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Data Sheet

August 13, 2026

NI

NI USB-6218 Isolated, Multifunction DAQ Device

The NI USB-6218 is an isolated, multifunction data acquisition device that integrates analog inputs, analog outputs, digital I/O, and counter/timers in a single USB-connected unit. Designed for industrial, laboratory, and research applications, it delivers 16-bit resolution across all analog channels with software-selectable input and output ranges from ± 0.1 V to ± 10 V. The reinforced isolation architecture (250 Vrms working voltage, 50 Vrms transient) eliminates ground loops and preserves signal integrity in electrically noisy environments. Compatibility & Integration USB connectivity enables direct connection to PCs without additional hardware. NI software frameworks and driver support simplify integration into measurement and control systems. Aumictech offers NIST-traceable calibration and repair for the NI USB-6218. All calibrations are performed to NIST-traceable standards and shi



MODEL	CALIBRATION
NI USB-6218	Available on request
CONDITION	STATUS
Used	In stock
RFQ / SKU	LISTING
USB-6218	https://aumictechlabs.com/products/usb-6218-2/

NIST-traceable cal

SAM registered

30-day returns

NAICS 423690 • 811210 • 541380

This unit

The NI USB-6218 is an isolated, multifunction data acquisition device that integrates analog inputs, analog outputs, digital I/O, and counter/timers in a single USB-connected unit. Designed for industrial, laboratory, and research applications, it delivers 16-bit resolution across all analog channels with software-selectable input and output ranges from ± 0.1 V to ± 10 V. The reinforced isolation architecture (250 Vrms working voltage, 50 Vrms transient) eliminates ground loops and

preserves signal integrity in electrically noisy environments. Technical Specifications Analog Input: 32 single-ended or 16 differential channels, 16-bit resolution, 1 MS/s aggregate sampling, 15-bit ENOB at 100 kS/s, 150 μ Vrms noise at 50 kS/s (10 V range), 80 dB CMRR at 50 Hz, 8th-order antialiasing filter. Analog Output: 4 channels, 16-bit resolution, 2 MS/s aggregate output rate, <5 mVrms noise, 6 V/ μ s slew rate. Digital I/O: 24 channels, software-configurable per port (0–7, 8–15, 16–23), 5 V/1 mA output drive, 100 k Ω selectable pull-up/pull-down resistors. Counter/Timers: 2 general-purpose channels, 32-bit resolution, 100 MHz maximum input frequency, quadrature encoder support. Isolation: Reinforced isolation, 250 Vrms working voltage, 50 Vrms transient voltage, 230 Vrms rated impulse voltage, Pollution Degree 2, Overvoltage Category II, device-to-ground and channel-to-channel isolation. Synchronization: Onboard clock. Key Features Simultaneous multifunction I/O: 32 analog inputs, 4 analog outputs, 24 digital I/O, 2 counter/timers DC coupling on analog input and output channels Software-selectable input ranges for precise gain matching Dual isolation architecture protects against ground potential differences Logic input thresholds: 0.8 V max (Low), 2.0 V min (High) Typical Applications Industrial process monitoring and control Multi-channel sensor data logging PWM and frequency measurement Quadrature encoder signal acquisition Test and measurement in high-noise environments Compatibility & Integration USB connectivity enables direct connection to PCs without additional hardware. NI software frameworks and driver support simplify integration into measurement and control systems.

Features & description

From manufacturer datasheet

Features

- Isolated 32 SE / 16 DI analog inputs, 16-bit, 250 kS/s aggregate
- Two 16-bit analog outputs, 250 kS/s per channel, +/-10 V
- 8 DI and 8 DO with PFI timing and debounce filters
- Two 32-bit counters; 80/20/0.1 MHz internal base clocks
- 60 VDC continuous isolation, CAT I; 1000 Vrms withstand (5 s)
- USB 2.0 Hi-Speed Signal Stream; bus-powered from USB

USB6218 Characteristics / Specifications

PARAMETER	VALUE
Model	USB-6218
Manufacturer	National Instruments
Instrument Type	Isolated USB Multifunction DAQ
Series	USB-621x
Alias	USB-6218; NI USB-6218
Connector Types	screw terminal; BNC
AI Channels	16 differential or 32 single ended
ADC Resolution	16 bits
DNL	no missing codes guaranteed
AI Sample Rate Single	250 kS/s maximum
AI Sample Rate Aggregate	250 kS/s maximum
AI Sample Rate Minimum	0 S/s
Timing Resolution	50 ns
Timing Accuracy	50 ppm of sample rate
Input Coupling	DC
Input Range	+/-0.2 V, +/-1 V, +/-5 V, +/-10 V
Working Voltage	+/-10.4 V of AI GND
CMRR	100 dB (DC to 60 Hz)
Input Impedance On	greater than 10 Gohm in parallel with 100 pF
Input Impedance Off	1200 ohm AI+ or AI- to AI GND
Input Bias Current	+/-100 pA
Crosstalk Adjacent	-75 dB at 100 kHz
Crosstalk Nonadjacent	-90 dB at 100 kHz
Small Signal Bandwidth	450 kHz (-3 dB)
AI FIFO	4095 samples

PARAMETER	VALUE
Scan List Memory	4095 entries
Overvoltage On	+/-30 V for up to two AI pins
Overvoltage Off	+/-20 V for up to two AI pins
Overvoltage Current	+/-20 mA maximum per AI pin
Settling 6 LSB	4 us convert interval (+/-90 ppm of step)
Settling 2 LSB	5 us convert interval (+/-30 ppm of step)
Settling 1 LSB	7 us convert interval (+/-15 ppm of step)
AI Absolute Accuracy FS	2690 uV at +/-10 V (warranted, 1 year class table)
AO Channels	2
DAC Resolution	16 bits
AO Monotonicity	16 bit guaranteed
AO Update Rate	250 kS/s (1 channel); 250 kS/s per channel (2 channels)
Output Range	+/-10 V
Output Impedance	0.2 ohm
Output Drive	+/-2 mA
Overdrive Protection	+/-30 V
AO FIFO	8191 samples shared
AO Settling	32 us full-scale step, 15 ppm (1 LSB)
AO Slew Rate	5 V/us
AO Absolute Accuracy FS	3512 uV at +/-10 V (warranted table)
Digital Inputs	8 (PFI 0..3 / P0.0..3 and PFI 8..11 / P0.4..7)
Digital Outputs	8 (PFI 4..7 / P1.0..3 and PFI 12..15 / P1.4..7)
Pull Down	47 kohm +/-1%
DIO Protection	+/-20 V on up to 8 pins
VIL	0 V to 0.8 V
VIH	2 V to 5.25 V
Counters	2, 32 bit

PARAMETER	VALUE
Counter Base Clocks	80 MHz, 20 MHz, 0.1 MHz
External Base Clock	0 MHz to 20 MHz
Counter FIFO	1023 samples
Frequency Generator	1 channel; 10 MHz or 100 kHz base; divisors 1 to 16
USB Interface	USB 2.0 Hi-Speed or full-speed; 4 Signal Stream channels
Plus 5 V Out	4.6 V to 5.2 V, 50 mA maximum shared with digital outputs
USB Current Typical	400 mA at 4.5 V maximum load; 320 mA no load typical
USB Suspend	260 uA typical
USB Input Voltage	4.5 V to 5.25 V configured
BNC Size	23.5 × 11.2 × 6.4 cm (9.25 × 4.40 × 2.50 in)
Screw Terminal Size	16.9 × 9.4 × 3.1 cm (6.65 × 3.70 × 1.20 in)
BNC Weight	950 g (33.5 oz)
Screw Terminal Weight	206 g (7.2 oz)
Wiring Gauge	16 AWG to 28 AWG
Warm Up	15 minutes
Calibration Interval	1 year
Operating Temperature	0 to 45 C
Storage Temperature	-20 to 70 C
Humidity	10% to 90% RH noncondensing
Altitude	2000 m maximum
Isolation Continuous	60 VDC Measurement Category\channel to earth
Isolation Withstand	1000 Vrms, 5 s dielectric withstand
Safety Standards	IEC/EN/UL/CSA 61010-1 Notes Specs from NI USB-6218 Specifications. Isolation is CAT I 60 VDC continuous; do not use on CAT II/III/IV mains. Confirm screw-terminal versus BNC enclosure on the unit.
Bandwidth	450 kHz (-3 dB)

General Specifications & Supplementary Characteristics

PARAMETER	VALUE
Storage temperature	20 to 70 C
Operating temperature	0 to 45 C
Operating Temperature	0 to 45 C
Humidity	10% to 90% RH noncondensing
Altitude	2000 m maximum
Isolation Continuous	60 VDC Measurement Category/channel to earth
Isolation Withstand	1000 Vrms, 5 s dielectric withstand
Safety Standards	IEC/EN/UL/CSA 61010-1 Notes Specs from NI USB-6218 Specifications. Isolation is CAT I 60 VDC continuous; do not use on CAT II/III/IV mains. Confirm screw-terminal versus BNC enclosure on the unit.

Full OEM specifications

Complete technical content extracted from the manufacturer datasheet. Sparse OEM tables are reconstructed as tables below; other text is preserved as paragraphs.

Specifications are typical at 25 C unless noted.

Applications

Isolated USB voltage acquisition in industrial benches; mixed analog output stimulus; NI-DAQmx portable test; measurements requiring 60 VDC CATIisolation from earth.

Key Features

- Isolated 32 SE / 16 DI analog inputs, 16-bit, 250 kS/s aggregate
- Two 16-bit analog outputs, 250 kS/s per channel, +/-10 V
- 8 DI and 8 DO with PFI timing and debounce filters
- Two 32-bit counters; 80/20/0.1 MHz internal base clocks
- 60 VDC continuous isolation, CAT I; 1000 Vrms withstand (5 s)
- USB 2.0 Hi-Speed Signal Stream; bus-powered from USB

Technical Specifications

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Input Range	+/-0.2 V, +/-1 V, +/-5 V, +/-10 V
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CMRR	100 dB (DC to 60 Hz)
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Settling 2 LSB	5 us convert interval (+/-30 ppm of step)
Settling 1 LSB	7 us convert interval (+/-15 ppm of step)
AI Absolute Accuracy FS	2690 uV at +/-10 V (warranted, 1 year class table)
A0 Channels	2
DAC Resolution	16 bits
A0 Monotonicity	16 bit guaranteed
A0 Update Rate	250 kS/s (1 channel); 250 kS/s per channel (2 channels)
Output Range	+/-10 V
Output Impedance	0.2 ohm
Output Drive	+/-2 mA
Overdrive Protection	+/-30 V
A0 FIFO	8191 samples shared
A0 Settling	32 us full-scale step, 15 ppm (1 LSB)
A0 Slew Rate	5 V/us
A0 Absolute Accuracy FS	3512 uV at +/-10 V (warranted table)
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Altitude	2000 m maximum
Isolation Continuous	60 VDC Measurement Category I channel to earth
Isolation Withstand	1000 Vrms, 5 s dielectric withstand
Safety Standards	IEC/EN/UL/CSA 61010-1

Notes
Specs from NI USB-6218 Specifications. Isolation is CAT I 60 VDC continuous; do not use on CAT II/III/IV mains. Confirm screw-terminal versus BNC enclosure on the unit.

Available from Aumictech

Used and refurbished unit evaluated in-house. Calibration: Available on request. Used · In stock.

Request a quote: sales@aumictech.com · +1 (484) 841-9341

Aumictech

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Technical content from manufacturer specifications. Unit photo/stock from Aumictech listing when available. Specifications subject to OEM documentation and unit condition.