

## SOA pulse modulation and amplification module

-- -- -- For distributed optical fiber sensing

-----HC-PLM Series

### Product introduction

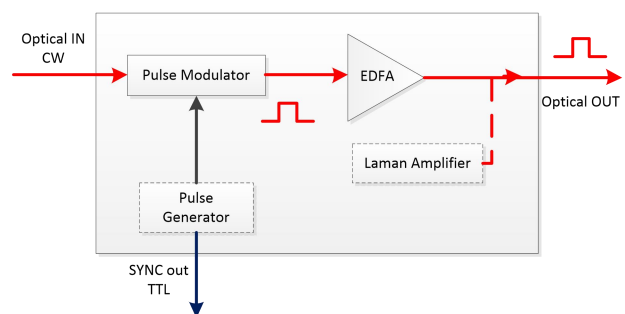
- HC-PLM series pulse modulation and amplification module integrates semiconductor optical amplifier (SOA), pulse erbium-doped fiber amplifier (EDFA) and its supporting temperature control and modulation circuits, and can output optical pulse signals with the narrowest pulse width of 2 ns and peak power 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
- Selectable 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
<b>SOA pulse modulation section</b>						
<b>Optical parameters</b>						
Operating wavelength		$\lambda_c$	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	VI	V	0		0.8
<b>Pulse signal source (optional)</b>						
Pulse width		PW	ns	5		500
Rise time		Tr	ns	1		1000
Repeat frequency		F	Hz	1		100K
Synchronization and output signal format					LVTTTL	
<b>Pulse amplification section</b>						
Operating wavelength		$\lambda_c$	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		$\Delta P$	dB			$\pm 0.1$
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	
<b>Raman amplification section (optional)</b>						
Operating wavelength		$\lambda_c$	nm		1455	
Output optical power		Po	mW		500	
Optical power stability		$\Delta P$	dB			0.02
Working mode					ACC	
<b>Other parameters</b>						
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	°C	-20		60
Storage temperature		Ts	°C	-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**

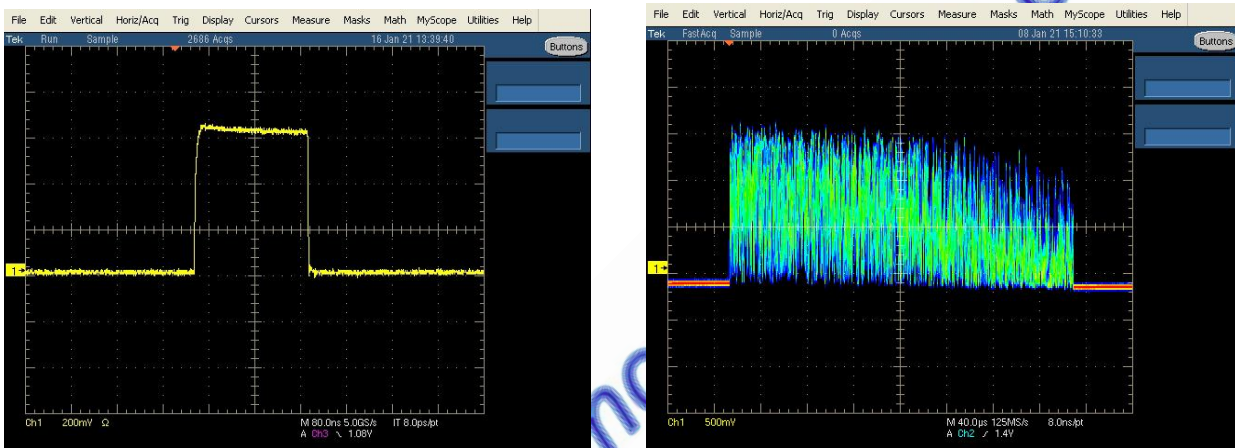
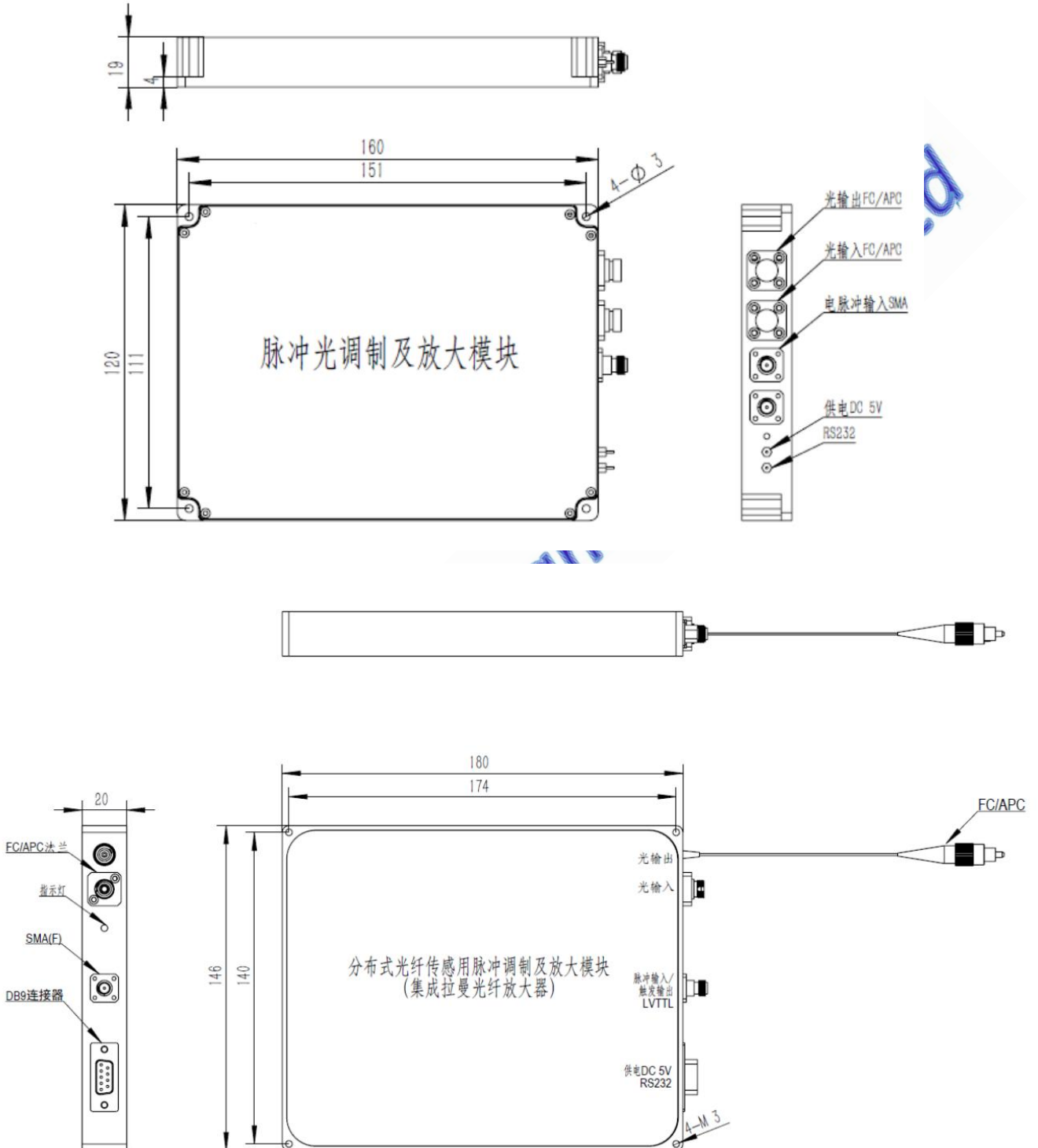


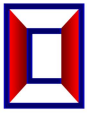
Figure 1 200ns Pulse Waveform and DVS System Test Chart (Coherent Heterodyne Detection)

 Mechanical dimensions in mm



 Ordering Information HC-PLM-XXX-PS

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



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

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