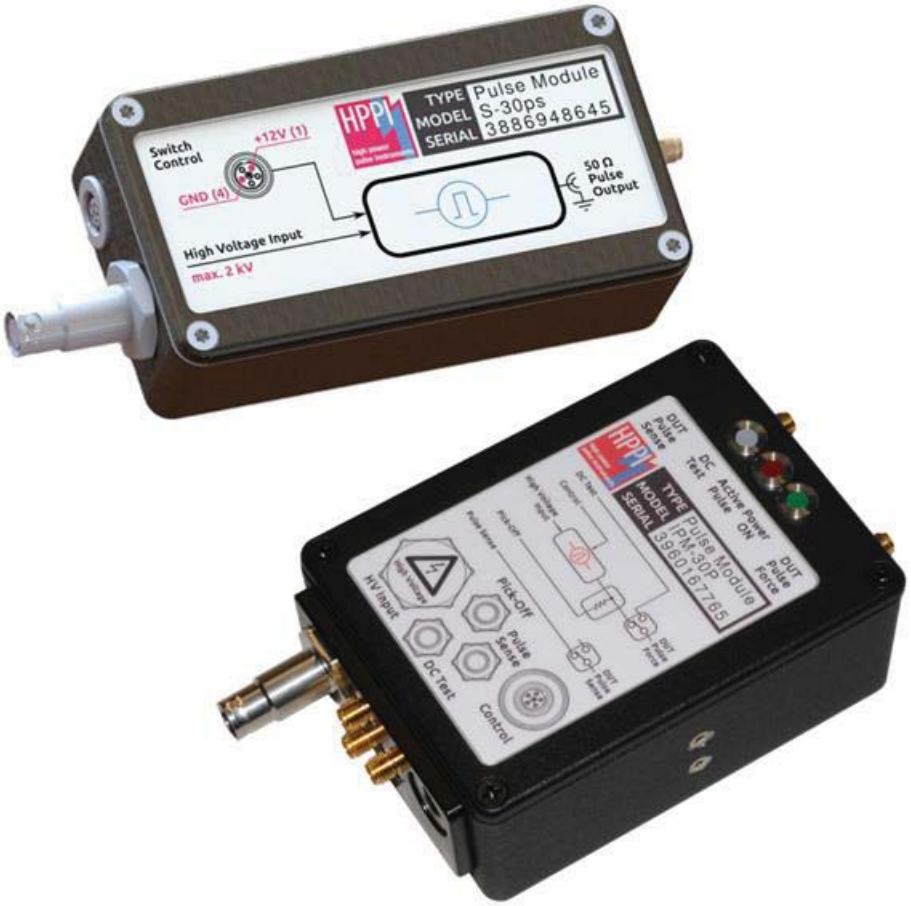
CALTRON PTE LTD

VF-TLP/TLP RISE TIME PULSE MODULE

IPM-30P



30 ps Rise-Time Integrated Pulse Module IPM-30P

Advanced TLP/HMM/HBM Solutions

1 Features

- 30 ps rise-time integrated pulse module for advanced VF-TLP and CC-TLP applications
- 500 ps pulse width (customizable e.g. 100 ps)
- Wide pulse output voltage range:
  sub-1 V to 800 V pulse output voltage into 50 Ω
- Integrated −20 dB pick-off tee for TDR DUT current and voltage measurement
- Integrated DUT-switch for DC test and Kelvin-type pulse sense DUT voltage measurement

2 Specifications

The IPM-30P is a stand-alone integrated pulse module for advanced VF-TLP and CC-TLP applications. It can be operated with HPPI pulse generators TLP-3010C/4010C/8010AC/12010AC/16010A or the stand-alone high voltage power supply unit HV-CU10-A. The pulse module is controlled automatically by the HPPI software suite, which is same for all HPPI products.

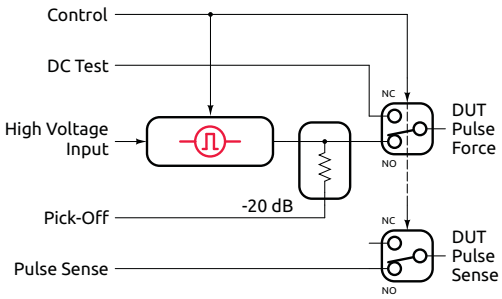


Figure 1: IPM-30P schematic diagram

Nominal output impedance	50	Ω
Output pulse rise time [1]	30	ps
Output pulse width [2]	500	ps
Pulse repetition frequency (max.)	10	Hz
Pulse output voltage (min.)	±1	V
Pulse output voltage (max.)	±800	V
Pick-off output	−20	dB
High voltage input (max.)	±2	kV
Power supply	12	V
Current consumption	550	mA
Connector type	SMA	
Size	149 x 82.4 x 45.5	mm^3

[1] increasing rise time at maximum pulse amplitude
[2] customizable at PO: e.g. 100 ps

The waveform data have been measured using a Keysight UXR0334A, MY59120115, 11.50.00601 oscilloscope at 33 GHz bandwidth and 128 GS/s sampling rate. Fig. 2 shows the measured pulse rising edge at 100 V. The preferred range of pulse output voltage to be used is up to 800 V (Fig. 3).

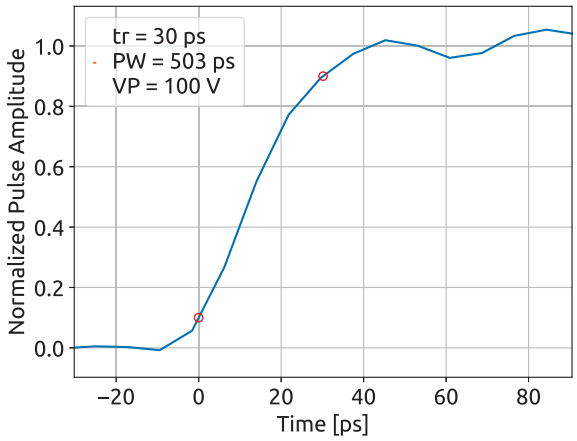


Figure 2: Measured output pulse rise-time

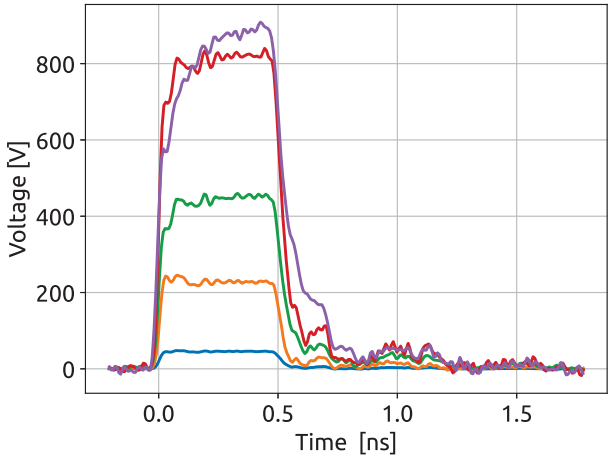


Figure 3: Measured pulse output voltage into 50 Ω

High Power Pulse Instruments GmbH
Internet: https://www.hppi.de/
E-mail: info@hppi.de

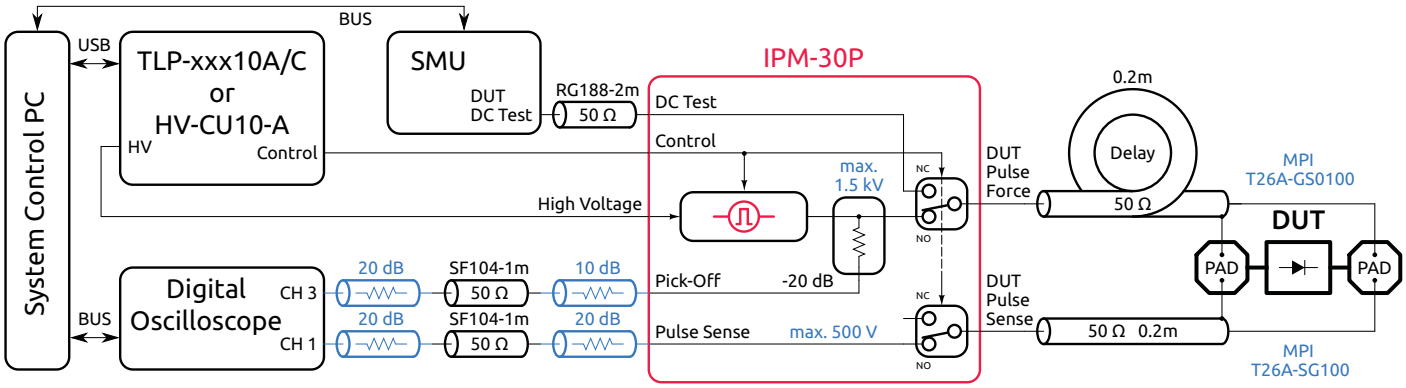


Figure 4: IPM-30P typical application

3 Application Note

Fig. 4 shows the typical application of the integrated pulse module. The IPM-30P pulse module should be located as close as possible to the device under test (DUT). The cable from the pulse output to DUT should be as short as possible to avoid pulse distortions. To interconnect the pulse module with the base units TLP-3010C/4010C/8010AC/12010AC/16010A or the stand-alone high voltage power supply unit HV-CU10-A, the control cable PCC-200A and the high voltage cable HV10-300A are required.

For the pick-off output two attenuators 18AH10 (10 dB) and 18AH20 (20 dB) are recommended. The attenuators should be located at both ends of the cables to suppress parasitic reflections effectively. The total attenuation including pick-off results to 50 dB, which allow a maximum TDR pulse voltage of $10^{(50/20)} \cdot 5 = 1.58$ kV.

MPI high performance probes T26A-GS0100 (26 GHz, 50 Ω) and SPC-T26A-KG0100-5K-1500V (5 kΩ) or T26A-SG0100 (50 Ω) are recommended to be used as probe tips.

4 Ordering Information

Specify pulse width PW [ps] at order.
Example: IPM-30P-200ps for 200 ps pulse width.

Item	Description	Part No.
01	30 ps Rise-Time Integrated Pulse Module	IPM-30P-PW
02	Control Cable	PCC-200A
03	High Voltage Cable	HV10-300A

General

High Power Pulse Instruments GmbH
Stadlerstrasse 6A
D-85540 Haar, Germany
Phone : +49 (0)89 8780698 - 440
Fax : +49 (0)89 8780698 - 444
E-Mail : info@hppi.de