User Manual

LDP-VRM 025-100 CA
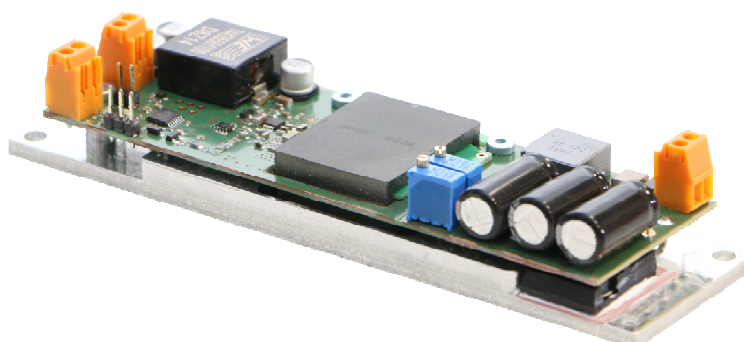
Table of Contents

How to use the Manual

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)

- 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.
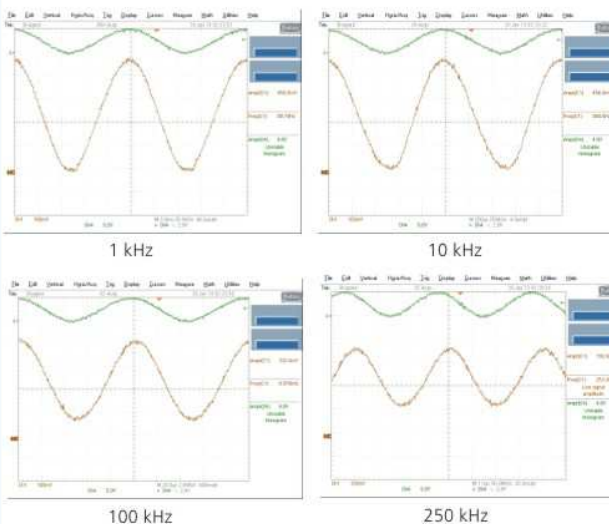
LDP-VRM 025-100 CA
Laser Diode Driver

- 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 100 kHz guaranteed
Current settling time (full-scale)	
Current setting input	0 .. 5 V
Current monitor	0.165 V/A
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.

1 kHz

10 kHz

100 kHz

250 kHz

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 2.5 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	Connect a dummy diode between LD+ and LD-. Alternatively make a short circuit there.	See section "Test Load"
2	Connect GND, VCC to power connector (power source disabled).	VCC 24 V
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 V .. 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.	VCC 24 V.
10	Feed a signal to the input terminal.	Make sure not to overload the laser diode!

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
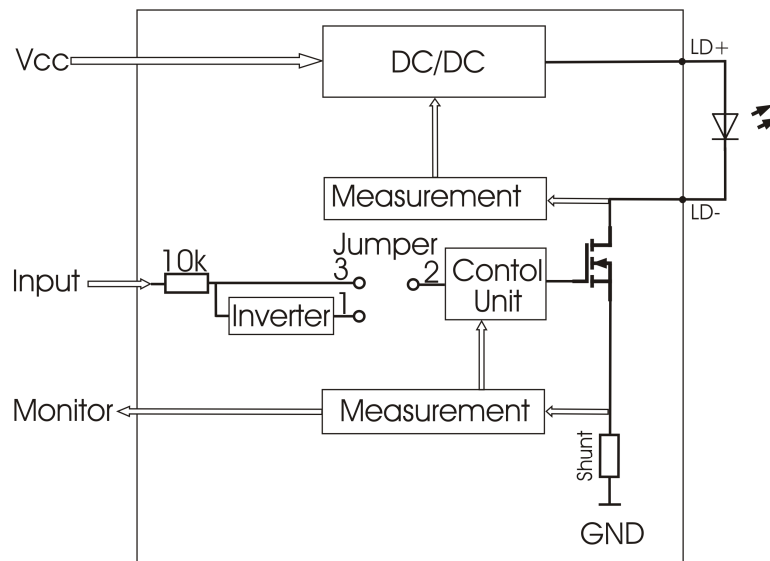
Description of the Connectors

LDP-VRM 025-100
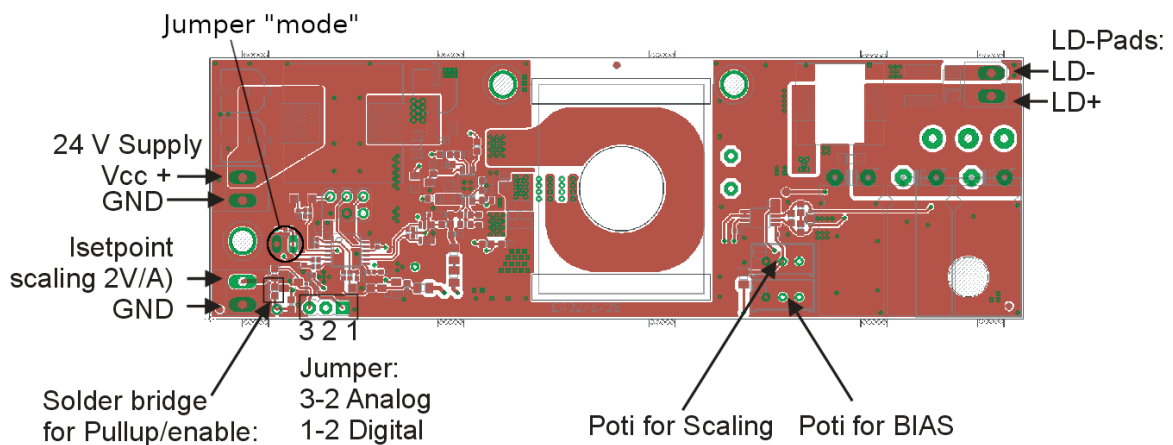
Power Supply and absolute maximum Ratings

Pin of 24V supply	Allowed range	Best performance	Destroying limit
1 VCC (laser supply)	24 V .. 26 V	24V	30 V
2 (GND)	GND	GND	
1 (Input terminal)	0 V .. 5 V	-	+ 5.3 V
2 (GND)	GND	GND	

Input for Current Set point

The analog set point signal is provided via this connector.
The output current follows the input signal proportionally within the driver's limitations (bandwidth, max. current, rise time) and setting of the scaling potentiometer. Turn the scaling potentiometer clockwise to increase the output current.

Jumper (*invert input signal*)

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

Jumper "*mode*"

With this jumper 2 different operating modes can be selected:
With open jumper the driver works with high efficiency and regulates the output voltage according to the load.
With closed jumper the output voltages is fixed at 105V ("pulse mode"). This mode is intended for pulse output currents. The device reduces the output voltage if the current controlling MOSFET heats over 85°C.

Bias Potentiometer

The bias potentiometer sets a DC output current up to 2.5 A which is added to the input signal. Turn it clockwise to increase the bias current.
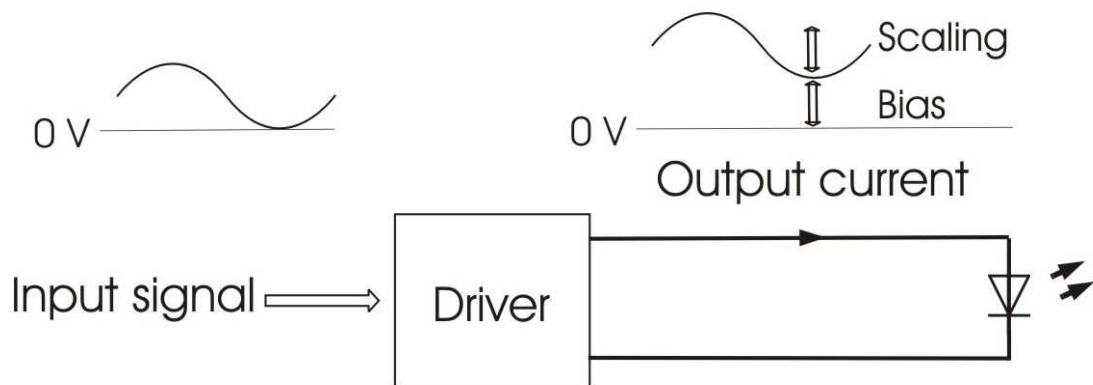
Test Load

For the first test an appropriate test load may be assembled instead of the laser diode. This test load can be a series of Schottky diodes 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 15 W in efficiency mode and up to 250W in pulse mode.

Mechanical Dimensions

The following dimensions are in millimeters (mm).

width 40 // length 145 // height 25