

# 100 A, 3 GHz, 50 Ω, 0.5 V/A Pulse Current Sensor CS-0V5-A

Advanced TLP/HMM Solutions

## 1 Features

- 100 A pulse current sensor for TLP/HMM measurements
- Very fast rise time <150 ps
- 1.5 kHz to >3 GHz bandwidth
- High magnetic Amp x Second rating 70 A μs
- Very low parasitic load impedance 28 mΩ (port 1-2)
- 0.5 V/A sensitivity at 50 Ω output (port 3)
- Three 50 Ω SMA ports
- Current sensor output is in line with pulse input
- Compact size: 41 mm x 34 mm x 16 mm
- High reliability

## 2 Description

The CS-0V5-A current sensor is used to measure the current in the 50 Ω pulse force transmission line of a TLP/HMM system such as TLP-3010C/4010C/3011C system at currents up to 40 A and 1.6 μs pulse width, or up to 80 A at 875 ns pulse width using the TLP-8010A/C systems. The CS-0V5-A can be used also as general purpose current sensor. The device has three 50 Ω SMA terminals. It can be used for replacement of the Tektronix™ CT-1, CT-2 and CT-6 current sensors in order to cover both high currents and high bandwidth using a single sensor.

Please note that in contrast to port 1 and port 2, the port 3 (sensor output) must be terminated with 50 Ω. For example, at 100 A the sensor output results to 50 V. Therefore 20 dB attenuation is required in front of the digital oscilloscope input in order to avoid overload.

The Amp x Second rating is typical 70 A μs which results in maximum 100 A at 700 ns pulse width or 40 A at 1.75 μs pulse width. The sensitivity of the sensor is typ. 0.5 V/A at the current sensor output.

## 3 Electrical Data

Nominal Impedance	:	50	Ω
Nominal Sensitivity	:	0.5	V/A
Pulse Response (Rise Time)	:	< 150	ps
Maximum Pulse Current <sup>1)</sup>	:	±100	A
Amp x Second Rating <sup>2)</sup>	:	70	A μs
Maximum DC Current <sup>2)</sup>	:	±0.5	A
Parasitic Load Impedance (Port 1 to Port 2)	:	28	mΩ
Lower Cut-Off Frequency <sup>3)</sup>	:	1.5	kHz
Upper Cut-Off Frequency <sup>3)</sup>	:	> 3	GHz

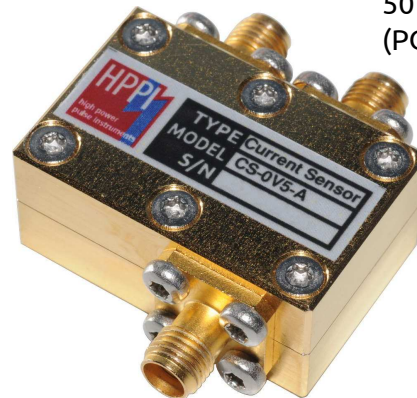
<sup>1)</sup> max. 0.7 μs pulse width.

<sup>2)</sup> when this value is exceeded, the sensor will not damage or degrade, but the output signal suddenly drops to zero and may give wrong measurement results.

<sup>3)</sup> ±3 dB

50 Ω Current Sensor Output (PORT 3)

50 Ω Pulse Input (PORT 1)



50 Ω Pulse Output (PORT 2)

## 4 Electrical Characteristics

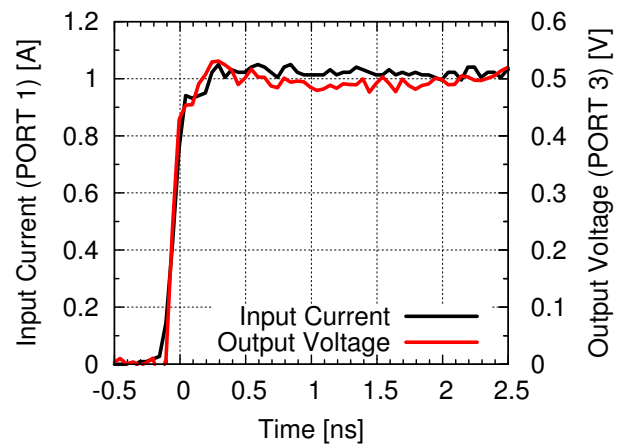


Figure 1: Typical pulse rise time

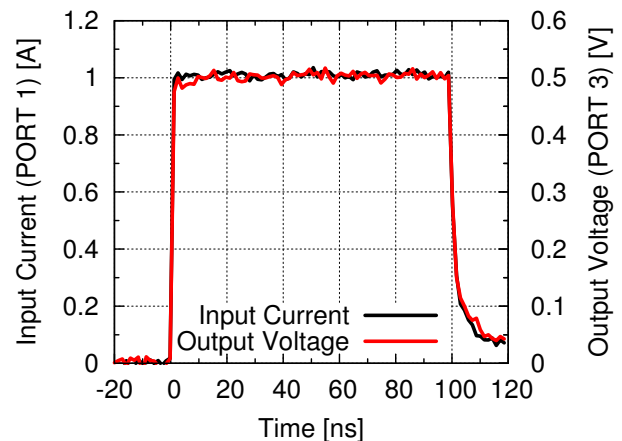


Figure 2: Typical pulse response (100 ns)

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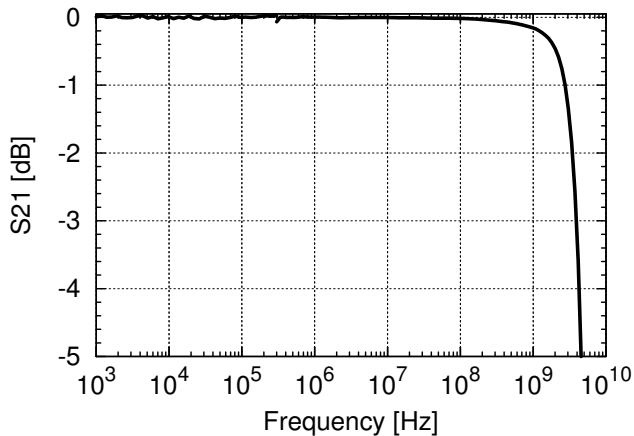


Figure 3: Typical frequency response (port 1 to port 2)

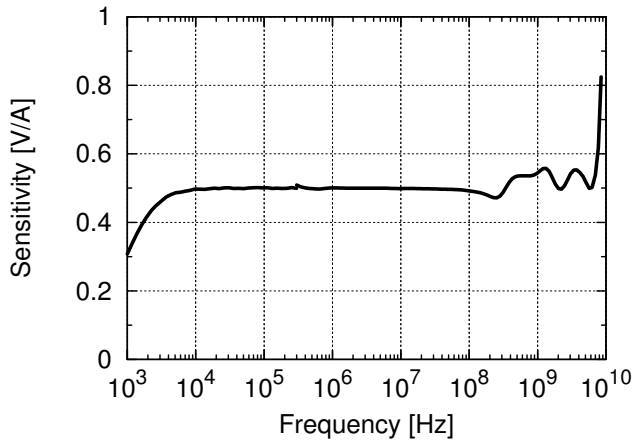


Figure 4: Typical sensitivity at port 3

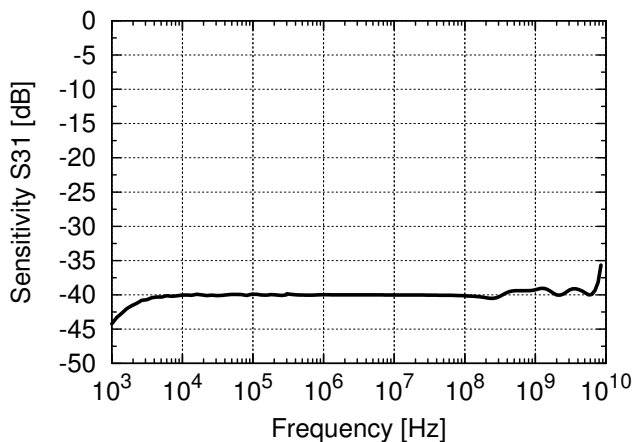


Figure 5: Typical transfer function (port 1 to port 3)

## 5 Physical Dimensions

Fig. 6 shows the dimensions of the CS-0V5-A in [mm].

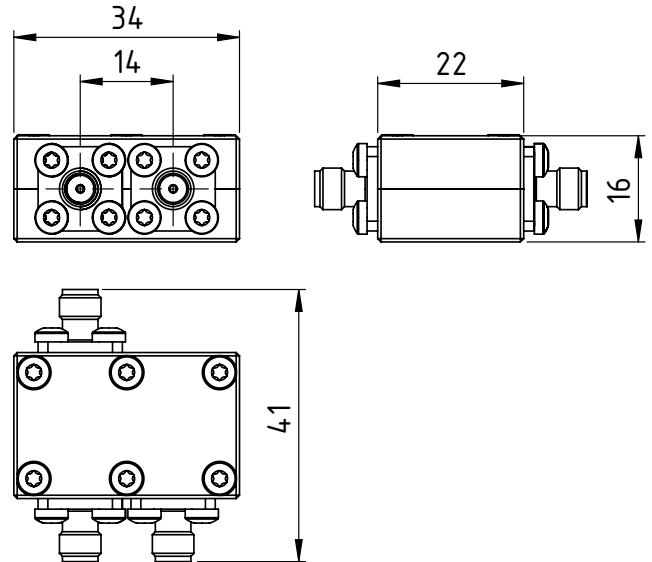


Figure 6: Dimensions in [mm]

## 6 Ordering Information

Pos.	Description	Part No.
01	100 A, 3 GHz, 50 Ω, 0.5 V/A Pulse Current Sensor	CS-0V5-A

### General

The product data contained in this data-sheet is exclusively intended for technically trained staff. You and your technical departments will have to evaluate the suitability of the product for the intended application and the completeness of the product data with respect to such application. Our products are solely intended to be commercially used internally and should not be sold to consumers. This data-sheet is describing the specifications of our products for which a warranty is being granted by HPPI GmbH. Any such warranty is granted exclusively pursuant the terms and conditions of the respective supply agreement. There will be no guarantee of any kind for the product and its specifications. For further information on technology, specific applications of our product, delivery terms, conditions and prices please contact HPPI:

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

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