USB-1901/1902/1903

8/16-ch 16-bit 250 kS/s Multi-Function USB DAQ Modules

Features

- USB 2.0 high-speed
- USB bus powered
- 16-ch 250 kS/s voltage input (USB-1901/1902)
- 8-ch 250 kS/s current input (USB-1903)
- 2-ch 1 MS/s voltage output (USB-1902/1903)
- Analog and Digital triggering
- Removable screw terminal on module
- Lockable USB cable for secure connectivity
- Ready-to-use testing application (U-Test) provided

Introduction

The ADLINK USB-1900 series provides a range of USB 2.0-based multi-functional DAQ modules. The USB-1901 and USB-1902 16-bit 250 kS/s USB 2.0-based high-performance DAQ modules allow four different voltage input ranges, while the USB-1903 features additional built-in precision current-tovoltage resistors capable of direct measurement of current signal from 0 to 20 mA.

The USB-1900 series is USB bus powered and equipped with removable screw-down terminals for easy device connectivity. The attached multi-functional stand can be used for desktop, rail, or wall mounting. Suitable for mixed-signal tests, laboratory research, and factory automation, the USB-1900 series provide a simple measurement solution at an affordable price.

Supported Operating System

- Windows 7/10, Linux

Driver and SDK

- LabVIEW, C/C++, Visual Studio.NET, MATLAB

Software Utility

- U-Test

Ordering Information

- **USB-1901**
  16-ch 16-bit 250kS/s Analog Input USB DAQ
- **USB-1902**
  16-ch 16-bit 250kS/s Multi-Function USB DAQ
- **USB-1903**
  8-ch 16-bit Current Input Multi-Function USB DAQ

Standard Shipped Accessories

- **One pair of 20-pin removable screw terminals**
- **2m USB Type A to USB Mini-B cable with lockable connector**
- **Module stand**
- **Rail-mount kit**

Optional Accessories

- **RST-20P**
  One pair of 20-pin removable screw terminals
- **USB-2M-L**
  2 M USB Type A to USB Mini-B cable with lockable connector

Pin Assignment

USB-1901/1902

ECLK	20	40	AOTG*
NC	19	39	AITG
NC	18	38	GPI7
GPO3	17	37	GPI6
GPO2	16	36	GPI5
GPO1	15	35	GPI4
GPO0	14	34	GPI3
DGND	13	33	GPI2
AGND	12	32	GPI1
*AO1	11	31	GPI0
*AO0	10	30	DGND
AGND	9	29	AISE
AI7(AIL3)	8	28	AI15(AIL7)
AI6(AIH3)	7	27	AI14(AIH7)
AI5(AIL2)	6	26	AI13(AIL6)
AI4(AIH2)	5	25	AI12(AIH6)
AI3(AIL1)	4	24	AI11(AIL5)
AI2 (AIH1)	3	23	AI10(AIH5)
AI1 (AIL0)	2	22	AI9(AIL4)
AI0(AIH0)	1	21	AI8(AIH4)

USB-1903

ECLK	20	40	AOTG
NC	19	39	AITG
NC	18	38	GPI7
GPO3	17	37	GPI6
GPO2	16	36	GPI5
GPO1	15	35	GPI4
GPO0	14	34	GPI3
DGND	13	33	GPI2
AGND	12	32	GPI1
AO1	11	31	GPI0
AO0	10	30	DGND
AGND	9	29	AISE
CI3-	8	28	CI7-
CI3+	7	27	CI7+
CI2-	6	26	CI6-
CI2+	5	25	CI6+
CI1-	4	24	CI5-
CI1+	3	23	CI5+
CI0-	2	22	CI4-
CI0+	1	21	CI4+

* Not available for USB-1901

Specifications

Model Name	USB-1901	USB-1902	USB-1903
Analog Input			
Resolution	16-bit		
Number of channels	16 SE / 8 Pseudo-diff, voltage input		8 Current inputs
Maximum sampling rate (single channel)	250 kS/s(Multiplexing, channel-gain-queue)		
Programmable gain	1, 5, 10, 50		1
Input range (Voltage)	± 10 V, ± 2 V, ± 1 V, ± 200 mV		N/A
Input range (Current)	N/A		0-20 mA
Offset error	± 0.1 mV (gain=1)		±0.01 mA (typical)
Gain error	± 0.05% of FSR (gain=1)		±0.05% of FSR (typical)
-3dB small signal bandwidth (gain=1)	600 kHz		-
CMRR (gain=1)	90 dB		-
SFDR (gain=1)	108 dB		-
SINAD (gain=1)	89 dB		-
THD (gain=1)	102 dB		-
SNR (gain=1)	89 dB		-
ENOB (gain=1)	14.5-bit		-
FIFO buffer size	4 k samples		
Trigger sources	Software, external digital, analog trigger (from one of analog input channels)		
Trigger mode	Post trigger, delay trigger, retrigger, gate trigger		
External conversion source	Yes (up to 250 kS/s)		
Input coupling	DC		
Overvoltage protection	Continuous ± 24 V		
Input impedance	High impedance > 1 GΩ		249.5 Ω (input resistor)
Data transfer	Programmed I/O, continuous (USB bulk transfer mode)		
Analog Output			
Number of channels	N/A	2 voltage outputs	
Resolution	-	16-bit	
Maximum update rate	-	1 MS/s (simultaneous update)	
Output range	-	± 10 V	
Offset error	-	± 0.15 mV	
Gain error	-	± 0.05% of FSR	
INL	-	≦ 2 LSB	
DNL	-	< 1 LSB	
Output driving capacity	-	± 5 mA	
Slew rate	-	2.2 V/μs	
Settling time (0.1% of Full scale)	-	26 μs	
Rising time	-	6 μs	
Falling time	-	6 μs	
FIFO	-	10 k samples (2-ch sharing)	
Output mode	-	Programmed I/O, continuous (USB bulk transfer mode)	
Function I/O			
Mode*	Digital I/O, general timer/counter, pulse generation		
Digital I/O	8 DI / 4 DO (TTL level)		
General timer/counter	Two 32-bit, base clock: 80 MHz, external to 10 MHz		
Pulse generation	Two PWM outputs (Modulation frequency: 0.01 Hz to 5 MHz; Duty cycle: 1%-99%)		
General Specifications			
Interface	USB 2.0 high speed, mini-USB connector		
I/O connector	Two 20-pin screw terminals		
Operating temperature	0 to 55°C (32°F to 131°F)		
Storage temperature	-20 to 70°C (-4°F to 158°F)		
Relative humidity	5 to 95% non-condensing		
Power requirements	5V@400 mA (USB bus powered)		
Dimensions	114 mm (H) x 156.5 mm (L) x 41.3 mm (W) (4.5" x 6.16" x 1.63") (without connector and stand)		

Note: The function I/O share the same I/O pins. Only one of these modes can be selected.