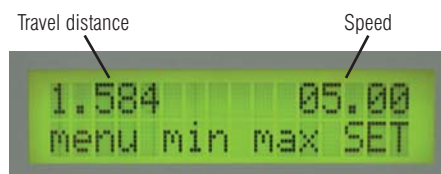# Programmable Test Stand w/PC Control ESM301

The ESM301 is a highly configurable motorized test stand for tension and compression testing applications up to 300 lb (1.5 kN). The stand can be controlled from the front panel or via a computer and is fully compatible with Nexygen™ TCD software. The ESM301 is engineered on a unique modular platform, allowing for "build-your-own" configurability. Features can be ordered individually at time of order or activated in the field. Integrated travel indication, overload protection, and a host of programmable parameters makes the ESM301 quite sophisticated, while its intuitive menu structure allows for quick, simple setup and operation. A password can be programmed to prevent unauthorized changes. With a rugged and modular design, the ESM301 is a compelling solution for applications in laboratory and production environments.

Standard Features

- LCD display with UP, DOWN, STOP, and emergency stop buttons and soft keys
- Selectable speed units of measurement (in/min & mm/min)
- Password protection of test parameters, to prevent unauthorized changes
- Integrated travel limit switches
- Removable fixture mounting plate with matrix of threaded holes
- Stepper motor-driven, produces 0% speed variation with load
- Mounting holes for bench mounting
- Unique mechanical design significantly reduces column bending

The ESM301 is shown in a typical configuration with Series BG digital force gauge and G1008 film & paper grips

Travel distance   Speed

Optional integrated travel indication

Optional Hardware Features

■ Multi-function cable, BG gauge to controller
Connects a Series BG force gauge to the controller. This single cable is used to transmit set points, overload signals, and force data.

■ Serial cable, controller to PC
Sends force and travel data on a single cable via RS-232 to a PC.

■ Column extensions
Available in 6" (150 mm), 12" (300 mm), 24" (600 mm), and custom lengths

■ Bench mounting kit
Facilitates safe mounting to a work bench. Consists of a set of mounting adapters, and four sets of hardware with Allen key to accommodate surfaces of various thickness.

Digital controller contains a backlit LCD screen with menu choices for ease of setup and operation

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Optional Controller Features

The below option packages may be purchased at time of order or may be added in the field through a code activation process. A complete options package is also available.

■ **Computer Control**
A bi-directional RS-232 port is provided to interface with a PC. Users can write their own custom program or control the stand via a PC using Nexygen™ TCD software. Requires a Series BG force gauge, 09-1056 serial cable, 09-1143 multi-function cable, ESM301-001 travel indication, and EF011 programmable travel limits.

■ **Travel Indication***
Travel is indicated on the front panel, and an RS-232 port is supplied. Position indication is provided via an internal linear scale, producing significantly higher accuracy than with conventional rotary encoder-based designs. Backlash and nonlinearity are virtually eliminated.

■ **Programmable Travel Limits**
The ESM301 can stop at or cycle between programmable upper and lower travel distances. Requires ESM301-001 integrated travel indication option .

■ **Overload Protection**
Protects a force gauge against overload (requires the 09-1143 multi-function cable). The user programs the desired percentage of full scale of the gauge. Adjustable analog output voltage setting allows the ESM301 to interface with virtually any force gauge with analog output.

■ **Auto-return**
The crosshead moves to a limit switch, force (requires a Series BG force gauge), or travel position (requires EF011 programmable travel limits), stops, and reverses direction at full speed to the other limit switch, force, or travel position.

■ **Cycling / Dwell Time**
Same as Auto-return, but with the ability to program the number of cycles up to 99,999 cycles. Dwell time allows the operator to program the length of time, up to 9,999.9 seconds, in 0.1 second intervals, for which the crosshead pauses between cycles. Independent up and down speeds may be programmed (requires EF013).

■ **Programmable Button Functions**
Expands UP and DOWN button operation to three user-configurable modes:
1. Maintained (standard): short push produces continuous motion until STOP is pressed
2. Momentary: crosshead moves only while the button is pressed
3. Auto: short push produces maintained motion, while holding the button down
   will produce momentary motion

■ **Independent Up and Down Speeds**
Configurable speeds for up and down directions

■ **Low Speed Extended Range**
Extends the speed range to 0.02 - 13 in/min (0.5 - 330 mm/min)

■ **High Speed Extended Range**
Extends the speed range to 0.5 - 45 in/min (13 - 1100 mm/min)

* Factory installation only. Also available as a retrofit.
** If force data output is required, both the 09-1143 and 09-1056 cables are required.
*** Requires: Series BG force gauge, 09-1056 serial cable, 09-1143 multi-function cable, ESM301-001 travel indication, and EF011 programmable travel limits.
**** Requires ESM301-001 integrated travel indication option

Specifications

Load capacity
  300 lbF [1.5 kN]
  200 lbF [1 kN]
	Up to 24 in/min (610 mm/min)
	> 24 in/min (> 610 mm/min)

Standard speed range	0.5-13 in/min [13-330 mm/min]
Maximum travel	11.5 [292 mm]
Speed setting accuracy	±0.2%
Speed variation with load	±0% [Stepper motor driven]
Limit switch repeatability	0.001 in [0.03 mm]
Travel accuracy	±0.002 in [0.05 mm]
Travel repeatability	0.001 in [0.02 mm]
Travel resolution	0.001 in / 0.02 mm
Power	Universal input 80-240 VAC, 50/60 Hz
Weight (without options)	34 lbs [15.6 kg]
Included accessories:	Ext. rod, small hook, medium hook, #10-32 coupler, compression plate, gauge mounting hardware, tool kit

Ordering Information

ESM301	Motorized test stand, 110 V
ESM301E	Motorized test stand, 220 V
ESM301-001*	Travel indication with RS-232 output*
ESM301-002-1 / -2 / -3	Column extension, 6" / 12" / 24"
ESM301-003	Bench mounting kit
09-1143**	Multi-function cable, BG to ESM301**
09-1056**	Serial cable, ESM301 to PC**
Controller Options	
EF010***	Computer control via RS-232***
EF011****	Programmable travel limits****
EF012	Integrated overload protection (requires 09-1143 cable)
EF013	Auto return
EF014	Cycling / dwell time
EF015	Programmable button functions
EF016	Independent up and down speeds
EF017	Extended speed range, low
EF018	Extended speed range, high
EFCOMP	Complete options package

MOUNTING PLATE
TOP VIEW