User Manual
LDP-VRM 025-100 CA

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How to use the Manual

Remark:
Please read all instructions before powering up the device.

Please see section “Power Dissipation” for more details about thermal power losses during operation.

Please pay attention to all safety warnings. If you have any doubt or suggestion, please do not hesitate to contact us!

Absolute maximum Ratings (destroying limits)

- All input pins may not exceed the voltage range below zero (GND) and beyond VCC
- VCC Limit: see table in section “Power Supply (#3)”
- Peak output current: 2.5 A
- Operating temperature range: 0 °C .. +60 °C
- Best performance operating temperature range: +10 °C .. +35 °C
- Storage temperature range: -20 °C .. +70 °C

Dos and Don’ts

Never ground any output connector.
Never use any grounded probes at the output.
Do not connect your oscilloscope to the output!
Driver and the probe will immediately be destroyed!

Keep the connecting cables between power supply and driver as well as between driver and laser diode as short as possible.

Please be aware that there might be hot surfaces. Be careful not to touch them.
LDP-VRM 025-100 CA
Laser Diode Driver

- Analog modulation DC .. 100 kHz
- Output current: 0 .. 2.5 A
- High speed
- Adaptive DC/DC converter

Technical Data*

| Output current | 0 .. 2.5 A |
| Max. compliance voltage | Single laser diode up to 100 V |
| Current noise | < 3 % |
| Current overshoot | < 5 % |
| Analog modulation | 120 kHz typical |
| Current setting time (full-scale) | 100 kHz guaranteed |
| Current setting input | 0 .. 5 V |
| Current monitor | 0.165 VA |
| Trigger | Analog / TTL (jumper) |
| Supply voltage | 24 V |
| Power dissipation | TBD |
| Dimensions in mm | 145 x 40 x 25 |
| Weight | 200 g |
| Operating temperature | 0 to +55 °C |

* Specifications measured with a fast recovery diode instead of a laser diode. Technical data is preliminary and subject to change without further notice.

Product Description
The LDP-VRM 025-12 CA is a fast driver for typical laser diodes. With its high output voltage it is suitable for IR, blue LD's and all kinds of LEDs. The internal DC/DC converter stabilizes the voltage drop across the driving MOSFET to prevent excessive losses.

- Innovative current regulation concept actively prevents laser diode from overshoots and over-current
- Protection against transients through regulated current rise time
- Adaptive DC/DC converter for lowest losses

Optional Accessories: None
How to get started

⚠️ The basic settings (scaling and BIAS current etc.) can be adjusted by potentiometer.
   Bias set a dc output current up to 1.6 A without connecting input signal.

⚠️ You need an additional waveform generator which has to be connected to the input terminal. There is no AWG included within the driver!

<table>
<thead>
<tr>
<th>Step</th>
<th>What to do</th>
<th>Check</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>Solder a dummy diode between LD+ and LD-. Alternatively make a short circuit there.</td>
<td>See section “Test Load”</td>
</tr>
<tr>
<td>2</td>
<td>Connect GND, VCC to power connector (power source disabled).</td>
<td>VCC 24 V</td>
</tr>
<tr>
<td>3</td>
<td>Connect waveform generator to input terminal (no pulse before enabling power supply).</td>
<td>See all sections discussing input (connector #2).</td>
</tr>
<tr>
<td>4</td>
<td>Enable the power source.</td>
<td></td>
</tr>
<tr>
<td>5</td>
<td>Adjust scaling and bias.</td>
<td>See potentiometer for scaling a bias.</td>
</tr>
<tr>
<td>6</td>
<td>Feed a signal on the input terminal. For example 1 kHz sine wave with 1 V amplitude.</td>
<td>Make sure not to overload the laser diode or the driver. Range of input signal 0 V .. 5 V.</td>
</tr>
<tr>
<td>7</td>
<td>Monitor the current output.</td>
<td>The current monitor measures a signal comparable with the input signal. Use an oscilloscope with a 1 MEG ohm termination. Scale 165 mV/A.</td>
</tr>
<tr>
<td>8</td>
<td>Disable the input signal and turn off the power source. Remove the test diode or bypass and assemble the final laser diode.</td>
<td></td>
</tr>
<tr>
<td>9</td>
<td>Turn the power supply for the VCC on again.</td>
<td>VCC 24 V</td>
</tr>
<tr>
<td>10</td>
<td>Feed a signal to the input terminal.</td>
<td>Make sure not to overload the laser diode!</td>
</tr>
</tbody>
</table>

Required Laser Diode Pinout
The LDP-VRM 025-100 CA is designed for a direct connection to almost all kinds of laser diodes. The laser diode can be connected directly by a screw terminal.
Power Driver Block Diagram

Description of the Connectors

LDP-VRM 025-100

Power Supply and absolute maximum Ratings

<table>
<thead>
<tr>
<th>Pin of conn. #3</th>
<th>Allowed range</th>
<th>Best performance</th>
<th>Destroying limit</th>
</tr>
</thead>
<tbody>
<tr>
<td>1 VCC (laser supply)</td>
<td>24 V .. 26 V</td>
<td>-</td>
<td>30 V</td>
</tr>
<tr>
<td>2 (GND)</td>
<td>GND</td>
<td>GND</td>
<td>-</td>
</tr>
<tr>
<td>3 (Input terminal)</td>
<td>0 V .. 5 V</td>
<td>-</td>
<td>+5.3 V</td>
</tr>
</tbody>
</table>
**Input for Current Setpoint**  
The analog setpoint signal is provided via this connector. The output current follows the input signal proportionally within the driver’s limitations (bandwidth, max. current, rise time).

**Jumper**  
The analog input can be switched to an inverted digital input. Set the jumper left to activate the inverted digital input.

**Bias and scaling Potentiometers**  
The bias potentiometer sets a DC output current up to 1.6 A which is added to the input signal. Turn it right to increase the bias current. The scaling potentiometer varies with the scaling of the input signal. Turn it right to increase the scale from 0 A / V to 0.5 A / V.

![Bias and scaling Potentiometers Diagram]

**Test Load**  
For the first test an appropriate test load may be assembled instead of the laser diode. This test load can either be a short circuit or a Schottky diode like the ES3C. Please connect the test load only between anode and cathode (LD+ and LD-) and prevent shorts to any other part of the circuit.

**Power Dissipation**  
The control of the driver reduces the power dissipation automatically to a minimum. The driver has to be cooled and allows a maximum power dissipation of 4.5 W.

**Mechanical Dimensions**  
The following dimensions are in millimetres (mm).

width 40 // length 145 // height 25