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68-Pin VHDCI Cables : DAQ Multifunction I/O Cable Guide

Updated Mar 9, 2022

Overview

This guide addresses many common questions for the most popular NI DAQ 68-pin VHDCI cables: the SHC68-68-EPM, SHC68-68, SHC68-C68-EPM, SHC68-C68-S, and RC68-68. NI 68-pin VHDCI cables are primarily used on many of the latest NI DAQ hardware family models, such as NI 63xx (formerly X Series) and NI 62xx (formerly M Series). The cables feature 0.8 mm 68-pin VHDCI connections, with options for unshielded ribbon cables and enhanced performance noise reducing cable assemblies. 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 DAQ Cable and Accessory Guides
- Understanding NI 68-pin VHDCI Cable Terminology
- Differences and Similarities between 68-pin VHDCI DAQ Cables
- Quick Specifications and Documentation
- Compatible Devices, Modules, and Cabling for DAQ VHDCI 68-pin Cables
- Additional Resources

Using the DAQ Cable and Accessory Guides

This guide is intended to cover the most popular VHDCI 0.8 mm 68-pin cables designed for use with NI DAQ devices. It does not cover similar cables for other NI product lines, even if they share the same connectors.

- Learn more about popular SCSI 0.050 D-Type 68-pin DAQ cables.
- To find more information about other NI DAQ cables and general information that applies to all DAQ cables, visit DAQ Multifunction I/O Cable Guide Main Page.
- To determine compatibility of your 68-pin cable with your NI DAQ device or module, your NI DAQ connector black or terminal block, visit DAQ Multifunction I/O Cable and Accessory Compatibility or review the general compatibility information below.
- To learn more about NI DAQ connector and terminal block accessories to which you can connect your cable, review DAQ Multifunction I/O Accessory Guide.
- To create your own cable or test fixture, or to repair an existing NI DAQ cable or accessory, visit NI DAQ Device Custom Cables, Replacement Connectors, and Screws.

Understanding NI 68-pin VHDCI Cable Terminology

This section provides a brief summary of acronyms and terminology used on these 68-pin VHDCI cables. For more in depth information about other connectors as well as the terminology listed on this page, visit the main DAQ cables guide.

Naming Summary for this Guide

- **SHC** - Shielded cable assembly with a VHDCI connector on the device or module end of the cable.
- **RC** - Unshielded ribbon cable with a VHDCI connector on the device or module end of the cable.
- **68-68** - This indicates 68-pin connector found on each end.
- **68-C68** - This indicates a "compact" VHDCI connector found on the accessory end of the cable.
- **-EPM** - NI's latest generation of shielded "Enhanced Performance" cable assembly offering superior noise reduction.
- **-EP** - NI's previous generation of shielded "Enhanced Performance" cable assembly offering noise reduction.

- **-S** - These cables are designed for switching and motion applications. Only used with DAQ models when specifically recommended.

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 68-pin VHDCI DAQ Cables

NI offers a wide range of cables to work with different DAQ 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 68-pin SCSI 0.050 D-Type DAQ cables like the SH68-68-EPM.
- Check out other popular DAQ cables with SCSI 0.050 D-Type, VHDCI and D-Sub connectors.
- Review which cables are compatible with your device, module or accessory.

Use this table to compare different 68-pin VHDCI DAQ cables and follow links to their quick specifications and documentation.

Model	Device Connector	Accessory Connector	Shielded?	Twisted Pairs?	Application Notes
SHC68-68-EPM	VHDCI	SCSI	Yes	Yes	Improved high performance noise reduction
SHC68-68-EP	VHDCI	SCSI	Yes	Yes	High performance noise reduction, previous generation.
SHC68-68	VHDCI	SCSI	Yes	Yes	Cost effective, basic shielding, some noise reduction.
SHC68-68-A2	VHDCI	SCSI	Yes	Yes	For use with the PXIe-6738 and PXIe-6739.
SHC68-C68-EPM	VHDCI	VHDCI	Yes	Yes	For custom breakout fixtures with a VHDCI connector.
SHC68-C68-S	VHDCI	VHDCI	Yes	Yes	For custom breakout fixtures with a VHDCI connector.
RC68-68	VHDCI	SCSI	No	No	Low-cost, no noise reduction.

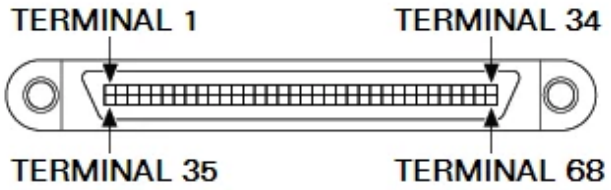
Quick Specifications and Documentation

This section contains a summary of information frequently sought when installing or customizing 68-pin VHDCI DAQ 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).

SHC68-68-EPM Quick Specifications and Documentation

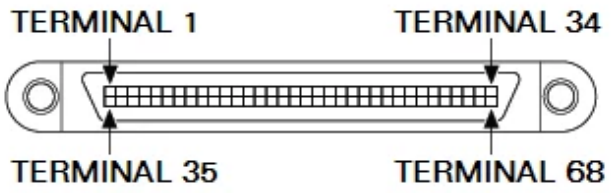
High Performance, Noise Reducing MIO Cable. For most MIO VHDCI connections, NI recommends that you use the SHC68-68-EPM cable; however, a SHC68-68-EP cable will work as a substitute for compatible devices. The SHC68-68-EPM cable is a newer design featuring additional shielding and specific cable pairings to improve noise performance.

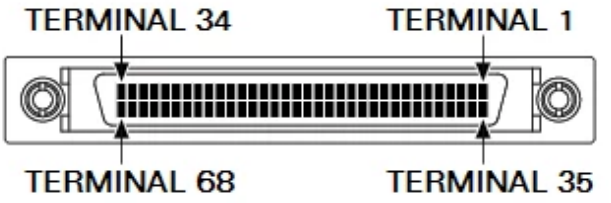
Device or Module Side Cable Pinout



68-pin 0.8 mm VHDCI Connector Male (Plug)

Accessory Side Cable Pinout





68-pin 0.050 in SCSI D-Type Connector Female (Receptacle)

Wire Gauge , Conductor Size

Signal Wires: 30 AWG

+5V Wires: 26 AWG

See Dimensional Drawing for more information

Bend Radius

Cable Outer Diameter: 0.540 in. (13.7 mm)

Bend Radius: 6.5 in. (165 mm)

See Dimensional Drawing for more information

Resources

Dimensional Drawing

Product Page

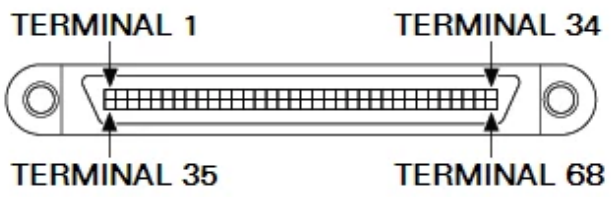
Detailed Information

Wire mapping or pinout with wire colors: See Dimensional Drawing Shielding: Individually shielded analog pairs, separate analog and digital groupings, entire cable assembly Twisted Pairs: Analog pairs, some digital lines Connector Part Number and Jackscrews: See Dimensional Drawing and Custom Connectors Guide

SHC68-68 Quick Specifications and Documentation

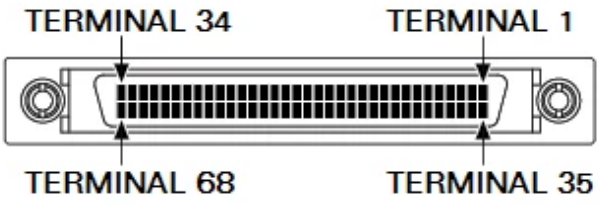
Basic Shielding MIO Cable. Offers cost-effective basic shielding and individually twisted cable pairs, but does not have shields between the analog and digital signals. For most shielded MIO VHDCI connections, NI recommends that you use the SHC68-68-EPM cable. Devices with extended Analog Input (AI) often recommend this cable for certain connectors.

Device or Module Side Cable Pinout



68-pin 0.8 mm VHDCI Connector Male (Plug)

Accessory Side Cable Pinout



68-pin 0.050 in SCSI D-Type Connector Female (Receptacle)

Wire Gauge , Conductor Size

Signal Wires: 30 AWG

+5V Wires: 30 AWG

See Dimensional Drawing for more information Bend Radius

Cable Outer Diameter: 0.380 in. (9.7 mm)

Bend Radius: 4.6 in. (117 mm)

See Dimensional Drawing for more information

Resources

Dimensional Drawing

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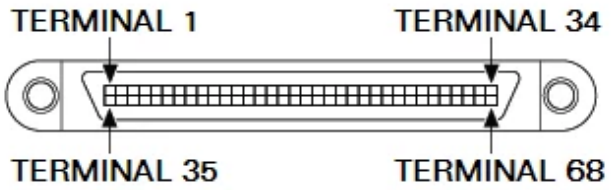
Detailed Information

Wire mapping or pinout with wire colors: See Dimensional Drawing Shielding: Entire cable assembly Twisted Pairs: Analog pairs, some digital lines Connector Part Number and Jackscrews: See Dimensional Drawing and Custom Connectors Guide

SHC68-C68-EPM Quick Specifications and Documentation

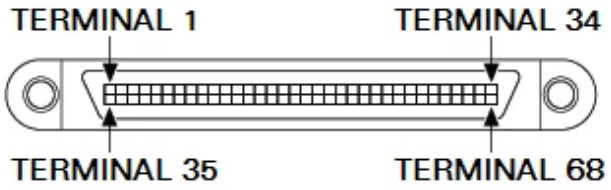
High Performance, Noise Reducing MIO Cable for Custom Fixtures and Breakouts. This special VHDCI-to-VHDCI cable is intended for use with a custom breakout fixture that features a VHDCI connection, rather than the SCSI connection used on most NI DAQ accessories.

Device or Module Side Cable Pinout



68-pin 0.8 mm VHDCI Connector Male (Plug)

Accessory Side Cable Pinout



68-pin 0.8 mm VHDCI Connector Male (Plug)

Wire Gauge , Conductor Size

Signal Wires: 30 AWG

+5V Wires: 26 AWG

Bend Radius

Cable Outer Diameter: 0.540 in. (13.7 mm)

Bend Radius: 6.5 in. (165 mm)

Resources

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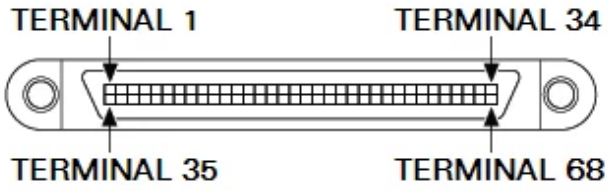
Detailed Information

Wire mapping or pinout with wire colors: Not available. Shielding: Individually shielded analog pairs, separate analog and digital groupings, entire cable assembly Twisted Pairs: Analog pairs, some digital lines Connector Part Number and Jackscrews: See Custom Connectors Guide

SHC68-C68-S Quick Specifications and Documentation

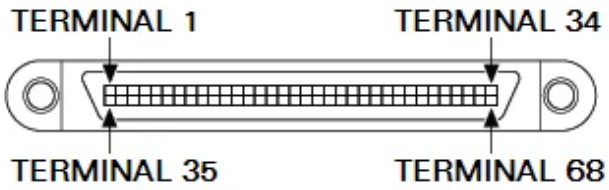
Cost Effective, Basic Shielding for Custom Fixtures and Breakouts. This cable is designed with wire pairings for switching and motion applications, and is only recommended for certain DAQ applications. This special VHDCI-to-VHDCI cable is intended for use with a custom breakout fixture that features a VHDCI connection, rather than the SCSI connection used on most NI DAQ accessories.

Device or Module Side Cable Pinout



68-pin 0.8 mm VHDCI Connector Male (Plug)

Accessory Side Cable Pinout



68-pin 0.8 mm VHDCI Connector Male (Plug)

Wire Gauge , Conductor Size

Signal Wires: 30 AWG

+5V Wires: 30 AWG

Bend Radius

Cable Outer Diameter: 0.380 in. (9.7 mm)

Bend Radius: 4.6 in. (117 mm)

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Dimensional Drawing

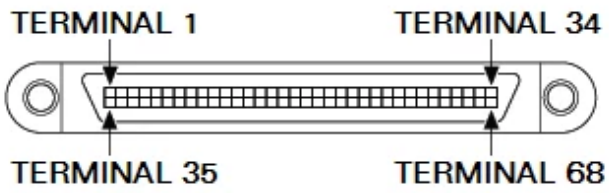
Detailed Information

Wire mapping or pinout with wire colors: Not available. Shielding: Each twisted pair, entire cable assembly Twisted Pairs: Analog pairs, some digital lines Connector Part Number and Jackscrews: See Custom Connectors Guide

RC68-68 Quick Specifications and Documentation

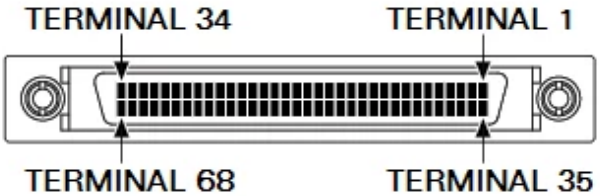
Unshielded MIO Ribbon Cable. Offers cost-effective option with no shielding or twisted pairs.

Device or Module Side Cable Pinout



68-pin 0.8 mm VHDCI Connector Male (Plug)

Accessory Side Cable Pinout



68-pin 0.050 in SCSI D-Type Connector Female (Receptacle)

Wire Gauge , Conductor Size

Signal Wires: 30 AWG

+5V Wires: 30 AWG

Resources

Product Page

Detailed Information

Wire mapping or pinout with wire colors:
Not available Shielding: None Twisted Pairs: None Connector Part Number and Jackscrews:
See Custom Connectors Guide

Compatible Devices, Modules, and Cabling for DAQ VHDCI 68-pin 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	Device or Module
SHC68-68-EPM	NI 63xx Models (formerly X Series) NI 62xx Models (formerly M Series)
SHC68-68	NI 673x Models (formerly Analog Output [AO] Series) NI 63xx Models (formerly X Series) NI 62xx Models (formerly M Series
SHC68-C68-EPM	Any device recommended for SHC68-68-EPM and needing custom connection solutions.
SHC68-C68-S	Any device recommended for SHC68-68-EPM and needing custom connection solutions.
RC68-68	NI 673x Models (formerly Analog Output [AO] Series) NI 63xx Models (formerly X Series) NI 62xx Models (formerly M Series)

Additional Resources

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

- Purchase NI DAQ cables, terminal blocks, and connector blocks

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