

 BKtel	Technical Requirement Specification Pulsed Fiber Laser Module HFL2-360amt-FCAPC-FCAPC	Id.- No.: 410368 Rev.: 1.0 Date: 2019-06-19
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Pulsed Fiber Laser Module

1550 nm 4 W average power
200uJ@10ns 20kHz
Max Peak Power 20kW

1 Document History

Edition	Date	Changes
1.0	2019-06-19	Creation

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2 Product Specification

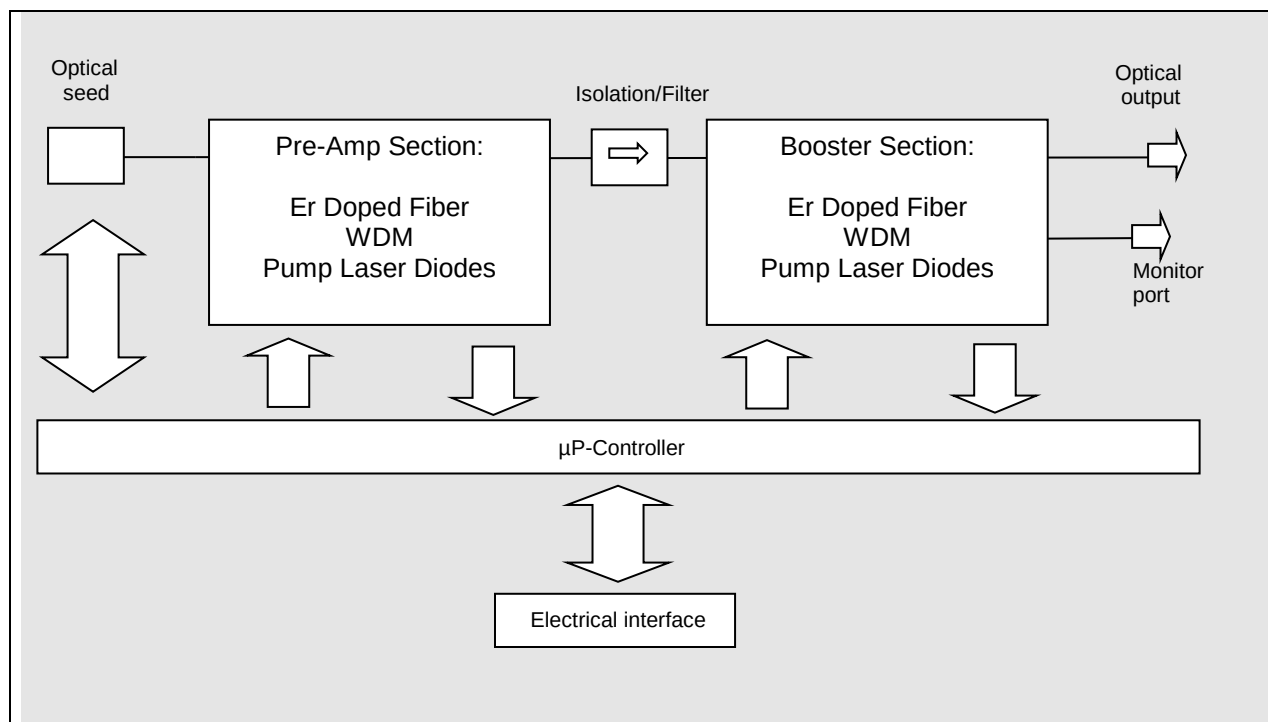
2.1 Overview

The HFL-Module housing is a pigtailed, stand-alone optical pulsed fiber laser module for integration into custom housings.

2.2 Functional Description

The fiber laser module comprises of laser diodes, optical isolators, WDMs and taps, erbium doped fiber and the micro-processor based controller for stand alone operation. Communication is provided by a serial RS-232 link in the electrical interface.

2.2.1 Fiber Laser Module

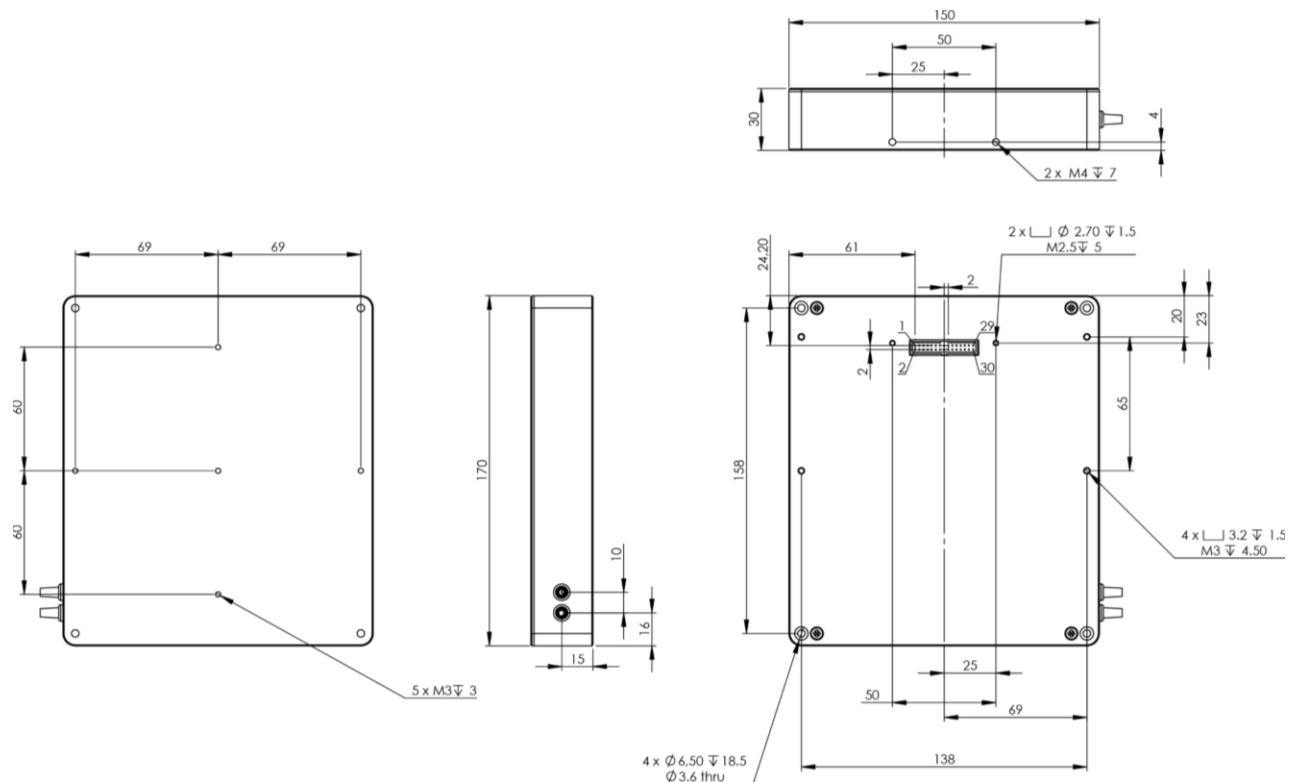




2.2.2 Mechanical Dimension

The connector is of type Samtec male 30 pin.

Conductive cooling via the bottom case surface



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2.3 Technical Specifications

2.3.1 Optical Specifications

Optical Performance						
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Center Wavelength	WB	Fixed wavelength	1548	1550	1552	nm
Wavelength Drift	WD	wavelength excursion 1nm over total operation temperature range		0.1		pm/°C
Pulse Width	PW		9	10	11	ns
Repetition frequency	RF		20		2000	kHz
Average Output Power	P-ave	Including ASE	0.3		4	W
Pulse energy	PE	@20kHz&4W		200		uJ
Peak power	P-peak	@20kHz&4W		18.8		kW
Polarization	POL		Random			
Output power stability	P-stab	RMS	-	-	4	%
Output power tunability	P-tun		10		100	%
Max allowed back-reflection	BR				-27	dB
Optical Monitor	MON			2		dBm

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2.3.2 Optical Fiber Ports

Fiber Pigtails

Output: SMF28 fiber with 3mm armored buffer equivalent

Monitor: SMF28 fiber with 0.9mm tight/semi-tight buffer or equivalent

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Length	Lf	-	30	34	40	cm
Bending radius	R	-	35	-	-	mm
Beam quality	M ²				1.2	M ²

Connectors Output

FC/APC

Connector Monitor

FC/APC

2.3.3 Electrical Specifications

Electrical Conditions

Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Power supply voltage	U _{op}		22	24.0	26	V
Power consumption	P _{op}	all conditions	-	44	50	W
Digital Signal Level	-	TTL	0	-	5.0	V
Trigger Level	-	LVTTL	0	-	3.0	V



2.3.4 Electrical Pinning Description

The electrical connector is of type 2x15 way, male, Samtec or equivalent

Pin	Meaning	Remark
1	+24.0 VDC	
2	+24.0 VDC	
3	NC	
4	NC	
5	GND	
6	GND	
7	RS232 Input	default 9600 Baud
8	RS232 Output	default 9600 Baud
9	GND	
10	GND	
11	NC	
12	NC	
13	Fiber Laser Shutdown	Active high (pull up resistor)
14	Pump Modulation	TTL Active High
15	Fiber Laser Temp Alarm	Active high
16	NC	
17	NC	
18	Trigger	0-3V
19	Common Alarm	Active high
20	Reserved	
21	GND	
22	GND	
23	NC	Option
24	NC	Option
25	GND	
26	GND	
27	NC	
28	NC	
29	+24.0 VDC	
30	+24.0 VDC	

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Environmental Specification

Module Environmental Conditions						
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Storage temperature range	T _{storage}	see note 1	-40	-	85	°C
Case operating temperature range	T _{op}	-	-20	-	65	°C
Humidity	-	non-condensing	-	-	85	%

2.3.5 Product Safety and RoHS Conformity

The module complies with the European low voltage directive 2006/95/EC as elaborated by standard EN 60950-1.

The module complies with the directive 2011/65/EU on the restriction of the use of certain hazardous substances in electrical and electronic equipment (RoHS).

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3 RS232 Serial Interface Specification

3.1 Overview

The HFL modules are controlled by serial RS232 interface using TTL logic Terminal emulator programs should be used to communicate with the module (e.g. Microsoft Hyper terminal). The HFL modules use the following terminal interface parameters:

Terminal Parameter	Setting	Unit
Baud rate	9600	Baud
Data bits	8	Bits
Parity	None	
Stop bits	1	Bit
Flow control	None	

The command list is described in detail in a separate document:

4 Applicable Documents

4.1 Proof of Delivery Quality

An individual test report is delivered for each module with detailed measurements including:

- Module serial number
- TBD

4.2 Equipment Labeling

4.2.1 Logo

- Sample is provided electronically
- Height 5.5mm, Length 20.4mm
- Printed on sticker label

4.2.2 Sticker Front Side

- Color: White
- Printed or fixed on center of top plate

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4.2.3 Laser class indication

- The module is labelled as laser class 4 product

4.3 Equipment Packaging

Each device will be supplied in single packaging. The packaging is safe against transport damages and protects particularly the pigtails and the connectors. On the packaging a label with the indication of BKtel type is to be applied on the front face.