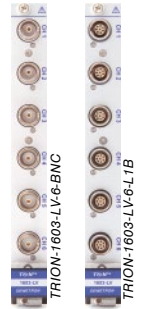


TRION-1603-LV

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 $\pm 20 \mu\text{V}$ | | | | | | | | |
| | | >5 kHz to 10 kHz $\pm 0.5 \%$ of reading $\pm 0.02 \%$ of range $\pm 20 \mu\text{V}$ | | | | | | | | |
| | Current ²⁾ | 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 V_{RMS} AC) | | | | | | | | | | |
| ²⁾ TRION-1603-LV-6-L1B only | | | | | | | | | | |
| ³⁾ 1 year accuracy 23 $^{\circ}\text{C}$ ± 5 $^{\circ}\text{C}$ | | | | | | | | | | |

| 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 |