

Portable & Compact Analog I/O USB3.0 Solution



Smart I/O & Communication

Industry's First Robust SuperSpeed USB 3.0 Digital I/O Modules



SuperSpeed USB 3.0



Robust Design



Flexible Expandability



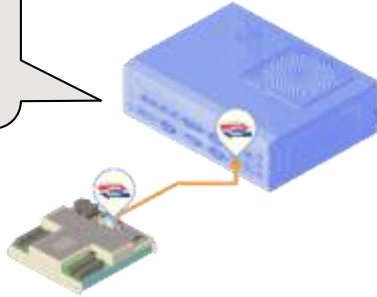
Zero Failures



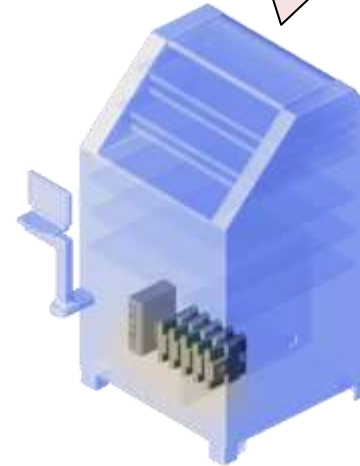
Easy Maintenance

Application Scenarios

System without
PCI/PCIE slots



Palm-sized design is
suitable for
small cabinet



All PCI/PCIE slots of the
existing system are already
occupied



Key Features



USB 3.0 SuperSpeed

Transfers data at up to 5 Gbit/s.



Robust Design

Offers level 3 ESD and surge protection.



Flexible Expandability

Built in USB hub can support daisy chain topology.



Zero Failures

Provides such advanced functions as Auto Recovery®, Output-Locker® and link reconnection, the USB I/O modules will give users zero-failure experience.



Easy to Maintain

Front LED indicators, ID switch and terminal blocks are easy for users to read module status and connect wires, which greatly simplifies maintenance and saves time.

Hardware Overview



ID Switch

Lockable USB 3.0
Upstream Port

Lockable USB 3.0
Downstream Port

Redundant Power

System Indicators



DIN-rail Mounting

PIN Assignment &
I/O Indicators

Euro Type Pluggable
Terminal Blocks

Compact Size

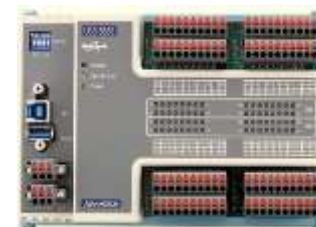
Key Spec - General

Isolation Protection	2500 V _{DC}
Power Input	USB bus or 10~30 V _{DC} external
Opto-Isolator Response	100us
Operating Temperature	0 ~ 60 °C (32 ~ 140 °F)
Dimensions	120 x 120 x 40 mm 170 x 120 x 40 mm
Protocol	USB 3.0 SuperSpeed

Key Spec – I/Os

Digital I/O

Isolated Input Voltage	Logic 0 : 3V max. Logic 1 : 10V min. (30V max.)
Isolated Output Voltage	5~40V Sink 350mA max./channel
PhotoMOS Relay Output	PhotoMOS SPST(Form A) , Load Voltage: 60V , Load current: 1.2A Isolation Protection : 1500 V _{DC} , Turn on/off time : 1 / 0.6 ms
Relay Output	Relay Type : Form A Contact Rating (resistive): 2A@250V _{AC} , 2A@30V _{DC} Max. Switching Power: 500VA , 60W Operating Time: Max. 10ms , Releasing Time: Max. 5ms



Analog I/O

Analog Input (USB-5817)	Channels: 8 differential Resolution: 16bits Sample rate: 200ks/s Input range: 0 ~ 10 V, ±10 V, 0 ~ 20 mA, 4 ~ 20 mA Isolation protection: 2,500 V _{DC} Common-mode voltage range: ±275 V
Analog Output (USB-5820)	Channels: 4 Resolution: 16bits Updating rate: 200ks/s Output range: 0 ~ 5 V, 0 ~ 10 V, ±5 V, ±10 V, 0 ~ 20 mA, 4 ~ 20 mA Isolation protection: 2,500 V _{DC} Output error: < ±0.1%



Key Spec – USB-5801

Product	USB-5801: DSA USB 3.0 module
Analog Input	Channels: 4 simultaneously sampled AI Resolution: 24bits Sample rate: 128kS/s Input range: ± 1 V, ± 10 V IEPE excitation: 2 mA THD+N: -94dB
Digital Input	Channels: 4 Logic 0 : 3V max , Logic 1 : 10V min Isolation protection: 2500V _{DC}
Digital Output	Channels: 4 Load: 5-40V with 350mA/ch (Sink) Isolation protection: 2500V _{DC}
Tachometer Input	Channels: 1 Frequency: 5 kHz max. Isolation protection: 2500V _{DC}



USB-5800 USB 3.0 I/O Module

Function	Isolated D I/O		Relay + Isolated DI				AI	AO	DSA
Part Number	USB-5830	USB-5856	USB-5850	USB-5860	USB-5855	USB-5862	USB-5817	USB-5820	USB-5801
Isolated DI	16	32	16	8	32	16	NEW	NEW	NEW
Isolated DO	16	32							
PhotoMOS Relay Output			8		16				
Relay Output				8		16			
Analog Input							8		
Analog Output								4	
IEPE Input									4
Audio Output									2



USB-5800 Product Roadmap

Available Developing Planning

USB 3.0 Device I/O Modules

USB-5830
USB 3.0 Device I/O Module
16 IDI/ 16 IDO

USB-5855
USB 3.0 Device I/O Module
32 IDI/ 16 PhotoMOS Relay

USB-5817
USB3.0 Device AI Module

- USB 3.0 Super speed
- 2500Vdc galvanic isolation
- ESD and Surge protection
- 8 channel 16bit 200KS/s AI

USB-5801
USB3.0 Device I/O Module

- USB 3.0 Super speed
- 2500Vdc galvanic isolation
- ESD and Surge protection
- 4 channel DSA AI
- 24 bit, 128KS/s

USB-5850
USB 3.0 Device I/O Module
16 IDI/ 8 PhotoMOS Relay

USB-5856
USB 3.0 Device I/O Module
32 IDI/ 32 IDO

USB-5820
USB3.0 Device AO Module

- USB 3.0 Super speed
- 2500Vdc galvanic isolation
- ESD and Surge protection
- 4 channel 16bit 200KS/s AO

USB-5860
USB 3.0 Device I/O Module
8 IDI/ 8 Relay






USB-5862
USB 3.0 Device I/O Module
16 IDI/ 16 Relay

2017 Q4











2019 Q2

Category	Items	USB-5801	USB-5817	USB-5820
Analog Input	Channels	4	8	--
	Sampling Rate	192KS/s, Simultaneous	200kS/s, Multiplexed	
	THD+N	-94dB		
	Resolution	24	16	
	Measurement Error	<0.1%	< 0.1%	
	IEPE	2mA		
	Value Range	$\pm 1 \text{ V}, \pm 10 \text{ V}$	0-10V, $\pm 10\text{V}$, 0- 20mA, 4-20 mA	
Analog Output	Channels	2	--	4
	Updating Rate	192KS/s, Simultaneous		200kS/s, Multiplexed
	THD+N	-90dB		
	Resolution	24		16
	Output Range	<0.1%		0-5V, 0-10V, $\pm 5\text{V}$, $\pm 10\text{V}$, 0-20mA, 4-20 mA
Tachometer	Channels	1	--	--
	Input Range	Logic 0: 3 V max. Logic 1: 10 V min. (30 V max.)		
	Input Frequency	5kHz		
	Isolation	2500VDC		
Digital Input	Channels	4	--	--
	Isolation	2500VDC		
	Response time	100us		
	Range	Logic 0: 3 V max. Logic 1: 10 V min. (30 V max.)		
Digital Output	Channels	4	--	--
	Isolation	2500VDC		
	Response time	100us		
	Range	5-40V		
	Current	350mA		

Competitive Analysis: USB-5817

Product	ADANTECH USB-5817	ADANTECH USB-4716	NATIONAL INSTRUMENTS USB-6003	NATIONAL INSTRUMENTS USB-6210	ADLINK USB-1901
					
Channels	8 diff	16 SE/ 8 Diff	8 SE/ 4 Diff	16 SE/ 8 Diff	16 SE / 8 Pseudo-diff
Sample Rate	200kS/s	200kS/s	100kS/s	250kS/s	250KS/s
Resolution	16 bit	16 bit	16 bit	16 bit	16 bit
Isolation	2500 V _{DC}	-	-	-	-
Input Range	0 ~ 10 V, ±10 V, 0 ~ 20 mA, 4 ~ 20 mA	± 10 V, ± 5 V ± 2.5 V, ± 1.25 V, ± 0.625 V, 0 ~ 10 V, 0 ~ 5 V, 0 ~ 2.5 V, 0 ~ 1.25 V	±10 V	±0.2 V, ±1 V, ±5 V, ±10 V	± 10 V, ± 2 V, ± 1 V, ± 200 mV
List Price(USD)	Low	High	High	High	High

Competitive Analysis: USB-5801

Product	 ADVANTECH USB-5820	 ADVANTECH PCI-1721	 NATIONAL INSTRUMENTS USB-9263	 DATA TRANSLATION DT-9853	 CONTEC USB-1901
					
Channels	4	4	4	4	4
Updating Rate	200kS/s	2kS/s	100kS/s	1kS/s	50S/s
Resolution	16 bit	12 bit	16 bit	16 bit	16 bit
Isolation	2500 V DC	-	-	300 V DC	Isolated from the bus by a digital isolator
Output Range	0 ~ 10 V, ±10 V, 0 ~ 20 mA, 4 ~ 20 mA	± 10 V, ± 5 V, 0 ~ 10 V, 0 ~ 5 V	±10 V	0 ~ 10 V , ±10 V	± 10 V, 0 ~ 20 mA
List Price(USD)	Low	Medium	Very High	High	High

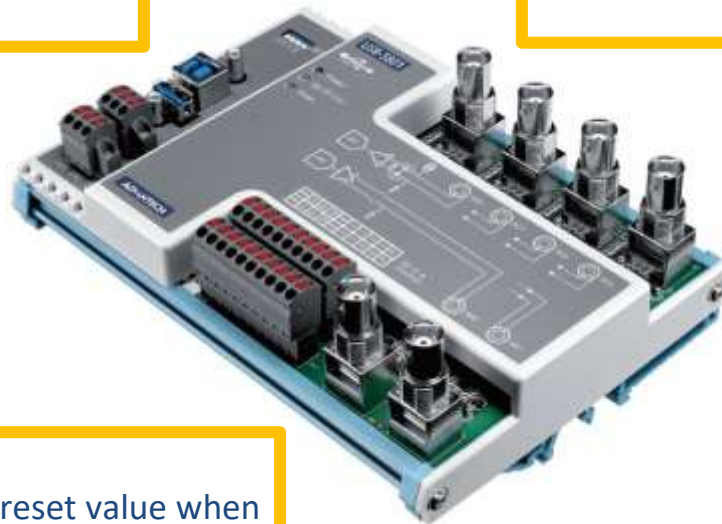
Features: USB-5801

Expandability

Maximum 5 modules can be connected
in a series

Connectivity

BNC connectors for high-end sensors
e.g. Accelerometers, Microphones



Safety

Output status return to preset value when
disconnection

DAQNAVI

Competitive Analysis: USB-5801

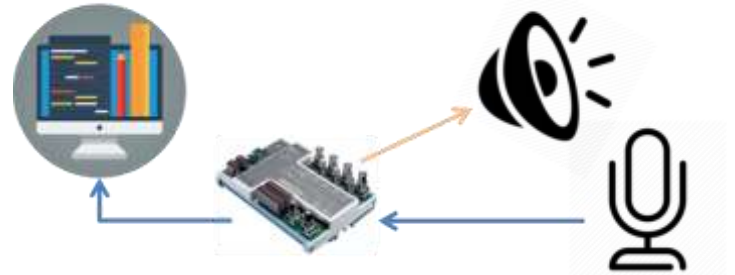
Product	ADVANTECH USB-5801	ADVANTECH PCIE-1802L	DATA TRANSLATION DT9837B	NATIONAL INSTRUMENTS USB-4432	NATIONAL INSTRUMENTS NI-9234	NATIONAL INSTRUMENTS NI-9230	ADLINK USB-2405
							
Channels	4	4	4	5	4	3	4
Sample Rate	192K	216K	105.4K	102.4K	51.2K	12.8K	128K
Harmonic Distortion Plus Noise (THD+N)	-94 dB	-98 dB	-90.7dB	-90 dB			-91dB
Tachometer Input Channel	1	N	1	Shared with AI	Shared with AI	Shared with AI	N
List Price(USD)	Low	Medium	Medium	High	High	Low	Medium

*May differ after M/P
** With USB box

Applications: USB-5801

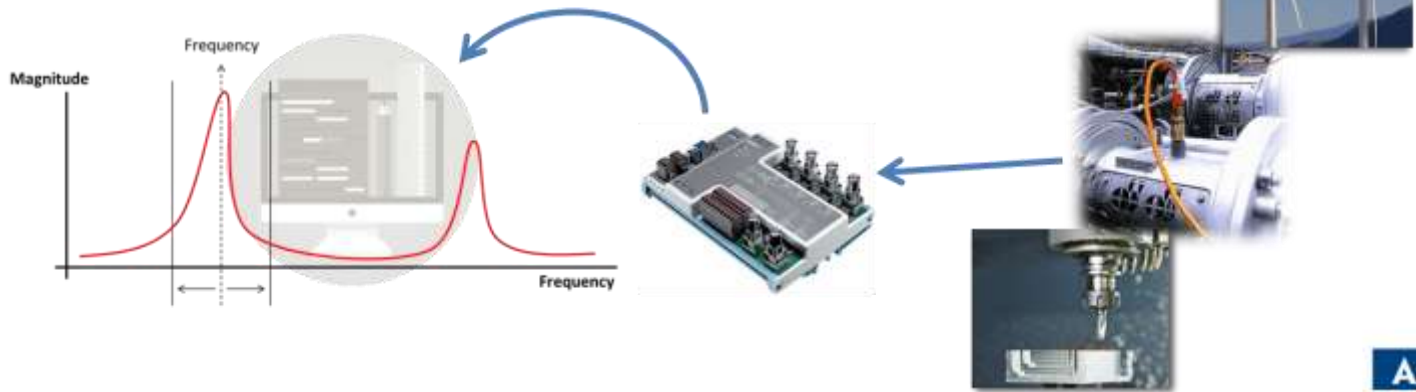
- **Acoustic Testing**

- Output: Waveform Output (Specific Sound)
- Input: Microphone input (Inspection)



- **Rotary Machinery**

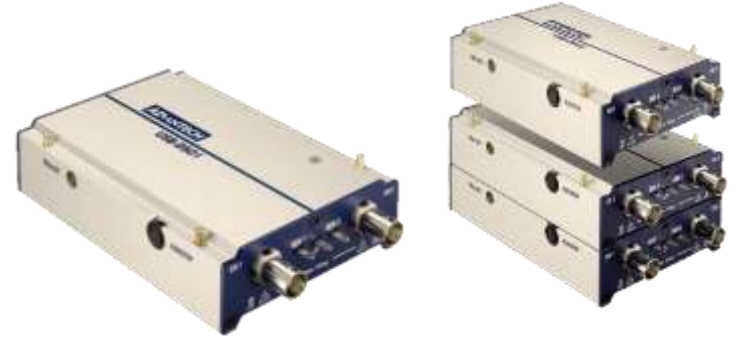
- Vibration vs Rotating Speed



[USB-DSO] Oscilloscope

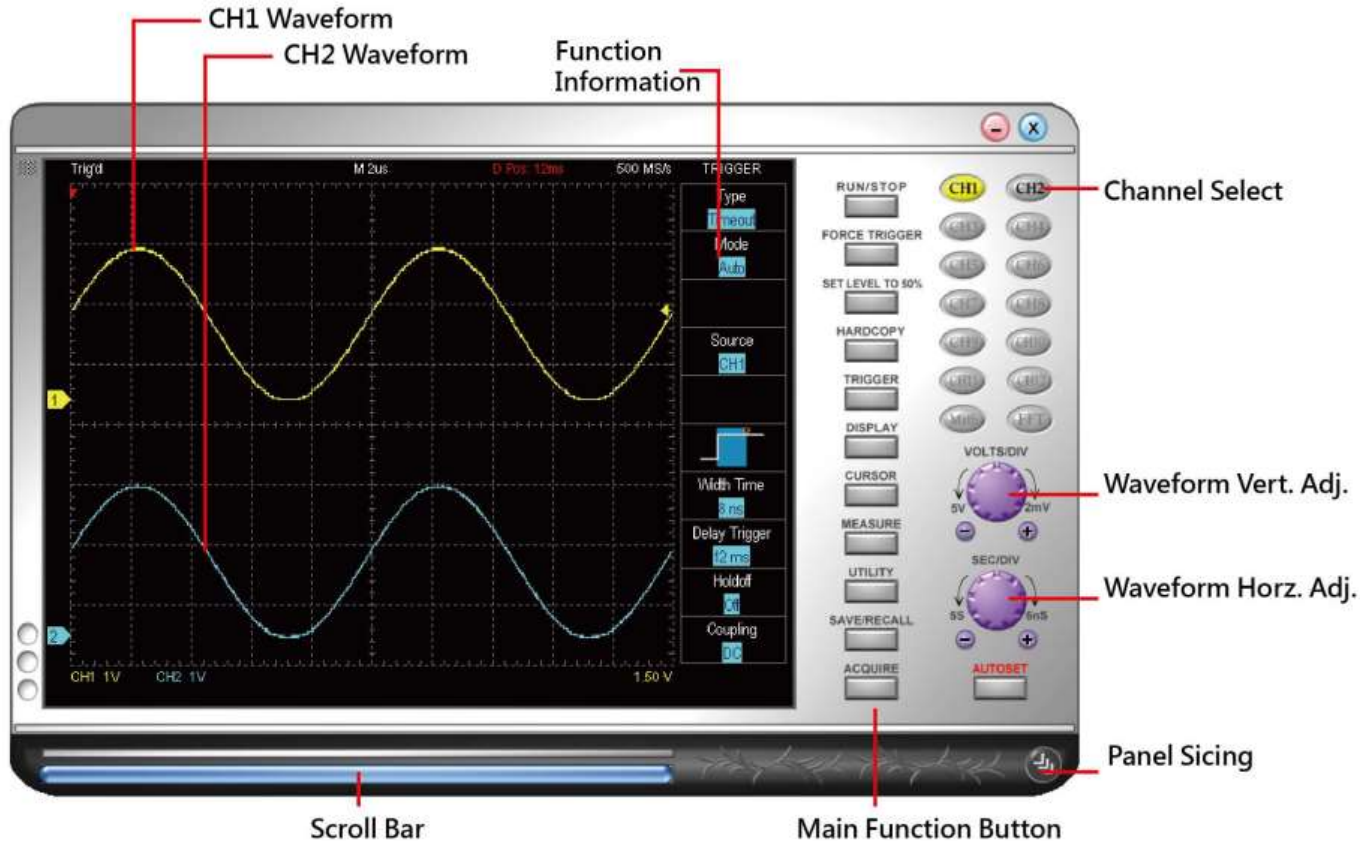
Features :

- **PC based user interface**
- **USB2.0 connect / power**
- **Small size for portable**
- **Low cost with high performance**
- **Build-in two function generators**
- **Stackable up to 12 channel**
- **Suitable for FAE field debug**
- **Student / Engineer personal instrument**



Advantech P/N	Sample Rate	Band Width	Record Length	Resolution	Channel	Trigger	Dimensions
USB-DSO1-AE	1GS/s	200 MHz	128 MS/ch	8 bits	2	Group I, II / Bus	135 x 80 x 26 mm ³
USB-DSO2-AE	1GS/s	200 MHz	128 MS/ch	16 bits	2	Group I, II / Bus	

PC Based User Interface – Software



*Go Together,
We Go Far and Grow Big*

