Data sheet
PSD Detector

PSD

- Fast position measurement
- Target position for stabilization can be freely selected
- Submicrometer resolution

Figure 1: Rear view of PSD detector
(The base plate is not included in the delivery.)

Product description

The PSD detector uses a "position sensitive device" with a resistive sensor surface for detection. This sensor has no segmentation and provides continuous position information. In contrast to 4-quadrant detectors, the PSD detector thus enables position measurement over the entire detection area.

With the *Adjust-In* option of the *Compact* beam stabilization, laser beams can be stabilized at any point on the detection surface. With this feature the PSD detector complements the most commonly used 4QD detector with higher resolution.

By using Invar, a material with a small coefficient of thermal expansion, the high resolution of the detector is permanently maintained.

For easy adjustment of the laser to the sensor, the PSD detector has position and intensity indicators on the back.

A clean room version is also available.

Applications for beam stabilization

1. When using the *Compact* beam stabilization, the PSD detectors can be positioned before the laser is finally adjusted. Once the laser has been adjusted, the target positions can be read out and the beam can be stabilized to these positions using the Set&Hold function.
2. The laser beam can be moved to different points with high precision by changing the target position on the detector. In doing so, the laser beam follows the external target but remains stabilized at the highest resolution.

Specification

Wavelength range	320 – 1100 nm
Detection area	9 x 9 mm^2
Resolution / Accuracy	< 0.5 µm / grating structure leads to repeatability of 1.5 µm when addressing a target point
Linearity over sensor area	±3%
Bandwidth	up to 100 kHz, limited to 30 kHz by default
Sensitivity (power/pulse energy)	26 – 1560 µW / 26 – 1560 nJ @ 532 nm, cw / 1 kHz *
Optical filter in compartment in front of sensor / dimension	2 pieces, exchangeable / 11.9 x 11.9 mm^2
Position / intensity display on housing	LED cross with 9 LEDs / LED line with 10 LEDs
Minimum beam diameter	> 200 µm (for pulsed lasers)**
Signal scaling of position output	1.20 (± 0.04) mV/µm
Electrical power consumption	max. 1.2 W (12 V, 110 mA)

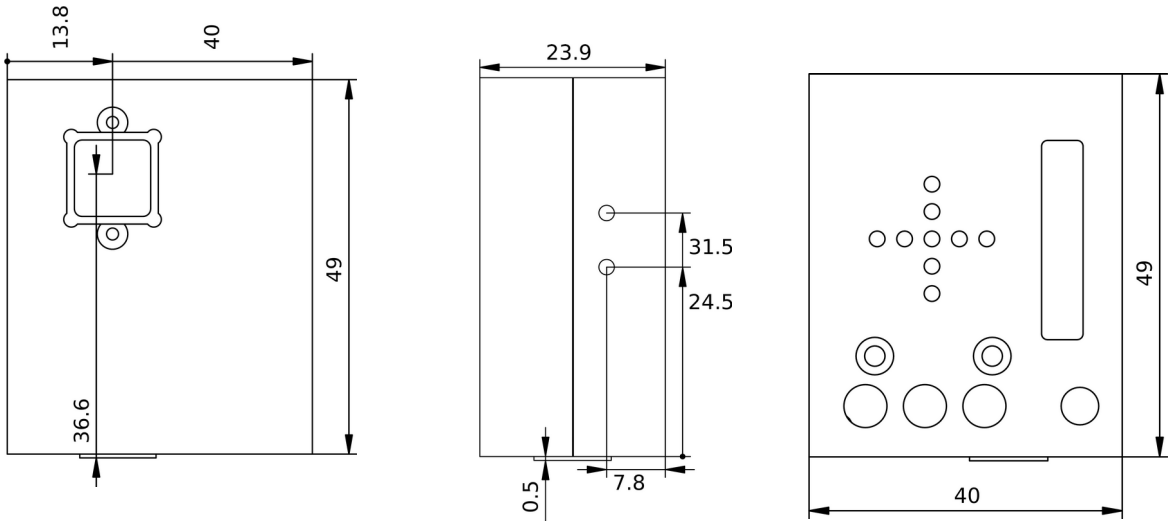
* The specification refers to the values on the sensor. With optical filters in front of the sensor, higher powers or energies can be applied. In case of higher pulse energies the beam diameter must not be too small. A fine adjustment of the sensitivity is possible via a digital potentiometer in 64 steps.

** Smaller beam diameters are possible for cw lasers and lasers with high repetition rates.

General data

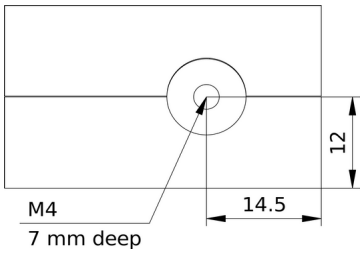
Material	anodized aluminum, invar, etc.
Dimensions (H x W x D)	49.5 x 40 x 23.9 mm (without base plate and rod)
Weight	85 g (without base plate and rod)
Cables	Adapter cable: 4x MCX (on the detector), length 16 cm
	Extension cable: LEMO→LEMO, length 4m

Technical drawings



Pin configuration LEMO FGG.0B.306.CLAD52

LEMO	Signal
Pin 1	GND
Pin 2	+ 12V
Pin 3	-
Pin 4	X signal
Pin 5	Y signal
Pin 6	Intensity



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