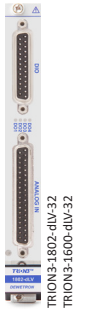
TRION3-1802/1600-dLV-32

DEWETRON

- Multi-function module with voltage inputs, digital I/Os, counter and CAN
- Channels: 32 single-ended or 16 differential, synchronous channels
- Sampling
  - TRION3-1802-dLV-32: 18-bit; 200 kS/s per channel
  - TRION3-1600-dLV-32: 16-bit; 20 kS/s per channel
- Input type: 5 V/10 V
- Features: 2x counter; CAN bus; RS-485; 8x DI; 4x DO



Module specifications

TRION3-1802/1600-dLV-32 specifications			
Input channels		TRION3-1802-dLV-32	32 channels single-ended or 16 channels fully differential
		TRION3-1802-dLV-32-CAN	32 channels single-ended or 16 channels fully differential + CAN
		TRION3-1600-dLV-32	32 channels single-ended or 16 channels fully differential
		TRION3-1600-dLV-32-CAN	32 channels single-ended or 16 channels fully differential + CAN
Sampling rate / resolution		TRION3-1802-dLV-32	High-speed mode: >50 to 200 kS/s, 18-bit Over-sampling mode: 100 S/s to 20 kS/s, 24-bit
		TRION3-1600-dLV-32	100 S/s to 20 kS/s 16-bit
Data transfer		TRION3-1802-dLV-32: 16-bit / 24-bit / 32-bit TRION3-1600-dLV-32: 16-bit	
Onboard data buffer		512 MB	
ADC type		18-bit SAR[2] (Successive Approximation Register)	
Data rate DMA transfer		32 analog channels: max 28 MB/s; 2x counter: max. 6 MB/s	
Input ranges – Voltage		 ±5 V, ±10 V	
Input noise (5 mV range) – 0 to 10 Hz – Full bandwidth		 10 μV_{PP} 1.35 mV_{PP}	
Input impedance		1 MΩ single-ended, 2 MΩ differential	
Input bias current		<25 pA	
Input coupling		DC	
Accuracy[1]	Voltage	DC to 1 kHz ±0.02 % of reading ± 0.01 % of range ±20 µV >1 kHz to 5 kHz ±0.5 % of reading ± 0.01 % of range ±20 µV >5 kHz to 10 kHz[2] ±1 % of reading ± 0.01 % 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 15 µV/°C + 20 ppm of range/°C	
Linearity		<20 ppm	
Input configuration		Differential or single-ended with GND sense	
Typical THD		-95 dB	
Typical CMRR in differential mode		100 dB @ 50 Hz; >70 dB @ 1 kHz	

Tab. 42: Module specifications

TRION3-1802/1600-dLV-32 specifications				
Typical signal-to-noise ratio, spurious Free SNR, effective number of Bits, V_{PP} [2]	10 V range			
	SNR	SFDR[3]	ENOB[4]	Noise peak to peak
Sample rate	[dB]	[dB]	[Bit]	[mV_{PP}]
0.1 kS/s	127	130	20.8	0.015
1 kS/s	118	130	19.3	0.055
10 kS/s	109	130	17.8	0.22
20 kS/s	106	130	17.3	0.33
50 kS/s[2]	102[2]	130[2]	16.7	0.52[5]
100 kS/s[2]	99[2]	130[2]	16.2	0.66[5]
200 kS/s[2]	96[2]	125[2]	15.7	1.00[5]

Low pass filter (-3 dB, dig.)	1 Hz to 40 % of sample rate freely programmable or OFF	
– Characteristic	Bessel or Butterworth	
– Filter order	2^{nd} , 4^{th}, 6^{th}, 8^{th}	
Analog antialiasing filter	2^{nd} order Butterworth	
Bandwidth (-3 dB, deactivated digital filter)	70 kHz 3^{rd} order Butterworth filter	
Crosstalk fin 1 kHz [10 kHz]	>108 dB	
Channel-to-channel phase mismatch	Typically <30 ns when using the same input range	
Board-to-board phase mismatch	<30 ns	
Common mode voltage	±12.5 V_{DC}	
Overvoltage protection	±50 V_{DC}	
Digital IN specification	Digital Input	8 CMOS/TTL compatible digital inputs; weak pullup via 100 kΩ
	Overvoltage protection	±30 V_{DC}, 50 V_{PEAK} (for 100 ms)
	Counter	2 counter channels; TTL input; shared with digital inputs
	– Counter resolution	32-bit
	– Counter time base	80 MHz
	– Max. input freq.	10 MHz
	Counter modes	
	– Waveform timing	Period, frequency, pulse width duty cycle and edge separation
	– Sensor modes	Encoder (angle and linear)
	– Event counting	Basic event counting, gated counting, up/down counting and encoder mode (X1, X2 and X4)
Digital OUT specification	Digital output	4 DO; TTL
	Output indication	LED (green = high; off = low)
	Maximum current	25 mA continuously
	Power-on default	Low
General specification	Sensor power supply (per module)	5 V (600 mA) and 12 V (600 mA)
	ESD protection	IEC61000-4-2: ±8 kV air discharge, ±4 kV contact discharge
	Power consumption	Voltage mode: 6 W

Tab. 42: Module specifications

TRION3-1802/1600-dLV-32 specifications		
Interfaces	CAN bus – CAN specification – CAN physical layer – Bus pin fault protection – Termination – RS485	1 CAN Bus; not isolated; routed to D-SUB-25 CAN 2.0B High-speed ±36 V_{DC} Programmable: High impedance or 120 Ω 1 RS485 interface dedicated to DAQP series modules

Tab. 42: 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) TRION3-1802-dLV-32 only