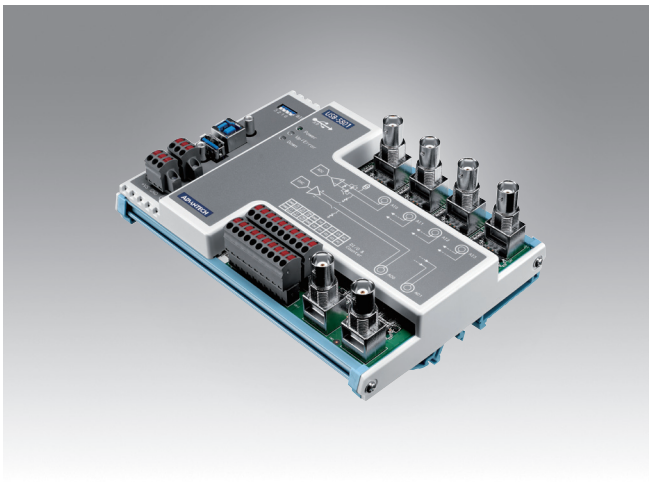
USB-5801

4-ch, 24-bit, 192 kS/s Dynamic Signal Acquisition USB 3.0 I/O Module with Analog Output and Tachometer



Features

- USB 3.0 SuperSpeed and daisy chainable by built-in USB hub
- 4 simultaneously sampled analog inputs, up to 192 kS/s
- 24-bit resolution ADCs with -95 dB total harmonic distortion plus noise (THD+N)
- Built-in anti-aliasing filter
- 2 mA integrated electronic piezoelectric (IEPE) excitation currents
- 2 analog outputs with update rate up to 192 kS/s
- 24-bit resolution DACs with -91 dB total harmonic distortion plus noise (THD+N)
- 2 tachometer inputs for period or frequency measurement
- 4-ch isolated digital input and 4-ch isolated digital output

Introduction

USB-5801 is a high accuracy dynamic signal acquisition USB 3.0 module specifically designed for vibration and acoustic measurements. It provides four simultaneously sampled, 24-bit, IEPE sensor inputs with up to 192 kS/s sample rate for high resolution measurements. It is also equipped with two 24-bit analog outputs with up to 192 kS/s update rate. In addition, it has two tachometer inputs whose data can be correlated to the sensor data. The built-in USB hub makes this module daisy chainable with other USB-5000 series products.

Specifications

Analog Input

Channels	4 (simultaneous sampling, 50 Ω pseudo-differential configurable)
Resolution	24 bits (delta-sigma ADC)
Max. Sampling Rate	1 ~ 192 kS/s
Input Coupling	AC/DC, selectable per channel
Trigger Modes	Start, Delayed Start, Stop, Delayed Stop
Input Range	±1 V, ±2 V, ±5 V, ±10 V
Offset Error	< ±0.2 mV
Gain Error	< ±0.02% of full-scale range
Total Harmonic Distortion Plus Noise (THD+N)	-95 dB
IEPE Excitation	2 mA

Analog Output

Channels	2 (50 Ω pseudo differential)
Resolution	24 bits (delta-sigma DAC)
Update rate	1 ~ 192 kS/s
Output coupling	DC
Output range	±1 V, ±10 V
Offset error	< ±0.5 mV
Gain error	< ±0.03% of full-scale range
Total harmonic distortion plus noise (THD+N)	-91 dB
Trigger mode	Start, delay to start, stop, delay to stop
Auto calibration	Yes

Tachometer Input

Channels	2
Input voltage	Logic 0: 3 V max. Logic 1: 10 V min. (30 V max.)
Input frequency	5 kHz max.
Isolation protection	2,500 V_{DC}
Digital Filter	16 µs ~ 131 ms

Digital Input

Channels	4
Input voltage	Logic 0: 3 V max. Logic 1: 10 V min. (30 V max.)
Opto-isolator response time	100 µs
Isolation protection	2,500 V_{DC}
Digital Filter	16 µs ~ 131 ms

Digital Output

Channels	4
Load voltage	5 ~ 40 V_{DC}
Load current	350 mA/ch (sink)
Opto-isolator response time	100 µs
Isolation protection	2,500 V_{DC}

General

Interface	USB 3.0
Data transfer rate	5 Gbps
Connectors	6 x BNC (AI and AO) 2 x 10-pin, 3.81-mm terminal blocks (tachometer, trigger, and DI/O) 2 x 3-pin, 3.81-mm terminal blocks (power) 1 x USB 3.0 type A (downstream port) 1 x USB 3.0 type B (upstream port)
Dimensions	168 mm x 120 mm x 40 mm (6.6" x 4.7" x 1.6")
Operating temperature	0 ~ 60 °C (32 ~ 140 °F)
Storage temperature	-40 ~ 70 °C (-40 ~ 158 °F)
Storage humidity	5 ~ 95% RH (non-condensing)
Power supply	External 10 ~ 30 V_{DC} or USB bus power
Power consumption	150 mA typ./200 mA max. @24 V external power 700 mA typ./860 mA max. @5 V bus power

Ordering Information

USB-5801-AE	4-ch, 24-bit, 192 kS/s Dynamic Signal Acquisition USB 3.0 I/O Module with Analog Output and Tachometer
96PSD-A40W24-MM	DIN RAIL A/D 100-240V 40W 24V

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