Hegewald & Peschke
Meß- und Prüftechnik GmbH

Product Information

Non-contact deformation measuring device

Laser Speckle Extensometer

zertifiziert nach DIN EN ISO 9001
TÜV CERT
Zert. Nr. 08/100/9044/3

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Description

Non-contacting deformation measurement device for material testing based on laser speckle evaluation

Technical description

The laser speckle extensometer uses laser light for the lighting of the test object. Thus, the system falls in the category of laser measurement. The special characteristics of laser light, such as the collimating and interference abilities, are used for metrological purposes. The advantages of this optical method when compared to conventional methods are that measurements are carried out without contact, non-reactive and 2-dimensional.

Measuring principle

The measured object is lit with laser light, which creates a speckle pattern on the surface of the specimen. Before the test starts, this pattern is recorded by two cameras and saved as reference. While the tensile test is carried out, the pattern is video recorded by both cameras. Then, the images are compared with the reference that was taken before the test and the changes are measured.

Laser diodes

The laser diodes are used for the lighting of the specimen. Because of the specific characteristics of laser light the so-called speckle pattern is created, which can be used for the elongation measurement.

CCD cameras

The speckle patterns are recorded with the help of the CCD cameras. The number of pixels that the cameras can record is an important influence on the resolution of the speckle images and, thus, on the measuring accuracy of the system.

Evaluation unit (PC)

The PC is used for the control of the hardware, evaluation of the speckle images and for the calculation of the extension value. Every interface on the measuring system is directly connected to the computer.

Evaluation software (in cooperation with the material testing software LabMaster)

The extension values, which are calculated by the evaluation software, are transmitted via a serial interface to a PC with the testing software LabMaster, where they are processed as measuring channel.

Further parameters

- Maximum working distance:
  approx. 600 mm
- Measuring range (length):
  20mm to 100mm (manually adjustable)
- Measuring accuracy:
  according to EN10002, part 4, class 1

Included in the delivery

- Extensometer (consisting of casing, cameras, laser, linear unit for L0 setting)
- Evaluation unit with evaluation software for linear expansion

Optional accessories

- Module for the determination of lateral extension