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# Gauge Block Calibration System



**EPP-Series**

## Design and Operation

Our EPP-Series gauge block calibration system is based on a new metrological method in which the upper inductive probe normally used is replaced by one of our Model LM 20 laser-interferometric gauging probes with a measuring range of 20 mm and a resolution of 1 nm. The German standards institute, the Physikalisch-Technische Bundesanstalt Braunschweig, determined that using this type of probe allows holding metric errors to 10 nm or less over 15 mm, which, in turn, allows reducing the total number of standard gauge blocks required and comparing gauge blocks with differing lengths.

A proprietary calibration technique allows determining system linearity errors (errors due to misalignment, probe tilt, and thermal effects).

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.
- Allows calibrating unusual types of nominal sizes and items fabricated from nonstandard materials.
- Features high linearity over its entire measuring range.
- Maintains the force applied by its gauging probe constant over its entire measuring range.
- Supplied complete with stable, high-precision, measuring stands.
- Employs the PEKAL-software, which corrects for test-object temperature and standard 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

Measuring range:	0.5 mm ... 100 mm
<b>Upper gauging probe:</b>	<b>SIOS Model LM 20 laser-interferometric gauging probe</b>
Measuring range:	20 mm
Resolution:	1 nm
Uncertainty:	$\leq \pm 10$ nm over 15 mm
Measuring force:	1 N
Probe tip:	Interchangeable, 1.5-mm radius, spherical, ruby-tipped insert equipped with an M 2.5 external thread
<b>Lower gauging probe:</b>	<b>Inductive type</b>
Measuring force:	0.6 N
Probe tip:	1.5-mm radius ball
Serial interface:	RS 232 C
Operating temperature:	20°C $\pm$ 0.5 K
Resolution of temperature measurement:	$\pm 0.01$ K

### Applications

- Calibrating plane-parallel gauge blocks with rectangular cross sections and ranging from 0.5 mm to 100 mm.
- Measuring characteristic dimensional parameters in compliance with DIN 861.
- Factory calibrations of metrological instrumentation.

### Signal-Processing and Control Software

- Controls the motions (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 departures of center sizes from nominal sizes, and classifies gauge blocks by their degrees of accuracy.
- Reads out signals from the system's online temperature-measuring system and compensates for departures from reference temperatures.
- Outputs custom-designed test reports.

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