

# FDSS 532-Q

Diode Pumped Passively Q-Switched Solid State Laser

- 532 nm
- Pulsed ( $\leq 1.3$  ns)
- $> 42$   $\mu$ J
- Up to 20 kHz
- External and Internal Trigger
- Free Beam or Fiber Coupling
- Single Pulse Operation



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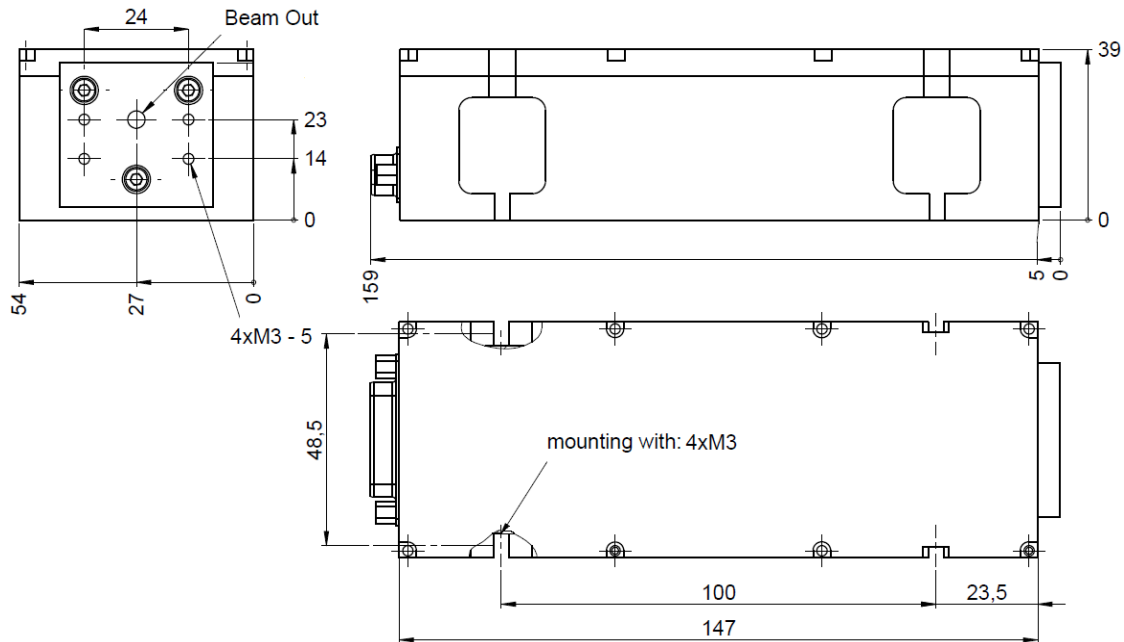
| Optical Data                                      |                                                                                          | FDSS532-Q1                                           | FDSS532-Q2      | FDSS532-Q3      | FDSS532-Q4_1k   |
|---------------------------------------------------|------------------------------------------------------------------------------------------|------------------------------------------------------|-----------------|-----------------|-----------------|
|                                                   | Wavelength                                                                               | 532 nm                                               |                 |                 |                 |
|                                                   | Pulse Energy                                                                             | > 2 μJ @ 15 kHz                                      | > 6 μJ @ 10 kHz | > 20 μJ @ 1 kHz | > 42 μJ @ 1 kHz |
|                                                   | Peak Power                                                                               | > 1.5 kW @15kHz                                      | > 4.5 kW @10kHz | > 15 kW @ 1kHz  | > 30 kW @ 1 kHz |
|                                                   | Pulse Repetition Rate                                                                    | ≤ 20 kHz                                             | ≤ 10 kHz        | ≤ 2.5 kHz       | ≤ 1 kHz         |
|                                                   | Pulse Width, FWHM                                                                        | ≤ 1.3 ns                                             |                 |                 |                 |
|                                                   | Polarization Ratio                                                                       | > 100:1 vertical                                     |                 |                 |                 |
|                                                   | Pulse Energy Drift <sup>1)</sup>                                                         | < ± 5 %                                              | < ± 5 %         | < ± 5 %         | < ± 5 %         |
|                                                   | Pulse-To-Pulse RMS <sup>2)</sup>                                                         | < 3% @15kHz                                          | < 2% @10kHz     | < 2% @1kHz      | < 2% @1kHz      |
| Laser Classification                              | 3B / IIIb                                                                                | 3B / IIIb                                            | 3B / IIIb       | 3B / IIIb       |                 |
| Optical Output                                    | Spatial Mode                                                                             | TEM <sub>00</sub> (Main Axis Divergence Ratio < 1.3) |                 |                 |                 |
|                                                   | Beam Divergence, 2Θ                                                                      | < 3.5 mrad                                           | < 3.5 mrad      | < 5.0 mrad      | < 4.5 mrad      |
|                                                   | Beam Diameter                                                                            | 250 ± 50 μm                                          | 260 ± 50 μm     | 400 ± 100 μm    | 400 ± 100 μm    |
| Electrical Data                                   | Power Consumption                                                                        | 15 W (max.40 W)                                      | 17 W (max.40 W) | 20 W (max.70 W) | 40 W (70 W)     |
|                                                   | Operating Voltage                                                                        | 12 V DC                                              |                 |                 |                 |
|                                                   | Line Voltage                                                                             | 90 - 265 V AC                                        |                 |                 |                 |
|                                                   | Marking                                                                                  | CE                                                   |                 |                 |                 |
| Interfaces                                        | RS 232, USB                                                                              |                                                      |                 |                 |                 |
|                                                   | External Trigger (TTL, rising edge) single shot (pulse on demand) – max. repetition rate |                                                      |                 |                 |                 |
|                                                   | Interface for TTL-control and power monitor                                              |                                                      |                 |                 |                 |
| Miscellaneous                                     | Warm-up Time                                                                             | < 5 min                                              |                 |                 |                 |
|                                                   | Operating Temperature                                                                    | 18 - 38 °C                                           |                 |                 |                 |
| Options                                           | Stand-alone system (incl. key-switch, heat-sink, manual shutter; CDRH compliant)         |                                                      |                 |                 |                 |
|                                                   | Synchronization signal output (rise time < 2 ns)                                         |                                                      |                 |                 |                 |
|                                                   | Fiber coupling for fiber with core diameter > 70 μm (Q4 ≥ 100μm)                         |                                                      |                 |                 |                 |
|                                                   | Manual shutter or electrical beam blocker                                                |                                                      |                 |                 |                 |
|                                                   | External beam expander (e.g. 3x)                                                         |                                                      |                 |                 |                 |
|                                                   | Manual or electrical attenuator on request                                               |                                                      |                 |                 |                 |
|                                                   | Manual or electrical driven wavelength switch 532 nm / 1064 nm                           |                                                      |                 |                 |                 |
| Closed loop operation for pulse energy on request |                                                                                          |                                                      |                 |                 |                 |

<sup>1)</sup> Drift over 6 hours, energy averaged over 10 sec after 5 min of continuous operation, temperature variation  $\pm 3$  °C and  $< 3$  °C/hour.

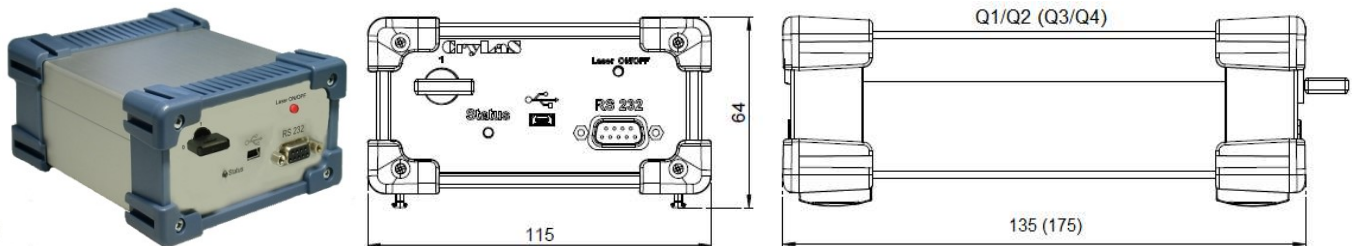
<sup>2)</sup> RMS over 1000 pulses after 5 min of continuous operation.

## Dimensions

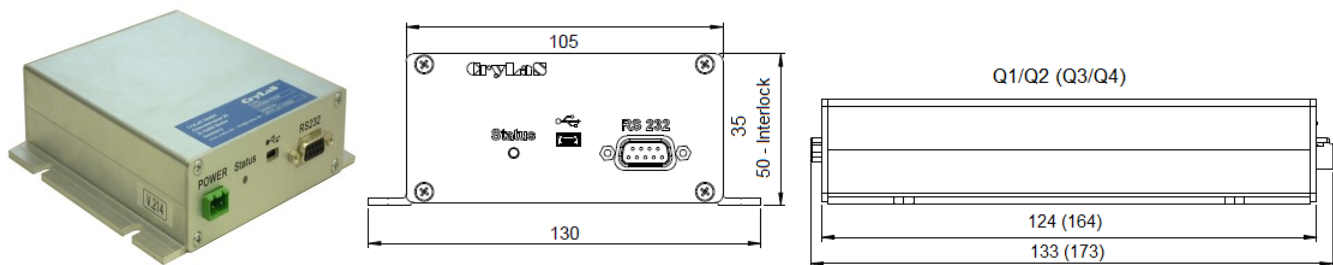
Laser Head: 159 x 54 x 39 mm



Controller Stand-Alone: Q1, Q2: 135 x 115 x 64 mm; Q3, Q4: 175 x 115 x 64 mm



Controller OEM: Q1, Q2: 133 x 130 x 35/50 mm; Q3, Q4: 173 x 130 x 35/50 mm



## Laser Safety Label

The FDSS 532-Q lasers are class 3B / IIb according to IEC 60825-1:2014

|                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                        |                                                                                                                                                                                                                                                                                          |                                                                                                                                                                                                                                                                                          |                                                                                                                             |
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| <p>wavelength: 532 nm<br/>max. output: 10 µJ<br/>pulse duration: &lt; 1.5 ns<br/>max. repetition rate: 22 kHz</p> <p>Complies with IEC 60825-1:2014<br/>Complies with 21CFR 1040.10 and 1040.11<br/>except for deviations pursuant to<br/>Laser Notice No. 50, dated July 26, 2001</p> | <p>wavelength: 532 nm<br/>max. output: 25 µJ<br/>pulse duration: &lt; 1.5 ns<br/>max. repetition rate: 11 kHz</p> <p>Complies with IEC 60825-1:2014<br/>Complies with 21CFR 1040.10 and 1040.11<br/>except for deviations pursuant to<br/>Laser Notice No. 50, dated July 26, 2001</p> | <p>wavelength: 532 nm<br/>max. output: 100 µJ<br/>pulse duration: &lt; 1.5 ns<br/>max. repetition rate: 2.7 kHz</p> <p>Complies with IEC 60825-1:2014<br/>Complies with 21CFR 1040.10 and 1040.11<br/>except for deviations pursuant to<br/>Laser Notice No. 50, dated July 26, 2001</p> | <p>wavelength: 532 nm<br/>max. output: 150 µJ<br/>pulse duration: &lt; 1.5 ns<br/>max. repetition rate: 1.2 kHz</p> <p>Complies with IEC 60825-1:2014<br/>Complies with 21CFR 1040.10 and 1040.11<br/>except for deviations pursuant to<br/>Laser Notice No. 50, dated July 26, 2001</p> | <p><b>WARNING - VISIBLE<br/>LASER RADIATION<br/>AVOID EXPOSURE<br/>TO BEAM</b></p> <p><b>CLASS 3B<br/>LASER PRODUCT</b></p> |
|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|----------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------------|-----------------------------------------------------------------------------------------------------------------------------|

Q1 series

Q2 series

Q3 series

Q4 series

