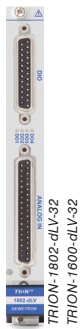


# TRION-1802/1600-dLV-32

## Multi-function module with voltage inputs, digital I/Os, counter and CAN

- Channels: 32 single ended or 16 differential, synchronous channels
- Sampling: TRION-1802-dLV-32: 18 bit; 200 kS/s per channel  
TRION-1600-dLV-32: 16 bit; 20 kS/s per channel
- Input types: 5 V/10 V
- Features: 2x Counter; CAN bus; RS-485; 8x DI; 4x DO; 2x Alarm Out



## Module specifications

TRION-1802/1600-dLV series specifications					
Configuration	TRION-1802-dLV-32 TRION-1802-dLV-32-CAN TRION-1600-dLV-32 TRION-1600-dLV-32-CAN	32 channels single ended or 16 channels fully differential 32 channels single ended or 16 channels fully differential + CAN 32 channels single ended or 16 channels fully differential 32 channels single ended or 16 channels fully differential + CAN			
Sampling Rate / Resolution	TRION-1802-dLV-32 High speed mode >50 to 200 kS/s, 18-bit Over Sampling mode 100 S/s to 50 kS/s, 24-bit TRION-1600-dLV-32 100 S/s to 20 kS/s, 16-bit				
Data Transfer	TRION-1802-dLV-32 TRION-1600-dLV-32	16-bit / 24-bit / 32-bit 16-bit			
ADC type	18-bit SAR <sup>2)</sup> (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		0 to 10 Hz: 10 $\mu$ V <sub>pp</sub> full bandwidth: 1.35 mV <sub>pp</sub>			
Input impedance	1 M $\Omega$ single ended, 2 M $\Omega$ differential				
Input bias current	<25 pA				
Input coupling	DC				
Accuracy <sup>1)</sup>	Voltage	DC to 1 kHz ±0.02 % of reading ± 0.01 % of range ±20 $\mu$ V >1 kHz to 5 kHz ±0.5 % of reading ± 0.01 % of range ±20 $\mu$ V >5 kHz to 10 kHz <sup>2)</sup> ±1 % of reading ± 0.01 % of range ±20 $\mu$ V			
Gain drift	typical 10 ppm/°C max. 20 ppm/°C				
Offset drift	typical 0.3 $\mu$ V/°C + 10 ppm of range, max 15 $\mu$ V/°C + 20 ppm of range/°C				
Typical Signal-to-noise ratio, Spurious-free SNR, Effective number of Bits, V <sub>pp</sub> <sup>2)</sup>	10 V range				
	Sample rate	SNR [dB]	SFDR <sup>3)</sup> [dB]	ENOB <sup>4)</sup> [Bit]	V <sub>pp</sub> [mV <sub>pp</sub> ]
	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 <sup>2)</sup>	102 <sup>2)</sup>	130 <sup>2)</sup>	16.7	0.52 <sup>5)</sup>
	100 kS/s <sup>2)</sup>	99 <sup>2)</sup>	130 <sup>2)</sup>	16.2	0.66 <sup>5)</sup>
	200 kS/s <sup>2)</sup>	96 <sup>2)</sup>	125 <sup>2)</sup>	15.7	1.00 <sup>5)</sup>
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				
Low pass Filter (-3 dB, IIR)	1 Hz to 40 % of sample rate freely programmable or OFF				
Characteristic	Bessel or Butterworth				
Filter order	2 <sup>nd</sup> , 4 <sup>th</sup> , 6 <sup>th</sup> , 8 <sup>th</sup>				
Analog antialiasing filter	3 <sup>rd</sup> order Butterworth				
Bandwidth (-3 dB, deactivated IIR filter)	70 kHz 3 <sup>rd</sup> order Butterworth filter				
Crosstalk fin 1 kHz [10 kHz]	>108 dB				
Channel to channel phase mismatch	typically <30 nsec when using the same input range				
Board to board phase mismatch	<30 nsec				
Common mode input voltage range	±12.5 V				
Overvoltage protection (IN+, IN-, Sense)	±50 V <sub>DC</sub>				

▶ continued on next page ...

# TRION-1802/1600-dLV-32

<b>Digital IN specification</b>	
Digital Input	8 CMOS/TTL compatible digital inputs; weak pullup via 100 kΩ
Overvoltage protection	±30 V permanent, 50 V <sub>PEAK</sub> (for 100 ms)
Counter	2 counter channels; TTL input; shared with digital inputs
Counter modes	
Event counting	Basic event counting, gated counting, up/down counting and encoder mode (X1, X2 and X4)
Waveform timing	Period, frequency, pulse width duty cycle and edge separation
Sensor modes	Encoder (angle and linear)
<b>Digital OUT specification</b>	
Digital output	4 DO; TTL
Output indication	LED (green = high; off = low)
Maximum current	25 mA continuously
Power-on default	Low
<b>Interfaces</b>	
CAN bus	1 CAN Bus; not isolated; routed to SUBD-25
CAN specification	CAN 2.0B
CAN Physical Layer	High Speed
CAN Bus fault protection	±36 V
Termination	Programmable: High impedance or 120 Ω
RS485	1 RS485 interface dedicated to DAQP and HSI series modules
<b>General specification</b>	
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
<sup>1)</sup> 1 year accuracy 23 °C ±5 °C <sup>2)</sup> LP Filter in auto mode <sup>3)</sup> SFDR excluding harmonics <sup>4)</sup> ENOB calculated from SNR <sup>5)</sup> TRION-1802-dLV-32 only	

## TRION-1802/1600-dLV-32 module

