

SE 110.58

Free vibrations in a bending beam



The illustration shows SE 110.58 in a frame similar to SE 112

Description

- **natural frequency on the freely vibrating bending beam**
- **approximation method according to Rayleigh**

An oscillator, which is left alone after a single excitation, performs free vibrations. The frequency of the free vibration is the natural frequency of the oscillator.

In SE 110.58, a bending beam is used as the system's oscillator. The bending beam can be used vertically standing or hanging and in the horizontal position in the SE 112 mounting frame.

The natural frequency is affected by the clamping length and the sliding weights. The bending beam is deflected by hand and performs free, damped vibrations. The resulting amplitudes are measured via strain gauges and a measuring amplifier. The signal can be displayed on an interlaboratory oscilloscope.

Learning objectives/experiments

- free vibration in a vertical and horizontal bending beam
- determine the natural frequency according to Rayleigh
- how clamping length and mass affect the natural frequency

Specification

- [1] investigation of the free vibration on a bending beam
- [2] elastic bending beam with sliding weights
- [3] bending beam can be mounted on all four sides of the frame
- [4] amplitude measurement via strain gauge and measuring amplifier
- [5] fixable length scale
- [6] storage system for parts
- [7] experimental setup in frame SE 112

Technical data

Bending beam

- LxWxH: 635x20x3mm
- material: AlMgSi0,5F22

Weights

- 10x 100g

230V, 50Hz, 1 phase

230V, 60Hz, 1 phase

120V, 60Hz, 1 phase

UL/CSA optional

LxWxH: 720x480x180mm (storage system)

Weight: approx. 9kg (total)

Required for operation

Mounting frame SE 112

Scope of delivery

- 1 bending beam
- 1 measuring amplifier
- 1 set of weights
- 1 set of accessories
- 1 storage system with foam inlay
- 1 set of instructional material

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Required accessories

SE 112 Mounting frame