

## HSI-HV

- **Input ranges:** 7 ranges ( $\pm 20$  V to  $\pm 1400$  V)
- **Bandwidth:** 2 MHz
- **Isolation:** 1.8 kV<sub>RMS</sub> line to line  
1.4 kV<sub>RMS</sub> line to ground
- **Input impedance:** 10 M $\Omega$
- **Protection:** 4 kV burst, surge
- **Signal connection:** Banana sockets

## Isolated high voltage module



## Module specifications

HSI-HV		
Input ranges	$\pm 20$ V <sup>1)</sup> , $\pm 50$ V <sup>1)</sup> , $\pm 100$ V, $\pm 200$ V, $\pm 400$ V, $\pm 800$ V, $\pm 1400$ V	
1 year accuracy <sup>2)</sup>	Range                      Signal frequency                      Accuracy	
	20 V; 50 V                      DC $\pm 0.05$ % of reading $\pm 60$ mV	
	100 V to 1400 V                      DC $\pm 0.05$ % of reading $\pm 0.05$ % of range	0.1 Hz to 500 Hz $\pm 0.05$ % of reading $\pm 0.01$ % of range
		>500 Hz to 5 kHz $\pm 0.1$ % of reading $\pm 0.05$ % of range
		>5 kHz to 50 kHz $\pm 0.4$ % of reading $\pm 0.05$ % of range
>50 kHz to 100 kHz $\pm (0.016 \cdot f)$ % of reading $\pm 0.1$ % of range		
>100 kHz to 1 MHz $\pm (0.010 \cdot f)$ % of reading $\pm 1$ % of range		
>1 MHz to 2 MHz $\pm (0.014 \cdot f)$ % of reading $\pm 3$ % of range		
	f = signal frequency in kHz	
Gain linearity	0.05 %	
Gain drift range	Typically 20 ppm/°C (max. 50 ppm/°C)	
Offset drift		
20 V to 100 V	typical 1.5 mV/°C of range                      max. 4 mV/°C	
200 V to 1400 V	typical 5 ppm/°C                      max. 20 ppm of range/°C	
Long term stability	100 ppm/sqrt (1000 hrs)	
Input resistance	10 M $\Omega$    2.2 pF	
-3 dB Bandwidth	2 MHz	
Signal delay @ full bandwidth	approx. 390 ns	
Filter selection	Push button or software	
Filter (lowpass)	100, 300, 1k, 3k, 10k, 30k, 100k, 300 kHz, 1 MHz, 2 MHz <sup>3)</sup>	
Filter type	Bessel or Butterworth 40 dB/decade	
Filter characteristics		
100 Hz to 1 MHz	Butterworth or Bessel 40 dB/dec (2 <sup>nd</sup> order; $\pm 1.5$ dB @ f <sub>0</sub> )	
2 MHz	Butterworth 60 dB/dec (3 <sup>rd</sup> order; 0 to -3 dB @ 2 MHz)	
Typical SFDR and SNR		
	10kHz bandwidth                      100kHz bandwidth                      1MHz bandwidth                      2 MHz bandwidth	
	SFDR    SNR                      SFDR    SNR                      SFDR    SNR                      SFDR    SNR	
50 V	110 dB    91 dB                      110 dB    82 dB                      94 dB    76 dB                      84 dB    73 dB	
400 V	110 dB    95 dB                      110 dB    92 dB                      94 dB    82 dB                      84 dB    77 dB	
1400 V	110 dB    95 dB                      110 dB    95 dB                      94 dB    82 dB                      84 dB    77 dB	
Typical CMRR	>80 dB @ 50 Hz                      60 dB @ 1 kHz 70 dB @ 400 Hz                      48 dB @ 10 kHz	
Isolation voltage	Line to Ground 1.4 kVrms Line to Line 1.8 kVrms	
Protection	CAT III 600 CAT IV 300	
Surge (1.2/50)	$\pm 4000$ V	
Burst (5 kHz)	$\pm 4000$ V	
Output voltage	$\pm 5$ V	
Output resistance	10 Ohm	
Output current maximum	35 mA                      CAUTION: do not exceed maximum output current!	
Power supply	$\pm 9$ V <sub>DC</sub> $\pm 1$ %	
Power consumption	1.2 W	
Power On default settings	Software programmable	
Special functions	Integrated temperature sensor	
Programming interface	RS-485	

<sup>1)</sup> 20 V and 50 V are auxiliary ranges and have a limited bandwidth.  
20 V range typically 0.9 Mhz  
50 V range typically 1.9 Mhz

<sup>2)</sup> Conditions for accuracy: Module temperature is calibration temperature  $\pm 5$  °C; humidity is 30 to 90 RH;  
AC accuracy: the highest filter (2 Mhz) has to be activated. f = signal frequency in kHz.  
for the 2 year accuracy multiply all % of range and % of reading values by 1.5.

<sup>3)</sup> 2 MHz filter: exclusively Butterworth 60 dB/decade. Please consider possible bandwidth limitation of further components in the measuring chain, e.g. A/D cards or signal conditioning mainframe

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