

TRION3-AOUT-8



TRION3-AOUT-8

- ▶ 8 isolated output channels
- ▶ Programmable voltage or current output
 - ± 5 V
 - ± 10 V
 - ± 30 mA
- ▶ FPGA based arbitrary signal generator
- ▶ Data replay



Module specifications

TRION3-AOUT-8 specifications		
Input channels / connectors	<div style="display: flex; justify-content: space-around; align-items: center;"> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; text-align: center;">CH1 Analog OUT</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; text-align: center;">CH2 Analog OUT</div> <div style="border: 1px solid gray; border-radius: 50%; padding: 5px; text-align: center;">CH3 Analog OUT</div> <div style="border: 1px solid gray; border-radius: 10px; padding: 5px; text-align: center;">Analog out CH1 to CH8 DI1 to 8 DO1 to 4</div> </div>	
Onboard data buffer	512 MB	
Isolation voltage (channel-to-channel and channel-to-chassis)	± 350 V _{DC}	
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
Power consumption	Typ. 15 W, max. 24 W	
Analog outputs	8 isolated channels, independently programmable	
Output range	± 5 V, 0 to 5 V, ± 10 V, 0 to 10 V, ± 30 mA; 0 to 30 mA	
Load current	± 30 mA max.	
Temperature drift	± 25 ppm/K	
Linearity	<100 ppm	
Output impedance	<1 Ω at D-SUB connector, 50 Ω at BNC	
Output protection	Continuous short to ground	
Analog output accuracy	See <i>Tab. 59 below</i> .	

Tab. 58: Module specifications

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TRION3-AOUT-8 specifications			
Modes ¹⁾	Constant output	-10 to +10 V or -30 to +30 mA	
	Function generator	Waveform	Sine, square, triangle, custom
		Frequency	0.001 Hz to 1 MHz
		Amplitude	0–10 V _{PEAK} or 0–30 mA _{PEAK}
		Offset	-10 to 10 V or -30 to 30 mA
		Phase	-180 to 180°
		Symmetry (triangle)/duty cycle (square)	0.01 to 100 %
		Custom waveforms	Up to 4 custom waveforms Max. 16384 samples per waveform
	Stream output	Output signal	-10 to +10 V or -30 to +30 mA
		Optional factor and offset	
Math output ²⁾	A*B; A+B; A-B		
Monitor output ²⁾	Direct conditioned signal output: -10 to +10 V or -30 to +30 mA		
DAC mode	High-speed mode	High-resolution mode	
Update rate	2.5 MS/s	500 kS/s	
DAC resolution	16-bit	32 bit	
Bandwidth	600 kHz, 4 th ord. Bessel characteristic	70 kHz, 6 th ord. Bessel characteristic	
Latency	<5µs	<100 µs	
LSB	305 µV	1 µV	
Linearity	50 ppm	10 ppm	
THD	90 dB	100 dB	
Noise floor	100 dB	115 dB	
Output noise static	2 mV _{PP} / 0.3 mV _{RMS}	2 mV _{PP} / 0.3 mV _{RMS}	
Output noise on 1 kHz signal	11 mV _{PP} / 0.7 mV _{RMS}	3 mV _{PP} / 0.3 mV _{RMS}	
Rise/fall time	400 ns	4 µs	
Latency (filter=off)	4 µs	15 µs	
Input to output Jitter	400 ns	3.5 µs	
Auxiliary power supply	+5 V, 20 mA		
Isolated digital input			
– Compatibility (input)	CMOS	Low: <1.5 V High: >3.2 V	
– Overvoltage protection	±35 V _{DC} , 65 V _{PEAK} (100 ms)		
– Bandwidth	50 kHz		
– Pulse width distortion	2.3 µs		
– Input high current @ 5V UIN	<3 mA		
– Input high current @ 35V UIN	<5 mA		

Tab. 58: Module specifications

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TRION3-AOUT-8 specifications		
Isolated digital output		
– Compatibility (output)	Open collector	
– Max. collector voltage	+30 V _{DC}	
– Max. collector current	5 mA	
Non isolated digital I/O		
– Compatibility (input)	CMOS/TTL, 100 kΩ pullup	
– Compatibility (output)	TTL, 20 mA	
– Overvoltage protection	±30 V _{DC} , 50 V _{PEAK} (100 ms)	
Number of DIO	6 DI + 3 DI (isolated) + 4 DO + 1 DO (isolated) + 2 (reserved internally)	
Connector	D-SUB-37 socket for all 8 channels, additionally 3x BNC sockets for CH1 to CH3	
BNC connector	Analog out	AO1, AO2, AO3
D-SUB-37 connector	Analog out	AO1 to AO8
	Digital in	DI3 to DI8
	Digital in (isolated)	DI1, DI2, DI11
	Digital out	DO1 to DO4
	Digital out (isolated)	DO5

Tab. 58: Module specifications

1) Analog output channels can be assigned variably (e.g. AO1 = CH4; AO2 = CH2 + CH7).

2) Only supported by TRION3-18xx-MULTI-AOUT-8, not by TRION3-AOUT-8.

Output 1 year accuracy (23 °C ±5 °C)					
		Highspeed mode		High-resolution mode	
		Voltage output (+10 V; 0 to 10 V; ±5 V; 0 to 5 V)	DC	±0.02 % of reading	±1 mV
	0.1 to 1 kHz	±0.02 % of reading	±1 mV	±0.02 % of reading	±1 mV
	0.1 to 10 kHz	±0.02 % of reading	±1 mV	-	
	10 to 100 kHz	±(0.015 % * f) of reading	±1 mV	-	
Current output (±30 mA; 0 to 30 mA)	DC	±0.03 % of reading	±3 μA	±0.02 % of reading	±3 μA
	0.1 to 1 kHz	±0.03 % of reading	±3 μA	±0.05 % of reading	±3 μA
	0.1 to 10 kHz	±0.07 % of reading	±3 μA	-	
	10 to 100 kHz	±(0.015 % * f) of reading	±3 μA	-	

Tab. 59: Output accuracy