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InfiniBand Cables: Digital Instrument Cable Guide

Updated Dec 30, 2022

Overview

This guide addresses many common questions for the NI Digital InfiniBand cables: the SHB12X-B12X and SHB12X-H3X24. NI InfiniBand cables are primarily used on the NI Digital hardware 656X series. The cables feature InfiniBand connections, with the option of a flying lead cable for custom test fixtures. Whether you are purchasing new, using a replacement cable, or creating a custom fixture, this guide provides pinouts, wire mappings, color codes, wire gauge, connector part info, and grounding or shielding information as a short summary.

Contents

- Using the Digital Instrument Cable and Accessory Guides
- Differences and Similarities between NI InfiniBand Cables
- Quick Specifications and Documentation
- Compatible Devices, Modules, and Cabling for InfiniBand Digital Instrument Cables
- Additional Resources

Using the Digital Instrument Cable and Accessory Guides

This guide is intended to cover the most popular Infiniband cables which are designed for use with NI Digital Instruments including Digital Waveform Instruments (previous High-Speed Digital I/O), Digital Pattern Instruments and High-Speed Serial devices. It does not cover similar cables for other NI product lines, even if they share the same connectors.

- To find more information about other NI Digital Instrument cables and general information that applies to all Digital Instrument cables, visit Digital Instrument Cable Guide Main Page.
- To determine compatibility of your 68-pin cable with your NI Digital device or module, your NI Digital connector black or terminal block, visit Digital Instrument Cable and Accessory Compatibility or review the general compatibility information below.
- To learn more about NI Digital Instrument connector and terminal block accessories to which you can connect your cable, review Digital Instrument Accessory Guide.
- To create your own cable or test fixture, or to repair an existing NI Digital Instrument cable or accessory, visit NI Digital Instrument Device Custom Cables, Replacement Connectors, and Screws.

Anatomy of a Model Name

Use this section to better understand your NI accessory's model name and numbering.

Model Prefixes

- **SH** - Shielded cables. Shielding can include individually shielded pairs and/or shielding for the entire cable assembly.
- **B** - Cables with an InfiniBand connector.
- **H** - Cables with a flying lead connector.

Shielding and Twisted Pairs

Cable shielding utilizes a thin conductive metallic layer to protect against electromagnetic interference. Twisted pairs provide another level of noise reduction by twisting pairs of differential signals. Click here to learn more about cable shielding and twisted pairs.

Differences and Similarities between NI InfiniBand Cables

NI offers a wide range of cables to work with different Digital products, serving a variety of needs. While the wire pinout may be the same on most cables, each offers different connectors, shielding, and twisted pairs.

- Check out other popular Digital cables.
- Review which cables are compatible with your device, module or accessory.

Use this table to compare different InfiniBand Digital Instrument cables.

Model	Device Connector	Accessory Connector	Shielded?	Application Notes
SHB12X-B12X	InfiniBand	InfiniBand	Yes	High performance noise reduction
SHB12X-H3X24	InfiniBand	-	Yes	Shielded flying lead cable for connecting to custom test fixtures

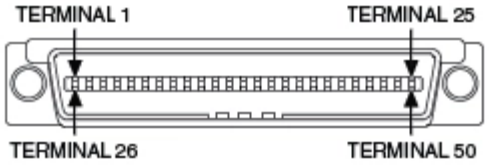
Quick Specifications and Documentation

This section contains a summary of information frequently sought when installing or customizing Infiniband cables. More detailed information can be found in the linked additional resources below. Dimensional drawings can be downloaded for free and are available in 2D and 3D formats; they contain size measurements, part numbers, wire mappings and other helpful information. They are available in several popular formats, such as PDF, AutoCAD (.dxf, and .igs (IGES)), STEP (.stp), and .prt (Pro/E).

SHB12X-B12X Quick Specifications and Documentation

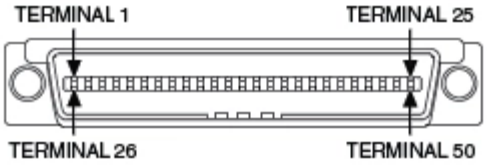
High Performance, Noise Reducing Cable. For most InfiniBand connections, NI recommends that you use the SHB12X-B12X cable. The SHB12X-B12X cable features additional shielding and specific cable pairings to improve noise performance.

Device or Module Side Cable Pinout



InfiniBand Cable Connector (Male)[1]

Accessory Side Cable Pinout



InfiniBand Cable Connector (Male)[1]

Wire Gauge

Signal Wires: 28 AWG

See Dimensional Drawing for more information

Bend Radius

Cable Outer Diameter: 0.44 Inches

Bend Radius: 3.1 inches

See Dimensional Drawing for more information

Resources

Dimensional Drawing

Product Page

Detailed Information

Shielding: Individually shielded pairs, shielding on full cable assembly

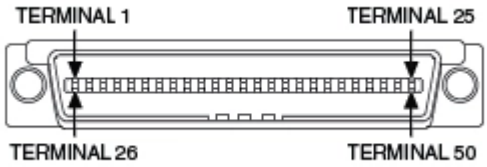
Note to Users: The NI SHB12X-B12X cable internally reverses the pinout of the device to which it is connected. This must be accounted for when designing custom test fixtures. For more information see the Note to Users.

[1] This cable connector is not sold separately. The mating Right-Angle InfiniBand connector (Female) can be found on the Digital Instrument custom connectors page.

SHB12X-H3X24 Quick Specifications and Documentation

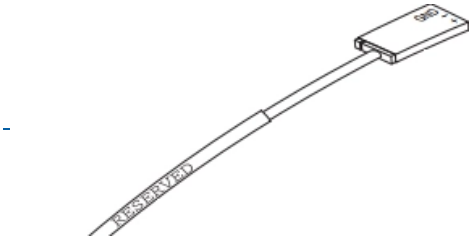
High Performance, Noise Reducing Cable for Custom Fixtures and Breakouts. This special InfiniBand to flying lead cable is intended for use with a custom breakout fixture, rather than the InfiniBand connection used on some NI Digital Instrument accessories.

Device or Module Side Cable Pinout



InifiniBand Cable Connector (Male)[1]

Accessory Side Cable Pinout



Pinout can be found on the cable as seen with the Reserved line above

Wire Gauge

Signal Wires: 28 AWG

Bend Radius

Cable Outer Diameter: 0.375 inches

Bend Radius: 2.63 inches

Note: Cable assembly is made up of 3 sleeves of wires, this may cause the cross-section of the cable to be oval instead of circular.

Resources

Product Page

User Manual

Detailed Information

Wire mapping or pinout with wire colors: Printed on Lead Pairs

Shielding: Full Cable Assembly

[1] This cable connector is not sold separately. The mating Right-Angle InfiniBand connector (Female) can be found on the Digital Instrument custom connectors page.

Compatible Devices, Modules, and Cabling for InfiniBand Digital Instrument Cables

This section is a summary of the most common use cases. Refer to the compatibility guide for complete coverage for your device or module with your cable and connector block or terminal block.

Compatible devices, modules, and cables.

Cable	Product	Device or Module
SHB12X-B12X	Digital I/O Adapter Modules for FlexRIO	NI 6583, NI 6587, NI 6589
	Digital Waveform Instruments (Previously HSDIO)	NI 6561, NI 6562
SHB12X-H3X24	Any device recommended for SHB12X-B12X and needing custom connection solutions.	

Additional Resources

- Learn about terminology, specifications and other common questions for other Digital Cables.
- Learn about specifications, model differences and other common questions for other Digital accessories.
- Learn about the compatibility of NI Digital devices and modules with NI Digital cables and accessories.
- Find the parts needed to make a custom cable, breakout fixture, or replace connectors and screws on NI Digital hardware.
- Browse and search NI manuals, guides, specifications, datasheets, getting started and more.
- Browse dimensional drawings for NI Digital cables and accessories.

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