see individual statement for further details)

Dimensions in [mm]



	Thread
M7-012 - M7-100	#10-32M UNF
M7-200 - M7-500	5/16-18M UNC

35 ANIVERSARIO CIENTEC
Acatempan No. 2112,
Chapultepec Country 44620
Guadalajara, Jalisco, México.
Tel. (33)38170140
ventas@cientec.com.mx www.cientec.com.mx

3 YEAR WARRANTY

In The Box



Series 7 force gauges are shipped as shown at left, and include the following accessories:

(1) Extension rod *
(1) Hook *
(1) Cone *
(1) Chisel *
(1) V-Groove *
(1) Flat *
(1) Coupling *
(1) Carrying case
(1) USB cable
(1) AC adapter
(1) Battery
(1) Resource CD (USB driver, MESUR® Lite software, MESUR®gauge software demo, and user's guide)
(1) Certificate of calibration with data

* The specific accessory depends on the force gauge model. Refer to the website for details.

Capacity x Resolution

Model	lbF	ozF	kgF	gF	N	kN	mN
M7-012	0.12 x 0.00002	2 x 0.0005	-	50 x 0.01	0.5 x 0.0001	-	500 x 0.1
M7-025	0.25 x 0.00005	4 x 0.001	-	100 x 0.02	1 x 0.0002	-	1000 x 0.2
M7-05	0.5 x 0.0001	8 x 0.002	-	250 x 0.05	2.5 x 0.0005	-	2500 x 0.5
M7-2	2 x 0.0005	32 x 0.01	1 x 0.0002	1000 x 0.2	10 x 0.002	-	-
M7-5	5 x 0.001	80 x 0.02	2.5 x 0.0005	2500 x 0.5	25 x 0.005	-	-
M7-10	10 x 0.002	160 x 0.05	5 x 0.001	5000 x 1	50 x 0.01	-	-
M7-20	20 x 0.005	320 x 0.1	10 x 0.002	10000 x 2	100 x 0.02	-	-
M7-50	50 x 0.01	800 x 0.2	25 x 0.005	25000 x 5	250 x 0.05	-	-
M7-100	100 x 0.02	1600 x 0.5	50 x 0.01	50000 x 10	500 x 0.1	-	-
M7-200	200 x 0.05	3200 x 1	100 x 0.02	-	1000 x 0.2	1 x 0.0002	-
M7-500	500 x 0.1	8000 x 2	250 x 0.05	-	2500 x 0.5	2.5 x 0.0005	-

Coefficient of friction and user-defined units are excluded from the above chart.

All models include 110V AC adapters. Add suffix 'E' for euro plug (220V),'U' for UK plug (220V) or 'A' for Australian plug (220V). Ex: M7-05E, M7-100U, M7-500A

35 ANIVERSARIO CIENTEC
Acatempan No. 2112,
Chapultepec Country 44620
Guadalajara, Jalisco, México.
Tel. (33)38170140
ventas@cientec.com.mx www.cientec.com.mx

3 YEAR WARRANTY