LDDP-20-70-10P-HS

Pulsed/CW buck-boost laser diode driver

Datasheet
rev 1.0

Features

- Output current up to 20 A
- Buck/boost U_{out} = 0 .. 70 V independent of U_{in}
- typ. 50 .. 65 µs rise time
- Very low current ripple/noise typ. 0.15 % p-p
- Efficiency to 97 %
- Especially suitable for fiber laser amplifiers and direct diode applications with multi single emitter strings

Description

LDDP-20-70 is designed to supply laser diode strings of multiple single emitters in series.
Its unique buck/boost switching topology allows DC/DC operation with load compliance voltage even exceeding the DC input voltage: Standard diode drivers with buck converter require a load voltage for minimum ca. 2 V below the supply input.
LDDP can supply loads from 0 .. 70 V from a DC input between 12 .. 52 V, as long as the input current does not exceed 25 A.
System designers can thus keep using usual low cost 24 V auxiliary supplies although more and more laser diodes exceed yet the 30 V compliance voltage level.

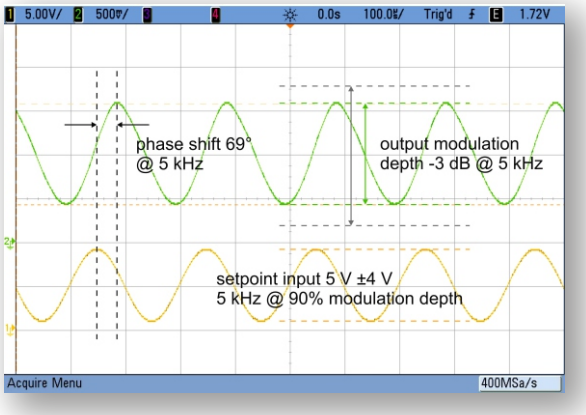
The high speed model LDDP-20-70-HS is fast analog regulated. The up to 97 % highly efficient switching regulation provides fast pulses to 2 kHz or to 5 kHz (-3 dB) analog amplitude modulation with typ. 50 .. 65 µs rise/fall times. At lower modulation depth even faster modulation to >10 kHz is possible.

Besides standard industrial and medical use for direct diode applications its low current ripple/noise makes it especially suitable for sensitive pumping applications.
The standard model provides differential signal I/Os for all digital and analog signals.
A 10pin interface (-10P) provides common GND w/ differential setpoint input.

Specifications

Output	0 .. 20 A / 0 .. 70 V *1)
Rise time	< 65 µs
Current ripple (peak-peak)	typ. ±0.15% p-p (buck) / ±0.35 % p-p (boost)
Current programming	0 .. 10 V = 0 .. 20 A (2 A/V)
Prog. accurracy	typ. <±1 % (of set-point within specified range)
Monitoring I/U	0 .. 10 V (I_{mon} 0.5 V/A, U_{mon} 0.1 V/V, real time)
Monitoring accurracy	typ. ±0.5 % (of set-point within specified range)
Protective features/ error output	Monitor starting sequence, soft start, transient protection, OVP, over temperature, over current, protection shut down reaction time <1 µs Fault = high impedance, ok = low imp.
Control interface	Quasi isolated: Interface GND can float max. ±5 V versus negative input terminal, connector JST 16pin S16B-PADSS-1 Digital interface upon request
Efficiency	typ. 95 .. 97 %
Input	typ. 48 VDC, allowed range 12 .. 52 VDC *2)
Input capacity	1 mF
Environment	-20 °C .. +50 °C (non condensing)
Cooling	Conductively via baseplate, max. power dissipation 25 W
Baseplate temperature	max. +50 °C
DC connectors in/out	Screw terminals M4
Size (LxWxH)	ca. 120 x 75 x 34 mm

*1) max. output power up to 800 W. Higher output power on request. Specified output voltage range 2 .. 70 V, independent of input voltage (U_{in} 24 .. 52 V DC).
Input current must not exceed 25 A. Specified output range 2 .. 20 A
*2) calibrated standard 24 .. 48 VDC. Operation at down to 12 VDC (±10%) input possible. Consult product management for calibration adjustment



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