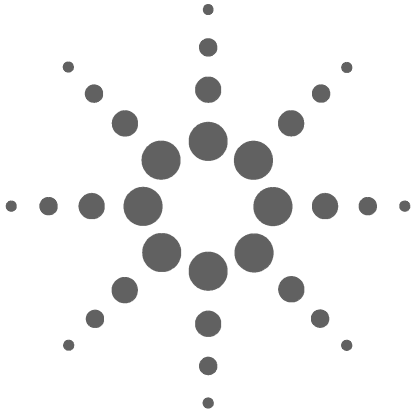

Agilent TS-5410
Compact Functional Test System

Wiring Guide and Hardware Reference

Agilent Technologies

Notices

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Safety Notices

A **CAUTION** notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in damage to the product or loss of important data. Do not proceed beyond a **CAUTION** notice until the indicated conditions are fully understood and met.

A WARNING notice denotes a hazard. It calls attention to an operating procedure, practice, or the like that, if not correctly performed or adhered to, could result in personal injury or death. Do not proceed beyond a WARNING notice until the indicated conditions are fully understood and met.

Safety Summary

The following general safety precautions must be observed during all phases of operation of this system. Failure to comply with these precautions or with specific warnings elsewhere in this manual violates safety standards of design, manufacture, and intended use of the system. Agilent Technologies, Inc. assumes no liability for the customer's failure to comply with these requirements.

General

This product is provided with a protective earth terminal. The protective features of this product may be impaired if it is used in a manner not specified in the operation instructions.

WARNING: DO NOT OPERATE IN AN EXPLOSIVE ATMOSPHERE

Do not operate the system in the presence of flammable gases or flames.

If the equipment in this system is used in a manner not specified by Agilent Technologies, the protection provided by the equipment may be impaired.

Cleaning Instructions

Clean the system cabinet using a soft cloth dampened in water.

WARNING: DO NOT REMOVE ANY SYSTEM COVER

Operating personnel must not remove system covers. Component replacement and internal adjustments must be made only by qualified service personnel. Equipment that appears damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by qualified service personnel.

Environmental Conditions

Unless otherwise noted in the specifications, this system is intended for indoor use in an installation category II, pollution degree 2 environment. It is designed to operate at a maximum relative humidity of 80% and at altitudes of up to 2000 meters. Refer to the specifications tables for the ac mains voltage requirements and ambient operating temperature range.

Before applying power

Verify that all safety precautions are taken. Note the external markings described in “Safety Symbols and Regulatory Markings” on page 4.

Ground the System

To minimize shock hazard, the system chassis must have a hard-wired connection to an electrical protective earth ground. The system must also be connected to the ac power mains through a power cable that includes a protective earth conductor. The power cable ground wire must be connected to an electrical ground (safety ground) at the power outlet. Any interruption of the protective grounding will cause a potential shock hazard that could result in personal injury.

Fuses

Use only fuses with the required rated current, voltage, and specified type (normal blow, time delay). Do not use repaired fuses or short-circuited fuse holders. To do so could cause a shock or fire hazard.

Operator Safety Information

MODULE CONNECTORS AND TEST SIGNAL CABLES CONNECTED TO THEM CANNOT BE OPERATOR ACCESSIBLE: Cables and connectors are considered inaccessible if a tool (e.g., screwdriver, wrench, socket, etc.) or a key (equipment in a locked cabinet) is required to gain access to them. Additionally, the operator cannot have access to a conductive surface connected to any cable conductor (High, Low or Guard).

ASSURE THE EQUIPMENT UNDER TEST HAS ADEQUATE INSULATION BETWEEN THE CABLE CONNECTIONS AND ANY OPERATOR-ACCESSIBLE PARTS (DOORS, COVERS, PANELS, SHIELDS, CASES, CABINETS, ETC.): Verify there are multiple and sufficient protective means (rated for the voltages you are applying) to assure the operator will NOT come into contact with any energized conductor even if one of the protective means fails to work as intended. For example, the inner side of a case, cabinet, door, cover or panel can be covered with an insulating material as well as routing the test cables to the module's front panel connectors through non-conductive, flexible conduit such as that used in electrical power distribution.

Safety Symbols and Regulatory Markings

Symbols and markings on the system, in manuals and on instruments alert you to potential risks, provide information about conditions, and comply with international regulations. Table 1 defines the symbols and markings you may encounter.

Table 1 Safety Symbols and Markings

Safety symbols	
	Warning: risk of electric shock.
	Caution: refer to accompanying documents.
	Alternating current.
	Both direct and alternating current.
	Earth (ground) terminal
	Protective earth (ground) terminal
	Frame or chassis terminal
	Terminal is at earth potential. Used for measurement and control circuits designed to be operated with one terminal at earth potential.
	Switch setting indicator. ○ = Off, | = On.
	Standby (supply); units with this symbol are not completely disconnected from ac mains when this switch is off. To completely disconnect the unit from ac mains, either disconnect the power cord, or have a qualified electrician install an external switch.
Regulatory Markings	
	The CE mark is a registered trademark of the European Community.
	The CSA mark is a registered trademark of the Canadian Standards Association.
 N10149	The C-tick mark is a registered trademark of the Spectrum Management Agency of Australia. This signifies compliance with the Australian EMC Framework regulations under the terms of the Radio Communications Act of 1992.
ISM 1-A	This text indicates that the product is an Industrial Scientific and Medical Group 1 Class A product (CISPR 11, Clause 4).

Service and Support

Any adjustment, maintenance, or repair of this product must be performed by qualified personnel. Contact your customer engineer through your local Agilent Technologies Service Center.

Agilent on the Web

You can find information about technical and professional services, product support, and equipment repair and service on the Web:

http://www.agilent.com

Click the link to **Test & Measurement**. Select your country from the drop-down menus. The Web page that appears next has contact information specific for your country.

Agilent by Phone

If you do not have access to the Internet, call one of the numbers in Table 2.

Table 2 Agilent Call Centers and Regional Headquarters

United States and Canada:	Test and Measurement Call Center (800) 452 4844 (toll-free in US)
Europe:	(41 22) 780 8111
Japan:	Measurement Assistance Center (81) 0426 56 7832
Latin America:	305 269 7548
Asia-Pacific:	(85 22) 599 7777

Contents

Chapter 1
Test System Interface Overview

This chapter contains an overview of the Test System Interface and the system equipment connected to it. Chapter contents are:

Test System Interface Description

The Agilent TS-5400 Test System Interface provides a common connection interface between the test stand and your test fixture/Unit Under Test (UUT). The Test System Interface provides flexibility for specific test requirements and is pre-wired and integrated to test stand equipment,

Test System Interface Connectors

The Test System Interface contains up to four Test Connectors (TC1 - TC4).

TC1 through TC4 Test Connectors

Test Connectors TC1 through TC4 provide the majority of the connections to the UUT. These connectors are 156-pin, ITT Cannon Zero-Insertion-Force connectors.

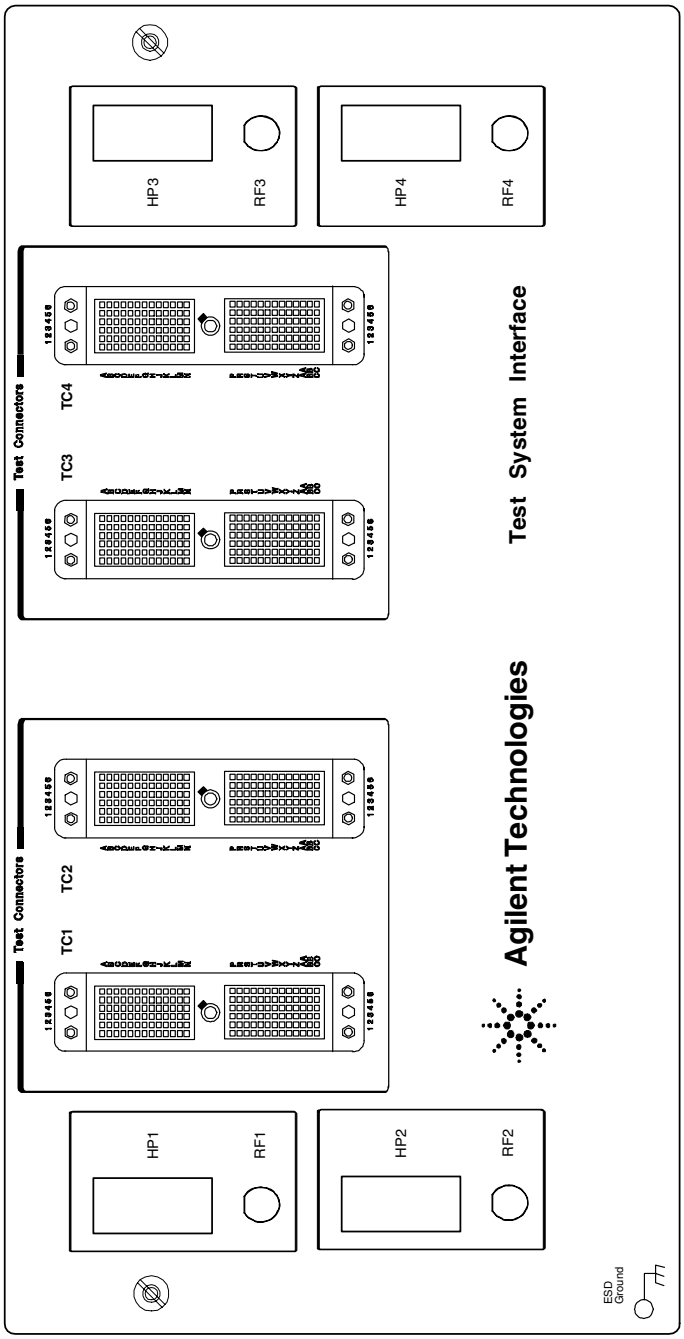


Figure 1-1. Test System Interface

Rack Layout

Figure 1-2 shows the system rack layout. Figure 1-3 is a simplified system block diagram. Block diagram equipment shown in dashed lines is optional equipment that can be added to the system later.

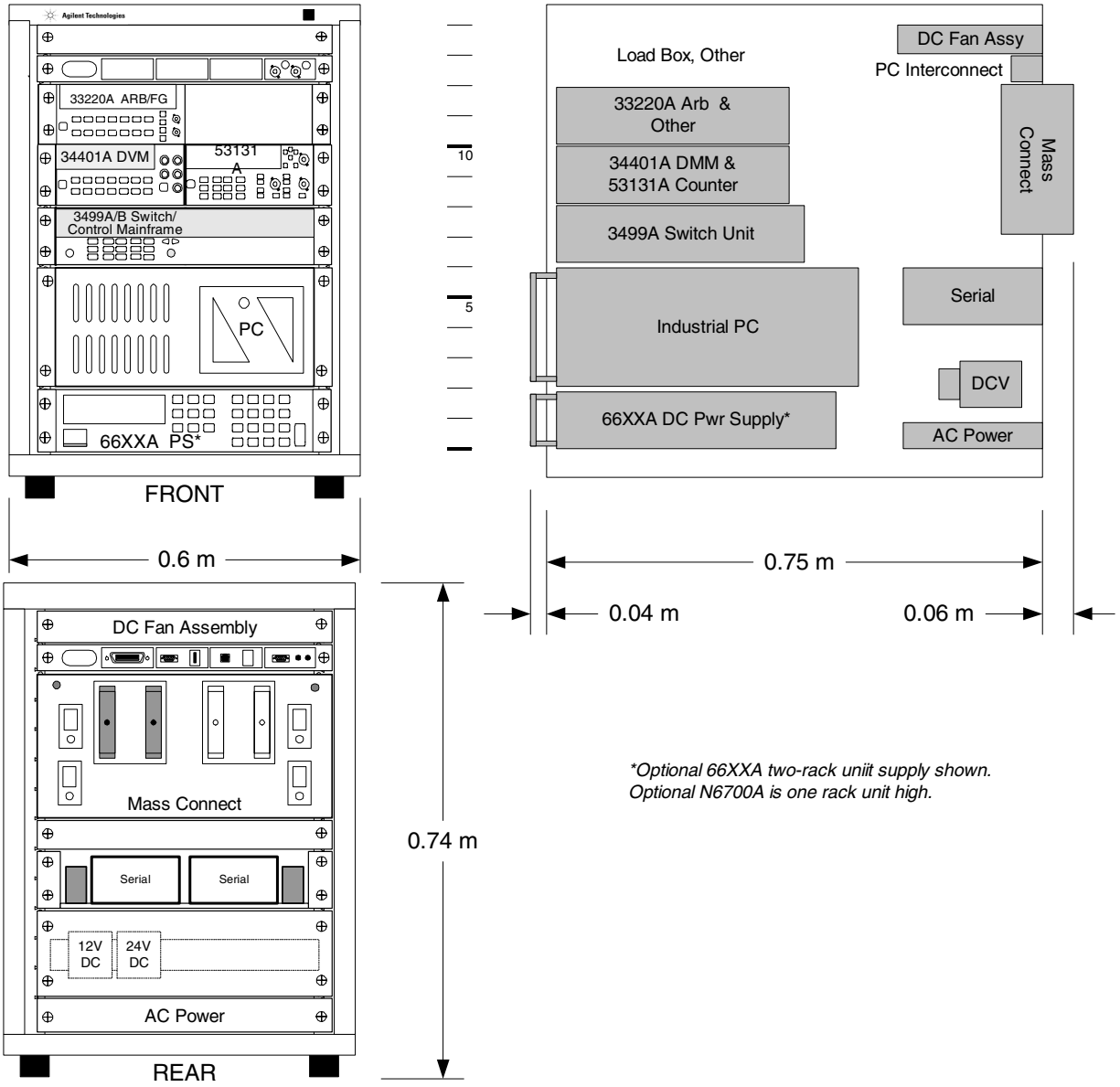


Figure 1-2. Typical System Rack Layout and Equipment Locations

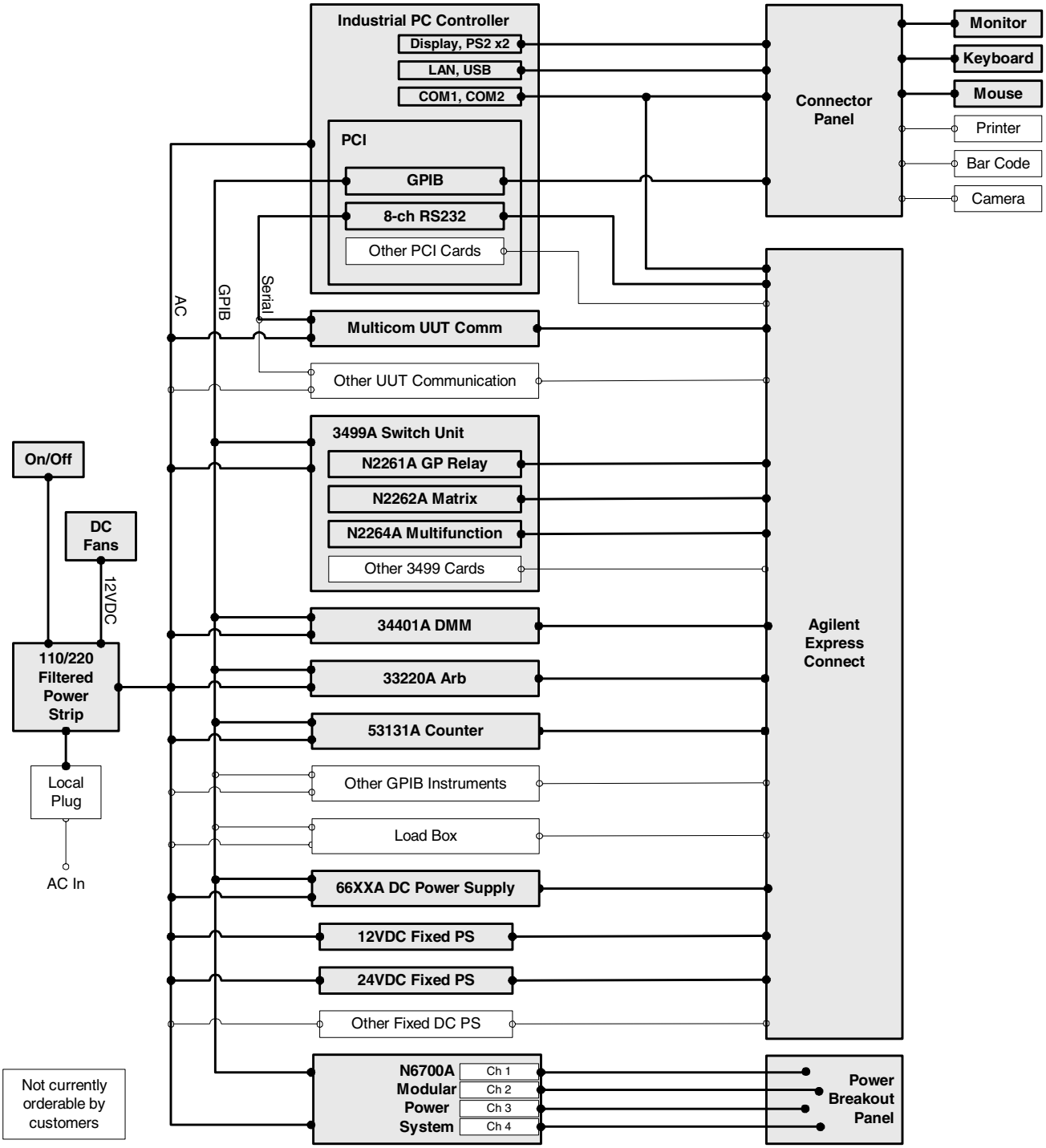


Figure 1-3. Simplified System Block Diagram

Equipment Descriptions

This section describes the equipment and signals shown in the previous system block diagrams.

3499A Switch/Control Mainframe

The Agilent 3499A Switch/Control Mainframe can accommodate up to five plug-in modules. In this system, it holds the N2261A 40-Channel GP Relay Module, the N2262A 4 x 8 2-Wire Matrix Switch Module, and the N2264A Multifunction Module. The following are general descriptions of the modules. Refer to the Agilent 3499A User's Manual for additional details.

N2261A 40-Channel GP Relay Module

The Agilent N2261A GP Relay Module contains 40 independent Single Pole - Single Throw (SPST, Form A) latching relays. The N2261A can be operated in one of two modes: single channel break-before-make (BBM) or multiple channels in a closed position.

A parallel switching feature makes the N2261A well suited for high-speed switching. The 40 2-wire relays on the N2261A can be separated into four groups and up to 10 relays in the same group can be closed simultaneously (parallel switching). The groups are: group 1 (channel N2261 GP 00 through N2261 GP 09), group 2 (N2261 GP 10 through N2261 GP 19), group 3 (N2261 GP 20 through N2261 GP 29) and group 4 (N2261 GP 30 through N2261 GP 39).

N2261A Simplified Schematic

A simplified schematic is shown in Figure 1-4.

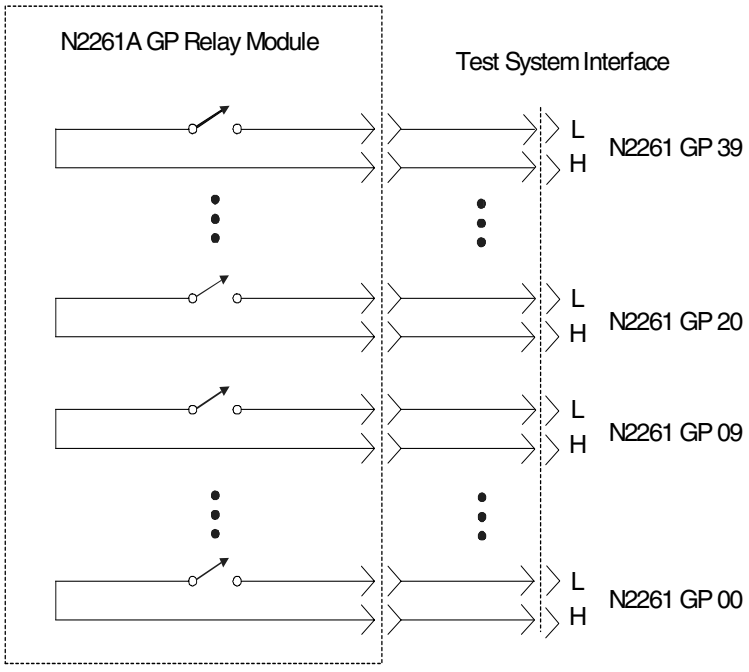


Figure 1-4. N2261 Simplified Schematic

N2262A 4 x 8 2-Wire Matrix Switch Module

The Agilent N2262A 4 x 8 Matrix module contains 32 2-wire crosspoints organized in a 4-row by 8-column configuration. Each crosspoint in the matrix contains a 2-wire latching relay for switching both Hi (H) and Lo (L) terminals of a signal line. Multiple switches can be closed, allowing any combination of row-to-column connections.

The parallel switching feature makes it well suited for high-speed switching applications. Up to 8 2-wire crosspoint relays in the same row can be closed all at once (parallel switching).

The N2262A provides a convenient way to connect multiple test instruments to multiple test points on a device or to multiple devices. Multiple N2262A modules can be connected together, or used in conjunction with other modules to provide a wide variety of switching combinations.

N2262A Simplified Schematic

A simplified schematic is shown below.

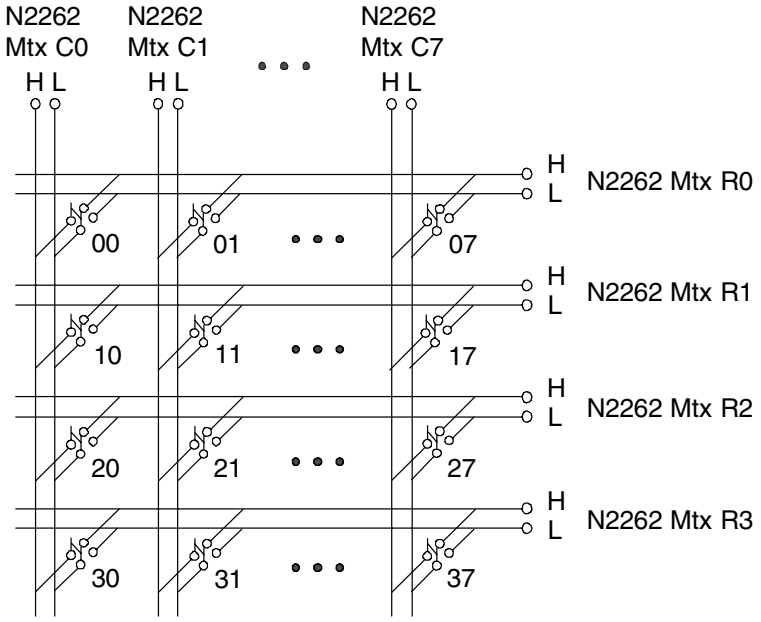


Figure 1-5. N2262A Simplified Schematic

N2264A Multifunction Module

The Agilent N2264A multifunction module combines a GP relay function, a high-current GP relay function, and a digital input/output function on a single module. It consists of:

- 12-Channel GP relays (non-latching Form-A)
- 3-Channel High-current GP relays (non-latching Form-A), capable of switching up to 5 amps.
- 16-bit Digital I/O

The parallel switching feature makes the module well suited for high speed switching applications. Any 10 of the 15 GP relays on the N2264A can be closed all at once (parallel switching).

Five handshaking modes are available for the digital I/O function. Handshaking uses up to three control lines:

- Peripheral Control (N2264 D PCTL)
- I/O direction (N2264 D I/O)
- Peripheral Flag (N2264 D PFLG)

N2264A Simplified Schematic

A simplified schematic is shown in Figure 1-6. There are three independent functions on the N2264A: the 12-channel GP Relay (N2264 GP 00 - N2264 GP 11), the 3-channel High-current GP Relay (N2264 PWR 20 - N2264 PWR 22), and the 16-bit Digital I/O (bits N2264 D30 - N2264 D45).

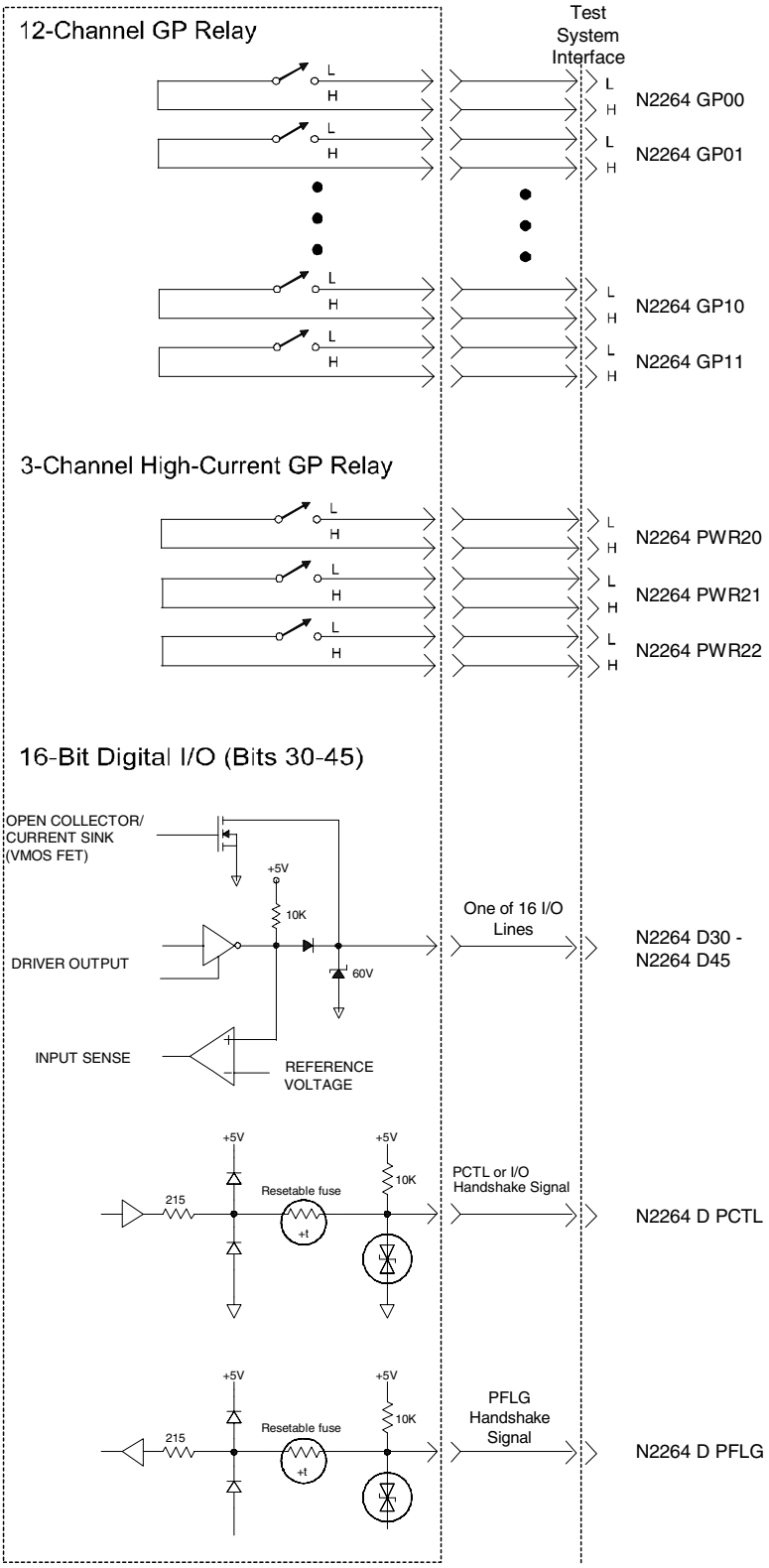


Figure 1-6. N2264A Simplified Schematic

PCI Cards

The following PCI cards are available and reside in the Industrial PC Controller. Refer to the individual PCI card's documentation for more information on each card.

- Advantech PCI-1750 Digital I/O Card,
- Signametrics SM2040 6.5 Digit DMM,
- Rocketport 8-Channel RS-232 Card,
- Automotive Serial Protocol Card,
- Other PCI cards for custom systems.

Agilent 34401 Digital Multimeter

The Agilent 34401 Digital Multimeter (DMM) measures dc voltage, ac-rms voltage, and ohms (including 4-wire ohms). It can also measure temperature by using thermistors.

For additional information, refer to the *Agilent 34401 Digital Multimeter User's Guide*.

Agilent 53131 Universal Counter

The Agilent 53131A Universal Counter can measure Frequency, Period, Pulse Width, Duty Cycle, Rise/Fall Time, Time Interval, Frequency Ratio, Totalize, Phase, and Peak Voltage.

The 53131A is capable of measuring frequencies to 225 MHz on Channels 1 and 2. Frequency and time interval resolutions are 10 digits in one second and 500 picoseconds, respectively. The 53131A provides GPIB measuring speed of up to 200 measurements per second.

For additional information, refer to the *Agilent 53131 Universal Counter Programming Guide*.

Agilent 33220 Function/Arbitrary Waveform Generator

The Agilent 33220A function / arbitrary waveform generator uses direct digital synthesis (DDS) techniques to create stable, low-distortion output signals. The 33220A provides easy access to standard sine, square, ramp, triangle, and pulse waveforms plus you can create custom waveforms using the 50 MSa/s, 14 bit, 64 K-point arbitrary waveform function.

For additional information, refer to the *Agilent 33220 Function/Arbitrary Waveform Generator User's Guide*.

Power Supplies

Available power supplies are the Agilent N6700 Low-Profile Modular Power System (MPS), the Agilent 6643A power supply, a 12VDC, 2A utility power supply, and a 24VDC, 1.5A utility power supply. The N6700 or 6643A supply is used to power the DUT and the utility power supplies are used for automation control such as fans, relays, lamps and solenoids.

Agilent N6700 MPS

The Agilent N6700 MPS is a one-rack unit high, multiple-output programmable DC power supply system. The MPS consists of a mainframe and up to four power modules. The MPS gives test system designers the flexibility to create a 1- to 4-channel DC power system optimized to meet specific test requirements.

The MPS uses a switching power supply design. It has side air vents (no top or bottom air vents) so other instruments can be mounted directly above or below it. Each power module is protected against over-voltage, over- current, and over-temperature.

Channel Names

The Channel Names of the N6700 power supply modules can be configured automatically (Auto Determine Channel Names) or can be overridden with your own custom Channel Names. Either of these naming options can be selected when configuring the N6700A using the System Configuration Editor (SCE). The SCE can be opened from the TestExec SL Tools Menu (click **Tools | System Configuration Editor**) or from this icon in the desktop:

The SCE online help contains more information on how to configure the N6700A.

Chapter 2
Making Connections

This chapter describes how to make connections to the Test System Interface connectors. Chapter contents are:

Connector Keying

The TC1-TC4 connectors are keyed to prevent the possibility of connecting a TC2 mating connector to TC1, for example. Figure 2-1 shows the keying.

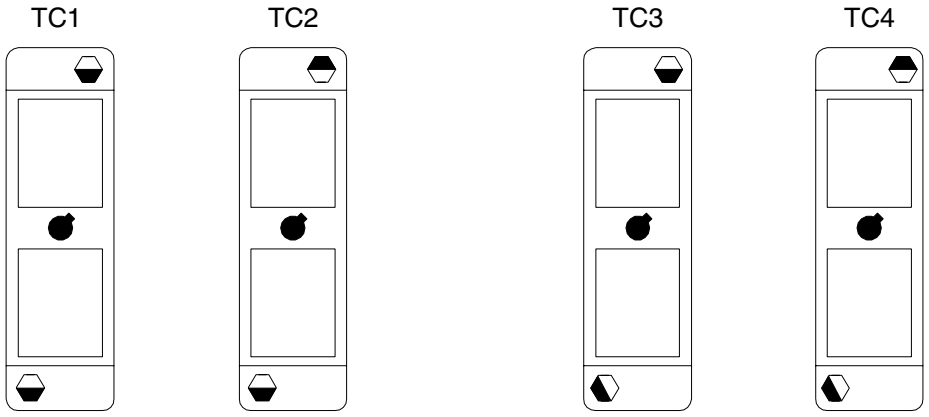


Figure 2-1. TC1-TC4 Connector Keying

Connectors and Tools

The specialized connectors and tools referenced in this chapter are available from Agilent as these options/part numbers:

- Agilent E6244A Option 001--Contains two 156-pin, ITT Cannon Zero-Insertion-Force mating connectors.
- Agilent E6244A Option 013--Crimp tool for Cannon connector contacts.
- Agilent E6244A Option 014--Extraction tool for Cannon connector contacts.
- Agilent E6244A Option 020--High Power Mating Connector Kit.
- Agilent E6244A Option 024--Extraction tool for Hi Power Connectors.

Standard connectors such as BNC connectors should be acquired from your local electronic parts supplier.

Connecting Wiring to Test Connectors TC1- TC4

The figures on this and the following pages show how to connect wiring and assemble the mating connectors for Test Connectors TC1 through TC4. Should you make a mistake, Figure 2-7 on page 25 shows how to remove a contact from a connector. Each Test Connector contact is rated at 3A (continuous).

Caution **Use only the Agilent supplied connector kit with its non-conductive handle screw. Failure to use the Agilent supplied kit may void the warranty.**

Crimping Wires to Contacts

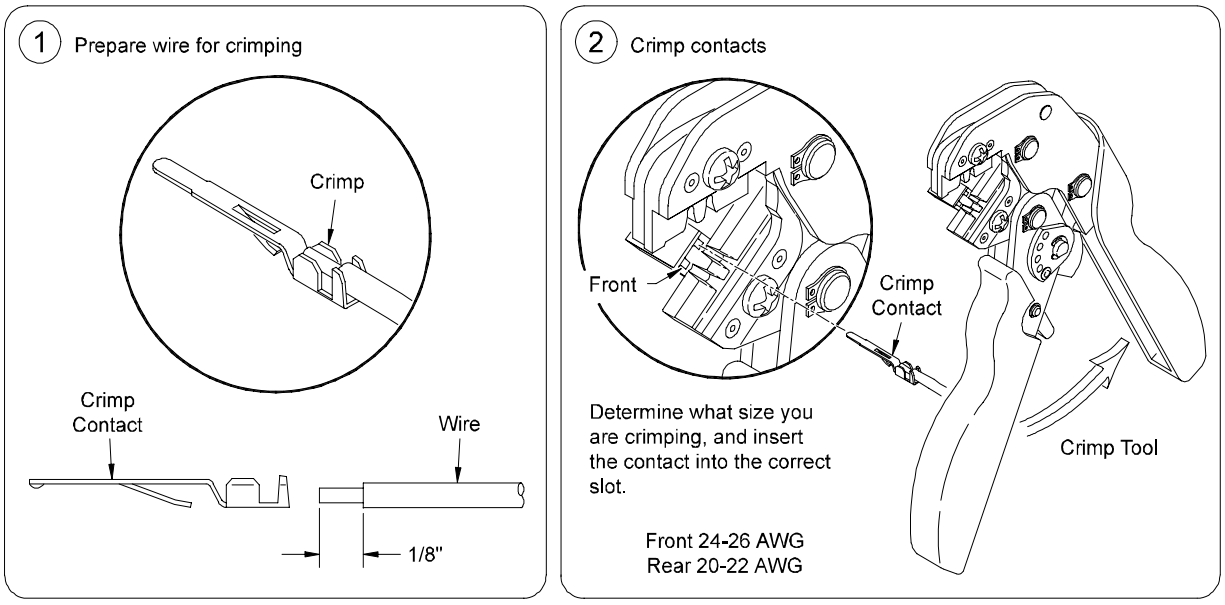


Figure 2-2. Crimping Wires to Contacts

Inserting Contacts and Assembling the Connector

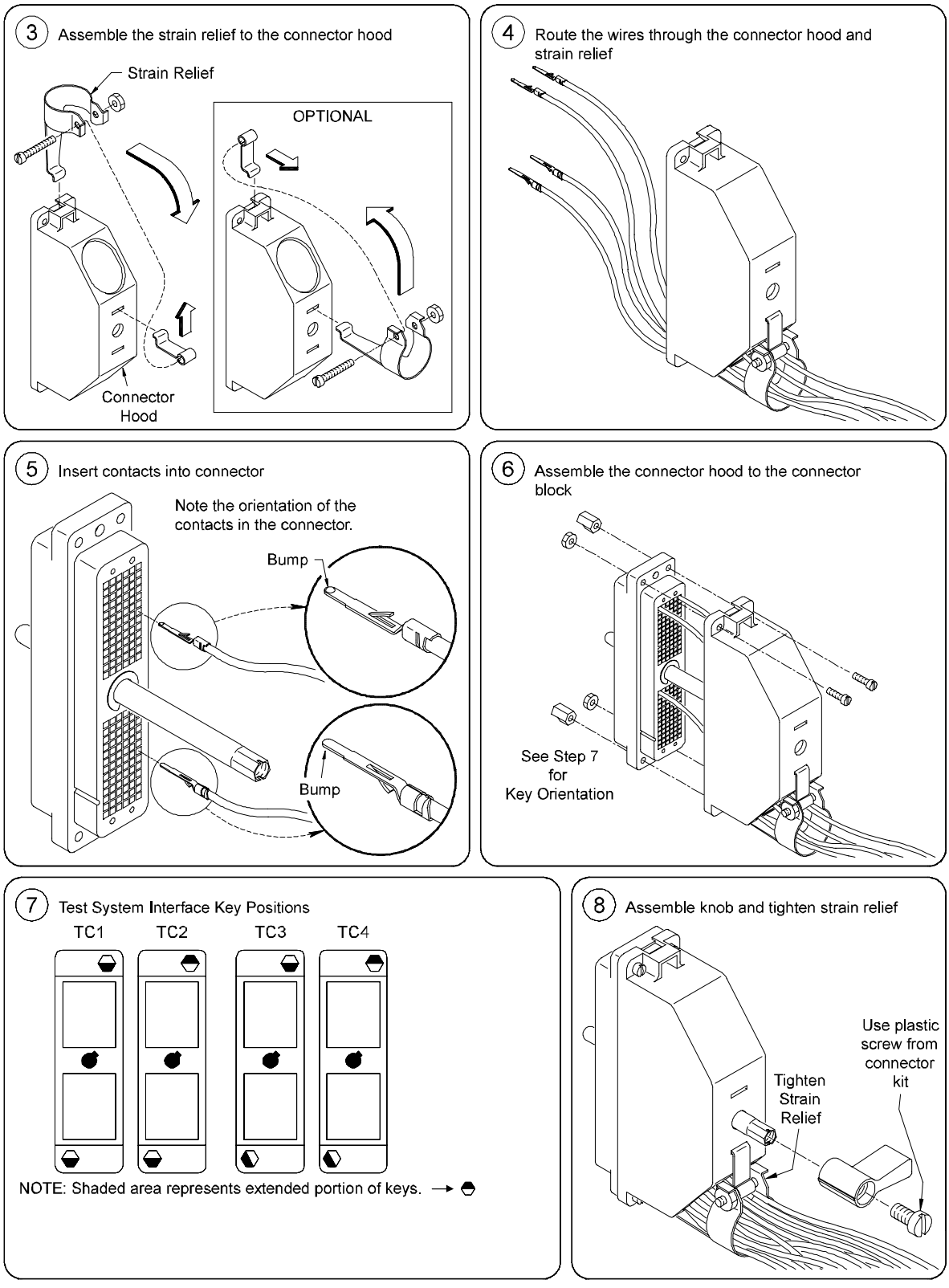


Figure 2-3. Assembling TC1 - TC4 Mating Connectors

Connecting to the Test System Interface

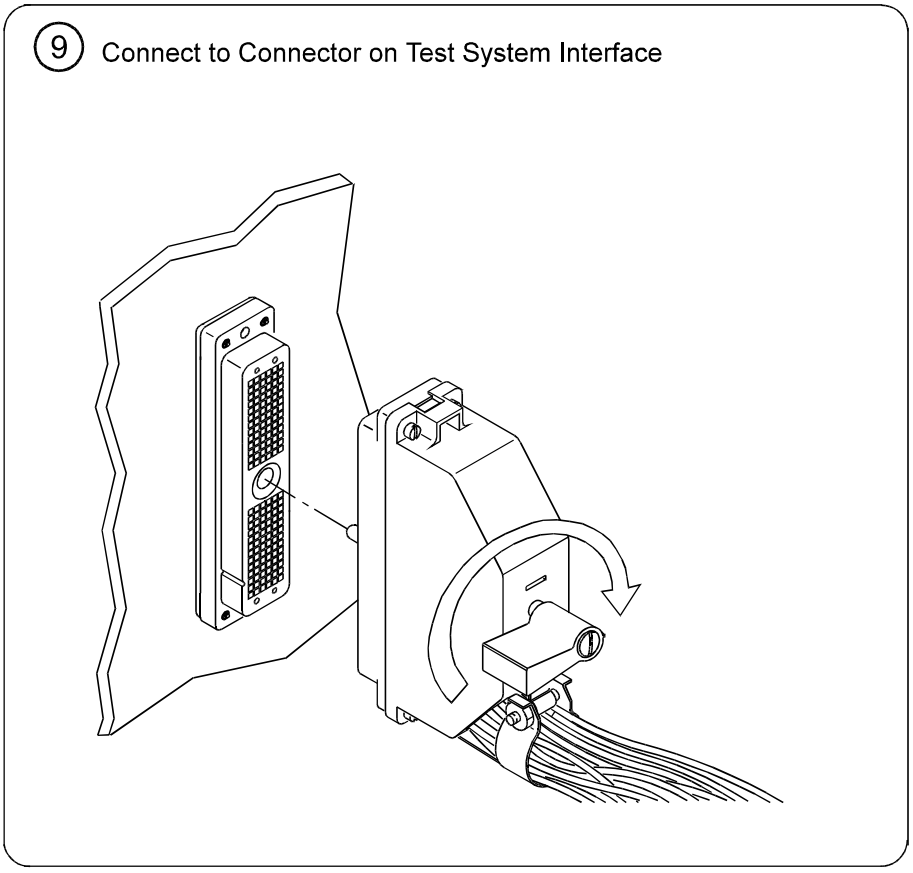


Figure 2-4. Connecting to the Test System Interface

ESD Protection Measures

In geographic areas where ESD (electro-static discharge) potential may be high (low humidity, etc.), you may need to add a grounding strap to the center shafts of the Test Connector mating connector assembly. Figure 2-5 shows how to add the grounding strap. Positions J1 through J6 are safety ground connections on the Test Connector.

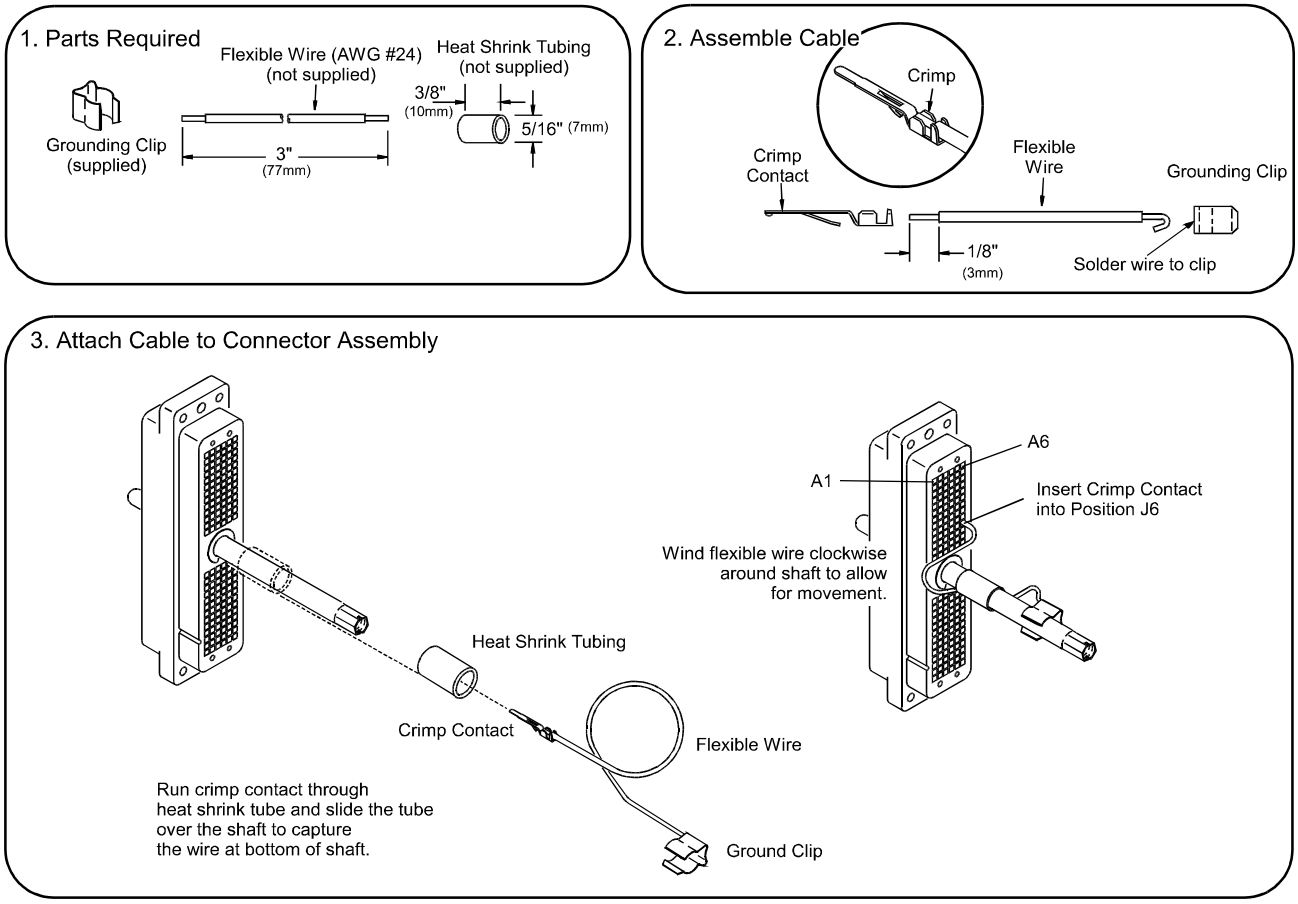


Figure 2-5. Adding a Grounding Strap to reduce ESD

Operator Wrist Strap ESD Connector

A connector is provided on the front of the Test System Interface for an operator ESD wrist strap connection. The connector is wired to Safety (Earth) ground.

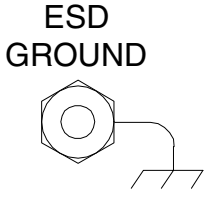


Figure 2-6. Wrist Strap ESD Connector

Removing a Contact

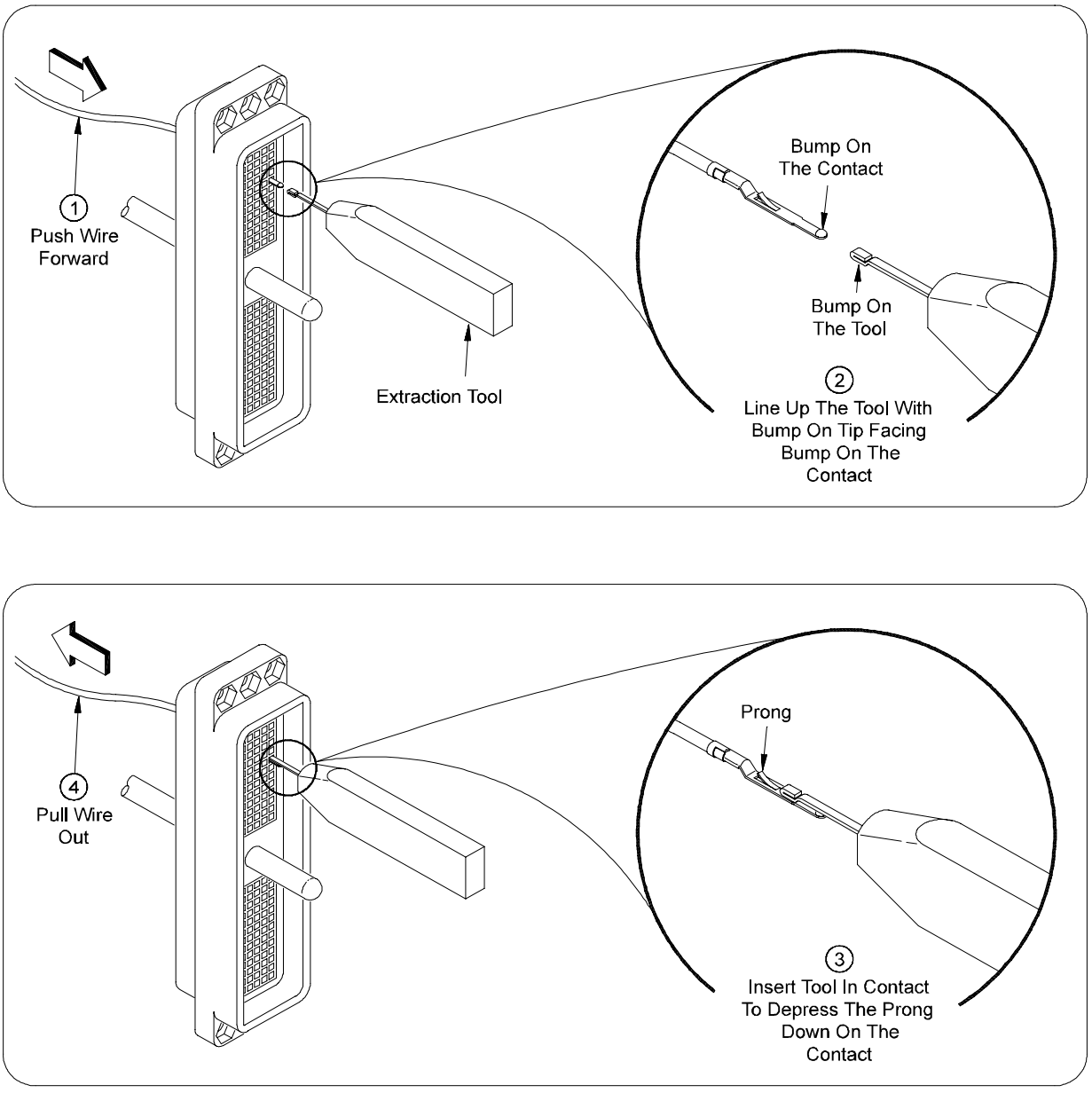


Figure 2-7. Removing a Test Connector Contact

TC1-TC4 Signal Definitions

Table 2-1 lists the signals available on Test Connector TC1 - TC4. Signal names are listed here alphabetically and are referenced to the TC1 - TC4 pinout diagrams on the following pages.

Note Each connector in the TC1 - TC4 Pinout Diagrams has text in a small font and a large font.The small font text is the generic signal name and corresponds to the schematics in Chapter 4. The large font text is the actual signal name and corresponds to the actual equipment signals.

Table 2-1. TC1 - TC4 Signal Definitions

+12 VDC, +24 VDC	+12V and +24V Power Supplies--referenced to System Ground. TC2 Connector.
664X PS -, 664X PS +, 664X PS S-, 664X PS S+	Agilent 6643 Power Supply minus, plus, sense minus, sense plus, respectively. TC1 Connector.
COM2 Gnd, COM2 Rx, COM2 Tx	Serial connections from the Industrial PC Controller's COM2 port. TC1 Connector.
DMM I -, DMM I +, DMM Trig -, DMM Trig +, DMM V Ohm -, DMM V Ohm +	DMM PCI Card connections. TC1 Connector.
N2261 GP 00 H/L - N2261 GP 39 H/L	N2261A 40-Channel GP Relay Module channel connections. TC2 Connector.
N2262 Mtx C0 H/L - N2262 Mtx C7 H/L N2262 Mtx R0 H/L - N2262 Mtx R3 H/L	N2262A 4 x 8 2-Wire Matrix Switch Module column (C0-C7) and row (R0-R3) connections. TC1 Connector.
N2264 D I/O, N2264 D PCTL, N2264 D PFLG N2264 D30 - N2264 D45 N2264 GP00H/L - N2264 GP11H/L N2264 PWR20H/L (3-each), - N2264 PWR22H/L (3 each)	N2264A Multifunction Module connections. Note: High power connections have three pins each to handle the extra current. Use all three pins when making connections. TC1 and TC2 Connector.
PCI DIO Com1, PCI DIO IGND, PCI DIO In 0 - PCI DIO In15/Ctr PCI DIO Out 0 - PCI DIO Out 15	Digital I/O PCI Card connections. TC1 and TC2 Connector.
RS232 ch3 - ch10	RS232 PCI Card connections. TC3 Connector.
Safety Ground	This is a high current/high noise ground. It connects the instrument rack to safety or earth ground. There are six Safety Ground pins per Test Connector (TC1-TC4). Be sure to connect ALL Safety Ground lines to your UUT to ensure proper current sharing. Refer to "Connect BNC cabling to the RF equipment. Re-apply power to the system." on page 36 for more information.
System Ground	Earth referenced ground. TC1 and TC2 Connector.

TC1-TC4 Pinouts

Figure 2-8 shows the pinouts for TC1, Figure 2-9 shows the pinouts for TC2, Figure 2-10 shows the pinouts for TC3 and Figure 2-11 shows the pinouts for TC4.

Note Each connector in the TC1 - TC4 Pinout Diagrams has text in a small font and a large font.The small font text is the generic signal name and corresponds to the schematics in Chapter 4. The large font text is the actual signal name and corresponds to the actual equipment signals.

	1	2	3	4	5	6	
A	Load Card 1.01 N2264 PWR20H	Load Card 1.02 N2264 PWR20H	Load Card 1.03 N2264 PWR20H	Load Card 1.04 N2264 GP00H	Load Card 1.05 N2264 GP01H	Load Card 1.06 N2264 GP02H	A
B	Load Card 1.07 N2264 PWR20L	Load Card 1.08 N2264 PWR20L	Load Card 1.09 N2264 PWR20L	Load Card 1.10 N2264 GP00L	Load Card 1.11 N2264 GP01L	Load Card 1.12 N2264 GP02L	B
C	Load Card 1.13 N2264 PWR21H	Load Card 1.14 N2264 PWR21H	Load Card 1.15 N2264 PWR21H	Load Card 1.16 N2264 GP03H	Load Card 1.17 N2264 GP04H	Load Card 1.18 N2264 GP05H	C
D	Load Card 1.19 N2264 PWR21L	Load Card 1.20 N2264 PWR21L	Load Card 1.21 N2264 PWR21L	Load Card 1.22 N2264 GP03L	Load Card 1.23 N2264 GP04L	Load Card 1.24 N2264 GP05L	D
E	Load Card 1.25 N2264 PWR22H	Load Card 1.26 N2264 PWR22H	Load Card 1.27 N2264 PWR22H	Load Card 1.28 N2264 GP06H	Load Card 1.29 N2264 GP07H	Load Card 1.30 N2264 GP08H	E
F	Load Card 1.31 N2264 PWR22L	Load Card 1.32 N2264 PWR22L	Load Card 1.33 N2264 PWR22L	Load Card 1.34 N2264 GP06L	Load Card 1.35 N2264 GP07L	Load Card 1.36 N2264 GP08L	F
G	Load Card 1.37 664X PS +	Load Card 1.38 664X PS +	Load Card 1.39 664X PS +	Load Card 1.40 N2264 GP09H	Load Card 1.41 N2264 GP10H	Load Card 1.42 N2264 GP11H	G
H	Load Card 1.43 664X PS -	Load Card 1.44 664X PS -	Load Card 1.45 664X PS -	Load Card 1.46 N2264 GP09L	Load Card 1.47 N2264 GP10L	Load Card 1.48 N2264 GP11L	H
J	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	J
K	Digital In 0 N2264 D30	Digital In 1 N2264 D31	System Ground System Ground	Power Bus Sense 1 664X PS S-	Ext Trigger 1 DMM Trig +	System Ground System Ground	K
L	Digital In 2 N2264 D32	Digital In 3 N2264 D33	RS-232 Common COM2 Gnd	Power Bus Sense 2 664X PS S+	Ext Trigger 2 not used	Safety Interlock not used	L
M	Digital In 4 N2264 D34	Digital In 5 N2264 D35	RS-232 Rx COM2 Rx	Power Bus Sense 3 not used	Ext Trigger 3 not used	ISense+ not used	M
N	Digital In 6 N2264 D36	Digital In 7 N2264 D37	RS-232 Tx COM2 Tx	Power Bus Sense 4 not used	Ext Trigger 4 not used	Isense- not used	N
P	CCard 1 Pin 1 COM3 TxD	CCard 1 Pin 2 COM3 RxD	CCard 1 Pin 3 COM3 CD	CCard 1 Pin 4 COM3 DTR	Aux Inst #1 34401 DMM I	Aux Inst #2 not used	P
R	CCard 1 Pin 5 COM4 TxD	CCard 1 Pin 6 COM4 RxD	CCard 1 Pin 7 COM4 Gnd	CCard 1 Pin 8 COM3 DSR	System Ground System Ground	System Ground System Ground	R
S	CCard1 Common1 COM3 Gnd	CCard1 Common1 COM3 Gnd	CCard1 Common1 COM3 Gnd	CCard1 Common1 COM3 Gnd	Spare Inst #1 DMM V+	Spare Inst #2 DMM V-	S
T	CCard 1 Pin 9 COM5 TxD	CCard 1 Pin 10 COM5 RxD	CCard 1 Pin 11 COM5 Gnd	CCard 1 Pin 12 COM3 RTS	Spare Inst #3 DMM 4W Sense+	Spare Inst #4 DMM 4W Sense-	T
U	CCard 1 Pin 13 COM6 TxD	CCard 1 Pin 14 COM6 RxD	CCard 1 Pin 15 COM6 Gnd	CCard 1 Pin 16 COM3 CTS	ARB 2 Hi 33220A Arb Hi	ARB 2 Lo 33220A Arb Lo	U
V	UUT Common 1 not used	UUT Common 1 not used	UUT Common 1 not used	UUT Common 1 not used	PMatrix 1 Row 1 N2262 Mtx R0 H	PMatrix 1 Row 2 N2262 Mtx R0 L	V
W	PMatrix 1 Row 3 N2262 Mtx R1 H	PMatrix 1 Row 4 N2262 Mtx R1 L	PMatrix 1 Row 5 N2262 Mtx R2 H	PMatrix 1 Row 6 N2262 Mtx R2 L	PMatrix 1 Row 7 N2262 Mtx R3 H	PMatrix 1 Row 8 N2262 Mtx R3 L	W
X	PMatrix 1 Row 9 N2262 Mtx C0 H	PMatrix 1 Row 10 N2262 Mtx C0 L	PMatrix 1 Row 11 N2262 Mtx C1 H	PMatrix 1 Row 12 N2262 Mtx C1 L	PMatrix 1 Row 13 N2262 Mtx C2 H	PMatrix 1 Row 14 N2262 Mtx C2 L	X
Y	UUT Common 1 not used	UUT Common 1 not used	UUT Common 1 not used	UUT Common 1 not used	UUT Common 1 not used	UUT Common 1 not used	Y
Z	PMatrix 1 Row 15 N2262 Mtx C3 H	PMatrix 1 Row 16 N2262 Mtx C3 L	PMatrix 1 Row 17 N2262 Mtx C4 H	PMatrix 1 Row 18 N2262 Mtx C4 L	PMatrix 1 Row 19 N2262 Mtx C5 H	PMatrix 1 Row 20 N2262 Mtx C5 L	Z
AA	PMatrix 1 Row 21 N2262 Mtx C6 H	PMatrix 1 Row 22 N2262 Mtx C6 L	PMatrix 1 Row 23 N2262 Mtx C7 H	PMatrix 1 Row 24 N2262 Mtx C7 L	PMatrix 1 Row 25 not used	PMatrix 1 Row 26 not used	AA
BB	UUT Common 1 not used	UUT Common 1 not used	UUT Common 1 not used	UUT Common 1 not used	UUT Common 1 not used	UUT Common 1 not used	BB
CC	PMatrix 1 Row 27 not used	PMatrix 1 Row 28 not used	PMatrix 1 Row 29 not used	PMatrix 1 Row 30 not used	PMatrix 1 Row 31 not used	PMatrix 1 Row 32 not used	CC
	1	2	3	4	5	6	

Figure 2-8. TC1 Pinouts

	1	2	3	4	5	6	
A	Load Card 2.01 N2261 GP 00 H	Load Card 2.02 N2261 GP 01 H	Load Card 2.03 N2261 GP 02 H	Load Card 2.04 N2261 GP 12 H	Load Card 2.05 N2261 GP 13 H	Load Card 2.06 N2261 GP 14 H	A
B	Load Card 2.07 N2261 GP 00 L	Load Card 2.08 N2261 GP 01 L	Load Card 2.09 N2261 GP 02 L	Load Card 2.10 N2261 GP 12 L	Load Card 2.11 N2261 GP 13 L	Load Card 2.12 N2261 GP 14 L	B
C	Load Card 2.13 N2261 GP 03 H	Load Card 2.14 N2261 GP 04 H	Load Card 2.15 N2261 GP 05 H	Load Card 2.16 N2261 GP 15 H	Load Card 2.17 N2261 GP 16 H	Load Card 2.18 N2261 GP 17 H	C
D	Load Card 2.19 N2261 GP 03 L	Load Card 2.20 N2261 GP 04 L	Load Card 2.21 N2261 GP 05 L	Load Card 2.22 N2261 GP 15 L	Load Card 2.23 N2261 GP 16 L	Load Card 2.24 N2261 GP 17 L	D
E	Load Card 2.25 N2261 GP 06 H	Load Card 2.26 N2261 GP 07 H	Load Card 2.27 N2261 GP 08 H	Load Card 2.28 N2261 GP 18 H	Load Card 2.29 N2261 GP 19 H	Load Card 2.30 N2261 GP 20 H	E
F	Load Card 2.31 N2261 GP 06 L	Load Card 2.32 N2261 GP 07 L	Load Card 2.33 N2261 GP 08 L	Load Card 2.34 N2261 GP 18 L	Load Card 2.35 N2261 GP 19 L	Load Card 2.36 N2261 GP 20 L	F
G	Load Card 2.37 N2261 GP 09 H	Load Card 2.38 N2261 GP 10 H	Load Card 2.39 N2261 GP 11 H	Load Card 2.40 N2261 GP 21 H	Load Card 2.41 N2261 GP 22 H	Load Card 2.42 N2261 GP 23 H	G
H	Load Card 2.43 N2261 GP 09 L	Load Card 2.44 N2261 GP 10 L	Load Card 2.45 N2261 GP 11 L	Load Card 2.46 N2261 GP 21 L	Load Card 2.47 N2261 GP 22 L	Load Card 2.48 N2261 GP 23 L	H
J	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	J
K	Open Drain Out 0 N2264 D38	Open Drain Out 1 N2264 D39	System Ground System Ground	System Ground System Ground	System Ground System Ground	System Ground System Ground	K
L	Open Drain Out 2 N2264 D40	Open Drain Out 3 N2264 D41	System Ground System Ground	+12 Vdc Supply +12 VDC	System Ground System Ground	System Ground System Ground	L
M	Open Drain Out 4 N2264 D42	Open Drain Out 5 N2264 D43	System Ground System Ground	-12 Vdc Supply not used	System Ground System Ground	ISense+ not used	M
N	Open Drain Out 6 N2264 D44	Open Drain Out 7 N2264 D45	Ext Clock not used	Spare Supply +24 VDC	System Ground System Ground	Isense- not used	N
P	CCard 1 Pin 17 COM7 TxD	CCard 1 Pin 18 COM7 RxD	CCard 1 Pin 19 COM7 CD	CCard 1 Pin 20 COM7 DTR	Aux Inst #3 not used	Aux Inst #4 not used	P
R	CCard 1 Pin 21 COM8 TxD	CCard 1 Pin 22 COM8 RxD	CCard 1 Pin 23 COM8 Gnd	CCard 1 Pin 24 COM7 DSR	System Ground System Ground	System Ground System Ground	R
S	CCard1 Common2 COM7 Gnd	CCard1 Common2 COM7 Gnd	CCard1 Common2 COM7 Gnd	CCard1 Common2 COM7 Gnd	Spare Inst #5 not used	Spare Inst #6 not used	S
T	CCard 1 Pin 25 COM9 TxD	CCard 1 Pin 26 COM9 RxD	CCard 1 Pin 27 COM9 Gnd	CCard 1 Pin 28 COM7 RTS	Spare Inst #7 53131A Cntr Ch1	Spare Inst #8 ·N2264 D PCTL	T
U	CCard 1 Pin 29 COM10 TxD	CCard 1 Pin 30 COM10 RxD	CCard 1 Pin 31 COM10 Gnd	CCard 1 Pin 32 COM7 CTS	Spare Inst #9 ·N2264 D PFLG	Spare Inst #10 · N2264 D I/#O	U
V	UUT Common 2 not used	UUT Common 2 not used	UUT Common 2 not used	UUT Common 2 not used	Pmatrix 2 Row 1 N2261 GP 24 H	Pmatrix 2 Row 2 N2261 GP 24 L	V
W	Pmatrix 2 Row 3 N2261 GP 25 H	Pmatrix 2 Row 4 N2261 GP 25 L	Pmatrix 2 Row 5 N2261 GP 26 H	Pmatrix 2 Row 6 N2261 GP 26 L	Pmatrix 2 Row 7 N2261 GP 27 H	Pmatrix 2 Row 8 N2261 GP 27 L	W
X	Pmatrix 2 Row 9 N2261 GP 28 H	Pmatrix 2 Row 10 N2261 GP 28 L	Pmatrix 2 Row 11 N2261 GP 29 H	Pmatrix 2 Row 12 N2261 GP 29 L	Pmatrix 2 Row 13 N2261 GP 30 H	Pmatrix 2 Row 14 N2261 GP 30 L	X
Y	UUT Common 2 not used	UUT Common 2 not used	UUT Common 2 not used	UUT Common 2 not used	UUT Common 2 not used	UUT Common 2 not used	Y
Z	Pmatrix 2 Row 15 N2261 GP 31 H	Pmatrix 2 Row 16 N2261 GP 31 L	Pmatrix 2 Row 17 N2261 GP 32 H	Pmatrix 2 Row 18 N2261 GP 32 L	Pmatrix 2 Row 19 N2261 GP 33 H	Pmatrix 2 Row 20 N2261 GP 33 L	Z
AA	Pmatrix 2 Row 21 N2261 GP 34 H	Pmatrix 2 Row 22 N2261 GP 34 L	Pmatrix 2 Row 23 N2261 GP 35 H	Pmatrix 2 Row 24 N2261 GP 35 L	Pmatrix 2 Row 25 N2261 GP 36 H	Pmatrix 2 Row 26 N2261 GP 36 L	AA
BB	UUT Common 2 not used	UUT Common 2 not used	UUT Common 2 not used	UUT Common 2 not used	UUT Common 2 not used	UUT Common 2 not used	BB
CC	Pmatrix 2 Row 27 N2261 GP 37 H	Pmatrix 2 Row 28 N2261 GP 37 L	Pmatrix 2 Row 29 N2261 GP 38 H	Pmatrix 2 Row 30 N2261 GP 38 L	Pmatrix 2 Row 31 N2261 GP 39 H	Pmatrix 2 Row 32 N2261 GP 39 L	CC
	1	2	3	4	5	6	

Figure 2-9. TC2 Pinouts

	1	2	3	4	5	6	
A	Load Card 3.01 not used	Load Card 3.02 not used	Load Card 3.03 not used	Load Card 3.04 not used	Load Card 3.05 not used	Load Card 3.06 not used	A
B	Load Card 3.07 not used	Load Card 3.08 not used	Load Card 3.09 not used	Load Card 3.10 not used	Load Card 3.11 not used	Load Card 3.12 not used	B
C	Load Card 3.13 not used	Load Card 3.14 not used	Load Card 3.15 not used	Load Card 3.16 not used	Load Card 3.17 not used	Load Card 3.18 not used	C
D	Load Card 3.19 not used	Load Card 3.20 not used	Load Card 3.21 not used	Load Card 3.22 not used	Load Card 3.23 not used	Load Card 3.24 not used	D
E	Load Card 3.25 not used	Load Card 3.26 not used	Load Card 3.27 not used	Load Card 3.28 not used	Load Card 3.29 not used	Load Card 3.30 not used	E
F	Load Card 3.31 not used	Load Card 3.32 not used	Load Card 3.33 not used	Load Card 3.34 not used	Load Card 3.35 not used	Load Card 3.36 not used	F
G	Load Card 3.37 not used	Load Card 3.38 not used	Load Card 3.39 not used	Load Card 3.40 not used	Load Card 3.41 not used	Load Card 3.42 not used	G
H	Load Card 3.43 not used	Load Card 3.44 not used	Load Card 3.45 not used	Load Card 3.46 not used	Load Card 3.47 not used	Load Card 3.48 not used	H
J	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	J
K	Digital In 0 (2) not used	Digital In 1 (2) not used	System Ground not used	Power Bus Sense 1 (2) not used	Ext Trigger 1 (2) not usedt	System Ground not used	K
L	Digital In 2 (2) not used	Digital In 3 (2) not used	RS-232 Common (2) not used	Power Bus Sense 2 (2) not used	Ext Trigger 2 (2) not used	Safety Interlock (2) not used	L
M	Digital In 4 (2) not used	Digital In 5 (2) not used	RS-232 Rx (2) not used	Power Bus Sense 3 (2) not used	Ext Trigger 3 (2) not used	Isense+ (2) not used	M
N	Digital In 6 (2) not used	Digital In 7 (2) not used	RS-232 Tx (2) not used	Power Bus Sense 4 (2) not used	Ext Trigger 4 (2) not used	Isense- (2) not used	N
P	CCard 2 Pin 1 PCI DIO In 0	CCard 2 Pin 2 PCI DIO In 1	CCard 2 Pin 3 PCI DIO In 2	CCard 2 Pin 4 PCI DIO In 3	Aux Inst #1 (2) not used	Aux Inst #2 (2) not used	P
R	CCard 2 Pin 5 PCI DIO In 4	CCard 2 Pin 6 PCI DIO In 5	CCard 2 Pin 7 PCI DIO In 6	CCard 2 Pin 8 PCI DIO In 7	System Ground not used	System Ground not used	R
S	CCard2 Common1 PCI DIO IGND	CCard2 Common1 PCI DIO IGND	CCard2 Common1 PCI DIO IGND	CCard2 Common1 PCI DIO IGND	Spare Inst #1 (2) not used	Spare Inst #2 (2) not used	S
T	CCard 2 Pin 9 PCI DIO In 8	CCard 2 Pin 10 PCI DIO In 9	CCard 2 Pin 11 PCI DIO In 10	CCard 2 Pin 12 PCI DIO In 11	Spare Inst #3 (2) not used	Spare Inst #4 (2) not used	T
U	CCard 2 Pin 13 PCI DIO In 12	CCard 2 Pin 14 PCI DIO In 13	CCard 2 Pin 15 PCI DIO In 14	CCard 2 Pin 16 PCI DIO In15/Ctr	ARB 2 Hi (2) not used	ARB 2 Lo (2) not used	U
V	UUT Common 1 (2) not used	UUT Common 1 (2) not used	UUT Common 1 (2) not used	UUT Common 1 (2) not used	PMatrix 3 Row 1 not used	PMatrix 3 Row 2 not used	V
W	PMatrix 3 Row 3 not used	PMatrix 3 Row 4 not used	PMatrix 3 Row 5 not used	PMatrix 3 Row 6 not used	PMatrix 3 Row 7 not used	PMatrix 3 Row 8 not used	W
X	PMatrix 3 Row 9 not used	PMatrix 3 Row 10 not used	PMatrix 3 Row 11 not used	PMatrix 3 Row 12 not used	PMatrix 3 Row 13 not used	PMatrix 3 Row 14 not used	X
Y	UUT Common 1 (2) not used	UUT Common 1 (2) not used	UUT Common 1 (2) not used	UUT Common 1 (2) not used	UUT Common 1 (2) not used	UUT Common 1 (2) not used	Y
Z	PMatrix 3 Row 15 not used	PMatrix 3 Row 16 not used	PMatrix 3 Row 17 not used	PMatrix 3 Row 18 not used	PMatrix 3 Row 19 not used	PMatrix 3 Row 20 not used	Z
AA	PMatrix 3 Row 21 not used	PMatrix 3 Row 22 not used	PMatrix 3 Row 23 not used	PMatrix 3 Row 24 not used	PMatrix 3 Row 25 not used	PMatrix 3 Row 26 not used	AA
BB	UUT Common 1 (2) not used	UUT Common 1 (2) not used	UUT Common 1 (2) not used	UUT Common 1 (2) not used	UUT Common 1 (2) not used	UUT Common 1 (2) not used	BB
CC	PMatrix 3 Row 27 not used	PMatrix 3 Row 28 not used	PMatrix 3 Row 29 not used	PMatrix 3 Row 30 not used	PMatrix 3 Row 31 not used	PMatrix 3 Row 32 not used	CC
	1	2	3	4	5	6	

Figure 2-10. TC3 Pinouts

	1	2	3	4	5	6	
A	Load Card 401 not used	Load Card 4.02 not used	Load Card 4.03 not used	Load Card 4.04 not used	Load Card 4.05 not used	Load Card 4.06 not used	A
B	Load Card 4.07 not used	Load Card 4.08 not used	Load Card 4.09 not used	Load Card 4.10 not used	Load Card 4.11 not used	Load Card 4.12 not used	B
C	Load Card 4.13 not used	Load Card 4.14 not used	Load Card 4.15 not used	Load Card 4.16 not used	Load Card 4.17 not used	Load Card 4.18 not used	C
D	Load Card 4.19 not used	Load Card 4.20 not used	Load Card 4.21 not used	Load Card 4.22 not used	Load Card 4.23 not used	Load Card 4.24 not used	D
E	Load Card 4.25 not used	Load Card 4.26 not used	Load Card 4.27 not used	Load Card 4.28 not used	Load Card 4.29 not used	Load Card 4.30 not used	E
F	Load Card 4.31 not used	Load Card 4.32 not used	Load Card 4.33 not used	Load Card 4.34 not used	Load Card 4.35 not used	Load Card 4.36 not used	F
G	Load Card 4.37 not used	Load Card 4.38 not used	Load Card 4.39 not used	Load Card 4.40 not used	Load Card 4.41 not used	Load Card 4.42 not used	G
H	Load Card 4.43 not used	Load Card 4.44 not used	Load Card 4.45 not used	Load Card 4.46 not used	Load Card 4.47 not used	Load Card 4.48 not used	H
J	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	Safety Ground Safety Ground	J
K	Open Drain Out 0 (2) not used	Open Drain Out 1 (2) not used	System Ground not used	System Ground not used	System Ground not used	System Ground not used	K
L	Open Drain Out 2 (2) not used	Open Drain Out 3 (2) not used	System Ground not used	+12 Vdc Supply (2) not used	System Ground not used	System Ground not used	L
M	Open Drain Out 4 (2) not used	Open Drain Out 5 (2) not used	System Ground not used	-12 Vdc Supply (2) not used	System Ground not used	ISense+ (2) not used	M
N	Open Drain Out 6 (2) not used	Open Drain Out 7 (2) not used	Ext Clock (2) not used	Spare Supply (2) not used	System Ground not used	Isense- (2) not used	N
P	CCard 2 Pin 17 PCI DIO Out 0	CCard 2 Pin 18 PCI DIO Out 1	CCard 2 Pin 19 PCI DIO Out 2	CCard 2 Pin 20 PCI DIO Out 3	Aux Inst #3 (2) not used	Aux Inst #4 (2) not used	P
R	CCard 2 Pin 21 PCI DIO Out 4	CCard 2 Pin 22 PCI DIO Out 5	CCard 2 Pin 23 PCI DIO Out 6	CCard 2 Pin 24 PCI DIO Out 7	System Ground not used	System Ground not used	R
S	CCard2 Common2 PCI DIO Clamp	CCard2 Common2 PCI DIO Clamp	CCard2 Common2 PCI DIO Clamp	CCard2 Common2 PCI DIO Clamp	Spare Inst #5 (2) not used	Spare Inst #6 (2) not used	S
T	CCard 2 Pin 25 PCI DIO Out 8	CCard 2 Pin 26 PCI DIO Out 9	CCard 2 Pin 27 PCI DIO Out 10	CCard 2 Pin 28 PCI DIO Out 11	Spare Inst #7 (2) not used	Spare Inst #8 (2) not used	T
U	CCard 2 Pin 29 PCI DIO Out 12	CCard 2 Pin 30 PCI DIO Out 13	CCard 2 Pin 31 PCI DIO Out 14	CCard 2 Pin 32 PCI DIO Out 15	Spare Inst #9 (2) not used	Spare Inst #10 (2) not used	U
V	UUT Common 2 (2) not used	UUT Common 2 (2) not used	UUT Common 2 (2) not used	UUT Common 2 (2) not used	PMatrix 4 Row 1 not used	PMatrix 4 Row 2 not used	V
W	PMatrix 4 Row 3 not used	PMatrix 4 Row 4 not used	PMatrix 4 Row 5 not used	PMatrix 4 Row 6 not used	PMatrix 4 Row 7 not used	PMatrix 4 Row 8 not used	W
X	PMatrix 4 Row 9 not used	PMatrix 4 Row 10 not used	PMatrix 4 Row 11 not used	PMatrix 4 Row 12 not used	PMatrix 4 Row 13 not used	PMatrix 4 Row 14 not used	X
Y	UUT Common 2 (2) not used	UUT Common 2 (2) not used	UUT Common 2 (2) not used	UUT Common 2 (2) not used	UUT Common 2 (2) not used	UUT Common 2 (2) not used	Y
Z	PMatrix 4 Row 15 not used	PMatrix 4 Row 16 not used	PMatrix 4 Row 17 not used	PMatrix 4 Row 18 not used	PMatrix 4 Row 19 not used	PMatrix 4 Row 20 not used	Z
AA	PMatrix 4 Row 21 not used	PMatrix 4 Row 22 not used	PMatrix 4 Row 23 not used	PMatrix 4 Row 24 not used	PMatrix 4 Row 25 not used	PMatrix 4 Row 26 not used	AA
BB	UUT Common 2 (2) not used	UUT Common 2 (2) not used	UUT Common 2 (2) not used	UUT Common 2 (2) not used	UUT Common 2 (2) not used	UUT Common 2 (2) not used	BB
CC	PMatrix 4 Row 27 not used	PMatrix 4 Row 28 not used	PMatrix 4 Row 29 not used	PMatrix 4 Row 30 not used	PMatrix 4 Row 31 not used	PMatrix 4 Row 32 not used	CC
	1	2	3	4	5	6	

Figure 2-11. TC4 Pinouts

N6700A MPS Power Connector

The N6700A Power Conector allows you to configure and route the power module outputs and sense lines. This connector brings power and sense lines from the power modules to Express Connect. Figure 1 shows the breakout connector.

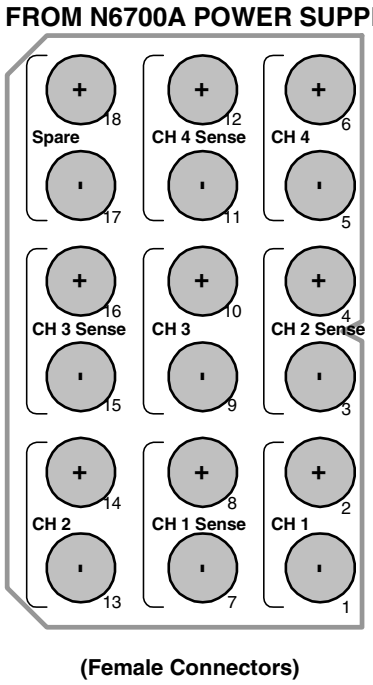


Figure 2-12. N6700 Power Connector

Making Custom Connections

The part numbers for the Positronic mating connector and pins are shown in Table 2-2.

Table 2-2. Positronic Mating Connector Part Numbers

Description	Positronic Part Number
Male Connector Pins, Solder Cup, 14-16 AWG (Qty 18)	MS114N
Connector Housing With Shrould (Male)	PLC18M0050

Output Noise Considerations

The plus (+) and minus (-) power leads from each power module should be twisted together to minimize noise. You should also twist the sense leads together for each power module to minimize the pickup of external noise.

Connecting Supplies in Parallel

Caution **Only power supply outputs that have equivalent voltage and current ratings can be connected in parallel.**

Connecting power module outputs in parallel provides a greater current capability than can be obtained from a single output. Before connecting power modules in parallel, be certain the two modules have equivalent voltage and current capability. As an example, <Hyperlink>Figure 2-13 is a wiring diagram and <Hyperlink>Figure 2-14 is a schematic showing how to connect two outputs in parallel to a single load with remote sensing.

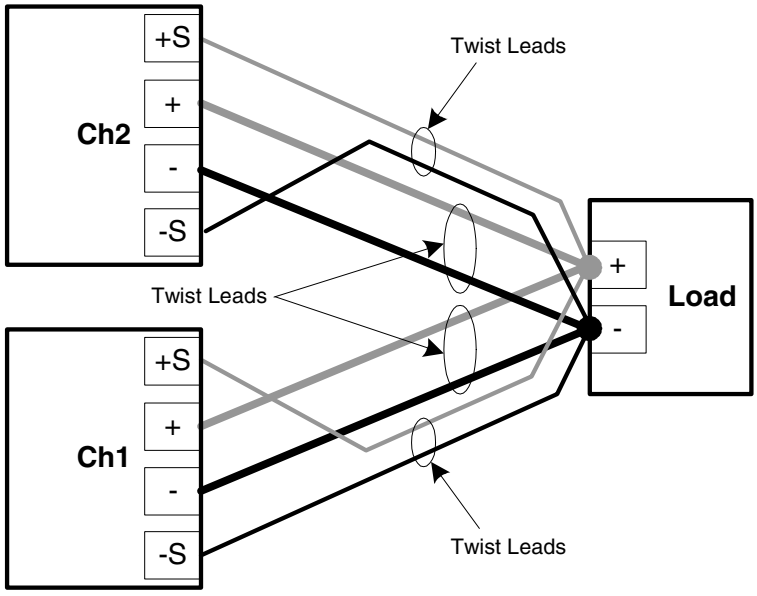


Figure 2-13. Connecting Two Power Modules in Parallel

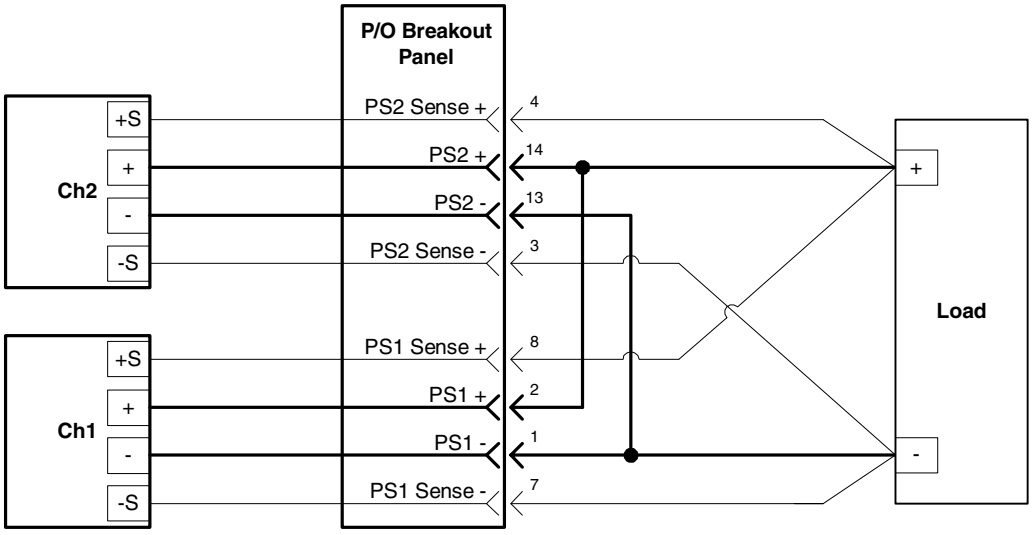


Figure 2-14. Schematic Showing Two Supplies in Parallel

Setting the Outputs

Program both outputs to the desired output voltage. Then program the current limit point of each output. The current limit point of the paralleled outputs will be the sum of both individual current limit points. The output current of the parallel combination will be the algebraic sum of the individual current readbacks.

Note The operating mode of each paralleled output channel is determined by the channel's programmed settings, operating point, and load condition. Because these conditions may change during parallel operation, the status annunciators on the MPS front panel will reflect these changes. This is normal. Momentary status changes are also normal.

High-Power Connector

A high-power (HP) connector can be added to the Test System Interface. The 16-pin HP connector can route higher current lines to the UUT, carrying up to 20A per pin. This is ideal for powering high-current devices or for customizing the system for applications that require higher power.

Wiring Recommendations

Use 14 AWG wire from the high-power mating connector to the UUT. A mating connector kit (Agilent E6244A Option 020) is available from Agilent.

System Grounding

The Agilent TS-5400 Test System has these grounds:

- System Ground:
  -- Earth referenced ground used by customer-supplied earth referenced instruments.
- Power Supply Grounds:
  -- Floating ground from the UUT Power Supplies.
- Safety or Earth (Earthed) Ground:
  -- This is typically a high current/high noise ground. It connects the instrument rack to safety or earth ground (see below).

Agilent recommends that you connect all grounds together at the UUT (forming a star pattern).

Installing BNC Connectors

The Test System Interface contains knockouts for mounting BNC connectors. Typical applications include connection to Remote Keyless Entry equipment or an RF signal generator.

WARNING Wear suitable eye protection (safety glasses) when removing knock-outs.

1. Remove AC power from the system.
2. Using a light hammer and a punch, remove one or more of the RF knock-outs. Retrieve any knockouts the may fall into the system cabinet.
3. Mount the floating BNC connector(s) on the Test System Interface as shown in Figure 2-15.

Connect BNC cabling to the RF equipment. Re-apply power to the system.

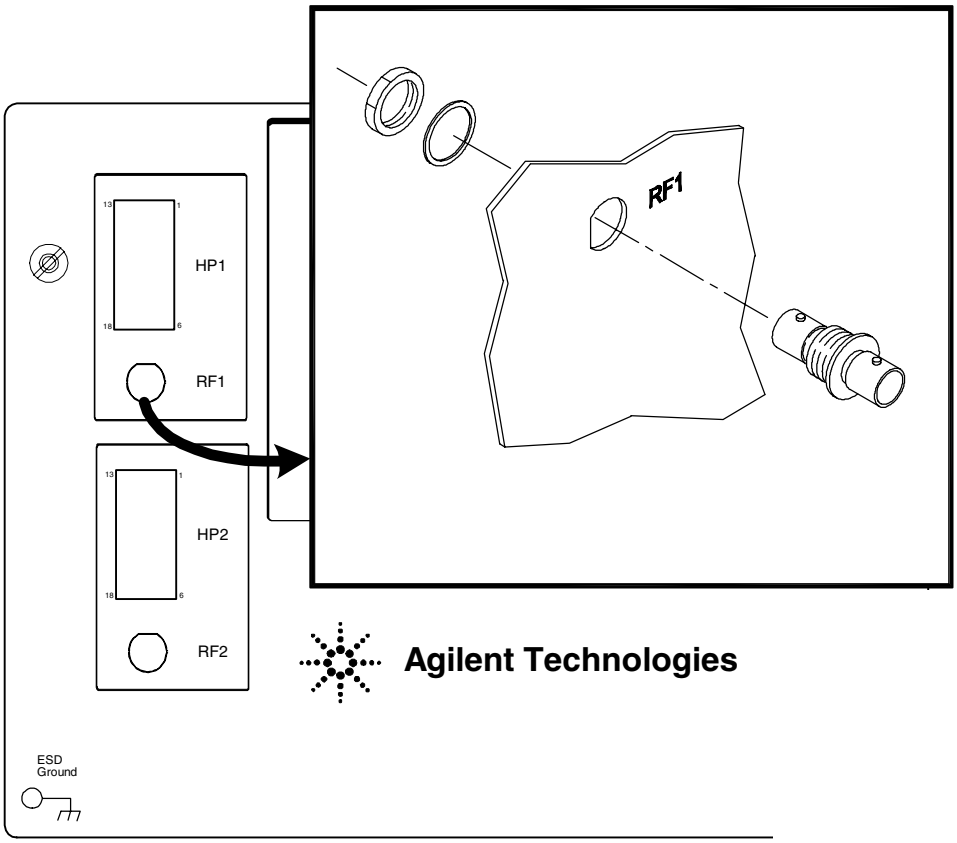


Figure 2-15. Installing a BNC Connector

Chapter 3
Test System Interface Cables

This chapter shows the contruction and pinouts of the system cables that connect to the Test System Interface. Chapter contents are:

Figure 3-1 and Figure 3-2 show the cable connections to the PC board connectors.

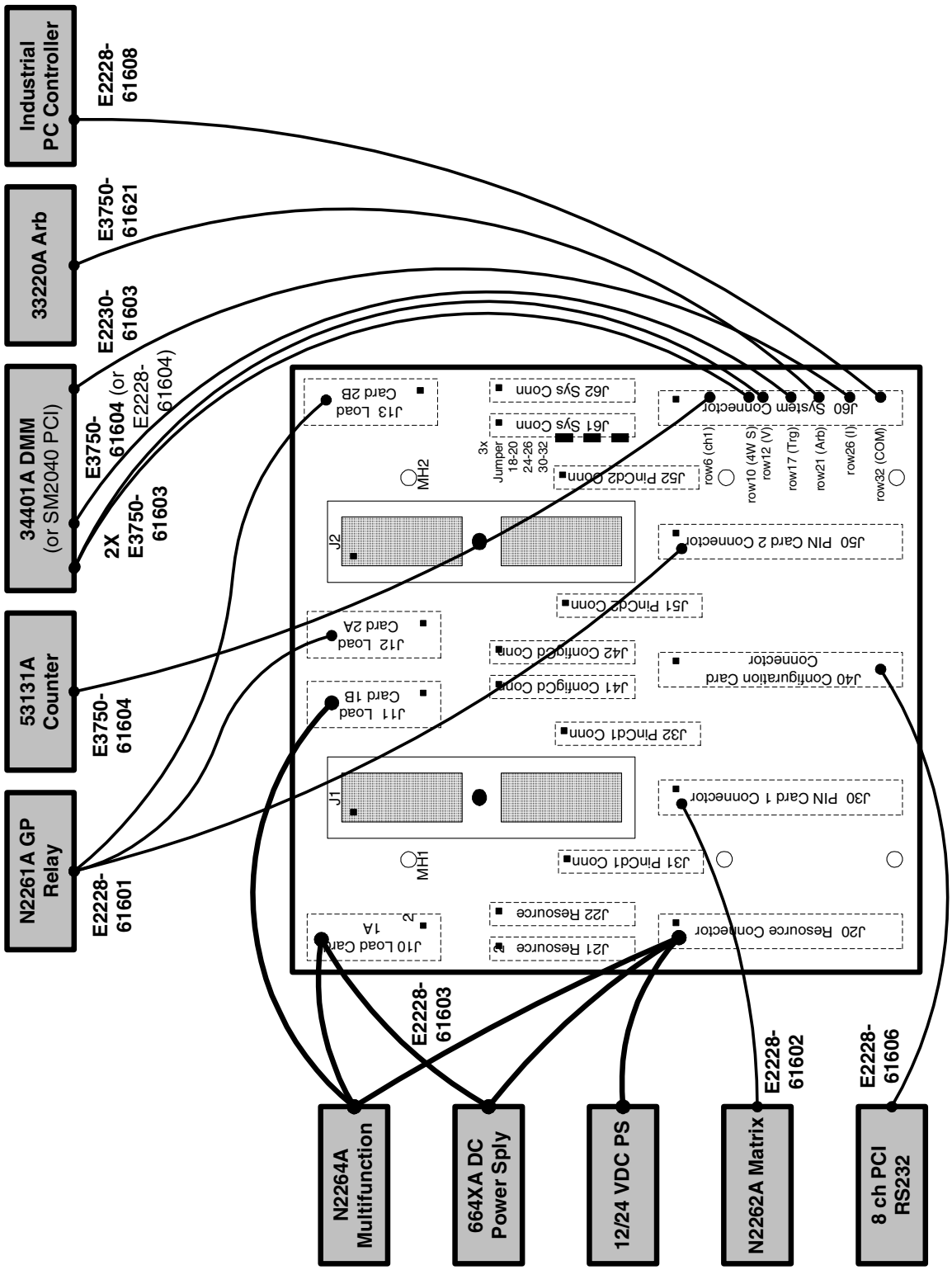


Figure 3-1. Cable Locator, TC1, TC2

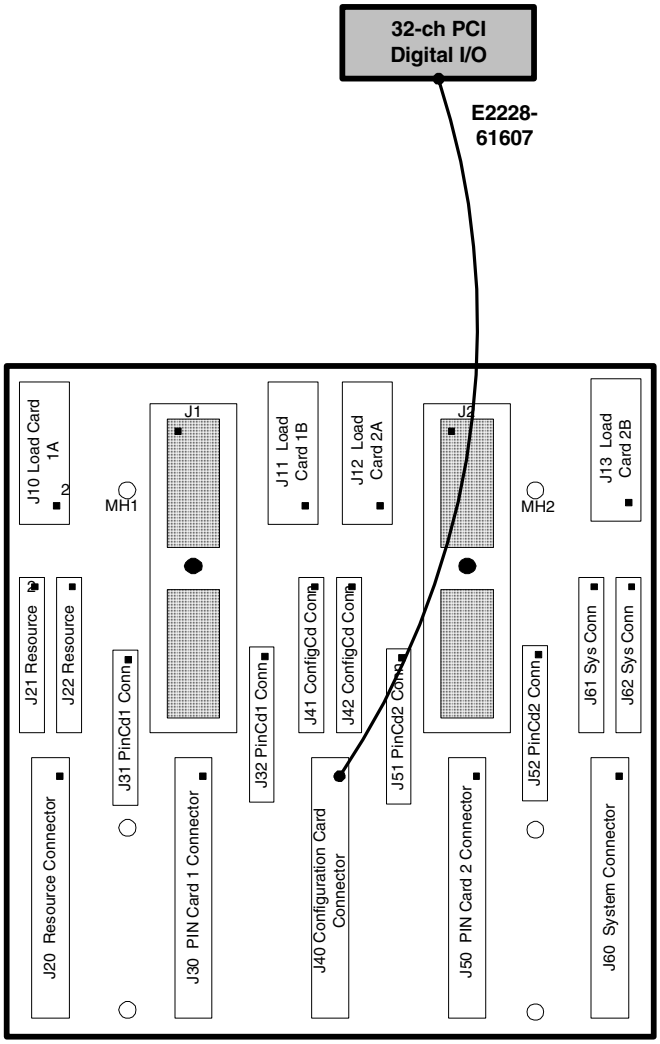
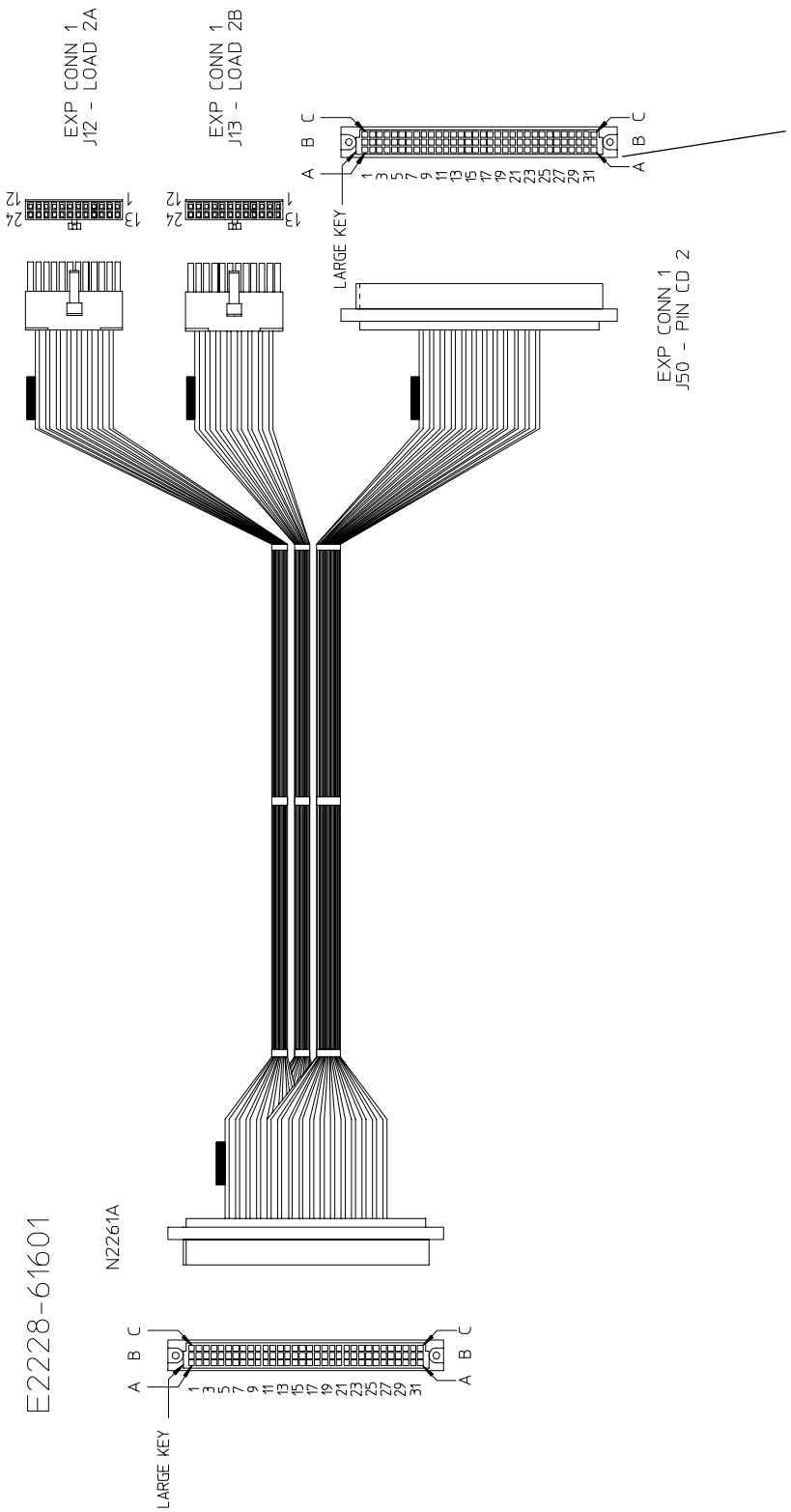


Figure 3-2. Cable Locator, TC3, TC4

E2228-61601 Cable (N2261A GP Relay Cable)



Note: Row numbers on this connector are reversed relative to the mating connector on the PC board. Row 1 = Row 32, Row 32 = Row 1. Columns are not reversed, a=a, b=b, c=c.

Figure 3-3. E2228-61601 Cable (N2261 GP Relay Cable)

Cable Pinout Table

N2261A GP Cable Asssembly

Signal Name	Part # E2228-	Product; Port (Label)	Connector Position	Cable Wire	Connector Position	Product; Port (Label)	Length (mm)
	61601	**N2261A**	**1252-3536**		**1252-6374**	**Exp Conn 1; J12 - Load 2A**	800
GP 00 H			a2	**1569-20WHT**	12		
GP 01 H			b2	**1569-20WHT**	11		
GP 02 H			c2	**1569-20WHT**	10		
GP 00 L			a1	**1569-20WHT**	9		
GP 01 L			b1	**1569-20WHT**	8		
GP 02 L			c1	**1569-20WHT**	7		
GP 03 H			a4	**1569-20WHT**	6		
GP 04 H			b4	**1569-20WHT**	5		
GP 05 H			c4	**1569-20WHT**	4		
GP 03 L			a3	**1569-20WHT**	3		
GP 04 L			b3	**1569-20WHT**	2		
GP 05 L			c3	**1569-20WHT**	1		
GP 06 H			a6	**1569-20WHT**	13		
GP 07 H			b6	**1569-20WHT**	14		
GP 08 H			c6	**1569-20WHT**	15		
GP 06 L			a5	**1569-20WHT**	16		
GP 07 L			b5	**1569-20WHT**	17		
GP 08 L			c5	**1569-20WHT**	18		
GP 09 H			a8	**1569-20WHT**	19		
GP 10 H			a10	**1569-20WHT**	20		
GP 11 H			b10	**1569-20WHT**	21		
GP 09 L			a7	**1569-20WHT**	22		
GP 10 L			a9	**1569-20WHT**	23		
GP 11 L			b9	**1569-20WHT**	24		
					1252-6374	**Exp Conn 1; J13 - Load 2B**	800
GP 12 H			c10	**1569-20WHT**	24		
GP 13 H			a12	**1569-20WHT**	23		
GP 14 H			b12	**1569-20WHT**	22		
GP 12 L			c9	**1569-20WHT**	21		
GP 13 L			a11	**1569-20WHT**	20		
GP 14 L			b11	**1569-20WHT**	19		
GP 15 H			c12	**1569-20WHT**	18		
GP 16 H			a14	**1569-20WHT**	17		
GP 17 H			b14	**1569-20WHT**	16		
GP 15 L			c11	**1569-20WHT**	15		
GP 16 L			a13	**1569-20WHT**	14		
GP 17 L			b13	**1569-20WHT**	13		
GP 18 H			c14	**1569-20WHT**	1		
GP 19 H			a16	**1569-20WHT**	2		
GP 20 H			a18	**1569-20WHT**	3		
GP 18 L			c13	**1569-20WHT**	4		
GP 19 L			a15	**1569-20WHT**	5		
GP 20 L			a17	**1569-20WHT**	6		
GP 21 H			b18	**1569-20WHT**	7		
GP 22 H			c18	**1569-20WHT**	8		
GP 23 H			a20	**1569-20WHT**	9		
GP 21 L			b17	**1569-20WHT**	10		
GP 22 L			c17	**1569-20WHT**	11		
GP 23 L			a19	**1569-20WHT**	12		
					1252-3536	**Exp Conn 1; J50 - Pin Cd 2**	800
GP 24 H			b20	**1569-20WHT**	a1		
GP 24 L			b19	**1569-20WHT**	a2		
GP 25 H			c20	**1569-20WHT**	a3		
GP 25 L			c19	**1569-20WHT**	a4		
GP 26 H			a22	**1569-20WHT**	a5		
GP 26 L			a21	**1569-20WHT**	a6		
GP 27 H			b22	**1569-20WHT**	a7		
GP 27 L			b21	**1569-20WHT**	a8		
GP 28 H			c22	**1569-20WHT**	a9		

Cable Pinout Table

N2261A GP Cable Asssembly

Signal Name	Part # E2228-	Product; Port (Label)	Connector Position	Cable Wire	Connector Position	Product; Port (Label)	Length (mm)
GP 28 L			c21	**1569-20WHT**	a10		
GP 29 H			a24	**1569-20WHT**	a11		
GP 29 L			a23	**1569-20WHT**	a12		
GP 30 H			a26	**1569-20WHT**	a13		
GP 30 L			a25	**1569-20WHT**	a14		
GP 31 H			b26	**1569-20WHT**	a15		
GP 31 L			b25	**1569-20WHT**	a16		
GP 32 H			c26	**1569-20WHT**	a17		
GP 32 L			c25	**1569-20WHT**	a18		
GP 33 H			a28	**1569-20WHT**	a19		
GP 33 L			a27	**1569-20WHT**	a20		
GP 34 H			b28	**1569-20WHT**	a21		
GP 34 L			b27	**1569-20WHT**	a22		
GP 35 H			c28	**1569-20WHT**	a23		
GP 35 L			c27	**1569-20WHT**	a24		
GP 36 H			a30	**1569-20WHT**	a25		
GP 36 L			a29	**1569-20WHT**	a26		
GP 37 H			b30	**1569-20WHT**	a27		
GP 37 L			b29	**1569-20WHT**	a28		
GP 38 H			c30	**1569-20WHT**	a29		
GP 38 L			c29	**1569-20WHT**	a30		
GP 39 H			a32	**1569-20WHT**	a31		
GP 39 L			a31	**1569-20WHT**	a32		

E2228-61602 (N2262A Matrix Cable)

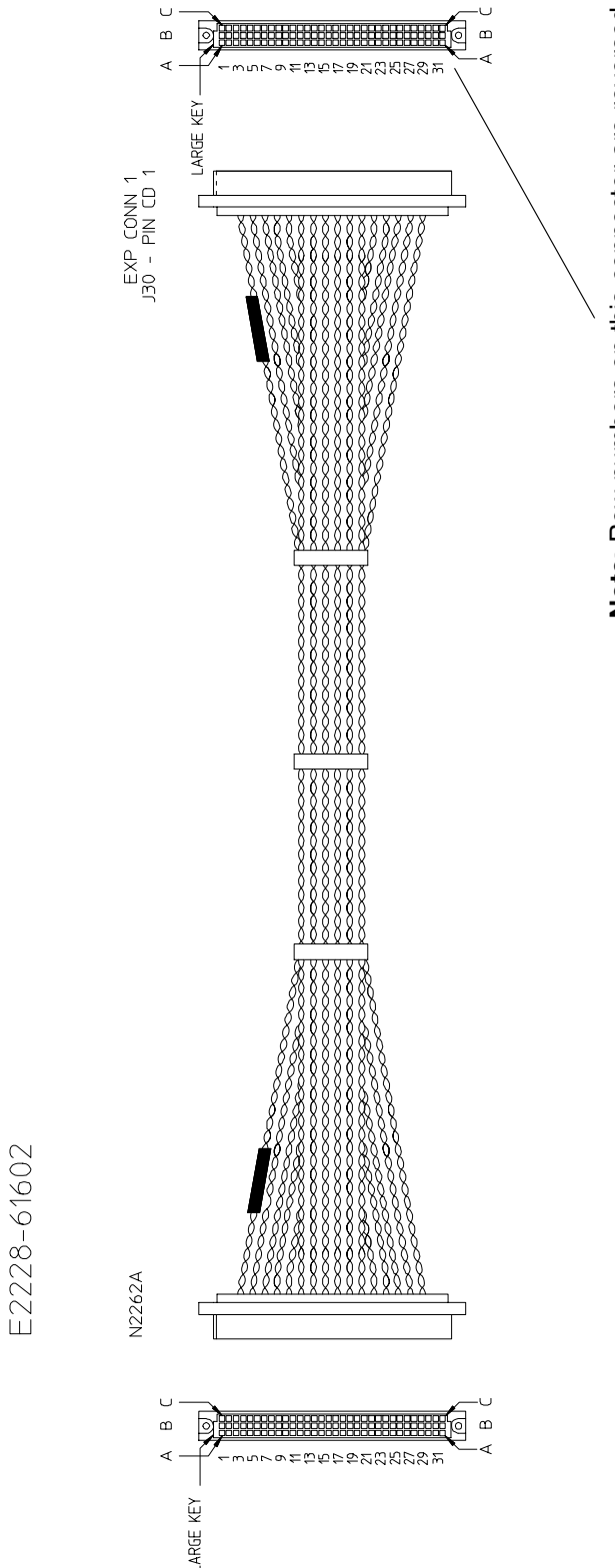
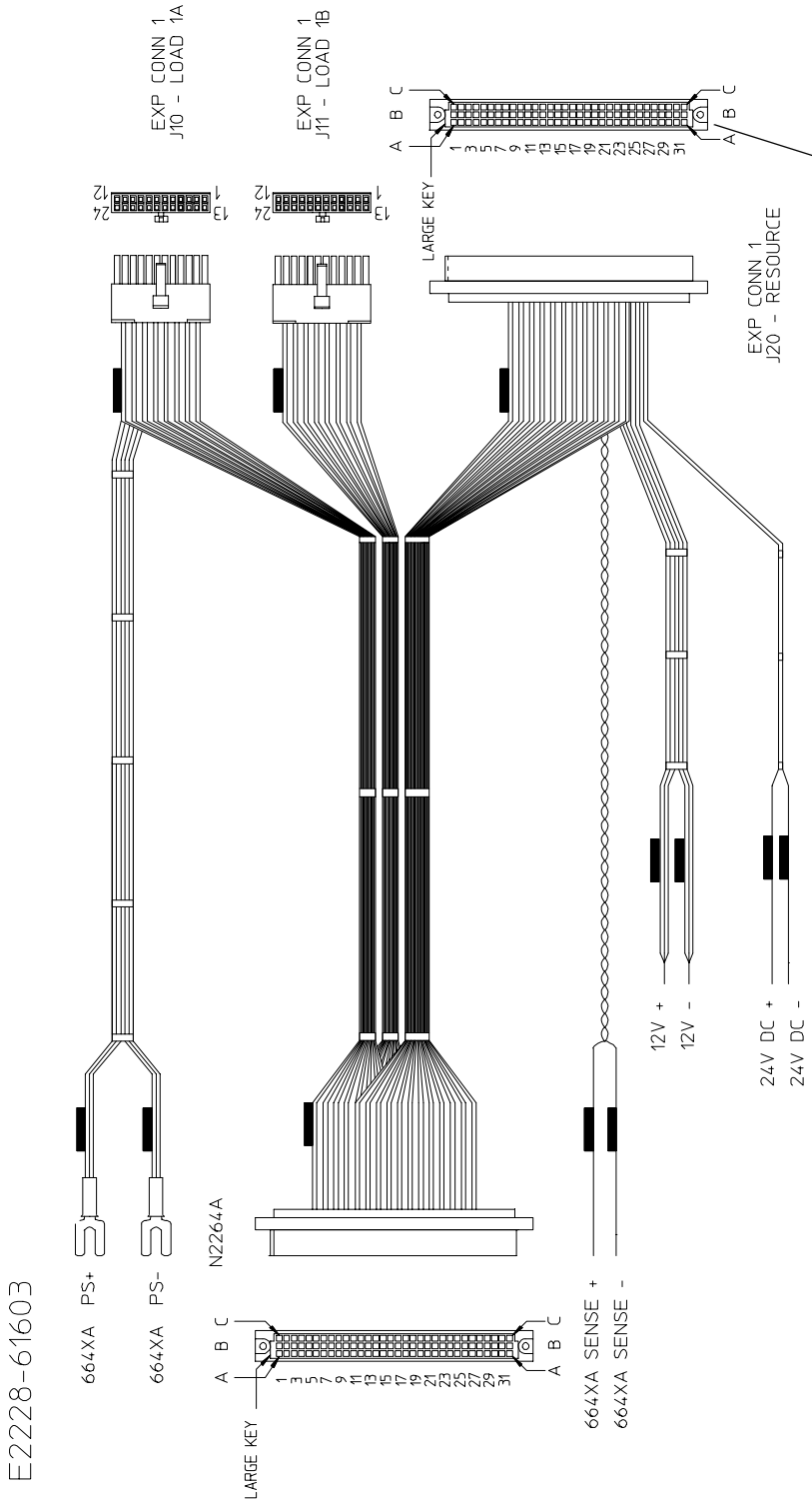


Figure 3-4. E2228-61602 (N2262A Matrix Cable)

Cable Pinout Table
N2262A Matrix Cable Asssembly

Signal Name	Part # E2228-	Product; Port (Label)	Connector Position	Cable Wire	Connector Position	Product; Port (Label)	Length (mm)
	61602	**N2262A**	**1252-3536**	(twist together)	**1252-3536**	**Exp Conn 1; J30 - Pin Cd 1**	800
Row 0 H			c11	**1569-20WHT**	a1		
Row 0 L			c10	**1569-20BLK**	a2		
				(twist together)			
Row 1 H			c15	**1569-20WHT**	a3		
Row 1 L			c14	**1569-20BLK**	a4		
				(twist together)			
Row 2 H			c19	**1569-20WHT**	a5		
Row 2 L			c18	**1569-20BLK**	a6		
				(twist together)			
Row 3 H			c23	**1569-20WHT**	a7		
Row 3 L			c22	**1569-20BLK**	a8		
				(twist together)			
Col 0 H			c2	**1569-20WHT**	a9		
Col 0 L			c1	**1569-20BLK**	a10		
				(twist together)			
Col 1 H			c4	**1569-20WHT**	a11		
Col 1 L			c3	**1569-20BLK**	a12		
				(twist together)			
Col 2 H			c6	**1569-20WHT**	a13		
Col 2 L			c5	**1569-20BLK**	a14		
				(twist together)			
Col 3 H			c8	**1569-20WHT**	a15		
Col 3 L			c7	**1569-20BLK**	a16		
				(twist together)			
Col 4 H			c26	**1569-20WHT**	a17		
Col 4 L			c25	**1569-20BLK**	a18		
				(twist together)			
Col 5 H			c28	**1569-20WHT**	a19		
Col 5 L			c27	**1569-20BLK**	a20		
				(twist together)			
Col 6 H			c30	**1569-20WHT**	a21		
Col 6 L			c29	**1569-20BLK**	a22		
				(twist together)			
Col 7 H			c32	**1569-20WHT**	a23		
Col 7 L			c31	**1569-20BLK**	a24		

E2228-61603 (N2264A Multifunction Cable)



Note: Row numbers on this connector are reversed relative to the mating connector on the PC board. Row 1 = Row 32, Row 32 = Row 1. Columns are not reversed, a=a, b=b, c=c.

Figure 3-5. E2228-61603 (N2264A Multifunction Cable)

Cable Pinout Table
N2264 Multifunction & Power Cable Asssembly

Signal Name	Part # E2228-	Product; Port (Label)	Connector Position	Cable Wire	Connector Position	Product; Port (Label)	Length (mm)
	61603				**1252-6374**	**Exp Conn 1; J10 - Load 1A**	
664X PS+		**664XA; +V**	**321233***	**1569-20RED**	19		800
"			(321233)	**1569-20RED**	20		
"			(321233)	**1569-20RED**	21		
664X PS-		**664XA; -V**	**321233***	**1569-20BLK**	22		800
"			(321233)	**1569-20BLK**	23		
"			(321233)	**1569-20BLK**	24		
		N2264A	**1252-3536**				800
PWR 20 H			a23	**1569-20WHT**	12*		
"			a24	**1569-20WHT**	(12)		
"			b23	**1569-20WHT**	11*		
"			b24	**1569-20WHT**	(11)		
"			c23	**1569-20WHT**	10*		
"			c24	**1569-20WHT**	(10)		
PWR 20 L			a21	**1569-20WHT**	9*		
"			a22	**1569-20WHT**	(9)		
"			b21	**1569-20WHT**	8*		
"			b22	**1569-20WHT**	(8)		
"			c21	**1569-20WHT**	7*		
"			c22	**1569-20WHT**	(7)		
PWR 21 H			a27	**1569-20WHT**	6*		
"			a28	**1569-20WHT**	(6)		
"			b27	**1569-20WHT**	5*		
"			b28	**1569-20WHT**	(5)		
"			c27	**1569-20WHT**	4*		
"			c28	**1569-20WHT**	(4)		
PWR 21 L			a25	**1569-20WHT**	3*		
"			a26	**1569-20WHT**	(3)		
"			b25	**1569-20WHT**	2*		
"			b26	**1569-20WHT**	(2)		
"			c25	**1569-20WHT**	1*		
"			c26	**1569-20WHT**	(1)		
PWR 22 H			a31	**1569-20WHT**	13*		
"			a32	**1569-20WHT**	(13)		
"			b31	**1569-20WHT**	14*		
"			b32	**1569-20WHT**	(14)		
"			c31	**1569-20WHT**	15*		
"			c32	**1569-20WHT**	(15)		
PWR 22 L			a29	**1569-20WHT**	16*		
"			a30	**1569-20WHT**	(16)		
"			b29	**1569-20WHT**	17*		
"			b30	**1569-20WHT**	(17)*		
"			c29	**1569-20WHT**	18*		
"			c30	**1569-20WHT**	(18)		
					1252-6374	**Exp Conn 1; J11 - Load 1B**	800
GP CH 00 H			a14	**1569-20WHT**	24		
GP CH 01 H			b14	**1569-20WHT**	23		
GP CH 02 H			c14	**1569-20WHT**	22		
GP CH 00 L			a13	**1569-20WHT**	21		
GP CH 01 L			b13	**1569-20WHT**	20		
GP CH 02 L			c13	**1569-20WHT**	19		
GP CH 03 H			a16	**1569-20WHT**	18		
GP CH 04 H			b16	**1569-20WHT**	17		
GP CH 05 H			c16	**1569-20WHT**	16		
GP CH 03 L			a15	**1569-20WHT**	15		
GP CH 04 L			b15	**1569-20WHT**	14		
GP CH 05 L			c15	**1569-20WHT**	13		
GP CH 06 H			a18	**1569-20WHT**	1		
GP CH 07 H			b18	**1569-20WHT**	2		

Cable Pinout Table

N2264 Multifunction & Power Cable Asssembly

Signal Name	Part # E2228-	Product; Port (Label)	Connector Position	Cable Wire	Connector Position	Product; Port (Label)	Length (mm)
GP CH 08 H			c18	**1569-20WHT**	3		
GP CH 06 L			a17	**1569-20WHT**	4		
GP CH 07 L			b17	**1569-20WHT**	5		
GP CH 08 L			c17	**1569-20WHT**	6		
GP CH 09 H			a20	**1569-20WHT**	7		
GP CH 10 H			b20	**1569-20WHT**	8		
GP CH 11 H			c20	**1569-20WHT**	9		
GP CH 09 L			a19	**1569-20WHT**	10		
GP CH 10 L			b19	**1569-20WHT**	11		
GP CH 11 L			c19	**1569-20WHT**	12		
					1252-3536	**Exp Conn 1; J20 - Resource**	800
DIO BIT 30			a1	**1569-20WHT**	a7		
DIO BIT 31			b1	**1569-20WHT**	c7		
DIO BIT 32			c1	**1569-20WHT**	a8		
DIO BIT 33			a3	**1569-20WHT**	c8		
DIO BIT 34			b3	**1569-20WHT**	a9		
DIO BIT 35			c3	**1569-20WHT**	c9		
DIO BIT 36			a4	**1569-20WHT**	a10		
DIO BIT 37			b4	**1569-20WHT**	c10		
DIO BIT 38			a6	**1569-20WHT**	a21		
DIO BIT 39			b6	**1569-20WHT**	c21		
DIO BIT 40			c6	**1569-20WHT**	a22		
DIO BIT 41			a8	**1569-20WHT**	c22		
DIO BIT 42			b8	**1569-20WHT**	a23		
DIO BIT 43			c8	**1569-20WHT**	c23		
DIO BIT 44			a9	**1569-20WHT**	a24		
DIO BIT 45			b9	**1569-20WHT**	c24		
DIO I/#0			a10	**1569-20WHT**	a32		
DIO PCTL			b10	**1569-20WHT**	c31		
DIO PFLG			c10	**1569-20WHT**	c32		
SYSGND			a5	**1569-20WHT**	a6		
"			c5	**1569-20WHT**	c6		
"			a11	**1569-20WHT**	a1		
"			c11	**1569-20WHT**	c1		
				(twist together)			
664X Sense+		**664XA; Sense+**	(strip 10mm and tin)	**1569-20RED**	c19		800
664X Sense -		**664XA; Sense+**	(strip 10mm and tin)	**1569-20BLK**	c19		800
+12VDC		**12VDC; +**	(strip 10mm, twist & tin)	**1569-20RED**	a26		600
"		(12VDC; +)	(strip 10mm, twist & tin)	**1569-20RED**	c26		
"		(12VDC; +)	(strip 10mm, twist & tin)	**1569-20RED**	a25		
SYSGND		**12VDC; -**	(strip 10mm, twist & tin)	**1569-20BLK**	a29		600
"		(12VDC; -)	(strip 10mm, twist & tin)	**1569-20BLK**	c29		
"		(12VDC; -)	(strip 10mm, twist & tin)	**1569-20BLK**	a28		
+24VDC		**24VDC; +**	(strip 10mm and tin)	**1569-20RED**	c27		600
SYSGND		**24VDC; -**	(strip 10mm and tin)	**1569-20BLK**	c28		600

E2228-61604 (PCI DMM Trig Cable)

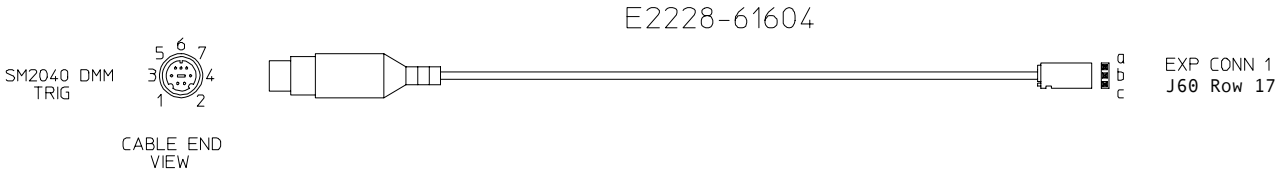
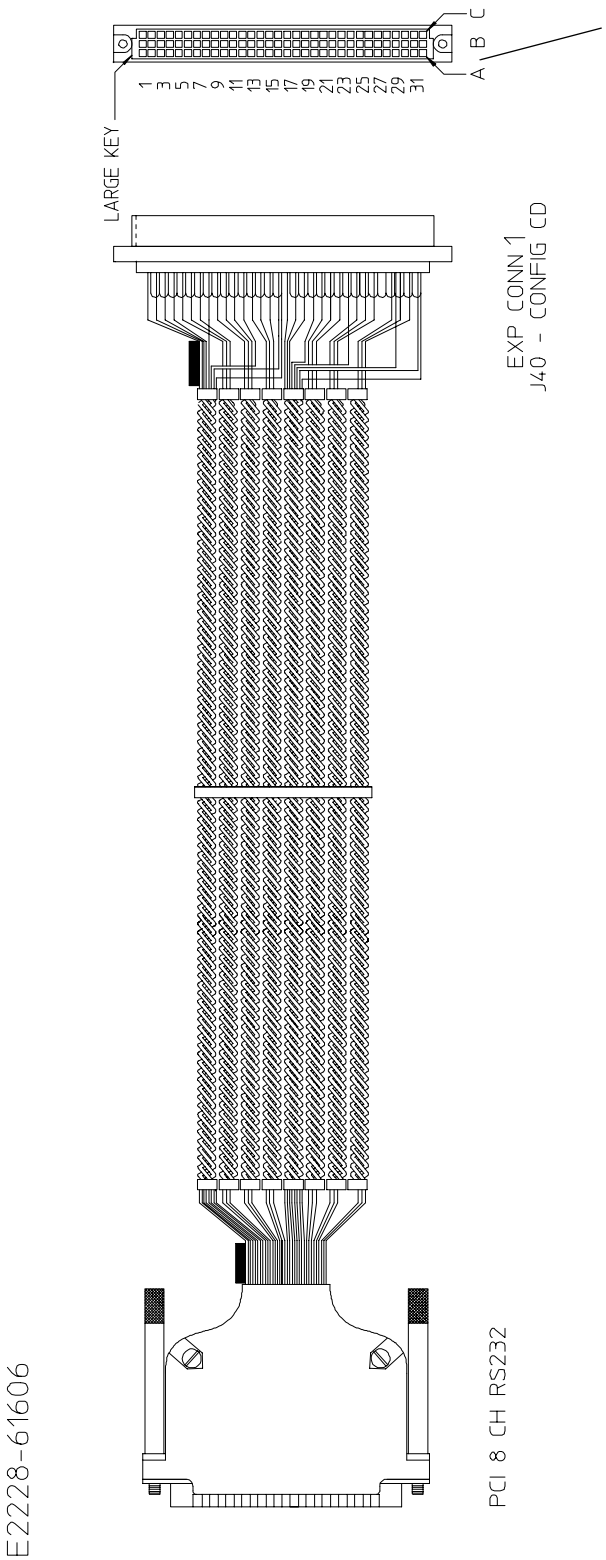


Figure 3-6. E2228-61604 (SM2040 PCI Cable)

Cable Pinout Table
SM2040 DMM Cable Asssembly

Signal Name	Part # E2228-	Product; Port (Label)	Connector Position	Cable Wire	Connector Position	Product; Port (Label)	Length (mm)
	61604	**SM2040 DMM; Trig**	**SM2040-CON7**	**9-903385**		**Exp Conn 1; J60 Row 17**	700
SystemGnd			4	shield	a		
DMM Trig +			7	clear	b		
			nc	blk	c		

E2228-61606 (8-Channel PCI RS232 Cable)



Note: Row numbers on this connector are reversed relative to the mating connector on the PC board. Row 1 = Row 32, Row 32 = Row 1. Columns are not reversed, a=a, b=b, c=c.

Figure 3-7. E2228-61606 (8-Channel PCI RS232 Cable)

Cable Pinout Table
PCI 8-ch RS232 Cable Asssembly

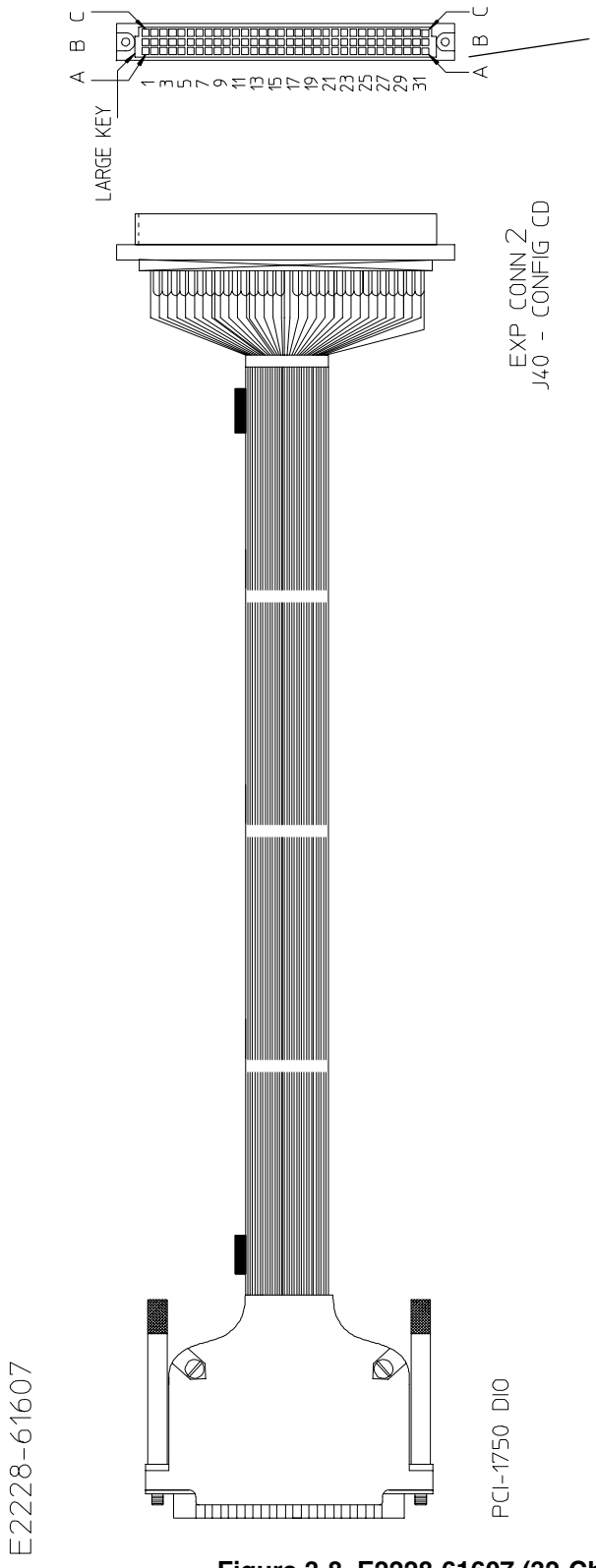
Signal Name	Part # E2228-	Product; Port (Label)	Connector Position	Cable Wire	Connector Position	Product; Port (Label)	Length (mm)
	61606	**PCI 8-ch RS232**	**DSHD-78M**	(twist together)	**1252-3536**	**Exp Conn 1; J40 - Config Cd**	700
COM 3 TxD (pt0)			30	**1569-22WHT**	a1		
COM 3 RxD (pt0)			55	**1569-22WHT**	a2		
COM 3 DCD (pt0)			35	**1569-22WHT**	a3		
COM 3 DTR (pt0)			49	**1569-22WHT**	a4		
COM 3 DSR (pt0)			54	**1569-22WHT**	a8		
COM 3 RTS (pt0)			51	**1569-22WHT**	a12		
COM 3 CTS (pt0)			16	**1569-22WHT**	a16		
COM 3 Gnd (pt0)			68	**1569-22WHT**	c16*		
jumper				**1569-22WHT**	(c16) to c15*		
jumper				**1569-22WHT**	(c15) to c14*		
jumper				**1569-22WHT**	(c14) to c13*		
jumper				**1569-22WHT**	(c13) to c12*		
jumper				**1569-22WHT**	(c12) to c11*		
jumper				**1569-22WHT**	(c11) to c10*		
jumper				**1569-22WHT**	(c10) to c9*		
jumper				**1569-22WHT**	(c9) to c8*		
jumper				**1569-22WHT**	(c8) to c7*		
jumper				**1569-22WHT**	(c7) to c6*		
jumper				**1569-22WHT**	(c6) to c5*		
jumper				**1569-22WHT**	(c5) to c4*		
jumper				**1569-22WHT**	(c4) to c3*		
jumper				**1569-22WHT**	(c3) to c2*		
jumper				**1569-22WHT**	(c2) to c1		
				(twist together)			
COM 4 TxD (pt1)			50	**1569-22WHT**	a5		
COM 4 RxD (pt1)			17	**1569-22WHT**	a6		
COM 4 Gnd (pt1)			69	**1569-22WHT**	a7		
				(twist together)			
COM 5 TxD (pt2)			11	**1569-22WHT**	a9		
COM 5 RxD (pt2)			37	**1569-22WHT**	a10		
COM 5 Gnd (pt2)			70	**1569-22WHT**	a11		
				(twist together)			
COM 6 TxD (pt3)			10	**1569-22WHT**	a13		
COM 6 RxD (pt3)			56	**1569-22WHT**	a14		
COM 6 Gnd (pt3)			71	**1569-22WHT**	a15		
				(twist together)			
COM 7 TxD (pt4)			40	**1569-22WHT**	a17		
COM 7 RxD (pt4)			28	**1569-22WHT**	a18		
COM 7 DCD (pt4)			43	**1569-22WHT**	a19		
COM 7 DTR (pt4)			22	**1569-22WHT**	a20		
COM 7 DSR (pt4)			5	**1569-22WHT**	a24		
COM 7 RTS (pt4)			21	**1569-22WHT**	a28		
COM 7 CTS (pt4)			25	**1569-22WHT**	a32		
COM 3 Gnd (pt4)			72	**1569-22WHT**	c32*		
jumper				**1569-22WHT**	(c32) to c31*		
jumper				**1569-22WHT**	(c31) to c30*		
jumper				**1569-22WHT**	(c30) to c29*		
jumper				**1569-22WHT**	(c29) to c28*		
jumper				**1569-22WHT**	(c28) to c27*		
jumper				**1569-22WHT**	(c27) to c26*		
jumper				**1569-22WHT**	(c26) to c25*		
jumper				**1569-22WHT**	(c25) to c24*		
jumper				**1569-22WHT**	(c24) to c23*		
jumper				**1569-22WHT**	(c23) to c22*		
jumper				**1569-22WHT**	(c22) to c21*		
jumper				**1569-22WHT**	(c21) to c20*		
jumper				**1569-22WHT**	(c20) to c19*		
jumper				**1569-22WHT**	(c19) to c18*		
jumper				**1569-22WHT**	(c18) to c17		
				(twist together)			
COM 8 TxD (pt5)			2	**1569-22WHT**	a21		
COM 8 RxD (pt5)			8	**1569-22WHT**	a22		
COM 8 Gnd (pt5)			73	**1569-22WHT**	a23		

Cable Pinout Table

PCI 8-ch RS232 Cable Asssembly

Signal Name	Part # E2228-	Product; Port (Label)	Connector Position	Cable Wire	Connector Position	Product; Port (Label)	Length (mm)
				(twist together)			
COM 9 TxD (pt6)			63	**1569-22WHT**	a25		
COM 9 RxD (pt6)			46	**1569-22WHT**	a26		
COM 9 Gnd (pt6)			74	**1569-22WHT**	a27		
				(twist together)			
COM 10 TxD (pt7)			64	**1569-22WHT**	a29		
COM 10 RxD (pt7)			27	**1569-22WHT**	a30		
COM 10 Gnd (pt7)			75	**1569-22WHT**	a31		

E2228-61607 (32-Channel PCI Digital I/O Cable)



Note: Row numbers on this connector are reversed relative to the mating connector on the PC board. Row 1 = Row 32, Row 32 = Row 1. Columns are not reversed, a=a, b=b, c=c.

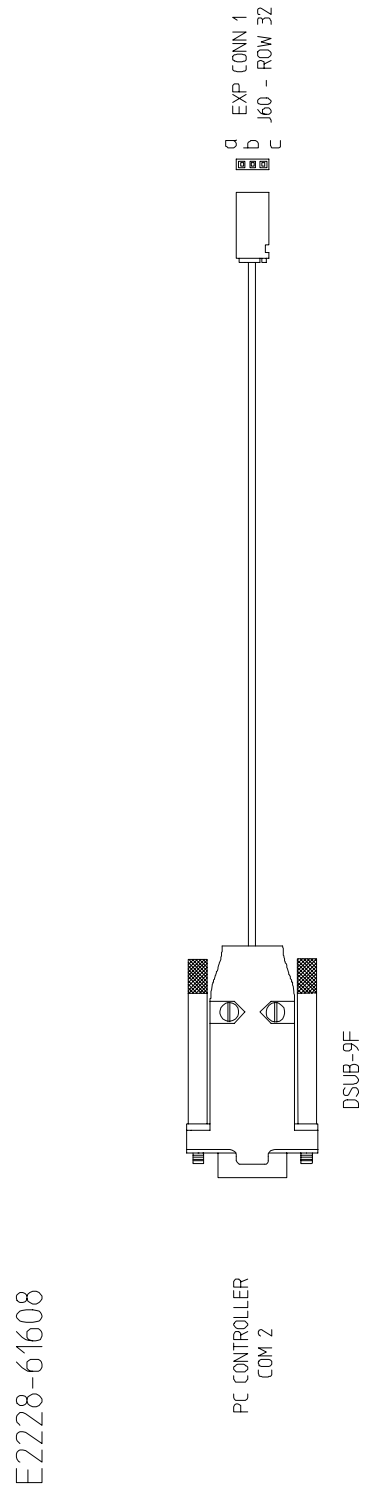
Figure 3-8. E2228-61607 (32-Channel PCI Digital I/O Cable)

Cable Pinout Table

PCI-1750 DIO Cable Assembly

Signal Name	Part # E2228-	Product; Port (Label)	Connector Position	Cable Wire	Connector Position	Product; Port (Label)	Length (mm)
	61607	**PCI-1750 DIO**	**DSUB-37M**		**1252-3536**	**Exp Conn 2; J40 - Config Cd**	700
DIO I 0			1	**1569-20WHT**	a1		
DIO I 1			20	**1569-20WHT**	a2		
DIO I 2			2	**1569-20WHT**	a3		
DIO I 3			21	**1569-20WHT**	a4		
DIO I 4			3	**1569-20WHT**	a5		
DIO I 5			22	**1569-20WHT**	a6		
DIO I 6			4	**1569-20WHT**	a7		
DIO I 7			23	**1569-20WHT**	a8		
DIO I 8			5	**1569-20WHT**	a9		
DIO I 9			24	**1569-20WHT**	a10		
DIO I 10			6	**1569-20WHT**	a11		
DIO I 11			25	**1569-20WHT**	a12		
DIO I 12			7	**1569-20WHT**	a13		
DIO I 13			26	**1569-20WHT**	a14		
DIO I 14			8	**1569-20WHT**	a15		
DIO I 15 Cntr			27	**1569-20WHT**	a16		
DIO O 0			11	**1569-20WHT**	a17		
DIO O 1			30	**1569-20WHT**	a18		
DIO O 2			12	**1569-20WHT**	a19		
DIO O 3			31	**1569-20WHT**	a20		
DIO O 4			13	**1569-20WHT**	a21		
DIO O 5			32	**1569-20WHT**	a22		
DIO O 6			14	**1569-20WHT**	a23		
DIO O 7			33	**1569-20WHT**	a24		
DIO O 8			15	**1569-20WHT**	a25		
DIO O 9			34	**1569-20WHT**	a26		
DIO O 10			16	**1569-20WHT**	a27		
DIO O 11			35	**1569-20WHT**	a28		
DIO O 12			17	**1569-20WHT**	a29		
DIO O 13			36	**1569-20WHT**	a30		
DIO O 14			18	**1569-20WHT**	a31		
DIO O 15			37	**1569-20WHT**	a32		
DIO IGND			9	**1569-20WHT**	c8*		
			28	**1569-20WHT**	c12*		
			29	**1569-20WHT**	c16*		
jumper				**1569-20WHT**	(c16) to c15*		a/r
jumper				**1569-20WHT**	(c15) to c14*		a/r
jumper				**1569-20WHT**	(c14) to c13*		a/r
jumper				**1569-20WHT**	(c13) to (c12)		a/r
jumper				**1569-20WHT**	(c12) to c11*		a/r
jumper				**1569-20WHT**	(c11) to c10*		a/r
jumper				**1569-20WHT**	(c10) to c9*		a/r
jumper				**1569-20WHT**	(c9) to (c8)		a/r
jumper				**1569-20WHT**	(c8) to c7*		a/r
jumper				**1569-20WHT**	(c7) to c6*		a/r
jumper				**1569-20WHT**	(c6) to c5*		a/r
jumper				**1569-20WHT**	(c5) to c4*		a/r
jumper				**1569-20WHT**	(c4) to c3*		a/r
jumper				**1569-20WHT**	(c3) to c2*		a/r
jumper				**1569-20WHT**	(c2) to c1		a/r
DIO Clamp (COM 1,2) **jumper**			10 to 19*	**1569-20WHT**			a/r
			(19)	**1569-20WHT**	c32*		700
jumper				**1569-20WHT**	(c32) to c31*		a/r
jumper				**1569-20WHT**	(c31) to c30*		a/r
jumper				**1569-20WHT**	(c30) to c29*		a/r
jumper				**1569-20WHT**	(c29) to c28*		a/r
jumper				**1569-20WHT**	(c28) to c27*		a/r
jumper				**1569-20WHT**	(c27) to c26*		a/r
jumper				**1569-20WHT**	(c26) to c25*		a/r
jumper				**1569-20WHT**	(c25) to c24*		a/r
jumper				**1569-20WHT**	(c24) to c23*		a/r
jumper				**1569-20WHT**	(c23) to c22*		a/r
jumper				**1569-20WHT**	(c22) to c21*		a/r
jumper				**1569-20WHT**	(c21) to c20*		a/r
jumper				**1569-20WHT**	(c20) to c19*		a/r
jumper				**1569-20WHT**	(c19) to c18*		a/r
jumper				**1569-20WHT**	(c18) to c17		a/r

E2228-61608 (PC Controller COM 2 Cable)



Cable Pinout Table
Cable, COM 2

Signal Name	Part # E2228-	Product; Port (Label)	Connector Position	Cable Wire	Connector Position	Product; Port (Label)	Length (mm)
	61608	PC Controller; COM 2	dsub -9F	9-903385		Exp Conn 1; J60 row 32	700
COM 2 Gnd			5	shield	a		
COM 2 RX			2	clear	b		
COM 2 TX			3	blk	c		

Figure 3-9. E2228-61608 (PC Controller COM 2 Cable)

E2230-61603 (34401A DMM Current Cable)

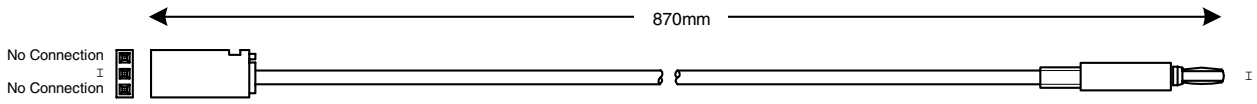


Figure 3-10. E2230-61603 (34401A DMM Current Cable)

E2233-61601 N6700 MPS Cable

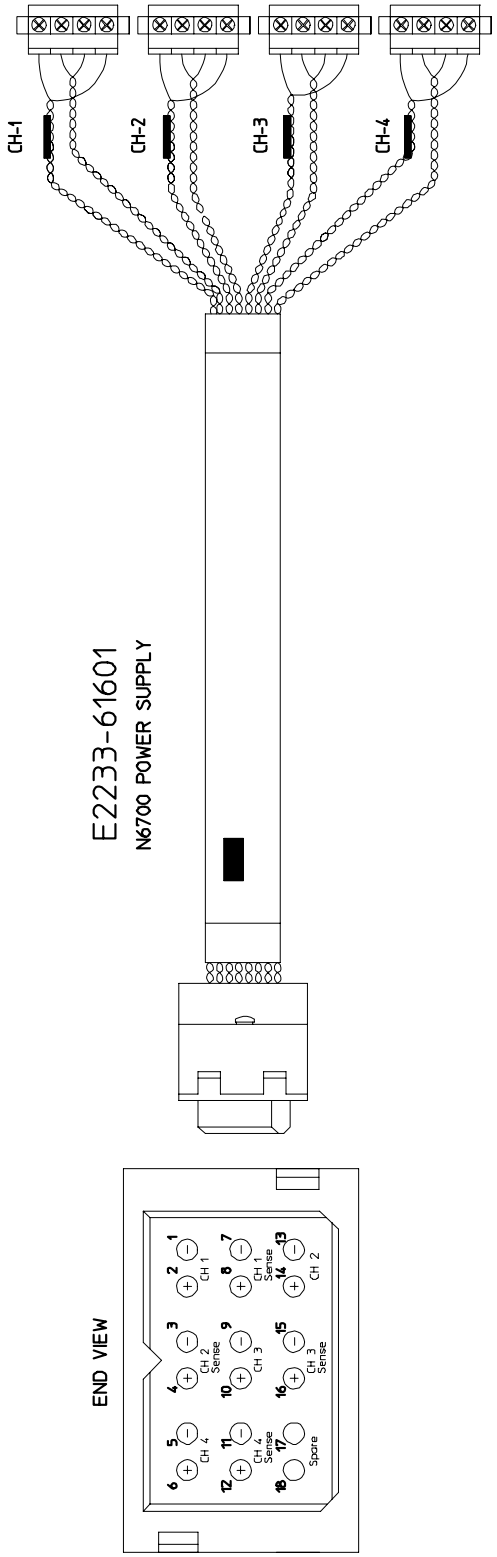


Figure 3-11. E2233-61601 N6700 MPS Cable

Cable Pinout Table Cable, N6700 Power Supply to Positronics							
Signal Name	**Part # E2233-**	**Product; Port (Label)**	**Connector Position**	**Cable Wire**	**Connector Position**	**Product; Port (Label)**	**Length (mm)**
	61601	**N6700 Power Supply**	**1252-6391**	(twist together)	**1253-5826**	**CH 1**	
CH-1 Sen +			8	**1569-22RED**	CH1 - 1		1500
CH-1 Sen -			7	**1569-22BLK**	CH1 - 4		1500
				(twist together)			
CH-1 +			2	**1015-14RED**	CH1 - 2		1500
CH-1 -			1	**1015-14BLK**	CH1 - 3		1500
				(twist together)	**1253-5826**	**CH 2**	
CH-2 Sen +			4	**1569-22RED**	CH2 - 1		1500
CH-2 Sen -			3	**1569-22BLK**	CH2 - 4		1500
				(twist together)			
CH-2 +			14	**1015-14RED**	CH2 - 2		1500
CH-2 -			13	**1015-14BLK**	CH2 - 3		1500
				(twist together)	**1253-5826**	**CH 3**	
CH-3 Sen +			16	**1569-22RED**	CH3 - 1		1500
CH-3 Sen -			15	**1569-22BLK**	CH3 - 4		1500
				(twist together)			
CH-3 +			10	**1015-14RED**	CH3 - 2		1500
CH-3 -			9	**1015-14BLK**	CH3 - 3		1500
				(twist together)	**1253-5826**	**CH 4**	
CH-4 Sen +			12	**1569-22RED**	CH4 - 1		1500
CH-4 Sen -			11	**1569-22BLK**	CH4 - 4		1500
				(twist together)			
CH-4 +			6	**1015-14RED**	CH4 - 2		1500
CH-4 -			5	**1015-14BLK**	CH4 - 3		1500
Spare			17	n/c	n/c		
Spare			18	n/c	n/c		

Figure 3-12. E2233-61601 N6700 MPS Cable Pinouts

E3750-61603 (DMM Cable, 2 each)

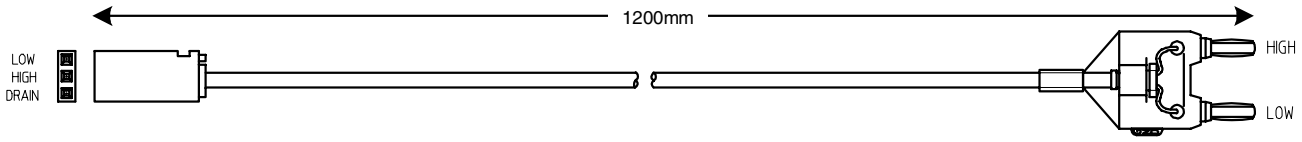


Figure 3-13. E3750-61603 (SM2040 PCI DMM Cable, 2 each)

E3750-61604 (Non-Isolated Cable)

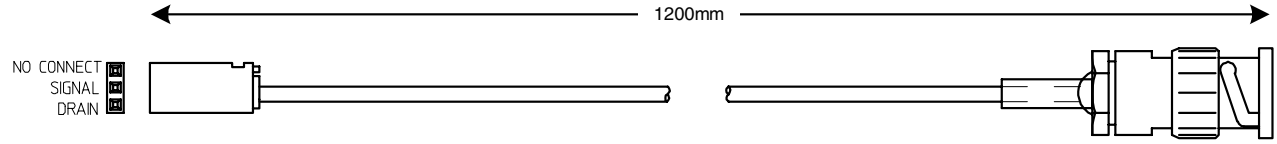


Figure 3-14. E3750-61604 (Non-Isolated Cable)

E3750-61621 (Isolated Cable)

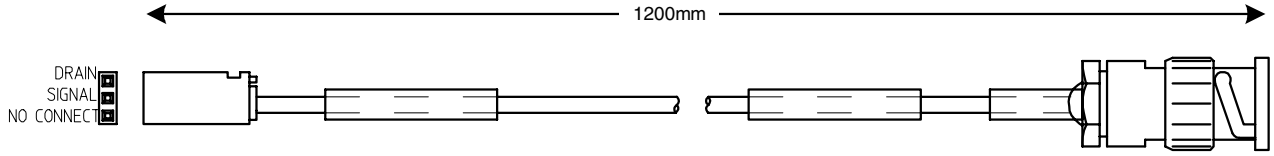


Figure 3-15. E3750-61621 (Isolated Cable)

Chapter 4
Schematics

This chapter contains schematics and a component locator for the Test System Interface. The J21, 22, 31, 32, 41, 42, 51, 52, 61 and 62 connectors are located on the back of the Test System Interface. These connectors can be used by the end-user to route miscellaneous signals from the test system to the Test System Interface TC1-TC4 connectors. Use the schematics and component locator on the following pages to make connections to these connectors. Chapter contents are:

Component Locator

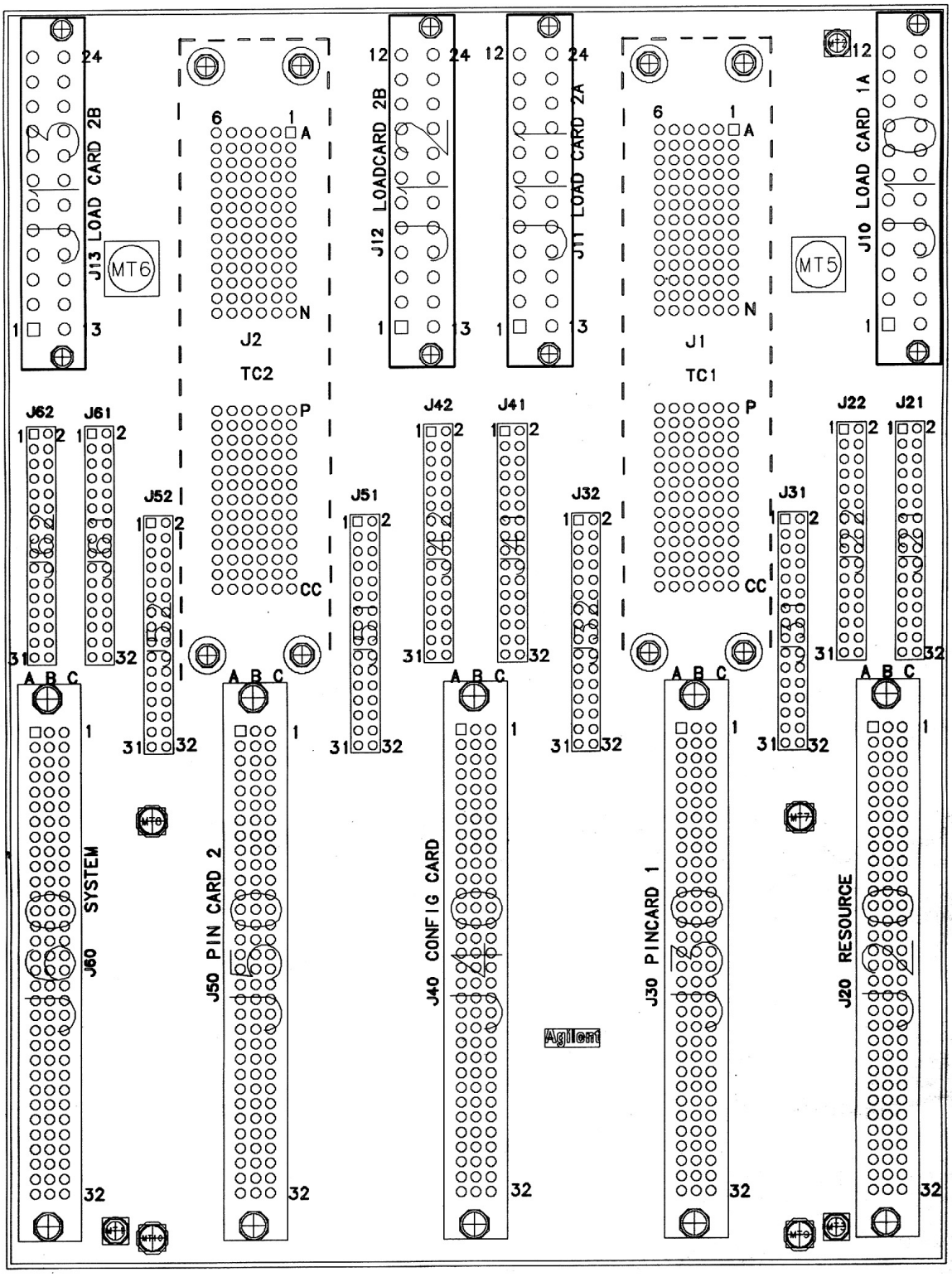


Figure 4-1. Test System Interface Component Locator

J10, J11, J12, J13 Schematic

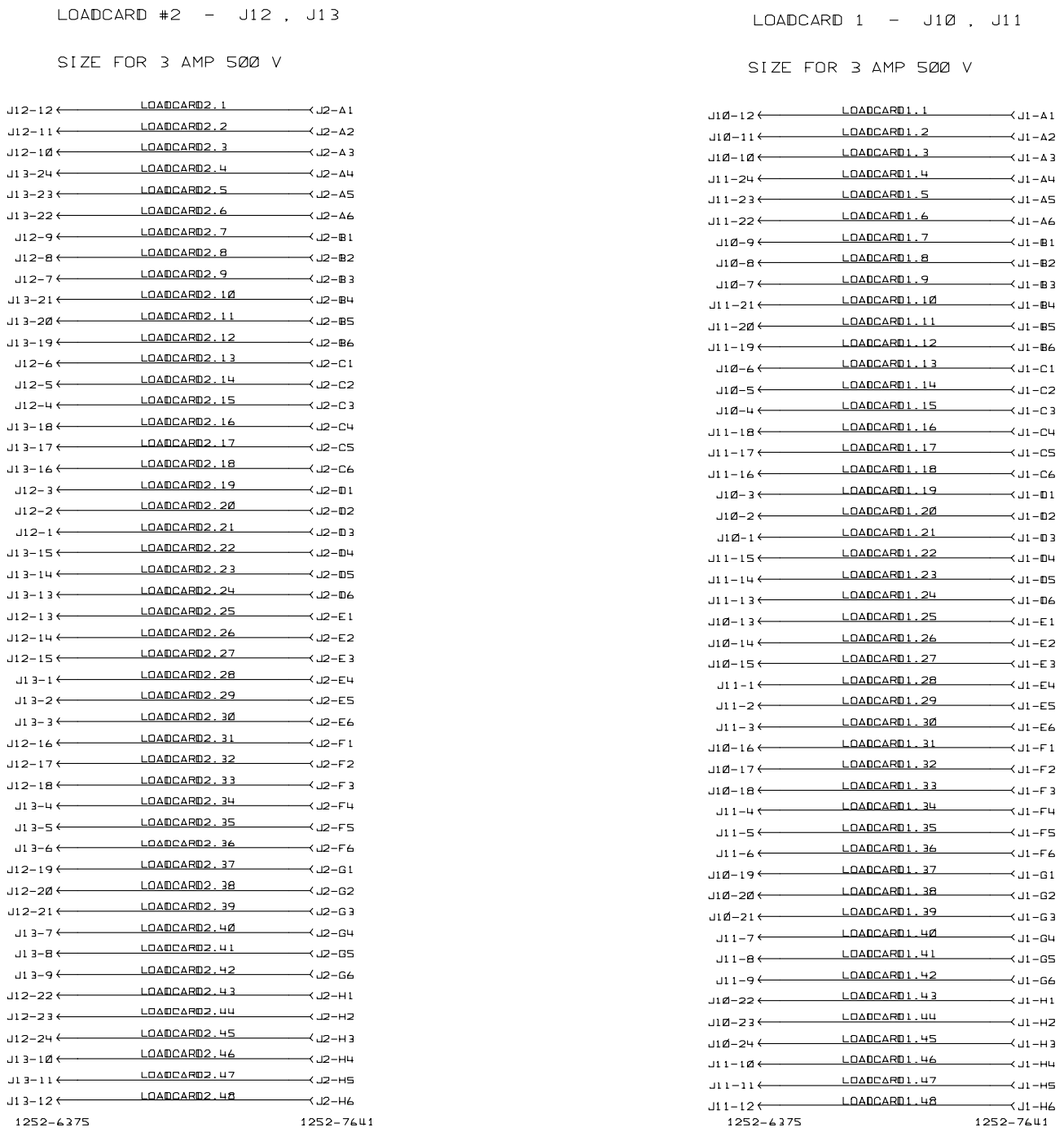


Figure 4-2. Connectors J10, J11, J12, J13

J30/J31/J32, J50/J51/J52 Connectors

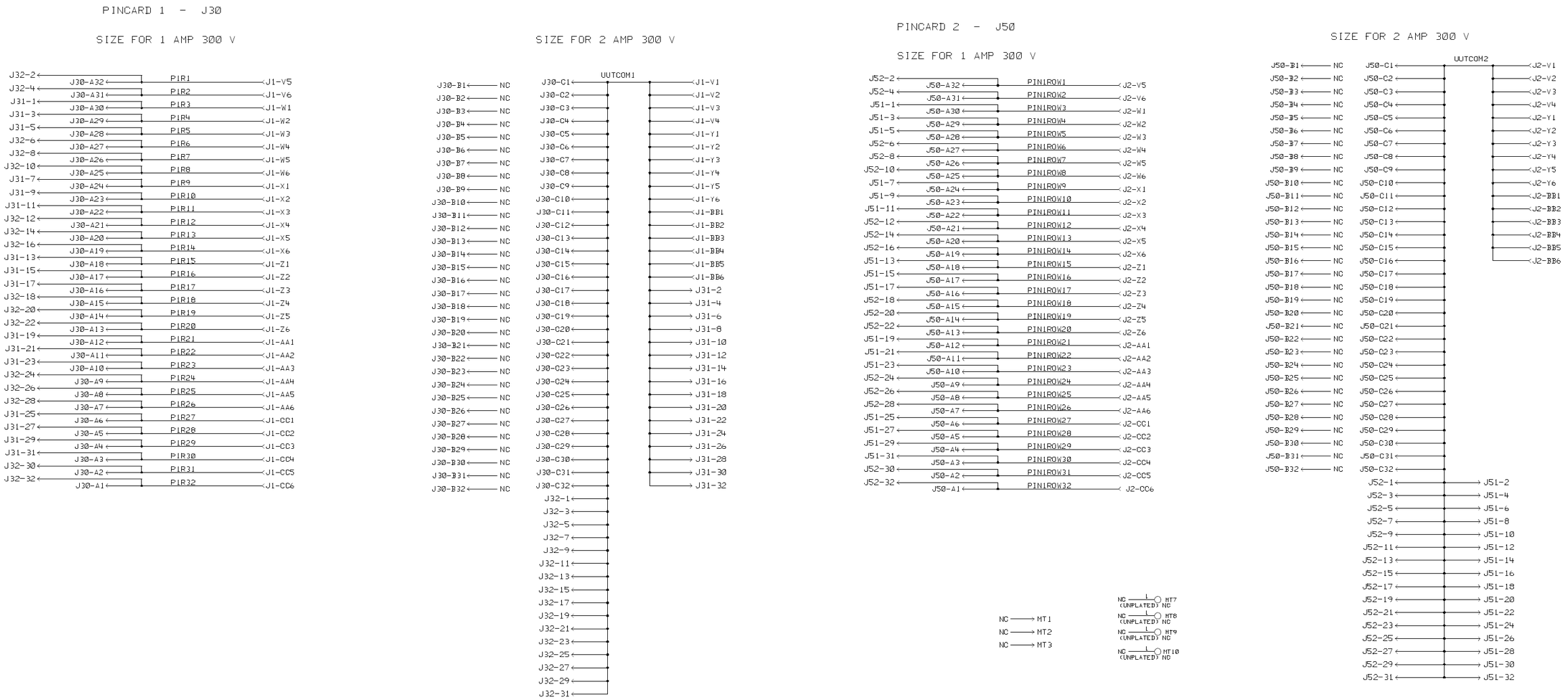


Figure 4-3. J30/J31/J32, J50/J51/J52 Connectors

J40/J41/J42 Connectors

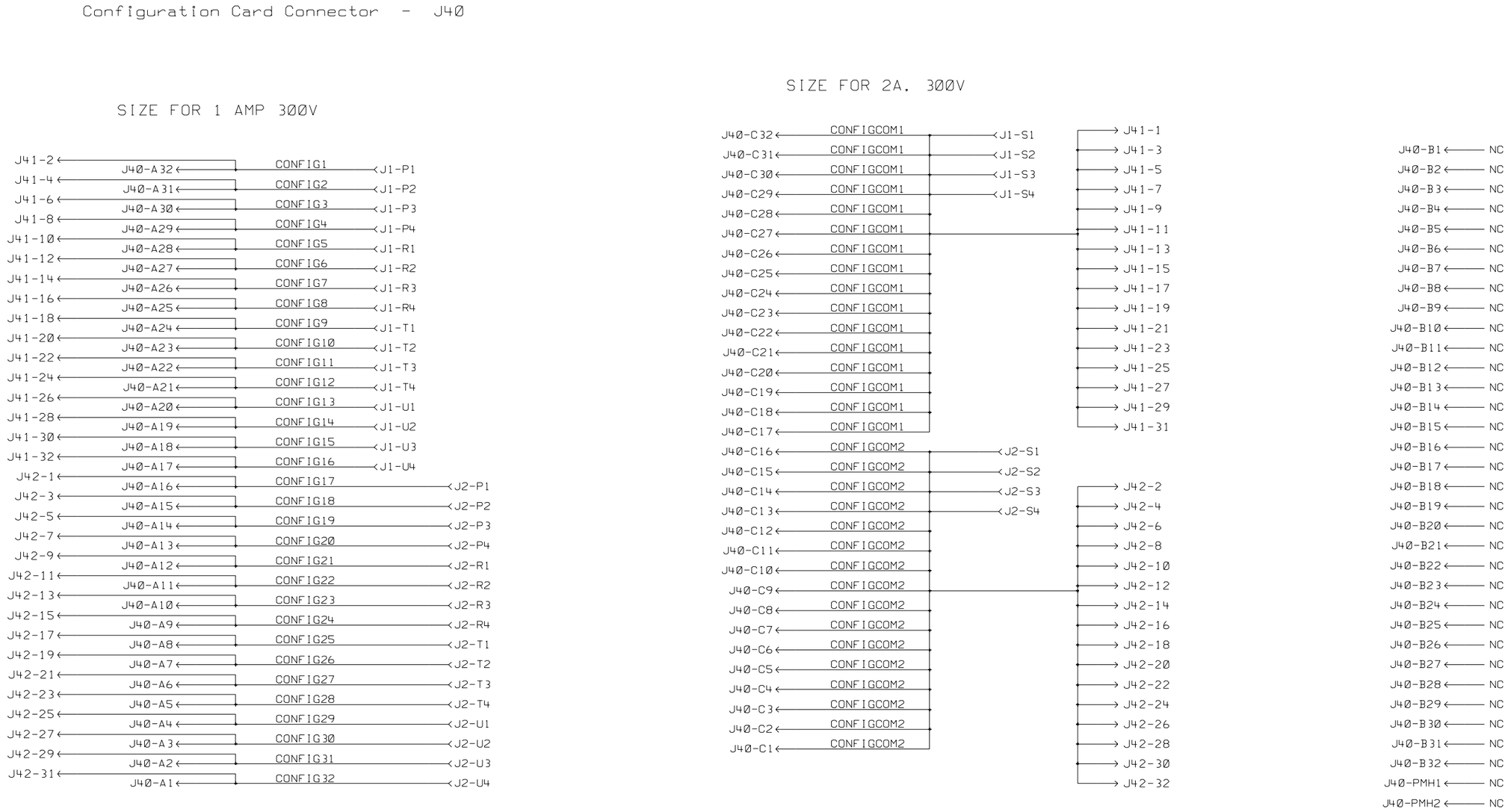


Figure 4-4. J40/J41/J42 Connectors

J20/J21/J22, J60/J61/J62 Connectors

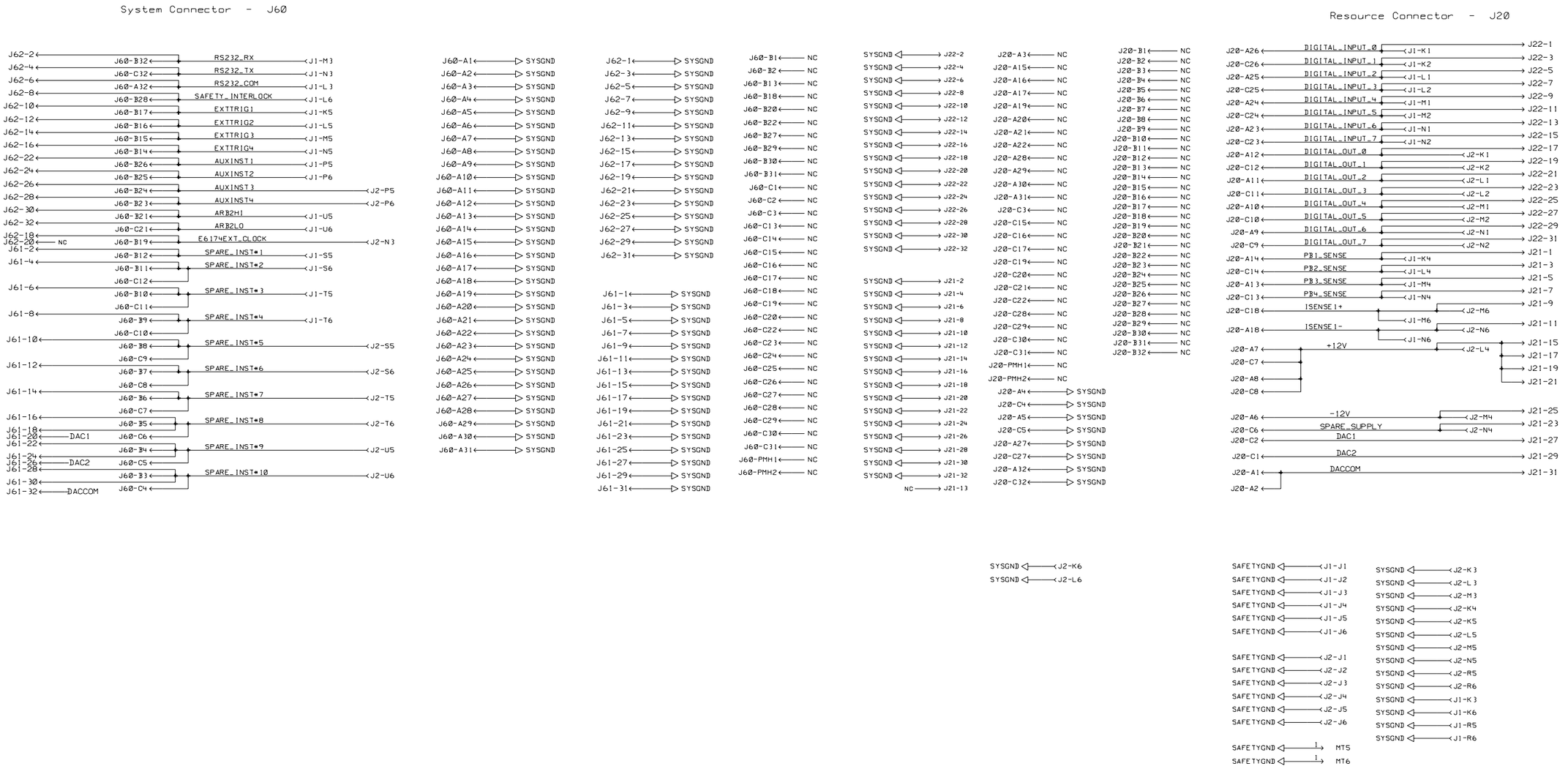


Figure 4-5. J20/J21/J22, J60/J61/J62 Connectors

Chapter 5
Replaceable and Spare Parts

This chapter lists the component level replaceable parts for the system and the spare parts stocking recommendations.

Note Cable part numbers are listed here, cable drawings are shown in Chapter 3.

Agilent E2230A Replaceable Parts

Table 5-1. PC Kits

Part Number	Description
E2235A(GSO)	2.5 GHz Industrial PC (Advantech) w/Windows XP (5065-6664) Keyboard (1150-7970) Mouse (1150-7913) GPIB Extender (1252-6133)

Table 5-2. Advantech Industrial PC Components (2.5 GHz)

Part Number	Description
PCA-6186G2-00A1	Single board computer
PCA-6114P12	PC Backplane
0950-4395	Power Supply
DVR-A06	DVD/CD Writer
0950-2656	3.5" Floppy Drive
0950-4407	40GB Hard Disk Drive
DR-184-512M-333NN	Memory (1.024 GB)

Table 5-3. Monitors

Part Number	Description
2090-0899	15 inch Flat Panel Monitor

Table 5-4. PC Plug-in Cards

Part Number	Description
1150-7919	NI GPIB interface
0960-2368	PCA 8-Channel RS-232/Rocket Port
1150-7773	Advantech Digital I/O
1120-2101	SM2040 6.5 Digit DMM
1150-7983	Vectra CAN Card

Table 5-5. GPIB Instrumentation

Part Number	Description
3499A- N2261A- N2262A- N2264A	Contact your local Agilent Sales and Service Office, reference (Webdoc # epsg1015741) for replaceable part/assembly information.
6643A	DC power supply, 0-35V, 0-6A, 210W GPIB

Table 5-6. Fixed Power Supplies

Part Number	Description
0950-4519	12V/2A Fixed DC Power Supply
0950-4520	24V/1.5A Fixed DC Power Supply

Table 5-7. I/O Panel Connectors

Part Number	Description
E3860-60100	Keyboard/Mouse/VGA Ports
E3860-60101	USB/LAN Ports
E3860-60102	GPIB Connector
E3860-60103	USB/RS232 Ports

Table 5-8. Express Connect PC Board

Part Number	Description
E2228-66501	Express Connect PC Board Assembly

Table 5-9. Cables

Part Number	Description
E2228-61601	N2261A GP channels
E2228-61602	N2262A Matrices
E2228-61603	N2264A GP channels, high-current GP channels, digital I/O lines, 664XA PS Output +, Output -12V/24V +, - outputs
E2228-61604	DMM Trig (1120-2101) Trig cable
E2228-61606	8-Channel PCI RS323 Cable
E2228-61607	Advantech PCI Digital I/O (1150-7773) cable assembly
E2228-61608	PC Controller COM 2 Cable
E2228-61610	PCI CAN Card Cable Assembly
E2230-61603	34401 DMM Current Cable
E3750-61603	DMM (1120-2101) V, Ohm, I + - outputs
E3750-61604	Non-Isolated Cable
E3750-61621	Isolated Cable

Agilent E2230A Recommended Spare Parts

Table 5-10. Recommended Spare Parts

Part Number	Description
1120-2101	SM2040 PCI 6.5 Digit DMM
1150-7773	Advantech PCI Digital I/O Module
E2228-66501	Express Connect PC Board Assembly
N2261A	40-channel GP Relay Module
N2262A	4x8 2-Wire Matrix Switch Module
N2264A	Multifunction Module

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