

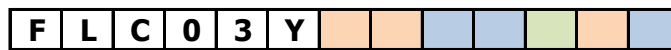
PRODUCT SPECIFICATIONS




3x1 Fiber Laser Combiner

Rev. 02

High-Power 1um Fiber Laser 3x1 Combiner

Product code selector - Available options



-  Input Ports and Power Handling - See section 1.0
-  Output Port and Termination - See section 2.0
-  Cooling Plate Option - See section 3.0

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1.0 Optical, Power and Input Ports Specifications

Item	Specifications	Min.	Typ.	Max.	Unit	Notes
1.01	Input laser wavelength	1040		1080	nm	
1.02	Operation regime	CW				
1.03	Input laser M ²			1.5	-	Never operate if M ² >1.5 at any input power
1.04	Output BPP			3	mm mrad	For input M ² < 1.4

		FLC	0	3	Y	A	_	_	_	A	_	3 kW class laser combiner				
1.05	Input power handling per port													1200	W	For input M ² < 1.5
1.06	Total optical loss													0.05	dB	
1.07	FLC	0	3	Y	A	A	_	_	_	A	_		Input ports: 20/400 um NA=0.06/0.46			
1.08	FLC	0	3	Y	A	B	_	_	_	A	_		Input ports: 25/400 um NA=0.06/0.46			
1.09	Input pigtailed length											1.5			m	Free fiber in splice tray

		FLC	0	3	Y	C	_	_	_	A	_	6 kW class laser combiner				
1.10	Input power handling per port													2050	W	For input M ² < 1.5
1.11	Total optical loss													0.05	dB	
1.12	FLC	0	3	Y	C	B	_	_	_	A	_		Input ports : 25/400 um NA=0.06/0.46			
1.13	Input pigtailed length											1.5			m	Free fiber in splice tray

2.0 Output fiber and termination options

Option: Bare Fiber Output																
Item	Specifications	Min.	Typ.	Max.	Unit	Notes										
2.1	Output length (customizable)	3		3.5	m											
	FLC	0	3	Y	_	_	A	0	_	A	3	Delivery fiber: 100/360 um NA=0.22/0.46				
	FLC	0	3	Y	_	_	B	0	_	A	3	Delivery fiber: 50/360 um NA=0.22/0.46				
	Note	Do NOT operate without proper high power termination (QBH cable, for example)														


Option: QBH Cable Output						
Item	Specifications	Min.	Typ.	Max.	Unit	Notes
2.2	Output length (customizable)	4.5	5	5.5	m	Case to termination
	Description	Water cooled beam delivery cable				
	FLC 0 3 Y _ _ A _ _ A A	Delivery fiber: 100/360 um NA=0.22/0.46				
	FLC 0 3 Y _ _ B _ _ A A	Delivery fiber: 50/360 um NA=0.22/0.46				

QBH Cable Supplier						
2.3	FLC 0 3 Y _ _ _ 3 _ A _	Optoskand Ab, Sweden				
	FLC 0 3 Y _ _ _ 4 _ A _	Optizone Technology Limited, China				

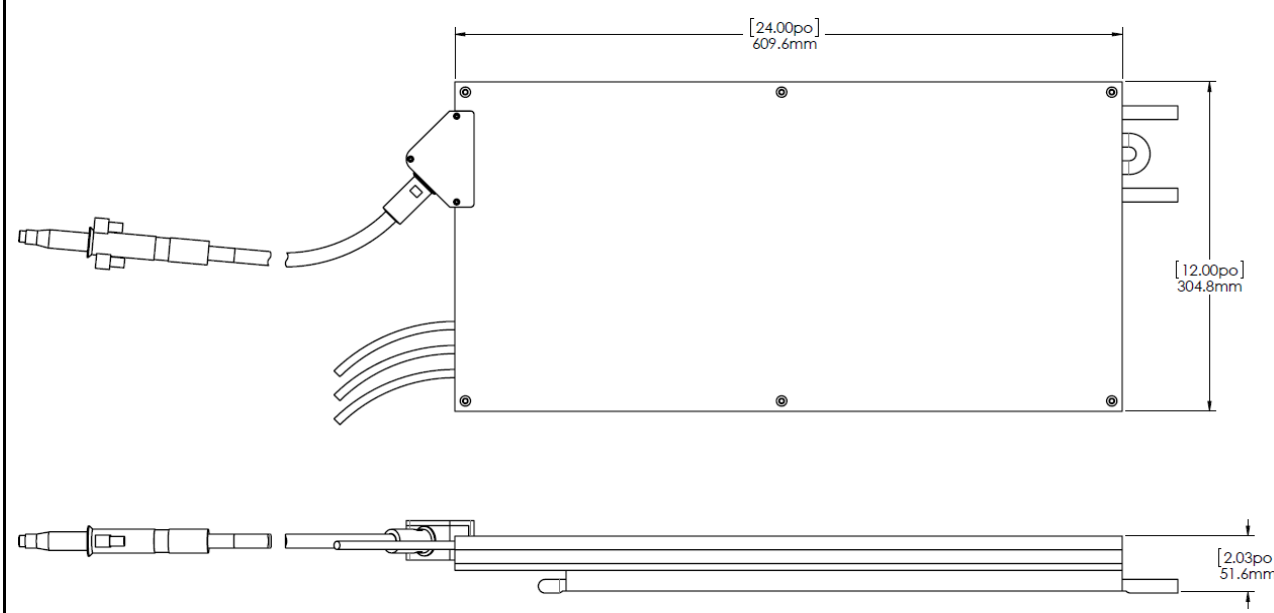
3.0 Environmental specifications

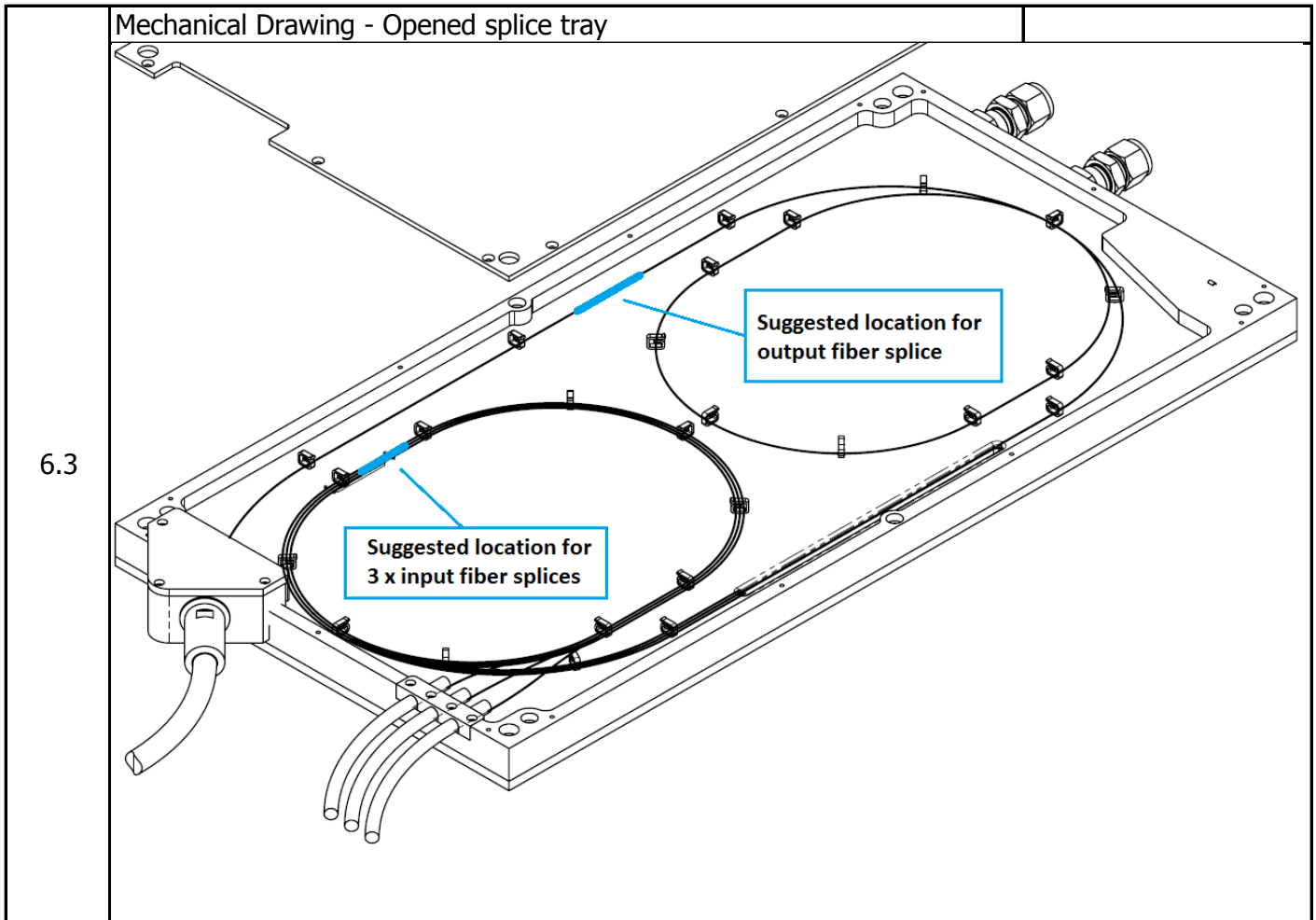
Item	Specifications	Min.	Typ.	Max.	Unit	Notes
3.1	Nominal operating temperature (T_N)		+20		°C	Case temperature
3.2	Operating temperature range	+15		+25	°C	Case temperature
3.3	Storage temperature	-40		+75	°C	Case temperature
3.4	Relative humidity			80	%	Non condensing
3.5	Cooling Method	conduction via bottom surface				
3.6	Case temperature monitoring	Via internal sensors				See electrical specifications
3.70	FLC 0 3 Y _ _ _ _ 0 A _	No cooling plate				See mechanical drawing
	FLC 0 3 Y _ _ _ _ 1 A _	Cooling plate included				

4.0 Electrical specifications

Item	Specifications	Type	Notes
4.1	Communication interface	DB-15 connector	
Communication interface command Codes			
	Description		Note
4.5	Probe temperature sensor 1		See Operation Instructions documents for more details
	Probe temperature sensor 2		
	Probe temperature sensor 3		
	Probe temperature sensor 4		
	Probe temperature sensor 5		
4.6	Pin assignment		

5.0 Mechanical specifications and drawings

Item	Specifications	Unit	Notes
5.1	Module's dimensions (approx.)	610 x 305 x 52	mm With cooling plate
5.1	Cooling plate thickness (approx.)	15	mm
5.2	Mechanical Drawing - Module including QBH cable and cooling plate		
			



6.0 Product Data Report - supplied with every unit

Item	Data
6.1	Input ports signal insertion loss
6.2	Output BPP (Beam Parameter Product) for each input port

7.0 Safety and specific precautions

Item	Note
7.1	This laser combiner is a passive laser system 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.
7.2	For your safety, never open the protective housing (case). Warranty is void if case is opened.
7.3	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.
7.4	To avoid irreversible damage and loss of power, fiber terminations (connectors, collimators...) must remain perfectly clean and scratch free.
7.5	The laser combiner module case is not ESD or EMI sensitive.

Revision history

Rev.#	Date	Ref. (#DC)	Change Description	Approved by
00	22-06-2017	n/a	Document created	JR
01		n/a	Mechanical drawings modified Details added for QBH cable option in section 2.0 Clarified input fiber options Added a new input M ² spec for safe operation Added PDR information	JR
02	20-11-2017	n/a	Added DB-15 connector	JR