PRODUCT SPECIFICATIONS
1000W Optical Laser Engine
OLE_S Rev. 01

1080nm fiber laser engine

Product code

O	L	E	_	_	S	_	_	_	_	_	_

Power and pump input ports options. See section 1.0

Termination options. See section 5.0

Cooling plate option. See section 2.0

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1.0 Optical and Operation Specifications

Item	Specifications	Min.	Typ.	Max.	Unit	Notes
1.1	Laser wavelength	1075	1080	1085	nm	At $T=T_N$
1.2	Laser linewidth	1.0			nm	At full power
1.3	Pump wavelength *	908	915	928	nm	At $T=T_N$, CW regime
1.4	Polarization	Random				
1.5	Operation regime	CW				
1.6	Warm-up time			30	min	Within 2% after 1min
1.7	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

1.8	OLE	_	_	S	**1**	_	_	_	_	_	**1000 W class laser engine**			
	Output power (P_{Max})[1]										1000		1100	W	At $T=T_N$, CW
	Optical-Optical Efficiency[1]										73	75		%	BOL. At $T=T_N$, CW
	OLE	**X**	**X**	S	1	_	_	_	_	_	**Number of pump input ports** (standard : 12)				

[1] At rated power output. Tested using Lumentum ST Series pump diodes.

1.09	OLE	_	_	S	_	_	_	_	**A**	_	**Pump input ports**: 106.5/125 um NA=0.22[2]			
	Maximum power per pump port												150	W	Do not exceed maximum output power (1.08)

[2] Designed to be used at NA=0.17 (95% of energy within NA=0.15)

1.09	OLE	_	_	S	_	_	_	_	**D**	_	**Pump input ports**: 135/155 um NA=0.22[2]			
	Maximum power per pump port												200	W	Do not exceed maximum output power (1.08)

[2] Designed to be used at NA=0.17 (95% of energy within NA=0.15)

1.10	Pump input pigtails length	1.5			m	

2.0 Environmental specifications

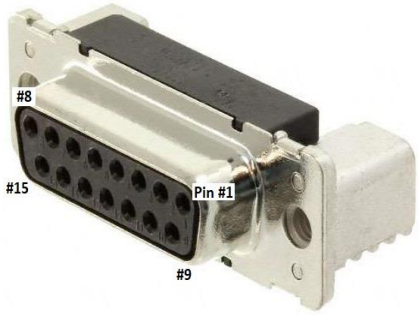
Item	Specifications	Min.	Typ.	Max.	Unit	Notes
2.1	Nominal operating temperature (T_N)			70	°C	T1 reading. See user manual
2.2	Operating temperature range	18	20	22	°C	Cooling temperature
2.3	Storage temperature[1]	-40		70	°C	Case temperature
2.4	Relative humidity			80	%	Non condensing
2.5	Cooling Method	conduction via bottom surface				
2.6	Case temperature monitoring	Via installed thermistors				See electrical pinout, Calibration recommended
2.7	Cooling plate	Included	O L E _ _ S _ _ _ **2** _ _			
2.7	Cooling plate	Not included	O L E _ _ S _ _ _ **0** _ _			

[1]**Note:** Specification for Laser Engine Module only. For QBH cable storage temperature, refer to the cable supplier specification. For reference, Optoskand QBH cable specification is -10°C to +70°C

3.0 Visible pilot/aiming beam

Item						
3.1	Red tracker beam output power	200		1000	uW	Operated by control electronics

4.0 Electronics specifications

Item	Description					Specification	Notes
4.1	Communication interface					DB-15 connector	See drawing
4.2	Firmware Version					10.2.1	
4.3	**Communication interface Pin assignment**						
	PIN		Name	Direction	Type	Description	
	1		Pback	OUT	Analog 0 to 5V	Back Reflection Power Monitor	
		9	GND	-			
	2		Pout	OUT	Analog 0 to 5V	Output Power Monitor	
		10	GND	-			
	3		Temperature	OUT	Analog 0 to 5V	Temperature monitor	
		11	Alarm	OUT	Logic 0 or 5V	Alarm signal. Active low	
	4		Pilot enable	IN	Logic 0 or 5V	Enable red laser pilot	
		12	TDB (+)	OUT	Differential	RS485-Tx+	
	5		TDA (-)	OUT	Differential	RS485-Tx-	
		13	RDA (-)	IN	Differential	RS485-Rx-	
	6		RDB (+)	IN	Differential	RS485-Rx+	
		14	GND	-			
	7		V+	-		Power supply 5V	
		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 _ _ S _ **0 1** _ _ **C**	Delivery fiber: **20/400 um NA=0.06/0.46**				
	Delivery fiber jacket	Armored cable				Length: 30cm
	Delivery fiber bend radius			80	mm	
	Beam quality (M^2)			1.2	-	
	Delivery fiber length	3		3.5	m	
	Note	Do NOT operate without proper high power termination (QBH cable, for example)				

Option : **QBH Cable Output**		
5.1	Description	Water cooled beam delivery cable

Item	Specifications	Min.	Typ.	Max.	Unit	Notes
5.2	OLE _ _ S _ **3** _ _ _ **E**	Delivery fiber: **20/400 um NA=0.06/0.46**				
	Beam quality (M^2)			1.2	-	
	Delivery fiber length	4.5	5	5.5	m	Case to termination

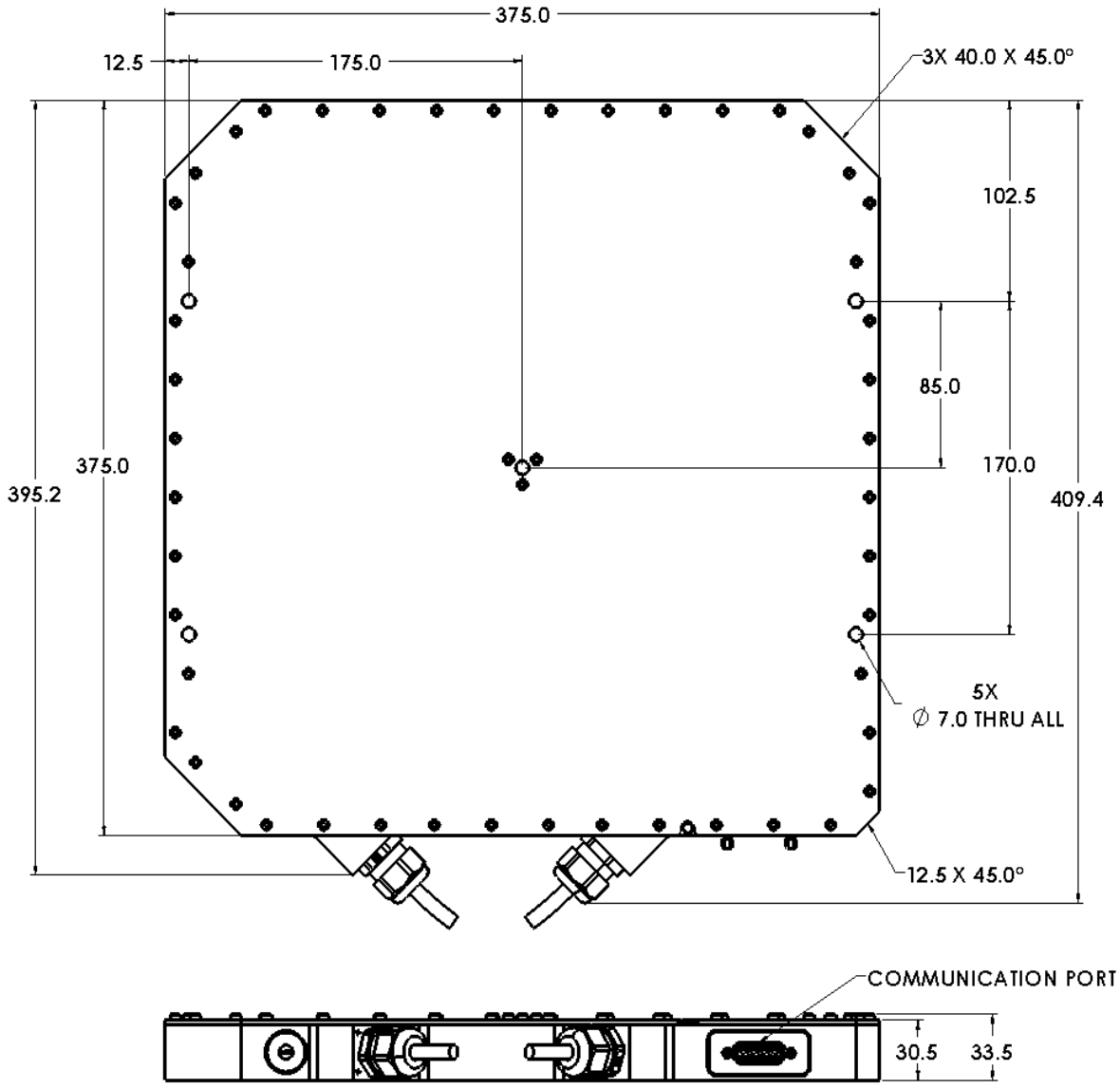
5.2	OLE _ _ S _ **4** _ _ _ **G**	Delivery fiber: **50/360 um NA=0.22/0.46**				
	Beam quality (BPP)		1.3		mm mrad	Typical value
	Delivery fiber length (default value)		15		m	Customizable

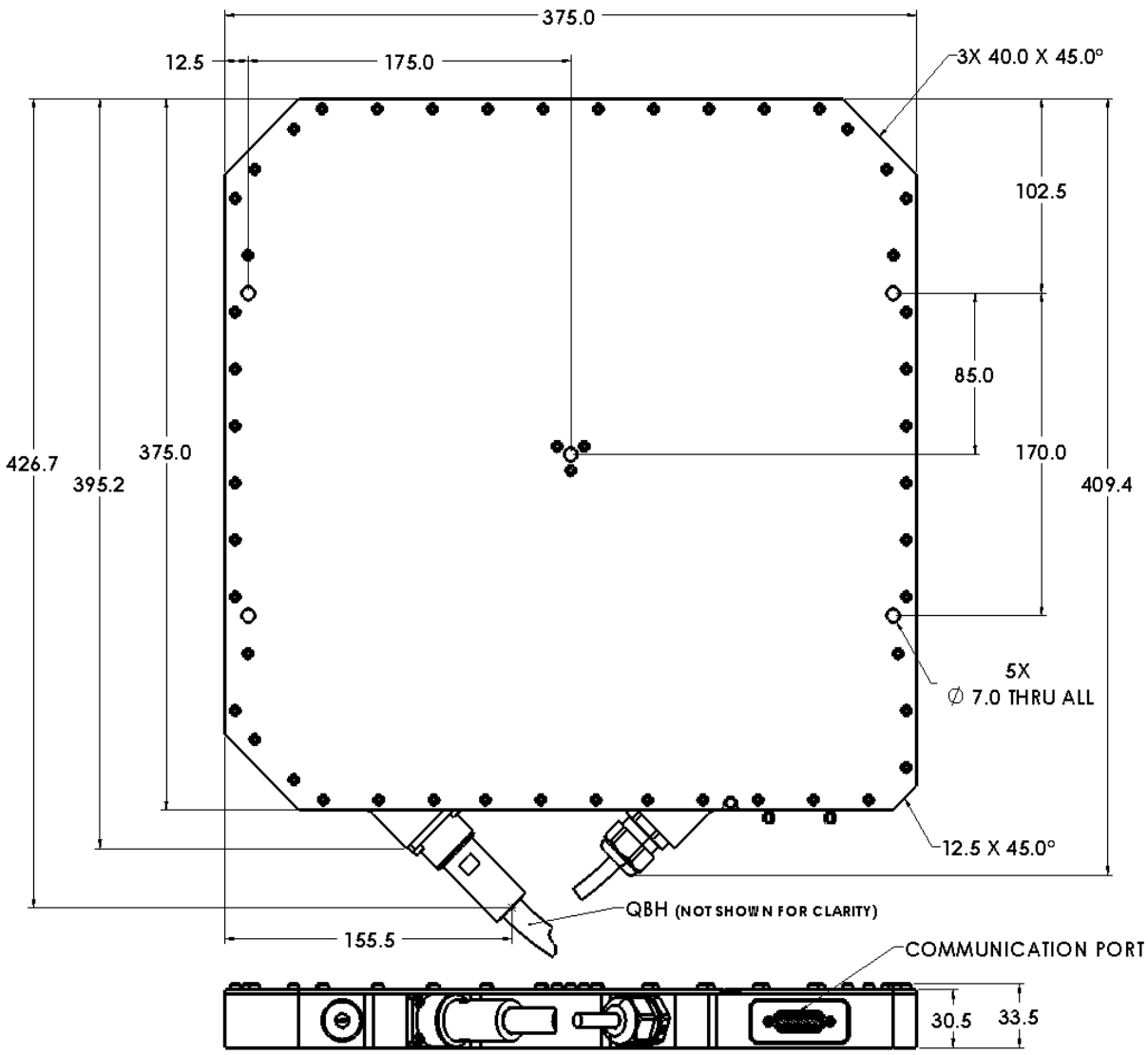
5.2	OLE _ _ S _ **5** _ _ _ **G**	Delivery fiber: **100/360 um NA=0.22/0.46**				
	Beam quality (BPP)		2.5		mm mrad	Typical value
	Delivery fiber length (default value)		15		m	Customizable

QBH Cable Supplier		
5.3	OLE _ _ S _ _ **A** _ _ _	Optoskand Ab, Sweden
	OLE _ _ S _ _ **B** _ _ _	Optizone Technology Limited, China
	OLE _ _ S _ _ **D** _ _ _	O-Net, China

6.0 Mechanical specifications and drawings

Item	Specifications		Unit	Notes
6.1	Dimensions (excluding cable extrusions)	375 x 375 x 30.5	mm	see drawing
6.2	Mechanical Drawing - With bare fiber output			Dimensions in mm



	Mechanical Drawing - With QBH Cable	Dimensions in mm
6.2		

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 currently being developed by ITF, contact us for more details.
8.3	Pump diodes electrical drivers not included.

Note: See Operation Instructions documents for more details and features

9.0 Safety and specific precautions

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 2nd 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	Red tracker laser safety information: 

10.0 Document change history

Rev.#	Date	Ref. (#DC)	Change Description	Approved by
00	07-01-19	n/a	Document created	AQL
01	27-03-19	n/a	Updated firmware version to 10.2.1 Added cooling plate option Removed M^2 measurement from PDR (now testing by sampling)	AQL