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653x Cable Adapter: Digital Instruments Accessory Guide

Updated Jan 4, 2023

Overview

This guide addresses many common questions for the 653x Cable Adapter, which allows you to easily interface your SCSI 68-pin D-type accessories with VHDCI 68-pin devices or modules. Whether you need mappings or pinouts for wiring, or creating custom configuration this guide will provide a short summary, and then link to other resources like manuals, specifications, dimensional drawings, and more.

Contents

- Using this Digital Instrument Accessory Guide
- Overview of the 653x Cable Adapter
- Quick Specifications, Manuals, Quick Reference Labels, and Dimensional Drawings
- Connecting to Your 653x Cable Adapter
- Compatible Devices, Modules, and Cabling for the 653x Cable Adapter
- Additional Resources

Using this Digital Instrument Accessory Guide

This guide is intended to cover the 653x Cable Adapter which was designed for use with NI High-Speed Digital I/O or HSDIO devices and modules. It does not cover use with other NI product hardware families like DAQ, C Series, or R Series although some may use similar adapters.

- To find more information about other NI Digital accessories and general information that applies to all Digital accessories, visit the NI Digital Accessories Guide.
- To determine compatibility of your 653x Cable Adapter with your NI Hight-Speed Digital I/O or HSDIO device or module, or your NI cable, visit Digital Instrument Cable and Accessory Compatibility.
- To create your own cable or test fixture, or to repair an NI Digital cable or accessory, visit NI Digital Instrument Custom Cables, Replacement Connectors, and Screws. First, note the connector information found on this page.

Overview of the 653x Cable Adapter

The 653x Cable Adapter was developed to enable users of the PXI-6533 or PXI-6534 and PCI-6533 or PCI-6534 to migrate to the PCIe-6535B, PCIe-6536B, PCIe-6537B and PXIe-6535, PXIe-6536, PXIe-6537. The adapter can also be used to migrate from the PXI-6533 or PXI-6534 and PCI-653 or PCI-6534 to the 654x series and the 655x series. The adapter enables you to migrate to the new devices without having to replace fixtures or accessories with SCSI 68-pin D-type connectors. The 653x Cable Adapter is a 68-pin SCSI to 68-pin VHDCI adapter that is used by attaching to the end of a 68-pin VHDCI cable.

The 653x Cable Adapter is only recommended when upgrading from the 6533/4 to an HSDIO device with a VHDCI 68-pin connector and is **not recommended for new designs**. If you are designing a new system or application NI recommends using an accessory with a VHDCI 68-pin connector instead of the 653x Cable Adapter. For more information on compatible accessories for your device please see the Digital Instrument Cable and Accessory Compatibility Guide.

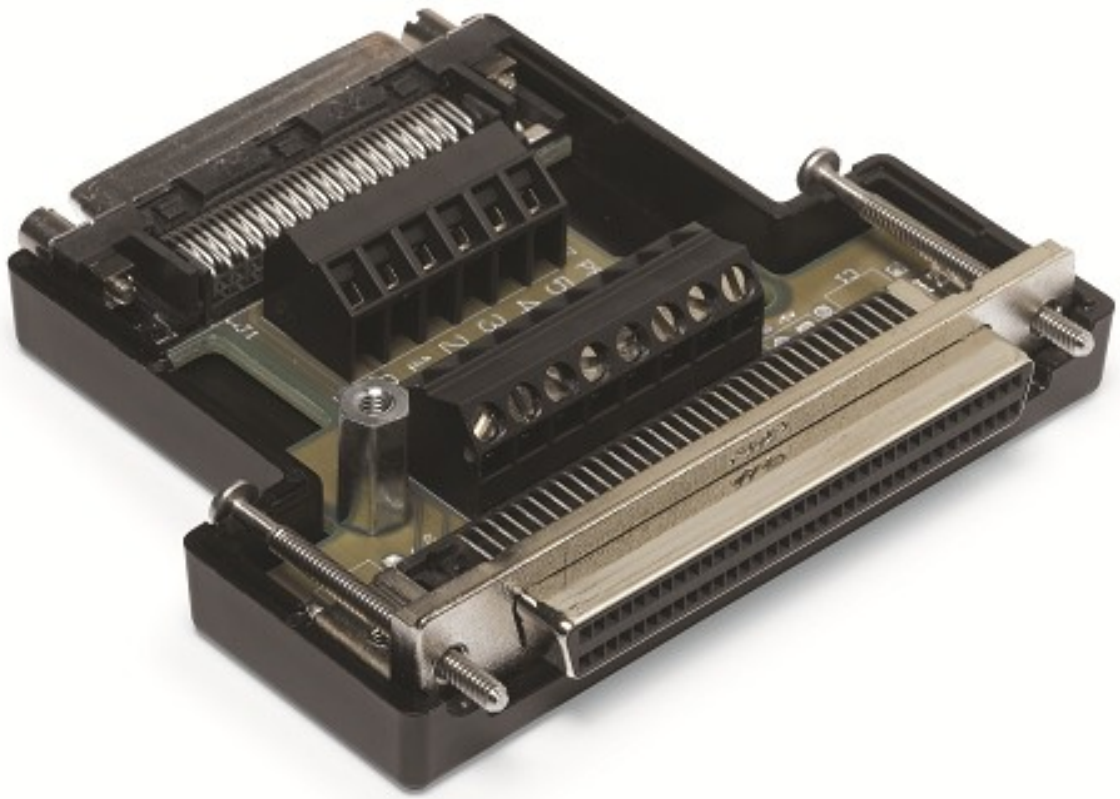


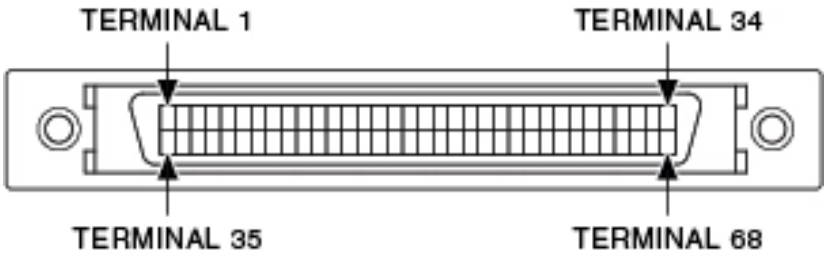
Figure 1: NI 653x Cable Adapter Without the Cover

Quick Specifications, Manuals, Quick Reference Labels, and Dimensional Drawings

This section contains a summary of information frequently sought when installing, wiring up or configuring the 653x Cable Adapter. 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 and other helpful information, and are available in several popular formats, such as PDF, AutoCAD (.dxf, .dwg, and IGES), SolidWorks, and STEP (.stp).

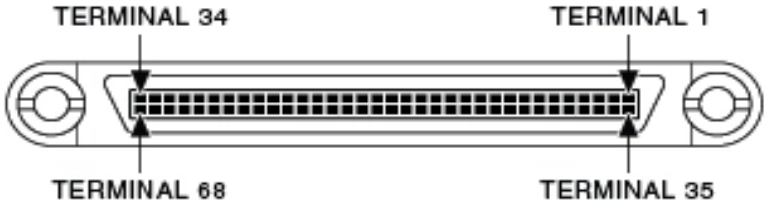
653x Cable Adapter Quick Specifications and Published Resources

Accessory Side Connector and Pinout



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

Cable Side Connector and Pinout



68-pin 0.8 mm VHDCI (Receptacle)

Published Resources

653x Cable Adapter User Guide

653x Cable Adapter Dimensional Drawing

Physical Characteristics

Width	69.3 mm (2.73 in.)
Depth	62.7 mm (2.47 in.)
Height	16.7 mm (0.66 in.)
Weight	60 g (2.1 oz)

For more information, refer to the User Manual and Specifications or Dimensional Drawing

Screw Terminal Wiring Specifications	
Minimum wire gauge	26 AWG
Maximum wire gauge	22 AWG
Screw terminal torque	0.3 N-m (2.7 in.·lb)

For more information, refer to the User Manual and Specifications

Connecting to Your 653x Cable Adapter

The diagram below displays the proper sequence to connect your device, cable, adapter and test fixture. The 653x Cable Adapter is used between the VHDCI cable and the SCSI test fixture. As seen above, the 653x Cable Adapter has a 68-pin 0.050 SCSI D-Type Connector Female (Receptacle) Connector, as such, when using the adapter with a custom test fixture, the test fixture must have a 68-pin 0.050 SCSI D-Type Connector Male (Plug) Connector. For more information on what connector to use on your custom test fixture when using the 653x Cable Adapter please see the Digital Instruments Custom Cables, Replacement Connectors and Screws Guide.

Note: The example diagram below uses the PXIe-6535, however the 653x Cable Adapter compatibility is not limited to this device. For more information on the 653x Cable Adapter compatibility please see the Compatible Devices, Modules, and Cabling for the 653x Cable Adapter.

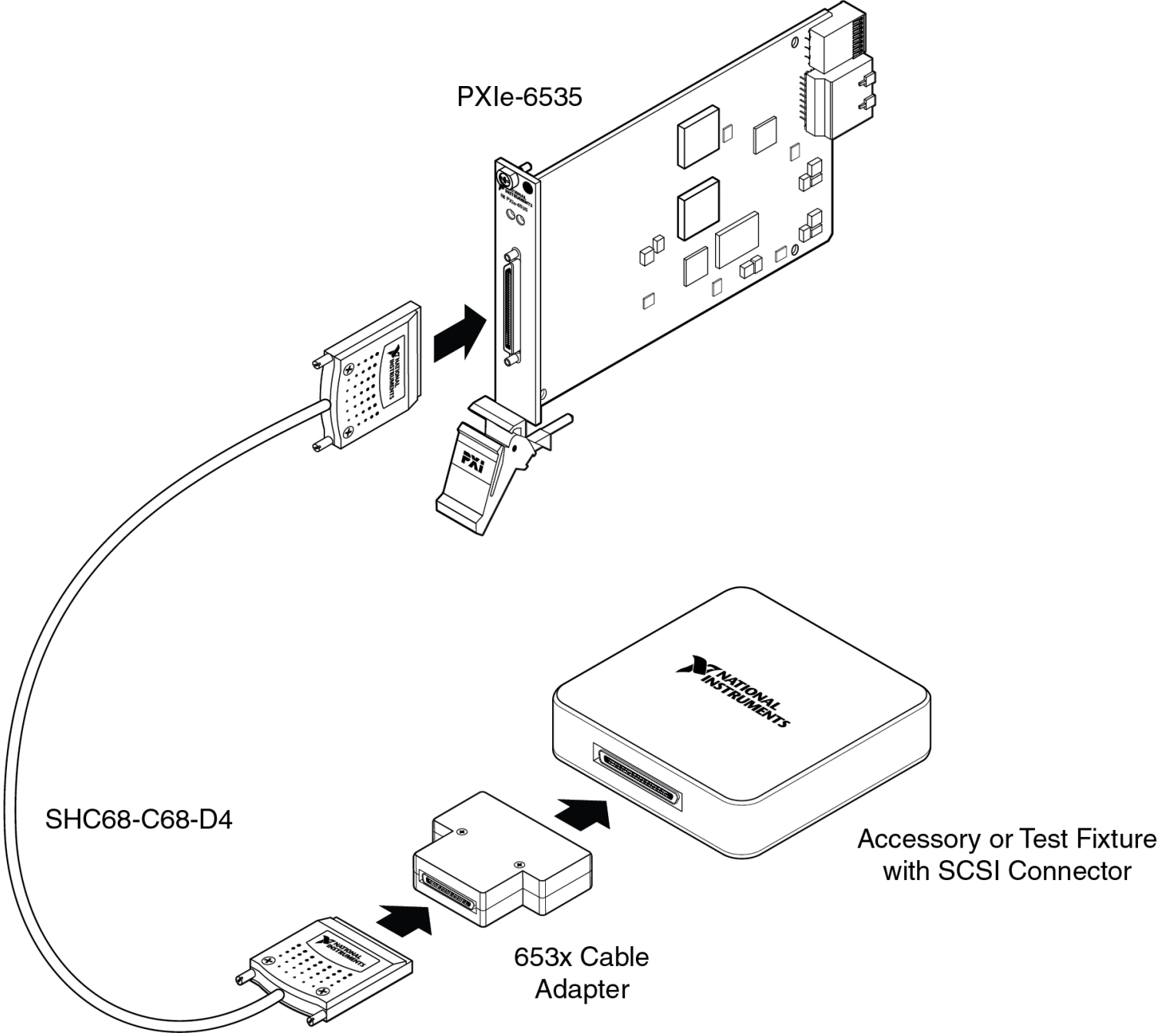


Figure 2: Connection Diagram

Additionally, the 653x Cable Adapter gives the user direct access to the PFI lines via screw terminals as seen in Figure 3. The PFI lines must be manually connected through the screw terminals to ensure correct signal routing. Note that not all PFI lines can route from the PCI-6533/4 or PXI-6533/4 to other HSDIO devices. See your specific device's User Manual for more information on what PFI lines can be used. For an example of how to connect PFI lines and how to modify the PFI lines in your program please see the 653x Cable Adapter User Guide linked above.

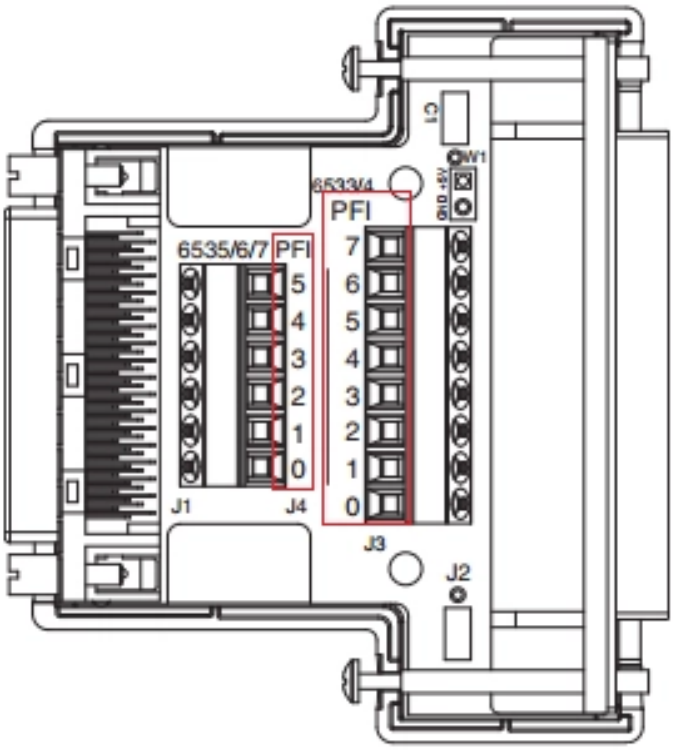


Figure 3: Screw Terminal Access to PFI Lines

Compatible Devices, Modules, and Cabling for the 653x Cable Adapter

Some devices and modules listed in the table have extended compatibility information, which is linked to in their Compatibility Guide. Refer to your device or module's user manual or user guide for more information. For additional compatibility information please see the NI Digital Cable and Accessory Compatibility Guide.

Compatible devices, modules, and cables.

Device or Module	Shielded Cable	UnShielded Cable	Accessories
NI 6535, NI 6536, NI 6537	SHC68-C68-D4	C68-C68-D4	SCB-68 SCB-68A CB-68LP CB-68LPR TBX-68 Custom Fixtures with SCSI 68-pin D-Type Connector
NI 6535B, NI 6536B, NI 6537B			
NI 6541, NI 6542			
NI 6544, NI 6545, NI 6547, NI 6548			
NI 6551, NI 6552			
NI 6555, NI 6556			

Additional Resources

- Learn about specifications, model differences and other common questions for other Digital accessories.
- Learn about the compatibility of NI Digital Instruments 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 cables and accessories.

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