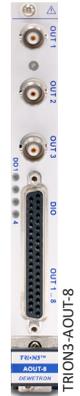# TRION3-AOUT-8

DEWETRON

- 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	CH1 Analog OUT CH2 Analog OUT CH3 Analog OUT	Analog out CH1 to CH8 DI1 to 8, DI11 DO1 to 5
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	
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)/ dutycycle (square)	0.01 to 100 %
		Custom waveforms	Up to 4 custom waveforms. Max. 16384 samples per waveform
	Stream output[2]	Output signal	-10 to +10 V or -30 to +30 mA
		Optional factor and offset	
	Math output[3]	*A*B; A+B; A-B*	
	Monitor output[3]	*Direct conditioned signal output: -10 to +10 V or -30 to +30 mA*	
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.	

Tab. 67: Module specifications

TRION3-AOUT-8 specifications		
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 *Tab. 68 below*.	
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, 4th ord. Bessel characteristic	70 kHz, 6th 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	
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	

Tab. 67: Module specifications

TRION3-AOUT-8 specifications		
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. 67:   Module specifications

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

[2] The smallest possible delay is 500 ms.

[3] Only supported by TRION3-18xx-MULTI-AOUT-8, not by TRION3-AOUT-8. Does not support CAN or Counter channels.

Output 1 year accuracy (23 °C ±5 °C)					
		High-speed 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	±0.02 % 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	$\pm(0.015 \% * f)$[1] 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	±0.3 % of reading	±3 µA	±0.3 % of reading	±3 µA
	0.1 to 10 kHz	±0.3 % of reading	±3 µA	-	
	10 to 100 kHz	$\pm(0.03 \% * f)$[1] of reading	±3 µA	-	

Tab. 68:   Output accuracy

[1] f: frequency in kHz