

Laser Measurement System

# HPI-3D

STANDARD SET



**DYNAMIC 3D MEASUREMENT**

## Standard elements for the measurements of the displacement and positioning



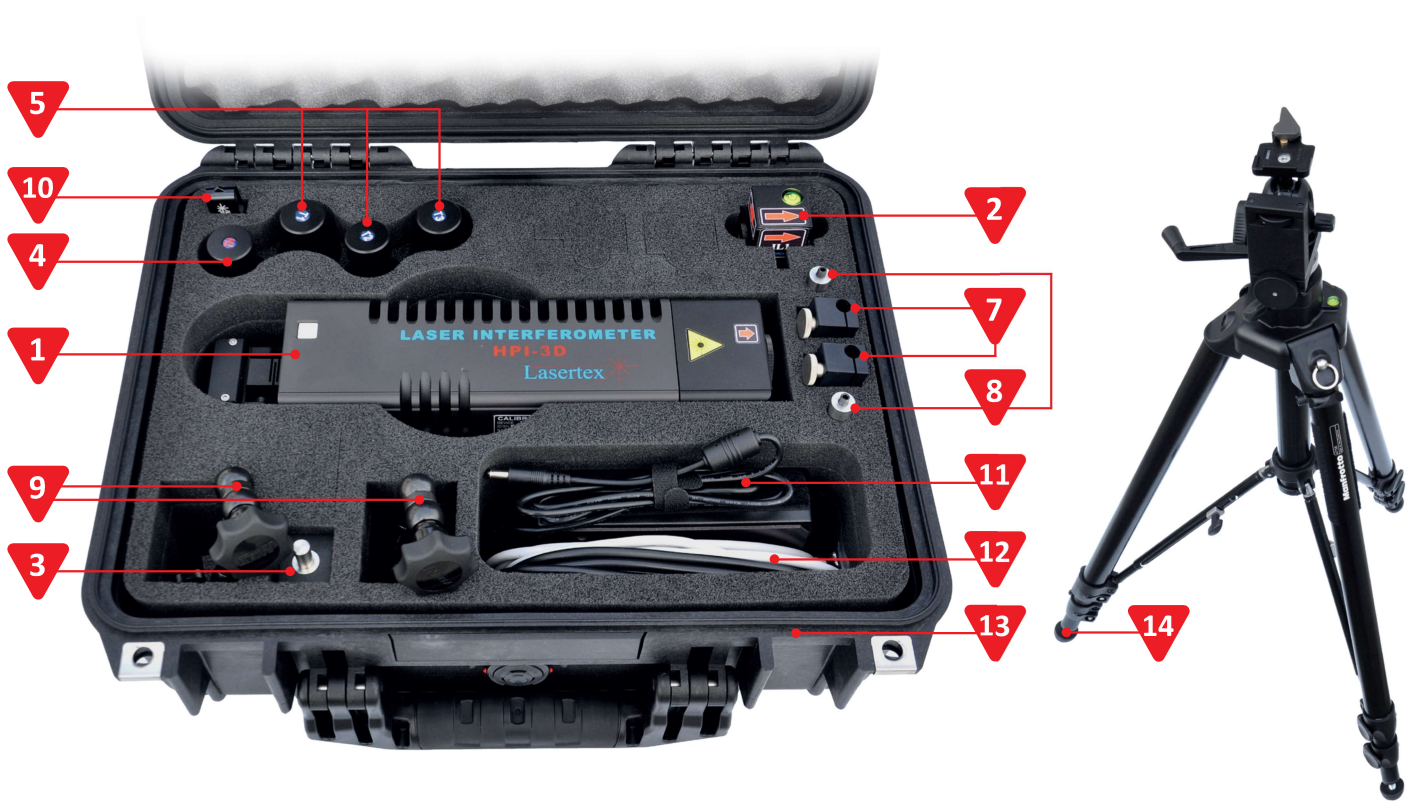
**Laser Measurement System HPI-3D** is the most advanced laser interferometer available on the market. It offers many new options for users with unprecedented measurement precision and resolution. Very easy to use, can be used both in research laboratories and in machine geometry measurements.

Accurate machine calibration is essential to provide quality products. With our system, you can perform quick and accurate calibration. The basic configuration enables measurements of linear displacement, vibrations, velocity, and positioning.

The 3D system offers the unique function of vertical and horizontal straightness measurement that makes the straightness measurements easy and time-saving.

Additionally, the software of HPI-3D offers a unique electronic alignment tool. Thanks to this function the alignment becomes easy and fast. Also, the cosine error influence is greatly reduced. Laser interferometer HPI-3D simplifies the measurements even further thanks to Bluetooth communication with a PC and wireless sensors.

## HPI-3D Standard Set



### HPI-3D Standard Set includes elements required for linear measurement

- |   |   |
|---|---|
| <ul style="list-style-type: none"> <li>1. Laser head with built-in compensation unit and Bluetooth adapter LH 02</li> <li>2. Linear interferometer IL1</li> <li>3. Linear retroreflector RL1</li> <li>4. Wireless environmental compensation sensor - EC 01</li> <li>5. Wireless basis temperature sensors T1, T2, T3</li> <li>6. Manual wireless trigger</li> <li>7. Mounting element ME 01 x 2</li> <li>8. Mounting element with crew thread diameter 5 mm x 2</li> <li>9. Magnetic mounting base MM 01 x 2</li> <li>10. PC software on Pendrive</li> <li>11. Power supply adapter PS 02</li> </ul> | <ul style="list-style-type: none"> <li>12. USB cable</li> <li>13. Ultra-durable case</li> <li>14. Tripod TS1</li> <li>15. Software for linear positioning according to standard: ISO 230-2, PN-93/M-55580/81, NMTBA, VDI/DGO 3441, BSI BS 4656 P16. Software also provide electronic adjustment of optical axes and linear displacement measurement, linear displacement registration, FFT analysis, measurement of the velocity</li> <li>16. Software for machines control compensation (Fanuc, Simens, Haidenhain and many others)</li> </ul> |
|---|---|

## Main parameters

| Measurement type         | Range             | Resolution                | Accuracy                          |
|--------------------------|-------------------|---------------------------|-----------------------------------|
| Distance                 | 0 - 30 m          | 100 µm                    | 0.4 µm/m                          |
| Velocity                 | 0 - 7 m/s         | 0.25 µm/s                 | ± 0.1 %                           |
| Angular *                | 0 - 3600 arcsec   | 0.01 arcsec               | ± 0.1 % * A ± 0.06 * L ± 0.1 µm * |
| Straightness angular *   | 0 - 25 m          | 0.01 µm (for 100 mm base) | ± 0.1 % * A ± 0.06 * L ± 0.1 µm * |
| Straightness Wollaston * | 0.3 - 9 m ± 30 mm | 0.01 µm                   | ± 0.5% * A µm ± 0.1 *             |
| Straightness 3D *        | 0 - 4 m           | 0.1 µm                    | ± (5+5 * L) µm                    |
| Flatness *               | 0 - 15 m ± 2 mm   | 0.01 µm/m                 | ± 0.1 % * A ± 0.06 * L ± 0.1 µm * |
| Squareness *             | ± 1000 arcsec     | 0.01 µm                   | ± 1 arcsec *                      |
| Rotary *                 | ± n * 360°        | 0.1 arcsec                | ± 1 arcsec *                      |

L - the distance between optical components in [m] • A - measured value in [m] • \* with electronic adjustment • \* additional optics required

## Applications

The construction of the HPI-3D Laser Measurement System allows a wide variety of applications:

- The positioning of CNC and CMM machines
- Machine geometry inspection
- Flatness measurements \*
- Axes parallelism measurements \*
- Vibration measurements
- Straightness measurements \*
- Squareness measurements \*
- Small angle measurements \*
- Angular positioning \*
- Ball screw inspection \*
- Dynamic measurements with an internal or external strobe
- Variety of laboratory applications

\* additional optics required



## Main features

### High resolution and accuracy

Over 30 years of experience in the production of laser interferometers allows us to offer resolution and accuracy of the laser tailored to customers most demanding needs.

### Competitive price

We try to make the HPI-3D a good choice both for demanding and cost-cutting clients. That is why we offer a complete Laser System for the price of competitors single components.

### Wireless operation

Thanks to the wireless connection to a PC and wireless environmental and basis temperature sensors the usage of the laser system becomes more flexible and faster.

### Electronic alignment tool

This useful option not only speeds up the usually toilsome beam alignment procedure but also allows reducing cosine errors improving the overall performance of the system.

### Results traceable to national standards

HPI-3D was many times successfully tested in a variety of National Standards Laboratories. Moreover, in some laboratories, it is used as a standard for length comparison.

### Operation at any angle

The unique laser head mounting makes the operation of the head at any angle a trifle. The application gives also information about the rotation and elevation of the head.

### Portability

The complete laser system is transported in a light and handy case. Therefore it is easy to move it from one place to another. It is especially important during machine servicing.

### Ease of use

HPI-3D has improved thanks to constant feedback from users. Thanks to that it is unbeatable on the market.

### Unique optics

The HPI-3D interferometer has an excellent optics that is characterized by unrivaled thermal stability.

### G-codes generator

The application consists free of charge module for tool path generation in G-codes simplifying and speeding up the positioning and straightness measurements.

### 3D measurements

Each HPI-3D in its basic configuration is equipped in the unique 3D system allowing rapid simultaneous measurement in three axes with the standard linear optics.

### Direct mount on machines

Each laser head is equipped in a magnetic base. Thanks to this, the laser head can be put anywhere inside the machine reducing greatly the beam alignment time.

