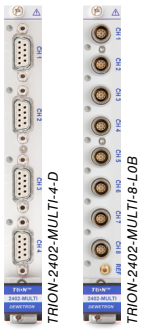
TRION-2402-MULTI Universal analog input module

- *Sampling:* *24-bit; 204.8 kS/s per channel*
- *Input:* *Voltage, bridge, resistance, RTD and IEPE*
- *Isolation:* *350 V_{DC}*
- *CAN:* *High-speed CAN2.0 port*



TRION-2402-MULTI specifications		
Input channels	TRION-2402-MULTI-4-D TRION-2402-MULTI-8-L0B	4 channels SUB-D connector (CH1 can be used as CAN port) 8 channels 0B LEMO connector (CH1 can be used as CAN port)
ADC		
Resolution	24-bit	
Sampling rate	1 kS/s to 204.8 kS/s per channel	
Isolation[1)]	Channel to channel Channel to chassis	350 V_{DC}[1)] 350 V_{DC}[1)]
Input ranges		
Voltage	±5 mV to ±100 V[1)] freely programmable	
IEPE	±100 mV to ±10 V freely programmable	
Bridge	1 to 1000 mV/V	
Resistance	10, 30, 100, 300 Ω, 1, 3, 10, 30 kΩ	
Voltage input 1 year accuracy	±0.05 % of reading ± 0.02 % of range ±20 µV	
Gain drift	typical 10 ppm/°C max. 20 ppm/°C	
Offset drift	typical 0.3 µV/°C + 10 ppm of range, max 2 µV/°C + 20 ppm of range	
Linearity	typical 0.01 %	
Input impedance	0 to 10 V range 10 to 100 V range	100 MΩ 2 MΩ
Input bias current	< 5 nA	
Input configuration	Single ended or differential (programmable)	
Input coupling	DC / AC (high pass filter 0.16 Hz)	
Common mode voltage	±200 V_{DC}	
Over voltage protection	0 to 10 V range 10 to 100 V range	50 V 250 V
Excitation voltage range	0 to 24 V_{DC} (programmable)	
Resolution	1 mV	
1 year accuracy	±0.05 % ±1 mV	
Drift	±10 ppm/K ±50 µV/K	
Current limit	0.1 to 10 V: 60 mA 10 to 15 V: 40 mA >15 V: 30 mA	
Protection	Continuous short	
Excitation current range	0.1 to 60 mA_{DC} (programmable, 16 bit DAC)	
Resolution	1 uA	
1 year accuracy	0.1 to 5 mA: 0.05 % ±2 µA	>5 to 60 mA: 2% ±5 µA
Drift	15 ppm/°C	
Compliance voltage	0.1 to 20 mA: 24 V >20 mA: 10 V	
Output impedance	>10 MΩ	
Supported sensors	4- or 6-wire full bridge 3- or 5-wire ½ bridge with internal completion (software programmable) 3- or 4-wire ¼ bridge with internal resistor for 120 Ω and 350 Ω (software programmable) 4-wire full bridge with constant current excitation (piezoresistive bridge sensors) Potentiometer Resistance Resistance temperature detection: Pt100, Pt200, Pt300, Pt500, Pt1000, Pt2000 (2-, 3-, 4-wire) IEPE	

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Bridge resistance	80 Ω to 10 kΩ @ ≤ 5 V_{DC} excitation			
Completion resistor accuracy	0.05 % ±15 ppm/K			
Automatic bridge balance	±400 % of range			
Typical SNR Range	10 mV	100 mV	1V	10 V
100 S/s ≤ fs ≤ 1 kS/s	82 dB	101 dB	111 dB	112 dB
10 kS/s < fs ≤ 102.4 kS/s	72 dB	92 dB	104 dB	107 dB
102.4 kS/s < f ≤ 200 kS/s	69 dB	80 dB	81 dB	81 dB
Spurious free dynamic range	10 mV	100 mV	1 V	10 V
100 S/s ≤ fs ≤ 1 kS/s	108 dB	128 dB	141 dB	141 dB
10 kS/s < fs ≤ 102.4 kS/s	103 dB	123 dB	134 dB	136 dB
102.4 kS/s < f ≤ 200 kS/s	99 dB	120 dB[2] / 106 dB	133 dB[2] / 106 dB	135 dB[2] / 106 dB
Typical CMRR	90 dB @ 1 kHz	80 dB @ 10 kHz		
Self test (self calibration)	Each channel is able to perform a complex self test by using internal high precision references			
Low pass filter (-3 dB, digital)	10 Hz to 40 % of sample rate freely programmable			
Characteristic	Bessel or Butterworth			
Filter order	2nd, 4th, 6th, 8th			
Analog anti aliasing filter	2nd order Bessel,			
Sample rate > 10 kS/s	250 kHz (-3 dB), 150 kHz (-1 dB)			
Bandwidth (-3 dB digital filter)				
1 kS/s ≤ fs ≤ 51.2 kS/s	0.494 fs			
51.2 kS/s < fs ≤ 102.4 kS/s0.49	0.49 fs			
102.4 kS/s < fs ≤ 204.8 kS/s	0.38 fs			
CAN specification	CAN 2.0			
CAN Physical Layer	High Speed			
CAN Termination	Programmable: high impedance or 120 Ω			
CAN bus protection	±36 V			
Input connector	9-pin LEMO EPG.0B.309, 9-pin SUB-D connector			
REF connector	SMB			
Environmental specifications				
Operating temperature	(0 to +45 °C (32 to 113 °F)			
Storage temperature	-20 to +70 °C (-4 to 158 °F)			
Humidity	10 to 80 % non cond., 5 to 95 % rel. humidity			

[1] for safety reasons it is not allowed to apply more than 47.2 V_{PEAK} or 70 V_{DC}
[2] below 0.22 * fs