

Data sheet

Laser Beam Stabilization "Compact"



Beam Stabilization

- Highest accuracy
- Simple plug&play
- Modular system with many options



Controller of beam stabilization "Compact"

Product description

The "Compact" laser beam stabilization is used in applications that require precise and reliable laser beam positioning. It stabilizes the position and direction of the beams.

The analog real-time closed-loop control compensates latency-free for all types of deviations caused by thermal drifts, vibrations or other effects. It is also effective against disturbances with high frequencies such as air fluctuations, vibrations or caused by moving optics.

The most widely used system comprises a controller, two high-speed piezo-driven actuated mirror mounts and two position detectors. The components are modular, so that the beam stabilization can be integrated into almost all laser setups without having to change the actual beam path.

The beam stabilization system is characterized by highest accuracy and ease of use in scientific and industrial environments.

Specifications

Controller	Resolution / Accuracy	< 0.1 μ m; < 0.1 μ rad
	Electronic bandwidth	40 kHz (defined by amplifier)
	Number of independent control stages	2
	Latency	negligible (no AD conversion, no numerical procedures)
	Safety functions	zero positioning in case of power drops, interlock, switch-on activity delay (300 ms)
Laser data	Wavelength	190 nm to 3000 μ m
	Repetition rate	all, also cw. For repetition rates < 1 kHz the option "Sample&Hold (ADDA)" is required
	Power / pulse energy	from 2 μ W / 2 nJ (depending on wavelength and repetition rate)
	Beam diameter	depending on position detector, up to 10x10 mm ² (adaptable by lenses)
	Pulse duration	no limitations
Detectors	Voltage inputs	-5 to 5 V for position, 8 V for intensity
	Dynamic intensity adjustment	factor > 1000 (with WID detectors)
Mirror mounts / Actuators	Adjustment range	up to 8 mrad (optical) backlash free with piezos, manual adjustment possibility: 9°
	Mirror diameter	0.5 to 4 inch, standard: 1 inch
	Piezo voltages	0 - 130 V
Operation data	Power supply	mains adapter: 50/60 Hz, 12V, 3.8A
	Electrical power consumption (max.)	quiescent power 10 W (0.8 A), 20 W (1.6 A) under load

There are separate data sheets for the different models of detectors and mirror mounts.

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Digital extension

The "Compact" beam stabilization is a stand-alone system that does not require a computer or software to operate. However, we do offer a digital extension and visualization software. This extension is for communication with the system only; the control loop itself remains analog.

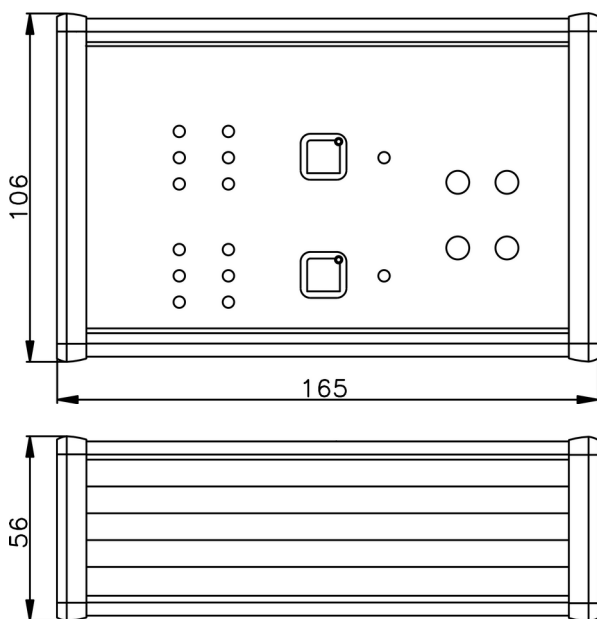
Interfaces	Serial USB, RS-232, Ethernet
µController	32-bit ARM Cortex-M4 CPU
Protocol	freely available, see website

Dimensions of controller

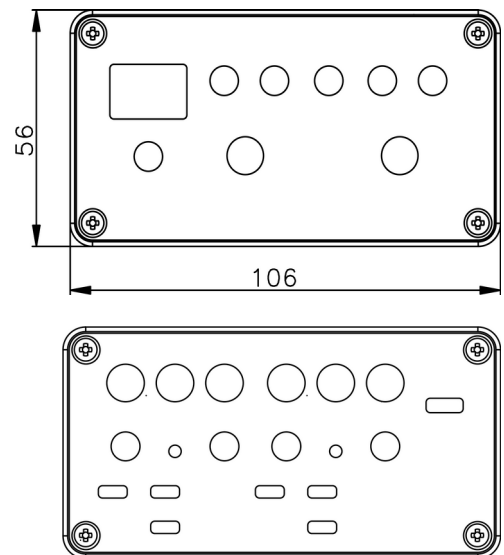
Dimensions (HxWxD)	106 x 184 x 56 mm ³ (without cables plugged in)
Weight	approx. 690 g

Technical drawings of controller

Front / keyboard:



Sides:



(Figure shows variant with USB interface)

Drawings of the various detectors and mirror mounts can be found in the associated data sheets.

Connector plug of controller

Connection	Connector
Detector	LEMO 0B series
Actuator	LEMO 0S series
Control status	LEMO 00 series
Beam position	LEMO 00 series

Pin assignment see separate data sheet.



Contact

MRC Systems GmbH
 Hans-Bunte-Str. 10
 D-69123 Heidelberg, Germany
 Phone: +49(0)6221/13803-00
 Email: info@mrc-systems.de

Subject to change without prior notice.