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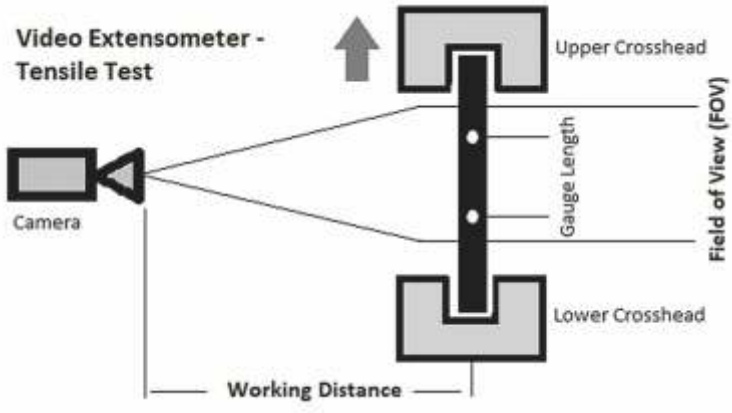
Video Extensometer for Optical Strain Measurement

- The Purpose of Video Extensometer is to optically measure the elongation on application of longitudinal tensile force on the test specimen.
- Markers, especially dots, lines or pre designed templates are used to track elongation in real time.
- The markers used should be in contrast with the color of the test specimen.



Video Extensometer for Optical Strain Measurement

Advantages over contact type Extensometer:

- More accurate results as there is no mechanical influence on the specimen during the test due to the non-contacting camera system.
- Knife edge Slippage errors are omitted.
- Knife edge damage errors are omitted.
- Auto Gauge Length Detection - Consistent results as the human error is eliminated while marking the Gauge length.
- No moving parts - hence, extremely low maintenance costs.
- No possibility of damage due to rupture shocks and jerks - hence, no wear and tear of the Video Extensometer
- Gives you Elongation results upto the sample rupture
- Extremely easy to use for untrained operators.

Operation Principle:

To track elongation, the test specimen is marked at the top and at the bottom along its longitudinal axis. The distance between these two points would be the gauge length.

The markers shall be automatically detected by the Digital Camera on starting the Tensile Test.

The gauge length shall be entered by the machine operator or can also be automatically detected.

On application of tensile strength, the instantaneous distance between the two longitudinal marks will be calculated by real time video processing algorithm.

Ample care should be taken to keep the Video Extensometer physically stable while conducting the tensile test.

The test specimen has to illuminated by an LED arrangement. Ensure that all the marks on the test specimen are illuminated with same luminosity.

The extension resolution will be dependent on the Field of View (FOV) for that particular test. As the field of view will increase, the extension resolution will also increase.

The Field of View (FOV) depends on the Focal Length (FL) of the lense that will be used with the digital camera.

Longer the focal length, smaller would be the Field of View (FOV) and lesser would be the extension resolution.

The Field of View (FOV) for any test should be 1.5 times the addition of the gauge length (gL) of the test specimen and maximum extension (mE). FOV = 1.5 * [gL + mE]

Home Screen

Variants :

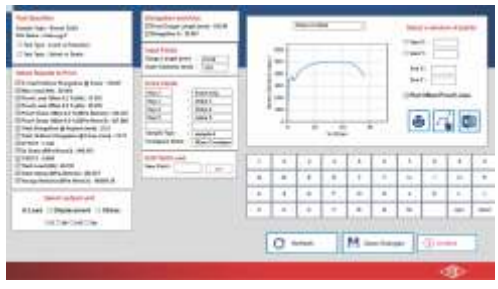
1. Standard Video Extensometer - Class C - 1 % Extension Accuracy - (ref. Table 1)
2. Advanced Video Extensometer - Class B2 - 0.5 % Extension Accuracy - (ref. Table 2)

Table 1 - Standard Video Extensometer

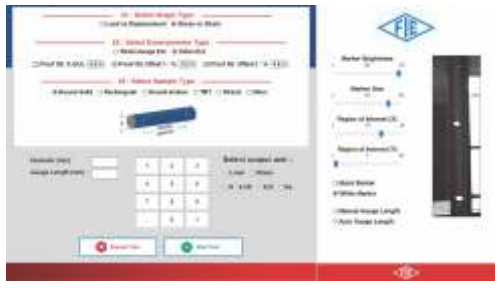
Field Of View (mm)	100	150	250	400	500
Gauge Length (mm)	40	60	100	160	200
Max. Extension (mm)	32	48	80	128	160
Resolution (Aprox) (μ)	5	5	10	15	20
Extension Error (%)	± 1 %	± 1 %	± 1 %	± 1 %	± 1 %
Strain Error (mm/mm or %) *Whichever Greater	± 0.001 or ±1 %	± 0.001 or ±1 %	± 0.001 or ±1 %	± 0.001 or ±1 %	± 0.001 or ±1 %
ASTM - E83 Class	Class C	Class C	Class C	Class C	Class C

Table 2 - Advanced Video Extensometer

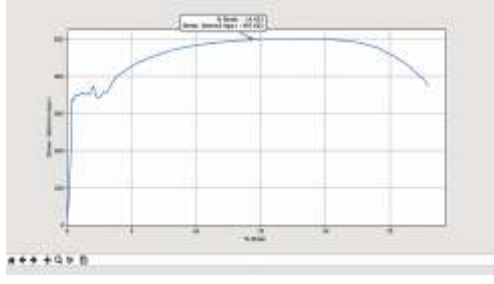
Field Of View (mm)	100	150	250	400	500
Gauge Length (mm)	40	60	100	160	200
Max. Extension (mm)	32	48	80	128	160
Resolution (Aprox) (μ)	1	1	2	3	5
Extension Error (%)	± 0.5 %	± 0.5 %	± 0.5 %	± 0.5 %	± 0.5 %
Strain Error (mm/mm or %) *Whichever Greater	± 0.0002 or ±0.5 %	± 0.0002 or ±0.5 %	± 0.0002 or ±0.5 %	± 0.0002 or ±0.5 %	± 0.0002 or ±0.5 %
ASTM - E83 Class	Class B2	Class B2	Class B2	Class B2	Class B2



Input Screen



In-Depth Result Analysis



Graph Tracing up to Rupture

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