목록

Gauge Block Calibration System

EPP-Series

SIOS Meßtechnik GmbH

Design and Operation

The EPP-Series gauge-block calibration system for calibrating parallel-sided gauge blocks employs an LM 20 laser-interferometric gauging probe as its upper gauging probe. It has a measuring range of 20 mm and a length resolution of 1 nm. Investigations conducted by the German national bureau of standards (PTB) yielded metric errors of less than 10 nm for this gauging probe when used for calibrating gauge blocks. According to a PTB recommendation, the total number of reference-standard gauge blocks required for calibrating a 122-piece set of gauge blocks may thus be reduced to fifteen.

A calibration procedure determines system linearity errors (errors due to misalignments, angular misalignments of its gauging probe, and thermal effects) and corrects for them.

The system is easy to operate from a PC running "Parallel Gauge Block Calibration" (PEKAL) signal-processing and control software, which also corrects, processes, and outputs metrological data.

Major Performance Features

- Only around 15 standard gauge blocks are needed for calibrating a 122-block set.
- Cuts calibration costs, thanks to its low recalibration requirements.
- Yields faster measurements, thanks to its menu-driven metrological procedures and the low number of standard gauge blocks required.
- Calibrates unusual nominal sizes and items fabricated from nonstandard materials.
- Features high linearity over its entire measuring range.
- Maintains a constant applied force for the gauging probe over the entire measurement range.
- Supplied complete with stable, high-precision, measuring stands.
- Employs the PEKAL software, which corrects for test object temperature and ambient temperature.
- Optionally available with a set of four temperature sensors.
- Employs a software package running under Windows on any standard PC.

Technical Data	EPP 01
Measurement range:	0.5 mm ... 100 mm
Upper gauging probe:	**SIOS Model LM 20 laser-interferometric gauging probe**
Measurement range:	20 mm
Resolution:	1 nm
Uncertainty:	≤ ± 10 nm over 15 mm
Measurement force:	1 N
Probe tip:	Interchangeable, 1.5-mm radius, spherical, ruby-tipped insert equipped with an M 2.5 external thread
Lower gauging probe:	**Inductive type**
Measuring force:	0.6 N
Probe tip:	1.5-mm radius ball
Serial interface:	RS 232 C
Operating temperature:	20°C ± 0.5 K
Resolution of temperature measurement:	± 0.01 K

Applications

- Calibration of plane-parallel gauge blocks with rectangular cross sections ranging from 0.5 mm to 100 mm.
- Measurement characteristic dimensional parameters in compliance with ISO 3650.

Signal-Processing and Control Software

- Controls the motion (raising/lowering) of both gauging probes.
- Simultaneously transmits metrological data obtained by both upper and lower gauging probes.
- Compensates for errors, computes center sizes, recognizes nominal sizes, outputs deviations of center sizes from nominal sizes, and classifies gauge blocks by their degrees of accuracy.
- Reads out signals from the system's online temperature measurement system and compensates for deviations from reference temperatures.
- Outputs custom-designed test reports and certificates

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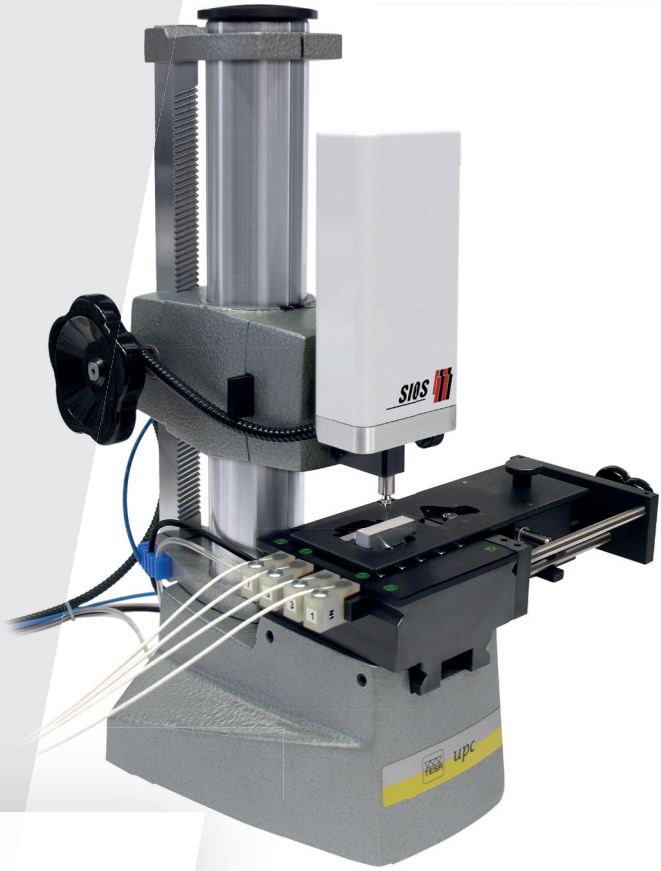


EPP

Product information

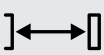
Highly accurate gauge block calibration system

Gauge Block Calibration System

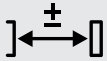
EPP

The EPP gauge block calibration system for calibrating gauge blocks uses an LM 20 laser interferometric probe as the upper measuring probe. It has a measuring range of 20 mm and a resolution of 1 nm. The Physikalisch-Technische Bundesanstalt Braunschweig determined a measurement error of less than 10 nm for this probe during gauge block calibration. This means that the number of standard gauge blocks required can be reduced to 15 for a 122-part gauge block set according to a PTB recommendation.

With a calibration procedure, the linear errors of the gauge block tester (misalignment, skewing of the probe, temperature influences) can be determined and corrected. The comfortable operation of the gauge block test station as well as the correction, evaluation and output of the measured values are carried out via a PC with the software „Infas-GAUGE“ (parallel gauge block calibration).



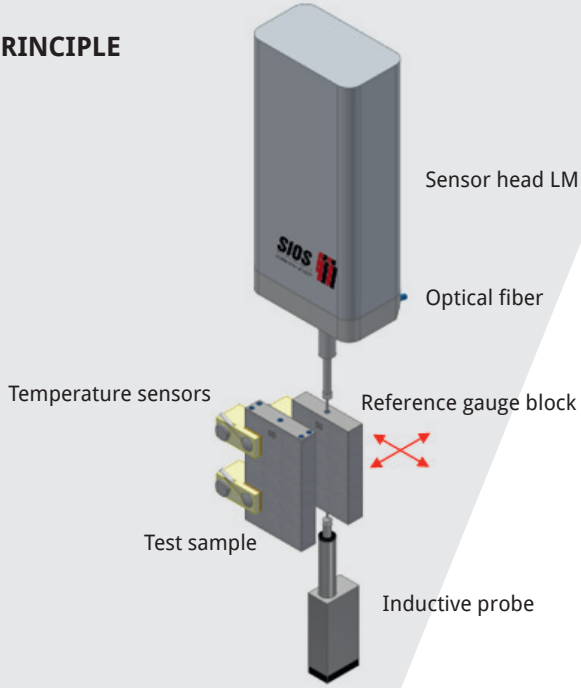
0.5 mm bis 100 mm



U=0.05 µm + 0.5 · 10^{-6} · L

1 nm

MEASURING PRINCIPLE



Areas of application

- calibration of gauge blocks with rectangular cross section in the range from 0.5 to 100 mm
- determination of parameters according to ISO 3650

Ideal für

- quality control
- calibration
- gauge block calibration

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For customer-specific versions, OEM applications or integration in special measuring stations, please contact us.

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