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PCI-6518

NI 651x Specifications

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ni.com/manuals

This document lists specifications for the NI 651x devices. These specifications are typical at 25 °C unless otherwise noted.

Power Requirements

Power consumption on
+5 VDC ($\pm 5\%$)..... 250 mA, typical

Power consumption on
+3.3 VDC ($\pm 5\%$)..... 300 mA, typical

(NI 6512/6513/6514/6515 only)

+5 V power available at I/O connector (pins 50 and 100)

Voltage +4.3 VDC to +6.3 VDC

Current..... 20 mA/port, typical



Note The power at the I/O connector is derived from the output V_{CC} (user-provided). The output V_{CC} must be greater than 10 VDC to ensure that the output voltage is in the range of +4.3 VDC to +6.3 VDC.

| Device | Inputs | Outputs | Connector Type |
|----------|----------------|-----------|-------------------|
| NI 6516* | 0 | 32 source | 37-pin male D-SUB |
| NI 6517* | 0 | 32 sink | 37-pin male D-SUB |
| NI 6518* | 16 source/sink | 16 source | 37-pin male D-SUB |
| NI 6519* | 16 source/sink | 16 sink | 37-pin male D-SUB |

* All channels belong to one isolated bank and use the same ground and/or power.
† Eight lines per bank. All lines in the same bank use the same ground and/or power.

Digital I/O

Channel distribution and I/O connector. All channels are optically isolated.

| Device | Inputs | Outputs | Connector Type |
|----------|----------------|-----------|---------------------------|
| NI 6510* | 32 source/sink | 0 | 37-pin male D-SUB |
| NI 6511† | 64 source/sink | 0 | 100-pin keyed female SCSI |
| NI 6512† | 0 | 64 source | 100-pin keyed female SCSI |
| NI 6513† | 0 | 64 sink | 100-pin keyed female SCSI |
| NI 6514† | 32 source/sink | 32 source | 100-pin keyed female SCSI |
| NI 6515† | 32 source/sink | 32 sink | 100-pin keyed female SCSI |

Common-mode isolation30 VDC
(bank-to-bank and bank-to-bus)

Data transfers.....Interrupts, programmed I/O

Isolated Inputs

Maximum input voltage30 VDC

| Level | Min | Max |
|---------------------------------------|--------------|--------------|
| Input logic low voltage (V_{IL}) | 0 VDC | ± 4 VDC |
| Input logic high voltage (V_{IH}) | ± 11 VDC | ± 30 VDC |

Input current

11 V inputs4.5 mA/line, maximum
30 V inputs12.5 mA/line, maximum

Propagation delay75 μ s, typical

Isolated Outputs

Power-on state0 (open), default;
 user-programmable
 to 0 or 1

Maximum switching voltage 30 VDC

The following table lists the derated current values for the PXI-6512, PXI-6513, PXI-6514, and PXI-6515 devices. Working at higher current values might damage the device.

| Ambient Temperature | PXI-6512/6514, Eight Lines per Port | PXI-6512/6514, One Line per Port | PXI-6513/6515, Eight Lines per Port | PXI-6513/6515, One Line per Port |
|---------------------|-------------------------------------|----------------------------------|-------------------------------------|----------------------------------|
| Up to 25 °C | 75 mA | 350 mA | 125 mA | 500 mA |
| Up to 35 °C | 75 mA | 350 mA | 125 mA | 500 mA |
| Up to 45 °C | 75 mA | 350 mA | 120 mA | 500 mA |
| Up to 55 °C | 75 mA | 350 mA | 100 mA | 500 mA |

Note: The values listed in the *Eight Lines per Port* columns are the current values of each line when *all* eight lines in a port are used. The values listed in the *One Line per Port* columns are the current values of the *only* line used in a port. For more information about the current output of these devices, refer to the KnowledgeBase document, *Per Channel Current Output of an NI 651x Digital Data Acquisition Device*, by going to ni.com/info and entering the Info Code 651xoutput.

These devices have a self-resetting fuse on each output port for overcurrent protection. The actual current value might be lower depending on the device working temperature, which is affected by the ambient temperature, air flow, I/O voltage, I/O usage, and duty cycle. For more information about the self-resetting fuse on the device, refer to the KnowledgeBase document, *Why does my 651x Shut Down When Outputting Over Maximum Current?*, by going to ni.com/info and entering the Info Code 651xfuse.

The following table lists the derated current values for the PCI-6512, PCI-6513, PCI-6514, PCI-6515, PCI-6516, PCI-6517, PCI-6518, and PCI-6519 devices. Working at higher current values might damage the device.

| Ambient Temperature | PCI-6512/6514/6516/6518, Eight Lines per Port | PCI-6512/6514/6516/6518, One Line per Port | PCI-6513/6515/6517/6519, Eight Lines per Port | PCI-6513/6515/6517/6519, One Line per Port |
|---------------------|---|--|---|--|
| Up to 25 °C | 75 mA | 350 mA | 125 mA | 475 mA |
| Up to 35 °C | 65 mA | 350 mA | 125 mA | 425 mA |
| Up to 45 °C | 55 mA | 350 mA | 115 mA | 375 mA |
| Up to 55 °C | 50 mA | 300 mA | 100 mA | 325 mA |

Note: The values listed in the *Eight Lines per Port* columns are the current values of each line when *all* eight lines in a port are used. The values listed in the *One Line per Port* columns are the current values of the *only* line used in a port. For more information about the current output of these devices, refer to the KnowledgeBase document, *Per Channel Current Output of an NI 651x Digital Data Acquisition Device*, by going to ni.com/info and entering the Info Code 651xoutput.

These devices have a self-resetting fuse on each output port for overcurrent protection. The actual current value might be lower depending on the device working temperature, which is affected by the ambient temperature, air flow, I/O voltage, I/O usage, and duty cycle. For more information about the self-resetting fuse on the device, refer to the KnowledgeBase document, *Why does my 651x Shut Down When Outputting Over Maximum Current?*, by going to ni.com/info and entering the Info Code 651xfuse.

Propagation delay80 µs,
 typical with 100 Ω load

Programmable power-up states
 response time400 ms

Physical Characteristics

PCI dimensions

NI 6510/6511 15.1 cm × 12.1 cm
 (5.94 in. × 4.75 in.)

NI 6512/6513/6514/6515/
 6516/6517/6518/6519 14.1 cm × 11.4 cm
 (5.54 in. × 4.47 in.)

PXI dimensions

| | |
|------------------------|--|
| NI 6511/6512/6513..... | 21 cm × 13 cm (8.38 in. × 5.12 in.) |
| NI 6514/6515..... | 16 cm × 10 cm (6.3 in. × 3.9 in.) |

PCI weight

| | |
|--|-----------------|
| NI 6510/6511..... | 87.9 g (3.1 oz) |
| NI 6512/6513/6514/6515 6516/6517/6518/6519..... | 70.9 g (2.5 oz) |

PXI weight

| | |
|------------------------|------------------|
| NI 6511/6512/6513..... | 136 g (4.8 oz) |
| NI 6514/6515..... | 172.9 g (6.1 oz) |

Environmental

NI 651x devices are intended for indoor use only.

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) |
| Altitude | 2,000 m (at 25 °C ambient temperature) |

Storage Environment

| | |
|---------------------------------|--|
| Ambient temperature range | -20 °C to 70 °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 (PXI-6511/6512/6513/6514/6515 Only)

| | |
|-------------------------|--|
| 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, 0.3 grms |
| Nonoperating | 5 Hz to 500 Hz, 2.4 grms |

Random vibration is tested in accordance with IEC-60068-2-64. The nonoperating test profile exceeds the requirements of MIL-PRF-28800F, Class 3.

Safety

This product meets 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 the *Online Product Certification* section.

Electromagnetic Compatibility

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

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



Note For the standards applied to assess the EMC of this product, refer to the *Online Product Certification* section.



Note For EMC compliance, operate this device with shielded cables.

CE Compliance

This product meets the essential requirements of applicable European Directives as follows:

- 2006/95/EC; Low-Voltage Directive (safety)
- 2004/108/EC; Electromagnetic Compatibility Directive (EMC)

Online Product Certification

Refer to the product Declaration of Conformity (DoC) for additional regulatory compliance information. To obtain product certifications and 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.

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 *NI and the Environment* Web page at ni.com/environment. This page contains the environmental regulations and directives with which NI complies, as well as other environmental information not included in this document.

Waste Electrical and Electronic Equipment (WEEE)



EU Customers At the end of the product life cycle, all products must be sent to a WEEE recycling center. For more information about WEEE recycling centers, National Instruments WEEE initiatives, and compliance with WEEE Directive 2002/96/EC on Waste Electrical and Electronic Equipment, visit ni.com/environment/weee.

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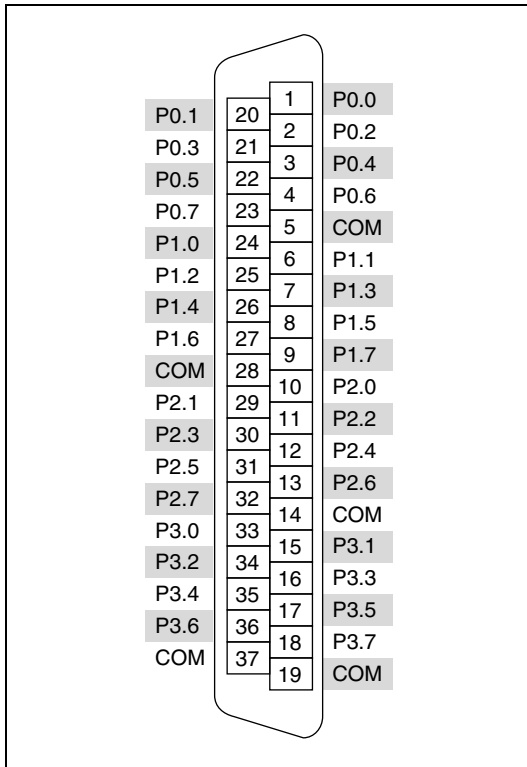


Figure 1. NI 6510 Pin Assignments

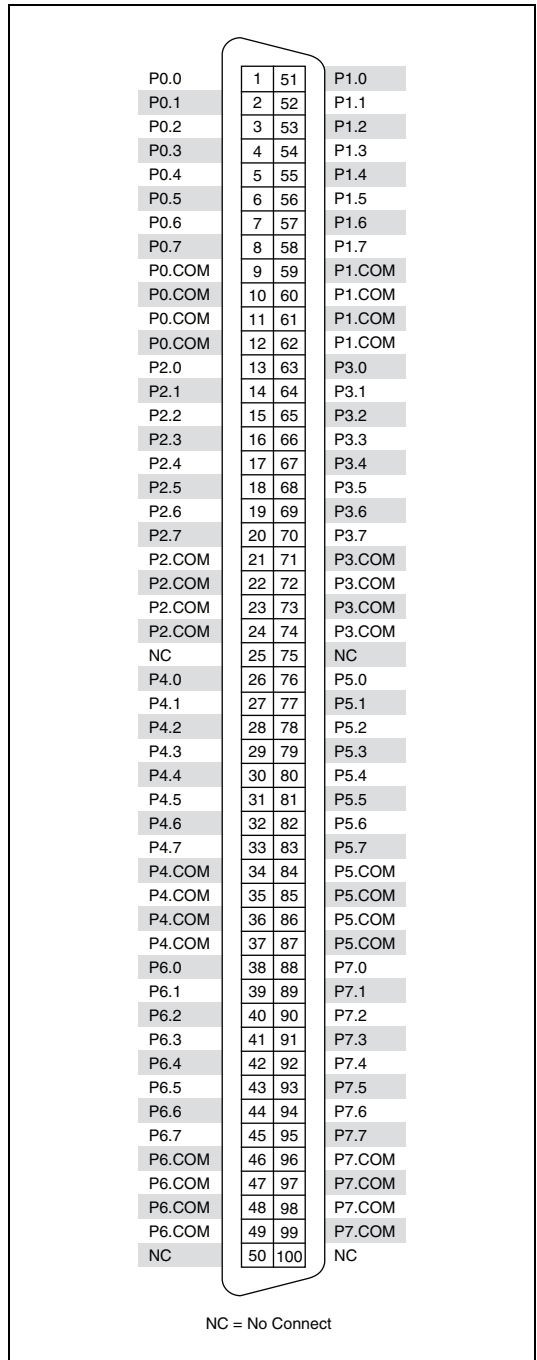


Figure 2. NI 6511 Pin Assignments for the SH100-100-F Cable

Positions 1 through 50

| | | | |
|--------|----|----|--------|
| P0.0 | 1 | 2 | P0.1 |
| P0.2 | 3 | 4 | P0.3 |
| P0.4 | 5 | 6 | P0.5 |
| P0.6 | 7 | 8 | P0.7 |
| P0.COM | 9 | 10 | P0.COM |
| P0.COM | 11 | 12 | P0.COM |
| P2.0 | 13 | 14 | P2.1 |
| P2.2 | 15 | 16 | P2.3 |
| P2.4 | 17 | 18 | P2.5 |
| P2.6 | 19 | 20 | P2.7 |
| P2.COM | 21 | 22 | P2.COM |
| P2.COM | 23 | 24 | P2.COM |
| NC | 25 | 26 | P4.0 |
| P4.1 | 27 | 28 | P4.2 |
| P4.3 | 29 | 30 | P4.4 |
| P4.5 | 31 | 32 | P4.6 |
| P4.7 | 33 | 34 | P4.COM |
| P4.COM | 35 | 36 | P4.COM |
| P4.COM | 37 | 38 | P6.0 |
| P6.1 | 39 | 40 | P6.2 |
| P6.3 | 41 | 42 | P6.4 |
| P6.5 | 43 | 44 | P6.6 |
| P6.7 | 45 | 46 | P6.COM |
| P6.COM | 47 | 48 | P6.COM |
| P6.COM | 49 | 50 | NC |

Positions 51 through 100

| | | | |
|--------|----|----|--------|
| P1.0 | 1 | 2 | P1.1 |
| P1.2 | 3 | 4 | P1.3 |
| P1.4 | 5 | 6 | P1.5 |
| P1.6 | 7 | 8 | P1.7 |
| P1.COM | 9 | 10 | P1.COM |
| P1.COM | 11 | 12 | P1.COM |
| P3.0 | 13 | 14 | P3.1 |
| P3.2 | 15 | 16 | P3.3 |
| P3.4 | 17 | 18 | P3.5 |
| P3.6 | 19 | 20 | P3.7 |
| P3.COM | 21 | 22 | P3.COM |
| P3.COM | 23 | 24 | P3.COM |
| NC | 25 | 26 | P5.0 |
| P5.1 | 27 | 28 | P5.2 |
| P5.3 | 29 | 30 | P5.4 |
| P5.5 | 31 | 32 | P5.6 |
| P5.7 | 33 | 34 | P5.COM |
| P5.COM | 35 | 36 | P5.COM |
| P5.COM | 37 | 38 | P7.0 |
| P7.1 | 39 | 40 | P7.2 |
| P7.3 | 41 | 42 | P7.4 |
| P7.5 | 43 | 44 | P7.6 |
| P7.7 | 45 | 46 | P7.COM |
| P7.COM | 47 | 48 | P7.COM |
| P7.COM | 49 | 50 | NC |

NC = No Connect

Figure 3. NI 6511 Pin Assignments for the R1005050 Cable

| | | | |
|-----------------|----|-----|-----------------|
| P0.0 | 1 | 51 | P1.0 |
| P0.1 | 2 | 52 | P1.1 |
| P0.2 | 3 | 53 | P1.2 |
| P0.3 | 4 | 54 | P1.3 |
| P0.4 | 5 | 55 | P1.4 |
| P0.5 | 6 | 56 | P1.5 |
| P0.6 | 7 | 57 | P1.6 |
| P0.7 | 8 | 58 | P1.7 |
| P0.COM (P0.GND) | 9 | 59 | P1.COM (P1.GND) |
| P0.VCC | 10 | 60 | P1.VCC |
| P0.VCC | 11 | 61 | P1.VCC |
| P0.VCC | 12 | 62 | P1.VCC |
| P2.0 | 13 | 63 | P3.0 |
| P2.1 | 14 | 64 | P3.1 |
| P2.2 | 15 | 65 | P3.2 |
| P2.3 | 16 | 66 | P3.3 |
| P2.4 | 17 | 67 | P3.4 |
| P2.5 | 18 | 68 | P3.5 |
| P2.6 | 19 | 69 | P3.6 |
| P2.7 | 20 | 70 | P3.7 |
| P2.COM (P2.GND) | 21 | 71 | P3.COM (P3.GND) |
| P2.VCC | 22 | 72 | P3.VCC |
| P2.VCC | 23 | 73 | P3.VCC |
| P2.VCC | 24 | 74 | P3.VCC |
| NC | 25 | 75 | NC |
| P4.0 | 26 | 76 | P5.0 |
| P4.1 | 27 | 77 | P5.1 |
| P4.2 | 28 | 78 | P5.2 |
| P4.3 | 29 | 79 | P5.3 |
| P4.4 | 30 | 80 | P5.4 |
| P4.5 | 31 | 81 | P5.5 |
| P4.6 | 32 | 82 | P5.6 |
| P4.7 | 33 | 83 | P5.7 |
| P4.COM (P4.GND) | 34 | 84 | P5.COM (P5.GND) |
| P4.VCC | 35 | 85 | P5.VCC |
| P4.VCC | 36 | 86 | P5.VCC |
| P4.VCC | 37 | 87 | P5.VCC |
| P6.0 | 38 | 88 | P7.0 |
| P6.1 | 39 | 89 | P7.1 |
| P6.2 | 40 | 90 | P7.2 |
| P6.3 | 41 | 91 | P7.3 |
| P6.4 | 42 | 92 | P7.4 |
| P6.5 | 43 | 93 | P7.5 |
| P6.6 | 44 | 94 | P7.6 |
| P6.7 | 45 | 95 | P7.7 |
| P6.COM (P6.GND) | 46 | 96 | P7.COM (P7.GND) |
| P6.VCC | 47 | 97 | P7.VCC |
| P6.VCC | 48 | 98 | P7.VCC |
| P6.VCC | 49 | 99 | P7.VCC |
| P6.+5V | 50 | 100 | P7.+5V |

NC = No Connect

Figure 4. NI 6512 Pin Assignments for the SH100-100-F Cable

| Positions 1 through 50 | | | | Positions 51 through 100 | | | |
|------------------------|----|----|-----------------|--------------------------|----|----|-----------------|
| P0.0 | 1 | 2 | P0.1 | P1.0 | 1 | 2 | P1.1 |
| P0.2 | 3 | 4 | P0.3 | P1.2 | 3 | 4 | P1.3 |
| P0.4 | 5 | 6 | P0.5 | P1.4 | 5 | 6 | P1.5 |
| P0.6 | 7 | 8 | P0.7 | P1.6 | 7 | 8 | P1.7 |
| P0.COM (P0.GND) | 9 | 10 | P0.VCC | P1.COM (P1.GND) | 9 | 10 | P1.VCC |
| P0.VCC | 11 | 12 | P0.VCC | P1.VCC | 11 | 12 | P1.VCC |
| P2.0 | 13 | 14 | P2.1 | P3.0 | 13 | 14 | P3.1 |
| P2.2 | 15 | 16 | P2.3 | P3.2 | 15 | 16 | P3.3 |
| P2.4 | 17 | 18 | P2.5 | P3.4 | 17 | 18 | P3.5 |
| P2.6 | 19 | 20 | P2.7 | P3.6 | 19 | 20 | P3.7 |
| P2.COM (P2.GND) | 21 | 22 | P2.VCC | P3.COM (P3.GND) | 21 | 22 | P3.VCC |
| P2.VCC | 23 | 24 | P2.VCC | P3.VCC | 23 | 24 | P3.VCC |
| NC | 25 | 26 | P4.0 | NC | 25 | 26 | P5.0 |
| P4.1 | 27 | 28 | P4.2 | P5.1 | 27 | 28 | P5.2 |
| P4.3 | 29 | 30 | P4.4 | P5.3 | 29 | 30 | P5.4 |
| P4.5 | 31 | 32 | P4.6 | P5.5 | 31 | 32 | P5.6 |
| P4.7 | 33 | 34 | P4.COM (P4.GND) | P5.7 | 33 | 34 | P5.COM (P5.GND) |
| P4.VCC | 35 | 36 | P4.VCC | P5.VCC | 35 | 36 | P5.VCC |
| P4.VCC | 37 | 38 | P6.0 | P5.VCC | 37 | 38 | P7.0 |
| P6.1 | 39 | 40 | P6.2 | P7.1 | 39 | 40 | P7.2 |
| P6.3 | 41 | 42 | P6.4 | P7.3 | 41 | 42 | P7.4 |
| P6.5 | 43 | 44 | P6.6 | P7.5 | 43 | 44 | P7.6 |
| P6.7 | 45 | 46 | P6.COM (P6.GND) | P7.7 | 45 | 46 | P7.COM (P7.GND) |
| P6.VCC | 47 | 48 | P6.VCC | P7.VCC | 47 | 48 | P7.VCC |
| P6.VCC | 49 | 50 | P6.+5V | P7.VCC | 49 | 50 | P7.+5V |

NC = No Connect

Figure 5. NI 6512 Pin Assignments for the R1005050 Cable

| | | | |
|-----------------|----|-----|-----------------|
| P0.0 | 1 | 51 | P1.0 |
| P0.1 | 2 | 52 | P1.1 |
| P0.2 | 3 | 53 | P1.2 |
| P0.3 | 4 | 54 | P1.3 |
| P0.4 | 5 | 55 | P1.4 |
| P0.5 | 6 | 56 | P1.5 |
| P0.6 | 7 | 57 | P1.6 |
| P0.7 | 8 | 58 | P1.7 |
| P0.COM (P0.VCC) | 9 | 59 | P1.COM (P1.VCC) |
| P0.GND | 10 | 60 | P1.GND |
| P0.GND | 11 | 61 | P1.GND |
| P0.GND | 12 | 62 | P1.GND |
| P2.0 | 13 | 63 | P3.0 |
| P2.1 | 14 | 64 | P3.1 |
| P2.2 | 15 | 65 | P3.2 |
| P2.3 | 16 | 66 | P3.3 |
| P2.4 | 17 | 67 | P3.4 |
| P2.5 | 18 | 68 | P3.5 |
| P2.6 | 19 | 69 | P3.6 |
| P2.7 | 20 | 70 | P3.7 |
| P2.COM (P2.VCC) | 21 | 71 | P3.COM (P3.VCC) |
| P2.GND | 22 | 72 | P3.GND |
| P2.GND | 23 | 73 | P3.GND |
| P2.GND | 24 | 74 | P3.GND |
| NC | 25 | 75 | NC |
| P4.0 | 26 | 76 | P5.0 |
| P4.1 | 27 | 77 | P5.1 |
| P4.2 | 28 | 78 | P5.2 |
| P4.3 | 29 | 79 | P5.3 |
| P4.4 | 30 | 80 | P5.4 |
| P4.5 | 31 | 81 | P5.5 |
| P4.6 | 32 | 82 | P5.6 |
| P4.7 | 33 | 83 | P5.7 |
| P4.COM (P4.VCC) | 34 | 84 | P5.COM (P5.VCC) |
| P4.GND | 35 | 85 | P5.GND |
| P4.GND | 36 | 86 | P5.GND |
| P4.GND | 37 | 87 | P5.GND |
| P6.0 | 38 | 88 | P7.0 |
| P6.1 | 39 | 89 | P7.1 |
| P6.2 | 40 | 90 | P7.2 |
| P6.3 | 41 | 91 | P7.3 |
| P6.4 | 42 | 92 | P7.4 |
| P6.5 | 43 | 93 | P7.5 |
| P6.6 | 44 | 94 | P7.6 |
| P6.7 | 45 | 95 | P7.7 |
| P6.COM (P6.VCC) | 46 | 96 | P7.COM (P7.VCC) |
| P6.GND | 47 | 97 | P7.GND |
| P6.GND | 48 | 98 | P7.GND |
| P6.GND | 49 | 99 | P7.GND |
| P6.+5V | 50 | 100 | P7.+5V |

NC = No Connect

Figure 6. NI 6513 Pin Assignments for the SH100-100-F Cable

| Positions 1 through 50 | | | | Positions 51 through 100 | | | |
|------------------------|----|----|-----------------|--------------------------|----|----|-----------------|
| P0.0 | 1 | 2 | P0.1 | P1.0 | 1 | 2 | P1.1 |
| P0.2 | 3 | 4 | P0.3 | P1.2 | 3 | 4 | P1.3 |
| P0.4 | 5 | 6 | P0.5 | P1.4 | 5 | 6 | P1.5 |
| P0.6 | 7 | 8 | P0.7 | P1.6 | 7 | 8 | P1.7 |
| P0.COM (P0.VCC) | 9 | 10 | P0.GND | P1.COM (P1.VCC) | 9 | 10 | P1.GND |
| P0.GND | 11 | 12 | P0.GND | P1.GND | 11 | 12 | P1.GND |
| P2.0 | 13 | 14 | P2.1 | P3.0 | 13 | 14 | P3.1 |
| P2.2 | 15 | 16 | P2.3 | P3.2 | 15 | 16 | P3.3 |
| P2.4 | 17 | 18 | P2.5 | P3.4 | 17 | 18 | P3.5 |
| P2.6 | 19 | 20 | P2.7 | P3.6 | 19 | 20 | P3.7 |
| P2.COM (P2.VCC) | 21 | 22 | P2.GND | P3.COM (P3.VCC) | 21 | 22 | P3.GND |
| P2.GND | 23 | 24 | P2.GND | P3.GND | 23 | 24 | P3.GND |
| NC | 25 | 26 | P4.0 | NC | 25 | 26 | P5.0 |
| P4.1 | 27 | 28 | P4.2 | P5.1 | 27 | 28 | P5.2 |
| P4.3 | 29 | 30 | P4.4 | P5.3 | 29 | 30 | P5.4 |
| P4.5 | 31 | 32 | P4.6 | P5.5 | 31 | 32 | P5.6 |
| P4.7 | 33 | 34 | P4.COM (P4.VCC) | P5.7 | 33 | 34 | P5.COM (P5.VCC) |
| P4.GND | 35 | 36 | P4.GND | P5.GND | 35 | 36 | P5.GND |
| P4.GND | 37 | 38 | P6.0 | P5.GND | 37 | 38 | P7.0 |
| P6.1 | 39 | 40 | P6.2 | P7.1 | 39 | 40 | P7.2 |
| P6.3 | 41 | 42 | P6.4 | P7.3 | 41 | 42 | P7.4 |
| P6.5 | 43 | 44 | P6.6 | P7.5 | 43 | 44 | P7.6 |
| P6.7 | 45 | 46 | P6.COM (P6.VCC) | P7.7 | 45 | 46 | P7.COM (P7.VCC) |
| P6.GND | 47 | 48 | P6.GND | P7.GND | 47 | 48 | P7.GND |
| P6.GND | 49 | 50 | P6.+5V | P7.GND | 49 | 50 | P7.+5V |

NC = No Connect

Figure 7. NI 6513 Pin Assignments for the R1005050 Cable

| | | | |
|-----------------|----|-----|-----------------|
| P0.0 | 1 | 51 | P1.0 |
| P0.1 | 2 | 52 | P1.1 |
| P0.2 | 3 | 53 | P1.2 |
| P0.3 | 4 | 54 | P1.3 |
| P0.4 | 5 | 55 | P1.4 |
| P0.5 | 6 | 56 | P1.5 |
| P0.6 | 7 | 57 | P1.6 |
| P0.7 | 8 | 58 | P1.7 |
| P0.COM | 9 | 59 | P1.COM |
| P0.COM | 10 | 60 | P1.COM |
| P0.COM | 11 | 61 | P1.COM |
| P0.COM | 12 | 62 | P1.COM |
| P2.0 | 13 | 63 | P3.0 |
| P2.1 | 14 | 64 | P3.1 |
| P2.2 | 15 | 65 | P3.2 |
| P2.3 | 16 | 66 | P3.3 |
| P2.4 | 17 | 67 | P3.4 |
| P2.5 | 18 | 68 | P3.5 |
| P2.6 | 19 | 69 | P3.6 |
| P2.7 | 20 | 70 | P3.7 |
| P2.COM | 21 | 71 | P3.COM |
| P2.COM | 22 | 72 | P3.COM |
| P2.COM | 23 | 73 | P3.COM |
| P2.COM | 24 | 74 | P3.COM |
| NC | 25 | 75 | NC |
| P4.0 | 26 | 76 | P5.0 |
| P4.1 | 27 | 77 | P5.1 |
| P4.2 | 28 | 78 | P5.2 |
| P4.3 | 29 | 79 | P5.3 |
| P4.4 | 30 | 80 | P5.4 |
| P4.5 | 31 | 81 | P5.5 |
| P4.6 | 32 | 82 | P5.6 |
| P4.7 | 33 | 83 | P5.7 |
| P4.COM (P4.GND) | 34 | 84 | P5.COM (P5.GND) |
| P4.VCC | 35 | 85 | P5.VCC |
| P4.VCC | 36 | 86 | P5.VCC |
| P4.VCC | 37 | 87 | P5.VCC |
| P6.0 | 38 | 88 | P7.0 |
| P6.1 | 39 | 89 | P7.1 |
| P6.2 | 40 | 90 | P7.2 |
| P6.3 | 41 | 91 | P7.3 |
| P6.4 | 42 | 92 | P7.4 |
| P6.5 | 43 | 93 | P7.5 |
| P6.6 | 44 | 94 | P7.6 |
| P6.7 | 45 | 95 | P7.7 |
| P6.COM (P6.GND) | 46 | 96 | P7.COM (P7.GND) |
| P6.VCC | 47 | 97 | P7.VCC |
| P6.VCC | 48 | 98 | P7.VCC |
| P6.VCC | 49 | 99 | P7.VCC |
| P6.+5V | 50 | 100 | P7.+5V |

NC = No Connect

Figure 8. NI 6514 Pin Assignments for the SH100-100-F Cable

| Positions 1 through 50 | | | | Positions 51 through 100 | | | |
|------------------------|----|----|-----------------|--------------------------|----|----|-----------------|
| P0.0 | 1 | 2 | P0.1 | P1.0 | 1 | 2 | P1.1 |
| P0.2 | 3 | 4 | P0.3 | P1.2 | 3 | 4 | P1.3 |
| P0.4 | 5 | 6 | P0.5 | P1.4 | 5 | 6 | P1.5 |
| P0.6 | 7 | 8 | P0.7 | P1.6 | 7 | 8 | P1.7 |
| P0.COM | 9 | 10 | P0.COM | P1.COM | 9 | 10 | P1.COM |
| P0.COM | 11 | 12 | P0.COM | P1.COM | 11 | 12 | P1.COM |
| P2.0 | 13 | 14 | P2.1 | P3.0 | 13 | 14 | P3.1 |
| P2.2 | 15 | 16 | P2.3 | P3.2 | 15 | 16 | P3.3 |
| P2.4 | 17 | 18 | P2.5 | P3.4 | 17 | 18 | P3.5 |
| P2.6 | 19 | 20 | P2.7 | P3.6 | 19 | 20 | P3.7 |
| P2.COM | 21 | 22 | P2.COM | P3.COM | 21 | 22 | P3.COM |
| P2.COM | 23 | 24 | P2.COM | P3.COM | 23 | 24 | P3.COM |
| NC | 25 | 26 | P4.0 | NC | 25 | 26 | P5.0 |
| P4.1 | 27 | 28 | P4.2 | P5.1 | 27 | 28 | P5.2 |
| P4.3 | 29 | 30 | P4.4 | P5.3 | 29 | 30 | P5.4 |
| P4.5 | 31 | 32 | P4.6 | P5.5 | 31 | 32 | P5.6 |
| P4.7 | 33 | 34 | P4.COM (P4.GND) | P5.7 | 33 | 34 | P5.COM (P5.GND) |
| P4.VCC | 35 | 36 | P4.VCC | P5.VCC | 35 | 36 | P5.VCC |
| P4.VCC | 37 | 38 | P6.0 | P5.VCC | 37 | 38 | P7.0 |
| P6.1 | 39 | 40 | P6.2 | P7.1 | 39 | 40 | P7.2 |
| P6.3 | 41 | 42 | P6.4 | P7.3 | 41 | 42 | P7.4 |
| P6.5 | 43 | 44 | P6.6 | P7.5 | 43 | 44 | P7.6 |
| P6.7 | 45 | 46 | P6.COM (P6.GND) | P7.7 | 45 | 46 | P7.COM (P7.GND) |
| P6.VCC | 47 | 48 | P6.VCC | P7.VCC | 47 | 48 | P7.VCC |
| P6.VCC | 49 | 50 | P6.+5V | P7.VCC | 49 | 50 | P7.+5V |

NC = No Connect

Figure 9. NI 6514 Pin Assignments for the R1005050 Cable

| | | | |
|-----------------|----|-----|-----------------|
| P0.0 | 1 | 51 | P1.0 |
| P0.1 | 2 | 52 | P1.1 |
| P0.2 | 3 | 53 | P1.2 |
| P0.3 | 4 | 54 | P1.3 |
| P0.4 | 5 | 55 | P1.4 |
| P0.5 | 6 | 56 | P1.5 |
| P0.6 | 7 | 57 | P1.6 |
| P0.7 | 8 | 58 | P1.7 |
| P0.COM | 9 | 59 | P1.COM |
| P0.COM | 10 | 60 | P1.COM |
| P0.COM | 11 | 61 | P1.COM |
| P0.COM | 12 | 62 | P1.COM |
| P2.0 | 13 | 63 | P3.0 |
| P2.1 | 14 | 64 | P3.1 |
| P2.2 | 15 | 65 | P3.2 |
| P2.3 | 16 | 66 | P3.3 |
| P2.4 | 17 | 67 | P3.4 |
| P2.5 | 18 | 68 | P3.5 |
| P2.6 | 19 | 69 | P3.6 |
| P2.7 | 20 | 70 | P3.7 |
| P2.COM | 21 | 71 | P3.COM |
| P2.COM | 22 | 72 | P3.COM |
| P2.COM | 23 | 73 | P3.COM |
| P2.COM | 24 | 74 | P3.COM |
| NC | 25 | 75 | NC |
| P4.0 | 26 | 76 | P5.0 |
| P4.1 | 27 | 77 | P5.1 |
| P4.2 | 28 | 78 | P5.2 |
| P4.3 | 29 | 79 | P5.3 |
| P4.4 | 30 | 80 | P5.4 |
| P4.5 | 31 | 81 | P5.5 |
| P4.6 | 32 | 82 | P5.6 |
| P4.7 | 33 | 83 | P5.7 |
| P4.COM (P4.VCC) | 34 | 84 | P5.COM (P5.VCC) |
| P4.GND | 35 | 85 | P5.GND |
| P4.GND | 36 | 86 | P5.GND |
| P4.GND | 37 | 87 | P5.GND |
| P6.0 | 38 | 88 | P7.0 |
| P6.1 | 39 | 89 | P7.1 |
| P6.2 | 40 | 90 | P7.2 |
| P6.3 | 41 | 91 | P7.3 |
| P6.4 | 42 | 92 | P7.4 |
| P6.5 | 43 | 93 | P7.5 |
| P6.6 | 44 | 94 | P7.6 |
| P6.7 | 45 | 95 | P7.7 |
| P6.COM (P6.VCC) | 46 | 96 | P7.COM (P7.VCC) |
| P6.GND | 47 | 97 | P7.GND |
| P6.GND | 48 | 98 | P7.GND |
| P6.GND | 49 | 99 | P7.GND |
| P6.+5V | 50 | 100 | P7.+5V |

NC = No Connect

Figure 10. NI 6515 Pin Assignments for the SH100-100-F Cable

Positions 1 through 50

| | | | |
|--------|----|----|-----------------|
| P0.0 | 1 | 2 | P0.1 |
| P0.2 | 3 | 4 | P0.3 |
| P0.4 | 5 | 6 | P0.5 |
| P0.6 | 7 | 8 | P0.7 |
| P0.COM | 9 | 10 | P0.COM |
| P0.COM | 11 | 12 | P0.COM |
| P2.0 | 13 | 14 | P2.1 |
| P2.2 | 15 | 16 | P2.3 |
| P2.4 | 17 | 18 | P2.5 |
| P2.6 | 19 | 20 | P2.7 |
| P2.COM | 21 | 22 | P2.COM |
| P2.COM | 23 | 24 | P2.COM |
| NC | 25 | 26 | P4.0 |
| P4.1 | 27 | 28 | P4.2 |
| P4.3 | 29 | 30 | P4.4 |
| P4.5 | 31 | 32 | P4.6 |
| P4.7 | 33 | 34 | P4.COM (P4.VCC) |
| P4.GND | 35 | 36 | P4.GND |
| P4.GND | 37 | 38 | P6.0 |
| P6.1 | 39 | 40 | P6.2 |
| P6.3 | 41 | 42 | P6.4 |
| P6.5 | 43 | 44 | P6.6 |
| P6.7 | 45 | 46 | P6.COM (P6.VCC) |
| P6.GND | 47 | 48 | P6.GND |
| P6.GND | 49 | 50 | P6.+5V |

Positions 51 through 100

| | | | |
|--------|----|----|-----------------|
| P1.0 | 1 | 2 | P1.1 |
| P1.2 | 3 | 4 | P1.3 |
| P1.4 | 5 | 6 | P1.5 |
| P1.6 | 7 | 8 | P1.7 |
| P1.COM | 9 | 10 | P1.COM |
| P1.COM | 11 | 12 | P1.COM |
| P3.0 | 13 | 14 | P3.1 |
| P3.2 | 15 | 16 | P3.3 |
| P3.4 | 17 | 18 | P3.5 |
| P3.6 | 19 | 20 | P3.7 |
| P3.COM | 21 | 22 | P3.COM |
| P3.COM | 23 | 24 | P3.COM |
| NC | 25 | 26 | P5.0 |
| P5.1 | 27 | 28 | P5.2 |
| P5.3 | 29 | 30 | P5.4 |
| P5.5 | 31 | 32 | P5.6 |
| P5.7 | 33 | 34 | P5.COM (P5.VCC) |
| P5.GND | 35 | 36 | P5.GND |
| P5.GND | 37 | 38 | P7.0 |
| P7.1 | 39 | 40 | P7.2 |
| P7.3 | 41 | 42 | P7.4 |
| P7.5 | 43 | 44 | P7.6 |
| P7.7 | 45 | 46 | P7.COM (P7.VCC) |
| P7.GND | 47 | 48 | P7.GND |
| P7.GND | 49 | 50 | P7.+5V |

NC = No Connect

Figure 11. NI 6515 Pin Assignments for the R1005050 Cable

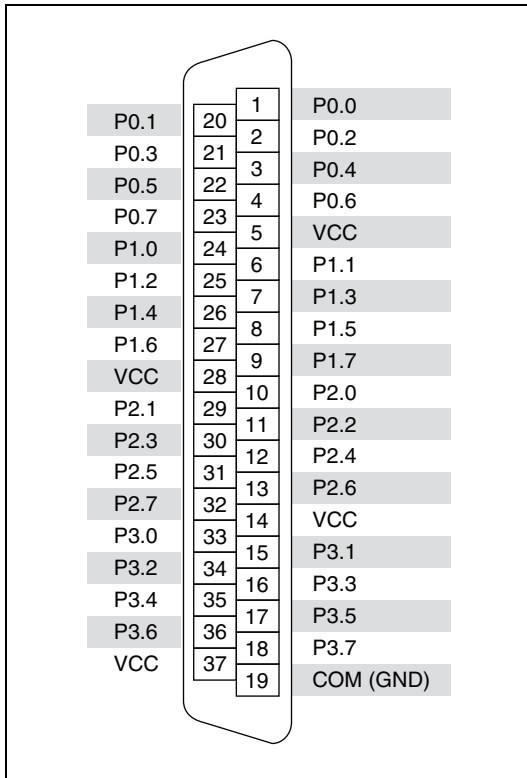


Figure 12. NI 6516 Pin Assignments

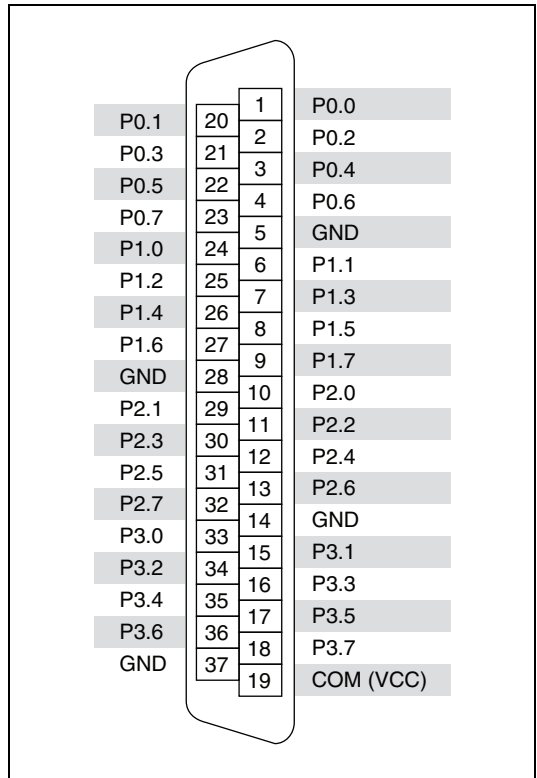


Figure 13. NI 6517 Pin Assignments

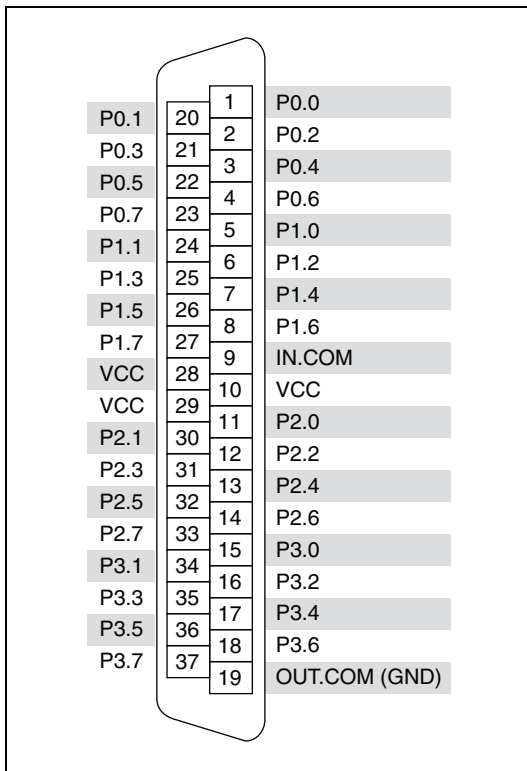


Figure 14. NI 6518 Pin Assignments

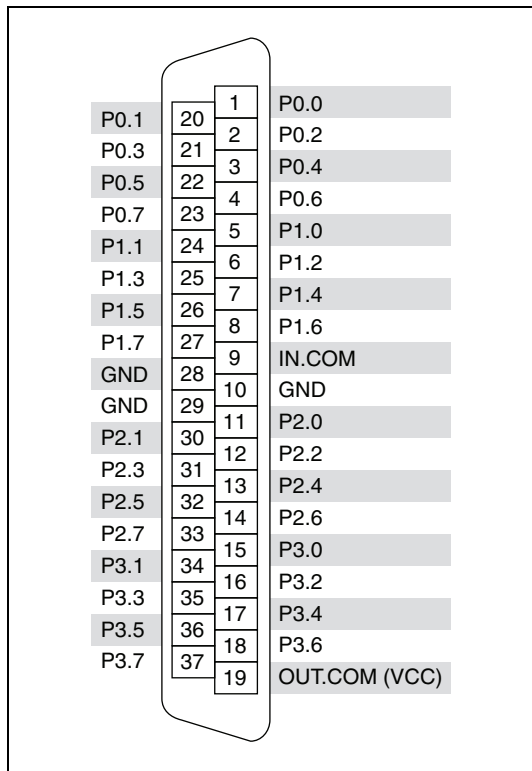


Figure 15. NI 6519 Pin Assignments

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