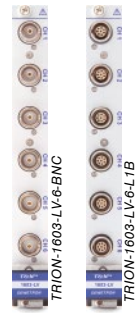


TRION-1603-LV

Isolated voltage input module

- **Resolution:** 16 bit 250 kS/s per channel
- **Input:** Voltage $\pm 5\text{ mV to } \pm 100\text{ V}^{(1)}$
Current $10\text{ mA to } 100\text{ mA}^{(2)}$
- **Isolation:** 1.5 kV



TRION-1603-LV series specifications										
Input channels	TRION-1603-LV-6-BNC		6 channels BNC; voltage input							
	TRION-1603-LV-6-L1B		6 channels LEMO; voltage input; 5/12 V sensor supply; TEDS							
Sampling Rate / Resolution	100 S/s to 250 kS/s 16-bit									
Data Transfer	16-bit									
ADC type	SAR (Successive Approximation Register)									
Data rate DMA transfer	6 analog channels: max 3 MB/s									
Input ranges	Voltage	$\pm 5, \pm 10, \pm 20, \pm 50, \pm 100, \pm 200, \pm 500\text{ mV}, \pm 1\text{ V}, \pm 2\text{ V}, \pm 5\text{ V}, \pm 10\text{ V}, \pm 20\text{ V}, \pm 50\text{ V}, \pm 100\text{ V}^{(1)}$								
	Current ⁽²⁾	10, 20, 50, 100 mA								
Input noise (5 mV range)	0 to 10 Hz :		1.5 μV_{pp}							
	Noise density:		6.4 nV/SQRT(Hz)							
Input impedance	1 M Ω shunted by 18 pF									
Input bias current	<1 nA									
Input coupling	DC									
Accuracy ⁽³⁾	Voltage	DC to 1kHz	$\pm 0.02\%$ of reading $\pm 0.02\%$ of range $\pm 20\ \mu\text{V}$							
		>1 kHz to 5 kHz	$\pm 0.2\%$ of reading $\pm 0.02\%$ of range $\pm 20\ \mu\text{V}$							
	Current ⁽²⁾	>5 kHz to 10 kHz	$\pm 0.5\%$ of reading $\pm 0.02\%$ of range $\pm 20\ \mu\text{V}$							
		DC to 1kHz	$\pm 0.1\%$ of reading $\pm 0.02\%$ of range $\pm 10\ \mu\text{A}$							
		>1 kHz to 5 kHz	$\pm 0.2\%$ of reading $\pm 0.02\%$ of range $\pm 10\ \mu\text{A}$							
	>5 kHz to 10 kHz	$\pm 0.5\%$ of reading $\pm 0.02\%$ of range $\pm 10\ \mu\text{A}$								
Gain drift	typical 10 ppm/ $^{\circ}\text{C}$ max. 20 ppm/ $^{\circ}\text{C}$									
Offset drift	typical 0.3 $\mu\text{V}/^{\circ}\text{C}$ + 10 ppm of range, max 15 $\mu\text{V}/^{\circ}\text{C}$ + 20 ppm of range/ $^{\circ}\text{C}$									
Linearity	typical 0.01 %									
Sensor excitation ⁽²⁾	1 to 28 V @ 1 % $\pm 1\text{ mV}$ accuracy freely programmable (max. 100 mA, max 1 W)									
Input configuration	Isolated									
Isolation impedance	Isolation resistance >1 G Ω ; Isolation capacitance typically 15 pF									
Current input	Internal 10 Ω shunt; max. 100 mA protected with resettable fuse									
Isolation voltage	1500 V with TRION-1603-LV-6-BNC 800 V with TRION-1603-LV-6-L1B									
Signal-to-noise ratio, spurious free SNR, Effective number of Bits	20 mV range			2 V range			100 V range			
	SNR	SFDR	ENOB	SNR	SFDR	ENOB	SNR	SFDR	ENOB	
Sample rate	[dB]	[dB]	[Bit]	[dB]	[dB]	[Bit]	[dB]	[dB]	[Bit]	
1 kS/s	93	120	15.2	93	120	15.2	93	120	15.2	
10 kS/s	90	120	14.7	93	120	15.2	93	120	15.2	
100 kS/s	80	116	13.0	93	120	15.2	93	120	15.2	
250 kS/s	74	100	12.0	93	120	15.2	93	120	15.2	
Typical CMRR	$\leq 2\text{ V range}$	>140 dB @ 50 Hz		>120 dB @ 1 kHz						
	$> 2\text{ V range}$	>90 dB @ 50 Hz		>60 dB @ 1 kHz						
Low pass Filter (-3 dB, digital)	10 Hz, 30 Hz, 100 Hz, 300 Hz, 1 kHz, 3 kHz, 10 kHz, 30 kHz, 100 kHz									
Characteristic	Bessel or Butterworth									
Filter order	2 nd , 4 th , 6 th , 8 th									
Analog antialiasing filter	2 nd order Bessel, automatically selected									
Bandwidth (-3 dB, deactivated digital filter)	100 kHz 2 nd order Bessel filter									
Crosstalk fin 1 kHz [10 kHz]	$\leq 2\text{ V Range: } 120\text{ dB [105 dB]}$									
Channel to channel phase mismatch	typically <60 nsec when using the same input range; <200 nsec for using different ranges.									
Board to board phase mismatch	<30 nsec									
Over voltage protection	$\pm 300\text{ V}_{DC}$									
ESD protection	IEC61000-4-2: $\pm 8\text{ kV}$ air discharge, $\pm 4\text{ kV}$ contact discharge									
Supported TEDS chips ⁽²⁾	DS2406, DS2430A, DS2431, DS2432, DS2433									
Power consumption	6 W									
¹⁾ For safety reasons maximum allowed voltage: 70 V_{DC} (46.7 $\text{V}_{RMS AC}$)										
²⁾ TRION-1603-LV-6-L1B only										
³⁾ 1 year accuracy 23 $^{\circ}\text{C} \pm 5\text{ }^{\circ}\text{C}$										

Mating Connector				
	Connector	Termination	Length	TRION modules
LEMO-FGG.1B.308.CLAD52Z	LEMO 1B.308	mating connector, for cable diameter 4.2 to 5.2 mm	-	TRION-x-LV-6-L1B
LEMO-FGG.1B.308.CLAD62Z	LEMO 1B.308	mating connector, for cable diameter 5.2 to 6.2 mm	-	TRION-x-LV-6-L1B
LEMO-FGG.1B.308.CLAD72Z	LEMO 1B.308	mating connector, for cable diameter 6.2 to 7.2 mm	-	TRION-x-LV-6-L1B