

PRODUCT SPECIFICATIONS

5kW Optical Laser Engine

OLE30M5010DC Rev.00




PRELIMINARY

PRODUCT SPECIFICATIONS

5 kW Optical Laser Engine
OLE_M Rev. 00
PRELIMINARY
1080nm fiber laser engine

Product code

O	L	E	3	0	M	5	0	1	0	D	C
---	---	---	---	---	---	---	---	---	---	---	---

-  Power and pump input ports options. See section 1.0
-  Termination options. See section 5.0
-  Cooling plate option. See section 2.0

400 Montpellier Blvd, Montreal, QC, Canada, H4N 2G7
Tel: +1 (514)-748-4848 --- Fax: +1 (514)-744-2080
www.itftechnologies.com
info@itftechnologies.com

Specifications subject to change without notice

August 20, 2020

Made in Canada

400 Montpellier Blvd, Montreal, QC, Canada, H4N 2G7, 1+(514) 748-4848

www.itftechnologies.com

ISO 9001:2015

1.0 Optical and Operation Specifications

Item	Specifications	Min.	Typ.	Max.	Unit	Notes
1.01	Laser wavelength	1075	1080	1085	nm	At T=T _N
1.02	Laser linewidth	1.0			nm	
1.03	Pump wavelength *	908	915	928	nm	At T=T _N , CW regime
1.04	Polarization	Random				
1.05	Operation regime	CW				
1.06	Warm-up time			30	min	Within 2% after 1min
1.07	Optical power stability			±1	%	At constant T and P=P _{max} over 1h

* 95% of pump energy must be within these limits over the full operation range

Power and input ports options

	OLE	3	0	M	5	0	1	0	D	C					
											5000 W class laser engine				
1.08	Output power (P _{Max}) ¹												5300	W	At T=T _N , CW
1.09	Optical-Optical Efficiency ¹										70	73		%	BOL. At T=T _N , CW

¹ At rated power output.

	OLE	3	0	M	5	0	1	0	D	C					
1.10											Pump input ports: 30x 135/155 um NA=0.22²				
1.11	Maximum power per pump port												270	W	Do not exceed 7500W total input pump power

² Designed to be used at 99% energy within NA=0.18 & 95% of energy within NA=0.16)

³ Pumps need to be turned on following a precise sequence, see below

1.12	Pump input pigtails length	1.5									m	
------	----------------------------	-----	--	--	--	--	--	--	--	--	---	--

Laser fire up sequence

- 1) Splice between 1000W and 1500W of total pump power on the Stage 1 ports (to be identified on drawing)
 - 2) Splice the rest of input pumps on Stage 2 inputs. Do not exceed 7.5kW of total pump power.
 - 3) Always turn on Stage 1 first, or at the same time as Stage 2 only if the the control electronics are fast enough (to open at same time, ±2us of real time difference between Stage 1 and Stage 2 is required)
- More details to be defined

2.0 Environmental specifications

Item	Specifications	Min.	Typ.	Max.	Unit	Notes
2.1	Nominal operating temperature	0		70	°C	T1 reading. See user manual
2.2	Base plate operation temperature range	18	20	22	°C	Cooling temperature
2.3	Storage temperature	-10		60	°C	Case temperature
2.4	Relative humidity			80	%	Non condensing
2.5	Cooling Method	conduction via bottom surface				
2.6	Case temperature monitoring	Via installed thermistors				See electrical pinout, Calibration recommended
2.7	Cooling plate	Not included		O L E 3 0 M	5 0 1 0 D C	

3.0 Red tracker / Visible pilot

Item	Specifications	Min.	Typ.	Max.	Unit	
3.1	Red tracker beam output power	800	1000		uW	Driven externally

4.0 Electronics specifications

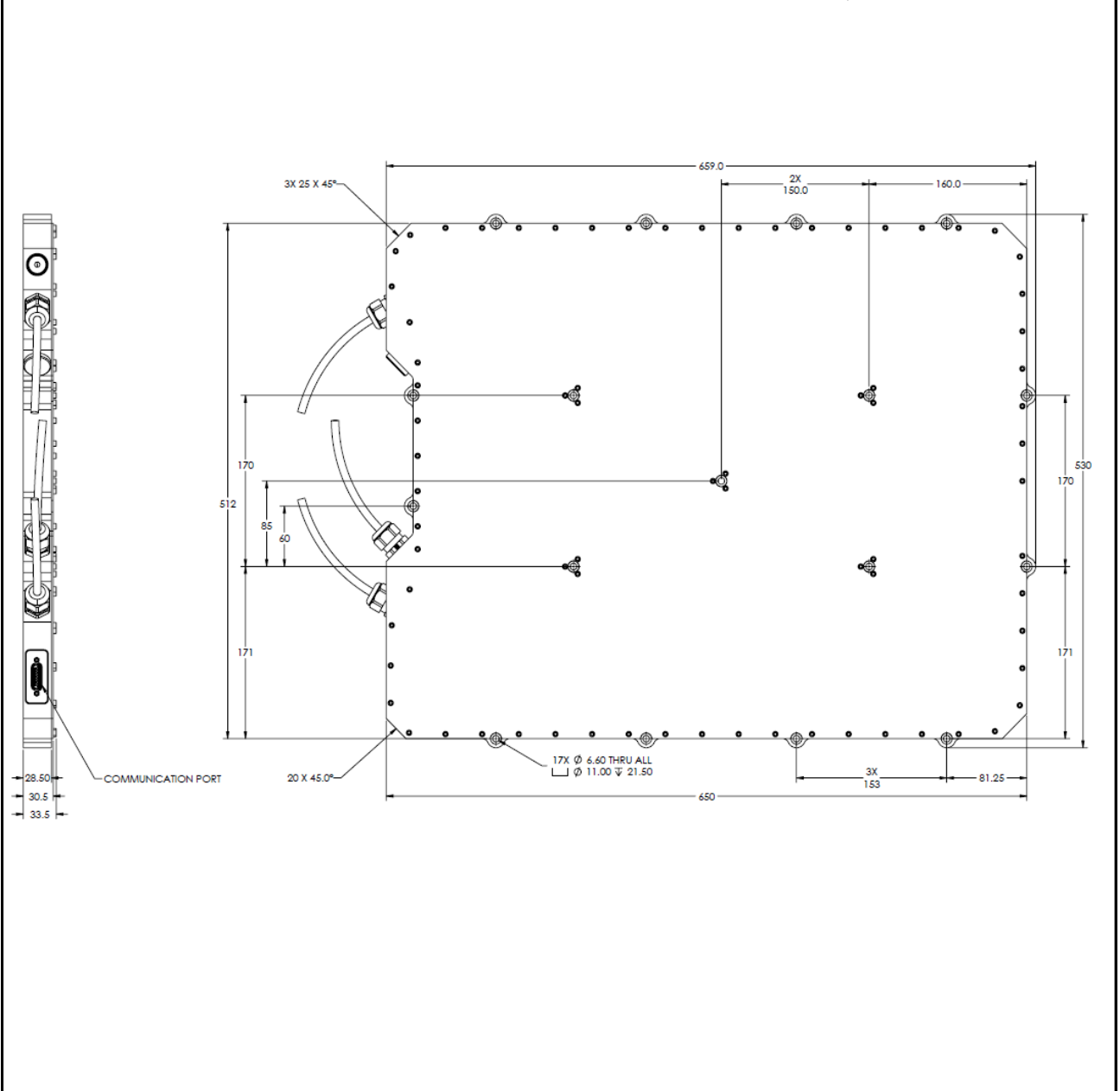
Item	Description	Specification	Notes		
4.1	Communication interface	DB-15 connector			
4.2	Communication protocol	Analog			
4.3	Communication interface Pin assignment				
	PIN	Name	Direction	Type	Description
	1	Therm1	OUT	Analog 0 to 5V	Temperature monitor 1
	9	GND	-		
	2	Therm2	OUT	Analog 0 to 5V	Temperature monitor 2
	10	VCC+	-		Thermistor bias voltage
	3	Therm3	OUT	Analog 0 to 5V	Temperature monitor 3
	11	GND	-		
	4	Photodiode1	OUT	Analog 0 to 5V	Back Reflection Power Monitor
	12	GND	-		
	5	Photodiode 2	OUT	Analog 0 to 5V	Output Power Monitor
	13	GND	-		
	6	RP current	IN	Analog input current	Red pointer current input
	14	Fiber fuse A	-		Fiber fuse A (protection)
	7	Fiber fuse B	-		Fiber fuse B (protection)
15	Intrlck A	-		QHB Interlock A (if option)	
8	Intrlck B	-		QHB Interlock B (if option)	
4.4	Connector Pin Numbering				

5.0 Delivery fiber and termination options

Option : **Bare Fiber Output**

Item	Specifications	Min.	Typ.	Max.	Unit	Notes
5.1	OLE 3 0 M 5 0 1 0 D C	Delivery fiber: 50/360 um, NA=0.22/0.46				
	Delivery fiber jacket	Armored cable			Length: 30cm	
	Delivery fiber bend radius			80	mm	
	Beam quality (BPP)	2.5		5	-	
	Delivery fiber length	2		2.5	m	
	Note	Do NOT operate without proper high power termination (QBH cable, for example)				

6.0 Mechanical specifications and drawings

Item	Specifications	Unit	Notes	
6.1	Dimensions (excluding cable extrusions)	530 x 659 x 30.5	mm	see drawing
6.2	Mechanical Drawing		Dimensions in mm	
 <p>The drawing shows a top-down view of the laser engine with the following dimensions and features:</p> <ul style="list-style-type: none"> Overall dimensions: 659.0 mm (width) x 530 mm (height) x 30.5 mm (depth). Internal width: 650 mm. Internal height: 512 mm. Top edge features: 3X 25 X 45° chamfers. Bottom edge features: 20 X 45.0° chamfers. Internal spacing: 2X 150.0 mm and 160.0 mm. Vertical spacing: 170 mm, 85 mm, 60 mm, and 171 mm. Bottom edge features: 3X 153 mm and 81.25 mm. Drill holes: 17X Ø 6.60 THRU ALL and Ø 11.00 Ψ 21.50. Left side features: COMMUNICATION PORT, 28.50 mm, 30.5 mm, and 33.5 mm. 				

Specifications subject to change without notice

August 20, 2020

Made in Canada

400 Montpelier Blvd, Montreal, QC, Canada, H4N 2G7, 1+(514) 748-4848

www.itftechnologies.com

ISO 9001:2015

7.0 Product Data Report - supplied with every unit

Item	Data
7.1	Optical-Optical Efficiency

8.0 Additional features

Item	Note
8.1	The Laser Engine is protected against backreflected signal during operation. Do not operate without proper high power termination (QBH cable, for example)
8.2	The output beam of multiple Laser Engines can be combined. Laser beam combiners are available from ITF, contact us for more details.
8.3	Pump diodes and electrical drivers not included.

9.0 Safety and specific precautions

Specifications subject to change without notice

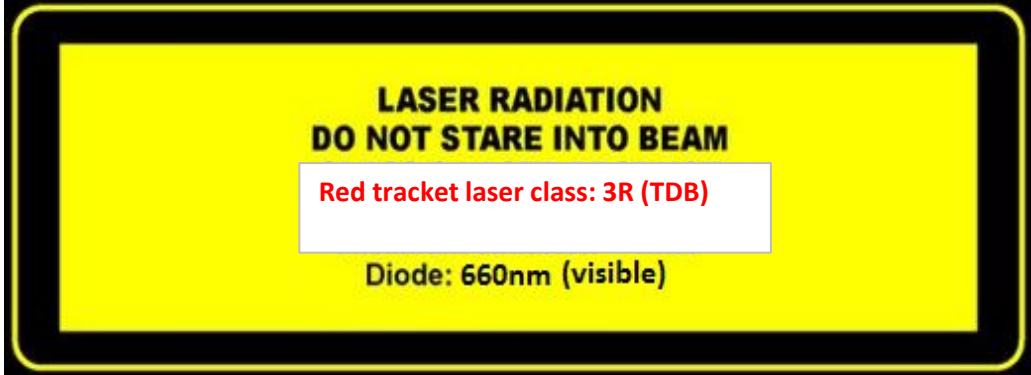
Made in Canada

400 Montpellier Blvd, Montreal, QC, Canada, H4N 2G7, 1+(514) 748-4848

www.itftechnologies.com

August 20, 2020

ISO 9001:2015

Item	Note
9.1	The Optical Laser Engine product is a passive sub-component for laser systems, and does not include all safety features 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.
9.2	For your safety, never open the protective housing (case). Warranty is void if case is opened.
9.3	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 sinked and its case temperature can be monitored using the built-in thermistors. A room temperature, power off, calibration is recommended. See OLE Application Note for more details.
9.4	To avoid irreversible damage and loss of power, fiber terminations (connectors, collimators...) must remain perfectly clean and scratch free.
9.5	The laser engine module case is not ESD or EMI sensitive.
9.6	<p>Red tracker laser safety information:</p> 

10.0 Document change history

Rev.#	Date	Ref. (#DC)	Change Description	Approved by
00	07-01-19	n/a	Document created	MDC

Specifications subject to change without notice

August 20, 2020

Made in Canada

400 Montpelier Blvd, Montreal, QC, Canada, H4N 2G7, 1+(514) 748-4848

www.itftechnologies.com

ISO 9001:2015