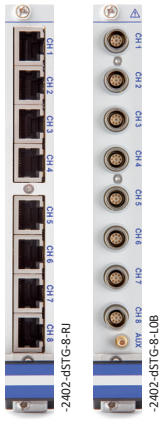
TY-2402-dSTG

- 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

TY-2402-dSTG specifi ca i ons		
Input channels	TY-2402-dSTG-8-RJ	8 channels using RJ-45 sockets
	TY-2402-dSTG-8-L0B	8 channels using LEMO 0B sockets
Sampling rate	200 kS/s channel	
Resolution	24 bit	
Input ranges		
– Voltage	±10 mV, 30 mV, 100 mV, 300 mV, 1 V, 3 V, 10 V	
– Bridge	1, 3, 10, 30, 100, 300, 1000 mV/V or mV/mA	
– IEPE®	±100 mV, 300 mV, 1 V, 3 V, 10 V	
– Resistance	10 Ω, 30 Ω, 100 Ω, 300 Ω, 1 kΩ, 3 kΩ, 10 kΩ, 30 kΩ	
– Current	Depending on external shunt	
Voltage input accuracy[1)]	±0.02 % 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/°C, max 2 µV/°C + 20 ppm of range/°C	
– Linearity	Typical ±0.01 %	
Input impedance	100 MΩ	
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_{DC} (programmable, 1 mV steps), 100 mA max. current, max. 8 W per module	
– Accuracy[1)]	±0.03 % ±1 mV	
– Drift	±10 ppm/K ±50 µV/K	
– Current limit	100 mA	
– Protection	Continuous short to ground	
Excitation current	0.002 to 20 mADC (pogrammable, 1 µA steps)	
– Accuracy[1)]	0.05% ±2 µA	
– Drift	15 ppm/°C	
– Compliance voltage	10 V	
– Output impedance	>10 MΩ	

Tab. 36: Module specifications

TY-2402-dSTG specifi ca i ons												
IEPE® excitation	4 mA ±10 %											
– Compliance voltage	22 V											
Supported sensors	4- or 6-wire full bridge 3- or 5-wire ½ bridge with internal completion 3- or 4-wire ¼ bridge with internal resistor for 120 and 350 Ω 4-wire full bridge with constant current excitation (piezo-resistive bridge sensors) Potentiometer; resistance IEPE® (fixed 4 mA excitation)											
Bridge resistance	80 Ω to 10 kΩ @ ≤ 5 V_{DC} excitation											
Shunt calibration	Two internal shunt resistors 50 kΩ and 100 kΩ											
Shunt and completion resistor accuracy	0.05 % ±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[2)]	SNR	SFDR[3)]	ENOB[4)]	SNR	SFDR[3)]	ENOB[4)]	SNR	SFDR[3)]	ENOB[4)]	SNR	SFDR[3)]	ENOB[4)]
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[5)]/106	13.0	81	133[5)]/106	13.2	81	135[5)]/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 ≤ 1k S/s – Sample rate ≤ 10 kS/s – Sample rate > 10 kS/s	 2.5 kHz (-3 dB), 1.5 kHz (-1 dB) 25 kHz (-3 dB), 15 kHz (-1 dB) 250 kHz (-3 dB), 150 kHz (-1 dB)											
Bandwidth (-3 dB digital filter)	2.5 kHz (-3 dB), 1.5 kHz (-1 dB) 25 kHz (-3 dB), 15 kHz (-1 dB) 250 kHz (-3 dB), 150 kHz (-1 dB)						0.494 fs 0.49 fs 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											
Common mode voltage	±10 V_{DC}											
Overvoltage protection	±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 Ω full bridge (5 V / 10 V)						7 W / 9.5 W					
	120 Ω quarter bridge 5 V excitation						8 W					
	Bridge mode without connected sensor						11.5 W[7)]					

Tab. 36: Module specifications

TY-2402-dSTG specificaions	
Weight	Approx. 200 g (RJ45 version), appr. 250 g (LEMO version)

Tab. 36: Module specifications

1) 1 year accuracy 23 °C ±5 °C

2) LP Filter in auto mode

3) SFDR excluding harmonics

4) ENOB calculated from SNR

5) Below 0.22 fs

6) Consider maximum power supply of your DEWE2 chassis

7) Do not switch to bridge mode if the input is open.