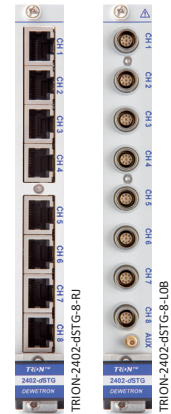


# TRION-2402-dSTG



## TRION-2402-dSTG

- ▶ Differential universal input module
- ▶ Sampling: 24 bit, 200 kS/s per channel
- ▶ Input types
  - Voltage
  - Strain gauge, bridge sensor, piezo-resistive bridge
  - IEPE®
  - Resistance, potentiometer



## Module specifications

TRION-2402-dSTG specifications		
Input channels	TRION-2402-dSTG-8-RJ	8 channels using RJ-45 sockets
	TRION-2402-dSTG-8-LOB	8 channels using LEMO 0B sockets
Sampling rate	200 kS/s channel	
Resolution	24 bit	
Input ranges	<ul style="list-style-type: none"> <li>– Voltage: <math>\pm 10, 30, 100, 300</math> mV, 1 V, 3 V, 10 V</li> <li>– Bridge: 1, 3, 10, 30, 100, 300, 1000 mV/V or mV/mA</li> <li>– IEPE®: <math>\pm 100, 300</math> mV, 1V, 3V, 10V</li> <li>– Resistance: 10, 30, 100, 300 <math>\Omega</math>, 1, 3, 10, 30 k<math>\Omega</math></li> <li>– Current: Depending on external shunt</li> </ul>	
Voltage input accuracy <sup>1)</sup>	$\pm 0.02$ % of reading $\pm 0.02$ % of range $\pm 20$ $\mu$ V	
– Gain drift	Typical 10 ppm/ $^{\circ}$ C max. 20 ppm/ $^{\circ}$ C	
– Offset drift	Typical 0.3 $\mu$ V/ $^{\circ}$ C + 10 ppm of range/ $^{\circ}$ C, max 2 $\mu$ V/ $^{\circ}$ C + 20 ppm of range/ $^{\circ}$ C	
– Linearity	Typical $\pm 0.01$ %	
Input impedance	100 M $\Omega$	
Input bias current	<1 nA	
Input configuration	Single-ended or differential (programmable)	
Input coupling	DC, AC (0.16 Hz, 0.5 Hz, 3.4 Hz, 10 Hz); max. DC voltage when AC coupled: 50 V	
Excitation voltage	0 to 13.5 V <sub>DC</sub> (programmable, 1 mV steps), 100 mA max. current, max. 8 W per module	
– Accuracy <sup>1)</sup>	$\pm 0.03$ % $\pm 1$ mV	
– Drift	$\pm 10$ ppm/K $\pm 50$ $\mu$ V/K	
– Current limit	100 mA	
– Protection	Continuous short to ground	

Tab. 35: Module specifications

# TRION-2402-dSTG



TRION-2402-dSTG specifications												
Excitation current	0.002 to 20 mADC (pogrammable, 1 $\mu$ A steps)											
– Accuracy <sup>1)</sup>	0.05% $\pm$ 2 $\mu$ A											
– Drift	15 ppm/ $^{\circ}$ C											
– Compliance voltage	10 V											
– Output impedance	>10 M $\Omega$											
IEPE <sup>®</sup> excitation	4 mA $\pm$ 10 %											
– Compliance voltage	22 V											
Supported sensors	4- or 6-wire full bridge 3- or 5-wire $\frac{1}{2}$ bridge with internal completion 3- or 4-wire $\frac{1}{4}$ bridge with internal resistor for 120 and 350 $\Omega$ 4-wire full bridge with constant current excitation (piezo-resistive bridge sensors) Potentiometer; resistance IEPE <sup>®</sup> (fixed 4 mA excitation)											
Bridge resistance	80 $\Omega$ to 10 k $\Omega$ @ $\leq$ 5 V <sub>DC</sub> excitation											
Shunt calibration	Two internal shunt resistors 50 k $\Omega$ and 100 k $\Omega$											
Shunt and completion resistor accuracy	0.05 % $\pm$ 15 ppm/K											
Automatic bridge balance	250 % of range											
Typical signal-to-noise ratio, spurious	10 mV range			100 mV range			1 V range			10 V range		
Free SNR, effective number of bits <sup>2)</sup>	SNR	SFDR <sup>3)</sup>	ENOB <sup>4)</sup>	SNR	SFDR <sup>3)</sup>	ENOB <sup>4)</sup>	SNR	SFDR <sup>3)</sup>	ENOB <sup>4)</sup>	SNR	SFDR <sup>3)</sup>	ENOB <sup>4)</sup>
Sample rate	[dB]	[dB]	[Bit]	[dB]	[dB]	[Bit]	[dB]	[dB]	[Bit]	[dB]	[dB]	[Bit]
1 kS/s	82	108	13.3	101	128	16.5	111	141	18.1	112	141	18.3
10 kS/s	78	106	12.7	98	126	16.0	108	136	17.6	109	138	17.8
100 kS/s	72	103	11.7	92	123	15.0	104	134	17.0	107	136	17.5
200 kS/s	69	99	11.2	80	120 <sup>5)</sup> /106	13.0	81	133 <sup>5)</sup> /106	13.2	81	135 <sup>5)</sup> /106	13.2
Typical THD	-97 dB											
Typical CMRR	100 dB @ 50 Hz; 90 dB @ 1 kHz; 80 dB @ 10 kHz											
Analog anti-aliasing filter	– Sample rate $\leq$ 1k S/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)	2.5 kHz (-3 dB), 1.5 kHz (-1 dB)						0.494 fs					
	25 kHz (-3 dB), 15 kHz (-1 dB)						0.49 fs					
	250 kHz (-3 dB), 150 kHz (-1 dB)						0.38 fs					
Crosstalk fin 1 kHz [10 kHz]	120 dB [105 dB]											
Channel-to-channel phase mismatch	Typically <60 ns between channels using the same range											

Tab. 35: Module specifications

# TRION-2402-dSTG



TRION-2402-dSTG specifications		
Common mode voltage	$\pm 10 V_{DC}$	
Overvoltage protection	$\pm 50 V_{DC}$	
Supported TEDS chips	All common TEDS chips are supported.	
Supported MSI adapters	MSI adapters are not supported	
Typical power consumption	Voltage mode; no excitation	7 W
	IEPE® mode	7 W
	350 $\Omega$ full bridge (5 V / 10 V)	7 W / 9.5 W
	120 $\Omega$ quarter bridge 5 V excitation	8 W
	Bridge mode without connected sensor	11.5 W <sup>7)</sup>
Weight	Approx. 200 g (RJ45 version), appr. 250 g (LEMO version)	

Tab. 35: Module specifications

- |                                     |  |
|-------------------------------------|--|
| 1) 1 year accuracy 23 °C $\pm$ 5 °C | 5) Below 0.22 fs                                       |
| 2) LP Filter in auto mode           | 6) Consider maximum power supply of your DEWE2 chassis |
| 3) SFDR excluding harmonics         | 7) Do not switch to bridge mode if the input is open.  |
| 4) ENOB calculated from SNR         |  |