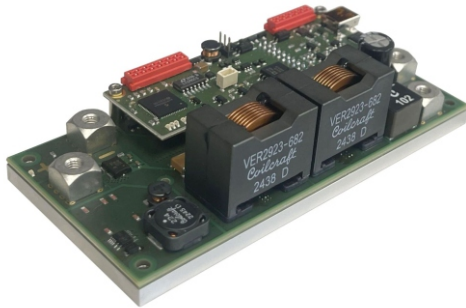


LDDP-12-125



Description

LDDP-12-125 is an OEM driver module for integration designed to supply high voltage laser diode strings of multiple single emitters in series at up to 12 A of output current.

Its unique buck/boost switching topology allows DC/DC operation with load compliance voltage up to 125 V exceeding with by far the DC input voltage: Standard diode drivers with step-down converter require a load voltage for minimum ca. 2 V below the supply input. In contrast LDDP can supply loads from 5 V to up to 125 V also above a DC input voltage between 24 .. 70 V¹⁾

System designers can thus even consider series connections of diode strings up to 125 V, while still using standard 48 VDC auxiliary supplies. LDDP-12-125 is fast analog regulated. The up to 98.5 % highly efficient switching mode regulation provides CW output and pulses or up to 100 % analog amplitude modulation with typ. 150 .. 250 μ s rise/fall times.

Besides standard industrial and medical use its extraordinary low current ripple/noise makes it especially suitable for sensitive pumping applications. By addition of three internal high frequency switched output phases the resulting output current ripple is extraordinary low with clearly <0.1 % (t.b.d.)

Safe operation: LDDP-12-125 provides - both digital and analog - fully isolated user interfaces. The driver can be operated in pure digital, pure analog or in mixed control configuration.

An external NTC input allows for peripheral components temperature monitoring. The temperature information can be used e.g. to activate GPIO functions for proper measures, as for example controlled fan activation (3 GPIO standard, up to 5 GPIOs available).

Parallel operation allows the further extension of power and current.

By choosing to supply the control section by a separate aux voltage (switchable by jumper) the driver can uphold digital communication even while the power stage is transferred to a laser safe state by cutting its main power. Control and monitoring functions are thus preserved.

For other LDDP configurations please contact our product management.

Features

- Output current up to 12 A
- Buck/boost U_{out} up to 125 V independent of U_{in}
- typ. 200 μ s rise/fall time
- Low current ripple/noise < $\pm 0.1\%$ pp
- Efficiency typ. 97 .. 98 %
- Especially suitable for fiber laser amplifiers and burn-in systems with multiple single emitter strings

Specifications

Output	0 .. 12 A / 5 .. 125 V / max. 1300 W ¹⁾
Rise time	typ. 150 .. 250 μ s ²⁾
Current ripple	typ. 0.1% (of full scale) (t.b.d. further)
Current programming	0 .. 3.6 V [0.3 V/A] alternative 0 .. 7.2 V [0.6 V/A]
Prog. accuracy	typ. 1 %
Monitoring I/U	I_{mon} 0.3 V/A, U_{mon} 25 mV/V (realtime)
Monitoring accuracy	typ. ± 0.5 % (of set-point within specified range)
Protective features/error output	Monitor starting sequence, soft start, transient protection, OVP, over temperature protection, user current limit, shut down reaction time <1 μ s output discharge circuit
Isolated interface	Digital and analog interface completely isolated towards power stage. Digital/analog interface 14pin/12pin Micromatch. Isolated DC aux supply of control stage Separate aux supply input via jumper selectable
Efficiency	ca. 96 .. 98.5 % ³⁾
Input	typ. 48 .. 60 VDC, allowed range 24 .. 70 VDC ⁴⁾
Input / output capacity	ca. 18 μ F / ca. 40 μ F
Environment	-20 $^{\circ}$ C .. +50 $^{\circ}$ C (non condensing)
Cooling	Conductively via baseplate
Heat loss	max. power dissipation 35 W (t.b.d.)
Baseplate temperature	max. +50 $^{\circ}$ C
DC connectors in/out	Screw terminals M4, input terminals in staggered arrangement to allow for bus bar connection of multiple drivers in one setup
Size (LxWxH)	ca. 115 x 55 x 29 mm

¹⁾ Derating dependent on input current limits. Refer to derating tables. Specified output range 1 .. 12 A, higher current to 20 A on request. Parallel operation of drivers for higher output current possible. Diode compliance voltage range 5 .. 125 V, independent of input voltage (U_{in} 24..70 V DC). Input current must not exceed 25 A. Max. output power up to 1300 W. Higher output power on request.

²⁾ Faster performance on request

³⁾ Efficiency mainly dependent on voltage difference between input and output and switching mode (buck mode, boost mode or mixed mode)

⁴⁾ Calibrated standard for 40 .. 60 VDC input. Higher input voltage up to 125 V on request