

SNP High Performances IR Microchip Series

Key features

- ▶ Repetition rate up to 130kHz
- ▶ Ultrashort pulses down to 600ps
- ▶ Multi-kW peak power
- ▶ Excellent beam quality – TEM00, $M^2 < 1.1$
- ▶ Efficient, air-cooled
- ▶ Sealed package, extremely long life



For generating high peak power IR pulses of a few hundred picoseconds, microchip lasers are economical, compact, and reliable. Sub-nanosecond 1064nm pulses are indeed directly generated from the diode pumped passively Q-switched Nd:YAG microchip engine.

Microchips are also easy to operate and service ; controllers can be used with every laser head model and swapped within minutes while conserving constant performances.

The SNP series are designed for high average power, either from pulse energies of 20 μ J at 1064nm, or from repetition rates up to 130kHz.

Applications

- ▶ Material processing
 - Cost effective marking solutions
 - Graphitization
- ▶ Instrumentation
 - Ranging
 - Differential absorption LIDAR
 - Super-continuum generation
 - Distributed temperature sensing
 - Raman spectroscopy
- ▶ Biophotonics
 - Nanosurgery
 - Protein cross-linking

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Technical specifications:

| | SNP-08E-100 | SNP-18E-100 | SNP-20F-100 | SNP-50F-100 | SNP-130F-100 |
|--|-----------------|---------------------------|-----------------|-----------------|-----------------|
| Wavelength | 1064nm | 1064nm | 1064nm | 1064nm | 1064nm |
| Repetition Rate | >5kHz | >13kHz | >19kHz | >45kHz | >130kHz |
| Constant Pulse width range (FWHM)⁽¹⁾ | <1ns | >3ns | <1ns | <0.7ns | <1.4ns |
| Output power⁽²⁾ | >40mW | >300mW | >140mW | >190mW | >200mW |
| Output energy | >8μJ | >18μJ | >7μJ | >4μJ | >1.5μJ |
| Peak Power | >8kW | N/A | >10kW | >5.5kW | >1.1kW |
| Short term (1min) power stability⁽³⁾ | <±1% | <±2% | <±1% | <±1% | <±1% |
| Long term (6 hrs) power stability⁽³⁾ | <±3% | <±5% | <±3% | <±3% | <±3% |
| Beam profile | Gaussian TEM00 | Gaussian TEM00 | Gaussian TEM00 | Gaussian TEM00 | Gaussian TEM00 |
| Full angle divergence | | | | | |
| Horizontal@1/e² | 12 ± 2 mrad | 5.2±1 mrad ⁽⁶⁾ | 13±5mrad | 17±2.5mrad | 17±2.5mrad |
| Vertical@1/e² | 14 ± 2 mrad | 5.1±1 mrad ⁽⁶⁾ | 13±5mrad | 17±2.5mrad | 17±2.5mrad |
| M²⁽⁴⁾ | <1.3 | <1.3 | <1.3 | <1.3 | <1.3 |
| Beam ellipticity⁽⁵⁾ | <1.3 | <1.3 | <1.3 | <1.3 | <1.3 |
| Polarization | Linear PER>20dB | Elliptical ⁽⁷⁾ | Linear PER>20dB | Linear PER>20dB | Linear PER>20dB |
| Package dimensions | 115x29x36mm | 145x42x36mm | 145x42x36mm | 145x42x36mm | 145x42x36mm |
| Package weight | 250g | 300g | 300g | 300g | 300g |
| Options (table p3) | None | None | F,M,S | F,M,S | F,M,S |

Notes

| | |
|------------|--|
| (1) | Measured with 1Ghz photodiode and 1GHz/10GS/s oscilloscope. |
| (2) | Measurement performed with an OPHIR thermal power sensor (OPHIR 3A-FS-SH) |
| (3) | For temperature variation < ± 3°C and < 3°C/hour, stability is measured with calorimeter - detector band [DC, 2Hz] |
| (4) | Mean average value M = √(XY), X and Y being respectively the major and minor axis of the ellipse |
| (5) | Beam ellipticity is calculated as the ratio of the main axis far field divergence |
| (6) | Collimated beam available as an option |
| (7) | Linear polarization available as an option |

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Complementary information & options:

Environment Parameters

| | |
|--|--------|
| Operating Temperature Range | 0-50°C |
| Maximum Laser Head Baseplate Temperature | <50°C |
| Maximum Power Consumption | <40W |
| Laser Head Thermal Dissipation | <15W |
| Storage Temperature | 0-50°C |
| Shock of 11ms according to IEC 68-2-27, non operating | 25g |
| Vibration 5Hz to 500Hz sinusoidal according to IEC 68-2-6 | 2g |

Certification

| | |
|---|-------------------------------------|
| Laser classification according to IEC 60825-1:2007 | 3B |
| CDRH | Yes, if used with a -DR1 controller |
| ROHs | Yes |

Options

| | |
|-----------------------------------|---|
| Multimode fibering (M) | Contact factory for availability |
| Single mode fibering (F) | Contact factory for availability |
| Synchronization output (S) | TTL compatible output signal for synchronization/monitoring |

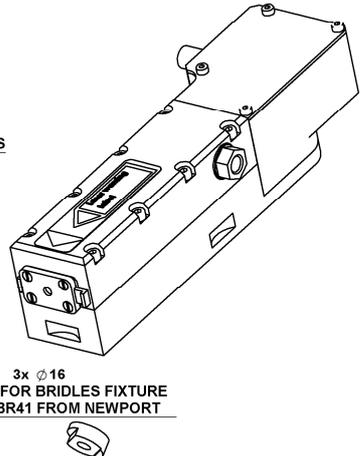
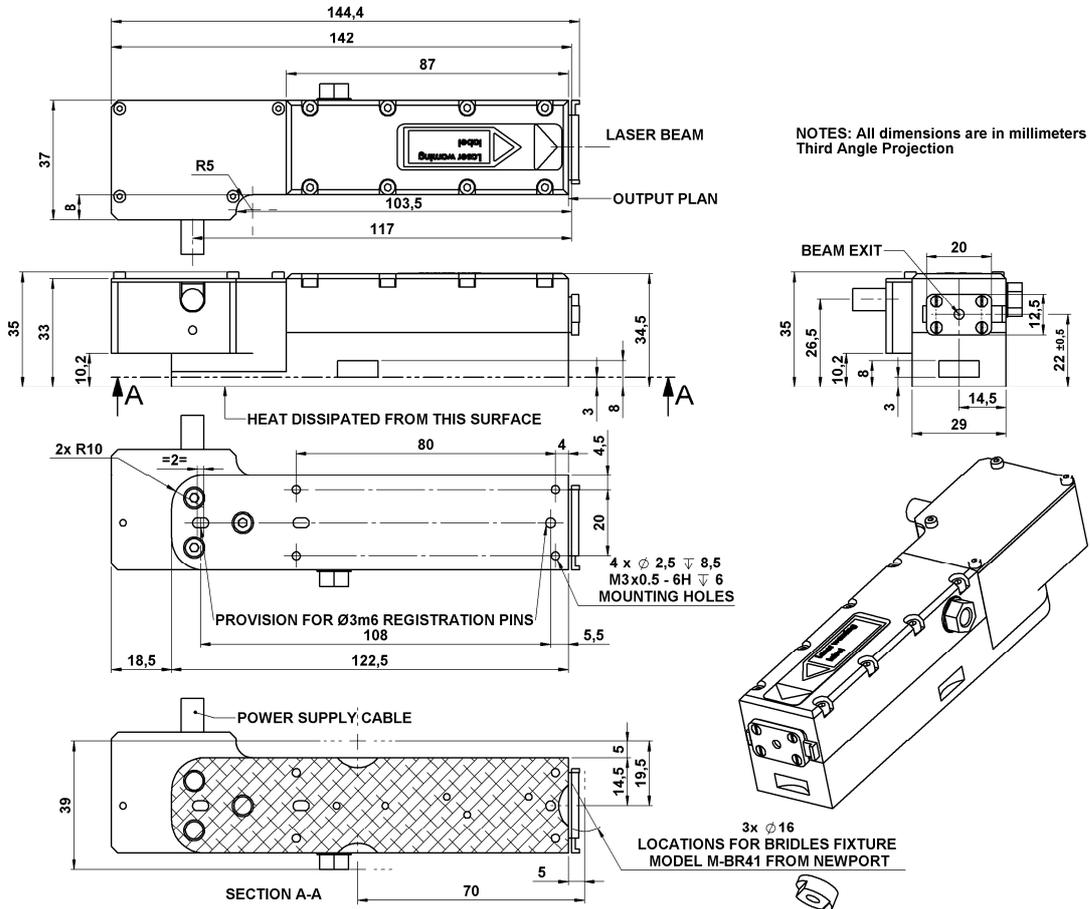
Available Controller Types

| Model | Type | Input Power | CDRH |
|--------------|-------------|--------------------|-------------|
| MLC-03A-DR1 | Desktop | 100-240 V AC | Yes |
| MLC-03A-MR1 | Module | 12 V DC | No |
| MLC-03A-BR1 | Board | 12 V DC | No |

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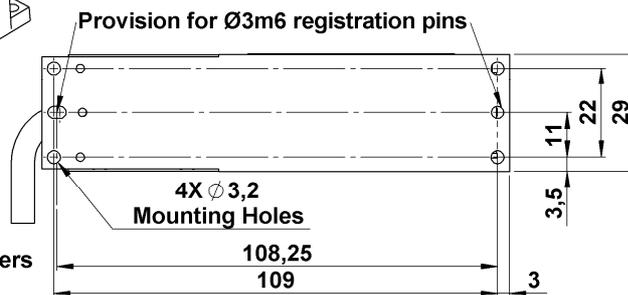
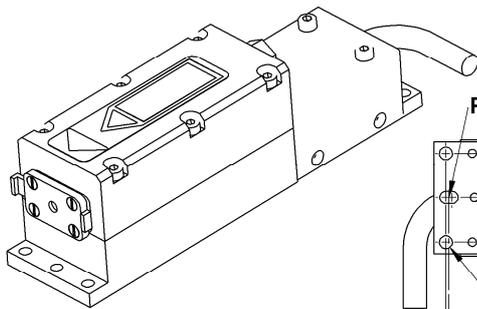
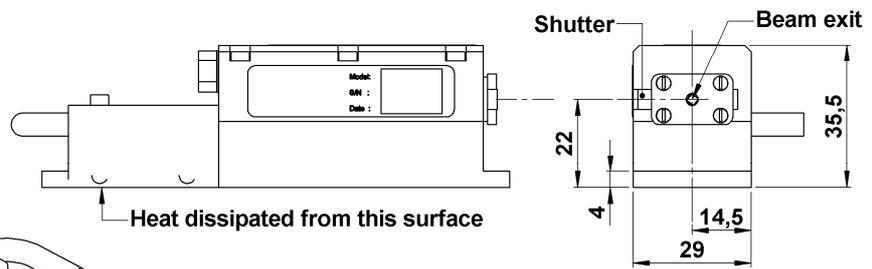
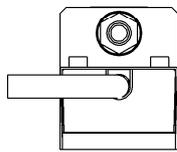
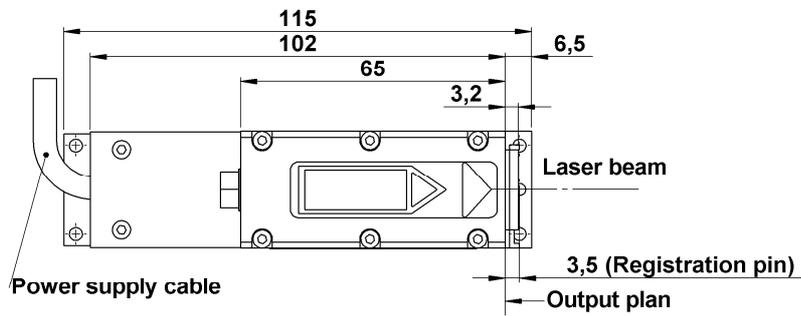
CDRH Laser Head Mechanical Drawings : SNP-18E-100, SNP-20F-100, SNP-50F-100 and SNP-130F-100



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CDRH Laser Head Mechanical Drawings : SNP-08E-100



Notes: All dimensions are in millimeters
Third angle projection