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SPECIFICATIONS

SA-413B

NI System SMU Banana Jack Adapter

These specifications apply to the SA-413B banana jack adapter for use with NI System Source Measure Units, including the PXIe-4136/4137/4138/4139.

Caution You can impair the protection provided by the SA-413B if you use it in a manner not described in this document.

Caution Refer to the specifications of the module with which you are using the SA-413B to note the maximum voltage and current ratings. The specifications listed below are the maximum for the SA-413B only.

Notice Clean the hardware with a soft, nonmetallic brush. Make sure that the hardware is completely dry and free from contaminants before returning it to service. Avoid direct handling of connector ends to prevent contaminant buildup on sensitive conductors.

Definitions

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

The following characteristic specifications 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 *Warranted* unless otherwise noted.

NATIONAL INSTRUMENTS

Voltage, Current, and Resistance

Caution Applying levels beyond the ratings specified in this section can result in permanent damage to the device. Connect only voltages that are within these limits.

Channel operating voltage[1]	202 VDC

Notice The SA-413B is recommended for use with 1 mA and larger current ranges. SMU accuracy specifications for current ranges smaller than 1 mA may be affected by leakage characteristics of the SA-413B, ambient environmental conditions, or the use of unshielded or unguarded cabling, such as banana patch cords.

HI/LO current[2]	10 A
Leakage resistance[3]	1 TΩ, typical
Settling time[4]	<10 s, typical

Isolation

Warning Take precautions to avoid electrical shock when operating this product at hazardous voltages.

Caution Do not connect to MAINs. Do not connect to signals or use for the measurements within CAT II, III, or IV.

Caution Isolation voltage ratings apply to the voltage measured between any channel pin (terminal) and the chassis ground. When operating channels in series or floating on top of external voltage references, ensure that no terminal exceeds this rating.

Caution Before plugging in banana cables, a trained technician must insert and secure the SA-413B onto a PXIe-4136/4137/4138/4139 using the two retaining screws to a torque of 0.3 N · m (2.7 lb · in.). Banana cables must be unplugged

[1] Maximum voltage measured between the HI, HI Sense, LO, LO Sense, or Guard terminals. SMU specifications take precedence if the SMU model is rated for lower voltage.
[2] SMU specifications take precedence if the SMU model is rated for lower current.
[3] Measured between HI and LO with 200 V applied at 25 °C.
[4] Time to settle within 20 pA of final value after a 200 V step.

before removing the SA-413B from the SMU. Banana cables must also be shrouded and rated for 300 VDC or higher.

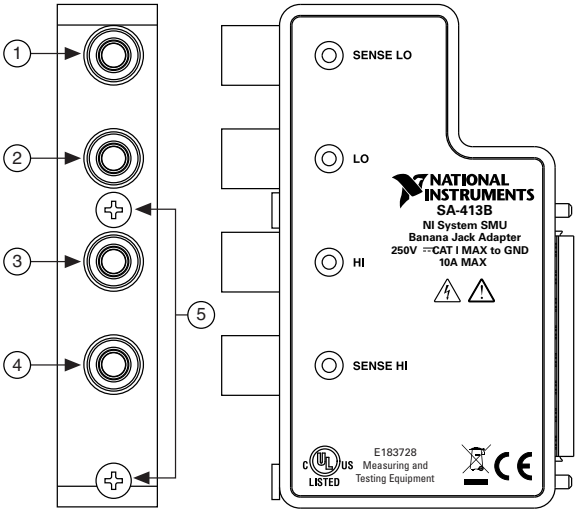
Isolation voltage, channel-to-earth ground	
Continuous	250 VDC, CAT I
Withstand[5]	1,000 V_{RMS}

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

Physical

Dimensions	6.40 cm × 9.30 cm × 1.85 cm (2.52 in. × 3.66 in. × 0.73 in.), nominal
Weight	125 g (4.4 oz), nominal
Connectors	Banana plug (x4), nominal

SA-413B Pinout



[5] Verified with a 5-second dielectric withstand test .

Table 1. SA-413B Signal Descriptions

Item	Signal
1	Sense LO
2	LO
3	HI
4	Sense HI
5	Retaining screws

Environment

Maximum altitude	2,000 m (800 mbar) (at 25 °C ambient temperature)
Pollution Degree	2

Indoor use only.

Operating Environment

Ambient temperature range	0 °C to 55 °C
Relative humidity range	10% to 90%, noncondensing

Storage Environment

Ambient temperature range	-40 °C to 71 °C
Relative humidity range	5% to 95%, noncondensing

Compliance and Certifications

Safety

This product 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 product label or the *Online Product Certification* section.

Electromagnetic Compatibility

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 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.

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 For EMC declarations, certifications, and additional information, refer to the *Online Product Certification* section.

CE Compliance CE

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

- 2014/35/EU; Low-Voltage Directive (safety)
- 2014/30/EU; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and the DoC for this product, visit *ni.com/certification*, search by model number or product line, and click the appropriate link in the Certification column.

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 *Minimize Our Environmental Impact* 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.

Waste Electrical and Electronic Equipment (WEEE)



EU Customers 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）



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