HSI-LV — *Isolated low voltage module*

- *Voltage input:* *12 ranges (10 mV to 50 V)*
- *Current input:* *±20 mA using SE-CUR-SHUNT-1*
  ±5 A using SE-CUR-SHUNT-4 or -SHUNT-5
- *Bandwidth:* *2 MHz*

Additional signal input using MSI

- *IEPE®* *Constant current powered sensors (accelerometers,microphones); 12 ranges (10 mV to 5 V); requires MSI-V-ACC*
- *RTD* *Resistance Temperature Detector (Pt100 to Pt2000) 9 resistance ranges (8 to 4000 Ω); requires MSI-V-RTD*

Module specifications

	HSI-LV							
Input ranges	10 mV, 20 mV, 50 mV, 100 mV, 200 mV, 500 mV, 1 V, 2.5 V, 5 V, 10 V, 25 V, 50 V							
Button selectable ranges	10 mV, 50 mV, 200 mV, 1 V, 5 V, 10 V, 50 V							
Rated input voltage	33 V_{RMS}, 46.7 V_{PEAK}, 70 V_{DC} according to EN-61010-1 and EN-61010-2-30							
1 year accuracy[1)]	Range		Signal frequency		Accuracy			
Bipolar	10 mV to 100 mV		DC		±0.02 % of reading ±60 µV			
	2.5 V		DC		±0.02 % of reading ±0.1 % of range			
	200 mV to 50 V		DC		±0.02 % of reading ±0.05 % of range			
	10 mV to 100 mV		0.1 Hz to 5 kHz >5 kHz to 50 kHz >50 kHz to 100 kHz >100 kHz to 1 MHz >1 MHz to 2 MHz		±0.1 % of reading ±30 µV ±0.4 % of reading ±30 µV ±(0.016*f) % of reading ±0.1 % of range ±(0.010*f) % of reading ±1 % of range ±(0.014*f) % of reading ±3 % of range			
	200 mV to 50 V		0.1 Hz to 500 Hz >500 Hz to 5 kHz >5 kHz to 50 kHz >50 kHz to 100 kHz >100 kHz to 1 MHz >1 MHz to 2 MHz		±0.05 % of reading ±0.01 % of range ±0.1 % of reading ±0.05 % of range ±0.4 % of reading ±0.05 % of range ±(0.016*f) % of reading ±0.1 % of range ±(0.010*f) % of reading ±1 % of range ±(0.014*f) % of reading ±3 % of range			
Unipolar	10 mV to 100 mV 200 mV to 50 V		DC DC		±0.02 % of reading ±60 µV ±0.02 % of reading ±0.08 % of range			
Input coupling	DC or AC software selectable (1.5 Hz standard, custom on request down to 0.01 Hz)							
Gain linearity	Typically 0.01 %; max. 0.04 % of full scale							
Gain drift range	Typically 10 ppm/°C (max. 30 ppm/°C)							
Offset drift	10 mV to 200 mV: 500 mV to 50 V:		Typically 3 µV/°C Typically 10 ppm of range/°C					
Long term stability	100 ppm/sqrt (1000 hrs)							
Input resistance	1 MOhm							
Bandwidth (-3 dB)	2 MHz							
Signal delay @ full bandwidth	approx. 405 ns							
Filter selection	Push button or software							
Filter	100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz, 300 kHz, 1 MHz, 2 MHz[2)]							
Filter type	Bessel or Butterworth 40 dB/dec							
Filter characteristics 100 Hz to 1 MHz 2 MHz	 Butterworth or Bessel 40 dB/dec (2nd order; ±1.5 dB @ f_0) Butterworth 60 dB/dec (3rd order; 0 to -3 dB @ 2 MHz)							
Typical SFDR and SNR:	10 kHz bandwidth		100 kHz bandwidth		1 MHz bandwidth		2 MHz bandwidth	
	SFDR	SNR	SFDR	SNR	SFDR	SNR	SFDR	SNR
20 mV	88 dB	78 dB	88 dB	71 dB	77 dB	60 dB	76 dB	56 dB
1 V	110 dB	98 dB	110 dB	95 dB	93 dB	82 dB	84 dB	75 dB
50 V	110 dB	98 dB	110 dB	95 dB	94 dB	82 dB	85 dB	75 dB
Typical CMRR	10 mV to 1 V range:		2.5 V to 50 V range:					
50 Hz	130 dB		100 dB					
1 kHz	120 dB		60 dB					
10 kHz	95 dB		40 dB					
100 kHz	75 dB		20 dB					

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Input overvoltage protection	350 V_{DC}
Isolation voltage	1 kV_{RMS} [3]
Sensor supply	±9 V (±1 %), 12 V (±5 %), 200 mA resettable fuse protected[4]
Output voltage	±5 V
Output resistance	10 Ohm
Maximum output current	5 mA
Output protection	Short to ground for 10 sec.
Power On default settings	Software programable
Power supply	±9 V_{DC} ±1 %
Power consumption	1.1 W without sensor supply
Special functions	Integrated temperature sensor
RS-485 interface	Yes
TEDS	Hardware support for TEDS (Transducer Electronic Data Sheet)
Supported TEDS chips	DS2406, DS2430A, DS2432, DS2433, DS2431
Supported MSI	MSI-V-ACC, MSI-V-RTD

[1] 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.

[2] 2 MHz filter: exclusively for Butterworth 60 dB/decade - refer to filter specifications. Please consider possible bandwidth limitation of further components in the measuring chain, e.g. A/D card or signal conditioning mainframe.

[3] Although the rated input voltage is 33 V_{RMS}, 46.7 V_{PEAK} or 70 V_{DC} according to EN-61010-1 and EN-61010-2-30, the galvanic isolation has been tested with 1 kV_{RMS} for 1 min.

[4] Overall current should not exceed DEWE-30-xx maximum power.