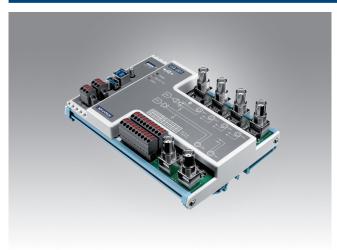
USB-5801

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

FC CE ROHS

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 -95 dB

Noise (THD+N)

IEPE Excitation 2 mA

Analog Output

2 (50 Ω pseudo differential) Channels 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

 $<\pm0.03\%$ of full-scale range Gain error

Total harmonic distortion plus

noise (THD+N)

 Trigger mode Start, delay to start, stop, delay to stop

Auto calibration

Tachometer Input

Channels

 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

Logic 0: 3 V max. Input voltage

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

Load voltage $5 \sim 40 \ V_{DC}$ 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

6 x BNC (Al and AO) Connectors

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 $0 \sim 60 \,^{\circ}\text{C} \, (32 \sim 140 \,^{\circ}\text{F})$ -40 ~ 70 °C (-40 ~ 158 °F) Storage temperature 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

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