Laser Diode Driver
For precision pulse shaping
### Laser Diode Driver

For precision pulse shaping

Laser diode driver to generate any pulse shape with nanosecond pulse duration. It is a multifunctional unit with integrated AWG (Arbitrary Waveform Generator), TEC controller & multiple pulse delay generators for signal synchronization. 2 models for either direct (laser diode) or external (EOM or AOM) pulse modulation. (Note: EOM=Electro optic Modulator; AOM = Acousto-Optic modulator)

### Key features:
- Direct modulation of ns laser pulses with any shape
- 0 to 1.6 A output current with 16 bit/48 dB/30 μA resolution
- Integrated pre-configured mounting sockets for type 1 butterfly laser diode (type 2 on request)
- User set pulse shape from 500 ps to 8 μs with 0 - 20 MHz repetition rate
- Integrated TEC controller with over temperature protection
- Special mode for laser diode "gain-switch peak" suppression
- Built-in pulse AWG with internal or remote triggering
- 3 integrated Pulse Delay Generators
- USB interface with intuitive GUI software
- Available in two versions direct or external modulations

### Technical Specifications

#### Laser diode driver

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Shaper Direct</th>
<th>Shaper External</th>
</tr>
</thead>
<tbody>
<tr>
<td>Pulse mode</td>
<td>user design pulse shape</td>
<td>square pulse (1 ns to CW)</td>
</tr>
<tr>
<td>Peak current level</td>
<td>0 - 1.6 A</td>
<td>0 - 3.5 A</td>
</tr>
<tr>
<td>Pulse shaping duration [4000 step max]</td>
<td>0.5 ns - 8 μs</td>
<td>1 ns to CW</td>
</tr>
<tr>
<td>Pulse shaping timing resolution</td>
<td>500 ps</td>
<td>± 2.5 ns / &lt; 100 ps</td>
</tr>
<tr>
<td>Pulse current resolution</td>
<td>30 μA</td>
<td>no</td>
</tr>
<tr>
<td>Laser diode Gain switch peak suppression function</td>
<td>Yes (user switchable and configurable)</td>
<td>no</td>
</tr>
<tr>
<td>Jitter [internal/external trigger]</td>
<td>&lt;100 ps / ±2.5 ns (200 MHz internal clock)</td>
<td></td>
</tr>
</tbody>
</table>

#### External modulator driver (EOM or AOM):

- EOM/AOM* pulse duration (4000 step max): Not applicable
- EOM/AOM* pulse timing resolution: Not applicable
- Output voltage (factory configuration): 1 V (50 Ohm)/5 V (High-Z)

#### Pulse Delay Generators outputs (for external equipment synchronization)

<table>
<thead>
<tr>
<th>Parameter</th>
<th>Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Number of outputs</td>
<td>3</td>
</tr>
<tr>
<td>Synchronization signals duration / resolution</td>
<td>0 - 10⁶ ns / 1 ns</td>
</tr>
<tr>
<td>Output voltage</td>
<td>3.3 V (50 Ohm)</td>
</tr>
</tbody>
</table>

#### Special functions

- Configurable starting modes: 4 (OEM, previous settings etc.)
- Configurable GUI: 100% adjustable by expert user with several user modes [production user, maintenance user etc.]
- Configurable output power supply: 0-18V adjustable voltage to drive any additional external board

#### General

- Compatibilities & Libraries: Win XP/7/10 - Hexa - DLLs - LabVIEW - Python
- Interface: USB or UART
- Power supply: 24 V/4 A (110 V/220 V adapter included)

www.aerodiode.com
**Technical Specifications**

**GUI control software**

- **Current:** 0.00 A
- **Offset:** 0.00 A
- **Temperature:** 25.00 °C
- **Laser Activation:** On/Off

**Shapes**

<table>
<thead>
<tr>
<th>Shape</th>
<th>Default Value</th>
</tr>
</thead>
<tbody>
<tr>
<td>Shape 1</td>
<td>0</td>
</tr>
<tr>
<td>Shape 2</td>
<td></td>
</tr>
<tr>
<td>Shape 3</td>
<td></td>
</tr>
<tr>
<td>Shape 4</td>
<td></td>
</tr>
</tbody>
</table>

**Synchronisation**

- **External IR-3**
- **Trigger Source A**
- **Trigger Source B**
- **Delay A/B**
- **Sequence A**
- **Sequence B**
- **Syncro A Frequency**

**Measures**

- **Main Voltage:** 25.55 V
- **Diode Temperature:** 21.94 °C
- **PD_H0Y Power:** 0.00 W

**Alarm**

- **Diode T°C**
- **Main Curr.**
- **Main Voltage**
- **AUX OFF**
- **Avg. Power**
- **Elec. Temp.**

**Version 1: direct modulation**

Ref: SHAPER-Direct

**Version 2: external modulation**

Ref: SHAPER-External

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**Mechanical**

- **Dimensions:**
  - 20 mm
  - 27 mm
  - 162 mm
  - 92 mm
  - 167 mm

**REV. DESCRIPTION DATE**

- Creation

**ECHELLE:**

- 1:2

**TAILLE DESSIN n°:**

- A4

**FINITION:**

- DO NOT SCALE DRAWING

**DIMENSIONS EN MM**

- Tolérances usinage: ISO 2768 fH
- Ra si non spécifié: 3.2

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**POIDS:**

**NOM DU DESSIN:**

- Carte Shaper_v3

**MATERIAU:**

**QUANTITE:**

**TALENCE**

**Tel:** 05 24 54 52 46

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**GUI control software**

**Technical Specifications**

**Version 1: direct modulation**

Ref: SHAPER-Direct

**Version 2: external modulation**

Ref: SHAPER-External

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**EOM/AOM**

**(1) Electro Optic Modulator / Acousto Optic Modulator**