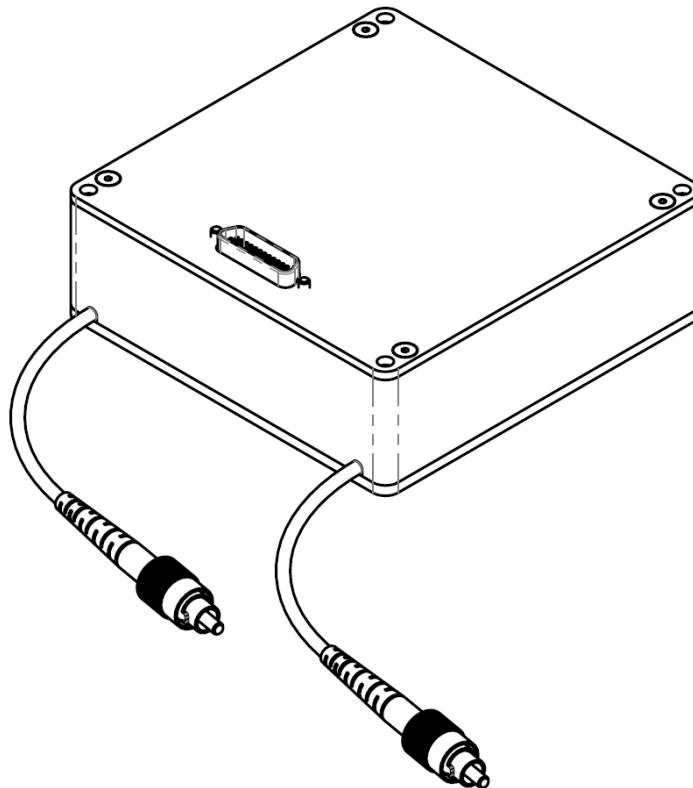


PRODUCT SPECIFICATIONS
1.5um pulsed LASER
Rev 00
05-07-2018

1550nm pulsed fiber laser module with a secondary output
PANDA ET C10986



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Specifications subject to change without notice

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pss revision	Date	Change description	Author
Rev 00	05-07-2018	initial revision	JM

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1.0 Optical and Operation Specifications, per output

Item	Specifications	Min.	Typ.	Max.	Unit	Notes
1.00	Laser peak wavelength (PWL)	1545.00	1550.00	1555.00	nm	
1.01	Integrated power within PWL+/-15nm	90			%	at 22C
1.02	Pulse width, full width at half maximum	1.70	2.00	2.30	ns	at 22C
1.03	Pulse rise time (10-90%)		0.60		ns	at 22C
1.04	Pulse repetition frequency (PRF)	300		1300	KHz	MASTER mode (EXT 0)
1.05	Pulse repetition frequency (PRF)	295		1315	KHz	SLAVE mode (EXT 1)
1.06	Maximum average power (command)	1400			mW	
1.07	Maximum average power software alarm ¹			1450	mW	software safety limit
1.08	Maximum peak power			3	kW	at max average power and min PRF
1.09	Variation of average power over temperature range			10	%	
1.10	Polarization	Random				
1.11	Beam quality (M ²)			1.1		by design, SM fiber
1.12	Average power monitor error between output and power setpoint ³	-5.0		5.0	%	
1.13	Steady state electrical power consumption			28	W	
1.14	pre-trig output trigger to output optical pulse delay		TBD		ns	User adjustable
1.15	Pulse request (laser pre_trig input) to output optical pulse delay			250	ns	
1.16	Monitoring output attenuation	45		55	dB	Secondary optical output
1.17	Temporal extinction ratio (TER)	-40			dB	by design, 10ns gating

¹ Value triggering the software eye safety limit, over operating temperature range

² Value triggering the hardware eye safety limit circuit, over operating temperature range

³ valid above 200mW output power

2.0 Environmental specifications

Item	Specifications	Min.	Typ.	Max.	Unit	Notes
2.1	Nominal operating temperature (T _N)		+22		°C	Case temperature
2.2	Operating temperature range	-40		+65	°C	Case temperature
2.3	Storage temperature range	-40		+85	°C	Case temperature
2.4	Relative humidity			90	%	Non condensing
2.5	Warm up time			5	s	0C to 50C range
2.6	Warm up time			15	s	-10 to 0C and 50C to 65C

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2.7	Warm up time			100	s	-40C to -10C
2.8	Turn off delay			5	ms	Using the RESET signal
2.9	Heat sink method	conduction via bottom surface			max surface temp: 65C	
3.0	NOTE : the module is not hermetic and must be operated in a clean, dry environment					

3.0 Electrical specifications

Item	Specifications	Type	Notes
3.1	Firmware	2.8 - 2.4 - 9.2	see manual for explanation
3.2	Communication protocole	UART with LVDS levels	ANSI/TIA/EIA-644-A LVDS standard
3.3	Connector	Female 25-pin micro-D	Connector part number: 380-025-213L001 Suggested mate part number: 380-025-113L001
3.4	Power supply	9-14VDC	
3.5	Max Power consumption transient regime	TBD	
3.6	Electro magnetic compatibilty (EMC)	not tested	
3.7	dB-25 pin assigment	Please refer to the user manual	
3.8	External trig option	slave mode	command : EXT 1

4.0 Main delivery fiber and fiber termination

Item	Specifications	Min.	Typ.	Max.	Unit	Notes
4.1	Delivery fiber type	SMF28e+				900um tight buffer
4.2	Delivery fiber jacket	3mm OD armored cable				
4.3	Delivery fiber bend radius	15			mm	
4.4	Delivery cables length	25	27	29	cm	see drawing (L)
4.5	Output connector	FC/APC				

5.0 Secondary optical output delivery fiber and fiber termination

Item	Specifications	Min.	Typ.	Max.	Unit	Notes
5.1	Delivery fiber type	SMF28e+				900um tight buffer
5.2	Delivery fiber jacket	3mm OD armored cable				
5.3	Delivery fiber bend radius	30			mm	
5.4	Delivery cables length	25	27	29	cm	see drawing (L)
5.5	Output connector	FC/APC				

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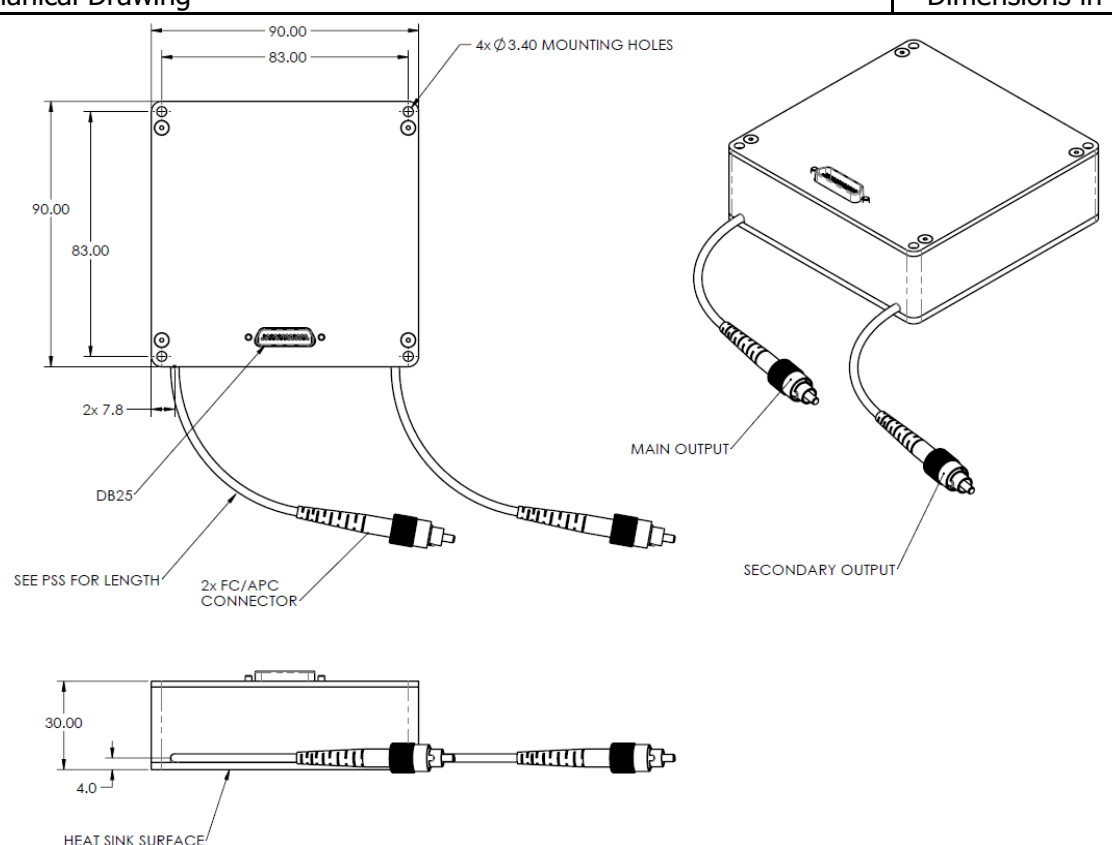
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6.0 Mechanical specifications and drawings

Item	Specifications	Unit	Notes
6.1	Module's dimensions	90x90x30	mm
6.2	Module weight (without mounting plate)	450	g
6.3	Mechanical Drawing		Dimensions in mm



7.0 Product Data Report (PDR) - supplied with every unit

Item	Data (Measured at extreme operating temperatures and 22C where applicable)
7.01	Laser peak wavelength - PWL (nm)
7.02	Integrated power within PWL +/- 15nm (%)
7.03	Pulse width - FWHM (ns)
7.04	Pulse rise time 10-90% (ns)
7.05	Max average power - software cap (mW)
7.06	Max average power - hardware cap ² (mW)
7.07	Variation of average power over temperature range (%)
7.08	Peak power - for information (kW)

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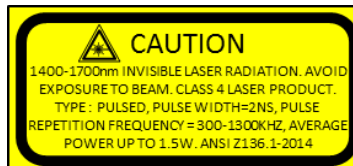
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7.09	Average power setpoint (mW)
7.10	Measured average power (mW)
7.11	Average power monitor error (%)
7.12	Steady state electrical power (W)
7.13	Monitoring output attenuation (dB)
7.14	Optical delay between pre-trig and main output pulse from port (ns)

8.0 Safety and specific precautions

Item	Note
8.1	This laser module is a laser component that does not include all safety features as required by IEC-60825-1:2007-03 2 nd edition sections 4.3 to 4.12 for laser systems, as defined by section 3.48. The end product manufacturer has the responsibility to provide the necessary features to meet compliance level as required by relevant national regulations.
8.2	For your safety, never open the protective housing (case). Warranty is void if case is opened.
8.3	The module's case temperature must be maintained within the range specified in the environmental specifications section at all times. Its entire bottom surface MUST be appropriately heat sunked and its case temperature can be monitored using the built-in thermistor. the use of a thermally conductive material between the heat sink and the modules bottom surface such as a graphite sheet is recommended. optimizing the heat transfer to the heat sink will result in optimal power consumption
8.4	To avoid irreversible damage and loss of power, fiber terminaisons (connectors, collimators...) must remain perfectly clean and scratch free.



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