



PXIe-2575

User Manual



Provided by:

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PXIe-2575 User Manual

The PXIe-2575 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***.

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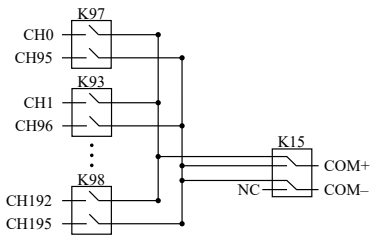


Table 1. Channel Pairings and Relay Assignments

1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Relay Number
CH0	CH95	CH0	CH0	K97
CH1	CH96	CH1	CH1	K93
CH2	CH97	CH2	CH2	K89
CH3	CH98	CH3	CH3	K85
CH4	CH99	CH4	CH4	K81
CH5	CH100	CH5	CH5	K77
CH6	CH101	CH6	CH6	K73
CH7	CH102	CH7	CH7	K69
CH8	CH103	CH8	CH8	K65
CH9	CH104	CH9	CH9	K61
CH10	CH105	CH10	CH10	K57
CH11	CH106	CH11	CH11	K53
CH12	CH107	CH12	CH12	K47
CH13	CH108	CH13	CH13	K44
CH14	CH109	CH14	CH14	K40
CH15	CH110	CH15	CH15	K39
CH16	CH111	CH16	CH16	K32
CH17	CH112	CH17	CH17	K28

1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Relay Number
CH18	CH113	CH18	CH18	K24
CH19	CH114	CH19	CH19	K20
CH20	CH115	CH20	CH20	K16
CH21	CH116	CH21	CH21	K11
CH22	CH117	CH22	CH22	K7
CH23	CH118	CH23	CH23	K3
CH24	CH119	CH24	CH24	K52
CH25	CH120	CH25	CH25	K56
CH26	CH121	CH26	CH26	K60
CH27	CH122	CH27	CH27	K64
CH28	CH123	CH28	CH28	K68
CH29	CH124	CH29	CH29	K72
CH30	CH125	CH30	CH30	K76
CH31	CH126	CH31	CH31	K80
CH32	CH127	CH32	CH32	K84
CH33	CH128	CH33	CH33	K87
CH34	CH129	CH34	CH34	K91
CH35	CH130	CH35	CH35	K95
CH36	CH131	CH36	CH36	K2
CH37	CH132	CH37	CH37	K6
CH38	CH133	CH38	CH38	K10
CH39	CH134	CH39	CH39	K14
CH40	CH135	CH40	CH40	K19
CH41	CH136	CH41	CH41	K23
CH42	CH137	CH42	CH42	K27
CH43	CH138	CH43	CH43	K31

1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Relay Number
CH44	CH139	CH44	CH44	K35
CH45	CH140	CH45	CH45	K38
CH46	CH141	CH46	CH46	K43
CH47	CH142	CH47	CH47	K46
CH48	CH143	CH48	CH48	K96
CH49	CH144	CH49	CH49	K92
CH50	CH145	CH50	CH50	K88
CH51	CH146	CH51	CH51	K83
CH52	CH147	CH52	CH52	K79
CH53	CH148	CH53	CH53	K75
CH54	CH149	CH54	CH54	K71
CH55	CH150	CH55	CH55	K67
CH56	CH151	CH56	CH56	K63
CH57	CH152	CH57	CH57	K59
CH58	CH153	CH58	CH58	K55
CH59	CH154	CH59	CH59	K51
CH60	CH155	CH60	CH60	K45
CH61	CH156	CH61	CH61	K42
CH62	CH157	CH62	CH62	K37
CH63	CH158	CH63	CH63	K34
CH64	CH159	CH64	CH64	K30
CH65	CH160	CH65	CH65	K26
CH66	CH161	CH66	CH66	K22
CH67	CH162	CH67	CH67	K18
CH68	CH163	CH68	CH68	K13
CH69	CH164	CH69	CH69	K9

1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Relay Number
CH70	CH165	CH70	CH70	K5
CH71	CH166	CH71	CH71	K1
CH72	CH167	CH72	CH72	K50
CH73	CH168	CH73	CH73	K54
CH74	CH169	CH74	CH74	K58
CH75	CH170	CH75	CH75	K62
CH76	CH171	CH76	CH76	K66
CH77	CH172	CH77	CH77	K70
CH78	CH173	CH78	CH78	K74
CH79	CH174	CH79	CH79	K78
CH80	CH175	CH80	CH80	K82
CH81	CH176	CH81	CH81	K86
CH82	CH177	CH82	CH82	K90
CH83	CH178	CH83	CH83	K94
CH84	CH179	CH84	CH84	K0
CH85	CH180	CH85	CH85	K4
CH86	CH181	CH86	CH86	K8
CH87	CH182	CH87	CH87	K12
CH88	CH183	CH88	CH88	K17
CH89	CH184	CH89	CH89	K21
CH90	CH185	CH90	CH90	K25
CH91	CH186	CH91	CH91	K29
CH92	CH187	CH92	CH92	K33
CH93	CH188	CH93	CH93	K36
CH94	CH189	CH94	CH94	K41
CH190	CH193	—	CH95	K48

1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Relay Number
CH191	CH194	—	CH96	K49
CH192	CH195	—	CH97	K98
COM Relay				K15

PXIe-2575 Pinout

1-Wire 196x1 Multiplexer Topology

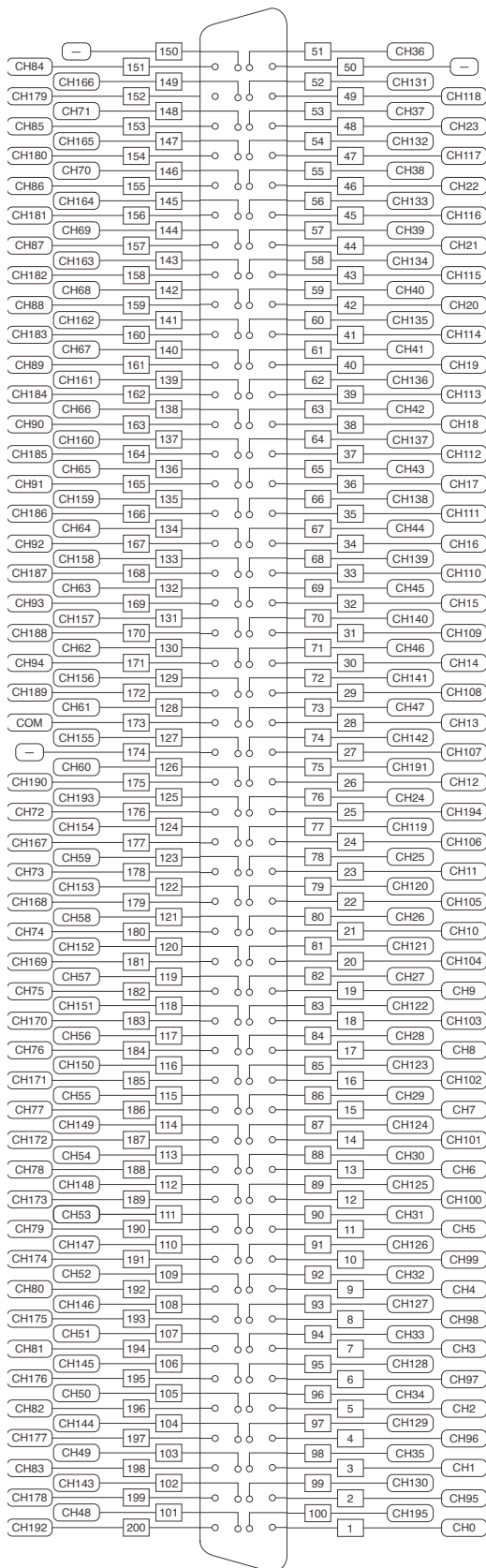


Table 2. Signal Descriptions

Signal	Description
CHx	Signal connection
COM	Routing destination for all channels
—	No connection

2-Wire 95×1 Multiplexer Topology

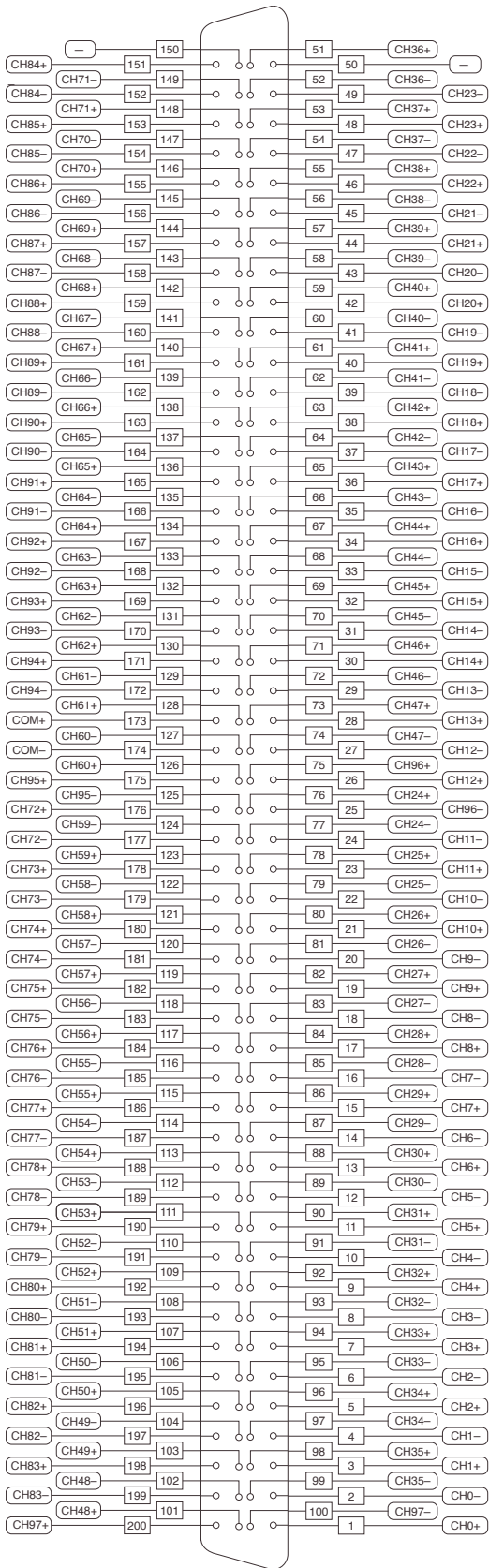


Table 3. Signal Descriptions

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

2-Wire 98×1 Multiplexer Topology

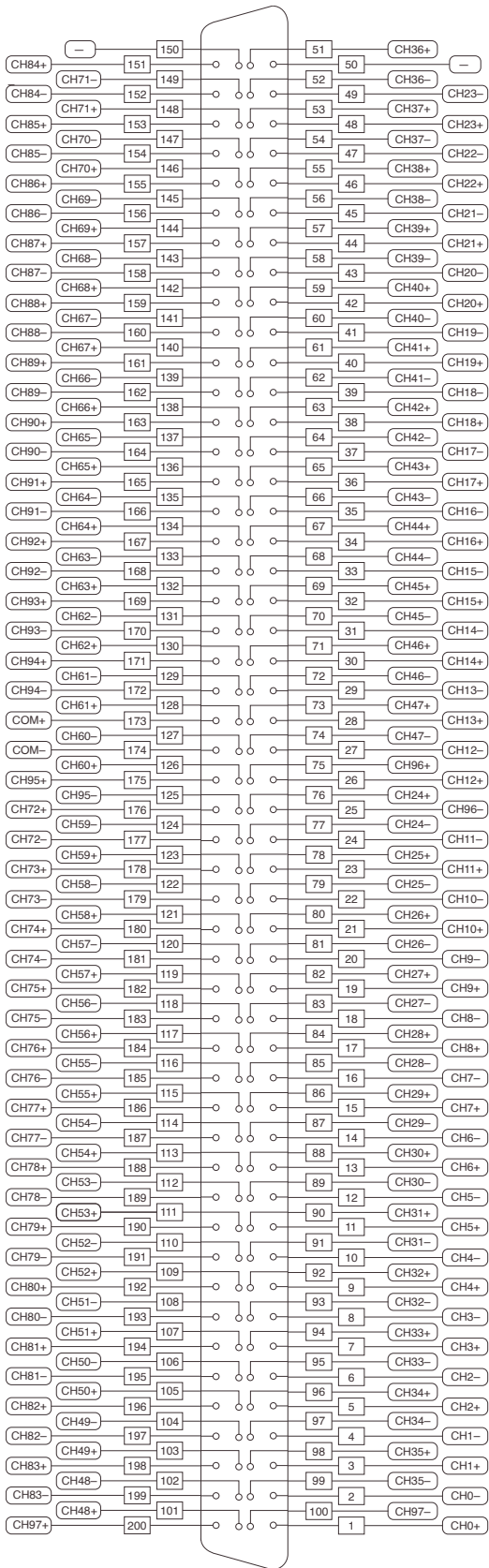


Table 4. Signal Descriptions

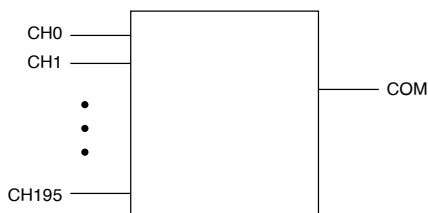
Signal	Description
CHx+	Positive signal connection
CHx-	Negative signal connection
COM+	Routing destination for all positive channels
COM-	Routing destination for all negative channels
—	No connection

PXIe-2575 Topology

Each topology supports immediate and scanning operations.

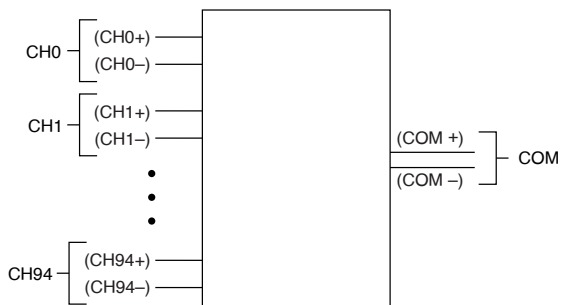
1-Wire 196×1 Multiplexer

Software name: 2575/1-Wire 196x1 Mux
(NISWITCH_TOPOLOGY_2575_1_WIRE_196X1_MUX)



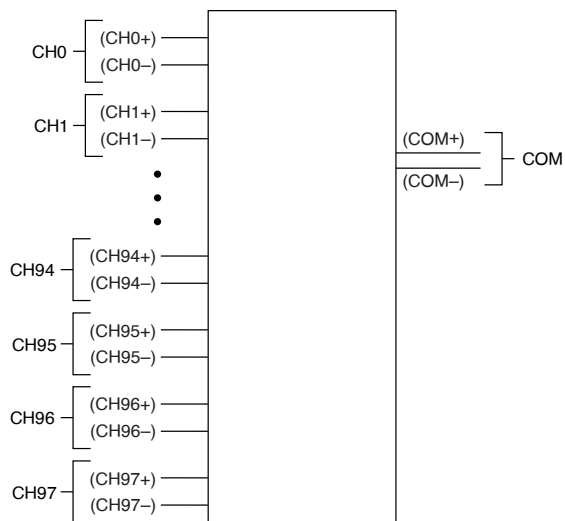
2-Wire 95×1 Multiplexer

Software name: 2575/2-Wire 95x1 Mux
(NISWITCH_TOPOLOGY_2575_2_WIRE_95X1_MUX)



2-Wire 98×1 Multiplexer

Software name: 2575/2-Wire 98x1 Mux
(NISWITCH_TOPOLOGY_2575_2_WIRE_98X1_MUX)



Making a Connection

You can control the channels using the niSwitch Connect Channels VI or the `niSwitch_Connect` function.

For example, to close the relay of channel 1, call `niSwitch_Connect(vi, "ch1", "com")`. To open the relay of channel 1, call `niSwitch_Disconnect(vi, "ch1", "com")`.

When scanning the module, a typical scan list entry could be `ch1->com;`. This entry closes the relay between CH1 and COM.

PXIe-2575 Relay Replacement

The module uses electromechanical armature relays.

Replacement Relay	Part Number
OMRON	G6KU-2F-Y
Tyco	5-1462039-7
National Instruments (10 relays, OMRON)	780386-01
National Instruments (10 relays, Tyco)	782051-01

Disassemble the Module

1. Ground yourself using a grounding strap or a ground connected to your PXI chassis.

**Note** Properly grounding yourself prevents damage to your module from electrostatic discharge.

2. Locate the relay you want to replace. Refer to the following figures and table for relay locations.

Figure 1. Base Board

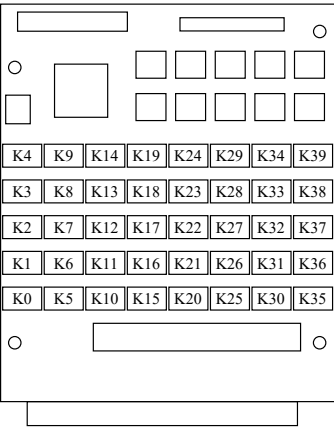
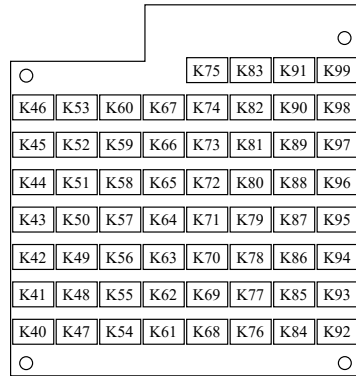


Figure 2. Mezzanine Board



1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Software Relay Name	Reference Designator (Base Board 191700D and earlier)
CH0	CH95	CH0	CH0	k97	K97 (mezzanine)
CH1	CH96	CH1	CH1	k93	K93 (mezzanine)
CH2	CH97	CH2	CH2	k89	K89 (mezzanine)
CH3	CH98	CH3	CH3	k85	K85 (mezzanine)
CH4	CH99	CH4	CH4	k81	K81 (mezzanine)
CH5	CH100	CH5	CH5	k77	K77 (mezzanine)
CH6	CH101	CH6	CH6	k73	K73 (mezzanine)
CH7	CH102	CH7	CH7	k69	K69 (mezzanine)
CH8	CH103	CH8	CH8	k65	K65 (mezzanine)
CH9	CH104	CH9	CH9	k61	K61 (mezzanine)
CH10	CH105	CH10	CH10	k57	K57

1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Software Relay Name	Reference Designator (Base Board 191700D and earlier)
					(mezzanine)
CH11	CH106	CH11	CH11	k53	K53 (mezzanine)
CH12	CH107	CH12	CH12	k47	K47 (mezzanine)
CH13	CH108	CH13	CH13	k44	K44 (mezzanine)
CH14	CH109	CH14	CH14	k40	K40 (mezzanine)
CH15	CH110	CH15	CH15	k39	K39 (base board)
CH16	CH111	CH16	CH16	k32	K32 (base board)
CH17	CH112	CH17	CH17	k28	K28 (base board)
CH18	CH113	CH18	CH18	k24	K24 (base board)
CH19	CH114	CH19	CH19	k20	K20 (base board)
CH20	CH115	CH20	CH20	k16	K16 (base board)
CH21	CH116	CH21	CH21	k11	K11 (base board)
CH22	CH117	CH22	CH22	k7	K7 (base board)
CH23	CH118	CH23	CH23	k3	K3 (base board)
CH24	CH119	CH24	CH24	k52	K52 (mezzanine)

1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Software Relay Name	Reference Designator (Base Board 191700D and earlier)
CH25	CH120	CH25	CH25	k56	K56 (mezzanine)
CH26	CH121	CH26	CH26	k60	K60 (mezzanine)
CH27	CH122	CH27	CH27	k64	K64 (mezzanine)
CH28	CH123	CH28	CH28	k68	K68 (mezzanine)
CH29	CH124	CH29	CH29	k72	K72 (mezzanine)
CH30	CH125	CH30	CH30	k76	K76 (mezzanine)
CH31	CH126	CH31	CH31	k80	K80 (mezzanine)
CH32	CH127	CH32	CH32	k84	K84 (mezzanine)
CH33	CH128	CH33	CH33	k87	K87 (mezzanine)
CH34	CH129	CH34	CH34	k91	K91 (mezzanine)
CH35	CH130	CH35	CH35	k95	K95 (mezzanine)
CH36	CH131	CH36	CH36	k2	K2 (base board)
CH37	CH132	CH37	CH37	k6	K6 (base board)
CH38	CH133	CH38	CH38	k10	K10 (base board)
CH39	CH134	CH39	CH39	k14	K14 (base board)

1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Software Relay Name	Reference Designator (Base Board 191700D and earlier)
CH40	CH135	CH40	CH40	k19	K19 (base board)
CH41	CH136	CH41	CH41	k23	K23 (base board)
CH42	CH137	CH42	CH42	k27	K27 (base board)
CH43	CH138	CH43	CH43	k31	K31 (base board)
CH44	CH139	CH44	CH44	k35	K35 (base board)
CH45	CH140	CH45	CH45	k38	K38 (base board)
CH46	CH141	CH46	CH46	k43	K43 (mezzanine)
CH47	CH142	CH47	CH47	k46	K46 (mezzanine)
CH48	CH143	CH48	CH48	k96	K96 (mezzanine)
CH49	CH144	CH49	CH49	k92	K92 (mezzanine)
CH50	CH145	CH50	CH50	k88	K88 (mezzanine)
CH51	CH146	CH51	CH51	k83	K83 (mezzanine)
CH52	CH147	CH52	CH52	k79	K79 (mezzanine)
CH53	CH148	CH53	CH53	k75	K75 (mezzanine)
CH54	CH149	CH54	CH54	k71	K71 (mezzanine)

1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Software Relay Name	Reference Designator (Base Board 191700D and earlier)
CH55	CH150	CH55	CH55	k67	K67 (mezzanine)
CH56	CH151	CH56	CH56	k63	K63 (mezzanine)
CH57	CH152	CH57	CH57	k59	K59 (mezzanine)
CH58	CH153	CH58	CH58	k55	K55 (mezzanine)
CH59	CH154	CH59	CH59	k51	K51 (mezzanine)
CH60	CH155	CH60	CH60	k45	K45 (mezzanine)
CH61	CH156	CH61	CH61	k42	K42 (mezzanine)
CH62	CH157	CH62	CH62	k37	K37 (base board)
CH63	CH158	CH63	CH63	k34	K34 (base board)
CH64	CH159	CH64	CH64	k30	K30 (base board)
CH65	CH160	CH65	CH65	k26	K26 (base board)
CH66	CH161	CH66	CH66	k22	K22 (base board)
CH67	CH162	CH67	CH67	k18	K18 (base board)
CH68	CH163	CH68	CH68	k13	K13 (base board)
CH69	CH164	CH69	CH69	k9	K9 (base board)

1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Software Relay Name	Reference Designator (Base Board 191700D and earlier)
CH70	CH165	CH70	CH70	k5	K5 (base board)
CH71	CH166	CH71	CH71	k1	K1 (base board)
CH72	CH167	CH72	CH72	k50	K50 (mezzanine)
CH73	CH168	CH73	CH73	k54	K54 (mezzanine)
CH74	CH169	CH74	CH74	k58	K58 (mezzanine)
CH75	CH170	CH75	CH75	k62	K62 (mezzanine)
CH76	CH170	CH76	CH76	k66	K66 (mezzanine)
CH77	CH172	CH77	CH77	k70	K70 (mezzanine)
CH78	CH173	CH78	CH78	k74	K74 (mezzanine)
CH79	CH174	CH79	CH79	k78	K78 (mezzanine)
CH80	CH175	CH80	CH80	k82	K82 (mezzanine)
CH81	CH176	CH81	CH81	k86	K86 (mezzanine)
CH82	CH177	CH82	CH82	k90	K90 (mezzanine)
CH83	CH178	CH83	CH83	k94	K94 (mezzanine)
CH84	CH179	CH84	CH84	k0	K0 (base board)

1-Wire 196×1 Channel Name		2-Wire 95×1 Channel Name	2-Wire 98×1 Channel Name	Software Relay Name	Reference Designator (Base Board 191700D and earlier)
CH85	CH180	CH85	CH85	k4	K4 (base board)
CH86	CH181	CH86	CH86	k8	K8 (base board)
CH87	CH182	CH87	CH87	k12	K12 (base board)
CH88	CH183	CH88	CH88	k17	K17 (base board)
CH89	CH184	CH89	CH89	k21	K21 (base board)
CH90	CH185	CH90	CH90	k25	K25 (base board)
CH91	CH186	CH91	CH91	k29	K29 (base board)
CH92	CH187	CH92	CH92	k33	K33 (base board)
CH93	CH188	CH93	CH93	k36	K36 (base board)
CH94	CH189	CH94	CH94	k41	K41 (mezzanine)
CH190	CH193	—	CH95	k48	K48 (mezzanine)
CH191	CH194	—	CH96	k49	K49 (mezzanine)
CH192	CH195	—	CH97	k98	K98 (mezzanine)
COM Relay				k15	K15 (base board)

3. Remove the four screws and washers that secure the mezzanine board to the base

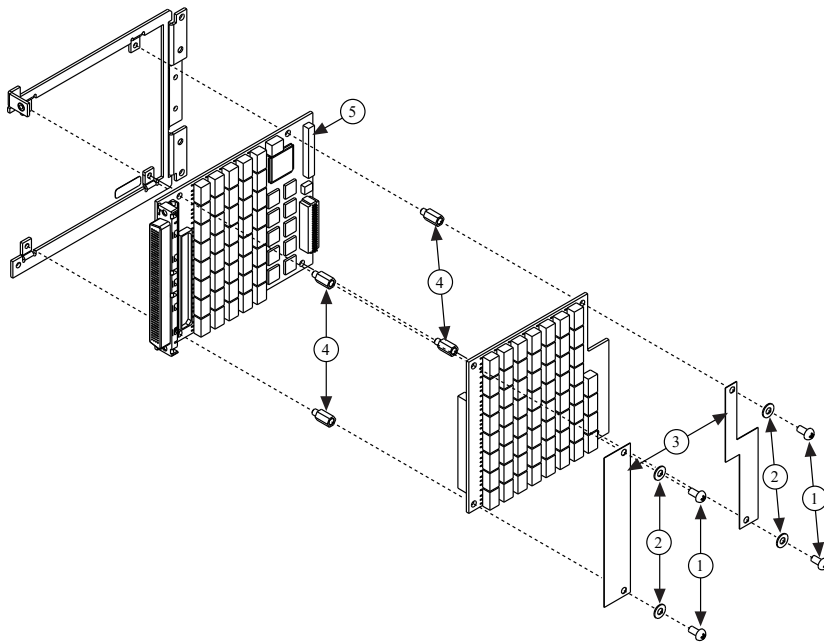
board. Do not remove the hex standoffs or the base board.



Note Older versions might have adhesive plastic lead covers that you must remove. The module retains full specifications even if these covers are not reinstalled.

- Disassembly of Base Board 191700C and Earlier: remove the four screws and washers that secure the mezzanine board to the base board. Do not remove the hex standoffs or the base board. .

Figure 3. Base Board Disassembly



1 Screws

4 Hex Standoff

2 Washers

5 Base board

3 Lead covers (if present)

- Separate the mezzanine board from the base board.
- Locate the assembly and serial number labels on the board with the relay you want to replace. White labels indicate the board was assembled using lead solder (Sn 63 Pb 37). Green labels indicate the board was assembled using lead-free solder (Sn 96.5 Ag 3.0 Cu 0.5). Lead-free assemblies have assembly numbers ending in L.

Replace the Relay

Ensure you have the following:

- Temperature-regulated soldering iron
 - Set to 371 °C (700 °F) for lead-free solder rework
 - Set to 316 °C (600 °F) for lead solder rework
- Solder
 - 96.5/3.0/0.5 Tin/Silver/Copper solder (flux core) for lead-free solder rework
 - 63/37 Tin/Lead solder (flux core) for lead solder rework
- Solder wick
- Fine pick
- Isopropyl alcohol
- Cotton swabs



Note NI recommends using lead-free solder for relay replacement on lead-free assemblies, and lead solder for relay replacement on lead assemblies.



Notice Do not rework lead assemblies using a lead-free work station. Lead solder from the unit could contaminate the station.



Notice If a lead-free assembly is reworked with lead solder, label the assembly to indicate this. This can prevent the same unit from being reworked later on a lead-free solder station, which could contaminate the station.

If you have a surface mount rework station, replace the relay as you would any other surface mount part. Otherwise, complete the following steps to replace the relay:

1. Use the soldering iron and solder wick to remove as much solder from the relay pads as possible. Do not leave the soldering iron on any lead for more than 5 seconds.



Note If it is necessary to reapply the soldering iron to the pad, allow the connection to cool completely before reapplying the soldering iron.

2. Apply heat to the pads one at a time, and use the pick to gently pry the relay pins from the pads. Make sure that the solder is molten before prying.



Notice Using excessive force on a soldered pad can result in lifting the PCB trace and ruining the board.

3. Remove the relay.
4. Clean the pads with isopropyl alcohol and cotton swabs.
5. Place the new relay on the PCB pads and solder.
6. Remove the excess flux with isopropyl alcohol and cotton swabs.



Notice Do not use flux remover to clean the board after relay replacement.

Reassemble the Module

Complete the ***Disassemble the Module*** steps in reverse order to reassemble your module.



Tip To reset the relay count after replacing a failed relay, refer to ***Resetting a Relay Count*** in the ***NI-SWITCH Switch Soft Front Panel User Manual***.

Related information:

- [Resetting a Relay Count](#)