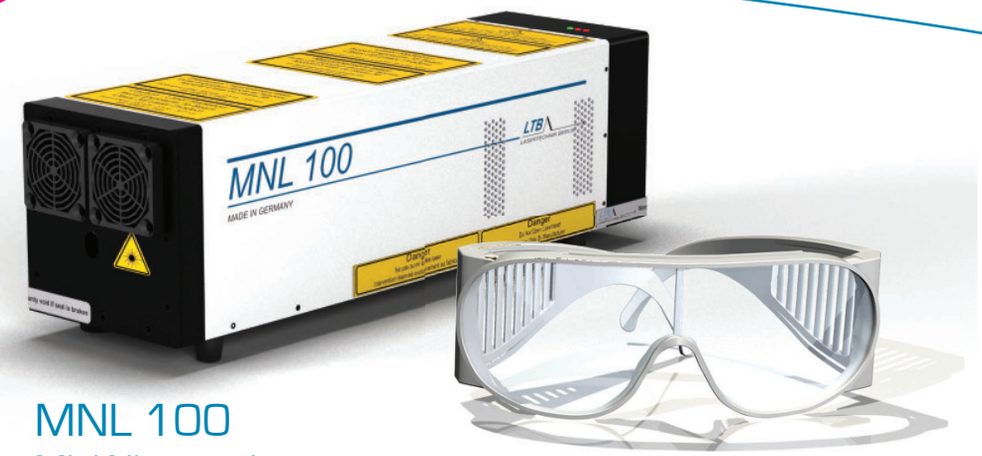
Laser

LTB LASERTECHNIK BERLIN

New longlife version
Warranty 120 million pulses / 3 years

Our **Marathon Laser** –
meeting highest demands
on efficiency and reliability



MNL 100
Mini-Nitrogen-Laser

- **Long operating life**
  through a sealed discharge cartridge in metal-ceramic technology
- **High precision**
  through a directly switching solid state power switch
- **Warranty 60 million laser pulses**
- **Patented and certified**

The MNL 100 nitrogen laser is representing the cutting edge in small compact UV lasers. It does not need an external gas supply. With a total volume of less than 3 litres, it weighs approx. 3.5 kg.

The MNL 100 is characterized by its long lifetime, low energy decay and high precision. This is achieved by the patented innovations

- sealed cartridge in metal-ceramic technology and
- directly switching solid state power switch.

Maintenance-free operation over 60 million laser pulses or 2 years is guaranteed.

The integrated laser controller makes a large number of presettings possible as well as the easy adaptation to different applications. The firmware provides the possibility to adjust and control all laser functions and parameters via the interface to the PC. All trigger in- and outputs are monitored by the trigger management.

The air-cooled laser is supplied with a low voltage of 24 V DC. A wide-range power supply is part of the delivery (100 - 240 V, 50 - 60 Hz).

The MNL 100 is largely compatible to the lasers of this class on the market and has got the certifications necessary for all international markets. CE, ETL Report No. 05KF1005386 (UL, CSA, VDE, Semco), ROHS, FDA.

Basic equipment:

- Pulse repetition rate up to 60 Hz
- Available also as low-divergent version
- Integrated controller
- Trigger management
- Laser pulse counter, calibration
- Software interface: DLL or serial bus protocol
- Serial interface RS232

Options:

- Operation without PC possible
- Laser energy can be varied by the user
- Integrated energy monitor
- Integrated continuous attenuator module up to 1 : 10,000
- Sync out: electrical trigger output (Jitter < 200 ps)
- Integrated fibre coupling
- Laser can be equipped with a fibre (200 - 1,000 µm)
- Adapter USB to RS232
- Dye laser and SHG modules that form a laser system continuously tunable from 205 - 950 nm with a MNL as pump laser

- OEM laser source
- LIF spectroscopy
- MALDI-TOF MS
- Ion trap MS
- UV microscope
- Micro LIPS
- Pumping of dye lasers

Specifications MNL 100

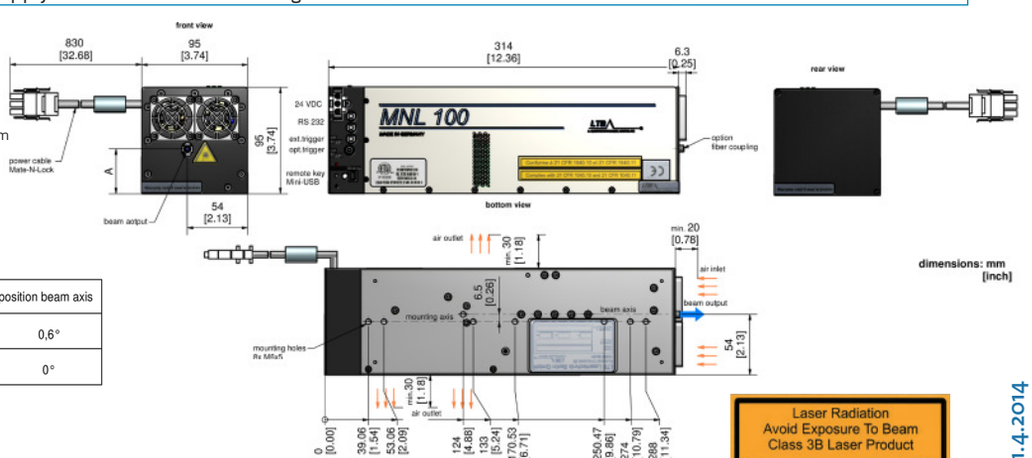
			103-PD / 106-PD	103-LD / 106-LD
General	Wavelength	nm	337.1	337.1
	Spectral bandwidth	nm	0.1	0.1
	Pulse halfwidth FWHM, typ. [1]	ns	3	3
	Guaranteed pulse energy (90 % after 60 mill.) [2]	µJ	**≥ 140 / ≥ 120**	**≥ 80 / ≥ 60**
	Typ. pulse energy (typ. 70 % after 100 mill.) [2]	µJ	**≥ 155 / ≥ 130**	**≥ 90 / ≥ 70**
	Pulse power, typ.	kW	51 / 43	30 / 23
	Repetition rate	Hz	**1 ... 30 / 1 .... 60**	**1 ... 30 / 1 ... 60**
	Energy stability SD /<E> (for all rep. rates)	%	**≤ 2**	**≤ 2**
	Beam dimensions, vertical x horizontal, typ.	mm	3 x 4	4 x 2.5
	Beam divergence, vertical x horizontal [3]	mrad	≤ 3.5 x ≤ 3	≤ 0.5 x ≤ 0.3
	Focus stability [4]	µm	< 15	< 25
	Beam exit angle, vertical / horizontal, typ.	grad	+ 0.5 (± 0.2) / 0 ± 0.1	0 ± 0.1 / 0 ± 0.1
	Trigger In		Optical or electrical (TTL)	
	Jitter: ext. trigger - laser pulse	ns	± 2.5	± 2.5
	Pulse delay: ext. trigger - laser pulse	ns	1,300 ± 10 %	1,300 ± 10 %
	Sync Out (optional)		3.5 ns before the laser pulse (U > 4 V)	
	Jitter: electr. trigger output - laser pulse	ns	< 0.2	< 0.2
	Warm-up time	s	< 20	< 20
	Control		Automode or software (DLL) via integrated controller	
	Warranty		**Min. 90 % from specified start energy after 60 mill. pulses or 2 years**	
	Certifications		CE, ETL, (UL, CSA, VDE, Semco), FDA	
	Laser class		3B / IIIb	

			103-PD / 106-PD	103-LD / 106-LD
Electrical interface	Power supply [5]	V DC	24	24
	Periodic peak current	A	2.4	2.4
	Periodic peak power = max. power	W	60 (40)	60 (40)
	Average current	A	1.6	1.6
	Average power	W	40	40

			103-PD / 106-PD	103-LD / 106-LD
Environment and conditions of use	Operating temperature	°C	+15 ... +38	+15 ... +38
	Storage temperature	°C	- 10 ... +60	- 10 ... +60
	Max. relative humidity (non-condensing)	%	85	85
	Air pressure	mbar	750 ... 1,300	750 ... 1,300
	Dimensions of the laser (L x W x H) [6]	mm	321 x 95 x 95	321 x 95 x 95
	Weight of the laser	kg	3.5	3.5
	Dimension of the power supply (L x W x H)	mm	180 x 80 x 50	180 x 80 x 50
	Weight of the power supply	kg	0.6	0.6

1 reduction on request
2 higher energies on request
3 at max. rep. rate; measuring at 5 m distance
4 based on focusing of 60 mm @ constant rep. rate
5 via external wide-range power supply (100 ... 240 V AC) (part of the delivery)
6 with attenuator module or fiber coupling (335 x 95 x 95) mm

Subject to technical changes.



beam output	A	position beam axis
version - PD	40 mm [1.57]	0,6°
version - LD	38 mm [1.50]	0°

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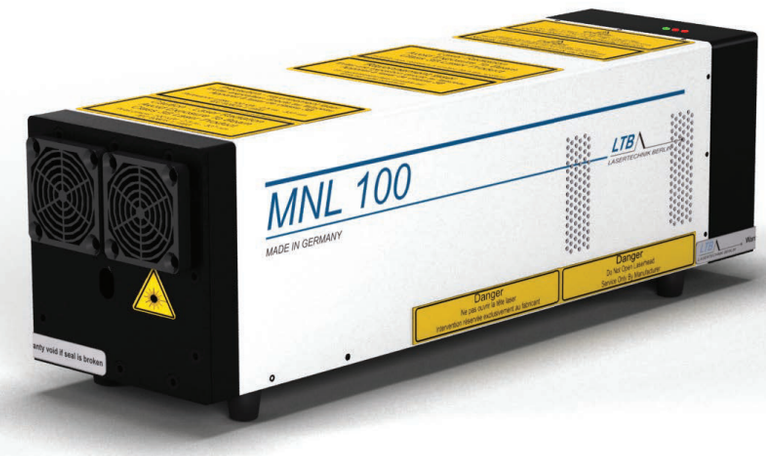
LTB LASERTECHNIK BERLIN

New New New
337 nm High Power Laser



MNL 100 High Power
Nitrogen laser

- 337 nm
- Up to 225 µJ
- Long operating life
- Replacement for 337-Si OEM, VSL-337-ND
- Adaptation to various MALDI-TOF spectrometers

LTB has developed a high power version of its nitrogen laser MNL 100. This is available both as standard and as LD-version with low divergence.

These versions are particularly recommended as high-quality replacement for nitrogen lasers of other manufacturers, which are not produced anymore. The MNL 100High Power provides a clearly longer lifetime than the replaced models at the same parameters.
Adaptation kits for the incorporation into MALDI-TOF mass spectrometers or LIF-systems of different manufacturers are offered by LTB on request.

The MNL 100High Power provides the same features and high quality standards like the other proven models of the MNL 100 series at pulse energies of up to 225 µJ.

- OEM-laser source
- LIF-spectroscopy
- MALDI-TOF MS
- Ion trap MS
- UV-microscope
- Micro-LIPS
- Pumping of dye lasers

Specifications

		MNL 103-PD High Power	MNL 103-LD High Power
Wavelength	nm	337.1	337.1
Pulse halfwidth	ns	3	3
Guaranteed pulse energy (90 % after 60 million)	µJ	**≥ 200**	**≥ 150**
Typ. pulse energy (typ. 70 % after 100 million)	µJ	**≥ 225**	**≥ 175**
Pulse power, typ.	kW	75	58
Repetition rate, max.	Hz	30	30
Energy stability SD/<E> (for all repetition rates)	%	≤ 2	≤ 2
Beam dimensions	mm	3 x 4	4 x 2.5
Beam divergence	mrad	≤ 3.5 x ≤ 3	**≤ 0.5 x ≤ 0.3**
Jitter: ext. trigger - laser pulse	ns	± 2.5	± 2.5
Sync Out (optional)			
Jitter: electr. trigger - laser	ns	< 0.2	< 0.2

State: 1.7.2015

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