

## LIGHT. PRECISION. ANALYTICS.

*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
- Longlife Warranty up to 200 million laser pulses / 4 years
- 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. 05KFI005386 (UL, CSA, VDE, Semco), ROHS, FDA.

#### Basic equipment:

- Pulse repetition rate up to 90 Hz
- Available also as low-divergent version
- Integrated controller
- Trigger management
- Software interface: DLL or serial bus protocol

#### 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 with fibers 200-1,000 µm
- Dye laser and SHG modules that form a laser system continuously tunable from 225 - 950 nm with a MNL as pump laser

#### Applications

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

## Specifications

		103-PD / 106-PD	103-LD / 106-LD	
General	Wavelength	nm	337.1	
	Spectral bandwidth	nm	0.1	
	Pulse halfwidth FWHM, typ.	ns	3	
	Guaranteed pulse energy (90 % after 60 mill.) <sup>1</sup>	µJ	≥ 140 / ≥ 120	≥ 80 / ≥ 60
	Typ. pulse energy (typ. 70 % after 100 mill.) <sup>1</sup>	µJ	≥ 155 / ≥ 130	≥ 90 / ≥ 70
	Pulse power, typ.	kW	51 / 43	30 / 23
	Repetition rate <sup>2</sup>	Hz	1 ... 30 / 1 ... 60	
	Energy stability SD / <E> (for all rep. rates)	%	≤ 2	
	Beam dimensions, vertical x horizontal, typ.	mm	3 x 4	4 x 2.5
	Beam divergence, vertical x horizontal <sup>3</sup>	mrad	≤ 3.5 x ≤ 3	≤ 0.5 x ≤ 0.3
	Focus stability <sup>4</sup>	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	
	Pulse delay: ext. trigger - laser pulse	ns	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	
	Warm-up time	s	< 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 <sup>5</sup>	V DC	24
	Periodic peak current	A	2.4
	Periodic peak power = max. power	W	60 (40)
	Average current	A	1.6
	Average power	W	40

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

<sup>1</sup> higher energies on request

<sup>2</sup> higher repetition rates on request

<sup>3</sup> at max. rep. rate; measuring at 5 m distance

<sup>4</sup> based on focusing of 200 mm @ constant rep. rate

<sup>5</sup> via external wide-range power supply (100 ... 240 V AC)

(part of the delivery)

<sup>6</sup> with attenuator module or fiber coupling (335 x 95 x 95) mm

Subject to technical changes.

