Artifex Engineering
Optoelectronics & Engineering Services

LDD100

Fast Pulsed, High Current Laser Diode Driver

HIGHLIGHTS

- Fast Risetime 400ns at 120A
- High Current 120A[1]
- Flexible Control Keypad or USB
- OEM version available

APPLICATIONS

- Lab
- R&D
- OEM

OPERATION PRINCIPLE

The LDD100 laser diode driver employs a digitally controlled analogue current source to provide for simple, flexible and accurate laser pulsing.

FIELDS OF APPLICATION

These laser drivers are particularly useful for laser diode testing procedures such as burn-in and LIV measurement. The LDD100 provides up to 200A in pulses ranging from 50ns to 3s duration. The rise time of the pulses is under 400ns with no overshoot.

The flexibility in setup and control makes the unit very useful for general laboratory environments, where high power, pulsed diode lasers are used.

The unit may be USB-controlled for automated measurements. Alternatively, the user may set up all parameters and operate the unit via the front panel keypad and LCD display.

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ABSOLUTE MAXIMUM RATINGS

Average Current	7A
Temperature Range	0 – 40 °C

ORDERING INFORMATION

Full order code: LDD 100 c

	Options	Description
Maximum current (c):	40	40A
	120	120A
	200	200A

For customized or OEM systems, please contact us.

SPECIFICATIONS

PARAMETER	CONDITIONS	MIN	TYP	MAX	UNITS
OUTPUT					
Current		400		120[1]	mA A
Connector	Control unit to head Head to laser		LEMO Strip line		
Rise time			400	420[2]	ns
Fall time			470	500	ns
Pulse duration		50		3	ns s
Resolution of pulse duration	50ns to 1.5ms 1.5ms to 3s	50		0.01	ns %
Repetition rate				100	kHz
Pulse separation		10		10	µs s
Resolution of pulse separation	10µs to 100ms 100ms to 1s 1s to 10s	10	100	1	µs µs ms
Compliance voltage				5.5	V
Duty cycle				6	%
Accuracy		± 2			%
Reproducibility		± 1			%
Linearity			± 1		%
PC INTERFACE					
Type			USB		
Data transfer rate			1.5		Mbit/s
TRIGGER					
Type			Internal External: sequence start External: individual pulse control		
POWER SUPPLY					
Type			88 - 264 47 - 63		VAC Hz
DIMENSIONS					
	Control unit Current head		250 x 235 x 150 mm (W x L x H) 105 x 190 x 55 mm (W x L x H)		mm mm

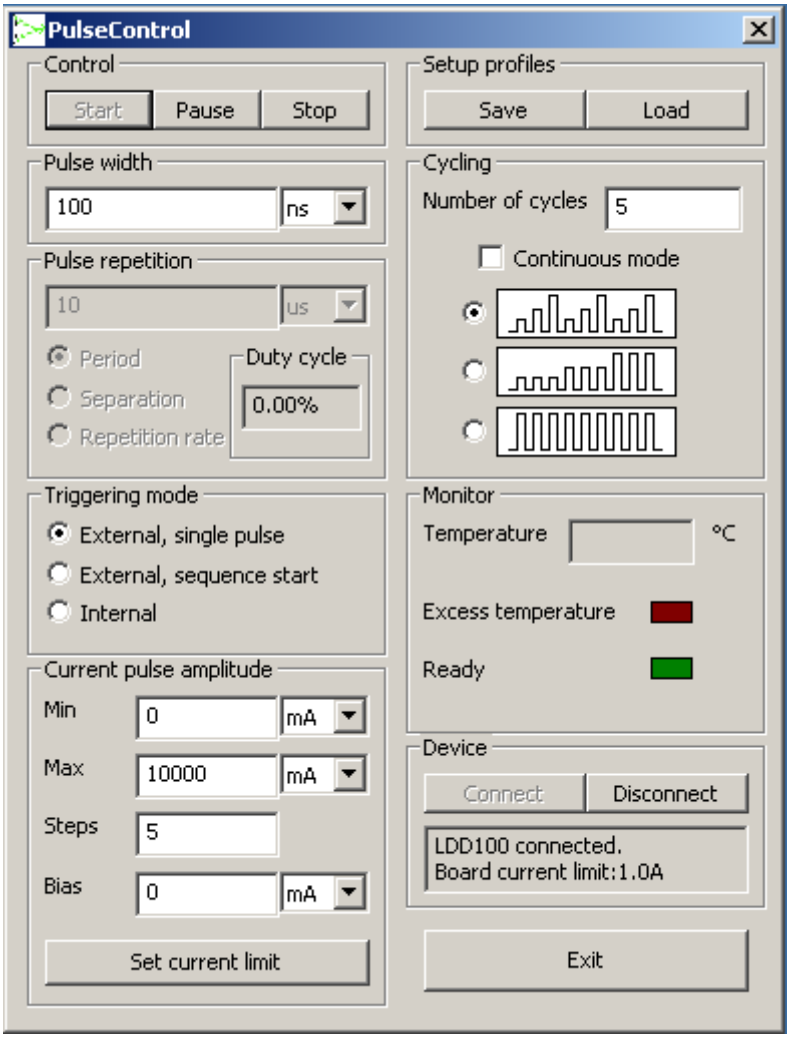
[1] 40A and 120A versions also available

[2] At 120A.

OPERATING MODES

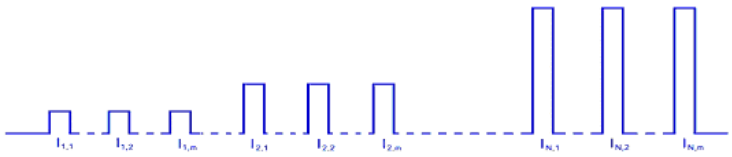
Local via keypad and LCD display.

Remote via graphical user interface:

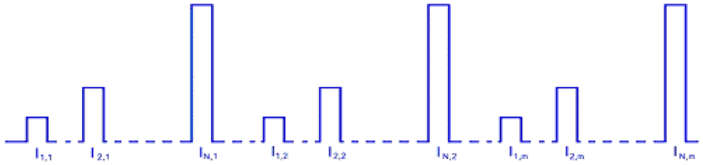


SEQUENCE MODES

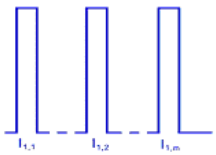
Parallel staircase:



Serial staircase:



Pulse:



MENU STRUCTURE

In the following, the columns “Main menu” and the submenus show what appear on the LCD display in each line. The box outline indicates the full display in each case. The user can navigate these lines using the ↑ and ↓ keys. This results in rolling the menu up or down. Alternatively, the user can just press the number corresponding to the line and the menu is entered directly.

Main menu	Submenu 1	Submenu 2	Submenu 3	Submenu 4
1/Sequence	1/Parallel	1/Current	1/Max	value + unit
			2/Min	value + unit
			3/Bias	value + unit
		2/No. of steps	value	
		3/No. of cycles	Number	value
			Continuous mode	0=off / 1=on
	2/Serial	1/Current	1/Max	value + unit
			2/Min	value + unit
			3/Bias	value + unit
		2/No. of steps	value	
		3/No. of cycles	Number	value
			Continuous mode	0=off / 1=on
	3/Pulse	1/Current	value + unit	
		2/Bias	value + unit	
		3/No. of cycles	Number	value
			Continuous mode	0=off / 1=on
2/Trigger	1/Ext TRG: pulse sync			
	2/Ext. TRG: seq start			
	3/Int. TRG			
3/Pulse Timing	1/Width	value + unit		
	2/Period	value + unit		
	3/Separation	value + unit		
	4/Repetition rate	value + unit		
4/Extras	1/Current Limit	value + unit		
	2/Setup Profiles	1/Store	number (1-10)	
		2/Recall		

For example, on programme start (after the “intro”), the LCD displays:

1/Sequence
2/Trigger
3/Pulse Timing
4/Extras

The “Enter” key now enters a main menu and shows the available submenu. Each submenu is designed to have only 4 selections, so that no rolling is necessary or possible. For example, entering the manin menu “Sequence” results in the following display:

1/Parallel
2/Serial
3/Pulse

From here, entering “1/Parallel” results in the following display:

1/Current
2/No. of steps
3/No. of cycles

From here, entering “1/Current” results in the following display:

1/Max
2/Min
3/Bias

From here, entering “1/Max” results in the following display:

<present value> <present units>	For example:	100000 mA

The user can enter a number and units here. The enter key then brings the display back to submenu 3.

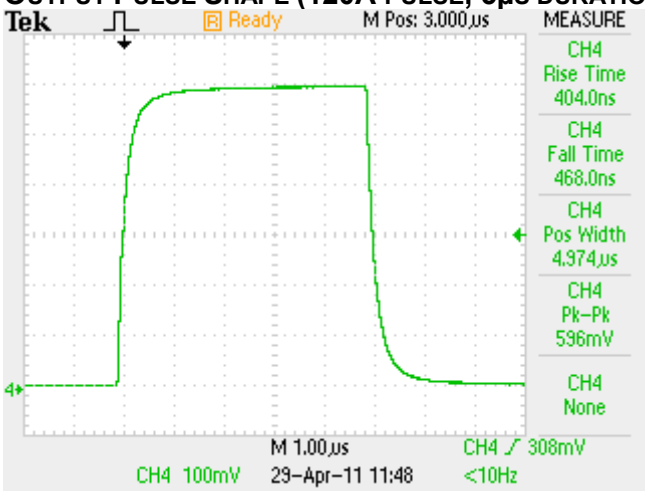
In any given submenu, the “Cancel” button brings the display up one menu level.

The latest parameters are automatically saved into a “default” non-volatile memory when exiting a menu point or when starting a sequence. The user may begin a pulsing sequence from any main menu or submenu as long as that menu is not in edit mode. That is, as soon as the last parameter has been entered, the sequence may be started.

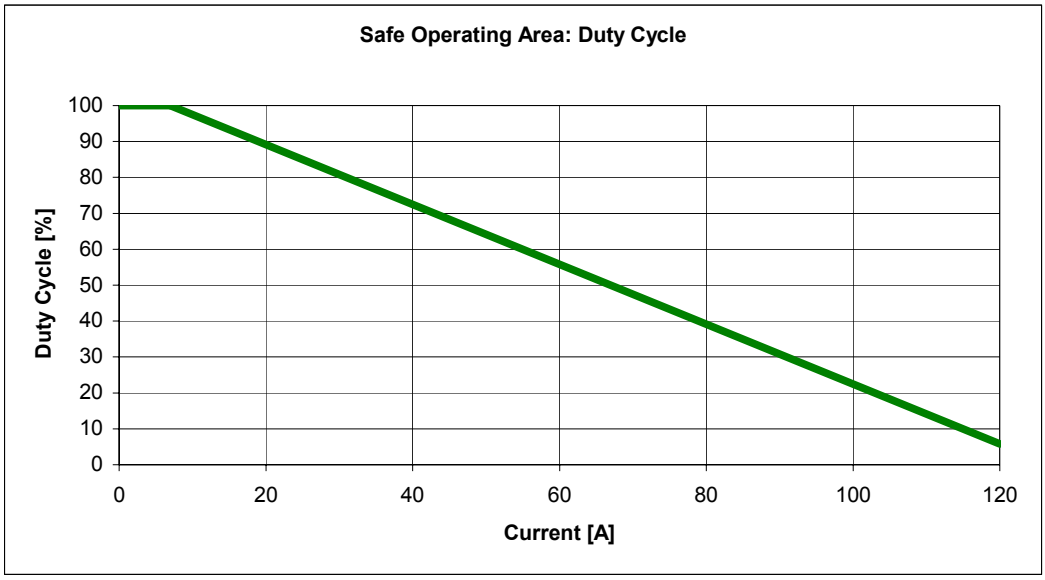
Additionally, the user may store or recall a setup profile into numerated non-volatile memories via the menu “Setup Profiles”. A total of 10 user defined profiles may be stored in this manner.

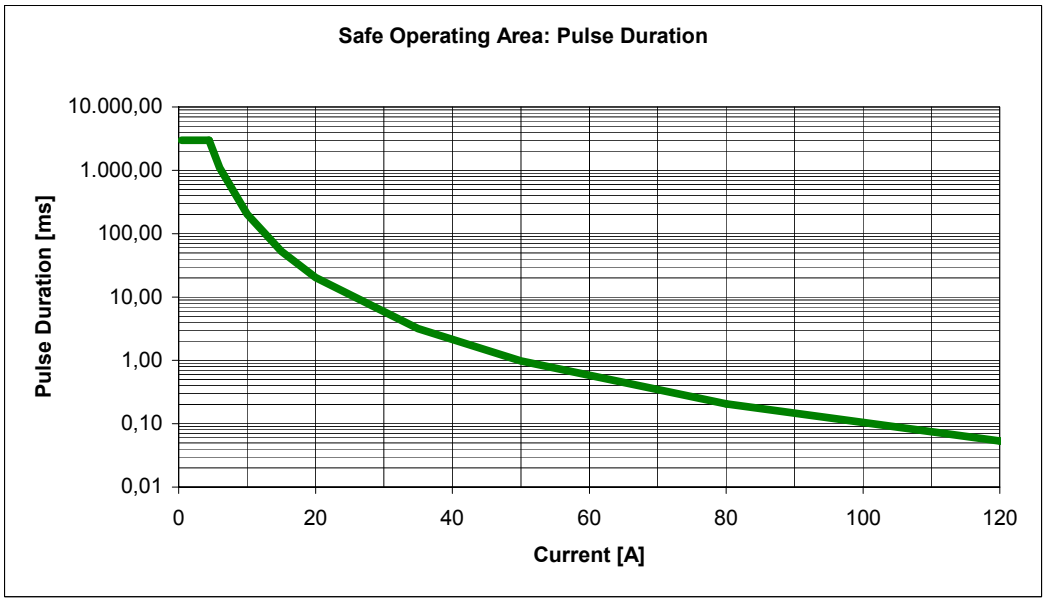
PERFORMANCE

OUTPUT PULSE SHAPE (120A PULSE, 5µS DURATION)



SAFE OPERATING AREAS





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Attention: The LDD series of drivers is designed for use with lasers. Personnel who use this instrument must, therefore, be instructed in the safe use of lasers and laser beams.

Always wear the proper laser safety glasses designed for the laser in use!

Never allow the direct or reflected laser beam to impinge on the eyeball or to come into contact with the skin!

[1] 40A and 200A versions also available.

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