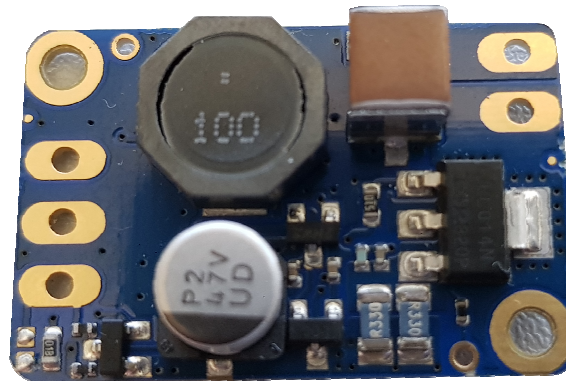




# User Manual

LDP-VRM 016-09



Rev. 1909

## Table of Contents

How to use the Manual.....	3
Absolute maximum Ratings (destroying limits).....	3
Dos and Don'ts .....	3
How to get started.....	5
Required Laser Diode Pinout .....	6
Power Driver Block Diagram.....	6
Description of the Connectors .....	7
Power Supply (#1...3) and absolute maximum Ratings .....	7
Input (#3).....	7
Jumper .....	8
Current Monitor (#5).....	8
Supply.....	8
Test Load.....	8
Power Dissipation.....	8
Mechanical Dimensions .....	8

### Germany and Other Countries

Laser Components Germany GmbH  
 Tel: +49 8142 2864-0  
 Fax: +49 8142 2864-11  
 info@lasercomponents.com  
[www.lasercomponents.com](http://www.lasercomponents.com)

### France

Laser Components S.A.S.  
 Tel: +33 1 39 59 52 25  
 Fax: +33 1 39 59 53 50  
 info@lasercomponents.fr  
[www.lasercomponents.fr](http://www.lasercomponents.fr)

### United Kingdom

Laser Components (UK) Ltd.  
 Tel: +44 1245 491 499  
 Fax: +44 1245 491 801  
 info@lasercomponents.co.uk  
[www.lasercomponents.co.uk](http://www.lasercomponents.co.uk)

### Nordic Countries

Laser Components Nordic AB  
 Tel: +46 31 703 71 73  
 Fax: +46 31 703 71 01  
 info@lasercomponents.se  
[www.lasercomponents.se](http://www.lasercomponents.se)

## How to use the Manual

**Remark:**

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

Before powering on your unit read this manual thoroughly and make sure you understood everything.



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 must not exceed the voltage range below zero (GND) and beyond VCC, resp. 5 V TTL
- VCC limit: see table in section “Power Supply (#3)”
- Peak output current: 1.65 A
- Operating temperature range: 0 °C .. +55 °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!

This will immediately destroy the driver and the probe!



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



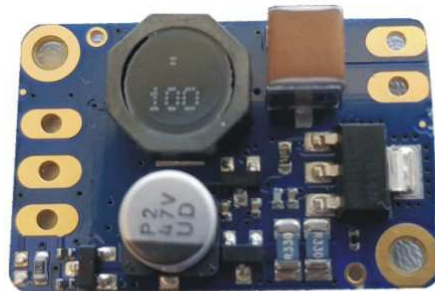
**Please be aware that there might be hot surfaces. Be careful not to touch them!**



## LDP-VRM 016-09

### Laser Diode Driver

Rev. 1909



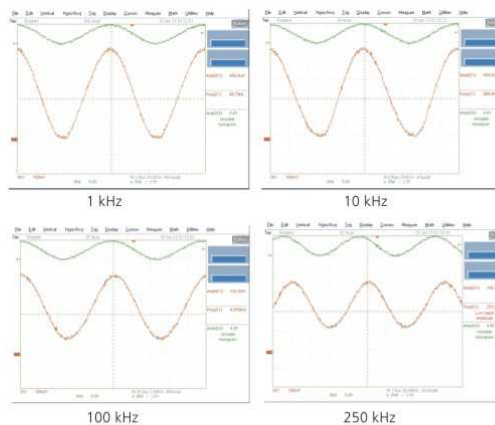
Preliminary picture (comes with heatsink)

- Analog modulation dc .. 150 kHz
- Output current: 0 .. 1.65 A
- High speed
- Adaptive DC/DC converter

#### Technical Data\*

Output current	0 .. 1.65 A
Max. compliance voltage	One SLD device
Current noise	< 3 %
Current overshoot	< 5 %
Analog modulation	180 kHz typical 150 kHz guaranteed
Current settling time (full-scale)	
Current setting input	0 .. 5 V
Current monitor	165 mV/A
Trigger	Analog / TTL (jumper)
Supply voltage	9 .. 15 V
Power dissipation	< 3.2 W
Dimensions in mm	21 x 31 x 15
Weight	10 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.



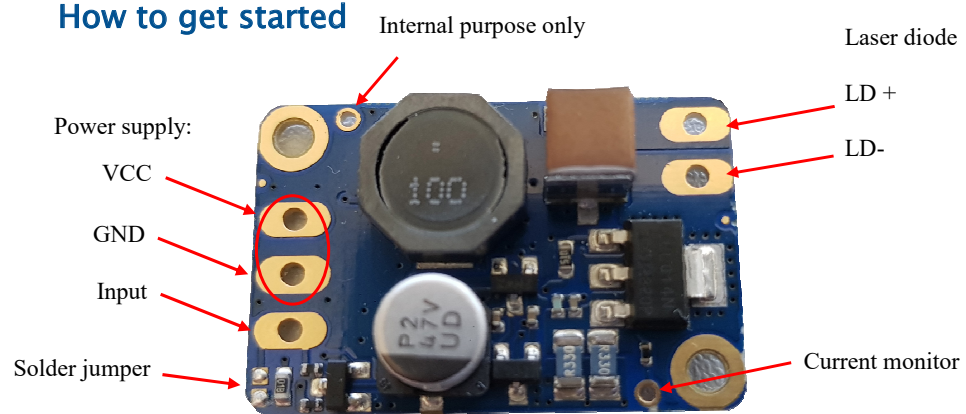
#### Product Description


The LDP-VRM 016-09 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 LED's. 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 overcurrent
- 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!

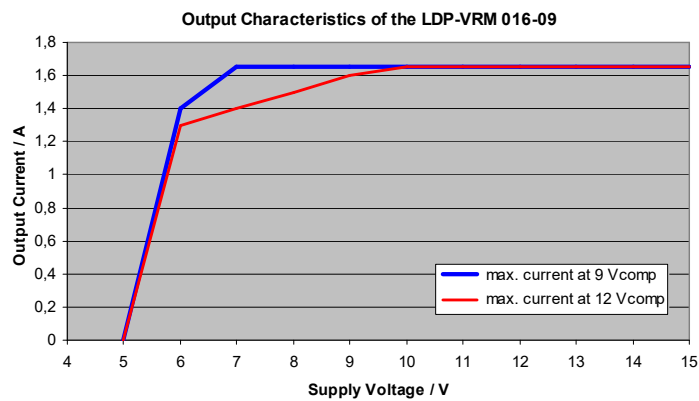
Step	What to do	Check
1	Solder a dummy diode between LD+ and LD-.	See section "Test Load". Range of compliance voltage 6 .. 12 V.
2	Connect GND, VCC to power connector (power source disabled).	Range of VCC 9 .. 15 V. Required max. current is less than 2 A (peak).
3	Connect waveform generator to input terminal (no pulse before enabling power supply).	See all sections discussing input (connector #2).
4	Enable the power source.	
5	Adjust scaling and bias.	See potentiometer for scaling a bias.
6	Feed a signal on the input terminal. For example 1 kHz sine wave with 1 V amplitude.	Make sure not to overload the laser diode or the driver. Range of input signal 0 .. 5 V.
7	Monitor the current output.	The current monitor measures a signal comparable with the input signal. Use an oscilloscope with a 1 Meg ohm termination. Scale 165 mV/A.
8	Disable the input signal and turn off the power source. Remove the test diode or bypass and assemble the final laser diode.	
9	Turn the power supply for the VCC on again.	Range of VCC 9 .. 15 V.
10	Feed a signal to the input terminal.	Make sure not to overload the laser diode!

## Required Laser Diode Pinout

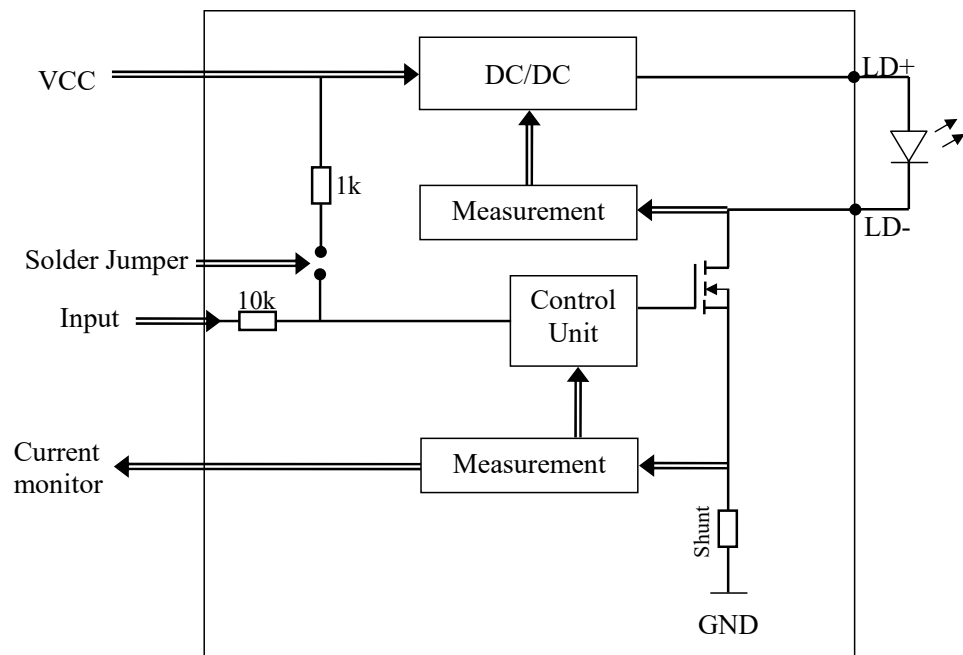
The LDP-VRM 016-09 is designed for a direct connection to SLD only. Connect at screw terminal.

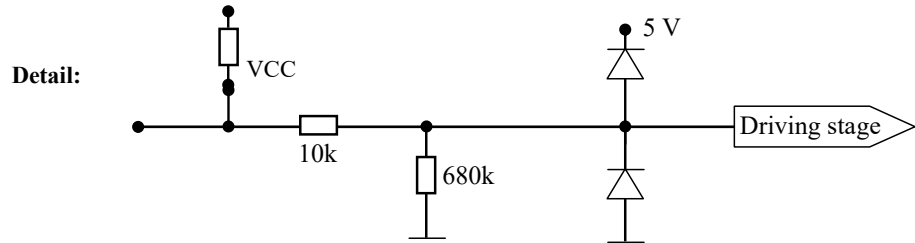
## Maximum Output Current

The maximum output current dependence on the compliance voltage of the attached laser diode in relation to the supply voltage. Please refer to the following diagram for the 9 V and 12 V compliance voltage.



## Power Driver Block Diagram





### Description of the Connectors

Connector	Function	
#1	Power connector: VCC	Screw terminal
#2	Power connector: GND for VCC and input signal	Screw terminal
#3	Power connector: input signal	Screw terminal
#4	Solder jumper	Soldering
#5	Current monitor (scaling 165 mV / A)	Measuring point

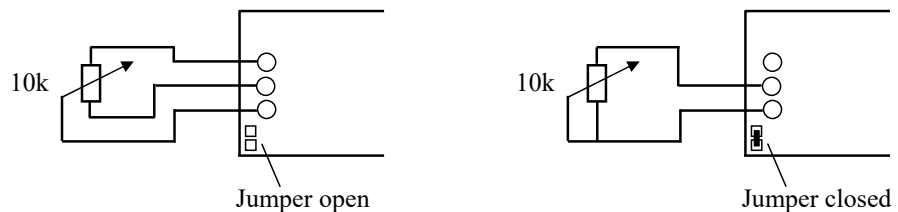
### Power Supply (#1 ...3) and absolute maximum Ratings

Pin of connector #3	Allowed range	Best performance	Destroying limit
1 VCC (laser supply)	6 .. 16 V	Supply can be lower, equal or higher than SLD compliance	16 V
2 (GND)	GND	GND	
3 (Input terminal)	0 .. 5 V	-	16 V

### Input (#3)

The analog setpoint signal is provided via connector #3. The output current follows the input signal proportionally within the driver's limitations (bandwidth, max. current, rise time).

A potentiometer can be used as external current control. The minimum current needs to be above 500 mA. Use a potentiometer between 10 kOhm and 100 kOhm nominal value.



## Jumper

Making a solder joint activates the internal pull up.

## Current Monitor (#5)

The scale of current monitor is 165 mV / A.

## Supply

Unit can be operated from a 3S LiPo battery pack. Undervoltage lockout (UVLO) is provided at 6 V. Other values are available upon request.

## Test Load

For the first test an appropriate test load may be assembled instead of the laser diode. This test load shall be a string of diodes to get approx. 9 V compliance 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 3.2 W.

## Mechanical Dimensions

The following dimensions are in millimetres (mm).  
21 x 31 x 15 (width x length x height)

