

 BKtel	Technical Requirement Specification Fiber Laser Module CPFL-217amt-FCAPC-FCAPC	Id.- No.: 409732 Rev.: 1.4 Date: 2021-04-14
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Pulsed Fiber Laser Module

100 mW average power
20ns, 5kHz, ~20uJ, 1550nm

1 Document History

Edition	Date	Changes
1.0	2017-12-11	Creation
1.1	2017-12-27	Wavelength stabilized
1.2	2018-01-10	Monitor port added Wavelength range tightened Energy bandwidth added
1.3	2018-03-05	Mechanical drawing updated for wavelength stabilized version.
1.4	2021-04-14	1550nm

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2 Product Specification

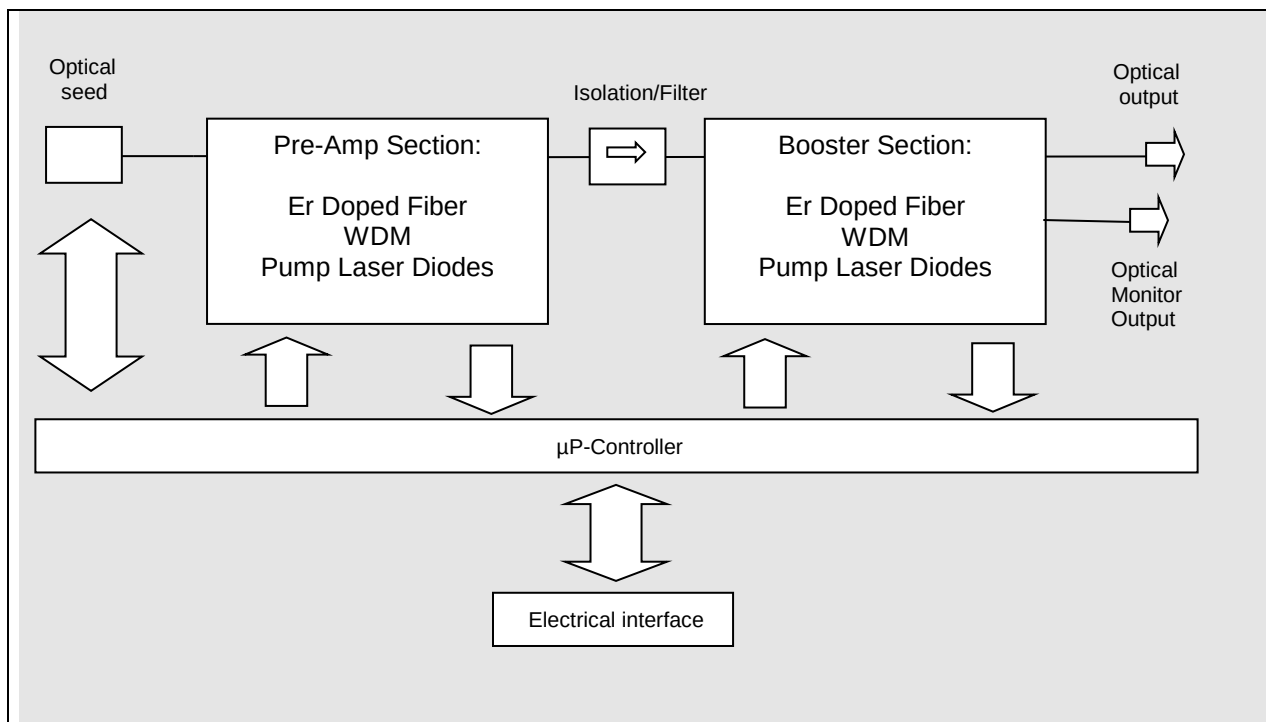
2.1 Overview

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

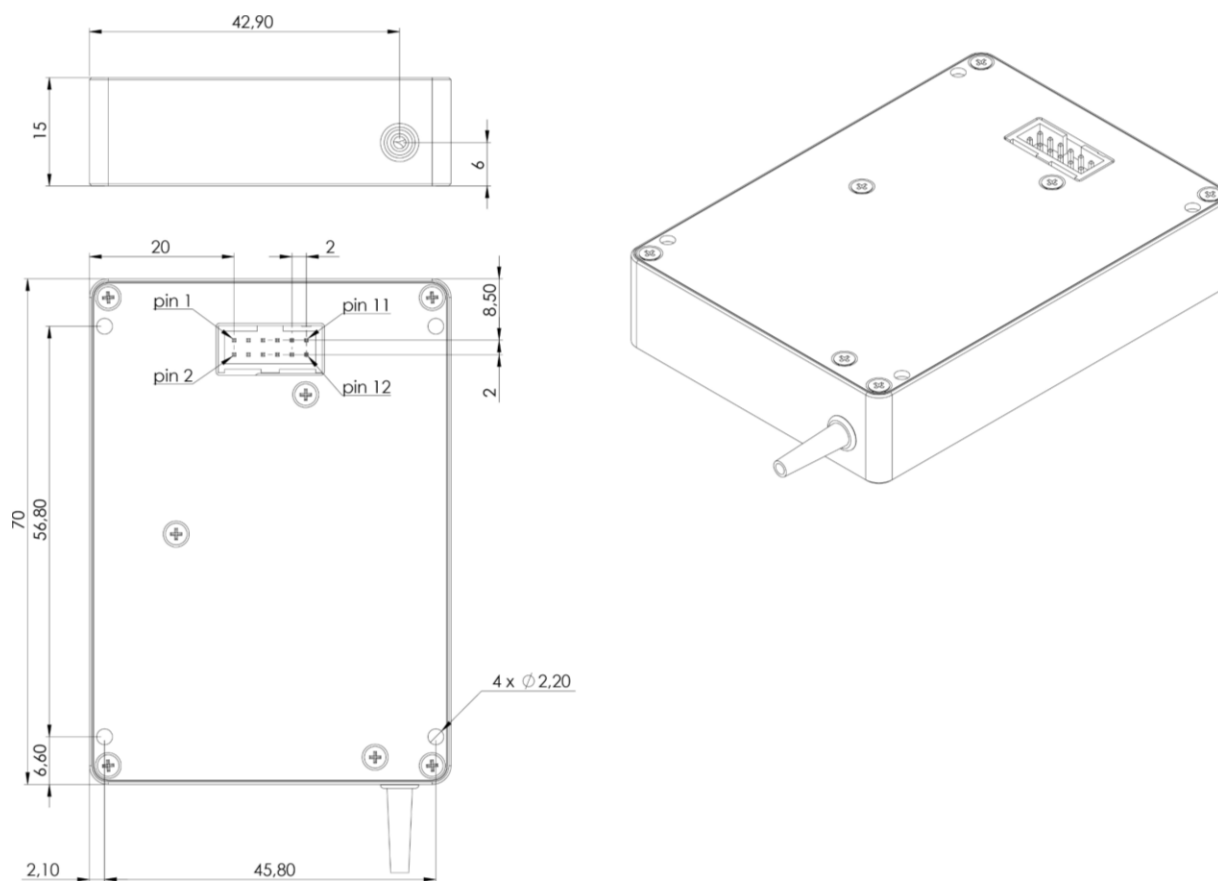
2.2 Functional Description

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



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2.3 Technical Specifications

2.3.1 Optical Specifications

Optical Performance						
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Wavelength bandwidth	WB	25°C	1549.5	1550	1550.5	nm
Pulse Width	PW			20		ns
Pulse energy	PE	@PF 5kHz		20		uJ
Repetition frequency	RF		5			kHz
Average Output Power	P-ave	Including ASE	100			mW
Output power stability	P-stab	RMS@ 25°C	-	-	4	%
Output power tunability	P-tun		10		100	%
Max allowed back-reflection	BR				-27	dB
ASE					10	%
Energy Bandwidth	EB	Center wavelength	+/-1			nm
Optical Monitor	MON			2		dBm

2.3.2 Optical Fiber Ports

Fiber Pigtails						
Single mode 9/125/250 with 900um easystrip buffer or equivalent						
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Length	Lf	-	45	50	55	cm
Bending radius	R	-	30	-	-	mm
Beam quality	M ²			1.1	1.2	M ²

Connectors Output	Connectors Monitor
FC/APC	FC/APC

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2.3.3 Electrical Specifications

Electrical Conditions						
Parameter	Symbol	Conditions	Min	Typ	Max	Unit
Power supply voltage	U_{op}		4.8	5.0	5.2	V
Power consumption	P_{op}	all conditions	-	3.5	6	W
Digital Signal Level	-	LVTTL	0	-	3.3	V
Trigger Signal Level	-	LVTTL	0	-	3.3	V

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2.3.4 Electrical Pinning Description

The electrical connector is SAMTEC ZLTMM-106-65-F-D-328

Pin	Meaning	Remark
1	+5.0 VDC	
2	+5.0 VDC	
3	GND	
4	GND	
5	RS232 Input (LVTTTL)	default 9600 Baud
6	RS232 Output (LVTTTL)	default 9600 Baud
7	Module Enable Input	active low
8	Pump Modulation	
9	NC	Option: LVDS-
10	Trigger	Option: LVDS+
11	Laser Status	active high
12	Alarm	active high

2.3.5 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	-	-	80	%

2.3.6 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 CPFL 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 CPFL 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 pigtailed and the connectors. On the packaging a label with the indication of BKtel type is to be applied on the front face.