Technical Information

Classification:	Release	Spec: 5- 2022
Product Name:	LLM Line Laser Module	
Description:	OEM Line laser modules	Rev: Running
Product line:	Line lasers 12mm	

Product description:

Very compact and reliable line laser modules in different power classes and wavelengths. The line position and focus are very easy to adjust.

The laser diodes are equipped with ACC control, so that a high degree of stability is guaranteed. However, this also means that the specified supply voltage should not be exceeded, otherwise the module may overheat.

The modules, like most OEM electronic components, are very sensitive to static electricity. For this reason, a discharge should be carried out before working on the module. Ideally, the wiring or connection should be undertaken in an antistatic working environment.

Adjustment and line width

With the front screw adjustment both the focus (line width) and the line position can be adjusted. Once you have found the desired mounting distance, turn the front knurled ring until the line width has been set to the best possible width.

If a certain polarisation to the line is required, the line optics can also be changed in the screwing position. To do this, turn the front holder completely out of the thread, then remove the collimator (black), turn the line optics by a few degrees, reinsert the collimator (hand screwing up to the pressure point) and then turn the entire element back into the actual module body. Make sure that fingers do not touch the surfaces of the optics! Use clean cotton swabs or plastic tweezers to adjust the line optics.

Fixation of the optics

Once the desired setting has been found, the collimator can be glued into the housing using screw lacquer. The adhesive should be viscous to prevent penetration into the module. In this process, the collimator assembly is first unscrewed relatively far, then screw lacquer is applied to the thread and screwed back into the appropriate focus. After the screw lacquer has dried, the optics are fixed.

Cleaning the optics

The cleaning of the optics is critical. Dirty line optics or collimator optics become apparent through veiling and streaks around the laser line. If the optics must be cleaned, use wrapped wooden cotton swabs (available in the Lasershop) and normal window cleaners. After cleaning, make sure that they are rubbed with a dry cotton swab without pressure. Please note that the plastic optics are very sensitive to scratches. If the optical surfaces are scratched, they must be replaced. Spare parts are also available in the Lasershop.

Assembly and heat sinking

Higher powered modules must be heatsinked for permanent operation. To achieve this, the module can be mounted or clamped in a metallic heat sink, in order to discharge the heat. It must be ensured that no concentrated pressure from a screw or the like reaches the module housing. Ideally, the module should be clamped flat.

MediaLas offers a wide range of different mounting options and brackets for mounting the line, cross and dot laser modules.

	3D ball head mount Adjustable in tilt, rotation X, rotation Y, angle 360°, tilt >180°.
	Pan/Tilt mount Massive XY mount with pan and tilt adjustment. Adjustment range 360° x 210°. The base plate can be displaced by 90° by removing the lower screws.
	Assembly block Cooling and clamping block for easy mounting of all our 12mm modules.
	Flat bracket Flat bracket with clamp for our 12mm modules.

Power supply

The specified operating voltages must be adhered to in order to avoid destruction of the driver electronics. The power supply must be free of voltage peaks. If only higher voltages are available in the system in question, a simple and very effective voltage adjustment can be carried out with our StepDown module, which can be ordered separately.

In systems which also contain motors or magnetic devices, it is recommended to connect a filter upstream in the supply line in order to screen switch-on peaks. Special filters and driver boards are also available in our online shop.

With some laser modules, the positive supply or ground is located on the housing due to the design! Here care must be taken that no short-circuit to ground can occur. If necessary, the holder or module should be mounted insulated. If a plug-in power supply is used, the secondary voltage is galvanically isolated, the housing therefore does not carry any general potential.

Overview of the recommended supply voltages:

Module	Voltage, stabilised	Operating current	Notes
LLM-5-650	3 – 5 V,	< 60 mA	Plus potential on housing
LLM-4-635	3 – 5 V,	< 60 mA	Plus potential on housing
LLM-10-650	3 – 5 V	< 100 mA	GND on housing
LLM-30-650	3 – 5 V	< 150 mA	GND on housing
LLM-60-650	3 – 5 V	< 160 mA	GND on housing
LLM-100-650	3.3 – 4.5 V	< 200 mA	GND on housing
LLM-10-635	3 – 5 V	< 80 mA	Plus potential on housing
LLM-20-635	3 – 5 V	< 100 mA	Insulated
LLM-50-635	3 – 5 V	< 150 mA	Insulated
LLM-100-635	3.3 – 4 V	< 180 mA	Insulated
LLM-20-405	3 - 5 V,	< 200 mA	Plus potential on housing
LLM-40-450	3 - 5 V	< 200 mA	Insulated
LLM-80-450	3 – 5 V	< 250 mA	Insulated
LLM-50-780	3.3 - 4 V	ca. 200 mA	-
LLM-120-780	3.3 - 4 V	ca. 200 mA	-
LLM-60-850	3.3 - 4 V	ca. 250 mA	-

In addition, we offer various adapters for various supply voltages up to 230VAC. You will find an overview in the Lasershop.

Models with a cable adapter 12-24VDC

The models with a cable adapter are supplied with two different connection cables, depending on the model. If nothing else is desired, the connections are made using open cores with ferrules. The connection diagrams must be followed in this case. The cable adapters feature reverse polarity protection.

1. Wire pair white / brown
   White: + 12 – 25VDC
   Brown: Ground

2. Wire pair black/ red
   Red: +12 – 25VDC
   Black: Ground

Dimensions:

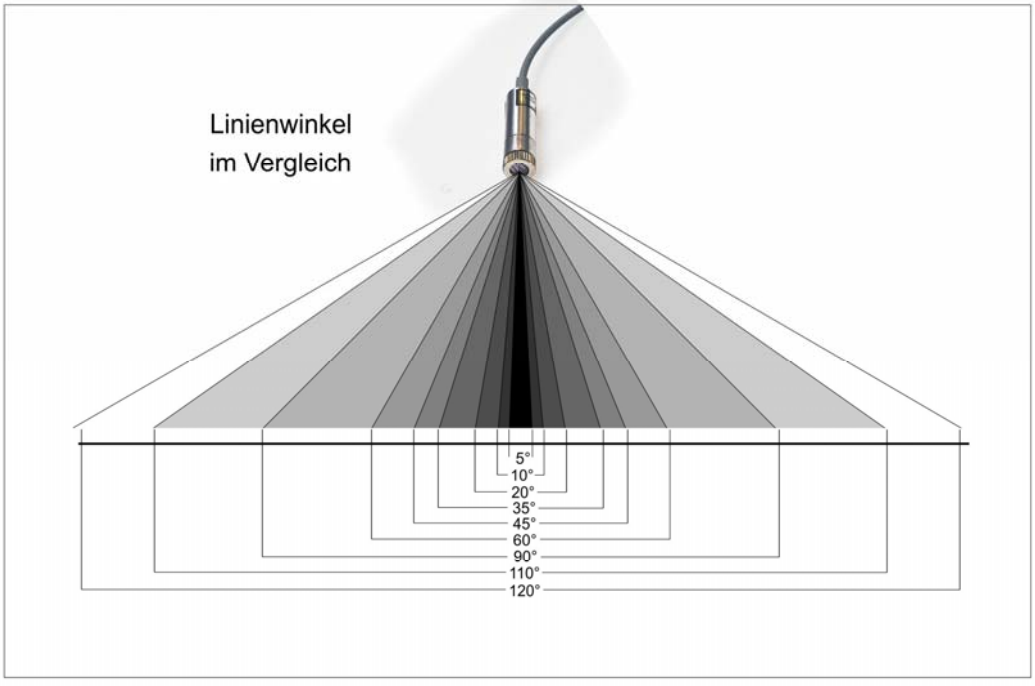
Diameter:	approx. 12mm
Length:	approx. 35 - 42mm, depending on model
Connections:	approx. 150mm open, approx. 200/800mm with DC connector approx. 100cm with 12-25VDC kit modules

Longer connection cables are possible at any time depending on customer requirements.

Possible deflection angles and corresponding line lengths:

Angle	Distance	Line length approx.
5°	1m	8cm
10°	1m	0,17m
20°	1m	0,34m
35°	1m	0.62m
45°	1m	0.85m
60°	1m	1.16m
75°	1m	1.53m
90°	1m	2m
110°	1m	3.0m
120°	1m	3.3m

The formula for this: **Line length = 2 x (tan (Angle/2)) x Distance**



Laser safety

Any laser is potentially dangerous. Please be sure to follow the international guidelines for laser safety, as mentioned in IEC/EN 60825-1, and additional local laws and regulations.