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Find the *National Instruments USB-8473* at our website: ***Click HERE***

Technical Sales
United States
(866) 531-6285
info@ni.com

Ordering Information

For user manuals and dimensional drawings, visit the product page resources tab on ni.com.

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1-Port USB CAN and LIN Interfaces

NI USB-8476, NI USB-8476s, NI USB-8473, NI USB-8473s, NI USB-8472, NI USB-8472s





- 1-port high-speed CAN, low-speed/fault-tolerant CAN, and LIN interfaces
- Hi-Speed USB compliant, bus-powered
- Interfaces available with optional hardware synchronization and 1 µs timestamping resolution
- Integrated USB cable and CAN or LIN bus transceiver
- Support for CAN 2.0A (11-bit) and extended CAN 2.0B (29-bit) arbitration ID
- LIN 1.3, 2.0, and J2602 compliance
- Powerful, frame-based API with NI-CAN driver software
- 500 V digital isolation

Overview

NI USB-847x CAN and LIN interfaces provide Hi-Speed USB interfaces for connecting your PC to controller area network (CAN) or local interconnect network (LIN) networks and devices. With the optional hardware synchronization versions that feature a 3-pin COMBICON synchronization connector, you can use 1 MHz, 10 MHz, or 20 MHz clocks to synchronize the internal hardware timebase with other devices such as USB CAN; USB LIN; and NI data acquisition, motion, and vision hardware. Synchronization eliminates clock drift between devices and enables triggering between devices for correlating CAN data with data from other devices.

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Comparison Tables

Model	Physical Layer	Transceiver	Max Transfer Rate (kbit/s)	Hardware Sync	Software Termination
USB-8473	High-Speed CAN	TJA1041	1,000	no	no
USB-8473s	High-Speed CAN	TJA1041	1,000	yes	no
USB-8472	Low-Speed/Fault-Tolerant CAN	TJA1054AT	125	no	yes
USB-8472s	Low-Speed/Fault-Tolerant CAN	TJA1054AT	125	yes	yes
USB-8476	LIN	ATA6620	20	no	yes
USB-8476s	LIN	ATA6620	20	yes	yes

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Application and Technology

NI USB-847x interfaces are ideal for a wide variety of applications, including monitoring and logging in-vehicle networks, bus load monitoring, device validation with synchronized data acquisition, CAN device development and test, and correlating CAN and LIN data with external measurements.

The convenient all-in-one design features a captive 2 m USB cable and built-in transceiver, requiring no extra cables or accessories to get applications running quickly. With hardware timestamping, you can log messages with microsecond-accurate timestamps for reconstructing network events and correlating data across synchronized devices.

All USB-847x interfaces use an industry-standard 9-pin male D-SUB (DB9) connector to interface to the CAN bus. Hi-Speed USB connectivity ensures no dropped frames, even under 100 percent bus loads. Hardware-based error checking helps identify bus-level message problems.

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CAN Interfaces
USB-847x CAN interfaces feature the industry-standard Philips SJA1000 CAN controller, which implements ISO 11898 CAN functionality. The SJA1000 offers additional features to aid in system development, including listen-only mode, sleep/wakeup mode, error counter access, and self-reception (echo) mode. USB-847x CAN interfaces recognize standard (11-bit) and extended (29-bit) arbitration IDs and are compatible with J1939 networks.

LIN Interfaces
NI USB-8476 LIN interfaces, featuring the Atmel ATA6620 LIN transceiver, are compliant with the LIN 1.3/2.0 and J2602 specifications and offer software-selectable master/slave termination. The ATA6620
features baud rates up to 20 kbit/s and offers advanced power management with a low-power sleep mode.

Hardware Synchronization
Many automotive applications demand tight integration of CAN, LIN, analog, and digital measurements. In applications such as CAN device development and validation, you need to synchronize different measurements to correlate data. You can program this synchronization in software, but OS latency and clock drift between the different onboard oscillators introduce unacceptable delays for certain automotive test applications. NI offers USB-847x CAN and LIN interfaces with an optional hardware synchronization feature, which the USB interfaces can use to share timing and triggering signals with other USB-847x interfaces as well as data acquisition, vision, and motion devices, to achieve true hardware synchronization. Determinism is maintained between the trigger signal and the desired response because timing and triggering signals are handled in hardware. The host PC software interacts only to retrieve the data once it is acquired or to write new data.

NI-CAN Software
National Instruments provides NI-CAN driver software for Windows 7/Vista/XP/2000. NI-CAN includes a detailed API and examples for NI LabVIEW and LabWindows™/CVI, Microsoft Visual C/C++ 6.0 and Visual Basic 6.0, and Borland C/C++. USB-847x interfaces use the NI-CAN Frame API for frame-level access to messages on CAN and LIN networks. The NI-CAN driver software also includes the Bus Monitor and NI I/O Trace utilities to aid in application development.

NI-CAN Frame API
The NI-CAN Frame API offers a powerful interface for accessing NI CAN and LIN hardware. The API enables full access to all traffic on CAN and LIN buses. It is a powerful tool for implementing a variety of applications, including CAN and LIN frame-level access, challenge response protocols, remote
frame handling, and advanced synchronization.

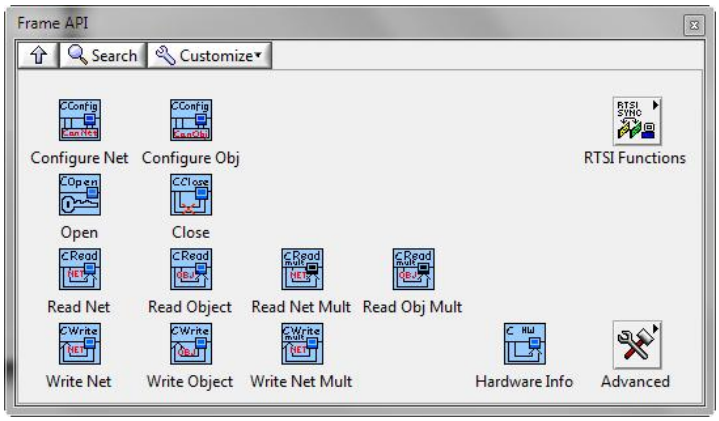


Figure 1. Customize your CAN communication projects with the NI-CAN Frame API.

NI-CAN Bus Monitor
To quickly monitor all CAN and LIN bus traffic, use the NI-CAN Bus Monitor, a utility that offers an easy-to-use interface that displays all CAN and LIN frames on the network, and log the traffic to disk. The NI-CAN Bus Monitor provides options to control, display, and view bus statistics.

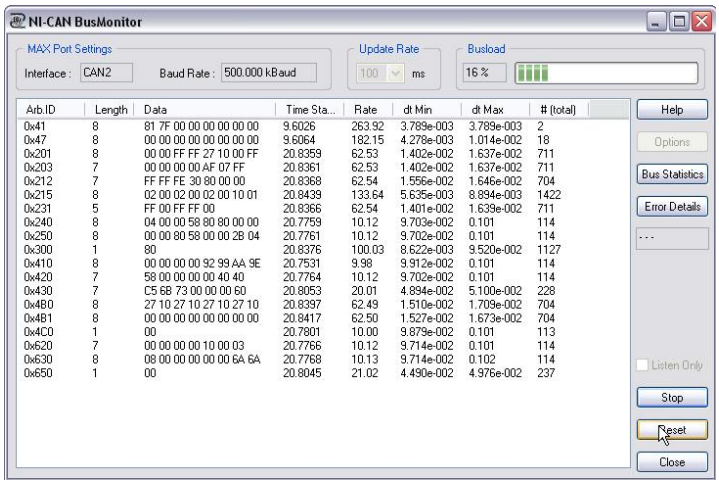


Figure 2. Use the NI-CAN Bus Monitor to view and log traffic easily.

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Ordering Information

For a complete list of accessories, visit the product page on ni.com.

Products	Part Number	Recommended Accessories	Part Number
NI USB-8473s Accessories			

NI CAN Single Termination, High-Speed Cable, 2m	192017-02	No accessories required.
NI CAN Breakout Box 7-Port for CAN, DeviceNet, and CANOpen	780041-01	No accessories required.
NI USB-8473 Accessories		
NI CAN Breakout Box 7-Port for CAN, DeviceNet, and CANOpen	780041-01	No accessories required.
NI CAN Single Termination, High-Speed Cable, 2m	192017-02	No accessories required.
NI USB-8476s Accessories		
NI CAN Breakout Box 7-Port for CAN, DeviceNet, and CANOpen	780041-01	No accessories required.
NI CAN/LIN Cable, No Term, High-Speed/Low-Speed, Dsub 9-pin F, 2m	193128-02	No accessories required.
NI USB-8472s Accessories		
NI CAN/LIN Cable, No Term, High-Speed/Low-Speed, Dsub 9-pin F, 2m	193128-02	No accessories required.
NI CAN Breakout Box 7-Port for CAN, DeviceNet, and CANOpen	780041-01	No accessories required.
NI USB-8476 Accessories		
NI CAN/LIN Cable, No Term, High-Speed/Low-Speed, Dsub 9-pin F, 2m	193128-02	No accessories required.
NI CAN Breakout Box 7-Port for CAN, DeviceNet, and CANOpen	780041-01	No accessories required.
NI USB-8472 Accessories		
NI CAN/LIN Cable, No Term, High-Speed/Low-Speed, Dsub 9-pin F, 2m	193128-02	No accessories required.
NI CAN Breakout Box 7-Port for CAN, DeviceNet, and CANOpen	780041-01	No accessories required.

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Support and Services

System Assurance Programs

NI system assurance programs are designed to make it even easier for you to own an NI system. These programs include configuration and deployment services for your NI PXI, CompactRIO, or Compact FieldPoint system. The NI Basic System Assurance Program provides a simple integration test and ensures that your system is delivered completely assembled in one box. When you configure your system with the NI Standard System Assurance Program, you can select from available NI system driver sets and application development environments to create customized, reorderable software configurations. Your system arrives fully assembled and tested in one box with your software preinstalled. When you order your system with the standard program, you also receive system-specific documentation including a bill of materials, an integration test report, a recommended maintenance plan, and frequently asked question documents. Finally, the standard program reduces the total cost of owning an NI system by providing three years of warranty coverage and calibration service. Use the online product advisors at ni.com/advisor to find a system assurance program to meet your needs.

Calibration

NI measurement hardware is calibrated to ensure measurement accuracy and verify that the device meets its published specifications. To ensure the ongoing accuracy of your measurement hardware, NI offers basic or detailed recalibration service that provides ongoing ISO 9001 audit compliance and confidence in your measurements. To learn more about NI calibration services or to locate a qualified service center near you, contact your local sales office or visit ni.com/calibration.

Technical Support

Get answers to your technical questions using the following National Instruments resources.

Support - Visit ni.com/support to access the NI KnowledgeBase, example programs, and tutorials or to contact our applications engineers who are located in NI sales offices around the world and speak the local language.
Discussion Forums - Visit forums.ni.com for a diverse set of discussion boards on topics you care about.
Online Community - Visit community.ni.com to find, contribute, or collaborate on customer-contributed technical content with users like you.

Repair

While you may never need your hardware repaired, NI understands that unexpected events may lead to necessary repairs. NI offers repair services performed by highly trained technicians who quickly return your device with the guarantee that it will perform to factory specifications. For more information, visit ni.com/repair.

Training and Certifications

The NI training and certification program delivers the fastest, most certain route to increased proficiency and productivity using NI software and hardware. Training builds the skills to more efficiently develop robust, maintainable applications, while certification validates your knowledge and ability.

Classroom training in cities worldwide - the most comprehensive hands-on training taught by engineers.
On-site training at your facility - an excellent option to train multiple employees at the same time.
Online instructor-led training - lower-cost, remote training if classroom or on-site courses are not possible.
Course kits - lowest-cost, self-paced training that you can use as reference guides.
Training memberships and training credits - to buy now and schedule training later.
Visit ni.com/training for more information.

Extended Warranty

NI offers options for extending the standard product warranty to meet the life-cycle requirements of your project. In addition, because NI understands that your requirements may change, the extended warranty is flexible in length and easily renewed. For more information, visit ni.com/warranty.

OEM

NI offers design-in consulting and product integration assistance if you need NI products for OEM applications. For information about special pricing and services for OEM customers, visit ni.com/oem.

Alliance

Our Professional Services Team is comprised of NI applications engineers, NI Consulting Services, and a worldwide National Instruments Alliance Partner program of more than 700 independent consultants and integrators. Services range from start-up assistance to turnkey system integration. Visit ni.com/alliance.

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