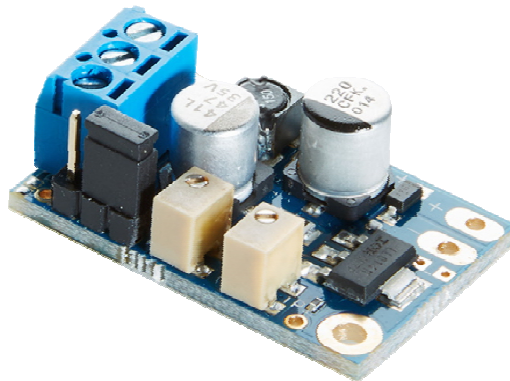




User Manual

LDP-VRM 01-12 CA



 **PicoLAS**

Rev. 1909

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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
- VCC limit: see table in section “Power Supply (#3)”
- Peak output current: 1.0 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!

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!


PicoLAS

FOCUSING POWER TO THE POINT

LDP-VRM 01-12 CA

Laser Diode Driver

Rev. 1909

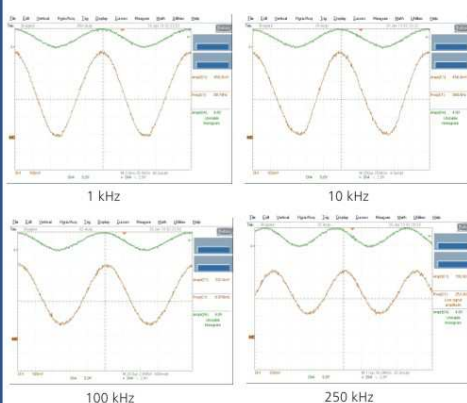


- Analog modulation DC .. 200 kHz
- Output current: 0 .. 1 A
- High speed
- Adaptive DC/DC converter

Technical Data*

Output current	0 .. 1 A
Max. compliance voltage	Single laser diode, up to 12 V
Current noise	< 3 %
Current overshoot	< 5 %
Analog modulation	290 kHz typical 200 kHz guaranteed
Current settling time (full scale)	
Current setting input	0 .. 5 V
Current monitor	0.5 V/A
Trigger	Analog / TTL (jumper)
Supply voltage	12 .. 20 V min 3 V above compliance
Power dissipation	2.2 W
Dimensions in mm	30 x 20 x 10
Weight	6 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.



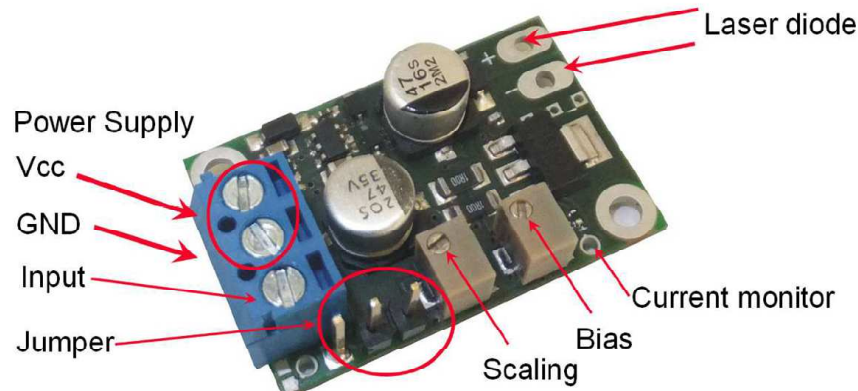
Product Description

The LDP-VRM 01-12 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 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 0.75 A without connecting input signal.

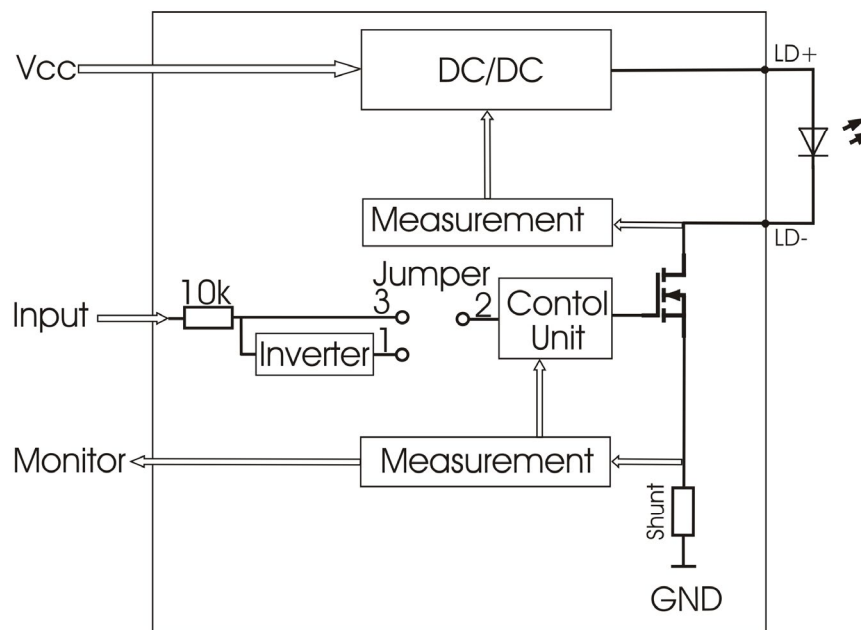
 You need an additional waveform generator which has to be connected to the input terminal. There is no AWG included within the driver!

Step	What to do	Check
1	Solder a dummy diode between LD+ and LD-. Alternatively make a short circuit there.	See section "Test Load". Range of compliance voltage 0 .. 12 V.
2	Connect GND, VCC on power connector (power source disabled).	Range of VCC 12 .. 20 V. Required max. current is about 1.2 A.
3	Connect waveform generator on input terminal (no pulse before power supply enabled).	See all sections referencing 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	Monitoring of the output current.	On current monitor you can measure a signal comparable with the input signal. Use an oscilloscope with a 1 MEG ohm termination. Scale 0.5 V/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 back on.	Range of VCC 12 .. 20 V.
10	Feed a signal to the input terminal.	Make sure not to overload the laser diode!

Required Laser Diode Pinout

The LDP-VRM 01-12 CA is designed for a direct connection to almost all kinds of laser diodes. The solder pads accept 2 and 3 terminal packaged laser diodes. The pitch of the LD+ and LD- connections is 3.5 mm.

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	Jumper	Analog / Digital
#5	Monitor	Scale 0.5 V / A

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

Pin of connector #3	Allowed range	Best performance	Destroying limit
1 VCC (laser supply)	12 .. 20 V	3 V above compliance	25 V
2 (GND)	GND	GND	
3 (Input terminal)	0 .. 5 V	-	+ 5.3 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).

Jumper

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

Current Monitor (#5)

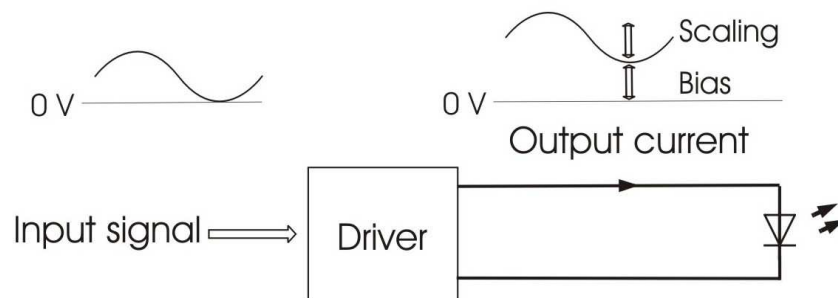
The scale of current monitor is scaled with 0.5 V / A.

Bias and scaling Potentiometers

The bias potentiometer sets a DC output current up to 0.75 A which is added to the input signal. Turn it right to increase the bias current.

The scaling potentiometer varies the scaling of input signal.

Turn it right to increase the scale from 0 A / V to 0.2 A / V.



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 parts of the circuit.

Power Dissipation

The control of the driver reduces the power dissipation automatically to a minimum. The driver doesn't need to be cooled and has a maximum power dissipation of 2.2 W.

Mechanical Dimensions

The following dimensions are in millimetres (mm).

width 20 // length 32 // height 13