SOA pulse modulation and amplification module

-- -- -- For distributed optical fiber sensing

------HC-PLM Series

Product introduction

HC-PLM series pulse modulation and amplification module integrates semiconductor optical amplifier (SOA), pulse erbium-doped fiber amplifier (EDFA) and its supporting temperature control and modulation circuits, and can output optical pulse signals with the narrowest pulse width of 2 ns and peak power of 100 W. At the same time, a built-in pulse signal source can be selected, which has the characteristics of fast rise time, high pulse extinction ratio, good stability and convenient use, so that it becomes an ideal choice for generating and amplifying pulsed light in various optical fiber sensing systems, and can also be applied to quantum communication systems, semiconductor testing and other aspects.

Product features

- Software-adjustable pulse width
  - Rise/fall time < 2 ns
  - Adjustment range 5 ns ~ 500 ns
  - Repetition frequency 1Hz-1MHz
- Integrating SOA and EDFA
- Lectable electric pulse sources
- Optional Raman Optical Amplifier 500 mW
- Output peak power < 1 W
- High extinction ratio
- DC 5V power supply
- RS232 serial communication
- Upper computer control
- Module encapsulation

Scope of application

- DVS & DAS System
- BOTDR & BOTDA System
- Homodyne coherent detection system

Technical parameters

Parameter		Symbol	Unit	Minimum value	Typical value	Maximum value
SOA pulse modulation section						
Optical parameters						
Operating wavelength		λc	nm	1550.12		
Input optical power		Po	dBm	-5		7
Rise time		tr	ns		2	
Pulse width range			ns	5		500
Extinction ratio		ER	dB	50		
Input electrical signal	High level	Vh	V	2	3.3/5	
	Low level	Vl	V	0		0.8
Pulse signal source (optional)						
Pulse width		PW	ns	5		500
Rise time		Tr	ns	1		1000
Repeat frequency		F	Hz	1		100K
Synchronization and output signal format					LVTTL	
Pulse amplification section						
Operating wavelength		λc	nm		1550.12	
Output optical peak power		Pp	mW	10		1000
Gain * *		G	dB		30	50
Noise Index * * *		NF	dB			5.0
Output optical power stability		ΔP	dB			±0.1
Input/output optical isolation		ISO	dB	30		
Return loss		RL	dB	30		
Polarization dependent gain		PDG	dB		0.3	0.5
Polarization mode dispersion		PMD	ps			0.3
Input pump leakage		PL_in	dBm			-30
Leakage of output pump		PL_out	dBm			-40
Working mode					ACC	
Raman amplification section (optional)						
Operating wavelength		λc	nm		1455	
Output optical power		Po	mW		500	
Optical power stability		ΔP	dB			0.02
Working mode					ACC	
Other parameters						
Operating voltage		Vo	V	4.75	5	5.25
Operating current	--	Io	A		0.5	1.5
	Integrated Raman amplifier				1.8	3

Operating temperature	To	℃	-20		60
Storage temperature	Ts	℃	-40		80
Interface type					
Fiber type			SMF-28e		
Fiber optic interface			FC flange interface		
Fiber optic connector			FC/APC		
Electrical signal interface			SMF(f)		
Power supply			Through-core capacitor		
Communication			RS232 serial communication		
Mechanical dimensions					
Package size	--		mm	160x120x19	
	Integrated Raman amplifier		mm	180x150x20	

Test curve

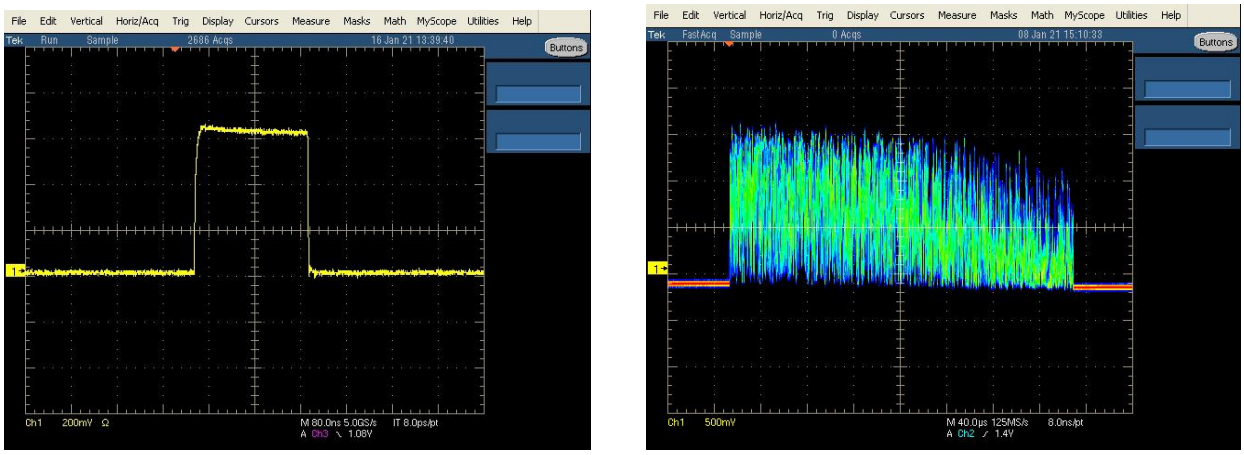
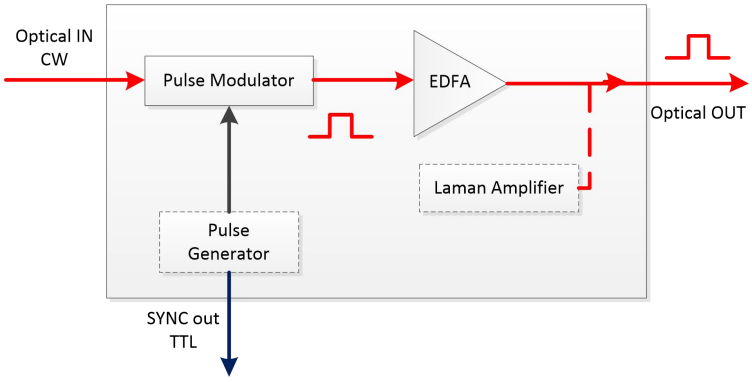
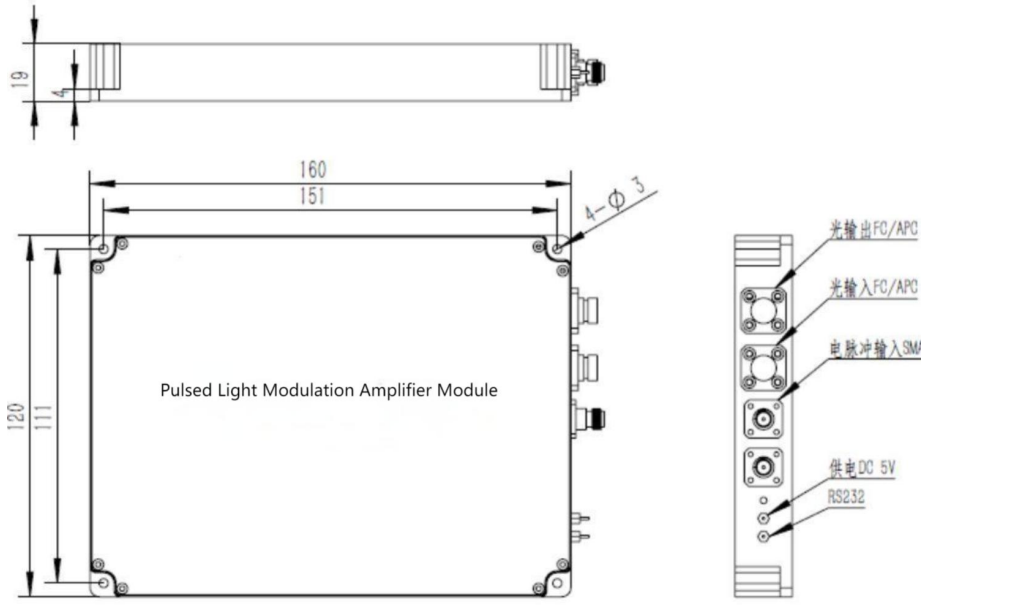


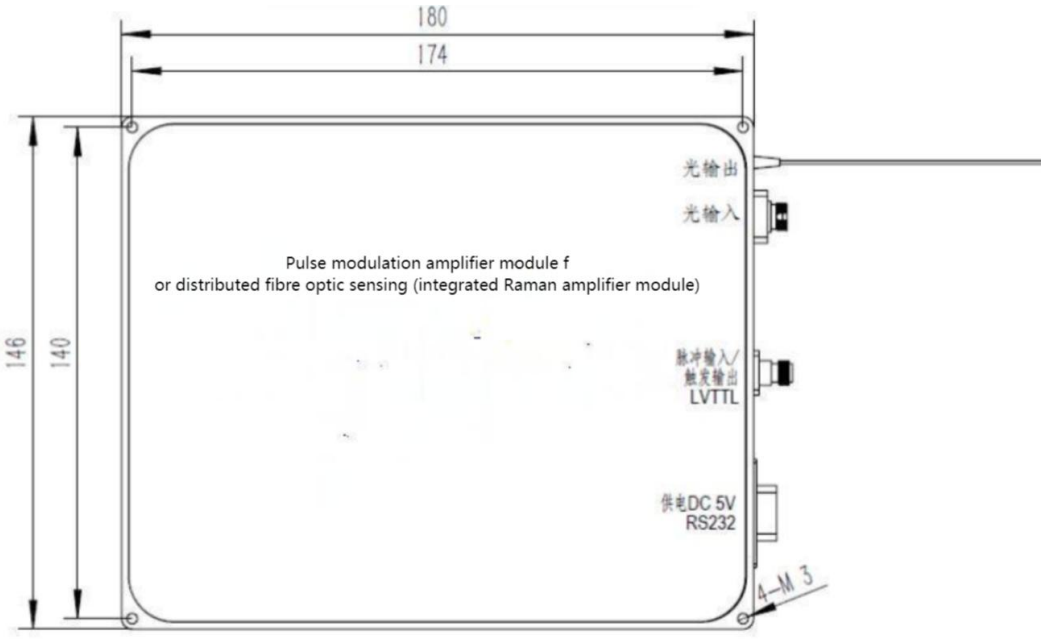
Figure 1 200ns Pulse Waveform and DVS System Test Chart (Coherent Heterodyne Detection)

Schematic diagram



Mechanical dimensions in mm





Ordering Information HC-PLM-XXX-PS

XXX — SEA — SOA integrated EDFA; SELA — SOA integrated EDFA and Raman amplifier;

PS-- NC — integrated pulse source not required; PS ： built-in pulse source