HSI-HV — Isolated high voltage module

- *Input ranges:* 7 ranges (±20 V to ±1400 V)
- *Bandwidth:* 2 MHz
- *Isolation:* 1.8 kV_{RMS} line to line
  1.4 kV_{RMS} line to ground
- *Input impedance:* 10 MΩ
- *Protection:* 4 kV burst, surge
- *Signal connection:* Banana sockets

Module specifications

	HSI-HV							
Input ranges	±20 V[1], ±50 V[1], ±100 V, ±200 V, ±400 V, ±800 V, ±1400 V							
1 year accuracy[2]	Range	Signal frequency	Accuracy					
	20 V; 50 V	DC	±0.05 % of reading ±60 mV					
	100 V to 1400 V	DC	±0.05 % of reading ±0.05 % of range					
		0.1Hz to 500 Hz	±0.05 % of reading ±0.01 % of range					
		>500 Hz to 5 kHz	±0.1 % of reading ±0.05 % of range					
		>5 kHz to 50 kHz	±0.4 % of reading ±0.05 % of range					
		>50 kHz to 100 kHz	±(0.016*f) % of reading ±0.1 % of range					
		>100 kHz to 1 MHz	±(0.010*f) % of reading ±1 % of range					
		>1 MHz to 2 MHz	±(0.014*f) % of reading ±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 MΩ || 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[3]							
Filter type	Bessel or Butterworth 40 dB/decade							
Filter characteristics								
100 Hz to 1 MHz	Butterworth or Bessel 40 dB/dec (2nd order; ±1.5 dB @ f_0)							
2 MHz	Butterworth 60 dB/dec (3rd 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)	±4000 V							
Burst (5 kHz)	±4000 V							
Output voltage	±5 V							
Output resistance	10 Ohm							
Output current maximum	35 mA	CAUTION: do not exceed maximum output current!						
Power supply	±9 V_{DC} ± 1%							
Power consumption	1.2 W							
Power On default settings	Software programable							
Special functions	Integrated temperature sensor							
Programming interface	RS-485							

[1] 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

[2] Conditions for accuracy: Module temperature is calibration temperature ±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.

[3] 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