
SCB-42 User Manual

2025-07-23



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SCB-42 User Manual

The SCB-42 User Manual provides detailed descriptions of the product functionality and the step by step processes for use.

Looking for Something Else?

For information not found in the User Manual for your product, such as specifications and API reference, browse ***Related Information***.

Related information:

- [Software and Driver Downloads](#)
- [Release Notes](#)
- [License Setup and Activation](#)
- [Dimensional Drawings](#)
- [Product Certifications](#)
- [Letter of Volatility](#)
- [Discussion Forums](#)
- [NI Learning Center](#)

SCB-42 Overview

The SCB-42 is a DIO connector block for use with NI products that have a Nano-Pitch connector for both MGTs and DIO. Use the SCB-42 to adapt the DIO signals to a mini HDMI connector while preserving the MGT functionality on a Nano-Pitch connector output.

Other product and company names listed are trademarks or trade names of their respective companies.

Part Numbers for Recommended Cables and Accessories

Use part numbers to purchase the cables and the accessories for optimizing the performance of SCB-42.

Table 1. Part Numbers for Recommended Accessories

Accessory	Description	Part Number
0.9 N · m (8 lb · in.) calibrated torque wrench, 5/16 in.	—	751120-01
100 N · cm calibrated torque screwdriver	Use with the SMA driver bit included in the SCB-42 kit.	780487-01
Cable retention bracket assembly for the Nano-Pitch cable	Included with the Nano-Pitch cables purchased from NI. To ensure an uninterrupted connection, NI recommends, but does not require, use of the retention bracket assembly.	143426A-01
DIN rail mounting kit	Use to mount the SCB-42 on a standard 35 mm DIN rail.	786797-01

Cables



Notice Only use rated cables to connect to the SCB-42.



Note NI recommends against using a commercial HDMI specification interface cable.

Table 2. Part Numbers for Recommended Cables

Cable	Part Number
Cable assembly, Nano-Pitch to Nano-Pitch	785486-01
Cable assembly, Nano-Pitch to Mini-SAS	786215-01

Cable	Part Number
Cable assembly, mini-HDMI to mini-HDMI, 180-degrees offset, 0.25 m	789123-01

Hardware Interfaces

Refer to the front panel information for your instrument to understand the connectors, pinouts, and signals found on your instrument.

SCB-42 Front Panel

Figure 1. SCB-42 Front Panel

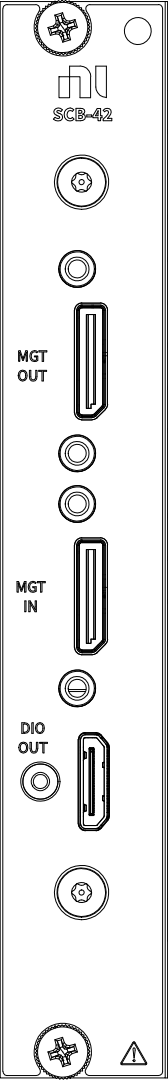


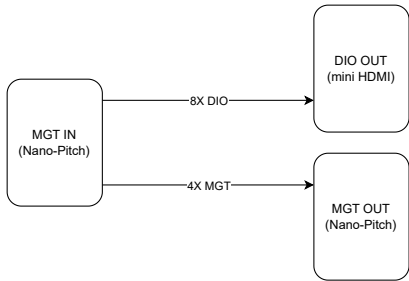
Table 3. SCB-42 Connector Types

Connector	Connector Type
MGT OUT	Nano-Pitch (f)

Connector	Connector Type
MGT IN	Nano-Pitch (f)
DIO OUT	Mini HDMI (f)

SCB-42 Internal Wiring

Figure 1. SCB-42 Internal Wiring



MGT Specifications and Pinout

Table 4. MGT Data Rate

Specification	Value
Data rate	500 Mbps to 12 Gbps, nominal

Figure 1. MGT IN Connector Pinout

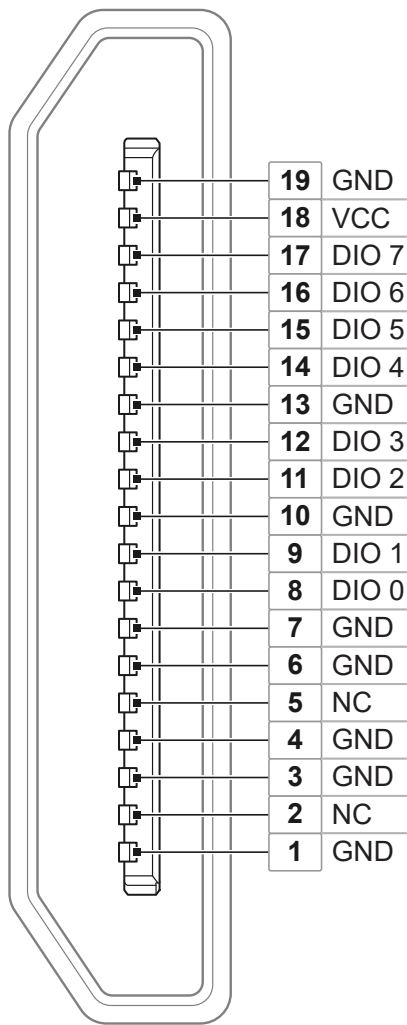
Reserved	A1	B1	5.0 V
GND	A2	B2	GND
MGT Rx+ 0	A3	B3	MGT Tx+ 0
MGT Rx− 0	A4	B4	MGT Tx− 0
GND	A5	B5	GND
MGT Rx+ 1	A6	B6	MGT Tx+ 1
MGT Rx− 1	A7	B7	MGT Tx− 1
GND	A8	B8	GND
DIO 4	A9	B9	DIO 6
DIO 5	A10	B10	DIO 7
GND	A11	B11	GND
MGT REF+ / DIO 0	A12	B12	DIO 2
MGT REF− / DIO 1	A13	B13	DIO 3
GND	A14	B14	GND
MGT Rx+ 2	A15	B15	MGT Tx+ 2
MGT Rx− 2	A16	B16	MGT Tx− 2
GND	A17	B17	GND
MGT Rx+ 3	A18	B18	MGT Tx+ 3
MGT Rx− 3	A19	B19	MGT Tx− 3
GND	A20	B20	GND
5.0 V	A21	B21	Reserved

Figure 1. MGT OUT Connector Pinout

Reserved	A1	B1	5.0 V
GND	A2	B2	GND
MGT Rx+ 0	A3	B3	MGT Tx+ 0
MGT Rx− 0	A4	B4	MGT Tx− 0
GND	A5	B5	GND
MGT Rx+ 1	A6	B6	MGT Tx+ 1
MGT Rx− 1	A7	B7	MGT Tx− 1
GND	A8	B8	GND
NC	A9	B9	NC
NC	A10	B10	NC
GND	A11	B11	GND
NC	A12	B12	NC
NC	A13	B13	NC
GND	A14	B14	GND
MGT Rx+ 2	A15	B15	MGT Tx+ 2
MGT Rx− 2	A16	B16	MGT Tx− 2
GND	A17	B17	GND
MGT Rx+ 3	A18	B18	MGT Tx+ 3
MGT Rx− 3	A19	B19	MGT Tx− 3
GND	A20	B20	GND
5.0 V	A21	B21	Reserved

DIO OUT Connector Pinout

Figure 1. DIO OUT Connector Pinout



Direct Connections to the SCB-42

Ensure you take the following precautions when making direct connections to the SCB-42.

- Ensure you are properly grounded when manipulating cables or antennas connected to the SCB-42.
- If you are using nonisolated devices, such as a nonisolated RF antenna, ensure the devices are maintained in a static-free environment.
- If you are using an active device, such as a preamplifier or switch routed to the SCB-42RF IN connector, ensure that the device cannot generate signal transients greater than the RF and DC specifications of the SCB-42 connectors.
- To ensure the Nano-Pitch cable stays inserted, slide the retention bracket assembly over the Nano-Pitch cable body and screw it into position in the front panel.



Note The retention bracket assembly ships with Nano-Pitch cables purchased from NI. To ensure an uninterrupted connection, NI recommends, but does not require, the use of the retention bracket assembly.

- To ensure the mini HDMI cable stays inserted, screw the cable overmold into position in the front panel.



Note The overmold ships with mini HDMI cables purchased from NI.

- The mini HDMI DIO connector is not an HDMI interface. Do not connect the mini HDMI DIO connector on the SCB-42 to the HDMI interface of another device. NI is not liable for any damage resulting from such signal connections.

Connecting to the SCB-42

The SCB-42 enables access to DIO signals from a Nano-Pitch cable through other common connectors. To use the SCB-42, you must first connect a Nano-Pitch cable to your VST.

Connecting to the Nano-Pitch Connector

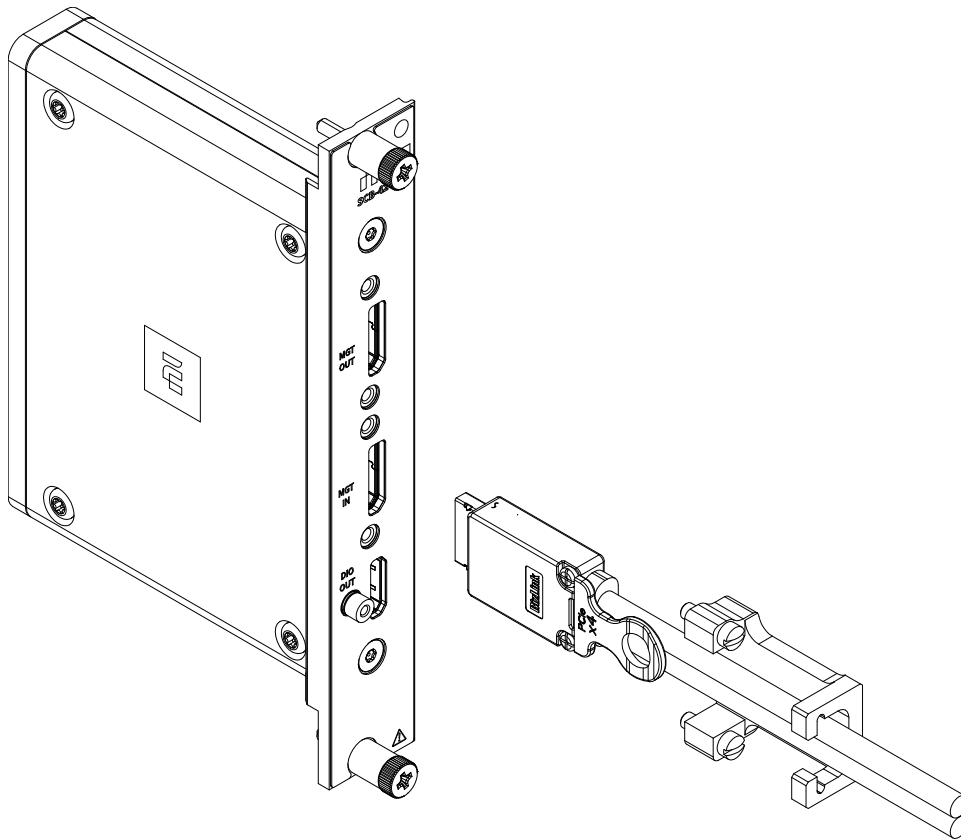
1. Connect the Nano-Pitch cable to the DIO terminal.



Notice Using signal voltages outside of the range specified for the module you connect to the SCB-42 could damage the SCB-42 and any instruments connected to it. For maximum voltage specifications, refer to the documentation for the connected hardware. NI is not liable for any damage resulting from using voltages outside of the recommended range.

2. To ensure the Nano-Pitch cable stays inserted, slide the retention bracket assembly over the Nano-Pitch cable body and screw it into position in the front panel.

Figure 1. Retention Bracket Assembly



Note The retention bracket assembly ships with Nano-Pitch cables purchased from NI. To ensure an uninterrupted connection, NI recommends, but does not require, the use of the retention bracket

assembly.

Physical Characteristics

Table 9. Physical Characteristics

Specification	Value
Dimensions	85.6 mm (3.4 in.) x 128.7 mm (5.1 in.) x 20.0 mm (0.8 in.)
	For more information, visit ni.com/dimensions and search by module number.
Weight	180 g (6.3 oz)

Safety Guidelines

Follow these guidelines to use the SCB-42 safely.



Important For comprehensive safety information, refer to the safety, environmental, and regulatory information document that shipped with your hardware.



Caution Observe all instructions and cautions in the user documentation. Using the product in a manner not specified can damage the product and compromise the built-in safety protection.

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.

Unpacking the Kit



Notice To prevent electrostatic discharge (ESD) from damaging the device, ground yourself using a grounding strap or by holding a grounded object, such as your computer chassis.

1. Touch the antistatic package to a metal part of the computer chassis.
2. Remove the device from the package and inspect the device for loose components or any other sign of damage.



Notice Never touch the exposed pins of connectors.



Note Do not install a device if it appears damaged in any way.

3. Unpack any other items and documentation from the kit.



Note Store the device in the antistatic package when the device is not in use.

Verifying the Kit Contents

- SCB-42 connector block
- ***SCB-42 Safety, Environmental, and Regulatory Information***

Preparing the Environment

Ensure that the environment you are using the SCB-42 in meets the following specifications.

Environmental Characteristics

Table 6. Temperature

Operating	0 °C to 55 °C
Storage	-41 °C to 71 °C

Table 7. Humidity

Operating	10% to 90%, noncondensing
Storage	5% to 95%, noncondensing

Table 8. Pollution Degree

Pollution degree	2
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Table 9. Maximum Altitude

Maximum altitude	2,000 m, 800 mbar (at 25 °C ambient temperature)
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Indoor use only.

Installing the SCB-42



Notice To prevent damage to the SCB-42 caused by ESD or contamination, handle the module using the edges or the metal bracket.

The SCB-42 has a PXI-compatible front panel. NI recommends, but does not require, installing the SCB-42 in your PXI chassis.

1. Identify a slot in the PXI chassis to mount the SCB-42.
Since it has no power requirements, the SCB-42 can be mounted in any PXI slot that it fits into.
2. Remove the black plastic covers from all the captive screws on the module front panel.
3. Touch any metal part of the chassis to discharge static electricity.
4. Slide the module into the slot until it is fully inserted.
5. Secure the module front panel to the chassis using the front-panel captive thumbscrews.



Note Tightening the top and bottom mounting screws increases mechanical stability and prevents damage.

6. Cover all empty slots using either filler panels (standard or EMC) or slot blockers with filler panels, depending on your application.



Note For more information about installing slot blockers and filler panels, refer to ***Installing Slot Blockers and Filler Panels***.

Related information:

- [Installing Slot Blockers and Filler Panels](#)

Mounting the SCB-42 on a DIN Rail

Complete the following steps to mount the SCB-42 on a DIN rail.

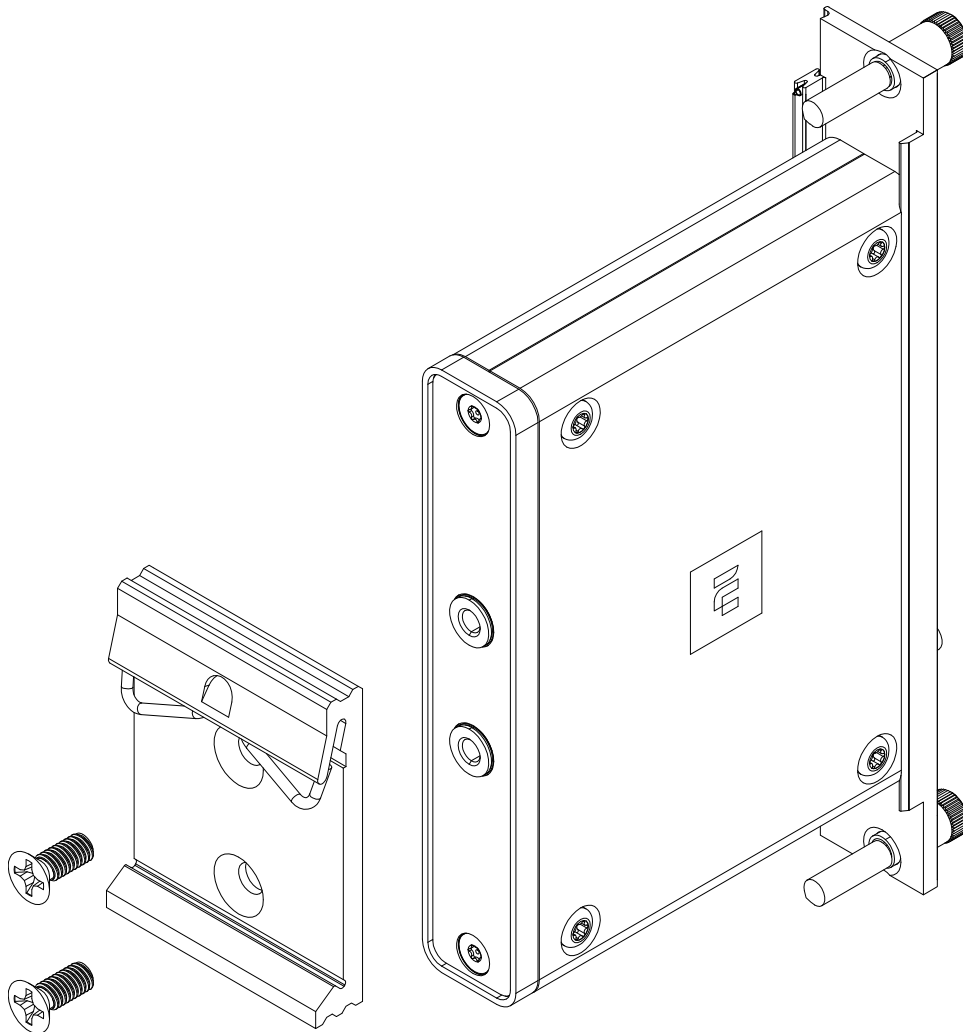
The NI DIN rail mounting kit (NI part number 786797-01) contains a clip for mounting the SCB-42 on a standard 35 mm DIN rail using the two holes on the rear panel of the SCB-42.

Gather the following equipment:

- (Optional but recommended) NI DIN rail mounting kit (NI part number 786797-01)
- #2 Phillips screwdriver
- FLH #6-32 $\times$ 5/16" screws (x2), included in the NI DIN rail mounting kit

1. Align the DIN rail clip with the mounting holes on the SCB-42.

Figure 1. DIN Rail Clip Alignment



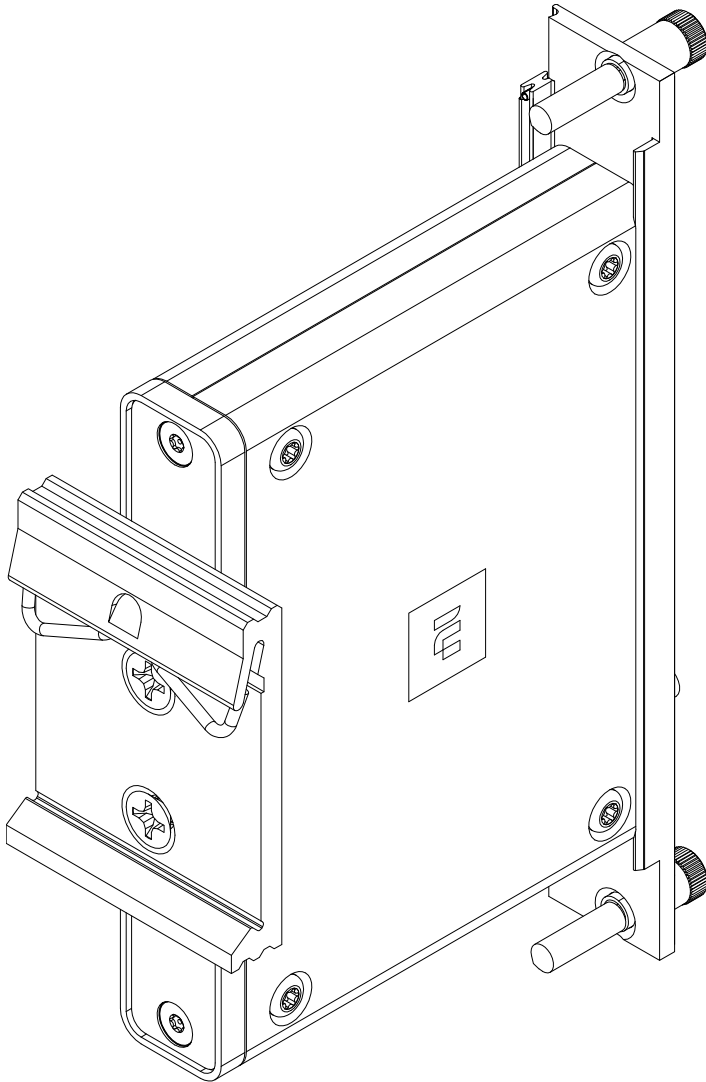
2. Use the #2 Phillips screwdriver and the two FLH #6-32 $\times$ 5/16" screws to fasten the DIN rail clip to the SCB-42.



Note Use only the screws provided in the DIN rail kit. Using longer

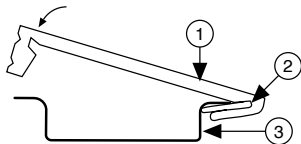
screws may damage the SCB-42.

Figure 1. DIN Rail Clip Installation



3. Clip the SCB-42 onto the DIN rail with the larger lip of the DIN rail clip positioned up.

Figure 9. DIN Rail Clip Parts Locator Diagram



1. DIN Rail Clip
2. DIN Rail Spring
3. DIN Rail

Cleaning the SCB-42

Keep the SCB-42 clean and free of dirt and any other debris to maintain its performance over time.

1. Clean the SCB-42 with a dry, lint-free cloth.
2. Ensure that the SCB-42 is completely dry and free from contaminants before returning it to service.