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INSTALLATION GUIDE
NI TB-2706

PXI/PXIe Terminal Block for M Series and NI 6143 Devices

This installation guide describes how to install and connect signals to the NI TB-2706 terminal block for use with PXI/PXIe M Series, NI PXI-6143, and other PXI/PXIe devices with a 68-pin VHDCI connector.

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Introduction

The TB-2706 is a terminal block assembly consisting of a printed circuit board, 70 screw terminals, and a metal enclosure with strain relief hardware. The terminal block assembly connects directly to the front panel of National Instruments PXI-622*x*, PXI-625*x*, PXIe-625*x*, PXI-628*x*, and PXI-6143 devices, eliminating the need for an external cable.

The TB-2706 allows you to easily connect analog input, analog output, counter/timer, and digital I/O signals to your National Instruments device. The 70 screw terminals allow access to every pin on the connector, plus two shield screw terminals for use with a shielded cable. For M Series devices with two connectors, this terminal block allows access to every pin on Connector 0, plus two shield screw terminals for use with a shielded cable, but makes Connector 1 inaccessible.

Caution The TB-2706 is not designed for input voltages greater than 42 V_{pk}/60 VDC, even if you install a voltage divider that reduces the voltage to within the input range of the DAQ device. Input voltages greater than 42 V_{pk}/60 VDC can damage the TB-2706, any device connected to it, and the host computer. Overvoltage also can cause an electric shock hazard for the operator. National Instruments is *not* liable for damage or injury resulting from such misuse.

What You Need to Get Started

You need the following to set up and use your terminal block:

- ❑ NI TB-2706 Terminal Block Assembly
- ❑ *NI TB-2706 Installation Guide*
- ❑ NI PXI/PXIe M Series device, NI PXI-6143, or other PXI/PXIe device with a 68-pin VHDCI connector
- ❑ *M Series User Manual*, *S Series User Manual*, or other PXI/PXIe DAQ device documentation

NATIONAL INSTRUMENTS

- ❑ 0.10 in. slotted screwdriver
- ❑ Pinout label for M Series (adhered to cover of TB-2706) or pinout list for NI PXI-6143
- ❑ Number 1 Phillips screwdriver
- ❑ 26–16 AWG wire
- ❑ Wire cutters
- ❑ Wire insulation stripper

Safety Information

Cautions Do *not* operate the device in an explosive atmosphere or where there may be flammable gases or fumes.

Do *not* operate damaged equipment. The safety protection features built into this device can become impaired if the device becomes damaged in any way. If the device is damaged, turn the device off and do *not* use it until service-trained personnel can check its safety. If necessary, return the device to National Instruments for service and repair to ensure that its safety is not compromised.

Do *not* operate this equipment in a manner that contradicts the information specified in this document. Misuse of this equipment could result in a shock hazard.

Do *not* substitute parts or modify equipment. Because of the danger of introducing additional hazards, do *not* install unauthorized parts or modify the device. Return the device to National Instruments for service and repair to ensure that its safety features are not compromised.

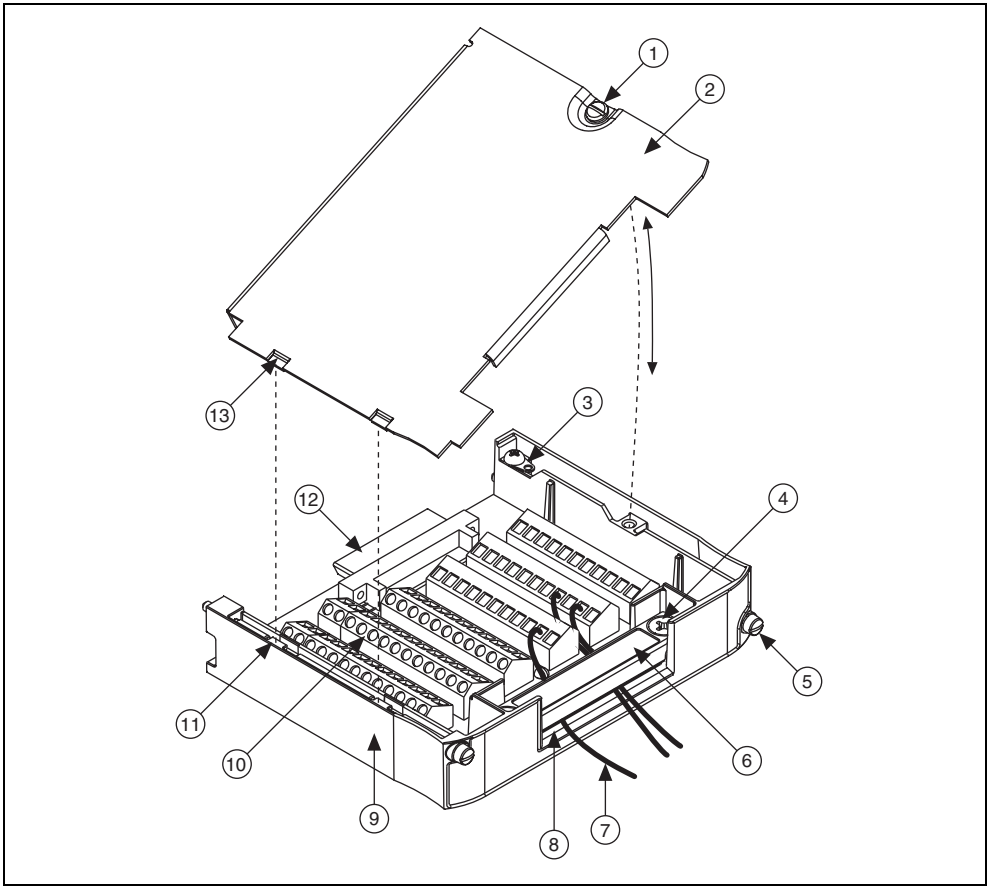
You *must* insulate all of your signal connections to the highest voltage with which the TB-2706 can come in contact.

Connections, including power signals to ground and vice versa, that exceed any of the maximum signal ratings on the terminal block can create a shock or fire hazard, or can damage any or all of the boards connected to the host computer, and the terminal block. National Instruments is *not* liable for any damages or injuries resulting from incorrect signal connections.

Clean the module and accessories by brushing off light dust with a soft non-metallic brush. Remove other contaminants with a stiff non-metallic brush. The unit *must* be completely dry and free from contaminants before returning it to service.

Connecting the Signals

Refer to Figure 1 as you complete the following steps to connect signals to your terminal block.

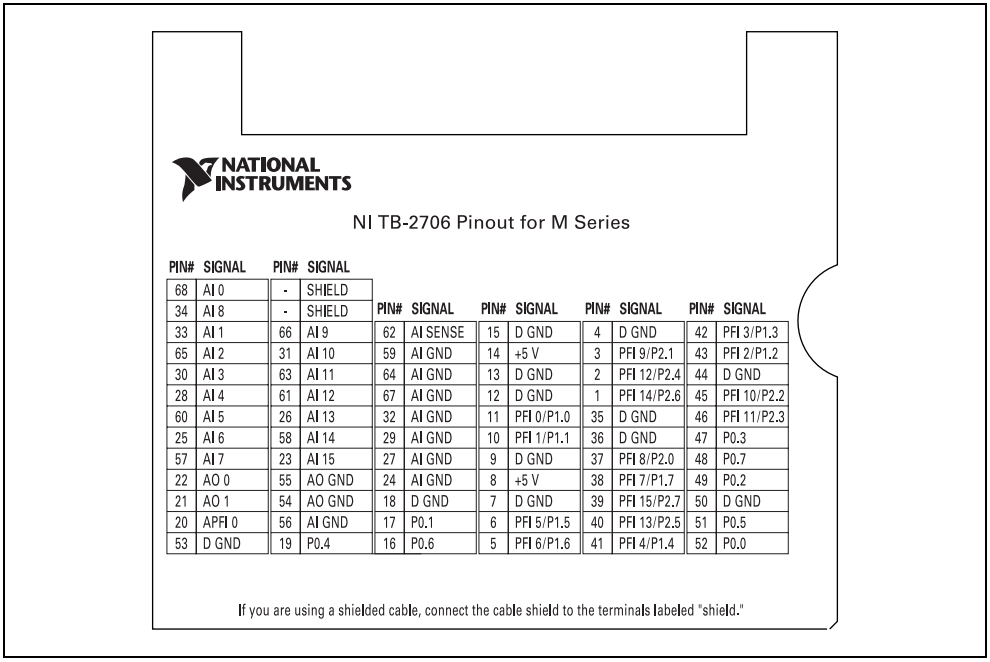


1	Top Cover Screw	6	Strain-Relief Bar	10	Screw Terminals
2	Cover	7	Signal Wire	11	Base Tab
3	Chassis Ground Lug	8	Strain-Relief Opening	12	Connection to PXI/PXIe Module
4	Strain-Relief Screw	9	Base	13	Cover Indentation
5	Terminal Block Mounting Screw				

Figure 1. TB-2706 Parts Locator Diagram

1. Remove the terminal block cover by unscrewing the top cover screw using the 0.10 in. slotted screwdriver.

Note Your kit contains a pinout label for M Series devices only, shown in Figure 2. This label, adhered to the inside of the cover, is a pin number-to-signal name reference. For PXI-6143 pin connections, refer to Figure 3 or the *S Series User Manual*.



NI TB-2706 Pinout for M Series

PIN#	SIGNAL	PIN#	SIGNAL	PIN#	SIGNAL	PIN#	SIGNAL	PIN#	SIGNAL	PIN#	SIGNAL
68	AI 0	-	SHIELD								
34	AI 8	-	SHIELD								
33	AI 1	66	AI 9	62	AI SENSE	15	D GND	4	D GND	42	PFI 3/P1.3
65	AI 2	31	AI 10	59	AI GND	14	+5 V	3	PFI 9/P2.1	43	PFI 2/P1.2
30	AI 3	63	AI 11	64	AI GND	13	D GND	2	PFI 12/P2.4	44	D GND
28	AI 4	61	AI 12	67	AI GND	12	D GND	1	PFI 14/P2.6	45	PFI 10/P2.2
60	AI 5	26	AI 13	32	AI GND	11	PFI 0/P1.0	35	D GND	46	PFI 11/P2.3
25	AI 6	58	AI 14	29	AI GND	10	PFI 1/P1.1	36	D GND	47	P0.3
57	AI 7	23	AI 15	27	AI GND	9	D GND	37	PFI 8/P2.0	48	P0.7
22	AO 0	55	AO GND	24	AI GND	8	+5 V	38	PFI 7/P1.7	49	P0.2
21	AO 1	54	AO GND	18	D GND	7	D GND	39	PFI 15/P2.7	50	D GND
20	APFI 0	56	AI GND	17	P0.1	6	PFI 5/P1.5	40	PFI 13/P2.5	51	P0.5
53	D GND	19	P0.4	16	P0.6	5	PFI 6/P1.6	41	PFI 4/P1.4	52	P0.0

If you are using a shielded cable, connect the cable shield to the terminals labeled "shield."

Figure 2. Pinout Label for M Series

NI TB-2706 Pinout for PXI-6143

PIN#	SIGNAL	PIN#	SIGNAL	PIN#	SIGNAL	PIN#	SIGNAL	PIN#	SIGNAL	PIN#	SIGNAL
68	AI 0+	-	SHIELD								
34	AI 0-	-	SHIELD								
33	AI 1+	66	AI 1-	62	NC	15	D GND	4	D GND	42	PFI 3/CTR 1 SOURCE
65	AI 2+	31	AI 2-	59	AI 5 GND	14	+5 V	3	PFI 9/CTR 0 GATE	43	PFI 2/AI CONV CLK
30	AI 3+	63	AI 3-	64	AI 2 GND	13	D GND	2	CTR 0 OUT	44	D GND
28	AI 4+	61	AI 4-	67	AI 0 GND	12	D GND	1	FREQ OUT	45	EXT STROBE*
60	AI 5+	26	AI 5-	32	AI 1 GND	11	PFI 0/AI START TRIG	35	D GND	46	AI HOLD COMP
25	AI 6+	58	AI 6-	29	AI 3 GND	10	PFI 1/AI REF TRIG	36	D GND	47	P0.3
57	AI 7+	23	AI 7-	27	AI 4 GND	9	D GND	37	PFI 8/CTR 0 SOURCE	48	P0.7
22	NC	55	NC	24	AI 6 GND	8	+5 V	38	PFI 7/AI SAMP CLK	49	P0.2
21	NC	54	NC	18	D GND	7	D GND	39	D GND	50	D GND
20	NC	56	AI 7 GND	17	P0.1	6	PFI 5	40	CTR 1 OUT	51	P0.5
53	D GND	19	P0.4	16	P0.6	5	PFI 6	41	PFI 4/CTR 1 GATE	52	P0.0

If you are using a shielded cable, connect the cable shield to the terminals labeled "shield."

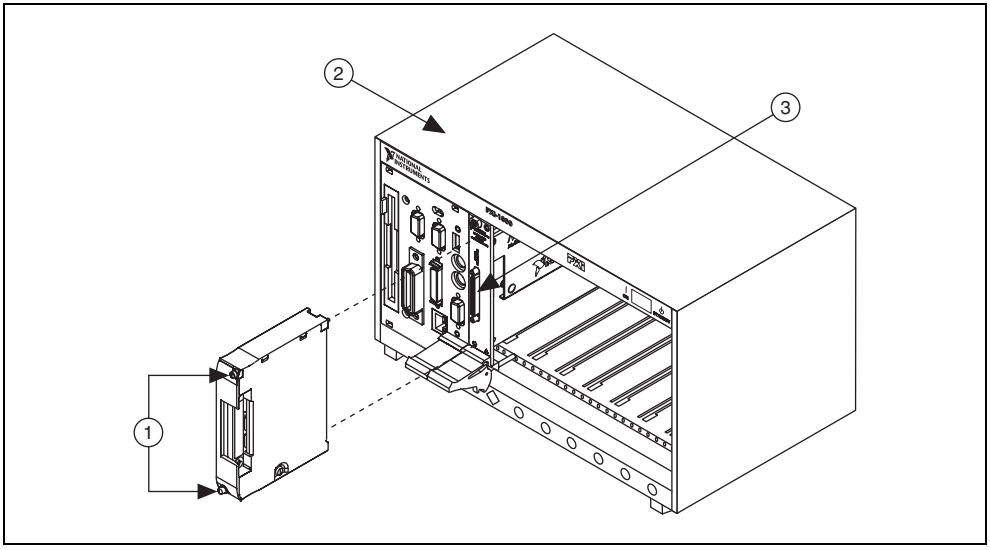
Figure 3. Pinout for PXI-6143

2. Loosen or remove the strain-relief bar by loosening the two strain-relief screws with the Phillips-head screwdriver.
3. Use wire cutters and wire insulation strippers to strip no more than 7 mm of insulation from the wire ends.
4. Loosen the screws in the screw terminals with the 0.10 in. slotted screwdriver.
5. Insert the stripped wires into the screw terminals. Tighten the screws with the 0.10 in. slotted screwdriver. No bare wire should extend past the screw terminal. Exposed wire increases the risk of short circuits and failures.

6. Tighten or replace the strain-relief screws.
7. Replace the terminal block cover by sliding the indentations on the cover under the tabs on the base. Tighten the top cover screw.

Installing the Terminal Block

Refer to Figure 4 as you complete the following steps to connect the terminal block to the PXI/PXIe module I/O connector.



1	Terminal Block Mounting Screws	2	PXI/PXIe Chassis	3	PXI/PXIe Module Connector

Figure 4. Connecting the TB-2706 to an M Series or PXI-6143 Device

Caution The connectors of both the PXI/PXIe module and the terminal block are polarized. You can attach them in only one way. Do *not* force the terminal block when inserting it into or removing it from the PXI/PXIe module I/O connector. Make sure that the chassis is powered off before inserting the PXI/PXIe module.

1. Install the PXI/PXIe module into the chassis and tighten the two module screws. You must install the TB-2706 terminal block on the PXI/PXIe module *after* the module is installed in the chassis.
2. Guide the terminal block onto the connector.
3. Tighten the two terminal block mounting screws.

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Specifications

These specifications are typical at 25 °C unless otherwise specified.

Input/Output

Caution The TB-2706 is not designed for input voltages greater than 42 V_{pk}/60 VDC.

Refer to the documentation for your M Series or PXI-6143 device to determine the input/output specifications for your application.

Physical

Dimensions .....10.7 × 8.6 × 2.0 cm (4.2 × 3.4 × 0.8 in.)

Dimension from face of PXI/PXIe card.....8.6 cm (3.4 in.)

Weight .....289 g (10.2 oz)

I/O connector .....One 68-position male VHDCI connector

Screw terminals

- Number 70
- Type.....Angled entry, 3.81 mm pitch

Wire gauge .....26–16 AWG

Environment

Operating temperature .....0 to 55 °C

Storage temperature .....–20 to 70 °C

Relative humidity.....10 to 90% noncondensing

Pollution Degree (indoor use only).....2

Altitude .....2,000 m

Safety

This product is designed to meet the requirements of the following standards of safety for electrical equipment for measurement, control, and laboratory use:

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA 61010-1

Note For UL and other safety certifications, refer to the product label or visit `ni.com/certification`, search by model number or product line, and click the appropriate link in the Certification column.

Electromagnetic Compatibility

This product is designed to meet the requirements of the following standards of EMC for electrical equipment for measurement, control, and laboratory use:

- EN 61326 EMC requirements; Minimum Immunity
- EN 55011 Emissions; Group 1, Class A
- CE, C-Tick, ICES, and FCC Part 15 Emissions; Class A

Note For EMC compliance, operate this device according to product documentation.

CE Compliance

This product meets the essential requirements of applicable European Directives, as amended for CE marking, as follows:

- 73/23/EEC; Low-Voltage Directive (safety)
- 89/336/EEC; Electromagnetic Compatibility Directive (EMC)

Note Refer to the Declaration of Conformity (DoC) for this product for any additional regulatory compliance information. To obtain 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.

Waste Electrical and Electronic Equipment (WEEE)

EU Customers At the end of their life cycle, all products *must* be sent to a WEEE recycling center. For more information about WEEE recycling centers and National Instruments WEEE initiatives, visit `ni.com/environment/weee.htm`.

Where to Go for Support

The National Instruments Web site is your complete resource for technical support. At `ni.com/support` you have access to everything from troubleshooting and application development self-help resources to email and phone assistance from NI Application Engineers.

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New Zealand 0800 553 322, Norway 47 (0) 66 90 76 60, Poland 48 22 3390150,
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