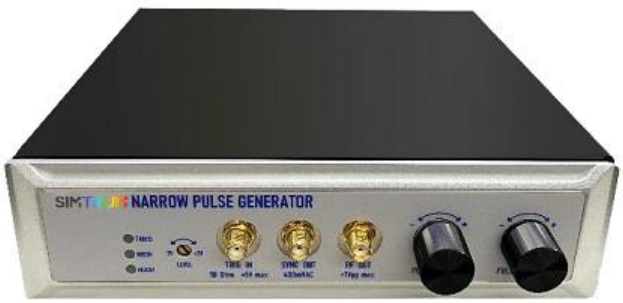
Ultra-fast Pulse Generating Modulator Driver

STNPG-1H20A



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SIMTRUM

Ultra-fast Pulse Generating Modulator Driver

STNPG-1H20A is an ultra-fast pulse generator especially for driving M-Z modulator. It has precision pulse width and pulse height control, and it can accept any logic level as trigger input. The pulse width can be set to lock or tuning mode by pressing the knob, while entering the lock mode, the last setting will be saved for power-cycling convenience. The pulse height can also be changed by another knob, while it has additional coarse tuning mode for faster adjustment.

Compared to previous model, STNPG-1H20A integrates a high-performance temperature control system for its RF gain block, therefore the output pulse stability of height and width is greatly improved, that is resistant to ambient temperature changed and it can run stably for a long time.

Features

- Minimal 100ps pulse width
- Any-level trigger input
- Pulse height and pulse lock/tuning mode with LED indication
- Integrated RF gain block temperature control
- USB communication control port

Applications

- Narrow pulse generation
- IM-based chopper laser
- Electro-optical intensity modulation
- Optical telecommunication
- RF test instrumentation

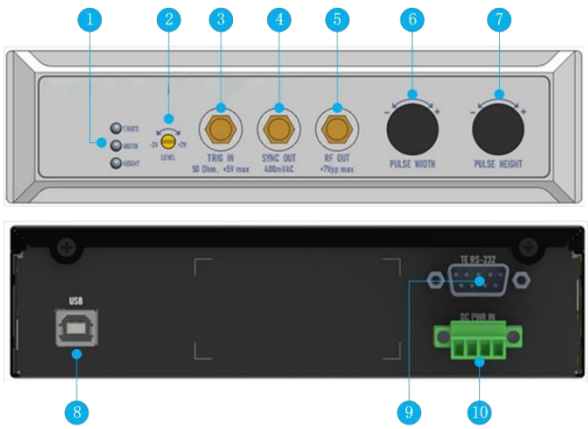
Product Specifications

PARAMETER	MIN	TYP	MAX	UNIT
Electrical				
Trigger input (SMA x1)				
Input voltage range	-5		5	V
Input threshold	-2		2	V
Input frequency	0.1		1800	MHz
Input pulse width	280			ps
Input impedance	50Ω, DC-coupled			
Synchronous output (SMA x1)				
Output voltage		400		mV
Output impedance	50 Ω, AC-coupled			
RF output (SMA x1)				
Adjustable pulse width [1]	100		5000	ps
Output pulse width resolution	10			ps
Rising time (20%~80%)		55	70	ps
Falling time (20%~80%)		70	85	ps
Adjustable pulse amplitude [2]			8	V
Output impedance	50Ω, AC-coupled			
Hardware				
Operating temperature	0		40	℃
Power supply		12		VDC
Power consumption [3]		15	35	W
Dimensions (W x D x H)	191.4 x 168 x 44.3			mm
Net weight	1.2			kg

Note:
The maximum pulse width may be limited by the input pulse width.
The maximum pulse amplitude is tested @ 100MHz trigger input and 200ps pulse width.
The power consumption may up to 35 watts within a few seconds while power-on, because the module TEC is achieving the target temperature.

User Instructions

- **Power Supply** - Users should use a high quality 12V DC power supply with at least 3A current rating. Either the attached AC-power adaptor or a high-quality linear power supply is recommended.
- **Pulse Width Control** – Users may press the knob to toggle between lock/unlock mode for pulse width control. The pulse width can be adjusted by turning the knob in unlock mode, while pulse width can be fixed and stored by pressing the knob into lock mode. Each time power cycling, pre-stored pulse width will be loaded automatically with lock mode on.
- **Pulse Height Control** – Users may press the knob to toggle among lock/coarse-tuning/fine-tuning mode for pulse height control. The last tuned pulse height can be fixed and stored by pressing the knob back into lock mode. Each time power cycling, pre-stored pulse height will be loaded automatically.
- **Trigger Threshold Adjustment** - The threshold is pre-set to 0V by factory default. The LED of TRIG'D is steady off when trigger is not present or not properly triggered. Adjusting the trigger threshold with a screw-driver till the LED turns blinking, if needed.



- **LED Indicators**

Indicator	Description
TRIG'D	- Blinking: actively triggered - Steady off: inappropriate threshold/sync out setting or no trigger input
WIDTH	- Steady on: pulse width lock mode - Blinking: pulse width adjusting mode
HEIGHT	- Steady on: lock mode - Blinking: pulse height coarse-tuning mode - Slow blinking: pulse height fine-tuning mode

- **Temp. control Debug Port** – for factory use only.
- **USB Communication Port** – Users can set the pulse width and height by connecting this port to a computer via a USB type-B cable. The protocol is based on a series of simple four-byte UART commands as follows

Baud Rate	115200
Data Bits	8
Stop Bits	1
Parity	None
Flow Control	None

The serial port configuration

n	Divider Ratio
0x0	÷1
0x1	÷2 (default)
0x2	÷4
0x3	÷8
0x4	÷16

The sync out divider value

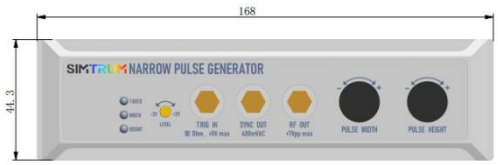
- 0xCA05XXXX write pulse width value, 9-bit range from 0x0000 to 0x01FF
- 0xCA150000 read pulse width value, return with 2-byte 0x5XXX
- 0xCA06XXXX write pulse height value, 12-bit range from 0000 to 0x0FFF
- 0xCA160000 read pulse height value, return with 2-byte 0x6XXX
- 0xCA200000 save current height and width value to non-volatile memory as the default value for power-on
- 0xCA07000X write sync out divider value n, 3-bit range from 0x0 to 0x4
- 0xCA170000 read sync out divider value n, return with 2-byte 0x700X

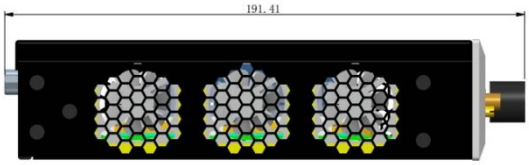
Typical Measurements

100ps pulse width @1.8GHz, 7V amplitude

2ns pulse width @100MHz, 10V amplitude

Dimensions (Unit: mm)





Ordering Information

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