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Continuous Wave Laser Diode Driver

Continuous Wave Laser Diode Driver Continuous Mayo Lager Diode Driver CW Operation 0 - 20 A / 120 V

LDD-1303 100-4368 HUDD11303 HW v1.10



Description:

Description 03 is a current source designed to Descriptions is a current source designed to presisting this e laser diodes in continuous wave applications. It's power converter oppiony allows for an output World We shall be converted oppion and the input application is the president of the president of the input application of the president of the president of the president of the application of the president of the president of the president of the application of the president of the president of the president of the application of the president of the president of the president of the application of the president of the president of the president of the application of the president of the president of the president of the application of the president of the president of the president of the application of the president of the PARE CONSIGNATION OF THE PROVIDE A CONSIGNATIA A CONSIGNATION OF THE PROVIDA CONSIGNATION OF THE two Webushol Maser diode temperature monitoring. The LDD-1303 offers various safety features, including WTE BEDIE OBAR OF CIRCLE AND SECTION OF CONTRACT OF CONTRACTO OF

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Laser Diode Driver:

Laser Diode Priver: 0 - 20 A, < 0.4% Ripple

- Laser Digner Plage 01A, 120,4% Ripple
 - Cowfoliancerrontage:20_A,20 Ripple TBD
- Input Characteristics Voltage: 1 120 V

Input Characteristics: 10.5 to 48 V

Input Characteristicities age: 10.5 to 48 V Main Features put Voltage: 10.5 to 48 V

Main Features: Generators: Nominal Current

- Main Features transformer ast Switch-off for optimal LD
 - ENGE WIG Pastatowich official Guirrant D
 - Sentistuation-Pastaswitch-offor SB1/mapter /

 - Centre Generation / Diagnosis: via USB / RS485 / RS8889074100 / Diagnosis: via USB / RS485 / RS8889074100 / Diagnosis: Via USB / RS485 /
 - Dimensions (L x W x H): 190 mm x 70 mm x 28
 - Fiftinensyons 95 % We H5.0 50 mm x 28
 - Emplies () yeg B & (d) | stg0 % Load)
 - CEfficienevier 853% (Cate 50 % Load)

Communication Interfacese Plate

Confinunication Interfaces:

Commit குத்திற்ற Interfaces:

- **₽• 8828**2270 L
- RS2325TL

Other Feater 232 TTL

Other Features: Sensor Inputs for NTC Thermistors Other Fightherasurensent opput for floor demermistors

- (12) Ten prise and the sense of the sense
- ALAGHY Magazenpert Input for Photodiode ••
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Digital I/O Configurable Features:

DRIGHT I/BOODANTIQUEABle Features:

- ADD TRANSPORTING urable functions
- Aductional control of the control of t

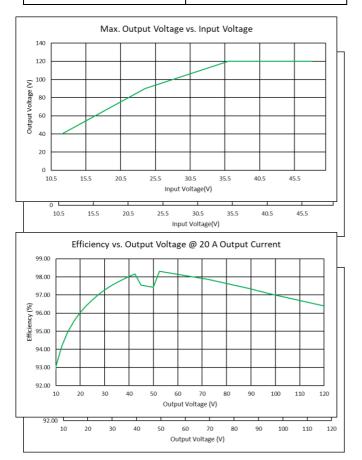
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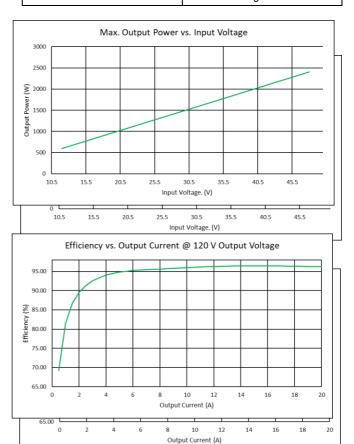
CW Operation 0 - 20 A / 120 V Continuous Wave Laser Diode Driver CW Operation 0 - 20 A / 120 V Operating Ratings LDD-1303 HW v1.20 LDD-1303 HW v1.20

Absolute Maximum Ratings1

Supply voltage (DC) Absolute Maximum Ratin Supply current (DC)	53 V 1951 53 A
Output Kunenge (DC)	25 ³ AV
OSUPPHY OUTGENT (DC)	158 ↔
Output current	25 A
Output voltage	130 V



System base plate	< 50 °C
Operating Ratings Operation temperature	0 – 50 °C
Storage base plate	<u>40⁵⁰8℃</u> C
Operation temperature	<u>50-9</u> 50%,C
Storage	noff-eomoensing
Humidity	5 – 95 %,
	non-condensing



¹ Exceeding the Absolute Maximum Ratings may permanently damage the device



LDD-1303 HW v1.20

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Electrical Characteristics

Electrical O							
Unless othe	rwise noted: T _A = 25 °C	, V _{IN} = 48 V, V _{LD} = 120 V					
Symbol	Parameter	Conditions	Min	Тур	Max	Units	
DC Power	DC Power Supply Input:						
VIN	Supply voltage		10.5	48	53	V	
VIN_RIPPLE	Ripple tolerance ²			300		mV _{PP}	

Output Characteristics

Unless otherwise noted: $T_A = 25^{\circ}C$, $V_{IN} = 48$ V, $V_{LD} = 120$ V

Symbol	Parameter	Conditions	Min	Тур	Max	Units
Output CW						
Ιουτ	Current range		0		20	А
Tcoefficient	Temp. coefficient	I _{out} = 20 A, T _A = 10 °C to 50 °C		3464		ppm/K
IOUT_RES	Current resolution			2		mA
OUT_RIPPLE	Current ripple	l _{out} > 2 A		0.4 ³		%
IOUT_ACC	Current Accuracy	Calibrated		30	40	mA
VF	Diode compliance	V _{IN} = 48 V	1 ⁴		120	V
	voltage					
Vout_max	Output voltage			120		V
	maximum					
Vout_acc	Voltage accuracy	Calibrated, I _{out} < 1 A		100		mV
Роит	Output power	V _{LD} = 120 V			2.4	kW
IOUT_Rise	Output current rise time	10% to 90%, PID Optimized, L _{Load} < 500			350	μS
		nH, Ιουτ = 20 A				

Safety Characteristics

Unless otherwise noted: $T_A = 25 \degree C$, $V_{IN} = 48 V$, $V_{LD} = 120 V$

Symbol	Parameter	Comments	Min	Тур	Max	Units
I/O Ports:						
toff_current	Overcurrent				TBD	μS
toff_opval	Operating Values	Voltages, currents			TBD	μS
toff_sfail	System failure	System status			TBD	μs

External Temperature Measurement (NTC only)

 T_A = 25 °C, measurement configuration = 12 bit / 2-wire / unshielded cable < 50 mm, °T probe = NTC B_{25/100} 3988K R₂₅ 10k

Symbol	Parameter	Test Conditions / Hints	Min	Тур	Max	Units
	Pange		295		106400	Ω
K LR, RANGE	Range	Corresponding temperature range		130 to -2	1	°C

² Input ripple voltage can directly influence the ripple current at the output

 $^{^3}$ Measured at I_{OUT} = 20A and V_{LD} = 100V

⁴ Current Ripple may increase, and current control performance may decrease at compliance voltages below 5V depending on load



General Purpose Digital I/O Characteristics (GPIO1 ... GPIO10)

Symbol	Parameter	Test Conditions	Min	Тур	Max	Units
Input Chara	acteristics:					
Uih	Logic high input threshold		2			V
UIL	Logic low input threshold				1	V
UIMAX	Maximum input voltage		-0.3		5.5	V
Output Cha	aracteristics:		•	•	•	•
UOH	Logic high output voltage	Output current 8mA	2.8		3.3	V
Uol	Logic low output voltage	Input current 8mA			0.4	V
Zout	Output Impedance		110	120	150	Ω
Іоит	Output Sink or Source Current			±8	±20	mA
ESD Prote	ction:					•
UPP	ESD discharge	IEC61000-4-2		18		kV

Analog Input and Output Characteristics

Unless otherwise noted: T_A = 25 °C. Voltages referenced to X2 (GND)

Symbol	Parameter	Test Conditions	Min	Тур	Max	Units
Input Char	acteristics:					
UI+	Voltage at the Analog In + Pin		-1		11	V
U⊦	Voltage at the Analog In - Pin		-1		11	V
UIN	Nominal Input Voltage (difference between In + and In -)		0		10	V
Output Cha	aracteristics:		•			
Uo	Analog Output Voltage		0		10	V
Іоит	Analog Output Current				20	mA

Interlock Input Characteristics

Unless otherwise noted: $T_A = 25 \ ^{\circ}C$. Parameter Min Units **Test Conditions** Max Symbol Тур Input Characteristics: 3 30 VIAct Interlock active input voltage range Voltage range which is V detected as active input 120 V VIORM Maximum Working Insulation Voltage

Photodiode Input Characteristics (only available with LPC Option)

Unless otherwise noted: $T_A = 25 \ ^{\circ}C$.

Symbol	Parameter	Test Conditions	Min	Тур	Max	Units
Input Characteristics:						
lin	Photodiode current	-LPC-4mA	0		4	mA
		-LPC-2mA	0		2	
		-LPC-1mA	0		1	
		-LPC-0.5mA	0		0.5	



Device Connectors Overview



USB Connector X5 and X11

The LDD-1303 can be equipped with a vertical and/or a horizontal USB-Connector (See "LDD-1303 Ordering Information"). If both USB-Connectors are soldered in only use one connector at a time. Otherwise, serious damage to the USB Host may occur.

Interfa	Interface Connector X7				
		Mating Connector: Würth 61202623021			
Pin		Pin			
1	+5V	14	GPIO4		
2	GND	15	GPIO5		
3	+3.3V	16	GPIO6		
4	RS485 1 A/D+	17	GPIO7		
5	RS485 1 B/D-	18	GPIO8		
6	RS232 TTL RX	19	GPIO9		
7	RS232 TTL TX	20	GPIO10		
8	GND	21	Not Connected/Reserved		
9	Do Not Connect	22	Not Connected/Reserved		
10	Do Not Connect	23	Analog GND		
11	GPIO1	24	0-10V Analog Out		
12	GPIO2	25	0-10V Analog In +		
13	GPIO3	26	0-10V Analog In –		



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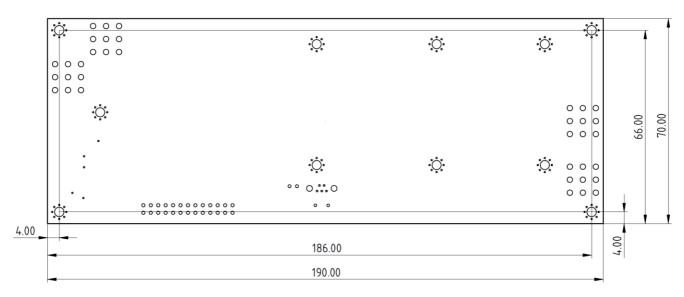
Interlock Connector X8		
Interlock Connector X8	Pin 1 2 Mating connector	To enable the LDD apply a voltage between the Interlock + and Interlock – Pins. The Interlock Pins are galvanically isolated from the LDD. The DIP-Switch S2 can be switched ON to disable the Interlock functionality

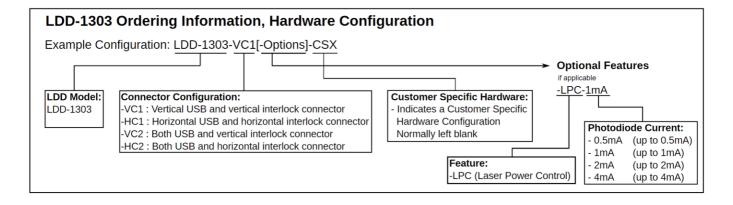
Temperat	Temperature and Light Measurement connector X9					
		JST G	g Connector: GHR-06V-S			
Pin		Pin				
1	Photo Diode Anode	4	NTC 2 B			
2	Photo Diode Cathode	5	NTC 1 A			
3	NTC 2 A	6	NTC 1 B			



Mounting holes Position

The four holes in each corner can be used to mount the device onto a heatsink. Hole diameter =3.2mm. A 3D model of the device is available on our website.





Laser diode, temperature probes, power supply and connectors not included.

Current-Controlled Operation-Modes and Communication Option

The LDD-1303 is an OEM high performance current source that is primarily designed to operate in CW mode. It is configured over an industry-standard RS485, RS232 TTL or a USB connection, either GUI-driven using the included LDD Service Software, or by direct parameter control using the predefined communication protocol. Basic system status is visually indicated by on-board LEDs, more detailed status information can be polled at any time. The LDD-1303 can operate in a stand-alone configuration as well as in a remotely controlled manner, with parameters adjusted on the fly. The laser diode driver is current-PID-controlled.

Configuration parameters further include: Control source selection, maximum current limits, nominal current ramping, PID controller settings, NTC temperature sensor modeling coefficients, measurement circuitry calibration, error thresholds, etc. Please refer to the user manual for further information.



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LDD-1303

HW v1.20

LDD-1303

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Date of change	Doc/Version	Changed/	Change/Reason
Change History		Approved	
12 January 2022 Date of change	Boc/Version	Changed/ Approved	Add Change History Change/Reason Review, small changes (types, format)
12 January 2022	В	ER/HS	Release History
21 April 2022	С	Ł5/RR/ML	Rieverwanatifenantiese(erbes, format)
		KR/AY	Reiterainimum compliance voltage
21 April 2022	С	R₽/HS	Fritcompliance/ontanity of tage text for clarity
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19 July 2022	D	RS/AS	Ebateding france to apply the perified the providence of the periods of the perio
		HS/RS	new configurations available Remove redundant efficiency figures Photodiode input is only available with the LPC Option
19 July 2022	D	RS/CU	Photodiate input is any pacified through to El o options, new configurations available
19 July 2022	E	CU/RS	new configurations available Hardware version increased to v1.20 Photocologe input is only available with the LPC Option Formatting Temperature coefficient and current accuracy added
19 July 2022	E	CU/RS	Hardware version increased to v1.20 Formatting