

# LIP

## Tester of laser pointers/illuminators

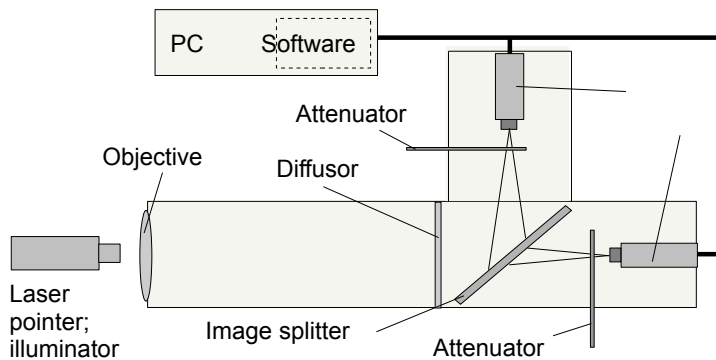


Fig.1. Block diagram of BAS beam analyser system

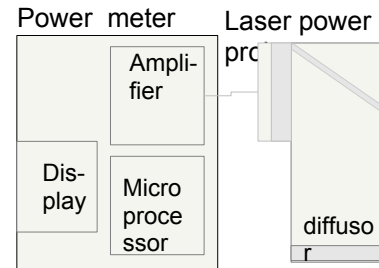


Fig.2. Block diagram of COP power meter

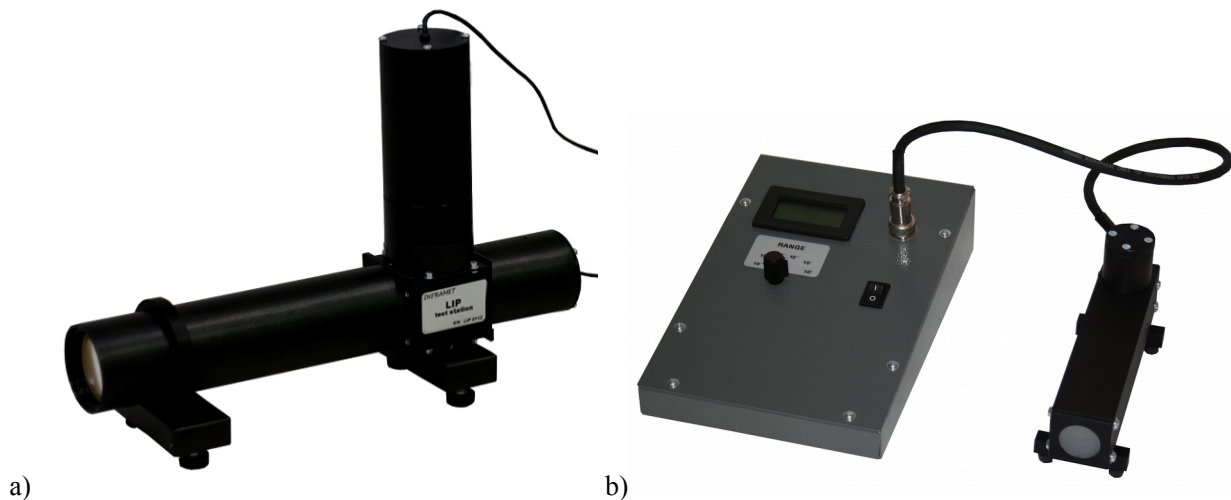


Fig.3. Photos a) BIS beam imaging system b) COP power meter

### BASIC INFORMATION:

Laser systems are nowadays frequently used to show point of interest (laser pointers) or to illuminate area of interest under surveillance with TV cameras (laser illuminators).

Both laser pointers and laser illuminators are apparently simple devices but can be of crucial importance in some applications (defense, security, search&rescue, automotive industry, etc).

Both devices are characterized by two crucial parameters: power and divergence angle. Both parameters often differ from values from values presented in data sheets due to a set of different reasons. At the same time performance of laser illuminators depends not only on beam power, or beam divergence but also on beam uniformity. Due to reasons mentioned above testing laser pointers and laser illuminators is important for both manufacturers and final users.

LIP station is a test station optimized for testing laser pointers and laser illuminators. The LIP station is built from two main blocks: BIS beam imaging system and COP power meter. BIS system is a hi-tech imaging system of ultra high dynamic capable to adapt to various level of power of tested laser pointers/illuminators (dynamic over 100 000) and to present light intensity distributions created by tested laser systems. The second module enables easy measurement of power of virtually all laser pointers and laser illuminators present on market. The meter range is optimized to fit to range of laser pointers/illuminators that are met on international market.

LIP test station belong to a family of LT stations developed for testing laser systems.

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### Design

BIS beam imaging system is built as an optical objective combined with two TV cameras. The optical objective focuses incoming laser beam onto diffuser plate when it is analysed using two TV cameras of different field of views and different sensitivity. The first camera is to create high resolution image of small laser spots created by laser pointers. The second camera is to create images of bigger beams created by laser illuminators.

COP optical power meter is built from three modules: optical probe, electronic meter, power supply. The optical probe is a calibrated large area silicon photodiode.

### Basic parameters

Tab 1. Basic parameters of COP optical power meter

Spectral range	400-1060nm
Active aperture	24mm
Measured power range	0,001mW - 3W
Measured power resolution	0,001mW
Nonlinearity	<1%
Operating temperature range	+10 °C to +35°C
Storage temperature range	-5°C to +50°C
Dimensions	meter: 220x150x50 mm; probe: 60x50x70

Tab.2. Basic parameters BIS imaging system

Spectral sensitivity range	400-1000 nm
Aperture	46mm
Optimization	optimized for testing lasers of power in range 0,1mW - 3W and divergence angle in range from 0.25mrad to 200mrad
Dynamic	>10 <sup>6</sup>
Resolution of camera no 1	640x640
FOV of camera no 1	14 mrad
Resolution of camera no 2	640x640
FOV of camera no 2	200mrad
Operating temperature range	+10 °C to +35°C
Storage temperature range	-5°C to +50°C
Dimensions	360x100x200mm

### Advantages of LIP test station

- Efficient, user friendly tool for final performance evaluation of laser pointers and laser illuminators
- Ability to measure not only power and divergence angle but also illumination uniformity
- Compact design suitable for both laboratory, depot or field applications
- Station optimized for testing virtually all laser pointers/illuminators on international market



Fig.4. Image of illuminated field by laser illuminator of poor illumination uniformity

Version 3.1

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