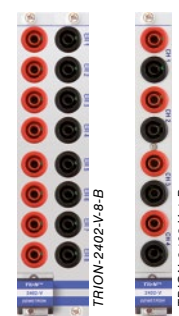


TRION-2402-V

Isolated wide range voltage module

- Sampling: 24 bit; 204.8 kS/s per channel
- Input types: Voltage ± 300 mV to $\pm 1000^{(2)}$ V_{DC}
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	± 0.3 V, ± 1 V, ± 3 V, ± 10 V, ± 30 V, ± 100 V, ± 400 V and ± 1000 V ⁽²⁾				
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	± 0.02 % of reading ± 0.02 % of range ± 3 mV			
	>1 kHz to 5 kHz	± 0.3 % of reading ± 0.02 % of range ± 3 mV			
	>5 kHz to 10 kHz	± 1 % of reading ± 0.02 % of range ± 3 mV			
Range ≤ 10 V	DC to 1 kHz	± 0.02 % of reading ± 0.02 % of range ± 200 μ V			
	>1 kHz to 5 kHz	± 0.3 % of reading ± 0.02 % of range ± 200 μ V			
	>5 kHz to 10 kHz	± 1 % of reading ± 0.02 % of range ± 200 μ V			
Offset drift	Range > 10 V	typical 10 μ V/ $^{\circ}$ C + 10 ppm of range, max 500 μ V/ $^{\circ}$ C + 20 ppm of range/ $^{\circ}$ C			
	Range ≤ 10 V	typical 0.3 μ V/ $^{\circ}$ C + 10 ppm of range, max 15 μ 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 Ω			
	Range ≤ 10 V	5 M Ω			
Input bias current	< 100 pA				
Input coupling	DC				
Input configuration	Isolated				
Typical SNR	Range	1 V	10 V	100 V	1000 V ⁽²⁾
	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 ⁽¹⁾ / 110 dB	131 dB ⁽¹⁾ / 112 dB	132 dB ⁽¹⁾ / 110 dB	131 dB ⁽¹⁾ / 112 dB
Typical CMRR	≤ 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 ≤ 1 kS/s	2.5 kHz (-3 dB), 1.5 kHz (-1 dB)				
Sample rate ≤ 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 ≤ 10 V	± 1000 V _{DC}				
Range > 10 V	± 2000 V _{DC}				
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)				

¹⁾ below 0.22 fs

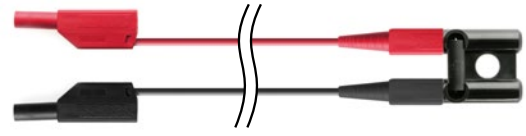
²⁾ Unit meets IEC/EN 61010-1:2010 and IEC/EN 61010-2-30:2010 up to input voltage 300 V

Shunts for TRION™ voltage input modules

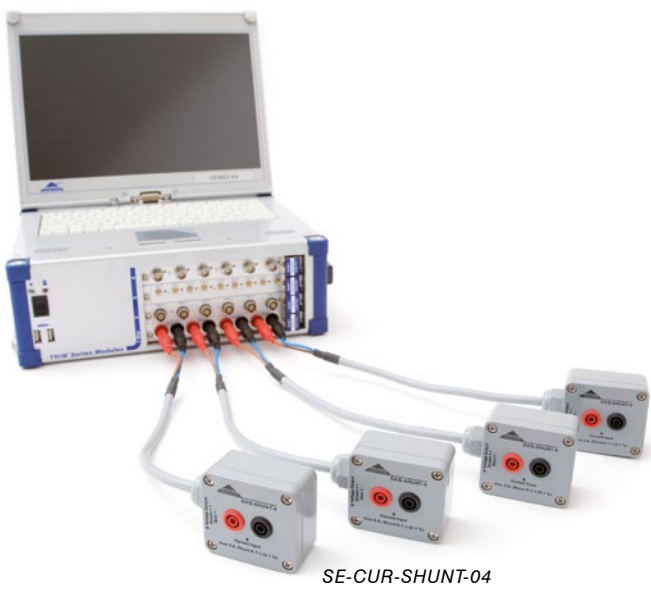
Shunts	
SE-CUR-SHUNT-01	20 mA shunt adaptor (50 Ohm, $\pm 0.1\%$, 1 W); Fitting into 4 mm banana jacks with 19 mm distance Not compatible with TRION-x-V-4-B
SE-CUR-SHUNT-01-UNI	20 mA shunt adaptor (50 Ohm, $\pm 0.1\%$, 1 W); Fitting into 4 mm banana jacks - also for TRION-x-V-4-B
SE-CUR-SHUNT-04	5 A 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



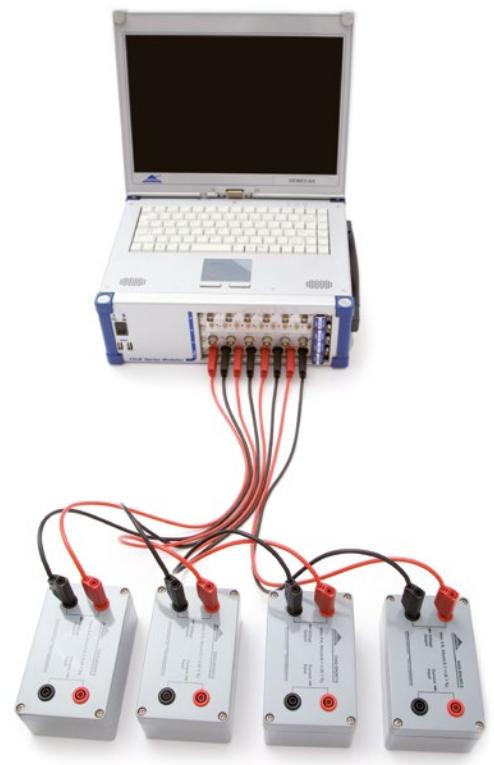
SE-CUR-SHUNT-01
(not compatible with TRION-x-V-4 modules)



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



SE-CUR-SHUNT-04



SE-CUR-SHUNT-05



SE-CUR-SHUNT-06