USB-8501 Specifications

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USB-8501 Specifications

This document lists specifications for the USB-85011-port and 2-port low-speed/ fault-tolerant CAN interface device.

Definitions

Warranted specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

Characteristics describe values that are relevant to the use of the model under stated operating conditions but are not covered by the model warranty.

- **Typical** specifications describe the performance met by a majority of models.
- **Nominal** specifications describe an attribute that is based on design, conformance testing, or supplemental testing.

Specifications are **Typical** unless otherwise noted.

Conditions

Specifications are typical at 0 °C to 55 °C unless otherwise noted.

Bus Interface

USB	USB 2.0 High-Speed

Power Requirements

USB 2.0, bus-powered device

Input voltage	4.5 V min, 5.25 V max
Working mode current	500 mA maximum, 250 mA typical (2 ports), 200 mA typical (1 port)
USB suspend current	2.5 mA maximum

Physical Characteristics

Dimensions

1 port	8.38 cm x 10.29 cm x 2.49 cm (3.30 in. x 4.05 in. x 0.98 in.)
2 port	9.27 cm x 10.29 cm x 2.49 cm (3.65 in. x 4.05 in. x 0.98 in.)

Weight

1 port	207 g (7.30 oz)
2 port	215 g (7.58 oz)

Cable Length

Captive USB cable length	2 m

I/O Connectors

USB	Standard Type A plug
High-Speed CAN Interface	9-pin male D-SUB

Sync Port (only on 2-port variant)	3-pin Combicon

Environmental

Operating Environment

Ambient temperature	0 °C to 55 °C
Relative humidity	10% to 90%, noncondensing
Maximum altitude	2,000 m (800 mbar) at 25 °C ambient temperature

Indoor use only.

Storage Environment

Ambient temperature	-20 °C to 70 °C
Relative humidity	5% to 95%, noncondensing
Pollution Degree	2

Low-Speed CAN Characteristics

Transceiver	NXP TJA1055T
Max baud rate	125 Kbps
CAN_H, CAN_L bus lines voltage	-27 VDC to +40 VDC

Onboard Termination (to RTH and RTL)

Termination disabled	4.99 kΩ
Termination enabled	1.12 kΩ

Sync Port

I/O compatibility	5V TTL compatible
Number of generic triggers[1]	2
Supported Input Time base frequencies	1 MHz, 10 MHz, and 20 MHz with auto detection
Supported Output Time base frequency	1 MHz

Isolation

The USB-8501 offers port-to-port (2-port variant) and port-to-USB (both 1 port and 2 port) isolation.

Isolation Voltage

Port-to-earth ground	
Continuous	60 VDC, Measurement Category I

Note The COM signals of CAN ports on the USB-8501 are not connected to the USB ground. This isolation is intended to prevent ground loops and does not meet UL ratings for safety isolation.

Maximum Voltage on CAN Ports

This voltage is the maximum voltage that can be applied or output without creating a safety hazard.

Connect only the voltages that are within these limits.

Port-to-COM	-27 VDC to +40 VDC max, Measurement Category I

Measurement Category I is for measurement performed on circuits not directly connected to the electrical distribution system referred to as MAINS voltage. MAINS is a hazardous live electrical supply system that powers equipment. This category is for measurements of voltages from specially protected secondary circuits. Such voltage measurements include signal levels, special equipment, limited-energy parts of equipment, circuits powered by regulated low-voltage sources, and electronics.

Caution Do not connect the USB-8501 to signals or use for measurements within Measurement Categories II, III, or IV.

Attention Ne connectez pas le USB-8501 à des signaux et ne l'utilisez pas pour effectuer des mesures dans les catégories de mesure II, III ou IV.

Note Measurement Categories CAT I and CAT O (Other) are equivalent. These test and measurement circuits are not intended for direct connection to the MAINs building installations of Measurement Categories CAT II, CAT III, and CAT IV.

Safety Compliance Standards

This device is designed to meet the requirements of the following electrical equipment safety standards for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA C22.2 No. 61010-1

Note For UL and other safety certifications, refer to the device label or the Product Certifications and Declarations section.

Electromagnetic Compatibility Standards

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326-1 (IEC 61326-1): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- EN 55022 (CISPR 22): Class A emissions
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emissions
- AS/NZS CISPR 22: Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions

Note The provided snap-on ferrite bead, National Instruments part number 714394-01, must be used when operating the USB-8501.

Note Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.

Note In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia and New Zealand (per CISPR 11) Class A equipment is intended for use only in heavy-industrial locations.

Notice For EMC declarations and certifications, and additional information, refer to the Product Certifications and Declarations section.

CE Compliance CE

This product meets the essential requirements of applicable European Directives, as follows:

- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)
- 2011/65/EU; Restriction of Hazardous Substances (RoHS)

Product Certifications and Declarations

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for NI products, visit ni.com/product-certifications, search by model number, and click the appropriate link.

Environmental Management

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the **Engineering a Healthy Planet** web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

EU and UK Customers

- **Waste Electrical and Electronic Equipment (WEEE)**—At the end of the product life cycle, all NI products must be disposed of according to local laws and

regulations. For more information about how to recycle NI products in your region, visit ni.com/environment/weee.

电子信息产品污染控制管理办法（中国 RoHS）

- **中国 RoHS**— NI 符合中国电子信息产品中限制使用某些有害物质指令(RoHS)。关于 NI 中国 RoHS 合规性信息，请登录 ni.com/environment/rohs_china。(For information about China RoHS compliance, go to ni.com/environment/rohs_china.)

[1] Each generic trigger can be configured independently as input or output, clock or trigger. Refer to the **NI-XNET Hardware and Software Help** for details.

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