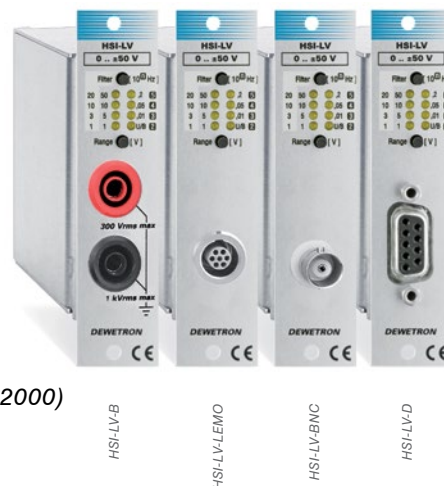


## HSI-LV

## Isolated low voltage module

- Voltage input: 12 ranges (10 mV to 50 V)
  - Current input:  $\pm 20$  mA using DAQ-SHUNT-1  
 $\pm 5$  A using DAQ-SHUNT-4 or DAQ-SHUNT-5
  - Bandwidth: 2 MHz
  - Isolation: 350 V<sub>DC</sub> (1 kV<sub>RMS</sub> with banana socket)
- 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  $\Omega$ ); 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
1 year accuracy <sup>1)</sup>	Range Signal frequency Accuracy
Bipolar	10 mV to 100 mV DC $\pm 0.02$ % of reading $\pm 60$ $\mu$ V
	2.5 V DC $\pm 0.02$ % of reading $\pm 0.1$ % of range
	200 mV to 50 V DC $\pm 0.02$ % of reading $\pm 0.05$ % of range
	10 mV to 100 mV 0.1 Hz to 10 kHz $\pm 0.1$ % of reading $\pm 30$ $\mu$ V
	>10 kHz to 50 kHz $\pm 0.4$ % of reading $\pm 30$ $\mu$ V
	>50 kHz to 100 kHz $\pm(0.016*f)$ % of reading $\pm 0.1$ % of range
Unipolar	>100 kHz to 1 MHz $\pm(0.010*f)$ % of reading $\pm 1$ % of range
	>1 MHz to 2 MHz $\pm(0.014*f)$ % of reading $\pm 3$ % of range
	200 mV to 50 V 0.1 Hz to 1 kHz $\pm 0.05$ % of reading $\pm 0.01$ % of range
	>1 kHz to 10 kHz $\pm 0.1$ % of reading $\pm 0.05$ % of range
	>10 kHz to 50 kHz $\pm 0.4$ % of reading $\pm 0.05$ % of range
	>50 kHz to 100 kHz $\pm(0.016*f)$ % of reading $\pm 0.1$ % of range
>100 kHz to 1 MHz $\pm(0.010*f)$ % of reading $\pm 1$ % of range	
>1 MHz to 2 MHz $\pm(0.014*f)$ % of reading $\pm 3$ % 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/ $^{\circ}$ C (max. 30 ppm/ $^{\circ}$ C)
Offset drift	10 mV to 200 mV: Typically 3 $\mu$ V/ $^{\circ}$ C 500 mV to 50 V: Typically 10 ppm of range/ $^{\circ}$ C
Long term stability	100 ppm/sqrt (1000 hrs)
Input resistance	1 MOhm
Bandwidth (-3 dB)	2 MHz
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 <sup>2)</sup>
Filter type	Bessel or Butterworth 40 dB/dec
Filter characteristics	100 Hz to 1 MHz Butterworth or Bessel 40 dB/dec (2 <sup>nd</sup> order; $\pm 1.5$ dB @ $f_0$ ) 2 MHz Butterworth 60 dB/dec (3 <sup>rd</sup> 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 75 dB
10 kHz	95 dB 55 dB
100 kHz	75 dB 25 dB

continued on next page

continued from previous page

Input overvoltage protection	350 V <sub>DC</sub>
Isolation voltage	350 V <sub>DC</sub> (1 kV <sub>RMS</sub> with banana connector)
Sensor supply	±9 V (±1 %), 12 V (±5 %), 200 mA resettable fuse protected <sup>3)</sup>
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 programmable
Power supply	±9 V <sub>DC</sub> ±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

<sup>1)</sup> 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.

<sup>2)</sup> 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.

<sup>3)</sup> Overall current should not exceed DEWE-30-xx maximum power.