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INSTALLATION INSTRUCTIONS

DIN160 Cable

このドキュメントには、日本語ページも含まれています。

This guide describes how to connect and use the National Instruments DIN160 cable, which has a maximum voltage rating of 150 V, CAT I. Use this cable to connect the NI PXI-2510 switch module to your application.

The DIN160 cable is available in three configurations:

- SH160DIN-3XDB50F
- SH160DIN-160DIN
- SH160DIN-BARE WIRE

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What You Need to Get Started

To use the cable, you need the following items:

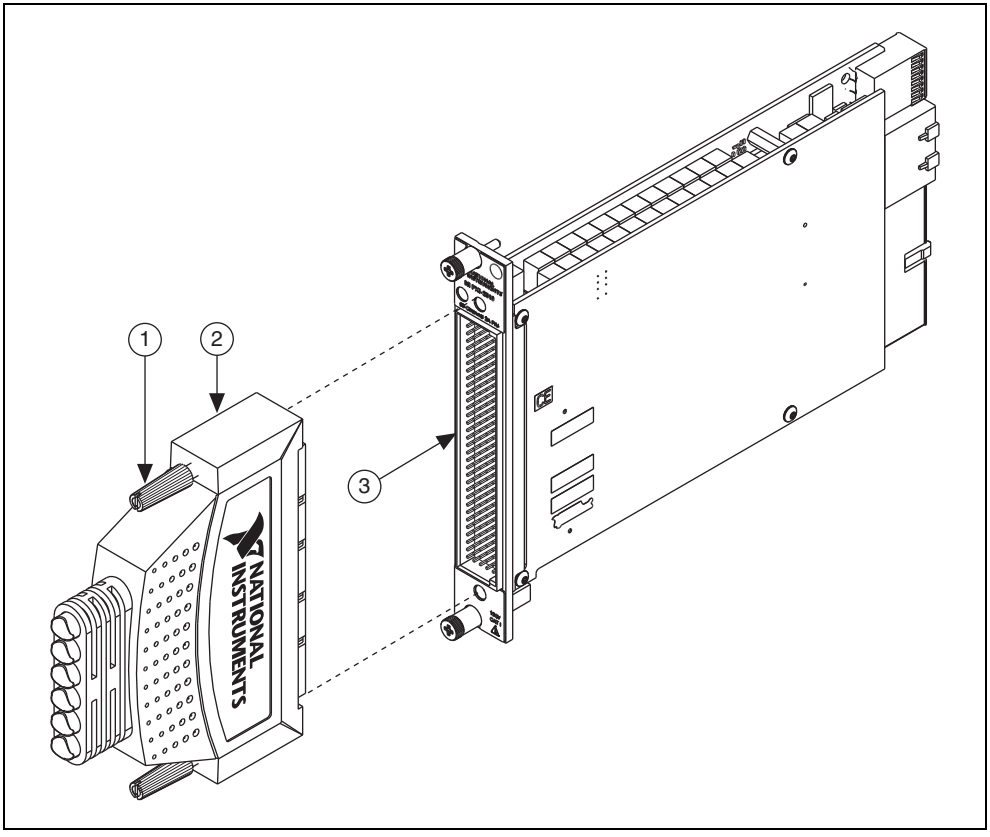
- ❑ DIN160 cable
- ❑ (Optional) Three NI TBX-50 screw terminal blocks for use with the SH160DIN-3XDB50F
- ❑ NI PXI-2510 switch module and documentation

NATIONAL INSTRUMENTS

Getting Started with the DIN160 Cable

Complete the following steps to connect the cable to the NI PXI-2510 and your application. Refer to Figures 2 through 4 for illustrations of the cable, and refer to Figures 5 and 6 for illustrations of the connectors.

1. Connect the DIN160 connector to the NI PXI-2510 connector on the switch module as shown in Figure 1.

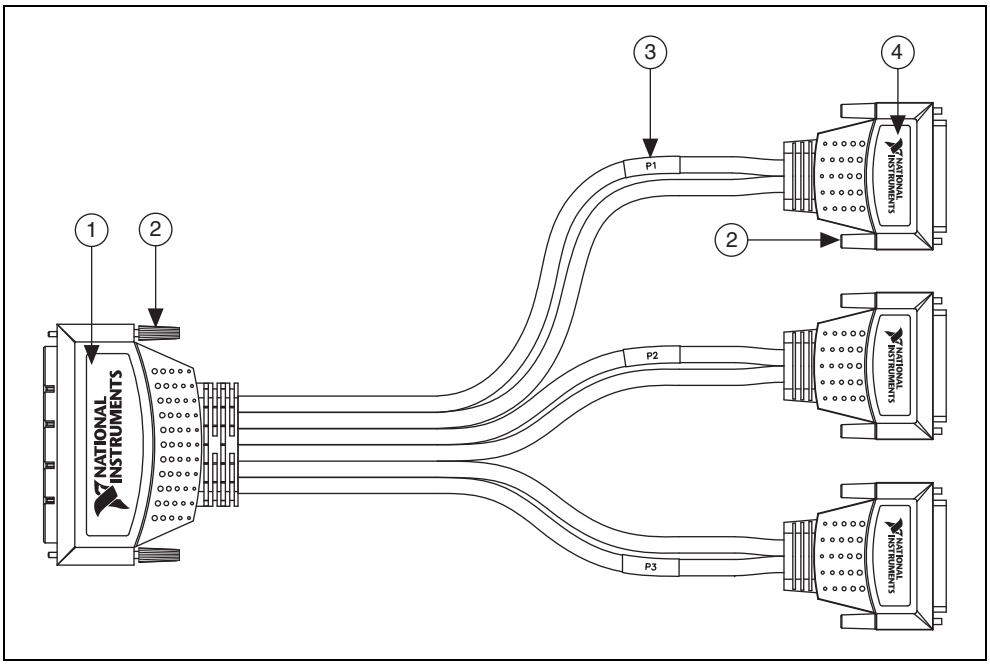


1	Thumbscrews	2	DIN160 Connector	3	NI PXI-2510 Connector

Figure 1. Connecting the DIN160 Connector to the NI PXI-2510

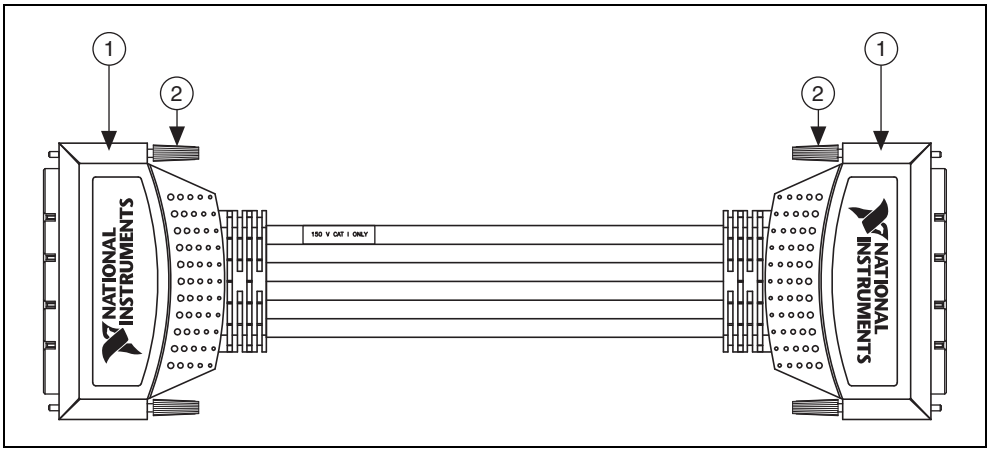
2. Tighten the thumbscrews on the cable.

3. Complete one of the following steps and refer to Tables 1 through 10 in the *Cable Configurations* section to determine how to connect signals to your application.
   - Connect the D-SUB connectors on the cable to your application. For screw terminal access, you can connect directly to NI TBX-50 terminal blocks.
   - Connect the second DIN160 connector on the cable to your application.
   - Connect the unterminated wires to your application.



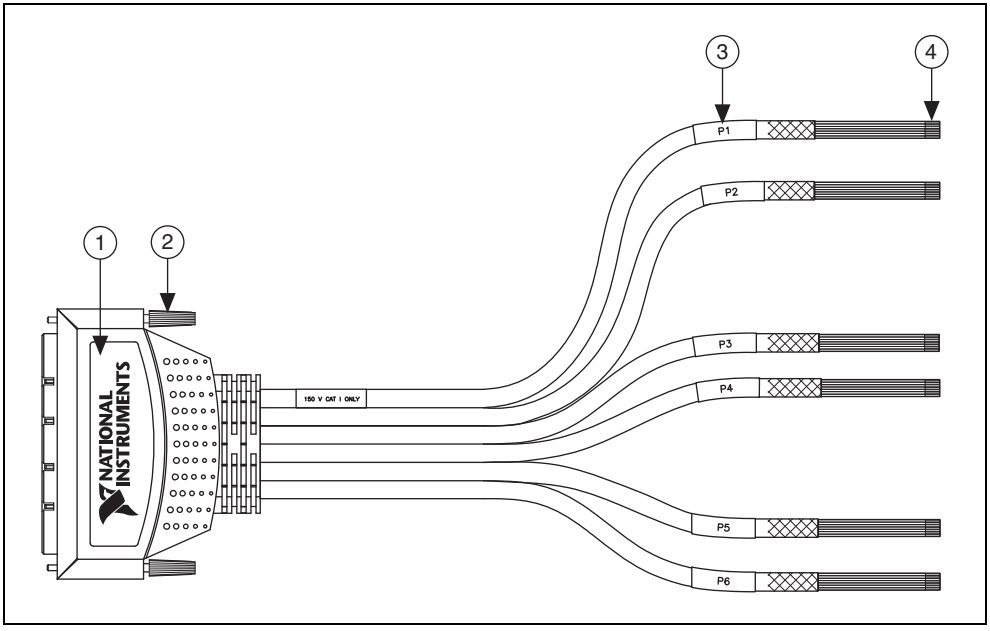
1	DIN160 Connector	3	Cable Leg Labels
2	Thumbscrews	4	50-Pin Female D-SUB Connectors

Figure 2. SH160DIN-3XDB50F Cable



1	DIN160 Connectors	2	Thumbscrews

Figure 3. SH160DIN-160DIN Cable



1	DIN160 Connector	3	Cable Leg Labels
2	Thumbscrews	4	25 Unterminated, Tinned, and Stripped Wires

Figure 4. SH160DIN-BARE WIRE Cable

Connectors

The cable connects a 160-pin female DIN connector (DIN160 connector) to three 50-pin female D-SUB connectors, a second DIN160 connector, or six bundles, legs J0–J5, of unterminated, tinned, and stripped wires. The DIN160 connector provides connection to the NI PXI-2510. The 50-pin female D-SUB connectors, second DIN160 connector, and unterminated cables provide connection to your application. Figures 5 and 6 show the pinouts for the DIN160 connectors and the 50-pin female D-SUB connectors.

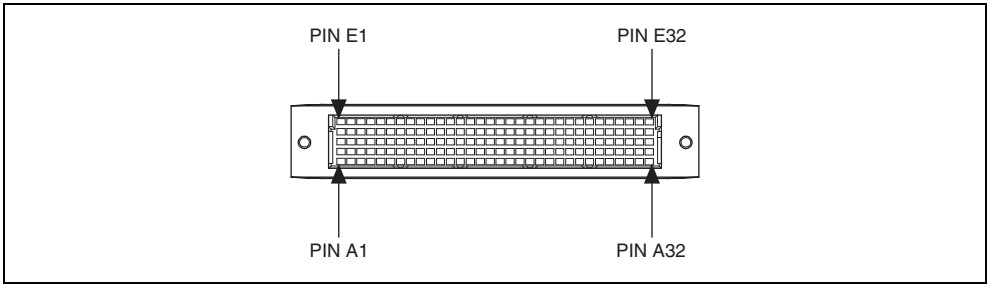


Figure 5. DIN160 Mating Connector

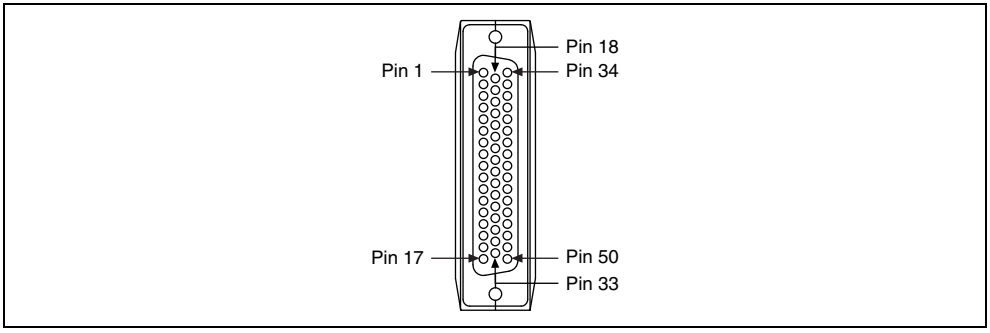


Figure 6. 50-Pin Female D-SUB Connector

Cable Configurations

The DIN160 cable is available in three configurations:

- SH160DIN-3XDB50F
- SH160DIN-160DIN
- SH160DIN-BARE WIRE

The following sections describe each of the configurations.

SH160DIN-3XDB50F Cable

The SH160DIN-3XDB50F cable is recommended for connecting the NI PXI-2510 to your system. One end of the cable terminates with a DIN160 connector. The other end of the cable terminates with three 50-pin female D-SUB connectors.

Use the pinouts and the pin assignments listed in Tables 1 through 3 to determine how to connect signals to your application using the SH160DIN-3XDB50F cable.

Refer to the *NI Switches Help* for a complete listing of channel names and pinouts.

Table 1. Pin Assignment for SH160DIN-3XDB50F Connector P1

50-Pin D-SUB Connector P1		
D-SUB Pin	**NI PXI-2510 Channel**	**Interface Connector Pin**
1	CH0	D31
2	DUT0	D32
3	CH1	C31
4	DUT1	C32
5	CH2	B31
6	DUT2	B32
7	CH3	A31
8	DUT3	A32
9	CH4	D29
10	DUT4	D30
11	CH5	C29
12	DUT5	C30
13	CH6	B29
14	DUT6	B30
15	CH7	A29
16	DUT7	A30
18	CH8	D27
19	DUT8	D28
20	CH9	C27
21	DUT9	C28
22	CH10	B27
23	DUT10	B28
24	CH11	A27
25	DUT11	A28
26	CH12	D25
27	DUT12	D26
28	CH13	C25

Table 1. Pin Assignment for SH160DIN-3XDB50F Connector P1 (Continued)

50-Pin D-SUB Connector P1		
D-SUB Pin	**NI PXI-2510 Channel**	**Interface Connector Pin**
29	DUT13	C26
30	CH14	B25
31	DUT14	B26
32	CH15	A25
33	DUT15	A26
34	CH16	D23
35	DUT16	D24
36	CH17	C23
37	DUT17	C24
38	CH18	B23
39	DUT18	B24
40	CH19	A23
41	DUT19	A24
42	A0	E32
43	A1	E31
44	A2	E30
45	A3	E29
47	B0	E27
48	B1	E26
49	B2	E25
50	B3	E24
17	USER_0*	E28
46	USER_1*	E23

* USER_*n* signals are not used by the NI PXI-2510.

Table 2. Pin Assignment for SH160DIN-3XDB50F Connector P2

50-Pin D-SUB Connector P2		
D-SUB Pin	**NI PXI-2510 Channel**	**Interface Connector Pin**
1	CH20	D21
2	DUT20	D22
3	CH21	C21
4	DUT21	C22
5	CH22	B21
6	DUT22	B22
7	CH23	A21
8	DUT23	A22
9	CH24	D19
10	DUT24	D20
11	CH25	C19
12	DUT25	C20
13	CH26	B19
14	DUT26	B20
15	CH27	A19
16	DUT27	A20
18	CH28	D17
19	DUT28	D18
20	CH29	C17
21	DUT29	C18
22	CH30	B17
23	DUT30	B18
24	CH31	A17
25	DUT31	A18
26	CH32	D15
27	DUT32	D16
28	CH33	C15
29	DUT33	C16
30	CH34	B15
31	DUT34	B16

Table 2. Pin Assignment for SH160DIN-3XDB50F Connector P2 (Continued)

50-Pin D-SUB Connector P2		
D-SUB Pin	**NI PXI-2510 Channel**	**Interface Connector Pin**
32	CH35	A15
33	DUT35	A16
34	CH36	D13
35	DUT36	D14
36	CH37	C13
37	DUT37	C14
38	CH38	B13
39	DUT38	B14
40	CH39	A13
41	DUT39	A14
42	CH40	D11
43	DUT40	D12
44	CH41	C11
45	DUT41	C12
46	CH42	B11
47	DUT42	B12
48	CH43	A11
49	DUT43	A12
17	BUSA	E14
50	BUSB	E12

Table 3. Pin Assignment for SH160DIN-3XDB50F Connector P3

50-Pin D-SUB Connector P3		
D-SUB Pin	**NI PXI-2510 Channel**	**Interface Connector Pin**
1	CH44	D9
2	DUT44	D10
3	CH45	C9
4	DUT45	C10
5	CH46	B9
6	DUT46	B10
7	CH47	A9
8	DUT47	A10
9	CH48	D7
10	DUT48	D8
11	CH49	C7
12	DUT49	C8
13	CH50	B7
14	DUT50	B8
15	CH51	A7
16	DUT51	A8
18	CH52	D5
19	DUT52	D6
20	CH53	C5
21	DUT53	C6
22	CH54	B5
23	DUT54	B6
24	CH55	A5
25	DUT55	A6
26	CH56	D3
27	DUT56	D4
28	CH57	C3
29	DUT57	C4
30	CH58	B3
31	DUT58	B4

Table 3. Pin Assignment for SH160DIN-3XDB50F Connector P3 (Continued)

50-Pin D-SUB Connector P3		
D-SUB Pin	**NI PXI-2510 Channel**	**Interface Connector Pin**
32	CH59	A3
33	DUT59	A4
34	CH60	D1
35	DUT60	D2
36	CH61	C1
37	DUT61	C2
38	CH62	B1
39	DUT62	B2
40	CH63	A1
41	DUT63	A2
42	CH64	E8
43	DUT64	E9
44	CH65	E6
45	DUT65	E7
46	CH66	E4
47	DUT66	E5
48	CH67	E2
49	DUT67	E3
17	USER_2*	E10
50	RESERVED†	E1

* USER_*n* signals are not used by the NI PXI-2510.

† RESERVED signal is reserved by the NI PXI-2510 for future use.

SH160DIN-160DIN Cable

The SH160DIN-160DIN cable is recommended for connecting the NI PXI-2510 to a system that terminates with a male DIN160 connector.

Use the pinouts and the pin assignments listed in Table 4 to determine how to connect signals to your application using the SH160DIN-160DIN cable.

Refer to the *NI Switches Help* for a complete listing of channel names and pinouts.

Table 4. Pin Assignment for SH160DIN-160DIN Cable

160DIN Mating Connector	
160 DIN P1/P2 Pin	**NI PXI-2510 Channel**
D31	CH0
D32	DUT0
C31	CH1
C32	DUT1
B31	CH2
B32	DUT2
A31	CH3
A32	DUT3
D29	CH4
D30	DUT4
C29	CH5
C30	DUT5
B29	CH6
B30	DUT6
A29	CH7
A30	DUT7
D27	CH8
D28	DUT8
C27	CH9
C28	DUT9
B27	CH10
B28	DUT10
A27	CH11
A28	DUT11

Table 4. Pin Assignment for SH160DIN-160DIN Cable (Continued)

160DIN Mating Connector	
160 DIN P1/P2 Pin	**NI PXI-2510 Channel**
D25	CH12
D26	DUT12
C25	CH13
C26	DUT13
B25	CH14
B26	DUT14
A25	CH15
A26	DUT15
D23	CH16
D24	DUT16
C23	CH17
C24	DUT17
B23	CH18
B24	DUT18
A23	CH19
A24	DUT19
E32	A0
E31	A1
E30	A2
E29	A3
E27	B0
E26	B1
E25	B2
E24	B3
E28	USER_0*
E23	USER_1*
D21	CH20
D22	DUT20
C21	CH21
C22	DUT21

Table 4. Pin Assignment for SH160DIN-160DIN Cable (Continued)

160DIN Mating Connector	
160 DIN P1/P2 Pin	**NI PXI-2510 Channel**
B21	CH22
B22	DUT22
A21	CH23
A22	DUT23
D19	CH24
D20	DUT24
C19	CH25
C20	DUT25
B19	CH26
B20	DUT26
A19	CH27
A20	DUT27
D17	CH28
D18	DUT28
C17	CH29
C18	DUT29
B17	CH30
B18	DUT30
A17	CH31
A18	DUT31
D15	CH32
D16	DUT32
C15	CH33
C16	DUT33
B15	CH34
B16	DUT34
A15	CH35
A16	DUT35
D13	CH36
D14	DUT36

Table 4. Pin Assignment for SH160DIN-160DIN Cable (Continued)

160DIN Mating Connector	
160 DIN P1/P2 Pin	**NI PXI-2510 Channel**
C13	CH37
C14	DUT37
B13	CH38
B14	DUT38
A13	CH39
A14	DUT39
D11	CH40
D12	DUT40
C11	CH41
C12	DUT41
B11	CH42
B12	DUT42
A11	CH43
A12	DUT43
E14	BUSA
E12	BUSB
D9	CH44
D10	DUT44
C9	CH45
C10	DUT45
B9	CH46
B10	DUT46
A9	CH47
A10	DUT47
D7	CH48
D8	DUT48
C7	CH49
C8	DUT49
B7	CH50
B8	DUT50

Table 4. Pin Assignment for SH160DIN-160DIN Cable (Continued)

160DIN Mating Connector	
160 DIN P1/P2 Pin	**NI PXI-2510 Channel**
A7	CH51
A8	DUT51
D5	CH52
D6	DUT52
C5	CH53
C6	DUT53
B5	CH54
B6	DUT54
A5	CH55
A6	DUT55
D3	CH56
D4	DUT56
C3	CH57
C4	DUT57
B3	CH58
B4	DUT58
A3	CH59
A4	DUT59
D1	CH60
D2	DUT60
C1	CH61
C2	DUT61
B1	CH62
B2	DUT62
A1	CH63
A2	DUT63
E8	CH64
E9	DUT64
E6	CH65
E7	DUT65

Table 4. Pin Assignment for SH160DIN-160DIN Cable (Continued)

160DIN Mating Connector	
160 DIN P1/P2 Pin	**NI PXI-2510 Channel**
E4	CH66
E5	DUT66
E2	CH67
E3	DUT67
E10	USER_2*
E1	RESERVED†

* USER_*n* signals are not used by the NI PXI-2510.

† RESERVED signal is reserved by the NI PXI-2510 for future use.

SH160DIN-BARE WIRE Cable

The SH160DIN-BARE WIRE cable is recommended for connecting the switch module to your system if termination other than a 50-pin female D-SUB or a DIN160 connector is required. One end of the cable terminates with a DIN160 connector. The other end of the cable has six bundles of unterminated, tinned, and stripped wires.

Use the pinouts and the pin assignments listed in Tables 5 through 10 to determine how to connect signals to your application.

Note The first color listed in the Bare Wire Color column of Tables 5 through 10 is the primary color of the wire. The second color listed is the stripe color.

Table 5. Pin Assignment for SH160DIN-BARE WIRE Cable Leg P1

Cable Leg P1		
160 DIN Pin	**Bare Wire Color**	**NI PXI-2510 Channel**
D31	BLACK	CH0
D32	BROWN	DUT0
C31	RED	CH1
C32	ORANGE	DUT1
B31	YELLOW	CH2
B32	GREEN	DUT2
A31	BLUE	CH3
A32	PURPLE	DUT3
D29	GRAY	CH4
D30	WHITE	DUT4
C29	PINK	CH5
C30	LIGHT GREEN	DUT5
B29	BLACK/WHITE	CH6
B30	BROWN/WHITE	DUT6
A29	RED/WHITE	CH7
A30	ORANGE/WHITE	DUT7
E28	GREEN/WHITE	USER_0*
D27	BLUE/WHITE	CH8
D28	PURPLE/WHITE	DUT8
C27	RED/BLACK	CH9
C28	ORANGE/BLACK	DUT9
B27	YELLOW/BLACK	CH10
B28	GREEN/BLACK	DUT10
A27	GRAY/BLACK	CH11
A28	PINK/BLACK	DUT11

* USER_*n* signals are not used by the NI PXI-2510.

Table 6. Pin Assignment for SH160DIN-BARE WIRE Cable Leg P2

Cable Leg P2		
160 DIN Pin	**Bare Wire Color**	**NI PXI-2510 Channel**
D25	BLACK	CH12
D26	BROWN	DUT12
C25	RED	CH13
C26	ORANGE	DUT13
B25	YELLOW	CH14
B26	GREEN	DUT14
A25	BLUE	CH15
A26	PURPLE	DUT15
D23	GRAY	CH16
D24	WHITE	DUT16
C23	PINK	CH17
C24	LIGHT GREEN	DUT17
B23	BLACK/WHITE	CH18
B24	BROWN/WHITE	DUT18
A23	RED/WHITE	CH19
A24	ORANGE/WHITE	DUT19
E32	GREEN/WHITE	A0
E31	BLUE/WHITE	A1
E30	PURPLE/WHITE	A2
E29	RED/BLACK	A3
E23	ORANGE/BLACK	USER_1*
E27	YELLOW/BLACK	B0
E26	GREEN/BLACK	B1
E25	GRAY/BLACK	B2
E24	PINK/BLACK	B3

* USER_*n* signals are not used by the NI PXI-2510.

Table 7. Pin Assignment for SH160DIN-BARE WIRE Cable Leg P3

Cable Leg P3		
160 DIN Pin	**Bare Wire Color**	**NI PXI-2510 Channel**
D21	BLACK	CH20
D22	BROWN	DUT20
C21	RED	CH21
C22	ORANGE	DUT21
B21	YELLOW	CH22
B22	GREEN	DUT22
A21	BLUE	CH23
A22	PURPLE	DUT23
D19	GRAY	CH24
D20	WHITE	DUT24
C19	PINK	CH25
C20	LIGHT GREEN	DUT25
B19	BLACK/WHITE	CH26
B20	BROWN/WHITE	DUT26
A19	RED/WHITE	CH27
A20	ORANGE/WHITE	DUT27
E14	GREEN/WHITE	BUSA
D17	BLUE/WHITE	CH28
D18	PURPLE/WHITE	DUT28
C17	RED/BLACK	CH29
C18	ORANGE/BLACK	DUT29
B17	YELLOW/BLACK	CH30
B18	GREEN/BLACK	DUT30
A17	GRAY/BLACK	CH31
A18	PINK/BLACK	DUT31

Table 8. Pin Assignment for SH160DIN-BARE WIRE Cable Leg P4

Cable Leg P4		
160 DIN Pin	**Bare Wire Color**	**NI PXI-2510 Channel**
D15	BLACK	CH32
D16	BROWN	DUT32
C15	RED	CH33
C16	ORANGE	DUT33
B15	YELLOW	CH34
B16	GREEN	DUT34
A15	BLUE	CH35
A16	PURPLE	DUT35
D13	GRAY	CH36
D14	WHITE	DUT36
C13	PINK	CH37
C14	LIGHT GREEN	DUT37
B13	BLACK/WHITE	CH38
B14	BROWN/WHITE	DUT38
A13	RED/WHITE	CH39
A14	ORANGE/WHITE	DUT39
D11	GREEN/WHITE	CH40
D12	BLUE/WHITE	DUT40
C11	PURPLE/WHITE	CH41
C12	RED/BLACK	DUT41
B11	ORANGE/BLACK	CH42
B12	YELLOW/BLACK	DUT42
A11	GREEN/BLACK	CH43
A12	GRAY/BLACK	DUT43
E12	PINK/BLACK	BUSB

Table 9. Pin Assignment for SH160DIN-BARE WIRE Cable Leg P5

Cable Leg P5		
160 DIN Pin	**Bare Wire Color**	**NI PXI-2510 Channel**
D9	BLACK	CH44
D10	BROWN	DUT44
C9	RED	CH45
C10	ORANGE	DUT45
B9	YELLOW	CH46
B10	GREEN	DUT46
A9	BLUE	CH47
A10	PURPLE	DUT47
D7	GRAY	CH48
D8	WHITE	DUT48
C7	PINK	CH49
C8	LIGHT GREEN	DUT49
B7	BLACK/WHITE	CH50
B8	BROWN/WHITE	DUT50
A7	RED/WHITE	CH51
A8	ORANGE/WHITE	DUT51
E10	GREEN/WHITE	USER_2
D5	BLUE/WHITE	CH52
D6	PURPLE/WHITE	DUT52
C5	RED/BLACK	CH53
C6	ORANGE/BLACK	DUT53
B5	YELLOW/BLACK	CH54
B6	GREEN/BLACK	DUT54
A5	GRAY/BLACK	CH55
A6	PINK/BLACK	DUT55

Table 10. Pin Assignment for SH160DIN-BARE WIRE Cable Leg P6

Cable Leg P6		
160 DIN Pin	**Bare Wire Color**	**NI PXI-2510 Channel**
D3	BLACK	CH56
D4	BROWN	DUT56
C3	RED	CH57
C4	ORANGE	DUT57
B3	YELLOW	CH58
B4	GREEN	DUT58
A3	BLUE	CH59
A4	PURPLE	DUT59
D1	GRAY	CH60
D2	WHITE	DUT60
C1	PINK	CH61
C2	LIGHT GREEN	DUT61
B1	BLACK/WHITE	CH62
B2	BROWN/WHITE	DUT62
A1	RED/WHITE	CH63
A2	ORANGE/WHITE	DUT63
E8	GREEN/WHITE	CH64
E9	BLUE/WHITE	DUT64
E6	PURPLE/WHITE	CH65
E7	RED/BLACK	DUT65
E4	ORANGE/BLACK	CH66
E5	YELLOW/BLACK	DUT66
E2	GREEN/BLACK	CH67
E3	GRAY/BLACK	DUT67
E1	PINK/BLACK	RESERVED*

* RESERVED signal is reserved by the NI PXI-2510 for future use.

Maximum voltage .....150 V, CAT I

Caution The NI PXI-2510 module and the DIN160 cable accessory can operate at various ambient temperatures and currents as shown in the following specifications.

Table 11. NI PXI-2510 and DIN160 Operating Currents

Current	NI PXI-2510 Module Alone	NI PXI-2510 Module with DIN160 Cable	
Operating temperature range	0–55 °C	0–55 °C	0–40 °C
Maximum total module current	64 A	32 A	48 A
Maximum current per channel	2 A	1 A	1.5 A*

* The DIN160 cable accessory is constructed with six sets of cable bundles. The above currents are valid for any channel combination. Table 12 describes how to balance signal loading to achieve the maximum 2 A/channel across the six cable bundles.

Table 12. Maximum Currents of NI PXI-2510 with DIN160 Cable When Operating at 2A/channel

Channel Range	Maximum Total Current Across Channel Range (0 °C to 40 °C)
ch0 to ch11	14 A
ch12 to ch19	14 A
ch20 to ch31	14 A
ch32 to ch43	14 A
ch44 to ch55	14 A
ch56 to ch67	14 A

Caution Do *not* connect to MAINs supply circuits (e.g., wall outlets) of 115 or 230 VAC. Refer to the *Read Me First: Safety and Electromagnetic Compatibility* document for more information about Measurement Categories.

Weight .....848.6 g (29.9 oz)

Environment

Operating temperature .....0 °C to 55 °C

Storage temperature .....–20 °C to 70 °C

Relative humidity.....5% to 85%, noncondensing

Pollution Degree 2

Maximum altitude.....2,000 m

Indoor use only.

Accessories

Visit ni.com for information about the following accessory.

Table 13. NI Accessory for the DIN160 Cable

Accessory	Part Number
NI TBX-50 terminal block, with screw connection and 50 position D-Subminiature pin strip	779305-01

Caution You must install mating connectors according to local safety codes and standards and according to the specifications provided by the connector manufacturer. You are responsible for verifying safety compliance of third-party connectors and their usage according to the relevant standard(s), including UL and CSA in North America and IEC and VDE in Europe.

Refer to Table 14 for information about third-party accessories.

Table 14. Third-Party Accessories for the DIN160 Cable

Accessory	Manufacturer	Part Number
VARIOFACE module, with screw connection and 50 position D-Subminiature male connector	Phoenix Contact	FLK-D50 SUB/S
Right-angle 50 position male D-SUB connector*	Amp	747497-4
* Small quantity orders are available from Digi-Key Corporation (part number A23398-ND).		

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375185C Jun10

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