

## **ภาคผนวก ก**

**รายละเอียดของ NI USB-6008**

**(Specification of NI USB-6008)**

# NI USB-6008

## 12-Bit, 10 kS/s Low-Cost Multifunction DAQ

- 8 analog inputs (12-bit, 10 kS/s)
- 2 analog outputs (12-bit, 150 S/s); 12 digital I/O; 32-bit counter
- Bus-powered for high mobility; built-in signal connectivity
- OEM version available
- Compatible with LabVIEW, LabWindows/CVI, and Measurement Studio for Visual Studio .NET
- NI-DAQmx driver software and NI LabVIEW SignalExpress LE interactive data-logging software



## Overview

The National Instruments USB-6008 provides basic data acquisition functionality for applications such as simple data logging, portable measurements, and academic lab experiments. It is affordable for student use, but powerful enough for more sophisticated measurement applications. Use the NI USB-6008 with the included ready-to-run data logger software to begin taking basic measurements in minutes, or program it using LabVIEW or C and the included NI-DAQmx Base measurement services software for a custom measurement system.

To supplement simulation, measurement, and automation theory courses with practical experiments, NI developed a USB-6008 Student Kit that includes a copy of the LabVIEW Student Edition. These kits are exclusively for students, giving them a powerful, low-cost, hands-on learning tool. Visit the NI academic products page for more details.

For faster sampling, more accurate measurements, calibration support, and higher channel count, consider the NI USB-6210 and NI USB-6211 high-performance USB data acquisition devices.

Every USB data acquisition module includes a copy of NI LabVIEW SignalExpress LE so you can quickly acquire, analyze and present data without programming. In addition to LabVIEW SignalExpress, USB data acquisition devices are compatible with the following versions (or later) of NI application software – LabVIEW 7.x, LabWindows™/CVI 7.x, or Measurement Studio 7.x. USB data acquisition modules are also compatible with Visual Studio .NET, C/C++, and Visual Basic 6.

## Specifications

### Specifications Documents

- Specifications (3)
- Data Sheet

### Specifications Summary

| General                 |                                      |
|-------------------------|--------------------------------------|
| Product Name            | USB-6008                             |
| Product Family          | Multifunction Data Acquisition       |
| Form Factor             | USB                                  |
| Part Number             | 779051-01                            |
| Operating System/Target | Mac OS , Pocket PC , Windows , Linux |
| DAQ Product Family      | B Series                             |

|                                       |              |
|---------------------------------------|--------------|
| <b>Measurement Type</b>               | Voltage      |
| <b>RoHS Compliant</b>                 | Yes          |
| <b>Analog Input</b>                   |              |
| <b>Channels</b>                       | 4 , 8        |
| <b>Single-Ended Channels</b>          | 8            |
| <b>Differential Channels</b>          | 4            |
| <b>Resolution</b>                     | 12 bits      |
| <b>Sample Rate</b>                    | 10 kS/s      |
| <b>Throughput</b>                     | 10 kS/s      |
| <b>Max Voltage</b>                    | 10 V         |
| <b>Maximum Voltage Range</b>          | -10 V , 10 V |
| <b>Maximum Voltage Range Accuracy</b> | 138 mV       |
| <b>Minimum Voltage Range</b>          | -1 V , 1 V   |
| <b>Minimum Voltage Range Accuracy</b> | 37.5 mV      |
| <b>Number of Ranges</b>               | 8            |
| <b>Simultaneous Sampling</b>          | No           |
| <b>On-Board Memory</b>                | 512 B        |
| <b>Analog Output</b>                  |              |
| <b>Channels</b>                       | 2            |
| <b>Resolution</b>                     | 12 bits      |
| <b>Max Voltage</b>                    | 5 V          |
| <b>Maximum Voltage Range</b>          | 0 V , 5 V    |
| <b>Maximum Voltage Range Accuracy</b> | 7 mV         |
| <b>Minimum Voltage Range</b>          | 0 V , 5 V    |
| <b>Minimum Voltage Range Accuracy</b> | 7 mV         |
| <b>Update Rate</b>                    | 150 S/s      |
| <b>Current Drive Single</b>           | 5 mA         |
| <b>Current Drive All</b>              | 10 mA        |
| <b>Digital I/O</b>                    |              |
| <b>Bidirectional Channels</b>         | 12           |
| <b>Input-Only Channels</b>            | 0            |
| <b>Output-Only Channels</b>           | 0            |

|  |                    |
|--|--------------------|
| Number of Channels                       | 0 , 12             |
| Timing                                   | Software           |
| Logic Levels                             | TTL                |
| Input Current Flow                       | Sinking , Sourcing |
| Output Current Flow                      | Sinking , Sourcing |
| Programmable Input Filters               | No                 |
| Supports Programmable Power-Up States?   | No                 |
| Current Drive Single                     | 8.5 mA             |
| Current Drive All                        | 102 mA             |
| Watchdog Timer                           | No                 |
| Supports Handshaking I/O?                | No                 |
| Supports Pattern I/O?                    | No                 |
| Maximum Input Range                      | 0 V , 5 V          |
| Maximum Output Range                     | 0 V , 5 V          |
| <b>Counter/Timers</b>                    |                    |
| Counters                                 | 1                  |
| Buffered Operations                      | No                 |
| Debouncing/Glitch Removal                | No                 |
| GPS Synchronization                      | No                 |
| Maximum Range                            | 0 V , 5 V          |
| Max Source Frequency                     | 5 MHz              |
| Minimum Input Pulse Width                | 100 ns             |
| Pulse Generation                         | No                 |
| Resolution                               | 32 bits            |
| Timebase Stability                       | 50 ppm             |
| Logic Levels                             | TTL                |
| <b>Physical Specifications</b>           |                    |
| Length                                   | 8.51 cm            |
| Width                                    | 8.18 cm            |
| Height                                   | 2.31 cm            |
| I/O Connector                            | Screw terminals    |
| <b>Timing/Triggering/Synchronization</b> |                    |

|                            |         |
|----------------------------|---------|
| Triggering                 | Digital |
| Synchronization Bus (RTSI) | No      |

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