# 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  $\Omega$  pseudo-differential configurable) Resolution 24 bits (delta-sigma ADC) Max. Sampling Rate 1 ~ 192 kS/s

AC/DC, selectable per channel Input Coupling Trigger Modes Start, Delayed Start,

Stop, Delayed Stop Input Range  $\pm 1$  V,  $\pm 2$  V,  $\pm 5$  V,  $\pm 10$  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  $\Omega$  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<sub>DC</sub> Digital Filter 16 μs ~ 131 ms

#### **Digital Output**

Isolation protection

Channels Load voltage  $5 \sim 40 \ V_{DC}$  Load current 350 mA/ch (sink) Opto-isolator response time 100 µs

#### 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")

2,500 V<sub>DC</sub>

**Operating temperature**  $0 \sim 60 \,^{\circ}\text{C} \, (32 \sim 140 \,^{\circ}\text{F})$ Storage temperature -40 ~ 70 °C (-40 ~ 158 °F) Storage humidity 5 ~ 95% RH (non-condensing) Power supply External 10 ~ 30 V<sub>DC</sub> 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