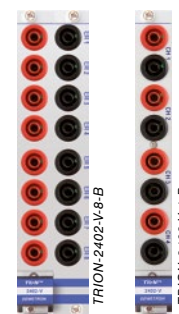


## TRION-2402-V

## Isolated wide range voltage module

- Sampling: 24 bit; 204.8 kS/s per channel
- Input types: Voltage  $\pm 300$  mV to  $\pm 1000^{(2)}$  V<sub>DC</sub>  
Current
- Isolation: 4 kV



TRION-2402-V specifications					
Input channels	4 (TRION-2402-V-4-B) 8 (TRION-2402-V-8-B)				
Sampling rate	204.8 kS/s per channel				
Resolution	24 bit				
Input ranges					
Voltage	$\pm 0.3$ V, $\pm 1$ V, $\pm 3$ V, $\pm 10$ V, $\pm 30$ V, $\pm 100$ V, $\pm 400$ V and $\pm 1000$ V <sup>(2)</sup>				
Current	Depending on external Shunt; e.g. 20 mA, 1 A, 5 A				
Voltage input accuracy	Signal frequency	Accuracy			
Range > 10 V	DC to 1 kHz	$\pm 0.02$ % of reading $\pm 0.02$ % of range $\pm 3$ mV			
	>1 kHz to 5 kHz	$\pm 0.3$ % of reading $\pm 0.02$ % of range $\pm 3$ mV			
	>5 kHz to 10 kHz	$\pm 1$ % of reading $\pm 0.02$ % of range $\pm 3$ mV			
Range $\leq 10$ V	DC to 1 kHz	$\pm 0.02$ % of reading $\pm 0.02$ % of range $\pm 200$ $\mu$ V			
	>1 kHz to 5 kHz	$\pm 0.3$ % of reading $\pm 0.02$ % of range $\pm 200$ $\mu$ V			
	>5 kHz to 10 kHz	$\pm 1$ % of reading $\pm 0.02$ % of range $\pm 200$ $\mu$ V			
Offset drift	Range > 10 V	typical 10 $\mu$ V/ $^{\circ}$ C + 10 ppm of range, max 500 $\mu$ V/ $^{\circ}$ C + 20 ppm of range/ $^{\circ}$ C			
	Range $\leq 10$ V	typical 0.3 $\mu$ V/ $^{\circ}$ C + 10 ppm of range, max 15 $\mu$ V/ $^{\circ}$ C + 20 ppm of range/ $^{\circ}$ C			
Gain drift	typical 10 ppm/ $^{\circ}$ C max. 20 ppm/ $^{\circ}$ C				
Linearity	typical 0.01 %				
Input impedance	Range > 10 V	10 M $\Omega$			
	Range $\leq 10$ V	5 M $\Omega$			
Input bias current	< 100 pA				
Input coupling	DC				
Input configuration	Isolated				
Typical SNR	Range	1 V	10 V	100 V	1000 V <sup>(2)</sup>
	100 S/s $\leq$ fs $\leq$ 1 kS/s	113 dB	115 dB	113 dB	115 dB
	10 kS/s < fs $\leq$ 102.4 kS/s	106 dB	109 dB	106 dB	109 dB
	102.4 kS/s < f $\leq$ 200 kS/s	81 dB	81 dB	81 dB	81 dB
Spurious free dynamic range	Range	1 V	10 V	100 V	1000 V
	100 S/s $\leq$ fs $\leq$ 1 kS/s	139 dB	140 dB	139 dB	140 dB
	10 kS/s < fs $\leq$ 102.4 kS/s	134 dB	134 dB	134 dB	134 dB
	102.4 kS/s < f $\leq$ 200 kS/s	132 dB <sup>(1)</sup> / 110 dB	131 dB <sup>(1)</sup> / 112 dB	132 dB <sup>(1)</sup> / 110 dB	131 dB <sup>(1)</sup> / 112 dB
Typical CMRR	$\leq 10$ V Range	100 dB @ 50 Hz	100 dB @ 1 kHz	100 dB @ 1 kHz	
	>10 V Range	90 dB @ 50 Hz	60 dB @ 1 kHz	60 dB @ 1 kHz	
Low pass Filter (in DEWESoft 7™, digital)	10 Hz, 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz (-3 dB), Off				
Characteristic	Bessel or Butterworth				
Filter order	2nd, 4th, 6th, 8th				
Analog anti aliasing filter	2nd order Bessel, automatically set by sample rate				
Sample rate $\leq$ 1 kS/s	2.5 kHz (-3 dB), 1.5 kHz (-1 dB)				
Sample rate $\leq$ 10 kS/s	25 kHz (-3 dB), 15 kHz (-1 dB)				
Sample rate > 10 kS/s	250 kHz (-3 dB), 150 kHz (-1 dB)				
Bandwidth (-3 dB digital filter)					
1 kS/s $\leq$ fs $\leq$ 51.2 kS/s	0.494 fs				
51.2 kS/s < fs $\leq$ 102.4 kS/s	0.49 fs				
102.4 kS/s < fs $\leq$ 204.8 kS/s	0.38 fs				
Typ. crosstalk fin 1 kHz [10 kHz]	110 dB [95 dB]				
Channel to channel phase mismatch	<60 nsec between channels using the same range				
Measurement category	CAT II 300 V				
Isolation voltage	4 kV				
Non-destructive voltage					
Range $\leq 10$ V	$\pm 1000$ V <sub>DC</sub>				
Range > 10 V	$\pm 2000$ V <sub>DC</sub>				
Typical power consumption					
TRION-2402-V-8	8.3 W				
TRION-2402-V-4	4.5 W				
Connector	4 mm safety banana sockets				
Weight	Appr. 270 g (4 ch version), appr. 400 g (8 ch version)				

<sup>1)</sup> below 0.22 fs

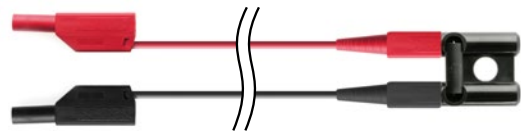
<sup>2)</sup> Unit meets IEC/EN 61010-1:2010 and IEC/EN 61010-2-30:2010 up to input voltage 300 V

### Shunts for TRION™ voltage input modules

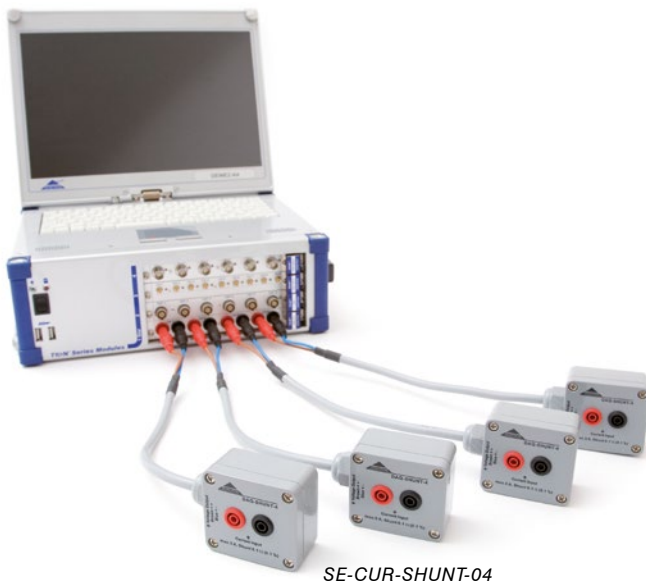
Shunts	
SE-CUR-SHUNT-01	20 mA shunt adaptor (50 Ohm, $\pm 0.1\%$ , 1 W); Fitting into 4 mm banana jacks with 19 mm distance Not compatible with TRION-x-V-4-B
SE-CUR-SHUNT-01-UNI	20 mA shunt adaptor (50 Ohm, $\pm 0.1\%$ , 1 W); Fitting into 4 mm banana jacks - also for TRION-x-V-4-B
SE-CUR-SHUNT-04	5 A shunt box (100 mOhm, $\pm 0.1\%$ , <10 ppm); Current input via 2 safety banana jacks, output 2x 0.3 m cable with banana plugs
SE-CUR-SHUNT-05	5 A shunt box (100 mOhm, $\pm 0.1\%$ , <10 ppm); Current input via 2 safety banana jacks, output via 2 safety banana jacks
SE-CUR-SHUNT-06	20 A shunt box (0.5 mOhm, $\pm 0.1\%$ < $\pm 30$ ppm/K); Current input via 2 safety banana jacks, output via 2 safety banana jacks



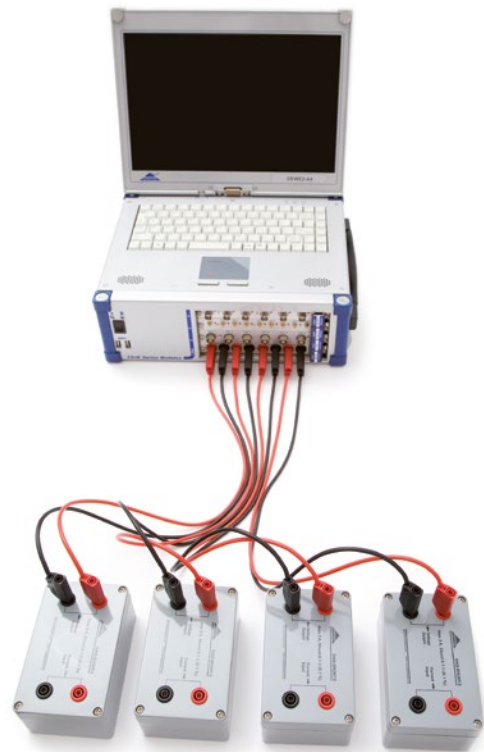
SE-CUR-SHUNT-01  
(not compatible with TRION-x-V-4 modules)



SE-CUR-SHUNT-01-UNI  
(50 cm cable length)



SE-CUR-SHUNT-04



SE-CUR-SHUNT-05



SE-CUR-SHUNT-06