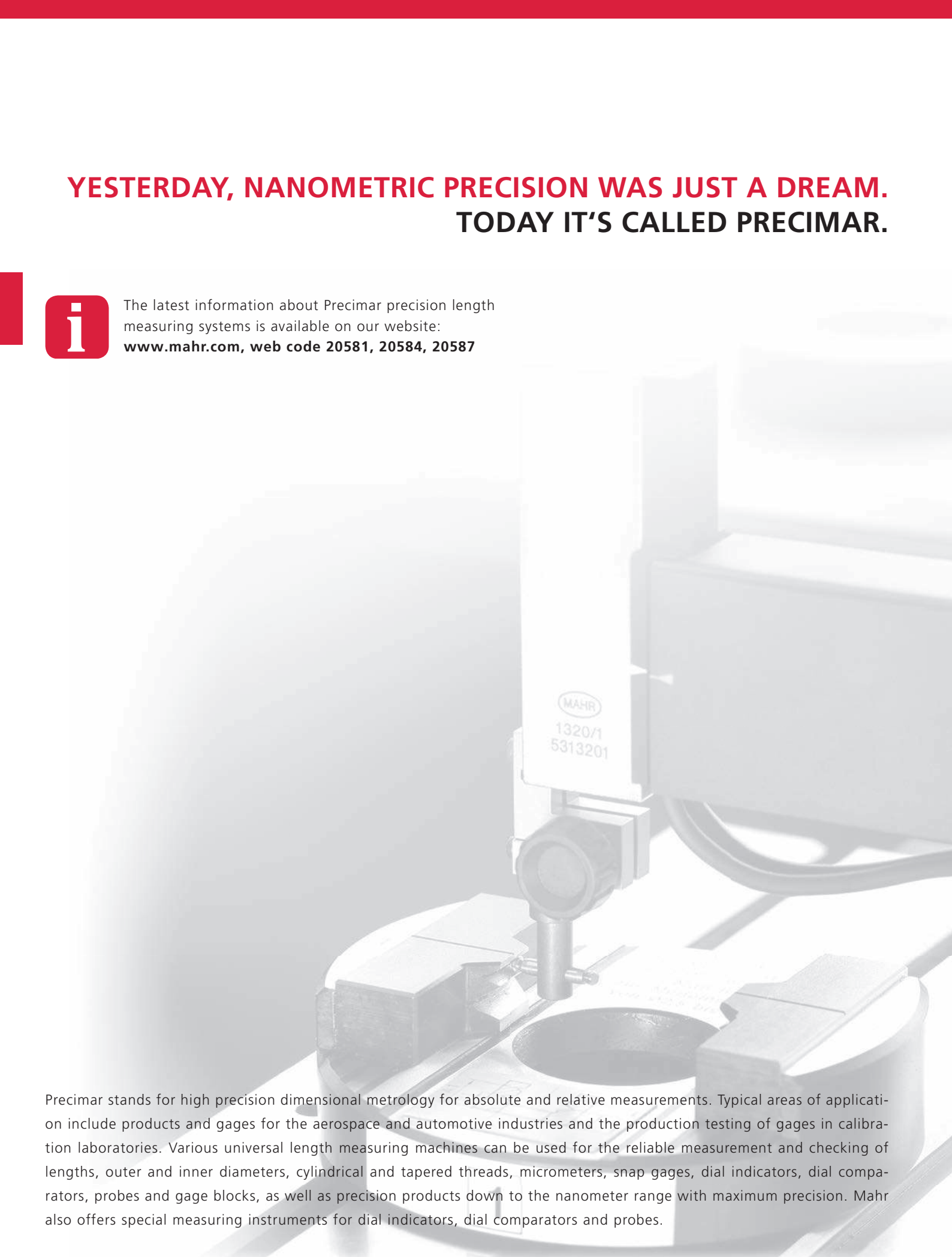
# YESTERDAY, NANOMETRIC PRECISION WAS JUST A DREAM.
# TODAY IT'S CALLED PRECIMAR.

The latest information about Precimar precision length measuring systems is available on our website:
**www.mahr.com, web code 20581, 20584, 20587**




Precimar stands for high precision dimensional metrology for absolute and relative measurements. Typical areas of application include products and gages for the aerospace and automotive industries and the production testing of gages in calibration laboratories. Various universal length measuring machines can be used for the reliable measurement and checking of lengths, outer and inner diameters, cylindrical and tapered threads, micrometers, snap gages, dial indicators, dial comparators, probes and gage blocks, as well as precision products down to the nanometer range with maximum precision. Mahr also offers special measuring instruments for dial indicators, dial comparators and probes.

# Precimar. Precision length measurement

# Precimar 826 PC. Gage Block Measuring Instrument

The 826 PC gage block measuring instrument is quick, reliable and highly accurate. An open and extremely rigid L-shaped stand forms the base for the two counteracting precision measuring probes and the absolutely level measuring table.

- Rigid cast stand for temperature stability and heat resistance
- Fast adjustment of vertical slide with top probe
- Highly ergonomic, user friendly one-handed operation to position the gage blocks under the measuring probe
- Precision adjustment via torsionally rigid parallelogram springs
- Electropneumatic lifting of measuring probes
- Precision ball bearing guides for smooth manipulator actuation
- No influence on measurement from hand force
- Round carbide precision support pins make it easy to move the gage blocks on the measuring table
- Set value linked to the stored actual deviation of the reference gage block, avoiding the need for zero point setting
- Flattening correction
- Correction of differing coefficients of expansion
- Mean value generation

## Technical Data

| | 826 PC |
|---|---|
| **Application range [mm]** | 0.5 to 170 |
| **Direct measuring range [mm]** | 0,2 |
| **Repeatability [µm]** | ± 0,01 |
| **Mass [kg]** | 37 |

## Accessories

- QMSOFT® / QM-Block 32 calibration software for the calibration and data management of gage blocks and gage block sets
- The evaluation program runs under WIN 7 Ultimate
- Excellent thermal insulation with wraparound acrylic glass screen
- 826 Va HS lifting device for fast and quiet pneumatic lifting of inductive probes via foot switch
- Temperature compensation
- Wooden pincers, gage block suction lifter, optical flat, lay-on thermometer

## Applications

- Quick and easy high precision testing of European and US gage blocks up to 170 mm in length, as per ISO 3650

For more information, please visit our website: www.mahr.com

# Precimar 130B. Gage Block Measuring Instrument

The 130B–24 and 130B–16 gage block measuring instruments from Mahr are the first choice for many large calibration laboratories. They are designed for comparative measurements of gage blocks.

- A unique floating measuring frame ensures exact point-to-point measurement
- Single sensor design for minimal electronic noise
- Precision balanced system for optimum adjustment of measuring forces
- Integrated measuring software and user interface
- Built-in positioning device for reproducible measuring positions



## Technical Data

| | 130B–24 / 130B–16 |
|---|---|
| **Application range [mm]** | 0.25 to 100 (130B–24) / 2.5 to 600 (130B–16) |
| **Direct measuring range [mm]** | ± 0,01 |
| **Repeatability [µm]** | 6 σ < 0,025 |
| **Mass [kg]** | 100 (130B–24) / 140 (130B–16) |

## Accessories

For further information please see our separate brochure.

## Applications

- Quick and easy high precision testing of European and US gage blocks

For more information, please visit our website: www.mahr.com

# **Precimar.** Dial Indicator Testing

## Partially And Fully Automated Testing Of Indicating Measuring Equipment

Dial indicator test devices from Mahr stand for accurate and efficient measurement. These devices are designed for absolute measurement of dial indicators, dial comparators, dial test indicator measuring devices and 2 point bore gages, as well as inductive and incremental measuring probes. Typical areas of use include dial indicator testing in all sectors of industry, measuring rooms and calibration laboratories, as well as production testing by dial indicator manufacturers. The Optimar 100 from Mahr is a practical solution for both the cost effective, semi-automatic testing of analog dial indicators and the efficient, fully automatic testing of digital measuring equipment.




# Precimar OPTIMAR 100. Dial Indicator Test Device

The OPTIMAR 100 is the most cost effective test station for the partially or fully automated testing of dial indicators, dial comparators, dial test indicator measuring devices and 2 point bore gages as well as inductive and incremental measuring probes.

- Automated sub-processes with motorized measuring spindle drive
- Fully automatic measuring procedure with digital measuring equipment
- Suitable for horizontal use
- Testpiece help by a vertical guide
- Fast height adjustment to adapt measuring objects to different measuring ranges
- Rigid, box-shaped device housing
- For measuring objects with 8 mm, 28 mm, 3/8" shaft diameter
- Electronic handwheel for manual control of spindle movement. The sensitivity of the electronic handwheel adjusts automatically to the testpiece resolution
- All control elements are ergonomically arranged
- Complies with Ernst Abbe's comparator principle for maximum measuring accuracies
- LIF 101 measuring system with computer-aided deviation correction
- Checking of 2 point bore gages with no loss of accuracy
- Pre-positioning: automatic
- Fine positioning: electronic rotary knob

## Technical Data

| | OPTIMAR 100 |
|---|---|
| **Measuring range** | 100 mm, 4 inch (101,66 mm) |
| **Measuring uncertainty $MPE_{E1}$ (L in mm) [µm]** | ≤ (0,2 + L/250) |
| **Digital numerical increment [µm]** | 0,02 |
| **Device dimensions** | 235 x 216 x 480 |

## Accessories

- Holder for dial test indicator measuring devices
- Wide choice of adapters for digital dial indicators and for inductive and incremental measuring probes
- Contect Mahr for the specific adapter
- Inductive probes from various manufacturers can be connected to via the probe box
- Holding device and software for testing 2 point bore gages with a moving measuring pin (test in accordance with VDI / VDE / DGQ 2618, Part 13.2, 2005)
- Device for force sensor upon request
- Calibration set for user calibration
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

## Applications

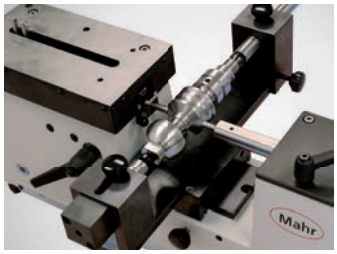
For testing of:

- Analog dial indicators
- Dial comparators
- Dial test indicator measuring devices
- Digital dial indicators
- Inductive and incremental probes
- 2 point bore gages

For more information, please visit our website: www.mahr.com

# **Precimar.** Length Measurement For All Areas Of Use

Length measurement is used today in all sorts of different sectors. LINEAR length measuring instruments are setting and measuring instruments designed for general workshop use. The well established universal length measuring instruments (ULM) are standard instruments for quality assurance in calibration measurement. They are also used for highly accurate length measurements on precision parts. Motorized PLM and CiM instruments offer fast, reliable and user friendly measurement with the lowest possible uncertainty. With products ranging from the simple LINEAR length measuring instrument and the ULM devices through to the ultra accurate, partially automated CiM Universal measuring machine, Mahr has practical solutions for manufacturing, measuring rooms and calibration laboratories. Precimar offers maximum precision combined with extremely efficient measuring processes.






# Precimar LINEAR 100. Length Measuring Instrument

The LINEAR 100 is a universal, easy to operate length measuring instrument for quick and precise outside and inside measurements up to 100 mm, directly on the production line. The simple design of the instrument speeds up the measurement process and makes it quick and easy to adapt to new measuring tasks.

- Cushioned measuring spindle with 2 preselectable measuring forces
- Constant measuring force over the entire measuring range
- Complies with Ernst Abbe's comparator principle for outer measurements
- Infinitely adjustable measuring table height for accurate adjustment of measuring positions
- Combined outer/inner measurement possible without the need for recalibration
- Easy change measuring anvils can be selected to match specific measuring tasks
- Sturdy cast body to eliminate stresses and bending errors
- Height adjustable support tables for inner and outer measurements
- MarCheck measurement display (with optional stand): including 2 channels, USB connection for printer or stick, USB connection for PC, and RS 232 interface for easy transfer of measured values to PCs
- Measured values can be transferred to all MSWindows ® programs (e.g. Microsoft Excel ®) via the MarCom software (optional)
- Various accessories available upon request


## Technical Data

| | LINEAR 100 |
|---|---|
| **Direct measuring range [mm]** | 50 |
| **Measuring range for outer measurement [mm]** | 0 to 100 |
| **Measuring range for inner measurement [mm]** | 15 to 100 |
| **Measuring uncertainty $MPE_{E1}$ (L in mm) [µm]** | ≤ (0,7 + L/1000) |

## Accessories

- Outer measurement set (assorted measuring anvils)
- Inner measurement set (probe pair starting from 6 mm, floating plate, etc.)
- Centering tip mount set
- Support plate for cylindrical workpieces
- Foot switch, data cable, stand for display unit
- Outside and inside probes with M2.5 bore for gear measuring balls
- MarCom software for transferring measured values to MSWindows® programs

## Applications

- Quick and easy high precision outer and inner measurements
- Outer diameter measurements (bolts, turned parts, etc.)
- Inner diameter measurements (bores, rings, etc.)
- 2 ball dimension checks on outer and inner gears

For more information, please visit our website: www.mahr.com

# Precimar Linear Serie. Setting Instrument


LINEAR length measuring instruments from Mahr are ideal for use as a setting and adjusting instrument close to the production area. They offer precision setting of inside and outside comparative measuring instruments, inside micrometers, 2 point bore gages, dial comparator snap gages and many other measuring instruments.
As an infinitely adjustable dimensional standard, the LINEAR is a cost-
effective alternative to setting gages, adjustment rings and gage blocks.
Key advantages include the ease of handling, short set-up time and ability to set any dimension whatsoever. A switchable measuring force regulator, for both outside and inside measurements, delivers user-independent measuring results.

- The base bar is made from steel, providing the same thermal behavior as the setting and measuring objects
- Precision ground and lapped guide rail, non-rusting
- Glued on steel scale
- Easy to operate
- Precision adjustable to 1/10 µm
- Measured values displayed with MarCheck
- Display unit with extensive measuring functions, USB connection for printer or stick and USB connection and RS 232 interface for transfer to PC
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

## Technical Data

| | LINEAR 800 | LINEAR 1200 | LINEAR 2000 |
|---|---|---|---|
| **Measuring range for outer measurement [mm]** | 0 to 815 | 0 to 1215 | 0 to 2015 |
| **Measuring range for inner measurement [mm]** | 40 to 855 | 40 to 1255 | 40 to 2055 |
| **Measuring uncertainty $MPE_{E1}$ (L in mm) [µm]** | ≤ (0,7 + L/1000) | ≤ (0,7 + L/1000) | ≤ (0,7 + L/1000) |
| **Repeatability [µm]** | ≤ 0.5 | ≤ 0.5 | ≤ 0.5 |
| **Device length [mm]** | 1250 | 1650 | 2450 |
| **Mass [kg]** | approx. 155 | approx. 210 | approx. 320 |

## Accessories

- Testing setups for outside micrometers
- Clamping devices for 2 point bore gages for universal measuring table
- Support for large, 2 point bore gages and their accurate positioning and setup on the LINEAR
- Adjustable height support for setting up large bore gages
- Support plates for rings > 200 mm
- Holding device for long measuring equipment
- Attachment for dial comparator snap gages
- Height measuring system for universal measuring table
- Additional support table for long measuring objects
- Measuring anvils with Ø 20 mm balls; with ball-ended gage blocks;
with Ø 15 mm and Ø 7.5 mm spindles
- Caliper, bore gages, plug-on heads, clamping elements
- Testing setups for depth gages
- Support for inside micrometers
- Temperature compensation

## Applications

- Setting universal probes, e.g. Multimar 844 T
- Setting 2 point bore gages, e.g. Intramess 844 N
- Setting dial comparator snap gages, e.g. MaraMeter 840 F
- Checking and setting outer micrometers
- Checking adjustment dimensions, rods etc.
- Checking calipers
- Checking and setting inside micrometers
- Measuring cylindrical parts
- Measuring inner dimensions and bores, etc.

For more information, please visit our website: www.mahr.com

# Precimar ULM-E. Calibration Measuring Instruments

ULM-E universal length measuring comparator instruments are mounted on highly homogeneous rigid granite in a horizontal configuration.
X-axis measuring system:
Heidenhain incremental, precision length measuring system, 100 mm long
Z-axis measuring system:
RENISHAW incremental, precision length measuring system, 80 mm long

- High measuring accuracy
- 100% compliant with Ernst Abbe's comparator principle
- Manual operation of measuring spindle
- Air bearings for smooth manual positioning of measuring element and counter bearing (not ULM 300-E)
- Object table height adjustment via pushbuttons (also positioning of predefined increments)
- Computer provided temperature measurement with 2 or 3 sensors
- Computer-aided correction of systematic instrument errors (CAA)
- Computer-aided instrument zero point stabilizing
- Computer-aided correction of temperature and measuring force influences
- Constant measuring force over the entire measuring spindle setting range
- Large object table with precision guidance in the Z direction and a loading capacity of 25 kg
- Automatic reversing point detection with static and dynamic adoption of measuring values
- Inner thread measurement supported by automatic Z positioning
- Highly flexible in application range
- Mahr 828 WIN measuring and evaluation software runs under MS Windows
- Optional use of measuring axis extensions


## Technical Data

| | ULM 300-E | ULM 600-E | ULM 1000-E | ULM 1500-E |
|---|---|---|---|---|
| **Direct measuring range [mm]** | 100 | 100 | 100 | 100 |
| **Measuring range for outer measurement [mm]** | 0 to 305 | 0 to 640 | 0 to 1060 | 0 to 1560 |
| **Measuring range for inner measurement [mm]** | 0.5 to 305 | 0.5 to 485 | 0.5 to 905 | 0.5 to 1405 |
| **Measuring uncertainty $MPE_{E1}$ (L in mm) [µm]** | ≤ (0,09+L/2000) | ≤ (0,09+L/2000) or ≤ (0,3+L/1500) | ≤ (0,09+L/2000) or ≤ (0,3+L/1500) | ≤ (0,09+L/2000) or ≤ (0,3+L/1500) |
| **Repeatability [µm]** | ≤ 0.05 | ≤ 0.05 or 0.1 | ≤ 0.05 or 0.1 | ≤ 0.05 or 0.1 |
| **Measuring forces [N]** | 0.2 ; 1.0 to 4.5 ; 11 | 0.2 ; 1.0 to 4.5 ; 11 | 0.2 ; 1.0 to 4.5 ; 11 | 0.2 ; 1.0 to 4.5 ; 11 |
| **Device length [mm]** | 685 | 1080 | 1500 | 2000 |
| **Mass [kg]** | 110 | 160 | 215 | 280 |

## Accessories

Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:

- Thread gages
- Taper gages
- Conical thread gages
- Gears
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

## Applications

Calibration of:

- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Taper gages
- Dial indicators
- Dial comparators
- 2 point bore gages
- Outside micrometers
- 2 point inside micrometers

For more information, please visit our website: www.mahr.com

# Precimar ULM S-E. Calibration Measuring Instruments


Large universal length measuring instruments with large direct measuring range are mounted on highly homogeneous rigid granite in a horizontal configuration.
X-axis measuring system:
• Heidenhain incremental, precision length
measuring system, 100 mm long in measuring element
• Heidenhain incremental incident light measuring systems covering the entire length of the base bed and to its right and left
Z-axis measuring system: RENISHAW incremental, precision length measuring system, 80 mm long

- Combined measuring instrument for ultra accurate measurements in the range to 100 mm and for measurements in the standard accuracy range
- Accurate throughout the entire movement range of the measuring element and counter bearing
- Recommended for measurements of larger measuring objects, but also suitable for measurements of smaller measuring objects
- Manual operation of measuring spindle
- Air bearings for smooth manual positioning of measuring element and counter bearing
- Object height adjustment via push-buttons (also positioning of predefined increment)
- Computer provided temperature measurement with 3 sensors
- Computer-aided instrument zero point stabilizing and correction of systematic instrument errors (CAA)
- Constant measuring force over the entire measuring spindle setting range
- Computer-aided correction of temperature and measuring force influences
- Large object table with precision guidance in the Z direction and a loading capacity of 25 kg
- Mahr 828 WIN measuring and evaluation software runs under MS Windows®
- Optional use of measuring axis extensions
- Inner thread measurement supported by automatic Z positioning

## Technical Data

| | ULM 520 S-E | ULM 1000 S-E |
|---|---|---|
| **Direct measuring range [mm]** | Outer measurement: 0 to 520<br>Inner measurement: 0.5 to 365 | Outer measurement: 0 to 1025<br>Inner measurement: 0,5 to 870 |
| **Measuring range for outer measurement [mm]** | 0 to 520 | 0 to 1025 |
| **Measuring range for inner measurement [mm]** | 0.5 to 365 | 0.5 to 870 |
| **Repeatability [µm]** | with Abbe measuring element: ≤ 0.05<br>with base bed measuring system: ≤ 0.2 | with Abbe measuring element: ≤ 0.05<br>with base bed measuring system: ≤ 0.2 |
| **Measuring forces [N]** | 0.2 ; 1.0 to 4.5 ; 11 | 0.2 ; 1.0 to 4.5 ; 11 |
| **Device length [mm]** | 1080 | 1500 |
| **Mass [kg]** | 160 | 215 |

## Accessories

Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:

- Thread gages
- Taper gages
- Conical thread gages
- Gears
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

## Applications

Calibration of:

- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Taper gages
- Dial indicators
- Dial comparators
- 2 point bore gages
- Outside micrometers
- 2 point inside micrometers

For more information, please visit our website: www.mahr.com

# Precimar ULM L-E. Calibration Measuring Instruments

Universal length measuring instruments with laser measuring system. Comparator with horizontal base bed (highly homogeneous, rigid granite)
X-axis measuring system: interferential laser measuring system, 525 or 1115 mm long
Z-axis measuring system: RENISHAW incremental, precision length measuring system, 80 mm long

- High-end length measuring instrument with large direct measuring range
- 100% compliant with Ernst Abbe's comparator principle
- Manual operation of measuring spindle
- Air bearings for smooth manual positioning of measuring element (with laser reflector) and counter element
- Object table height adjustment via pushbuttons (also positioning of predefined increment)
- Laser correction in respect of environmental influences: temperature, air pressure (optionally also humidity)
- Separate laser generator outside the measuring instrument, fed via optical cable, and laser beam cover
- Computer-aided instrument zero point stabilizing and correction of systematic instrument errors (CAA)
- Online temperature measurement and computer-aided correction of temperature and measuring force influences
- Constant measuring force over the entire measuring spindle setting range
- Large object table with precision guidance in the Z-direction and a loading capacity of 25 kg
- Automatic reversing point detection with static and dynamic adoption of measuring values
- Highly flexible within the application range (can be used for measuring both miniature and large measuring objects)
- Mahr 828 WIN measuring and evaluation software and MS Windows
- Inner thread measurement supported by automatic Z positioning


## Technical Data

| | ULM 800 L-E | ULM 1500 L-E |
|---|---|---|
| **Direct measuring range [mm]** | 0 to 525 | 0 to 1115 |
| **Measuring range for outer measurement [mm]** | 0 to 830 | 0 to 1620 |
| **Measuring range for inner measurement [mm]** | 0.5 to 670 | 0.5 to 1465 |
| **Measuring uncertainty $MPE_{E1}$ (L in mm) [µm]** | ≤ (0,1+L/2000) | ≤ (0,1+L/2000) |
| **Repeatability [µm]** | ≤ 0,05 | ≤ 0,05 |
| **Measuring forces [N]** | 0.2 ; 1.0 to 4.5 ; 11 | 0.2 ; 1.0 to 4.5 ; 11 |
| **Device length [mm]** | 1500 | 2300 |
| **Mass [kg]** | 220 | 325 |

## Accessories

Large number of accessory kits and modular components for solving a wide variety of measuring tasks, including the measurement of:

- Thread gages
- Taper gages
- Conical thread gages
- Gears
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

## Applications

Calibration of

- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Taper gages
- Dial indicators
- Dial comparators
- 2 point bore gages
- Outside micrometers
- 2 point inside micrometers

For more information, please visit our website: www.mahr.com

# Precimar PLM 600-E. Precision Length Measuring Machine


The PLM 600-E precision length measuring machine is an Abbe compliant comparator mounted on highly homogeneous rigid granite in a horizontal configuration

- Sensitive adjustment in 5 axes
- Object table with a loading capacity of 35 kg
- PC-based, multi-axis machine control, including PC workstation and 828 WIN Free measurement basic software
- Simple operating procedure by means of measuring force adjusted and joystick controlled measuring slides with progressive deflection characteristic and automatic contact detection
- Automatic detection of outside and inside measurements and computer-aided search for reversal points
- The motorized measuring slide allows for high travel speeds.
- The CNC controlled vertical and cross adjustment of the universal measuring table facilitates highly efficient measuring
- The latest machine control system (MarEcon) Recording, processing, logging and transfer of measurement data via powerful software and menu driven controls
- Software compensation of thermal dimensional deviations
- Very easy to set the measuring force using the software
- Aerostatic guides for all slides mounted on the machine bed ensure low measurement uncertainties
- Electronic generation of measuring force and automatic contacting
- Subjective influences largely eliminated and unintended collisions with the testpiece avoided.
- Automatic bore and inner thread measurement
- Automatic and manual Y adjustments are possible
- A factory calibration or DAkkS/DKD calibration is available for the Precimar PLM 600-E

## Technical Data

| | |
|---|---|
| **Direct measuring range [mm]** | 200 |
| **Measuring range for outer measurement [mm]** | 0 to 600 |
| **Measuring range for inner measurement [mm]** | 0,5 to 445 |
| **Measuring uncertainty $MPE_{E1}$ (L in mm) [µm]** | ≤ (0,085 + L/1500) |
| **Position deviation / error limit (L in mm) [µm] *** | ≤ (0.07 + L/2000) |
| **Repeatability [µm]** | ≤ 0.05 |
| **Measuring forces [N]** | 0 to 13.9 |
| **Device length [mm]** | 1660 |
| **Mass [kg]** | 480 |

*** Proof can be carried out at Göttingen if required**

## Accessories

Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:

- Thread gages
- Conical thread gages
- Gears
- Thread pitches

## Applications

Calibration of:

- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Dial indicators
- Dial comparators
- 2 point bore gages
- Outside micrometers
- 2 point inside micrometers
- Precision length measurement

For more information, please visit our website: www.mahr.com

# Precimar 828 CiM 1000. Precision Length Measuring Machine

The 828 CiM precision length measuring machine is an Abbe compliant comparator mounted on highly homogeneous rigid granite in a horizontal configuration

- Electronically controlled measuring force generation
- Motorized measuring spindle control with joystick and automatic contacting
- Air bearings for smooth positioning of measuring slide and counter bearing
- Sensitive adjustment in 5 axes, and object table with a loading capacity of 25 kg
- Motorized object table height adjustment via joystick or CNC
- Maximum measuring accuracy
- Fast and reliable measurement
- Exceptionally low length measuring uncertainty for precision parts and gage monitoring
- Compliant with Ernst Abbe's comparator principle
- Online temperature monitoring
- Software-supported measuring force generation, especially advantageous for thin-walled workpieces and gages
- Semi-automatic bore and inner thread measurement
- Measuring and evaluation software runs under MS Windows, 828 WIN
- Patented measuring procedure
- Aerostatic guides for all slides mounted on the machine bed ensure extremely low measuring uncertainties
- Movable measuring spindle mount via a spring parallelogram free from play and friction
- Electronic measuring force adjustment and automatic contacting — largely eliminating subjective influences and avoiding unintended collisions with the testpiece


## Technical Data

| | 828 CiM 1000 |
|---|---|
| **Direct measuring range [mm]** | 300 |
| **Measuring range for outer measurement [mm]** | 0 to 1000 |
| **Measuring range for inner measurement [mm]** | 0.5 to 845 |
| **Measuring uncertainty $MPE_{E1}$ (L in mm) [µm]** | ≤ (0,055 + L/1500) |
| **Position deviation / error limit (L in mm) [µm] *** | ≤ (0,04+ L/2000) |
| **Repeatability [µm]** | ≤ 0,03 |
| **Measuring forces [N]** | 0 to 13.9 |
| **Device length [mm]** | 2500 |
| **Mass [kg]** | 840 |

*** Proof can be carried out at Göttingen if required**

## Accessories

Large number of accessory kits and modular components for completing a wide variety of measuring tasks, including the measurement of:

- Thread gages
- Conical thread gages
- Gears
- Thread pitches
- Factory calibration or DAkkS/DKD calibration can be additionally offered for this measuring station.

## Applications

Calibration of:

- Plain plug gages and gage rings
- Setting gage rings
- Snap gages
- Spherical gage blocks, internal micrometers
- Gage blocks
- Thread gages
- Taper thread gages
- Gear gages
- Dial indicators
- Dial comparators
- 2 point bore gages
- Outside micrometers
- 2 point inside micrometers
- Precision length measurement

For more information, please visit our website: www.mahr.com