Automatic Extensometer

AEX500

Long-travel High-precision automatic gauge length extensometer

Compatible with

Tinius Olsen ST and SL series of materials testing systems

- \+ Accuracy class 0.5 (EN ISO 9513) across the full measuring range
- \+ Ultra-high resolution up to 0.01µm (1 Vpp) or 0.05µm (RS422/TTL)
- \+ Gauge length from 10 mm
- \+ Fully automatic positioning, gauge length setting, and specimen attachment
- \+ Measuring travel 500mm minus gauge length
- \+ Operation in both upper and lower testing spaces
- \+ Smooth, nearly frictionless linear guidance of measuring heads
- \+ Quick release measuring heads for simple handling and maintenance

Automatic Extensometer Series

Application : The AEX500 is suitable for nearly all materials and specimen geometries with gauge lengths from 10 mm, covering a wide range of linear strain measurement tasks, including:

+ Tensile testing of metals, plastics, and composites
+ Determination of Young's modulus (E modulus)
+ Research and development applications
+ Quality control testing
+ Accurate strain measurement up to specimen fracture

Its combination of long travel, high accuracy, and reliability makes the AEX500 a versatile solution for laboratory and industrial environments.

Design and Operating Principle : The AEX500 features a robust mechanical design with smooth running, nearly frictionless linear guidance to ensure precise strain measurement throughout the entire test.

A non contact optical incremental measurement system enables reliable compliance with ISO accuracy class 0.5 over the total measuring travel.

Fully Automatic Operation:

+ Automatic movement to the test position
+ Automatic setting of the initial gauge length
+ Automatic attachment and detachment from the specimen
+ Continuous strain measurement from test start up to specimen rupture

The extensometer can be operated without restriction in both the upper and lower testing areas, offering maximum system flexibility.

TO order numbers

AE-006-0002	AEX 500 : Auto Extensometer, SRC ; 500 mm GL 10 mm Double output
AE-005-0012	Standard Measuring Head Fit AEX models, 250 mm Arm length (2 per device Rqd)
99-1009083	AE/AEX Rotating/Swivel Bracket - S/T/L & ST Twin Column (Configured)
99-994-0990/06	Signal Conditioner Module, 3X I/O-DAC-Encoder Device inc cables+plugs,ST/SL

Standard sample dimensions

Round specimens	up to Ø 80mm / 3.15in	
Square specimens	up to 70 x 70mm / 2.76 x 2.76in	
Rectangular specimens	Width	360mm / 14.17in
	Thickness	50mm / 1.97in
Other dimensions are available on request		

Device options

+ Measuring arms with tilting mechanism
  + Tungsten carbide knife edge (circular or straight)
+ Adjustable clamping force 0.02 to 1 N
+ Extended measuring arms +45mm or +90mm
+ Bending test measuring arms:
  + Arm lengths: 400mm or 490mm

Specifications

Accuracy class EN ISO 9513	0.5
Indication error (rel.)*	0.5%
Indication error*	1.5µm
Error in gauge length (L_e)	± 0.5%
Gauge length (L_e)	10 to 500mm minus travel
Activating force	max. 0.01 N
Clamping force	0.5 - 1 N
Operating temperature range	0-50°C
Weight	approx. 30kg

Measuring system

	Standard	Optional
Name	LIDA 48	LIDA 47
Interface (each output)	1 Vpp	RS422/TTL
Measurement principle	Optic-incremental	
Travel	500mm minus L_e and position	
Signal period	20µm	0.2µm
Resolution max.	0.01µm	0.05µm
Voltage supply	DC 5V ± 0.25V	
Current consumption	< 100mA	< 255mA (without load)
Integrated interpolation	-	100-fold
Sampling rate	-	25kHz
Edge distance	-	0.080µs
Movement speed	≤480m/min	≤30m/min
Input frequency of the subsequent electronics	-	8MHz
Edge separation of the subsequent electronics	-	≥0.05µs

* The larger of the values is admissible