

## Data Sheet

## Motorized Test Stand w/PC Control **ESM1500**



^ ESM1500LC is shown above configured for a tensile test, with a Series R01 force sensor, Model 7i indicator, G1061-2 wedge grips, and eye end adapters.

The ESM1500 is a highly configurable single-column force tester for tension and compression measurement applications up to 1,500 lbf (6.7 kN). Suitable for laboratory and production environments, the ESM1500 may be used with an indicator-load cell combination or with a force gauge. Sample setup and fine positioning are a breeze with available FollowMe™ force-based positioning - using your hand as your guide, push and pull on the load cell or force gauge to move the crosshead at a dynamically variable rate of speed.

With generous travel, clearance, and depth dimensions, a wide range of tests can be performed, including break testing, cycling, limit testing to a load or distance, loadholding, elongation testing, tensile testing, compression testing, and more. Satisfy various test methods through an easy-to-use menu, allowing the configuration of test speed, force and distance limits, cycling, preload, and many other functions, all protected by a password.

The ESM1500 has a unique, modular controller function platform. Individual functions, such as travel measurement, cycling, loadholding, etc., may be purchased either upfront or enabled in the field through an activation code. This a-la-carte platform allows for custom configuration as appropriate for the application and budget.

Force and travel data can be output to a PC for graphing and analysis using MESUR™ gauge software. Or, fully control the stand by a PC through a custom-written program in any language supporting ASCII communications.

### Standard Features

- Compatible with indicators and load cells, as well as force gauges
- Adjustable, removal controller with intuitive menu navigation
- Password protection of test parameters
- Stepper motor-driven, producing smooth and quiet operation with no speed variation under load
- USB output of force vs. time or force vs. distance
- Compact footprint, suitable for crowded workbenches
- Ergonomic design, with smart, clean cable management
- Most electronics are housed in an integrated removeable enclosure, easily removed and transported

Quick Specs	
Max. Force:	1,500 lbf [6.7 kN]
Speed Range:	0.001 - 90 in/min [0.02 - 2,300 mm/min]
Max. Travel:	32 in [813 mm]
Max. Clearance:	37 in [940 mm]
Throat Depth:	6.7 in [170 mm]



## Key Features and Options



### FollowMe™ dynamic positioning

Using your hand as your guide, push and pull on the load cell or force gauge to move the crosshead. Responsive enough for quick positioning as well as fine adjustments.



### Simple controller interface

Rugged aluminum up/down/stop keys are designed for industrial environments. *Zero Travel* and *FollowMe*™ keys add convenience. Removable for remote use. See the following page for a full list of available functions.



### Limit switches

Adjustable upper and lower solid state limit switches stop test stand travel with 0.001 in. [0.025 mm] repeatability.



### Modular design

Most electronics are housed in an integrated enclosure, easily accessible and removable for updating and service.



### Indicators

Choose from three indicator models. Consider a Model 7i or 5i to take full advantage of all test stand functions.



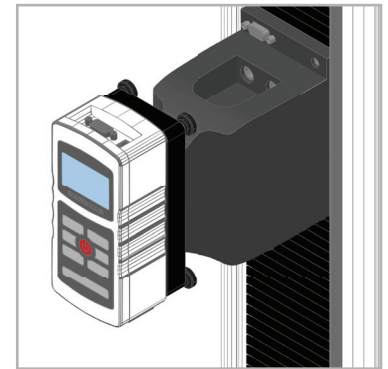
### Series R01 force sensors (load cells)

Rugged S-beam design. Available in capacities from 50 to 2,000 lbf (250 N to 10 kN).



### Series R03 force sensors (load cells)

Enclosed design. Available in capacities from 0.25 to 100 lbf (1 to 500 N).



### Force gauges

Choose from several gauge series. Consider a Series 7 or 5 gauge to take advantage of all test stand functions.



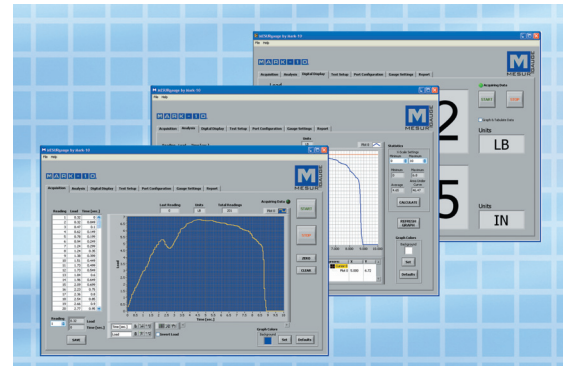
### Optional mounting plate, threaded hole matrix

A matrix of #10-32 threaded holes is provided, along with a 5/16-18 center hole.



### Optional mounting plate, multiple hole thread sizes

Three thread sizes are provided (#10-32, 5/16-18, and 1/2-20), along with an array of four 1/4-28 holes.



### MESUR™ gauge data collection software

Output force vs. time or force vs. distance data from the ESM1500's USB port. MESUR™ gauge graphs, tabulates, calculates statistics, and provides reporting and output tools.

## Optional Functions

Any of the below functions may be purchased at time of order or may be activated in the field at a later date via an activation code. A complete options package is also available at a discounted price. The stand is supplied in Demo Mode, a 160-hour time period in which all functions are temporarily enabled.

Feature	Part No.	Description	Requirements
FollowMe™	SF008	Crosshead movement responds to manually pushing or pulling on the force gauge shaft or load cell. Increasing force produces greater speeds. Ideal for setups and quick positioning.	- Series 7 or 5 gauge or indicator
Travel indication	SF009	Travel is indicated on the control unit display, with output via USB. An internal scale utilizing Renishaw technology produces significantly higher accuracy than with conventional rotary encoder-based designs. Backlash and nonlinearity are virtually eliminated.	-
Computer control	SF010	The ESM1500 may be fully controlled by a PC through a custom-written program in any language supporting ASCII communications. Also responds to the legacy Chatillon TCD command set and legacy Nexygen TCD software (not available from Mark-10).	- Series 7 or 5 gauge or indicator - SF009 travel indication - SF011 programmable travel set points
Programmable travel limits	SF011	The stand stops at or cycles between programmable upper and lower travel distances.	- SF009 travel indication option
Overload protection	SF012	Protects a force gauge or force sensor against overload. Program the desired percentage of full scale of the gauge. Adjustable analog output voltage setting allows the stand to interface with virtually any gauge with analog output.	- Series 7 or 5 gauge or indicator
Auto return	SF013	The crosshead moves to a limit switch, force set point, travel position, or break, then stops and reverses direction at full speed to the opposite limit.	- Reversing at force set point: Series 7 or 5 gauge or indicator - Reversing at travel limit: SF011 programmable travel limits option - Reversing at break: SF019 break detection option
Cycling / dwell time	SF014	Same as auto-return, but with the ability to program up to 100,000 cycles. Programmable dwell time for upper and lower limits (set independently) can be set up for up to 10,000 seconds.	- Same as auto-return, at the same speed in each direction. Add SF016 for independent up and down speeds.
Independent up and down Speeds	SF016	Individually configure speeds for the up and down directions.	-
Low speed range extension	SF017	Extends the standard speed range down to 0.001 in/min (0.02 mm/min).	-
High speed range extension	SF018	Extends the standard speed range up to 90 in/min (2,300 mm/min).	-
Break detection	SF019	Crosshead stops at a sudden drop in force. Programmable percentage of peak force.	- Series 7 or 5 gauge or indicator
Loadholding	SF020	Dynamically adjusts the crosshead position to maintain a programmed load for an indefinite or specified period of time.	- Series 7 or 5 gauge or indicator - If a specified time is required, order SF014 cycling / dwell time option
Preload / sample touch	SF021	Stops the crosshead and/or zeroes the travel display at an initial preload - useful in tensile, compression, spring, elongation, and other applications. Preload is programmable as a percentage of force gauge/load cell full scale. Three modes: (1) stop, (2) stop and zero, and (3) zero without stopping.	- SF009 travel indication - Series 7 or 5 gauge or indicator
Complete options package	SFCOMP	Includes all functions listed above. Requires a Series 7 or 5 gauge or indicator.	



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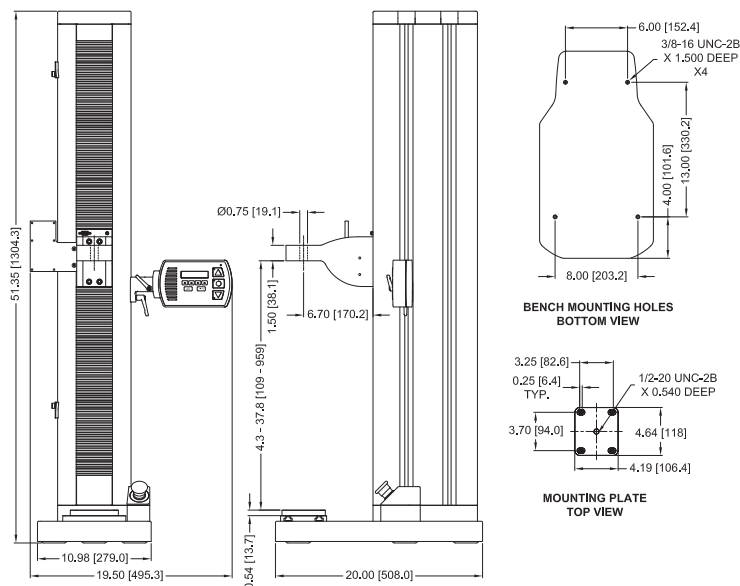
## Motorized Test Stand w/PC Control **ESM1500**

### Specifications

Load capacity:	
< 60 in [1,525 mm]/min:	1,500 lbf (6.7 kN)
> 60 in [1,525 mm]/min:	1,000 lbf (4.5 kN)
Speed range:	
Standard:	0.5 - 24 in/min (10 - 600 mm/min)
Optional:	0.001 - 90 in/min (0.02 - 2,300 mm/min)
Maximum travel:	32 in [813 mm]
Speed setting accuracy:	±0.2%
Speed variation with load:	±0% [Stepper motor driven]
Travel accuracy:	±0.002 in. per 10 in. [±0.05 mm per 250 mm]
Travel resolution:	0.001 in [0.02 mm]
Limit switch repeatability:	±0.001 in [0.03 mm]
Power:	Universal input 80-240 VAC, 50/60 Hz
Weight:	
Test stand:	198 lb (90 kg)
Shipping weight:	248 lb (113 kg)
Included accessories:	USB cable, instrument-stand interface cable, base eye end with 2 locking rings, 2 spanner wrenches, gauge/indicator mounting screws, Allen wrench set, Resource CD

### Dimensions in (mm)

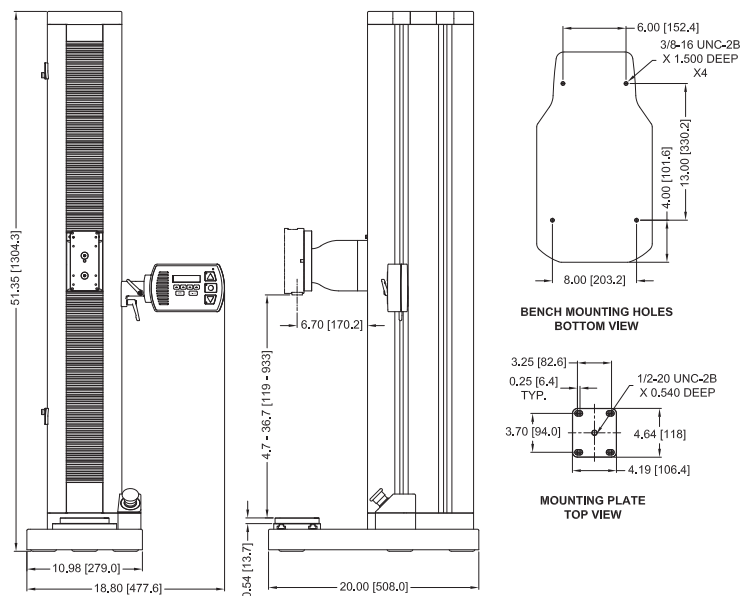
**ESM1500LC** (for use with an indicator and load cell)



### Ordering Information

Hardware	
ESM1500LC*	Motorized test stand with force sensor / load cell mount, 110V*
ESM1500FG*	Motorized test stand with force gauge mount, 110V*
AC1055	Base plate, matrix of threaded holes
AC1054	Base plate, multiple center hole threads
AC1045	Eye end, force gauge, #10-32F
AC1045-1	Eye end, force gauge, 5/16-18F
AC1047-3	Eye end, R01 force sensor / load cell, 1/4-28M
AC1047-2	Eye end, R01 force sensor/M5-1000/M5-2000 force gauge, 1/2-20M
AC1057	Force gauge mounting kit (included w/ESM1500FG)
AC1056	Force sensor / load cell mounting kit (included w/ESM1500LC)
Controller Options	
SF008	FollowMe™ force-based manual positioning
SF009	Travel indication, with USB output
SF010	Computer control, via USB
SF011	Programmable travel limits
SF012	Integrated overload protection
SF013	Auto return
SF014	Cycling / dwell time
SF016	Independent up and down speeds
SF017	Extended speed range, low
SF018	Extended speed range, high
SF019	Break detection
SF020	Loadholding
SF021	Preload / sample touch
SFCOMP	Complete options package

**ESM1500FG** (for use with a force gauge)



\* ESM1500 contains a universal power supply (80 - 240V) and includes a power cord with US plug. Add suffix 'E' for Euro plug, 'U' for UK plug, or 'A' for Australian plug. Ex: ESM1500LCE