

LDU1000

Laser Diode Controller



Laser Diode Driver

- Up to 120A laser diode current
- Up to 60V laser diode voltage
- CW and pulse operation

TEC Driver

- TEC driver up to 48V / 13A unipolar
- Digital PI temperature control

Power Laser Diode Driver Max. Laser Diode Voltage V 600 48 36 24 15 12 5	Parameter	Unit	Value						
Max. Laser Diode Current A 10 13 18 27 43 53 120	Specifications								
Max. Laser Diode Voltage V 60 48 36 24 15 12 5 Current Limit Range Current Adjustment Accuracy Temperature Coefficient ppm/°C < 100	Power Laser Diode Driver	W				600			
Current Limit Range Current Adjustment Accuracy Temperature Coefficient Short Term Stability (1 hr) Long Term Stability (24 hr) Repetition Rate Pulse Width (*) Rise- / Fall- Time (*) Analog Modulation Input (BNC Connector) Transfer Function Bandwidth Bandwidth Brilot Laser Pilot Laser Current Power Monitor Input (BNC connector) Transfer Function Pilot Laser Power Adjustment Power Monitor Input (BNC connector) Trensfer Function Free Controller Temperature Range Control Loop Output Cooler TEC Output Power TEC Current An Outlage TEC Current Limit Range An Outlage Text Outl	Max. Laser Diode Current	A	10	13	18	27	43	53	120
Current Adjustment Accuracy mA 100 Temperature Coefficient ppm/°C < 100	Max. Laser Diode Voltage		60	48	36	24	15	12	5
Temperature Coefficient Short Term Stability (1 hr) ppm < 30	Current Limit Range			0 N	1ax. La	ser Dic	ode Cu	irrent	
Short Term Stability (1 hr)	Current Adjustment Accuracy	mA							
Long Term Stability (24 hr) ppm	Temperature Coefficient	ppm/°C	< 100						
Repetition Rate	Short Term Stability (1 hr)	ppm				< 30			
Pulse Width (*) ms Rise- / Fall- Time (*) ms < 2 (10 % – 90 % of Max. Current)	Long Term Stability (24 hr)	ppm				< 75			
Rise- / Fall- Time (*) ms (2 (10 % – 90 % of Max. Current)	Repetition Rate	Hz	0 100						
Analog Modulation Input (BNC Connector) O 10 V, 1 kΩ	Pulse Width (*)	ms	> 5						
Analog Modulation Input (BNC Connector) 0 10 V, 1 kΩ Transfer Function 10 A/V Bandwidth Hz 0 100 Pilot Laser 5 V Pilot Laser Voltage 5 V Pilot Laser Current mA Max. 300 Pilot Laser Power Adjustment ppm/°C 1 100 % Power Monitor V 0 10 Input (BNC connector) V 0 10 Transfer Function 10 A/V TEC Controller 0 50 Temperature Range °C 0 50 Temperature Stability K < 0,1	Rise- / Fall- Time (*)	ms							
Input (BNC Connector) 0 10 V, 1 kΩ Transfer Function 10 A/V Bandwidth Hz 0 100 Pilot Laser 5 V Pilot Laser Voltage 5 V Pilot Laser Current mA Max. 300 Pilot Laser Power Adjustment ppm/°C 1 100 % Power Monitor V 0 10 Input (BNC connector) V 0 10 Transfer Function 10 A/V TEC Controller 0 50 Temperature Range °C 0 50 Temperature Stability K < 0,1				(10 %	90 9	% of Ma	ax. Cur	rent)	
Transfer Function Bandwidth Hz 0 100 Pilot Laser Pilot Laser Voltage Pilot Laser Current MA Max. 300 Pilot Laser Power Adjustment Power Monitor Input (BNC connector) Transfer Function Temperature Range Temperature Stability Temperature Stability Control Loop Output Cooler TEC Output Power TEC Current A TEC Current A TEC Current Limit Range A Ripple MA O 13 Pilot Laser NMAx. 300 Amax. 300	_								
Bandwidth Pilot Laser Pilot Laser Voltage Pilot Laser Current Pilot Laser Current Pilot Laser Current Pilot Laser Current Pilot Laser Power Adjustment Pilot Laser Power Adjustment Power Monitor Input (BNC connector) Transfer Function Tec Controller Temperature Range Temperature Stability Temperature Stability Temperature Adj. Accuracy Control Loop Output Cooler TEC Output Power TEC Current A O 13 TEC Voltage V O 48 TEC Current Limit Range A O 13 Ripple MA DO 100 DO 100 PID O 100 PID O 13 PIC Current Limit Range A O 13 PIC Current Limit Range A O 13 PIC Current Limit Range A O 13 PIC O 100									
Pilot Laser Pilot Laser Voltage Pilot Laser Current Pilot Laser Current Pilot Laser Current Pilot Laser Power Adjustment Power Monitor Input (BNC connector) Transfer Function Tec Controller Temperature Range Temperature Stability Temperature Adj. Accuracy Control Loop Output Cooler TEC Output Power TEC Current A D13 TEC Voltage V D48 TEC Current Limit Range A D13 Ripple Fan Voltage Adjustment Range (Manual) SV Max. 300 Max. 300 5 V Max. 300 1100 % 010 010 010 010 010 1100 % 010 010 1100 % 010 1100 % 010 1100 % 010 1100 % 010 1100 % 010 1100 % 010 1100 % 010 1100 % 010 1100 % 010 1100 % 010 1100 % 010 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 % 1100 %									
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Pilot Laser Current mA max. 300 Pilot Laser Power Adjustment ppm/°C 1 100 % Power Monitor									
Pilot Laser Power Adjustment Power Monitor Input (BNC connector) Transfer Function Tec Controller Temperature Range Control Loop Output Cooler TEC Output Power TEC Current TEC Current TEC Current Limit Range A D 13 Ripple Fan Voltage Adjustment Range (Manual) Po 100 % O 100 (12 V)									
Power Monitor Input (BNC connector) Transfer Function TEC Controller Temperature Range C O 50 Temperature Stability Temperature Adj. Accuracy Control Loop Output Cooler TEC Output Power TEC Current A O 13 TEC Voltage TEC Current Limit Range A O 13 Ripple Fan Voltage Adjustment Range (Manual) V O 100 O									
Input (BNC connector) Transfer Function TEC Controller Temperature Range °C Temperature Stability K Control Loop Output Cooler TEC Output Power TEC Current A TEC Current A TEC Voltage TEC Current Limit Range Ripple Fan Voltage Adjustment Range (Manual)		_ppm/°C	1 100 %						
Transfer Function TEC Controller Temperature Range °C Temperature Stability K Control Loop Output Cooler TEC Output Power TEC Current A TEC Voltage TEC Current Limit Range Ripple Fan Voltage Adjustment Range (Manual) TEC Controller Con. 50 Con. 50									
TEC Controller Temperature Range °C 0 50 Temperature Stability K < < 0,1 Temperature Adj. Accuracy K 0,1 Control Loop PID Output Cooler TEC Output Power M TEC Current A 0 13 TEC Voltage V TEC Current Limit Range A TEC Current Limit Range A Ripple Fan Voltage Adjustment Range (Manual) **Tex O 50 **O 13 **O 13 **O 13 **O 13 **O 13 **O 13 **O 100 **O 1		V							
Temperature Range C Temperature Stability K Co,1 Temperature Adj. Accuracy K O,1 Control Loop Output Cooler TEC Output Power TEC Current A O 13 TEC Voltage V TEC Current Limit Range Ripple Fan Voltage Adjustment Range (Manual) C CO 50 O 13			10 A/V						
Temperature Stability Temperature Adj. Accuracy Control Loop Output Cooler TEC Output Power TEC Current A O 13 TEC Voltage V O 48 TEC Current Limit Range Ripple Fan Voltage Adjustment Range (Manual)	TEC Controller								
Temperature Adj. Accuracy K 0,1 Control Loop PID Output Cooler W 600 TEC Output Power W 600 TEC Current A 0 13 TEC Voltage V 0 48 TEC Current Limit Range A 0 13 Ripple mA 100 Fan Voltage Adjustment Range (Manual) % 0 100 (12 V)	Temperature Range	°C	0 50						
Control Loop PID Output Cooler W 600 TEC Output Power W 600 TEC Current A 0 13 TEC Voltage V 0 48 TEC Current Limit Range A 0 13 Ripple mA 100 Fan Voltage Adjustment Range (Manual) % 0 100 (12 V)	•	K	< 0,1						
Output Cooler TEC Output Power W 600 TEC Current A 0 13 TEC Voltage V 0 48 TEC Current Limit Range A 0 13 Ripple mA 100 Fan Voltage Adjustment Range (Manual) % 0 100 (12 V)	Temperature Adj. Accuracy	K	O,1						
TEC Output Power W 600 TEC Current A 0 13 TEC Voltage V 0 48 TEC Current Limit Range A 0 13 Ripple mA 100 Fan Voltage Adjustment Range (Manual) % 0 100 (12 V)	Control Loop		PID						
TEC Current A 0 13 TEC Voltage V 0 48 TEC Current Limit Range A 0 13 Ripple mA 100 Fan Voltage Adjustment Range (Manual) % 0 100 (12 V)	Output Cooler								
TEC Voltage V 0 48 TEC Current Limit Range A 0 13 Ripple mA 100 Fan Voltage Adjustment Range (Manual) % 0 100 (12 V)	TEC Output Power	W	600						
TEC Current Limit Range A 0 13 Ripple mA 100 Fan Voltage Adjustment Range (Manual) % 0 100 (12 V)	TEC Current	A	O 13						
Ripple mA 100 Fan Voltage Adjustment % 0 100 (12 V) Range (Manual)	TEC Voltage		0 48						
Fan Voltage Adjustment % 0 100 (12 V) Range (Manual)	TEC Current Limit Range	A	0 13						
Range (Manual)	Ripple	mA	100						
Fan Current A Max. 1		%	0 100 (12 V)						
	Fan Current	Α				Max.1			

Temperature Sensors					
Sensor Types		Thermistor / PT100 / PT1000			
Thermistor		NTC, 10 kΩ @ 25°C, Current: 100 μA			
Power Supply					
Line Voltage	V	85 - 264 AC, Auto Ranging			
Frequency	Hz	50 - 60			
Power Consumption	W	1.500			
Fuses Rating for 115 V AC		16 A Slow Acting (5x20 mm)			
Fuses Rating for 230 V AC		8 A Slow Acting (5x20 mm)			
General Characteristics					
Ambient Temperature, Operating	°C	0 30			
Relative Humidity, Operating	%	30 70			
Weight	kg	6,4			
Dimensions	mm ³	310 x 140 x 220 (W x H x D)			
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Notes:

(*) The risetime, the fall time and the pulse width may be prolonged by long cables between the power supply and the laser diode.

The signal ground (shielding) of the BNC-connectors of the trigger input, the trigger output and the analogue modulation input BNC-connector are isolated from the chassis ground (earth).

Attention:

The output pin "laser diode anode, plus, "+" " which is connected to the anode (A) of the laser diode is internally connected to any internal power supply voltage of the instrument.

Please be aware that most of all medium and high-power laser diodes have their housing electrically connected to the anode of the laser diode.

Therefore, in order to avoid any grounding loops when applying external instruments to the Laser Diode Controller unit it is recommended to isolate the housing of the laser diode from the chassis (earth).

Remark:

If the laser diode is mounted to the heat spreader of the heat sink provided by LASER ELECTRONICS it is already isolated from chassis ground (earth).

