C224-E052D

SHIMADZU
Excellence in Science

Non-Contact Digital Video Extensometer

TRViewX

Advanced, World Leading Non-Contact Extensometer

Intelligent

The Shimadzu TRViewX not only far exceeds the measurement accuracy of conventional video type extensometers, but is also capable of width measurements. Furthermore, thanks to complete synchronization with TRAPEZIUMX testing machine software, the system provides the assist line functionality to simplify specimen mounting, specimen video recording, and other convenient (intelligent) functionality. Together with the adoption of a camera stand reflecting careful attention both to operability and design, this non-contact extensometer offers dramatically improved performance and ease of use. Since this is a non-contact system, it is suitable to measure thin films, foils and wires without damaging the specimens during the test.
Measurements within a thermostatic chamber are also possible.

* TRViewX and safety cover for main unit can not be used together. Use a protective goggle.

High Accuracy Elongation Measurements

- Absolute accuracy ±1.5 µm, relative accuracy ±0.5 % (world's highest accuracy)
  Compliant with ISO 9513 Class 0.5, JIS B7741 Class 0.5 at room temperature
- Absolute accuracy ±3 µm, relative accuracy ±1.0 %
  Compliant with ISO 9513 Class 1, JIS B7741 Class 1 in chamber
- Thanks to compatibility with gauge lengths of even 10 mm, small specimens can be measured
- Compatible with cycle loading tests

Width Measurement Functionality Provided

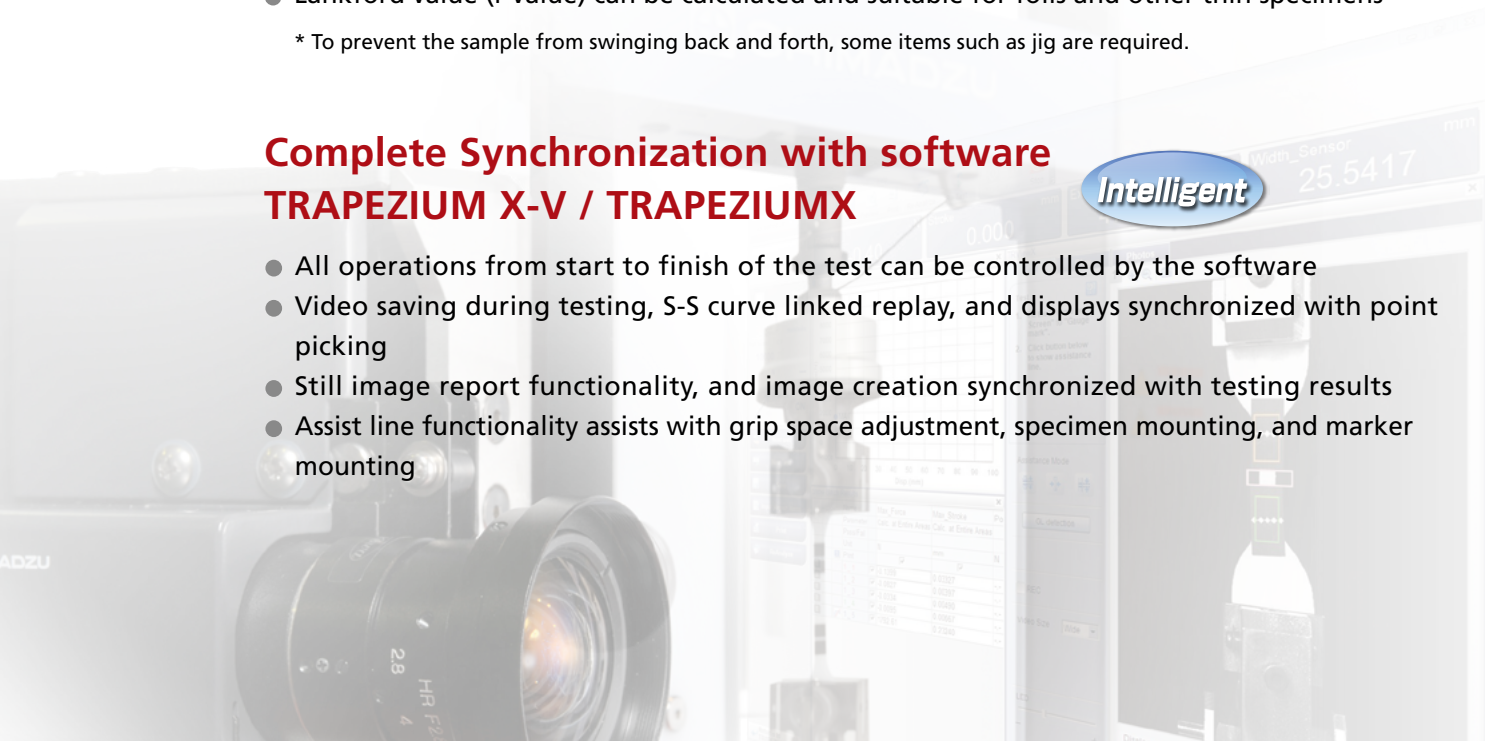
- Capable of simultaneous elongation and width measurements
- Lankford value (r value) can be calculated and suitable for foils and other thin specimens

  * To prevent the sample from swinging back and forth, some items such as jig are required.

Complete Synchronization with software TRAPEZIUM X-V / TRAPEZIUMX

Intelligent

- All operations from start to finish of the test can be controlled by the software
- Video saving during testing, S-S curve linked replay, and displays synchronized with point picking
- Still image report functionality, and image creation synchronized with testing results
- Assist line functionality assists with grip space adjustment, specimen mounting, and marker mounting



Select the Optimum Model to Suit Your Specimens

- Meeting demands with a wide lineup featuring cameras with different fields of view

  Single Camera Model TRViewXS Series

  55 to 240 mm field of view: Examine a specific area in detail (ISO/JIS Class 0.5 compatible)

  Maximum of 800 mm field of view: Even large elongation specimens can be measured.

- The ultimate system, simultaneously attaining high accuracy and a wide field of view

  Double Camera Model TRViewXD Series

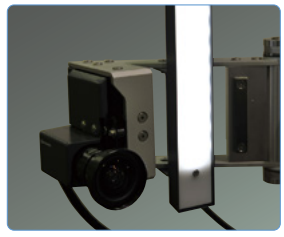
  Small displacements are measured with a high accuracy camera, achieving ISO/JIS Class 0.5.

  During testing, the camera can switch to large displacement, and is capable of ISO/JIS Class 0.5 large field of view measurements.

LED Lighting for Achieving High Accuracy Measurements

- Thanks to high intensity LED, the impact of ambient lighting is minimized, thereby attaining even higher measurement accuracy.

  The intensity of the lighting can be regulated using TRAPEZIUMX.



- Multi lighting system

  For large elongation specimens, up to four LEDs can be positioned forward and back, and to the left and right.

  The optimum lighting can be achieved to suit your various types of specimens.

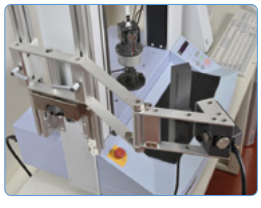
Equipped with a High Quality Digital Camera Featuring a Fine Position Adjustment Mechanism

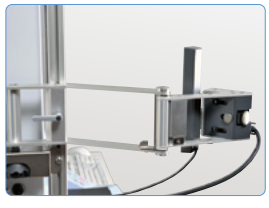
- Equipped with a high quality 2 megapixel digital camera, and a special megapixel lens

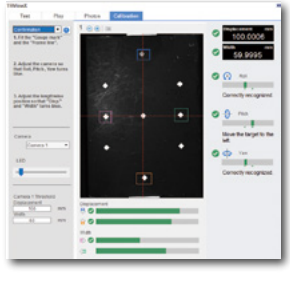
  The clear images lead to even higher accuracy.

- Equipped with a mechanism for making fine position adjustments forward/back, left/right, and up/down. The optimum settings are simple to make to accommodate the specimen thickness and length.

  The camera position can be confirmed easily on the TRAPEZIUMX window.



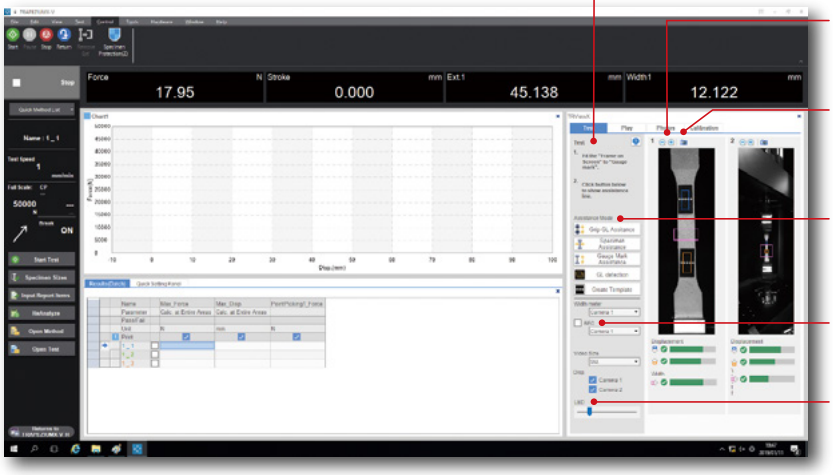




Complete Synchronization with TRAPEZIUM X-V / TRAPEZIUMX Simplifies Operability

The complete synchronization is achieved with the popular, easy-to-operate TRAPEZIUM X-V / TRAPEZIUM X software for testing machines.

- Simply select the TRViewX testing conditions to automatically set the measurement mode.
- All operations from start to finish of the test can be controlled by the software.
- It is possible to measure the actual gauge length when testing starts.



Operational guidance
Straightforward operations with operational guidance displayed

Zoom in / Zoom out button
Automatically zoom in / zoom out or drag images

Free shot button
Photograph the specimen and jig, and output the photographs to reports

Convenient assist line functionality

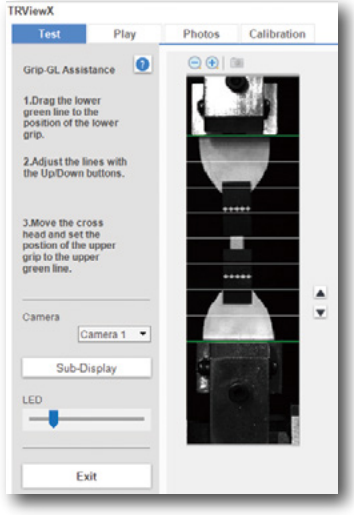
Single-click recording

LED lighting brightness adjustment

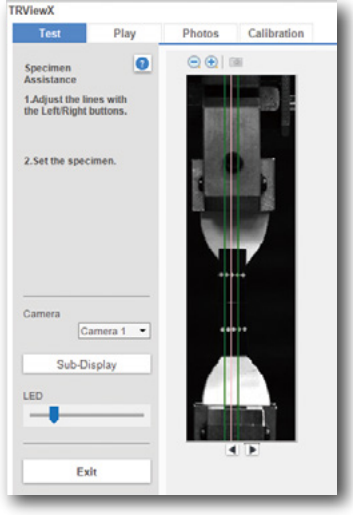
Assist Line Functionality for Smooth Everyday Operations

Onscreen assistance is provided for specimen mounting, movement of the grip to the test starting position, and mounting of the elongation measurement marker, all of which are required for testing.

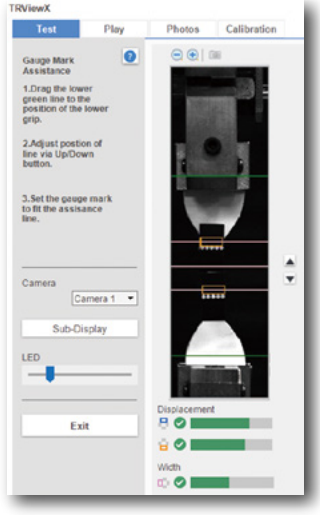
Intelligent



Grip-GL Assistance



Specimen Assistance

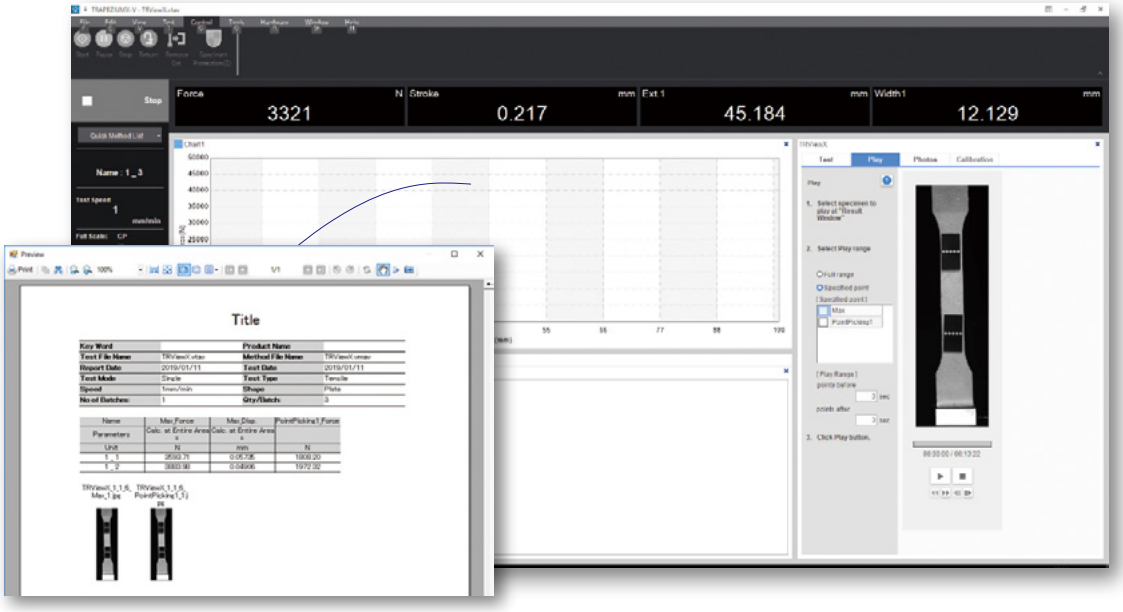


Gauge Mark Assistance

Video and Still Image Functionality Enables Detailed Analysis and Strain Distribution

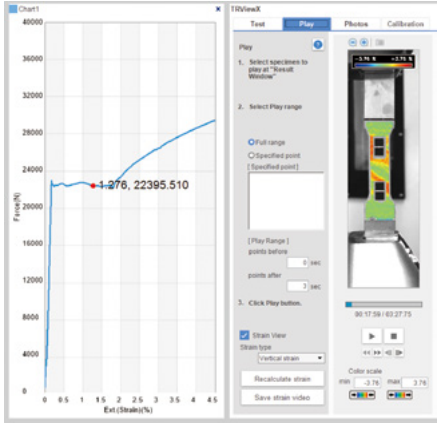
Video Recording, Playback Functionality and Still Image Functionality

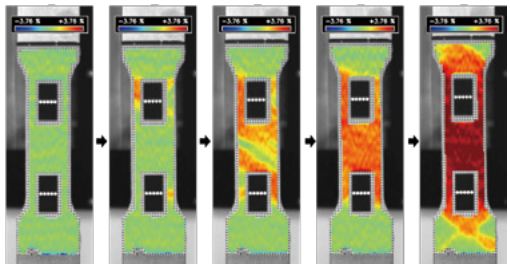
- The testing conditions can be video recorded.
- A variety of playback functions from start to finish of testing, including replay only in the vicinity of fracture, pause function, and frame-by-frame playback.
- During playback, the display is synchronized with the graph.
- Select a point on the graph with the mouse (point picking) to display the image of that part.
- During testing, images of a particular part can be extracted, and output to reports with a single click. Photos of specimens and jigs can be taken before and after testing.



Real-Time Strain View Dedicated For AGX-V and TRAPEZIUM X-V

Grid marks applied to the surface of the sample are compared before and after deformation of the object, enabling to investigate the amount of deformation of the object. By adding Real-Time Strain View software to the TRViewX video type non-contact extensometer, it enables real-time 2D mapping of the strain distribution. Operations are performed seamlessly using the TRViewX software.





Configurations

Main Unit

Single Camera Model (TRViewXS Series)

Select from five models differing in the size of the camera's field of view.
This table is the example of the model selection F.O.V. requires (initialG.L + elongation) × 1.5 to 2.0.

Gauge Length	Elongation Measurement Range	Camera Model	Camera Field of View
10 mm	Approx. 100 %	TRViewX55S	55 mm
10 mm	Approx. 350 %	TRViewX120S	120 mm
20 mm	Approx. 180 %		
20 mm	Approx. 350 %	TRViewX240S	240 mm
20 mm	Approx. 800 %	TRViewX500S	500 mm
25 mm	Approx. 150 %	TRViewX240S	240 mm
25 mm	Approx. 250 %		
25 mm	Approx. 600 %	TRViewX500S	500 mm
50 mm	Approx. 90 %	TRViewX240S	240 mm
50 mm	Approx. 300 %	TRViewX500S	500 mm
75 mm	Approx. 200 %		
100 mm	Approx. 100 %		
100 mm	Approx. 300 %	TRViewX800S	800 mm

Double Camera Model (TRViewXD Series)

This model uses two cameras.
In the small elongation region, the small field of view camera is used for high accuracy measurements. (Camera 1)
In the large elongation region, the large field of view camera is used for large scale measurements. (Camera 2)
During testing, the system can switch automatically between Camera 1 and Camera 2.
This model can perform both high accuracy measurements of elastic modulus, and fracture and elongation measurements of large elongation specimen.
Select from two models differing in the size of the camera's field of view.
This table is the example of the model selection F.O.V. requires (initialG.L + elongation) × 1.5 to 2.0.

Gauge Length	Elongation Measurement Range	Camera Model	Camera Field of View	
			Camera 1	Camera 2
10 mm	Approx. 500 %	TRViewX500D	120 mm	500 mm
20 mm	Approx. 350 %			
20 mm	Approx. 700 %	TRViewX800D		800 mm
25 mm	Approx. 800 %			
50 mm	Approx. 300 %	TRViewX500D		500 mm
75 mm	Approx. 180 %			
100 mm	Approx. 200 %	TRViewX800D		800 mm

Items Included in the Unit

Item	Description
Camera (2 megapixels)	1 unit (TRViewXS Series), 2 units (TRViewXD Series)
Lens (for TRViewXS Series)	1 set supplied with each model • TRViewX55S: Focal distance 50 mm • TRViewX120S: Focal distance 25 mm • TRViewX240S: Focal distance 12.5 mm • TRViewX500S: Focal distance 5 mm • TRViewX800S: Focal distance 3.5 mm
Lens (for TRViewXD Series)	2 types (1 of each) supplied with each model • TRViewX500D: Focal distance 25 mm and focal distance 5 mm • TRViewX800D: Focal distance 25 mm and focal distance 3.5 mm
Camera cable	1 set (TRViewXS Series), 2 sets (TRViewXD Series)
LED lighting unit	1 set
Control box	(LED control, elongation output port to testing machine, USB cable) 1 set
Cable for output to the testing machine	Digital, 1 cable (for AGS-X, AG-Xplus and AGX-V)
Background black rubber sheet	1 set
Sticker-type gauge marker (white line)	2 types, 1 sheet each
Gauge marker template	1
Black pen	1
Image input board	1 set (Note 1)
Calibration bar	1 set (TRViewXS Series) (Note 2), 2 sets (TRViewXD Series)
Camera fixed type mounting arm, mounting stand with fine position adjustment mechanism	1 set (AGS-X, AG-Xplus, AGX-V, each for use at room temperature, and for use in chamber)
Testing machine optional rails	1 set (for AGS-X, AG-X plus table-top type, AG-XD plus table-top type, AG-X plus floor type)
Lower joint for lower grip (45 degree type)	Room temperature only (required for AGS-X, AG-X plus table-top type, AGX-VD table-top type, 5 kN max. grip)
Leveling instrument	1
Measurement software CD	1 set
Kit for in-chamber modifications	In-chamber kit only. Implements modifications of thermostatic chamber door.

(Note 1) (PCIExpress × 4) slots are required for the PC.
(Note 2) A suitable calibration bar is packaged with the lens used.
* This software is incorporated in the TRAPEZIUMX testing machine control software. It does not exist as separate software.
* A safety cover cannot be used with this instrument. The safety cover must be removed to use this instrument. Contact Shimadzu if you require a cover of a particular shape.

Specifications

Item			Specifications						
Model Name			TRViewX 55S	TRViewX 120S	TRViewX 240S	TRViewX 500S	TRViewX 800S	TRViewX 500D	TRViewX 800D
Gauge Length			Any value within camera's field of view						
Field of View (Note 1)			Elongation: 55 mm Width: 40 mm	Elongation: 120 mm Width: 90 mm	Elongation: 240 mm Width: 180 mm	Elongation: 500 mm Width: 300 mm	Elongation: 800 mm Width: 300 mm	Elongation: 500 mm Camera 1: 120 mm Camera 2: 500 mm Width: 300 mm Camera 1: 90 mm Camera 2: 300 mm	Elongation: 800 mm Camera 1: 120 mm Camera 2: 800 mm Width: 300 mm Camera 1: 90 mm Camera 2: 300 mm
Effective Resolution			0.15 µm	0.30 µm	0.60 µm	1.2 µm	1.8 µm	Camera 1: 0.30 µm Camera 2: 1.2 µm	Camera 1: 0.30 µm Camera 2: 1.8 µm
Elongation Accuracy (Note 2)	At Room Temperature	Absolute Accuracy	±1.5 µm			±15 µm	±15 µm	±1.5 µm Camera 1 only	±1.5 µm Camera 1 only
		Relative Accuracy	Indicated value ±0.5 % *0.5			Indicated value ±0.5 % *0.5	Indicated value ±1 % *1	Indicated value ±0.5 % (Note 3) *0.5	Camera 1: Indicated value ±0.5 % Camera 2: Indicated value ±1 % (Note 3) *1
	In Chamber (Note 5)	Absolute Accuracy (23 °C)	±3 µm		±4 µm	±95 µm	±150 µm	±3 µm Camera 1 only	±3 µm Camera 1 only
		Relative Accuracy (23 °C)	Indicated value ±1 % *1		Indicated value ± 2 % *2	Indicated value ±2 % *2	Indicated value ±3 %	Camera 1: Indicated value ±1 % Camera 2: Indicated value ±2 % (Note 3) *2	Camera 1: Indicated value ±1 % Camera 2: Indicated value ±3 % (Note 3)
Width Accuracy (Note 2&8)	At Room Temper	Absolute Accuracy	±2 µm			±22.5 µm	±30 µm	Camera 1: ±2 µm Camera 2: ±22.5 µm	Camera 1: ±2 µm Camera 2: ±30 µm (Note 4)
		Relative Accuracy	ature Indicated value ±0.5 % *1			Indicated value ±0.5 % *0.5	Indicated value ±1 % *1	Indicated value ±0.5 % *0.5	Camera 1: Indicated value ±0.5 % Camera 2: Indicated value ±1 % (Note 4) *1
	In Chamber (Note 5)	Absolute Accuracy (23 °C)	±10 µm			±100 µm	±200 µm	Camera 1: ±10 µm Camera 2: ±100 µm	Camera 1: ±10 µm Camera 2: ±200 µm (Note 4)
		Relative Accuracy (23 °C)	Indicated value ±2 % *2			Indicated value ±2 % *2	Indicated value ±3 %	Indicated value ±2 % *2	Camera 1: Indicated value ±2 % Camera 2: Indicated value ±3 % (Note 4)
Distance Between Specimen and Camera			Approx. 515 mm to 530 mm, Approx. 15 mm adjustment possible via forward/back position adjustment mechanism						
Maximum Tensile Rate			1000 mm/min (Note 6)						
Sampling Frequency (Note 7)			Three values depending on image size: 33 Hz, 50 Hz, and 100 Hz						
Available Recording Time (File Size)			Approx. two hours maximum (approx. 10 GB), or up to the HDD space available, whichever is less.						
Control Box Specifications			Lighting control: 4 channels, analog voltage output: 2 channels (Output voltage: ±5 V, maximum output current: ±10 mA, output resolution: 1/50000 full-scale) Digital pulse output: 2 channels, communication with PC: USB						
Usage Environment			Temperature 5 °C to 35 °C (ISO is only certified for 18 °C to 28 °C, with fluctuations of ±2 °C max.), humidity 20 % to 80 % (no condensation) In-chamber temperature measurement range: -50 °C to 200 °C						

*0.5 : ISO9513 Class 0.5 compatible, *1 : ISO9513 Class 1 compatible, *2 : ISO9513 Class 2 compatible

(Note 1) The field of view and elongation measurement range differ. The field of view indicates the image-taking range of the cameras. In general, a field of view of (initial GL + elongation) × 1.5 to 2 is required. In addition, the field of view differs with the camera's vertical position, and the testing machine's vertical and longitudinal dimensions. The field of view may become narrow particularly when using double camera models (TRViewXD Series).
(Note 2) The accuracy is defined as the absolute error with respect to the indicated value, or the relative error with respect to the indicated value, whichever is larger.
(Note 3) When the gauge length is within Camera 1's field of view (120 mm), the measurement accuracy shall correspond to the accuracy of Camera 1. The accuracy in the range from Camera 1's maximum field of view (120 mm) to Camera 2's maximum field of view shall correspond to the accuracy of Camera 2.
(Note 4) When the specimen's initial width is 90 mm or less, Camera 1 is used for measurement. When the value is larger than 90 mm, Camera 2 is used. The accuracy shall be in the range guaranteed for the respective camera.
(Note 5) A special thermostatic chamber compatible with video extensometers is required for measuring elongation and width using the thermostatic chamber. In addition, the chamber observation window may cloud over depending on the measurement and usage conditions. Measurements cannot be performed if the gauge markers cannot be observed by the cameras.
(Note 6) Testing speed may be limited depending on the field of view.
(Note 7) The data sampling frequency may be less than values indicated in the specifications, due to the PC performance and load.
* Special jig may be required if the shape of a test specimen is round bar and its diameter is more than 4 mm, or when the compression and bending test.
(Note 8) It is possible to calculate the Poisson's ratio but results are reference.
(Note 9) Strain rate control compliant with ISO 6892 is not possible.

Optional Accessories

(1) Sticker-Type Gauge Marker

These sticker-type gauge markers are adhered to the test object.

Name	P/N	Color	Number of Sheets	Remarks	Operational Temp. Range*	Adhesion
3 Diamond-Shaped Sticker-Type Gauge Marker	348-36045-01	White line on black background	50 sheets	Suitable for measuring the elastic modulus of black resins and metals	-20 °C to 150 °C	Double-coated tape
	348-36045-02	Black line on white background		Suitable for measuring the elastic modulus of white resins and metals		
Line Sticker-Type Gauge Marker	345-02917-03	White line on black background	160 sheets	Suitable for large elongation measurements		
	345-02917-04	Black line on white background				
Small Sticker-Type Gauge Marker	348-36040-01	White line on black background	400 sheets	Suitable when the GL is 20 mm max. or for width measurements		
	348-36040-02	Black line on white background				
Straight Sticker-Type Gauge Marker	345-02917-11	White line on black background	160 sheets	Suitable for black rubbers	-50 °C to 150 °C	Printing paste
	345-02917-12	Black line on white background		Suitable for white rubbers		

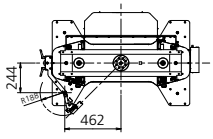
*Depending on the specimen material and display conditions, the gauge marker stickers may tend to come off at low temperatures.

(2) Clip-Type Gauge Marker

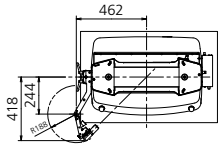
Name	P/N	Color	Number of Sheets	Remarks	Operational Temp. Range*
Clip Type Gauge Marker for Round T.P.	346-57602-01	White line on black background	1 set (2pcs)	Suitable for Round T.P. D4.5-D7	-50 °C to 150 °C

External Dimensions (example for mounting on testing machine)

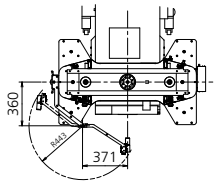
AGX-V floor type (20 kN-300 kN)



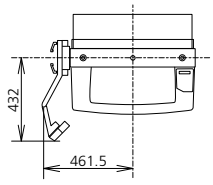
AGX-V table-top type



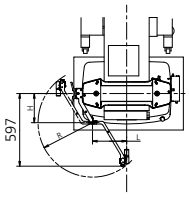
AGX-V floor type (20 kN-300 kN) thermostatic chamber



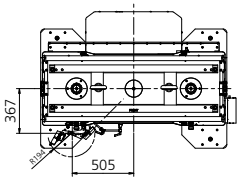
AGS-X



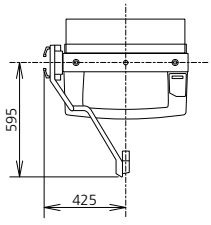
AGX-V table-top type thermostatic chamber



AGX-600 kNV



AGS-X thermostatic chamber



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