

# Taiko PDL M1

## High-End Picosecond Diode Laser Driver

- Most powerful driver, finest control of the laser parameters
- Pulsed, burst and CW operation
- Calibrated pulse parameters and optical power
- Easily controlled via USB or local interface
- Suited for LDH-I Series
- 5-year warranty

### Applications

- Time-resolved measurements
- Materials science & semiconductor diagnostics
- Metrology & calibration
- Ranging & LiDAR
- Life science, FLIM, FCS, STED, TRPL
- Diffusion measurements (DOT, DCS, TD-DCS)
- Seeding



The Taiko PDL M1 is a high end laser driver that can operate and monitor any laser head from the LDH-I Series. The strengths of the Taiko are its enhanced power capability, smart monitoring of laser diodes and ease-of-use, making it accessible even to novice laser users. Changing the emission wavelength is as simple as plugging in a different laser head and the Taiko will automatically recognize its operational parameters.

### More Power

The Taiko PDL M1 features enhanced power capabilities to operate high power laser diodes. For example, the latest generation of multi-transverse mode diodes can now deliver average optical output power of up to 150 mW in pulsed mode and up to 200 mW in CW mode. Such laser diodes are available covering the whole visible range. Furthermore, the laser diode heads can be operated in two distinct modes: the classic linear mode, the max. power mode.

In linear mode, both pulse energy and pulse shape are guaranteed to remain constant over the entire range of repetition rates. This ensures a very stable instrument response function (IRF) for, e.g., lifetime measurements and offers perfect linearity of average power for every repetition rate.

The max. power mode allows reaching the highest pulse energy at each repetition rate. The exact amount of extra power that can be achieved depends both on the connected laser head as well as on the repetition rate at which it is operated.

### Take full control

The Taiko PDL M1 offers very intuitive local and remote user interfaces to accurately control and monitor all relevant laser diode parameters in pulsed, burst, or CW emission mode.

## Specifications

|                               |   |
|-------------------------------|---|
| <b>Internal Oscillator</b>    |   |
| Type                          | crystal locked  |
| Operation mode                | pulsed, burst or Continuous wave (CW)   |
| Repetition frequency range    | 1 Hz to 1 MHz in steps of 1, 2 or 5 times various powers of ten<br>1 to 100 MHz in steps of 1 MHz   |
| Jitter                        | typ. 3-5 ps   |
| <b>External Trigger Input</b> |   |
| Input voltage range           | -5 to +5 V (TTL compatible)   |
| Trigger level (adjustable)    | -1 to +1 V  |
| Required pulse width          | > 5 ns  |
| Delay                         | trigger input to optical output: typ. 16 ns   |
| Frequency range               | single shot to 90 MHz   |
| Input impedance               | 50 Ohms   |
| Connector                     | BNC socket (female)   |
| <b>Synchronization Output</b> |   |
| Amplitude                     | < -800 mV into 50 Ohms (NIM)  |
| Pulse width                   | 5 ns  |
| Delay                         | sync output (falling edge) to laser output: typ. 10 ns  |
| Input impedance (destination) | 50 Ohms   |
| Connector                     | SMA socket (female)   |
| <b>Gating Inputs</b>          |   |
| Fast gate                     | pulsed or burst emission: transition time typ. 10 ns<br>CW emission: rise time typ. 5-10 $\mu$ s (from 0% to 80-90% of maximum CW emission power, wavelength dependent)<br>User selectable input impedance: 10 kOhms with pull-up or 50 Ohms with pull-down |
| Connector type                | 1-pin LEMO Socket - 00.250 Series<br>Example of connector: FFA.00.250.NTA   |
| Slow gate                     | transition time < 1 ms  |
| Connector type                | 4-pin LEMO Socket - 00.304 Series<br>Example of connector: FGG.00.304.CLA   |
| <b>Remote Interlock</b>       |   |
| Voltage                       | < 16 VDC  |
| Loop resistance               | 10 Ohms maximum   |
| Remote Interlock connectors   | Lemo 00.304 and banana socket   |
| <b>Computer</b>               |   |
| PC Interface                  | USB 2.0   |
| Operating system              | Windows™ 8 / 8.1 / 10   |
| <b>Power Supply</b>           |   |
| Line voltage                  | 220 / 240 or 110 / 120 VAC, 50 / 60 Hz  |
| Power consumption             | 140 W maximum   |

| Dimensions            |                               |
|-----------------------|-------------------------------|
| Base unit             | 355 x 311 x 95 mm (w x l x h) |
| Operation Environment |                               |
| Temperature range     | 10 to 40°C                    |
| Rel. humidity         | < 80 %                        |

These tables are updated on a regular basis based on data of recently manufactured laser heads. Other specifications such as shorter pulse widths or higher powers than listed might be possible depending on the performance of diodes on stock. Please contact us for more information. All measurements shown may be subject to a 10 % calibration error. Each laser head undergoes an extensive burn-in test to ensure long-term stability and is shipped with a comprehensive set of test data. This test data is kept in our database, which already holds records of more than 18 years.



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