

# **PXIe-2575**

# **Specifications**





Test & Measurement Automation

**Embedded Control & Monitoring** 

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Authorized Distributor



Integration Partner

# **Contents**

DVI0-2575 S	nacifications			-
LVIE-5010 0	pecifications	 	 	

# PXIe-2575 Specifications

#### **PXIe-2575 Specifications**



Caution The protection provided by the PXIe-2575 can be impaired if it is used in a manner not described in this document.

#### **Definitions**

**Warranted** specifications describe the performance of a model under stated operating conditions and are covered by the model warranty.

**Characteristics** describe values that are relevant to the use of the model under stated operating conditions but are not covered by the model warranty.

- Typical specifications describe the performance met by a majority of models.
- **Nominal** specifications describe an attribute that is based on design, conformance testing, or supplemental testing.

Specifications are *Typical* unless otherwise noted.

#### **Related information:**

What Do the Specifications for NI Switch Products Mean?

#### **Conditions**

Specifications are valid at 23 °C unless otherwise noted.

All voltages are specified in DC, AC<sub>pk</sub>, or a combination unless otherwise specified.

# **PXIe-2575 Pinout**

1-Wire 196x1 Multiplexer Topology

					١		
	150	$\left( -\right)$	٦ŗ		51	—(CH36)	
CH84 CH166	151 149	$\stackrel{\circ}{\vdash}$		0-	52 50	(CH131)	
CH179 CH71	152 148	0		0-	53 49	CH37	(CH118)
CH85 CH165	153	-0	- L	0-	54	—(CH132)	(CH23)
CH180 CH70	154	-	7	0-	55	CH38	(CH117)
CH86 CH164	155	-	76	0-	56 46	(CH133)	CH22
CH181 CH69	156	$\vdash$		0-	57 45	CH39	(CH116)
CH87 CH163	157	-	99	0-	58 44	(CH134)	CH21
CH182 CH68	158	-0	99	0-	59 43	CH40	(CH115)
CH88 CH162	159 141	-0	99	0-	60 42	(CH135)	CH20
CH183 CH67	160	-		0-	41	CH41	(CH114)
CH89	161	-	J	0-	61 40	$\equiv$	CH19
CH184 CH161	162	-0		0-	62 39	(CH136)	CH113
CH90 CH66	163	-0	Jſ	0-	63 38	CH42	CH18
CH185	137	-	Jſ	0-	64 37	(CH137)	CH112
CH65 CH91	136	-	7.	0-	65 36	(CH43)	CH17
CH159)—	135	-	٦٢	<u>~</u>	66 35	(CH138)	(CH111)
CH92 CH64	134	-0	٦٢	0-	67 34	—( CH44 )	CH16
CH158	168	-	٦ŗ	<u> </u>	68 33	CH139	(CH110)
CH63	132		٦ſ	<u>~</u>	69 32	CH45	(CH15)
CH157	170 131		ĪŢ	0-	70 31	CH140	(CH109)
CH62 CH62	171	-	٦ſ	<u> </u>	71 30	-CH46	(CH14)
CH156)—	129	-	٦ſ		72	-(CH141)	CH108
CH189 CH61	172 128	-	٦ŗ	0-	73	CH47	
CH155	173	-	Ĵŗ	0-	74	CH142	(CH13)
CH60	174	$\stackrel{\sim}{}$		<u>~</u>	75	CH191	(CH107)
CH190 CH193	175	$\stackrel{ ightharpoonup}{=}$		0-	76 26	CH24	(CH12)
CH72 CH154	176	-		0-	77	CH119	(CH194)
CH167 CH59	177	-		0-	78	—(CH25)	(CH106)
CH73 CH153	178	-	Ĵŗ	<u>-</u>	79	—(CH120)	(CH11)
CH168 CH58	179 121	-	٦ŗ	_	80	—(CH26)	(CH105)
CH74 CH152	180	-		<u>~</u>	81	CH121	(CH10)
CH169 CH57	181	-		0-	82 20	CH27	(CH104)
CH75 CH151	182	-	٦. ۱۱	0-	83	CH122	CH9
CH170 CH56	183	-0	7	0-	84	—(CH28)	(CH103)
CH76 CH150	184	$\stackrel{\triangleright}{}$	٦.	0-	85	—(CH123)	(CH8)
CH171 CH55	185	-		0-	16	CH29	(CH102)
CH77 CH149	186	-0	76	0-	87 15	(CH124)	CH7
CH172 CH54	187	-	96	<u></u>	88 14	(CH30)	(CH101)
CH78 CH148	188	-	99	0-	13	(CH125)	CH6
CH173 CH53	189 111	-		0-	90 12	CH31	CH100
CH79 CH147	190	-		0-	91 11	(CH126)	CH5
CH174)	191 10	-		<u></u>	10	=	CH99
CH52 CH80	192	-0	Jſ	0-	92 9	CH32	CH4
CH175 CH146	193	-0	Jſ	0-	93 8	(CH127)	CH98
CH81 CH51	194	-	Jſ	0-	94 7		CH3
CH176 CH145	195	-0	Jſ	<u>~</u>	95 6	(CH128)	CH97
CH82 CH50	105	-	Jſ	0-	96 5	—(CH34)	CH2
CH177 CH144	104	-	7.	<u>~</u>	97 4	—(CH129)	(CH96)
CH49 CH83	198	-0	٦٢	<u>~</u>	98 3	CH35	CH1
CH143 —	199	-	٦ſ	<u>~</u>	99 2	-(CH130)	(CH95)
CH192 CH48	200 101	-0	٦ſ	<u> </u>	100	CH195	(CHO)
			_				

Table 1. Signal Descriptions

Signal	Description
СНх	Signal connection
СОМ	Routing destination for all channels
_	No connection

# 2-Wire 95×1 Multiplexer Topology

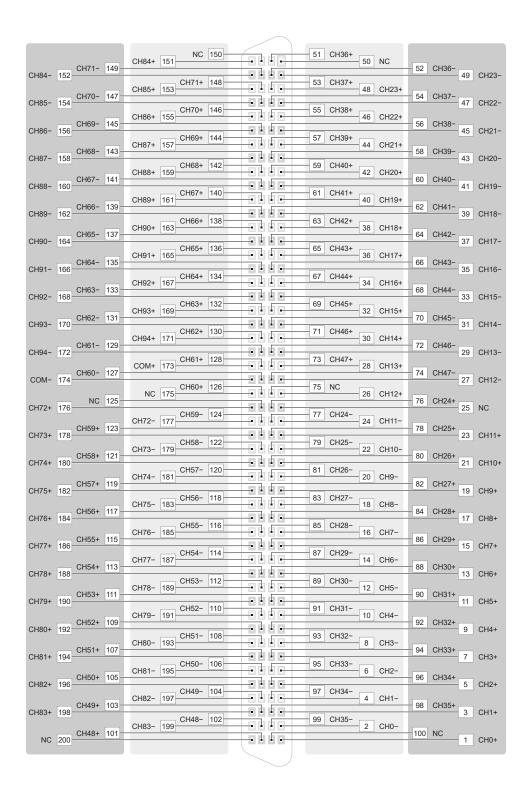


Table 2. Signal Descriptions

Signal	Description
CHx+	Positive signal connection

Signal	Description
CHx-	Negative signal connection
COM+	Routing destination for all positive channels
COM-	Routing destination for all negative channels
_	No connection

# 2-Wire 98×1 Multiplexer Topology

		_			1	
	150				51	CH36+
CH84+	151	-		0-	50	
CH84-	152	-	Jſ	0-	52 49	CH36- CH23-
(CH71+)—	153	-0	Jſ	<u>~</u>	53 48	CH37+)
CH70-	154	-	Jſ	<u> </u>	54 47	CH37- CH22-
CH70+	146	-	٦ŗ	<u> </u>	55	CH38+ CH22+
CH69-)-	155		٦ſ	_	56 46	-(CH38-)
CH86-) CH69+)	156	-0		<u>~</u>	57 45	CH39+
(CH87+) (CH68-)	157		٦. ۱۱	<u>~</u>	58 44	CH21+)
(CH87-) (CH68+)	158	0	96	<u>~</u>	59 43	CH20-)
CH88+ CH67-	159	-	99	0-	60 42	CH20+
CH88-	160	-		0-	61 41	CH19-
CH89+	161	-0		0-	40	CH19+
CH66-	139	-	Jſ	0-	62 39	CH118-
(CH66+)	163	-	Jſ	<u>~</u>	63 38	CH42+) CH18+)
CH65-	137	-	Jſ	<u> </u>	64 37	CH42- CH17-
CH65+	136	-	ĪŢ	<u> </u>	65 36	CH43+ CH17+
CH64-)-	135	-	٦ſ		66	-(CH43-)
CH91-) CH64+)	166	-		<u>~</u>	67	CH44+
(CH92+) (CH63-)	167	$\stackrel{\circ}{-}$	7	0-	68 34	CH16+)
(CH92-) (CH63+)	168	-	7	0	69 33	CH15-)
CH93+	169	-	99	0-	70 32	CH15+
CH93- CH62+	170	-	99	0-	31	CH14-
CH94+	171	-0	7[	0-	71 30	(CH14+)
CH94-)	172	-	Jſ	0-	72 29	CH46-) CH13-
(CH61+)	173	-0	Jſ	·	73 28	CH47+) CH13+)
CH60-	174	-	٦ſ	o-	74 27	CH47- CH12-
CH60+	126	-	٦ŗ	0-	75 26	CH96+ CH12+
CH72+	125		٦ſ	<u> </u>	76	CH24+ CH96-
CH59-)-	176			_	77	(CH24-)
CH72-) CH59+	177	$\stackrel{\circ}{-}$	JГ	0-	78	CH11-)
(CH73+) (CH58-)	178	-	76	<u>~</u>	79 23	CH11+)
(CH73-) (CH58+)	179 121	-	76	0-	80 22	CH10-)
CH74+ CH57-	180	-0	99	<u></u>	81	CH10+
(CH74-)	181	-		<b>О</b> —	20	CH9-
CH75+)	182	-0	Jſ	<u></u>	82 19	CH27+ CH9+
(CH56-)	183	-0	Jſ	0-	83	CH27-) CH8-)
(CH56+)	184	-	Jſ	<u>~</u>	84 17	CH28+) CH8+)
CH55-	116	-	٦ŗ	<u>~</u>	85 16	CH28-)
CH55+	186		٦ŗ	o-	86	CH29+ CH7+
CH54-)-	114	_	J.		87	-(CH29-)
CH77-) CH54+)	187	-		0-	88	CH30+
(CH78+) (CH53-)	188	-0	٦ L	<u>~</u>	89 13	CH30-
(CH78-) (CH53+)	189	-	7	<u>~</u>	90	CH5-
CH79+) CH52-)-	190	-	71	<u></u>	91	CH31-
CH79- CH52+)-	191	-0	99	<u></u>	10	(CH4-
(CH80+)	192	-0		0-	92 9	CH32+ CH4+
CH80-	193	-0	Jſ	0-	93 8	CH32-)
(CH51+)	194	-0	Jſ	<u>~</u>	94 7	CH33+) CH3+
CH50-	195	-	Jſ	<u>~</u>	95 6	CH33- CH2-
CH50+	196	-0	J,	<u> </u>	96 5	CH34+ CH2+
CH49-	104		Jſ		97	-(CH34-)
CH82-) CH49+)	197	-		<u>~</u>	98	CH35+
CH83+) CH48-	198	-	٦ L	0-	99	CH35-
CH83-) (CH48+)	199	-		0-	100	CH0-
CH97+	200	-	99	0-	1	CH0+
		_			J	

Table 3. Signal Descriptions

Signal	Description
CHx+	Positive signal connection
CHx-	Negative signal connection
COM+	Routing destination for all positive channels
COM-	Routing destination for all negative channels
_	No connection

#### **Related information:**

- PXIe-2575 Hardware Diagram
- NI Switches Cable and Accessory Compatibility

### **Topology**

1-wire 196 × 1 multiplexer
2-wire 95 × 1 multiplexer
2-wire 98 × 1 multiplexer

### **Input Characteristics**



**Caution** This module is rated for Measurement Category I and intended to carry signal voltages no greater than 100 V. This module can withstand up to 500 V impulse voltage. Do not use this module for connection to signals or for measurements within Categories II, III, or IV. Do not connect to MAINS supply circuits (for example, wall outlets) of 115 or 230 VAC. Refer to the **Read Me First: Safety and Electromagnetic Compatibility** document for more information on measurement categories.



 $\boldsymbol{Caution}$  When hazardous voltages (>42.4  $V_{pk}\!/$  60 VDC) are present on any

relay terminal, safety low-voltage (≤42.4 V<sub>pk</sub>/60 VDC) cannot be connected to any other relay terminal.

Maximum switching voltage				
Channel-to-channel	100 V			
Channel-to-ground	100 V, CAT I			



Caution The switching power is limited by the maximum switching current and the maximum voltage and must not exceed 60 W, 62.5 VA.

Maximum switching power (per chann	60 W, 62.5 VA (DC to 60 Hz)				
DC isolation resistance (between char	>1 GΩ, typical at 25 °C				
Maximum total current (switching or c	1 A				
Minimum switch load <sup>12</sup>	20 mV /1 mA				
DC path resistance <sup>3</sup>					
Initial	<0.5 Ω, warranted				

- 1. The PXIe-2575 is not recommended for 2-wire resistance measurements.
- 2. Switching inductive loads (for example, motors and solenoids) can produce high voltage transients in excess of the module's rated voltage. Without additional protection, these transients can interfere with module operation and impact relay life. For more information about transient suppression, visit ni.com/info and enter the Info Code relayflyback.
- 3. DC path resistance typically remains low for the life of the relay. At the end of relay life, the path resistance rises rapidly above 1  $\Omega$ . Load ratings apply to relays used within the specification before

End-of-life	≥1.0 Ω				
Differential thermal EMF				3 μV, typical <sup>4</sup> <12 μV, maximum	
Bandwidth (-3 dB, 50 $\Omega$ termination)					
1-wire		>20 MHz	Нz		
2-wire	2-wire >8 MHz		Z		
Channel-to-channel isolation (50 $\Omega$ to	ermin	ation) <sup>5</sup>			
1-wire channels in different relays					
10 kHz			>90 dB		
100 kHz		>70 dB			
1 MHz			>50 dB		
1-wire channels in the same relay					
10 kHz			>68 dB		
100 kHz			>48 dB		

the end of relay life.

4. To ensure the typical thermal EMF, power down all relays and avoid pulsing high currents near the channels you are measuring. For more information about powering down latching relays, refer to the Power Down Latching Relays After Debounce property in NI-SWITCH or the Power Down Latching Relays After Settling property in NI-DAQmx.

1 MHz	>28 dB			
2-wire channels				
10 kHz	>95 dB			
100 kHz	>75 dB			
1 MHz	>55 dB			
Open channel isolation (50 $\Omega$ termination)				
10 kHz	>90 dB			
100 kHz	>70 dB			
1 MHz	>50 dB			

# **Dynamic Characteristics**

Relay operate time <sup>6</sup>	1 ms, typical 3.4 ms, maximum
Expected relay life <sup>7</sup>	
Mechanical	1 × 10 <sup>8</sup> cycles

- 5. Each relay in the PXIe-2575 is shared by two channels.
- 6. Certain applications may require additional time for proper settling. Refer to *NI Switches Help* for more information about including additional settling time.

Electrical	
10 VDC, 100 mADC resistive	2.5 × 10 <sup>6</sup> cycles
10 VDC, 1 ADC resistive	1 × 10 <sup>6</sup> cycles
30 VDC, 1 ADC resistive	5 × 10 <sup>5</sup> cycles
60 VDC, 1 ADC resistive	1 × 10 <sup>5</sup> cycles

# **Trigger Characteristics**

Input trigger	
Sources	PXI trigger lines <07>
Minimum pulse width <sup>8</sup>	150 ns
Output trigger	
Destinations	PXI trigger lines <07>
Default pulse width	2 μs, typical

- 7. Relays are field replaceable. Refer to **NI Switches Help** for more information about replacing a failed relay.
- 8. The PXIe-2575 recognizes trigger pulse widths less than 150 ns if digital filtering is disabled. For information about disabling digital filtering, refer to the *NI Switches Help*.

# **Physical Characteristics**

Relay type	Electro	mechanical, latching
Relay contact material <sup>9</sup>	Palladi	um-ruthenium, gold covered
I/O connector	200 PO	S LFH Matrix 50, receptacle
Power requirement		
PXI		6 W at 5 V 2.5 W at 3.3 V
PXI Express		7.5 W at 12 V 2.5 W at 3.3 V
Dimensions (L × W × H)	3U, one slot, PXI/cPCI module 21.6 × 2.0 × 13.0 cm (8.5 × 0.8 × 5.1 in.)	
Weight	231 g (8.1 oz)	

#### **Environment**

Maximum altitude	2,000 m (at 25 °C ambient temperature)
Pollution degree	2
Indoor use only	

9. Some versions of the PXIe-2575 are built with silver, gold covered. Contact NI for more details on specific versions.

# **Operating Environment**

Ambient temperature range	0 °C to 55 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2.)
Relative humidity range	10% to 90%, noncondensing (Tested in accordance with IEC 60068-2-56.)

# **Storage Environment**

Ambient temperature range	-40 °C to 71 °C (Tested in accordance with IEC 60068-2-1 and IEC 60068-2-2.)
Relative humidity range	5% to 95%, noncondensing (Tested in accordance with IEC 60068-2-56.)

# **Shock and Vibration**

Operational shock	30 g peak, half-sine, 11 ms pulse (Tested in accordance with IEC 60068-2-27. Test profile developed in accordance with MIL-PRF-28800F.)	
Random vibration		
Operating	5 Hz to 500 Hz, 0.31 g <sub>rms</sub> (Tested in accordance with IEC 60068-2-64.)	
Nonoperating	5 Hz to 500 Hz, 2.46 g <sub>rms</sub> (Tested in accordance with IEC 60068-2-64. Test profile exceeds the requirements of MIL-PRF-28800F, Class 3.)	

### **Compliance and Certifications**

#### **Safety Compliance Standards**

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

- IEC 61010-1, EN 61010-1
- UL 61010-1, CSA C22.2 No. 61010-1



Note For safety certifications, refer to the product label or the Product Certifications and Declarations section.

#### **Electromagnetic Compatibility**

This product meets the requirements of the following EMC standards for electrical equipment for measurement, control, and laboratory use:

- EN 61326-1 (IEC 61326-1): Class A emissions; Basic immunity
- EN 55011 (CISPR 11): Group 1, Class A emissions
- EN 55022 (CISPR 22): Class A emissions
- EN 55024 (CISPR 24): Immunity
- AS/NZS CISPR 11: Group 1, Class A emissions
- AS/NZS CISPR 22: Class A emissions
- FCC 47 CFR Part 15B: Class A emissions
- ICES-001: Class A emissions



**Note** In the United States (per FCC 47 CFR), Class A equipment is intended for use in commercial, light-industrial, and heavy-industrial locations. In Europe, Canada, Australia, and New Zealand (per CISPR 11), Class A equipment is intended for use only in heavy-industrial locations.



**Note** Group 1 equipment (per CISPR 11) is any industrial, scientific, or medical equipment that does not intentionally generate radio frequency energy for the treatment of material or inspection/analysis purposes.



**Note** For EMC declarations, certifications, and additional information, refer to *Product Certifications and Declarations*.

#### **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 <u>ni.com/product-certifications</u>, search by model number, and click the appropriate link.

#### **Environmental Management**

NI is committed to designing and manufacturing products in an environmentally responsible manner. NI recognizes that eliminating certain hazardous substances from our products is beneficial to the environment and to NI customers.

For additional environmental information, refer to the **Engineering a Healthy Planet** web page at <u>ni.com/environment</u>. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

#### **EU and UK Customers**

• Waste Electrical and Electronic Equipment (WEEE)—At the end of the product life cycle, all NI products must be disposed of according to local laws and regulations. For more information about how to recycle NI products in your region, visit ni.com/environment/weee.

#### 电子信息产品污染控制管理办法(中国RoHS)

• ●●● 中国RoHS—NI符合中国电子信息产品中限制使用某些有害物质指令 (RoHS)。关于NI中国RoHS合规性信息,请登录 ni.com/environment/rohs\_china。(For information about China RoHS compliance, go to ni.com/environment/rohs\_china.)