



Agilent TS-8900 Functional Test System

Wiring Guide And Hardware Reference

Notices

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

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Legal Information

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Latin America:	305 269 7548
Asia-Pacific:	(85 22) 599 7777

Manufacturing Address

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Safety Information

Safety Summary

The following general safety precautions must be observed during all phases of operation of this instrument. 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 instrument. Agilent Technologies, Inc. assumes no liability for the customer's failure to comply with these requirements.

Safety Notice

CAUTION

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.

WARNING

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.

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 product in the presence of flammable gases or flames.

WARNING

DO NOT REMOVE RACK PANELS OR INSTRUMENT COVERS. Operating personnel must not remove any rack panels or instrument covers. Component replacement and internal adjustments must be made only by qualified service personnel. Products that appear damaged or defective should be made inoperative and secured against unintended operation until they can be repaired by a qualified service personnel.

WARNING

The protection provided by the TS-8900 system may be impaired if the system is used in a manner not specified by Agilent.

Environmental Conditions

The TS-8900 Functional Test System is designed for indoor use only. [Table 2-1](#) shows general environmental requirements.

Table 2-1 Environment Requirements

Environment Conditions	Requirements
Maximum Altitude	2000 meters
Temperature (Operation)	5 ° C to 40 ° C
Maximum Relative Humidity	The test system is designed to operate in the range from 5% to 80% relative humidity (non-condensing).

CAUTION

This product is designed for use in Installation Category II and Pollution Degree 2, per IEC 61010-1 and 664 respectively.

Before Applying Power

Verify that the product is set to match the available line voltage and all safety precautions are taken. Note the external markings of the instruments described in “[Safety Symbols and Regulatory Markings](#)”.

Ground The System

To minimize shock hazard, the instrument chassis and cover must be connected to an electrical protective earth ground. The instrument must be connected to the ac power mains through a grounded power cable, with the ground wire firmly connected to an electrical ground (safety ground) at the power outlet. Any interruption of the protective (grounding) conductor or disconnection of the protective earth terminal 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.

WARNING

In order to avoid electrical hazards, all system internal fuses must be replaced by trained and qualified personnel.

Operator Safety Information

WARNING

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 a conductive surface connected to any cable conductor (High, Low or Guard).

WARNING














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 front panel connectors of the module 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 2-2](#) defines the symbols and markings you may find in a manual or on an instrument.

Table 2-2 Safety Symbols and Regulatory Markings

Safety symbols	
	Warning: risk of electric shock.
	Warning: hot surface
	Caution: refer to accompanying documents.
	Laser radiation symbol: marked on products that have a laser output.
	Alternating current.
	Both direct and alternating current.
	Three-phase 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.
	Terminal for neutral conductor on permanently installed equipment.
	Terminal for line conductor on permanently installed equipment.

Safety symbols



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

ICES/NMB-001

This text indicates that the ISM device complies with Canadian ICES-001. Cet appareil ISM est conforme à la norme NMB-001 du Canada.



The CSA mark is a registered trademark of the Canadian Standards Association.



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.



This instrument complies with the WEEE Directive (2002/96/EC) marking requirement. This affixed product label indicates that you must not discard this electrical/electronic product in domestic householdwaste.



The CE mark is a registered trademark of the European Community. If it is accompanied by a year, it indicates the year the design was proven.

Electrostatic Discharge (ESD) Precautions

Static electricity is destructive to your production process and the TS-8900. Careless handling and poor site planning can cause system reliability problems and reduce your product yield. The system may not be as easily damaged as the modules you will be testing, but good anti-static planning will help ensure high reliability.

The ESD symbol below indicates areas where ESD caution must be exercised. This is to prevent damage to instruments and/or test disruption.

ESD Symbol



Caution: Static Sensitive.

Electrostatic discharge in this area may cause equipment damage or test disruption.

While not an exhaustive list of anti-static precautions, [Table 2-3](#) shows suggestions to consider as you plan your system area:

Table 2-3 Suggested Anti-Static Solutions for Site Planning

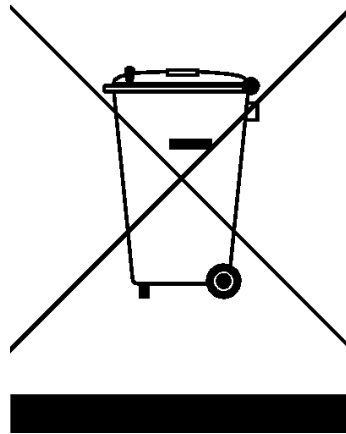
Precaution	Suggested Solution
Anti-static flooring	Plan to use an anti-static floor covering or mats.
Grounding straps	Plan for foot straps in conjunction with anti-static flooring and wrist straps for system operators.

CAUTION

The system test rack is secured to the pallet of the shipping crate and wrapped with a plastic wrap. Do not move the crate or the test rack and pallet to a static sensitive area until you have removed the plastic wrap from the test rack.

End of Life: Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC

This product complies with the WEEE Directive (2002/96/EC) marking requirement. The affixed product label (see below) indicates that you must not discard this electrical/electronic product in domestic household waste.



Product Category:

With reference to the equipment types in the WEEE directive Annex 1, this product is classified as a “Monitoring and Control Instrumentation” product.

Do not dispose in domestic household waste

To return unwanted products, contact your local Agilent office, or see:

<http://www.agilent.com/environment/product>

for more information.

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Instructions For Use

The Agilent TS-8900 systems contain all of the instrumentation needed to test most electronics modules. You may also add additional instruments and cabling to increase the test capabilities of the system. The locations of the instruments and test system interface or mass interconnect are standardized as much as possible. Because the Agilent TS-8900 Series uses open system standards, and is configurable by the system integrator, systems at your site may be different from the factory configurations.

WARNING

In the event that additional instrumentation is added that will shift the center of gravity, a rack stability test must be completed to verify the stability of the modified rack.

Typical system operation is dependant on the target application. The system is to be modified by trained personal for the target test module application. Typically, the test system development process consists of:

- Identify the number of load resources required and assign load resources.
- Identify the number of measurement resources required and assign measurement resources.
- Identify ECM serial interface communications needs and assign serial resource.
- Identify fixture control resources required and assign I/O & power resources.
- Construct test fixture and test system interconnect cabling required for the specific application.
- Develop TXSL based test-plan for specific application.
- Develop Software operator user interface for specific application
- Validate and deploy test system to manufacturing site.

Test System Specifications and Capabilities

The TS-8900 test system specifications are derived directly from the specifications of the instrumentation that make up the system. The overall test system measurement capability is a combination of the measurement uncertainty as specified by the individual instrumentation combined with the system switch paths of the switching sub-systems.

For test system instrumentation specifications & characteristics, refer directly to the manufacturer documentation. [Table 3-1](#) lists various instrumentations that may be configured into the system. Refer to the manufacturer supplied datasheets for detailed specifications.

Table 3-1 Typical TS-8900 instrumentation

P/N	Manufacturer	Description
E6198B	Agilent Technologies	21 slots Switch/Load Unit (SLU)
E8782A	Agilent Technologies	Pin Card with 24 Instrumentation & 40 Measurement Matrix
E8783A	Agilent Technologies	Pin Card with 64 Measurement Matrix
E6178B	Agilent Technologies	8-Channel 30 Amp Load Card
E6175A	Agilent Technologies	8-Channel Load Card
U7177A	Agilent Technologies	24-Channel Load Card with Current Sense
N9377A	Agilent Technologies	16-channel Dual-Load Load Card
N9379A	Agilent Technologies	48-channel High Density Load Card
M9018A	Agilent Technologies	18 slot PXIe Chassis
M9021A	Agilent Technologies	PCIe Cable Interface
M9182A	Agilent Technologies	PXI Digital Multimeter, 6½ digit
M9183A	Agilent Technologies	PXI Digital Multimeter, 6½ digit Enhanced Performance
M9216A	Agilent Technologies	PXI 32-channel High Voltage Data Acquisition
M9187A	Agilent Technologies	PXI Digital IO : 32 Inputs, 32 Outputs
M9185A	Agilent Technologies	PXI 8/16-Channel Isolated D/A Converter
M9186A	Agilent Technologies	PXI Isolated Single Channel Voltage/Current Source, 100V
33521A	Agilent Technologies	Function / Arbitrary Waveform Generator, 1-channel, 30 MHz
33522A	Agilent Technologies	Function / Arbitrary Waveform Generator, 2-channel, 30 MHz
53220A	Agilent Technologies	350 MHz Universal Frequency Counter/Timer
L4532A	Agilent Technologies	20 MSa/s, 2 Channel LXI Digitizer
L4534A	Agilent Technologies	20 MSa/s, 4 Channel LXI Digitizer
L4451A	Agilent Technologies	4-Channel D/A Converter with Waveform Memory
N5764A	Agilent Technologies	Power Supply, 20V, 76A, 1520W
N5744A	Agilent Technologies	Power Supply, 20V, 38A, 760W
N5745A	Agilent Technologies	Power Supply, 30V, 25A, 750W
N5765A	Agilent Technologies	Power Supply, 30V, 50A, 1500W
N8734A	Agilent Technologies	Power Supply, 20V, 165A, 3300W
N8735A	Agilent Technologies	Power Supply, 30V, 110A, 3300W
N6702A	Agilent Technologies	Low-Profile MPS Mainframe, 1200W

Test System Interface Description

The Agilent TS-8900 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

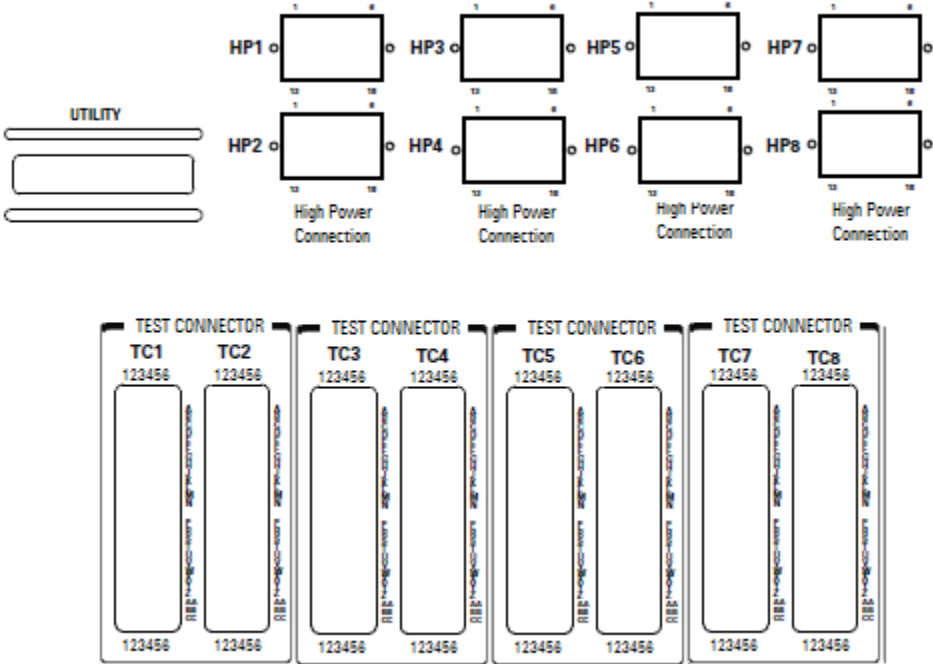
The Express Connect Test System Interface is used in TS-8900 Test System.

This interface consists of connectors TC1 through TC8.

Test connectors TC1 to TC8 provide the majority of the connections to the UUT. These connectors are 156-pin, ITT Cannon Zero-Insertion Force connectors.

Figure 3-1 shows the outline of the connector sets.

Figure 3-1 Express Connect Test System Interface TC1 through TC8



Rack Layout with Express Connect Test System Interface

Figure 3-2 Typical TS-8900 1.6m System Rack Layout with Express Connect

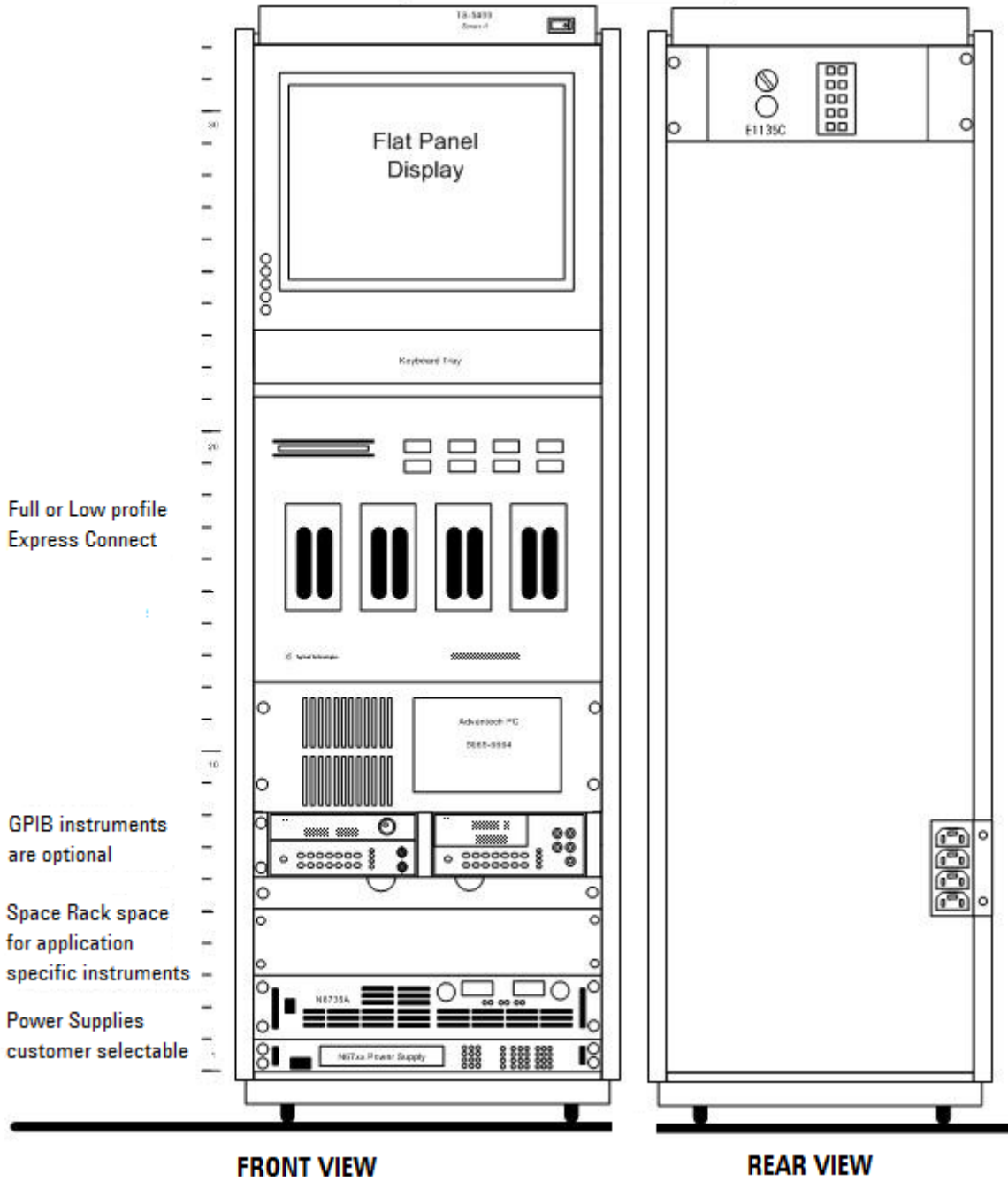
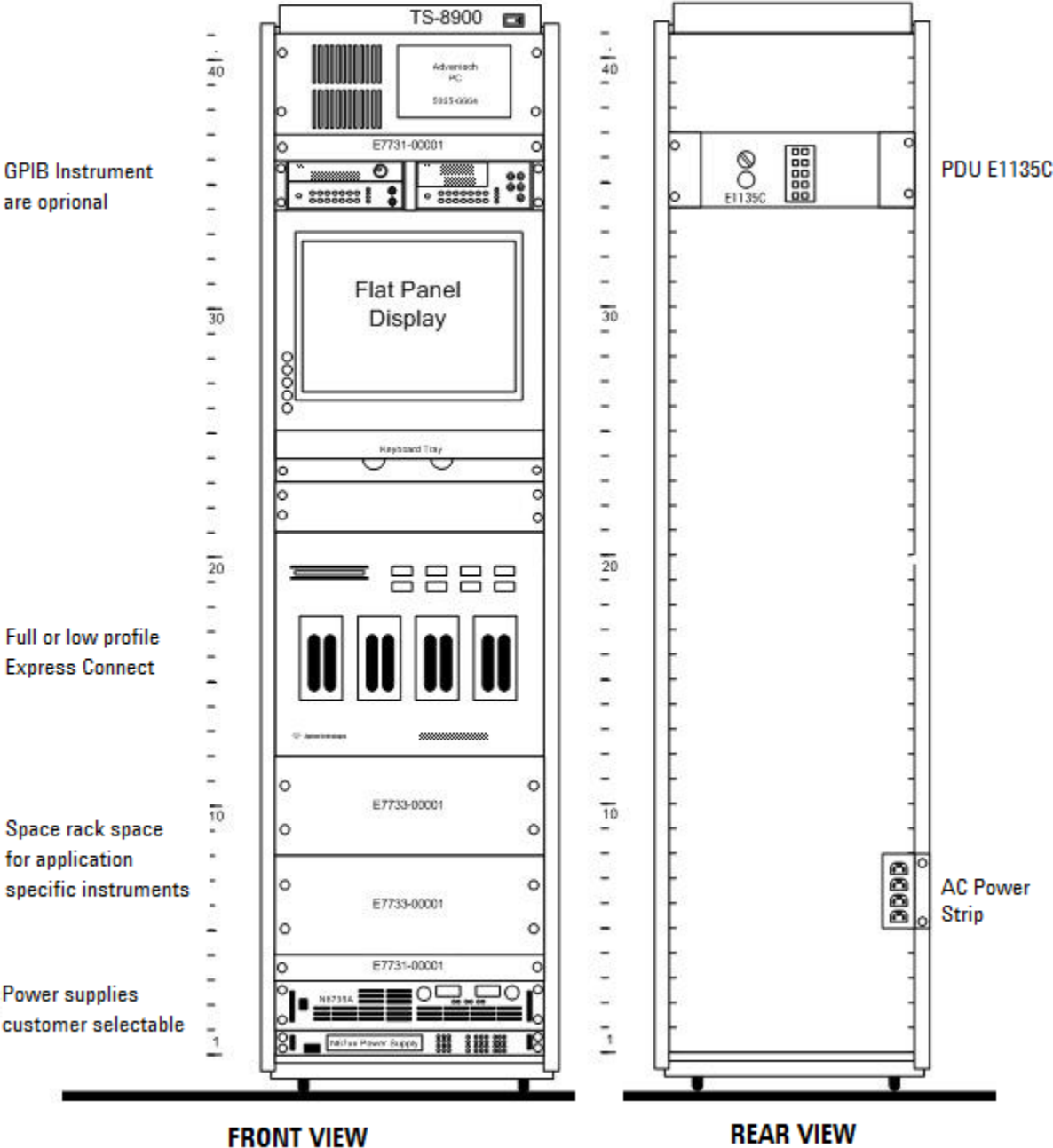
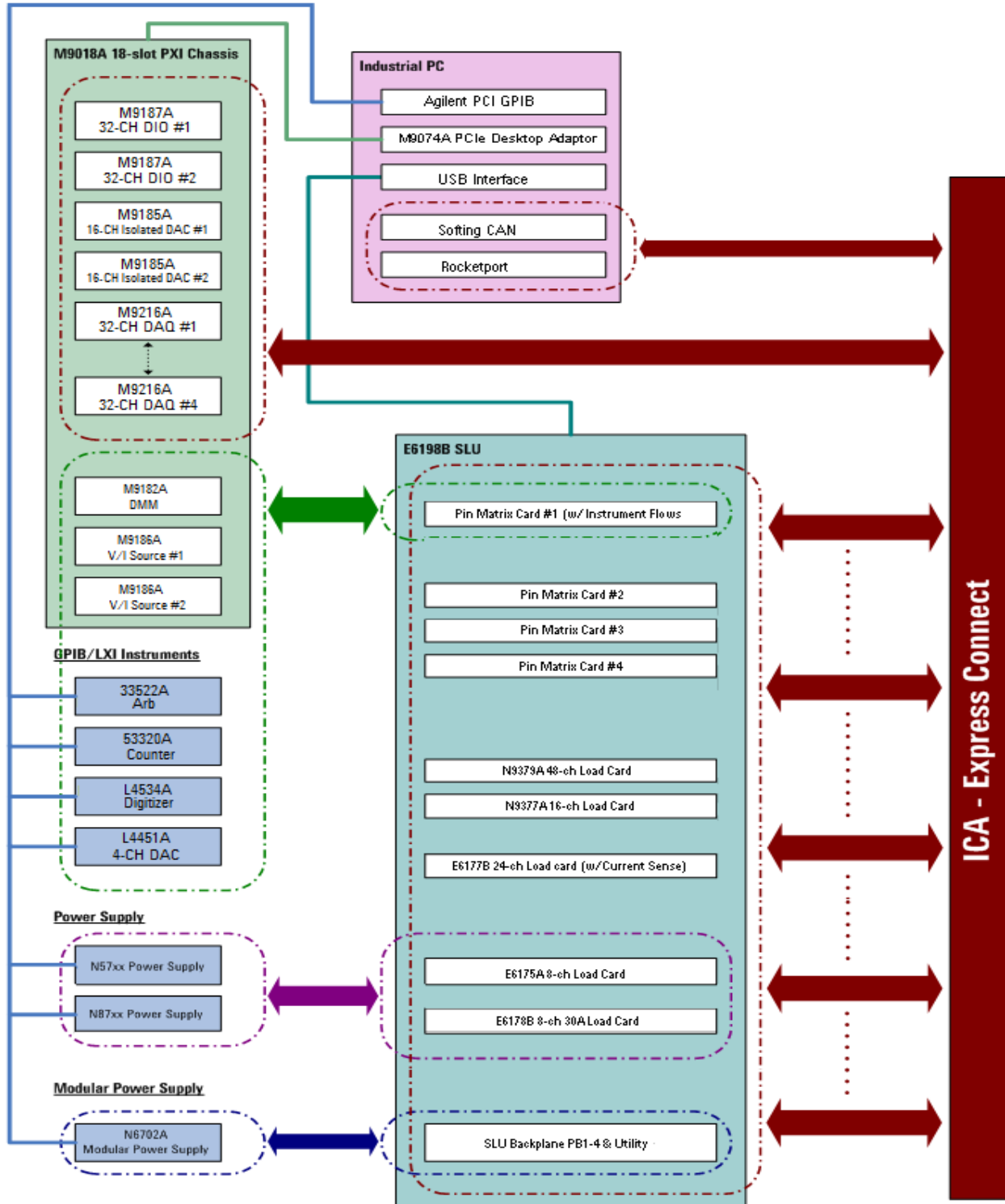


Figure 3-3 Typical TS-8900 2m System Rack Layout with Express Connect



System Block Diagram with Express Connect Test System Interface

Figure 3-4 TS-8900 Test System with Express Connect Simplified Block Diagram



PC 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.

- Rocketport 8-Channel RS-232 Card,
- Softing AC2-PCI CAN Card (Automotive Serial Protocol Card),

Other PCI cards are also available for custom systems.

Agilent 53220 Universal Counter

The Agilent 53220A Universal Counter can measure Frequency, Period, Pulse Width, Duty Cycle, Rise/Fall Time, Time Interval, Frequency Ratio, Totalize, Phase, and Peak Voltage.

The 53220A is capable of measuring frequencies to 350 MHz on Channels 1 and 2. Frequency and time interval resolutions are 12 digits in one second and 100 picoseconds, respectively. The 53220A provides GPIB measuring speed of up to 200 measurements per second.

For additional information, refer to the Agilent 53220A 350MHz Universal Frequency Counter/Timer User's Guide.

Agilent 33522 Function/Arbitrary Waveform Generator

The Agilent 33522A function / arbitrary waveform generator uses direct digital synthesis (DDS) techniques to create stable, low-distortion output signals. The 33522A provides easy access to standard sine, square, ramp, triangle, and pulse waveforms plus you can create custom waveforms using the 250 MSA/s, 16 bit, true point-by-point arbitrary waveform function.

For additional information, refer to the Agilent 33522A Function/Arbitrary Waveform Generator User's Guide.

Power Supplies

Available power supplies are the Agilent N6702A Low-Profile Modular Power System (MPS), the Agilent N57xxA and N87xxA power supply.

The power supply can be wired to the E6198B or wired through the E6178B load card to the TC pins.

Agilent N6702 MPS

The Agilent N6702A 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.

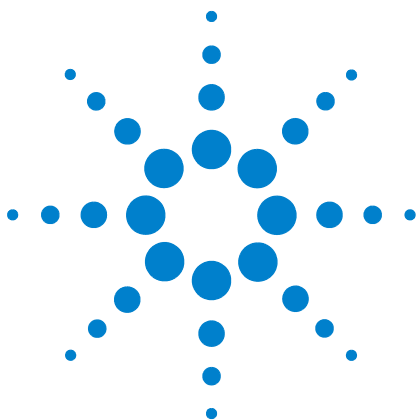
The MPS uses a switching power supply design. It has side air vents (no top or bottom air vents) so other instruments can be mounted directly above or below it. Each power module is protected against over-voltage, over-current, and over-temperature.

Channel Names

The Channel Names of the N6702A 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 N6702A 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 N6702A.



4 System Interconnects

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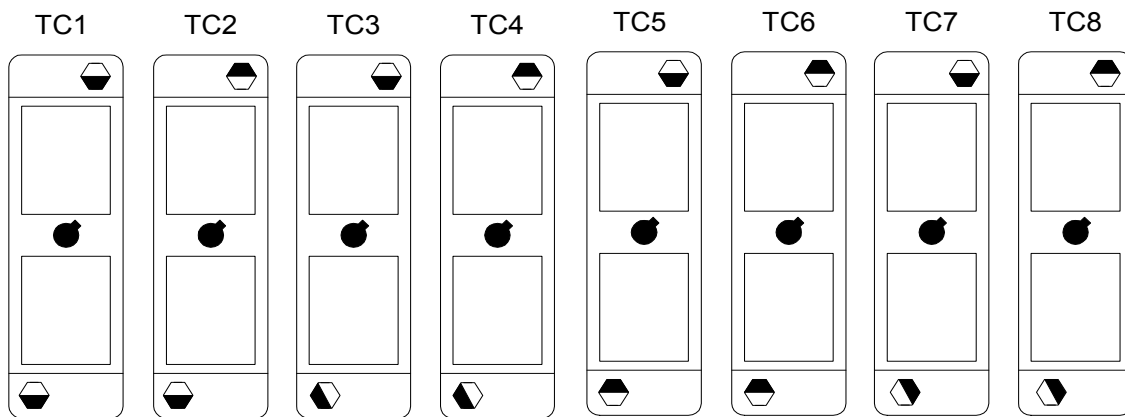


System Interconnect for Express Connect Interface

Connector Keying

The TC connectors are prevented from mating into the wrong TC terminal by their key configurations. [Figure 4-1](#) shows the possible key configuration to prevent the possibility of, say, connecting a TC2 mating connector to TC1.

Figure 4-1 TC1-TC8 Connector Key Configuration



NOTE: Shaded area represents extended portion of keys. →

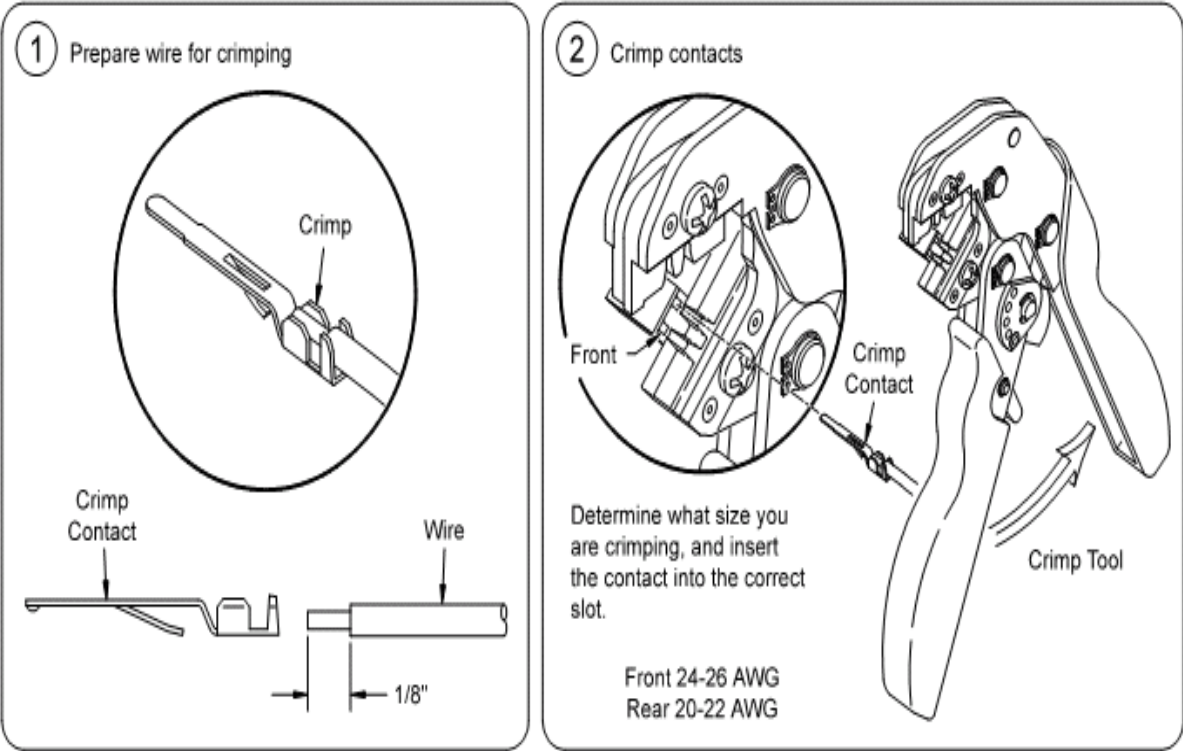
Connecting Wiring to Test Connectors TC1- TC8

The figures on this and the following pages show how to connect wiring and assemble the mating connectors for Test Connectors TC1 through TC8. Should you make a mistake, [Figure 4-2](#) 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.

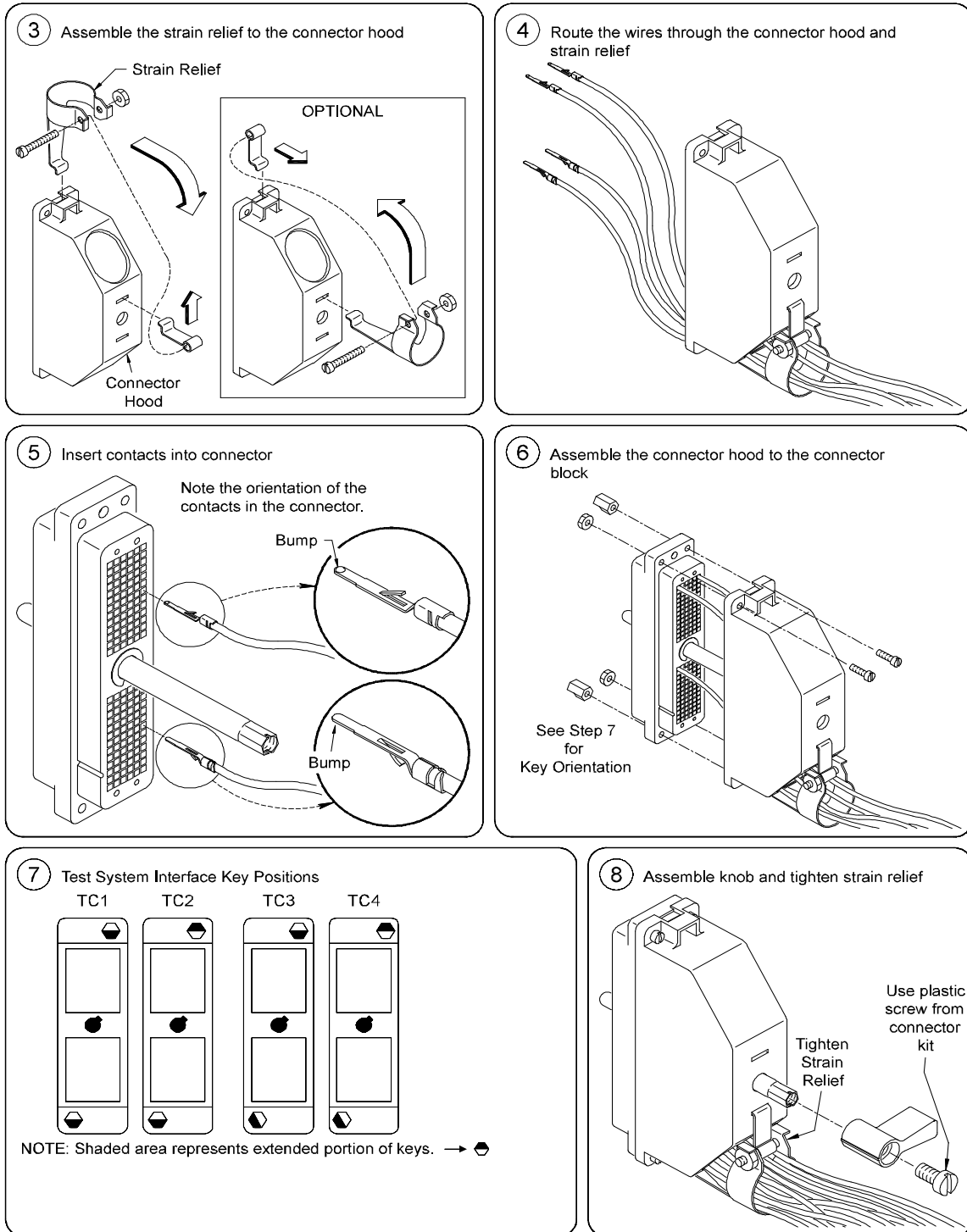
Crimping Wires to Contacts

Figure 4-2 Crimping Wires to Contacts



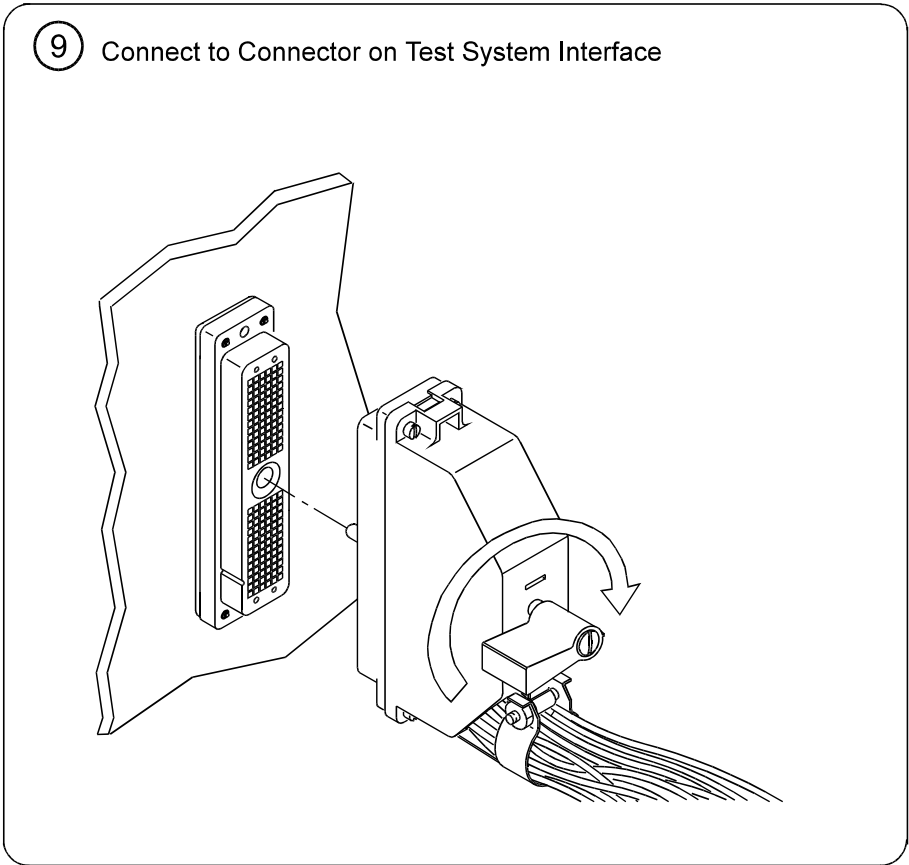
Inserting Contacts and Assembling the Connectors

Figure 4-3 Assembling TC1 to TC4



Connecting To The Test System Interface

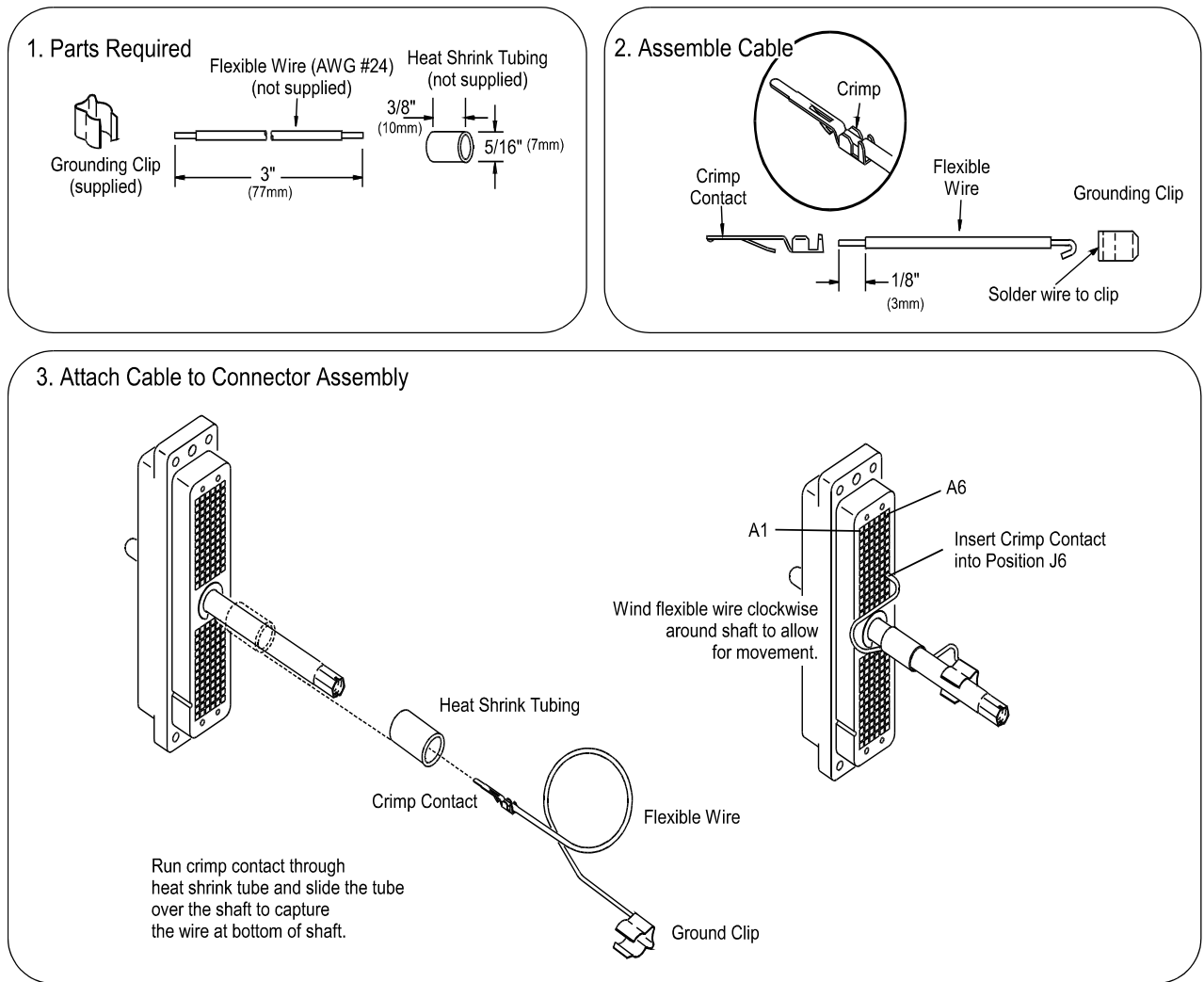
Figure 4-4 Connecting To The Test System Interface



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 4-5** shows how to add the grounding strap. Positions J1 through J4 are safety ground connections on the Test Connector.

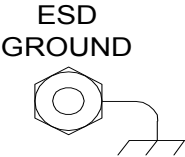
Figure 4-5 Adding A Grounding Strap To Reduce ESD



Operator Wrist Strap ESD Connector

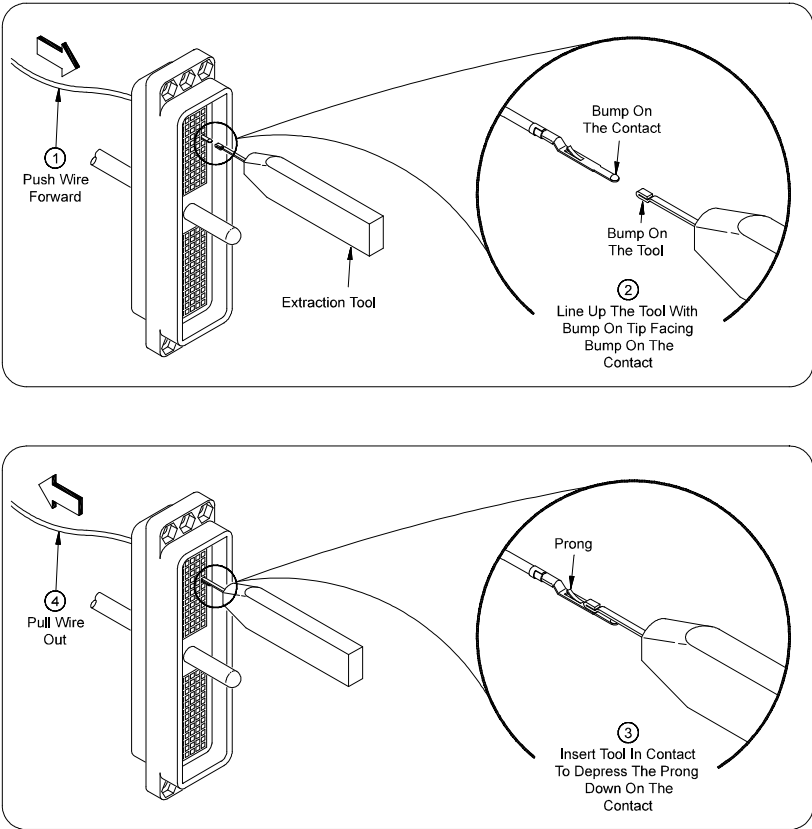
A connector is provided on the front of the Test System Interface for an operator ESD wrist strap connection. The connector is wired to Safety (Earth) ground.

Figure 4-6 Wrist Strap ESD Connector



Removing A Contact

Figure 4-7 Removing A Test Connector Contact



Test Connector Signal Definitions

Table 4-1 lists the signals available on Test Connector TC_x. Signal names are listed here alphabetically and are referenced to the 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. The large font text is the actual signal name and corresponds to the actual equipment signals.

Table 4-1 TC_x Signal Definitions

TC Signal	Description
LoadCard.n	Loadcard connections to one of several different loadcards.
Pmatrix.n	Measurement matrix pin access.
PM.Aux	Aux pin access for the first measurement matrix.
DAQ.n	PXI HV DAQ pin access.
DAC.n	PXI 8-CH/16-CH DAC pin access.
DIO.n	PXI 32-CH DIO pin access.
LXI_DAC	LXI 4-CH DAC pin access.
Safety Ground	This is a high current/high noise ground. It connects the instrument rack to safety or earth ground. There are total 6 Safety Ground pins for every test connector pair. Be sure to connect ALL Safety Ground lines to your UUT to ensure proper current sharing.
RS232	Serial connections from the Industrial PC Controller's COM ports.
CAN	Serial connections from the serial interface module (Multicom, Softing CAN Card).

The system integrator may configure various uncommitted TC connector pin groups for use as required for their specific application. There are two connectors on the back of the Express Connect Printed Circuit Assembly (PCA) that map to the TC connector for this purpose.

- 1 User define pins may be accessed through the DIO connector. These pins work well for multi-channel instruments (such as digitizer or DAC channels), or for multi-channel serial access (such as for a flash programming station). These pins are available for use as needed on all of the even numbered TC connectors. The DIO connector located on the Express Connect PCA as is labeled DIO. See [Figure 4-18](#).
- 2 The connector labeled “CONFIG” is user configurable. Row 1 to Row 11 of the connector is configurable for multi-channel instruments. Row 26, 28, 30 and 32 provide 12 pinouts on each odd numbered TC, allowing additional serial interface connection. Row 1 to row 11, row 18, row 20 and row 22 each has a pair of pinout on odd numbered TC connector. These pins work well for multi-channel instruments (such as digitizer or DAC channels). See [Figure 4-19](#).

The connectors labeled “PINCARD1” and “PINCARD2” are available for use for both E878xA pin matrix card and M9216High Voltage Data Acquisition (HV DAQ). If both pin matrix card and HV DAQ are present in a system, it is recommended that pin matrix resources are given priority over HV DAQ. In other words, resources from the first pin matrix card should be assigned to “PINCARD1” & “PINCARD2” of the first Express Connect PCA, likewise for the second pin matrix card on the second Express Connect PCA and so on. HV DAQ resources will be assigned to the next available “PINCARD1” or “PINCARD2” connector after the pin matrix card(s).

The system interconnect is also designed for scalability. All odd numbered TC connector has identical pin arrangement; the same applies for even numbered TC connector. This allows the system interconnect to be used as a group of 8 TC connectors, 2 groups of 4 TC connectors each, or 4 groups of 2 TC connectors each. Such arrangement is useful for a multi-up application.

These TC connectors are intended for low current access and should not be used for application above 500mA.

TC1-TC8 Pinouts

Figure 4-8 shows the pinouts for TC1 and Figure 4-9 the pinouts for TC2.

Figure 4-10 shows the pinouts for TC3 and Figure 4-11 the pinouts for TC4.

Figure 4-12 shows the pinouts for TC5 and Figure 4-13 the pinouts for TC6.

Figure 4-14 shows the pinouts for TC7 and Figure 4-15 the pinouts for TC8.

Every TC has the same pinout for loadcards.

Every odd numbered TC are almost identical. Note that they have equal pinouts for 8-CH PXI DAC, 32-CH DAQ or 32-CH Pin Matrix, Serial interface and 8-CH Pin Matrix Aux.

Every even numbered TC are almost identical. Note that they have equal pinouts for 16-CH PXI DIO, 32-CH DAQ or 32-CH Pin Matrix and 4-CH LXI DAC.

Figure 4-8 TC1 Pinouts

1		2		3		4		5		6	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
CAN_Lo		CAN_Hi		CAN_COM		PM.Aux1		PM.Aux2			
RS232-Pin 3 (Rx)		RS232-Pin 2 (Tx)		RS232-Pin 5 (SGND)		PM.Aux3		PM.Aux4			
RS232-Pin 6 (DSR)		RS232-Pin 4 (DTR)		RS232-Pin 1 (CD)		PM.Aux5		PM.Aux6			
RS232-Pin 9 (TI)		RS232-Pin 8 (CTS)		RS232-Pin 7 (RTS)		PM.Aux7		PM.Aux8			
Safety Ground		DAC.n - Triggering		DAC.n - ZGND CAL		DAC.n - DMM_H		DAC.n - DMM_L		DAC.n - DMM_C	
DAC.n - Ch1 L		DAC.n - Ch1 Lsense		DAC.n - Ch2L		DAC.n - Ch2Lsense		DAC.n - Ch3 L		DAC.n - Ch3 Lsense	
DAC.n - Ch1 H		DAC.n - Ch1 Hsense		DAC.n - Ch2 H		DAC.n - Ch2 Hsense		DAC.n - Ch3 H		DAC.n - Ch3 Hsense	
DAC.n - Ch4 L		DAC.n - Ch4 Lsense		DAC.n - Ch5 L		DAC.n - Ch5 Lsense		DAC.n - Ch6 L		DAC.n - Ch6 Lsense	
DAC.n - Ch4 H		DAC.n - Ch4 Hsense		DAC.n - Ch5 H		DAC.n - Ch5 Hsense		DAC.n - Ch6 H		DAC.n - Ch6 Hsense	
DAC.n - Ch7 L		DAC.n - Ch7 Lsense		DAC.n - Ch8 L		DAC.n - Ch8 Lsense		DAC.n - ZGND		DAC.n - ZGND	
DAC.n - Ch7 H		DAC.n - Ch7 Hsense		DAC.n - Ch8 H		DAC.n - Ch8 Hsense		DAC.n - ZGND		DAC.n - ZGND	
DAQ.n - Port 1	Pmatrix.n - Row1	DAQ.n - Port 9	Pmatrix.n - Row2	DAQ.n - Port 17	Pmatrix.n - Row3	DAQ.n - Port 5	Pmatrix.n - Row17	DAQ.n - Port 13	Pmatrix.n - Row18	DAQ.n - Port 21	Pmatrix.n - Row19
DAQ.n - Port 25	Pmatrix.n - Row4	DAQ.n - G1	UUT Common	DAQ.n - Port 2	Pmatrix.n - Row5	DAQ.n - Port 29	Pmatrix.n - Row20	DAQ.n - G3	UUT Common	DAQ.n - Port 6	Pmatrix.n - Row21
DAQ.n - Port 10	Pmatrix.n - Row6	DAQ.n - Port 18	Pmatrix.n - Row7	DAQ.n - Port 26	Pmatrix.n - Row8	DAQ.n - Port 14	Pmatrix.n - Row22	DAQ.n - Port 22	Pmatrix.n - Row23	DAQ.n - Port 30	Pmatrix.n - Row24
DAQ.n - G2	UUT Common	DAQ.n - G1	UUT Common	DAQ.n - G2	UUT Common	DAQ.n - G4	UUT Common	DAQ.n - G3	UUT Common	DAQ.n - G4	UUT Common
DAQ.n - Port 3	Pmatrix.n - Row9	DAQ.n - Port 11	Pmatrix.n - Row10	DAQ.n - Port 19	Pmatrix.n - Row11	DAQ.n - Port 7	Pmatrix.n - Row25	DAQ.n - Port 15	Pmatrix.n - Row26	DAQ.n - Port 23	Pmatrix.n - Row27
DAQ.n - Port 27	Pmatrix.n - Row12	DAQ.n - G2	UUT Common	DAQ.n - Port 4	Pmatrix.n - Row13	DAQ.n - Port 31	Pmatrix.n - Row28	DAQ.n - G4	UUT Common	DAQ.n - Port 8	Pmatrix.n - Row29
DAQ.n - Port 12	Pmatrix.n - Row14	DAQ.n - Port 20	Pmatrix.n - Row15	DAQ.n - Port 28	Pmatrix.n - Row16	DAQ.n - Port 16	Pmatrix.n - Row30	DAQ.n - Port 24	Pmatrix.n - Row31	DAQ.n - Port 32	Pmatrix.n - Row32

Figure 4-9 TC2 Pinouts

1		2		3		4		5		6	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
Safety Ground		Safety Ground		Safety Ground		Safety Ground		Safety Interlock		DCOM	
DIO.1 - Input 1	User Define	DIO.1 - Input 2	User Define	DIO.1 - Input 3	User Define	DIO.1 - Input 4	User Define	LXI_DAC_Ch1_L		LXI_DAC_Ch1_Lsense	
DIO.1 - Input 5	User Define	DIO.1 - Input 6	User Define	DIO.1 - Input 7	User Define	DIO.1 - Input 8	User Define	LXI_DAC_Ch1_H		LXI_DAC_Ch1_Hsense	
DIO.1 - Input 9	User Define	DIO.1 - Input 10	User Define	DIO.1 - Input 11	User Define	DIO.1 - Input 12	User Define	LXI_DAC_Ch2_L		LXI_DAC_Ch2_Lsense	
DIO.1 - Input 13	User Define	DIO.1 - Input 14	User Define	DIO.1 - Input 15	User Define	DIO.1 - Input 16	User Define	LXI_DAC_Ch2_H		LXI_DAC_Ch2_Hsense	
DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		LXI_DAC_Ch3_L		LXI_DAC_Ch3_Lsense	
DIO.1 - Output 1	User Define	DIO.1 - Output 2	User Define	DIO.1 - Output 3	User Define	DIO.1 - Output 4	User Define	LXI_DAC_Ch3_H		LXI_DAC_Ch3_Hsense	
DIO.1 - Output 5	User Define	DIO.1 - Output 6	User Define	DIO.1 - Output 7	User Define	DIO.1 - Output 8	User Define	LXI_DAC_Ch4_L		LXI_DAC_Ch4_Lsense	
DIO.1 - Output 9	User Define	DIO.1 - Output 10	User Define	DIO.1 - Output 11	User Define	DIO.1 - Output 12	User Define	LXI_DAC_Ch4_H		LXI_DAC_Ch4_Hsense	
DIO.1 - Output 13	User Define	DIO.1 - Output 14	User Define	DIO.1 - Output 15	User Define	DIO.1 - Output 16	User Define	LXI_DAC_Ground		LXI_DAC_Ground	
DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - Vext		LXI_DAC_ExtClock		LXI_DAC_Triggering	
DAQ.n - Port 1	Pmatrix.n - Row33	DAQ.n - Port 9	Pmatrix.n - Row34	DAQ.n - Port 17	Pmatrix.n - Row35	DAQ.n - Port 5	Pmatrix.n - Row49	DAQ.n - Port 13	Pmatrix.n - Row50	DAQ.n - Port 21	Pmatrix.n - Row51
DAQ.n - Port 25	Pmatrix.n - Row36	DAQ.n - G1	UUT Common	DAQ.n - Port 2	Pmatrix.n - Row37	DAQ.n - Port 29	Pmatrix.n - Row52	DAQ.n - G3	UUT Common	DAQ.n - Port 6	Pmatrix.n - Row53
DAQ.n - Port 10	Pmatrix.n - Row38	DAQ.n - Port 18	Pmatrix.n - Row39	DAQ.n - Port 26	Pmatrix.n - Row40	DAQ.n - Port 14	Pmatrix.n - Row54	DAQ.n - Port 22	Pmatrix.n - Row55	DAQ.n - Port 30	Pmatrix.n - Row56
DAQ.n - G2	UUT Common	DAQ.n - G1	UUT Common	DAQ.n - G2	UUT Common	DAQ.n - G4	UUT Common	DAQ.n - G3	UUT Common	DAQ.n - G4	UUT Common
DAQ.n - Port 3	Pmatrix.n - Row41	DAQ.n - Port 11	Pmatrix.n - Row42	DAQ.n - Port 19	Pmatrix.n - Row43	DAQ.n - Port 7	Pmatrix.n - Row57	DAQ.n - Port 15	Pmatrix.n - Row58	DAQ.n - Port 23	Pmatrix.n - Row59
DAQ.n - Port 27	Pmatrix.n - Row44	DAQ.n - G2	UUT Common	DAQ.n - Port 4	Pmatrix.n - Row45	DAQ.n - Port 31	Pmatrix.n - Row60	DAQ.n - G4	UUT Common	DAQ.n - Port 8	Pmatrix.n - Row61
DAQ.n - Port 12	Pmatrix.n - Row46	DAQ.n - Port 20	Pmatrix.n - Row47	DAQ.n - Port 28	Pmatrix.n - Row48	DAQ.n - Port 16	Pmatrix.n - Row62	DAQ.n - Port 24	Pmatrix.n - Row63	DAQ.n - Port 32	Pmatrix.n - Row64

Figure 4-10 TC3 Pinouts

1		2		3		4		5		6	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
CAN_Lo		CAN_Hi		CAN_COM		PM.Aux33		PM.Aux34			
RS232-Pin 3 (Rx)		RS232-Pin 2 (Tx)		RS232-Pin 5 (SGND)		PM.Aux35		PM.Aux36			
RS232-Pin 6 (DSR)		RS232-Pin 4 (DTR)		RS232-Pin 1 (CD)		PM.Aux37		PM.Aux38			
RS232-Pin 9 (TI)		RS232-Pin 8 (CTS)		RS232-Pin 7 (RTS)		PM.Aux39		PM.Aux40			
Safety Ground		DAC.n - Triggering/ DAC.ZGNDF		DAC.n - ZGNDCAL/ DAC.ZGNDF		DAC.n - DMM_H/ DAC.ZGNDF		DAC.n - DMM_L/ DAC.ZGNDF		DAC.n - DMM_C / DAC.ZGNDF	
DAC.n - Ch1 L		DAC.n - Ch1 Lsense		DAC.n - Ch2L		DAC.n - Ch2Lsense		DAC.n - Ch3 L		DAC.n - Ch3 Lsense	
DAC.n - Ch1 H		DAC.n - Ch1 Hsense		DAC.n - Ch2 H		DAC.n - Ch2 Hsense		DAC.n - Ch3 H		DAC.n - Ch3 Hsense	
DAC.n - Ch4 L		DAC.n - Ch4 Lsense		DAC.n - Ch5 L		DAC.n - Ch5 Lsense		DAC.n - Ch6 L		DAC.n - Ch6 Lsense	
DAC.n - Ch4 H		DAC.n - Ch4 Hsense		DAC.n - Ch5 H		DAC.n - Ch5 Hsense		DAC.n - Ch6 H		DAC.n - Ch6 Hsense	
DAC.n - Ch7 L		DAC.n - Ch7 Lsense		DAC.n - Ch8 L		DAC.n - Ch8 Lsense		DAC.n - ZGND		DAC.n - ZGND	
DAC.n - Ch7 H		DAC.n - Ch7 Hsense		DAC.n - Ch8 H		DAC.n - Ch8 Hsense		DAC.n - ZGND		DAC.n - ZGND	
DAQ.n - Port 1	Pmatrix.n - Row1	DAQ.n - Port 9	Pmatrix.n - Row2	DAQ.n - Port 17	Pmatrix.n - Row3	DAQ.n - Port 5	Pmatrix.n - Row17	DAQ.n - Port 13	Pmatrix.n - Row18	DAQ.n - Port 21	Pmatrix.n - Row19
DAQ.n - Port 25	Pmatrix.n - Row4	DAQ.n - G1	UUT Common	DAQ.n - Port 2	Pmatrix.n - Row5	DAQ.n - Port 29	Pmatrix.n - Row20	DAQ.n - G3	UUT Common	DAQ.n - Port 6	Pmatrix.n - Row21
DAQ.n - Port 10	Pmatrix.n - Row6	DAQ.n - Port 18	Pmatrix.n - Row7	DAQ.n - Port 26	Pmatrix.n - Row8	DAQ.n - Port 14	Pmatrix.n - Row22	DAQ.n - Port 22	Pmatrix.n - Row23	DAQ.n - Port 30	Pmatrix.n - Row24
DAQ.n - G2	UUT Common	DAQ.n - G1	UUT Common	DAQ.n - G2	UUT Common	DAQ.n - G4	UUT Common	DAQ.n - G3	UUT Common	DAQ.n - G4	UUT Common
DAQ.n - Port 3	Pmatrix.n - Row9	DAQ.n - Port 11	Pmatrix.n - Row10	DAQ.n - Port 19	Pmatrix.n - Row11	DAQ.n - Port 7	Pmatrix.n - Row25	DAQ.n - Port 15	Pmatrix.n - Row26	DAQ.n - Port 23	Pmatrix.n - Row27
DAQ.n - Port 27	Pmatrix.n - Row12	DAQ.n - G2	UUT Common	DAQ.n - Port 4	Pmatrix.n - Row13	DAQ.n - Port 31	Pmatrix.n - Row28	DAQ.n - G4	UUT Common	DAQ.n - Port 8	Pmatrix.n - Row29
DAQ.n - Port 12	Pmatrix.n - Row14	DAQ.n - Port 20	Pmatrix.n - Row15	DAQ.n - Port 28	Pmatrix.n - Row16	DAQ.n - Port 16	Pmatrix.n - Row30	DAQ.n - Port 24	Pmatrix.n - Row31	DAQ.n - Port 32	Pmatrix.n - Row32

Figure 4-11 TC4 Pinouts

1		2		3		4		5		6	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
Safety Ground		Safety Ground		Safety Ground		Safety Ground		Safety Interlock		DCOM	
DIO.1 - Input 17	User Define	DIO.1 - Input 18	User Define	DIO.1 - Input 19	User Define	DIO.1 - Input 20	User Define	LXI_DAC_Ch1_L	LXI_DAC_Ch1_Lsense		
DIO.1 - Input 21	User Define	DIO.1 - Input 22	User Define	DIO.1 - Input 23	User Define	DIO.1 - Input 24	User Define	LXI_DAC_Ch1_H	LXI_DAC_Ch1_Hsense		
DIO.1 - Input 25	User Define	DIO.1 - Input 26	User Define	DIO.1 - Input 27	User Define	DIO.1 - Input 28	User Define	LXI_DAC_Ch2_L	LXI_DAC_Ch2_Lsense		
DIO.1 - Input 29	User Define	DIO.1 - Input 30	User Define	DIO.1 - Input 31	User Define	DIO.1 - Input 32	User Define	LXI_DAC_Ch2_H	LXI_DAC_Ch2_Hsense		
DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		LXI_DAC_Ch3_L	LXI_DAC_Ch3_Lsense		
DIO.1 - Output 17	User Define	DIO.1 - Output 18	User Define	DIO.1 - Output 19	User Define	DIO.1 - Output 20	User Define	LXI_DAC_Ch3_H	LXI_DAC_Ch3_Hsense		
DIO.1 - Output 21	User Define	DIO.1 - Output 22	User Define	DIO.1 - Output 23	User Define	DIO.1 - Output 24	User Define	LXI_DAC_Ch4_L	LXI_DAC_Ch4_Lsense		
DIO.1 - Output 25	User Define	DIO.1 - Output 26	User Define	DIO.1 - Output 27	User Define	DIO.1 - Output 28	User Define	LXI_DAC_Ch4_H	LXI_DAC_Ch4_Hsense		
DIO.1 - Output 29	User Define	DIO.1 - Output 30	User Define	DIO.1 - Output 31	User Define	DIO.1 - Output 32	User Define	LXI_DAC_Ground	LXI_DAC_Ground		
DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - Vext		LXI_DAC_ExtClock	LXI_DAC_Triggering		
DAQ.n - Port 1	Pmatrix.n - Row33	DAQ.n - Port 9	Pmatrix.n - Row34	DAQ.n - Port 17	Pmatrix.n - Row35	DAQ.n - Port 5	Pmatrix.n - Row49	DAQ.n - Port 13	Pmatrix.n - Row50	DAQ.n - Port 21	Pmatrix.n - Row51
DAQ.n - Port 25	Pmatrix.n - Row36	DAQ.n - G1	UUT Common	DAQ.n - Port 2	Pmatrix.n - Row37	DAQ.n - Port 29	Pmatrix.n - Row52	DAQ.n - G3	UUT Common	DAQ.n - Port 6	Pmatrix.n - Row53
DAQ.n - Port 10	Pmatrix.n - Row38	DAQ.n - Port 18	Pmatrix.n - Row39	DAQ.n - Port 26	Pmatrix.n - Row40	DAQ.n - Port 14	Pmatrix.n - Row54	DAQ.n - Port 22	Pmatrix.n - Row55	DAQ.n - Port 30	Pmatrix.n - Row56
DAQ.n - G2	UUT Common	DAQ.n - G1	UUT Common	DAQ.n - G2	UUT Common	DAQ.n - G4	UUT Common	DAQ.n - G3	UUT Common	DAQ.n - G4	UUT Common
DAQ.n - Port 3	Pmatrix.n - Row41	DAQ.n - Port 11	Pmatrix.n - Row42	DAQ.n - Port 19	Pmatrix.n - Row43	DAQ.n - Port 7	Pmatrix.n - Row57	DAQ.n - Port 15	Pmatrix.n - Row58	DAQ.n - Port 23	Pmatrix.n - Row59
DAQ.n - Port 27	Pmatrix.n - Row44	DAQ.n - G2	UUT Common	DAQ.n - Port 4	Pmatrix.n - Row45	DAQ.n - Port 31	Pmatrix.n - Row60	DAQ.n - G4	UUT Common	DAQ.n - Port 8	Pmatrix.n - Row61
DAQ.n - Port 12	Pmatrix.n - Row46	DAQ.n - Port 20	Pmatrix.n - Row47	DAQ.n - Port 28	Pmatrix.n - Row48	DAQ.n - Port 16	Pmatrix.n - Row62	DAQ.n - Port 24	Pmatrix.n - Row63	DAQ.n - Port 32	Pmatrix.n - Row64

Figure 4-12 TC5 Pinouts

1		2		3		4		5		6	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
CAN_Lo		CAN_Hi		CAN_COM		PM.Aux1		PM.Aux2			
RS232-Pin 3 (Rx)		RS232-Pin 2 (Tx)		RS232-Pin 5 (SGND)		PM.Aux3		PM.Aux4			
RS232-Pin 6 (DSR)		RS232-Pin 4 (DTR)		RS232-Pin 1 (CD)		PM.Aux5		PM.Aux6			
RS232-Pin 9 (TI)		RS232-Pin 8 (CTS)		RS232-Pin 7 (RTS)		PM.Aux7		PM.Aux8			
Safety Ground		DAC.n - Triggering		DAC.n - ZGND CAL		DAC.n - DMM_H		DAC.n - DMM_L		DAC.n - DMM_C	
DAC.n - Ch1 L		DAC.n - Ch1 Lsense		DAC.n - Ch2L		DAC.n - Ch2Lsense		DAC.n - Ch3 L		DAC.n - Ch3 Lsense	
DAC.n - Ch1 H		DAC.n - Ch1 Hsense		DAC.n - Ch2 H		DAC.n - Ch2 Hsense		DAC.n - Ch3 H		DAC.n - Ch3 Hsense	
DAC.n - Ch4 L		DAC.n - Ch4 Lsense		DAC.n - Ch5 L		DAC.n - Ch5 Lsense		DAC.n - Ch6 L		DAC.n - Ch6 Lsense	
DAC.n - Ch4 H		DAC.n - Ch4 Hsense		DAC.n - Ch5 H		DAC.n - Ch5 Hsense		DAC.n - Ch6 H		DAC.n - Ch6 Hsense	
DAC.n - Ch7 L		DAC.n - Ch7 Lsense		DAC.n - Ch8 L		DAC.n - Ch8 Lsense		DAC.n - ZGND		DAC.n - ZGND	
DAC.n - Ch7 H		DAC.n - Ch7 Hsense		DAC.n - Ch8 H		DAC.n - Ch8 Hsense		DAC.n - ZGND		DAC.n - ZGND	
DAQ.n - Port 1	Pmatrix.n - Row1	DAQ.n - Port 9	Pmatrix.n - Row2	DAQ.n - Port 17	Pmatrix.n - Row3	DAQ.n - Port 5	Pmatrix.n - Row17	DAQ.n - Port 13	Pmatrix.n - Row18	DAQ.n - Port 21	Pmatrix.n - Row19
DAQ.n - Port 25	Pmatrix.n - Row4	DAQ.n - G1	UUT Common	DAQ.n - Port 2	Pmatrix.n - Row5	DAQ.n - Port 29	Pmatrix.n - Row20	DAQ.n - G3	UUT Common	DAQ.n - Port 6	Pmatrix.n - Row21
DAQ.n - Port 10	Pmatrix.n - Row6	DAQ.n - Port 18	Pmatrix.n - Row7	DAQ.n - Port 26	Pmatrix.n - Row8	DAQ.n - Port 14	Pmatrix.n - Row22	DAQ.n - Port 22	Pmatrix.n - Row23	DAQ.n - Port 30	Pmatrix.n - Row24
DAQ.n - G2	UUT Common	DAQ.n - G1	UUT Common	DAQ.n - G2	UUT Common	DAQ.n - G4	UUT Common	DAQ.n - G3	UUT Common	DAQ.n - G4	UUT Common
DAQ.n - Port 3	Pmatrix.n - Row9	DAQ.n - Port 11	Pmatrix.n - Row10	DAQ.n - Port 19	Pmatrix.n - Row11	DAQ.n - Port 7	Pmatrix.n - Row25	DAQ.n - Port 15	Pmatrix.n - Row26	DAQ.n - Port 23	Pmatrix.n - Row27
DAQ.n - Port 27	Pmatrix.n - Row12	DAQ.n - G2	UUT Common	DAQ.n - Port 4	Pmatrix.n - Row13	DAQ.n - Port 31	Pmatrix.n - Row28	DAQ.n - G4	UUT Common	DAQ.n - Port 8	Pmatrix.n - Row29
DAQ.n - Port 12	Pmatrix.n - Row14	DAQ.n - Port 20	Pmatrix.n - Row15	DAQ.n - Port 28	Pmatrix.n - Row16	DAQ.n - Port 16	Pmatrix.n - Row30	DAQ.n - Port 24	Pmatrix.n - Row31	DAQ.n - Port 32	Pmatrix.n - Row32

Figure 4-13 TC6 Pinouts

1		2		3		4		5		6	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
Safety Ground		Safety Ground		Safety Ground		Safety Ground		Safety Interlock		DCOM	
DIO.1 - Input 1	User Define	DIO.1 - Input 2	User Define	DIO.1 - Input 3	User Define	DIO.1 - Input 4	User Define	LXI_DAC_Ch1_L		LXI_DAC_Ch1_Lsense	
DIO.1 - Input 5	User Define	DIO.1 - Input 6	User Define	DIO.1 - Input 7	User Define	DIO.1 - Input 8	User Define	LXI_DAC_Ch1_H		LXI_DAC_Ch1_Hsense	
DIO.1 - Input 9	User Define	DIO.1 - Input 10	User Define	DIO.1 - Input 11	User Define	DIO.1 - Input 12	User Define	LXI_DAC_Ch2_L		LXI_DAC_Ch2_Lsense	
DIO.1 - Input 13	User Define	DIO.1 - Input 14	User Define	DIO.1 - Input 15	User Define	DIO.1 - Input 16	User Define	LXI_DAC_Ch2_H		LXI_DAC_Ch2_Hsense	
DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		LXI_DAC_Ch3_L		LXI_DAC_Ch3_Lsense	
DIO.1 - Output 1	User Define	DIO.1 - Output 2	User Define	DIO.1 - Output 3	User Define	DIO.1 - Output 4	User Define	LXI_DAC_Ch3_H		LXI_DAC_Ch3_Hsense	
DIO.1 - Output 5	User Define	DIO.1 - Output 6	User Define	DIO.1 - Output 7	User Define	DIO.1 - Output 8	User Define	LXI_DAC_Ch4_L		LXI_DAC_Ch4_Lsense	
DIO.1 - Output 9	User Define	DIO.1 - Output 10	User Define	DIO.1 - Output 11	User Define	DIO.1 - Output 12	User Define	LXI_DAC_Ch4_H		LXI_DAC_Ch4_Hsense	
DIO.1 - Output 13	User Define	DIO.1 - Output 14	User Define	DIO.1 - Output 15	User Define	DIO.1 - Output 16	User Define	LXI_DAC_Ground		LXI_DAC_Ground	
DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - Vext		LXI_DAC_ExtClock		LXI_DAC_Triggering	
DAQ.n - Port 1	Pmatrix.n - Row33	DAQ.n - Port 9	Pmatrix.n - Row34	DAQ.n - Port 17	Pmatrix.n - Row35	DAQ.n - Port 5	Pmatrix.n - Row49	DAQ.n - Port 13	Pmatrix.n - Row50	DAQ.n - Port 21	Pmatrix.n - Row51
DAQ.n - Port 25	Pmatrix.n - Row36	DAQ.n - G1	UUT Common	DAQ.n - Port 2	Pmatrix.n - Row37	DAQ.n - Port 29	Pmatrix.n - Row52	DAQ.n - G3	UUT Common	DAQ.n - Port 6	Pmatrix.n - Row53
DAQ.n - Port 10	Pmatrix.n - Row38	DAQ.n - Port 18	Pmatrix.n - Row39	DAQ.n - Port 26	Pmatrix.n - Row40	DAQ.n - Port 14	Pmatrix.n - Row54	DAQ.n - Port 22	Pmatrix.n - Row55	DAQ.n - Port 30	Pmatrix.n - Row56
DAQ.n - G2	UUT Common	DAQ.n - G1	UUT Common	DAQ.n - G2	UUT Common	DAQ.n - G4	UUT Common	DAQ.n - G3	UUT Common	DAQ.n - G4	UUT Common
DAQ.n - Port 3	Pmatrix.n - Row41	DAQ.n - Port 11	Pmatrix.n - Row42	DAQ.n - Port 19	Pmatrix.n - Row43	DAQ.n - Port 7	Pmatrix.n - Row57	DAQ.n - Port 15	Pmatrix.n - Row58	DAQ.n - Port 23	Pmatrix.n - Row59
DAQ.n - Port 27	Pmatrix.n - Row44	DAQ.n - G2	UUT Common	DAQ.n - Port 4	Pmatrix.n - Row45	DAQ.n - Port 31	Pmatrix.n - Row60	DAQ.n - G4	UUT Common	DAQ.n - Port 8	Pmatrix.n - Row61
DAQ.n - Port 12	Pmatrix.n - Row46	DAQ.n - Port 20	Pmatrix.n - Row47	DAQ.n - Port 28	Pmatrix.n - Row48	DAQ.n - Port 16	Pmatrix.n - Row62	DAQ.n - Port 24	Pmatrix.n - Row63	DAQ.n - Port 32	Pmatrix.n - Row64

Figure 4-14 TC7 Pinouts

1		2		3		4		5		6	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
CAN_Lo		CAN_Hi		CAN_COM		PM.Aux33		PM.Aux34			
RS232-Pin 3 (Rx)		RS232-Pin 2 (Tx)		RS232-Pin 5 (SGND)		PM.Aux35		PM.Aux36			
RS232-Pin 6 (DSR)		RS232-Pin 4 (DTR)		RS232-Pin 1 (CD)		PM.Aux37		PM.Aux38			
RS232-Pin 9 (TI)		RS232-Pin 8 (CTS)		RS232-Pin 7 (RTS)		PM.Aux39		PM.Aux40			
Safety Ground		DAC.n - Triggering/ DAC.ZGNDF		DAC.n - ZGNDCAL/ DAC.ZGNDF		DAC.n - DMM_H/ DAC.ZGNDF		DAC.n - DMM_L/ DAC.ZGNDF		DAC.n - DMM_C / DAC.ZGNDF	
DAC.n - Ch1 L		DAC.n - Ch1 Lsense		DAC.n - Ch2L		DAC.n - Ch2Lsense		DAC.n - Ch3 L		DAC.n - Ch3 Lsense	
DAC.n - Ch1 H		DAC.n - Ch1 Hsense		DAC.n - Ch2 H		DAC.n - Ch2 Hsense		DAC.n - Ch3 H		DAC.n - Ch3 Hsense	
DAC.n - Ch4 L		DAC.n - Ch4 Lsense		DAC.n - Ch5 L		DAC.n - Ch5 Lsense		DAC.n - Ch6 L		DAC.n - Ch6 Lsense	
DAC.n - Ch4 H		DAC.n - Ch4 Hsense		DAC.n - Ch5 H		DAC.n - Ch5 Hsense		DAC.n - Ch6 H		DAC.n - Ch6 Hsense	
DAC.n - Ch7 L		DAC.n - Ch7 Lsense		DAC.n - Ch8 L		DAC.n - Ch8 Lsense		DAC.n - ZGND		DAC.n - ZGND	
DAC.n - Ch7 H		DAC.n - Ch7 Hsense		DAC.n - Ch8 H		DAC.n - Ch8 Hsense		DAC.n - ZGND		DAC.n - ZGND	
DAQ.n - Port 1	Pmatrix.n - Row1	DAQ.n - Port 9	Pmatrix.n - Row2	DAQ.n - Port 17	Pmatrix.n - Row3	DAQ.n - Port 5	Pmatrix.n - Row17	DAQ.n - Port 13	Pmatrix.n - Row18	DAQ.n - Port 21	Pmatrix.n - Row19
DAQ.n - Port 25	Pmatrix.n - Row4	DAQ.n - G1	UUT Common	DAQ.n - Port 2	Pmatrix.n - Row5	DAQ.n - Port 29	Pmatrix.n - Row20	DAQ.n - G3	UUT Common	DAQ.n - Port 6	Pmatrix.n - Row21
DAQ.n - Port 10	Pmatrix.n - Row6	DAQ.n - Port 18	Pmatrix.n - Row7	DAQ.n - Port 26	Pmatrix.n - Row8	DAQ.n - Port 14	Pmatrix.n - Row22	DAQ.n - Port 22	Pmatrix.n - Row23	DAQ.n - Port 30	Pmatrix.n - Row24
DAQ.n - G2	UUT Common	DAQ.n - G1	UUT Common	DAQ.n - G2	UUT Common	DAQ.n - G4	UUT Common	DAQ.n - G3	UUT Common	DAQ.n - G4	UUT Common
DAQ.n - Port 3	Pmatrix.n - Row9	DAQ.n - Port 11	Pmatrix.n - Row10	DAQ.n - Port 19	Pmatrix.n - Row11	DAQ.n - Port 7	Pmatrix.n - Row25	DAQ.n - Port 15	Pmatrix.n - Row26	DAQ.n - Port 23	Pmatrix.n - Row27
DAQ.n - Port 27	Pmatrix.n - Row12	DAQ.n - G2	UUT Common	DAQ.n - Port 4	Pmatrix.n - Row13	DAQ.n - Port 31	Pmatrix.n - Row28	DAQ.n - G4	UUT Common	DAQ.n - Port 8	Pmatrix.n - Row29
DAQ.n - Port 12	Pmatrix.n - Row14	DAQ.n - Port 20	Pmatrix.n - Row15	DAQ.n - Port 28	Pmatrix.n - Row16	DAQ.n - Port 16	Pmatrix.n - Row30	DAQ.n - Port 24	Pmatrix.n - Row31	DAQ.n - Port 32	Pmatrix.n - Row32

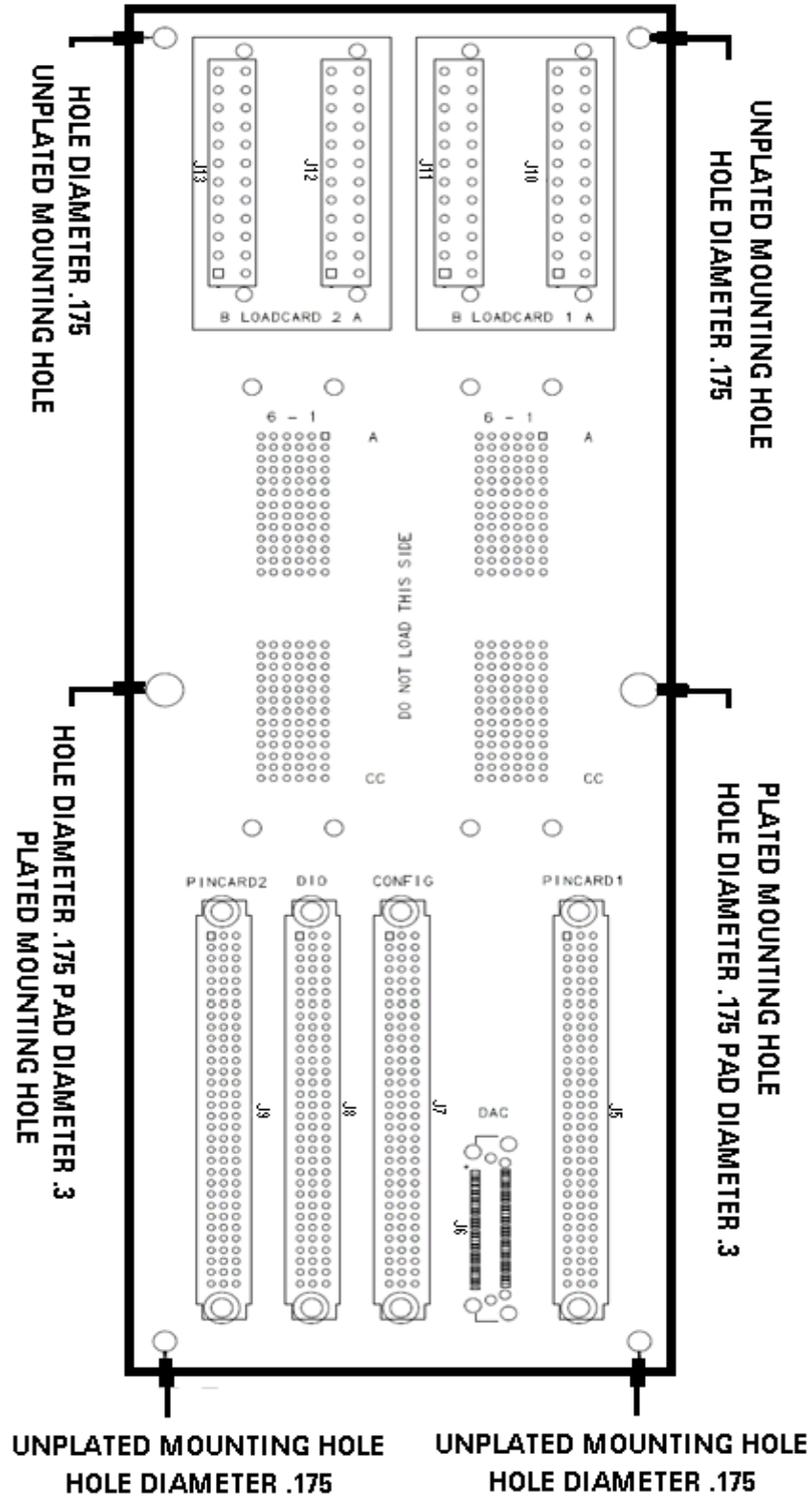
Figure 4-15 TC8 Pinouts

1		2		3		4		5		6	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n		LoadCard.n	
Safety Ground		Safety Ground		Safety Ground		Safety Ground		Safety Interlock		DCOM	
DIO.1 - Input 17	User Define	DIO.1 - Input 18	User Define	DIO.1 - Input 19	User Define	DIO.1 - Input 20	User Define	LXI_DAC_Ch1_L		LXI_DAC_Ch1_Lsense	
DIO.1 - Input 21	User Define	DIO.1 - Input 22	User Define	DIO.1 - Input 23	User Define	DIO.1 - Input 24	User Define	LXI_DAC_Ch1_H		LXI_DAC_Ch1_Hsense	
DIO.1 - Input 25	User Define	DIO.1 - Input 26	User Define	DIO.1 - Input 27	User Define	DIO.1 - Input 28	User Define	LXI_DAC_Ch2_L		LXI_DAC_Ch2_Lsense	
DIO.1 - Input 29	User Define	DIO.1 - Input 30	User Define	DIO.1 - Input 31	User Define	DIO.1 - Input 32	User Define	LXI_DAC_Ch2_H		LXI_DAC_Ch2_Hsense	
DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		LXI_DAC_Ch3_L		LXI_DAC_Ch3_Lsense	
DIO.1 - Output 17	User Define	DIO.1 - Output 18	User Define	DIO.1 - Output 19	User Define	DIO.1 - Output 20	User Define	LXI_DAC_Ch3_H		LXI_DAC_Ch3_Hsense	
DIO.1 - Output 21	User Define	DIO.1 - Output 22	User Define	DIO.1 - Output 23	User Define	DIO.1 - Output 24	User Define	LXI_DAC_Ch4_L		LXI_DAC_Ch4_Lsense	
DIO.1 - Output 25	User Define	DIO.1 - Output 26	User Define	DIO.1 - Output 27	User Define	DIO.1 - Output 28	User Define	LXI_DAC_Ch4_H		LXI_DAC_Ch4_Hsense	
DIO.1 - Output 29	User Define	DIO.1 - Output 30	User Define	DIO.1 - Output 31	User Define	DIO.1 - Output 32	User Define	LXI_DAC_Ground		LXI_DAC_Ground	
DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - FPGND		DIO.1 - Vext		LXI_DAC_ExtClock		LXI_DAC_Triggering	
DAQ.n - Port 1	Pmatrix.n - Row33	DAQ.n - Port 9	Pmatrix.n - Row34	DAQ.n - Port 17	Pmatrix.n - Row35	DAQ.n - Port 5	Pmatrix.n - Row49	DAQ.n - Port 13	Pmatrix.n - Row50	DAQ.n - Port 21	Pmatrix.n - Row51
DAQ.n - Port 25	Pmatrix.n - Row36	DAQ.n - G1	UUT Common	DAQ.n - Port 2	Pmatrix.n - Row37	DAQ.n - Port 29	Pmatrix.n - Row52	DAQ.n - G3	UUT Common	DAQ.n - Port 6	Pmatrix.n - Row53
DAQ.n - Port 10	Pmatrix.n - Row38	DAQ.n - Port 18	Pmatrix.n - Row39	DAQ.n - Port 26	Pmatrix.n - Row40	DAQ.n - Port 14	Pmatrix.n - Row54	DAQ.n - Port 22	Pmatrix.n - Row55	DAQ.n - Port 30	Pmatrix.n - Row56
DAQ.n - G2	UUT Common	DAQ.n - G1	UUT Common	DAQ.n - G2	UUT Common	DAQ.n - G4	UUT Common	DAQ.n - G3	UUT Common	DAQ.n - G4	UUT Common
DAQ.n - Port 3	Pmatrix.n - Row41	DAQ.n - Port 11	Pmatrix.n - Row42	DAQ.n - Port 19	Pmatrix.n - Row43	DAQ.n - Port 7	Pmatrix.n - Row57	DAQ.n - Port 15	Pmatrix.n - Row58	DAQ.n - Port 23	Pmatrix.n - Row59
DAQ.n - Port 27	Pmatrix.n - Row44	DAQ.n - G2	UUT Common	DAQ.n - Port 4	Pmatrix.n - Row45	DAQ.n - Port 31	Pmatrix.n - Row60	DAQ.n - G4	UUT Common	DAQ.n - Port 8	Pmatrix.n - Row61
DAQ.n - Port 12	Pmatrix.n - Row46	DAQ.n - Port 20	Pmatrix.n - Row47	DAQ.n - Port 28	Pmatrix.n - Row48	DAQ.n - Port 16	Pmatrix.n - Row62	DAQ.n - Port 24	Pmatrix.n - Row63	DAQ.n - Port 32	Pmatrix.n - Row64

Express Connect PCA Connector Definition and Pin Access

The Express Connect PCA is also known as the Accumulator Card. User may access the sockets using the appropriate cables as needed.

Figure 4-16 PCA Layout for Accumulator Card



Connector PINCARD1 and PINCARD2 are dedicated for Pin Matrix E8782A, E8783A and M9216 PXI DAQ.

Figure 4-17 Connector PINCARD1 and Connector PINCARD2 with TC Assignments

PINCARD 1 (96 DIN)				PINCARD 2 (96 DIN)			
Row	a	b	c	Row	a	b	c
32	TC1.W1		TC1.X2	32	TC2.W1		TC2.X2
31	TC1.W2		TC1.X2	31	TC2.W2		TC2.X2
30	TC1.W3		TC1.X2	30	TC2.W3		TC2.X2
29	TC1.X1		TC1.X2	29	TC2.X1		TC2.X2
28	TC1.X3		TC1.Z2	28	TC2.X3		TC2.Z2
27	TC1.Y1		TC1.Z2	27	TC2.Y1		TC2.Z2
26	TC1.Y2		TC1.Z2	26	TC2.Y2		TC2.Z2
25	TC1.Y3		TC1.Z2	25	TC2.Y3		TC2.Z2
24	TC1.AA1		TC1.Z1	24	TC2.AA1		TC2.Z1
23	TC1.AA2		TC1.Z1	23	TC2.AA2		TC2.Z1
22	TC1.AA3		TC1.Z1	22	TC2.AA3		TC2.Z1
21	TC1.BB1		TC1.Z3	21	TC2.BB1		TC2.Z3
20	TC1.BB3		TC1.Z3	20	TC2.BB3		TC2.Z3
19	TC1.CC1		TC1.Z3	19	TC2.CC1		TC2.Z3
18	TC1.CC2		TC1.BB2	18	TC2.CC2		TC2.BB2
17	TC1.CC3		TC1.BB2	17	TC2.CC3		TC2.BB2
16	TC1.W4		TC1.X5	16	TC2.W4		TC2.X5
15	TC1.W5		TC1.X5	15	TC2.W5		TC2.X5
14	TC1.W6		TC1.X5	14	TC2.W6		TC2.X5
13	TC1.X4		TC1.X5	13	TC2.X4		TC2.X5
12	TC1.X6		TC1.Z5	12	TC2.X6		TC2.Z5
11	TC1.Y4		TC1.Z5	11	TC2.Y4		TC2.Z5
10	TC1.Y5		TC1.Z5	10	TC2.Y5		TC2.Z5
9	TC1.Y6		TC1.Z5	9	TC2.Y6		TC2.Z5
8	TC1.AA4		TC1.Z4	8	TC2.AA4		TC2.Z4
7	TC1.AA5		TC1.Z4	7	TC2.AA5		TC2.Z4
6	TC1.AA6		TC1.Z4	6	TC2.AA6		TC2.Z4
5	TC1.BB4		TC1.Z6	5	TC2.BB4		TC2.Z6
4	TC1.BB6		TC1.Z6	4	TC2.BB6		TC2.Z6
3	TC1.CC4		TC1.Z6	3	TC2.CC4		TC2.Z6
2	TC1.CC5		TC1.BB5	2	TC2.CC5		TC2.BB5
1	TC1.CC6		TC1.BB5	1	TC2.CC6		TC2.BB5

4 System Interconnects

Connector DIO is dedicated for M9187 PXI DIO. This connector can also be used with customized cable for other specific applications.

Figure 4-18 Connector DIO with TC Assignments

Row	a	b	c
32	TC2.P1	TC2.K2	TC2.K1
31	TC2.P1	TC2.K3	TC2.K2
30	TC2.P1	TC2.K4	TC2.K3
29	TC2.P1	TC2.L1	TC2.K4
28	TC2.P2	TC2.L2	TC2.L1
27	TC2.P2	TC2.L3	TC2.L2
26	TC2.P2	TC2.L4	TC2.L3
25	TC2.P2	TC2.M1	TC2.L4
24	TC2.P3	TC2.M2	TC2.M1
23	TC2.P3	TC2.M3	TC2.M2
22	TC2.P3	TC2.M4	TC2.M3
21	TC2.P3	TC2.N1	TC2.M4
20	TC2.P4	TC2.N2	TC2.N1
19	TC2.P4	TC2.N3	TC2.N2
18	TC2.P4	TC2.N4	TC2.N3
17	TC2.P4	TC2.R1	TC2.N4
16	TC2.V1	TC2.R2	TC2.R1
15	TC2.V1	TC2.R3	TC2.R2
14	TC2.V1	TC2.R4	TC2.R3
13	TC2.V1	TC2.S1	TC2.R4
12	TC2.V1	TC2.S2	TC2.S1
11	TC2.V2	TC2.S3	TC2.S2
10	TC2.V2	TC2.S4	TC2.S3
9	TC2.V2	TC2.T1	TC2.S4
8	TC2.V2	TC2.T2	TC2.T1
7	TC2.V2	TC2.T3	TC2.T2
6	TC2.V3	TC2.T4	TC2.T3
5	TC2.V3	TC2.U1	TC2.T4
4	TC2.V3	TC2.U2	TC2.U1
3	TC2.V3	TC2.U3	TC2.U2
2	TC2.V3	TC2.U4	TC2.U3
1	TC2.V4		TC2.U4

Connector CONFIG routes to Row J,K,L,M of the odd numbered TC. It allows the user to configure as needed.

Figure 4-19 Connector CONFIG with TC Assignments

Row	a	b	c
32	TC1.J3	TC1.J2	TC1.J1
31			
30	TC1.K3	TC1.K2	TC1.K1
29			
28	TC1.L3	TC1.L2	TC1.L1
27			
26	TC1.M3	TC1.M2	TC1.M1
25			
24	TC1.J6	TC1.J5	TC1.J4
23			
22	TC1.K6	TC1.K5	TC1.K4
21			
20	TC1.L6	TC1.L5	TC1.L4
19			
18	TC1.M6	TC1.M5	TC1.M4
17			
16			
15			
14			
13			
12			
11		TC2.J5	TC2.J6
10		TC2.K5	TC2.K6
9		TC2.L5	TC2.L6
8		TC2.M5	TC2.M6
7		TC2.N5	TC2.N6
6		TC2.P5	TC2.P6
5		TC2.R5	TC2.R6
4		TC2.S5	TC2.S6
3		TC2.T5	TC2.T6
2		TC2.U5	TC2.U6
1		TC2.V5	TC2.V6

Connector DAC is dedicated for M9185 PXI DAC only.

Figure 4-20 Connector DAC with TC Assignments

A1	TC1.P1	A35	TC1.R1
A2	TC1.P2	A36	TC1.R2
A3	TC1.U5	A37	TC1.V5
A4	TC1.P3	A38	TC1.R3
A5	TC1.P4	A39	TC1.R4
A6	TC1.U5	A40	TC1.V5
A7	TC1.P5	A41	TC1.R5
A8	TC1.P6	A42	TC1.R6
A9	TC1.U5	A43	TC1.V5
A10	TC1.S1	A44	TC1.T1
A11	TC1.S2	A45	TC1.T2
A12	TC1.U5	A46	TC1.V5
A13	TC1.S3	A47	TC1.T3
A14	TC1.S4	A48	TC1.T4
A15	TC1.U5	A49	TC1.V5
A16	TC1.S5	A50	TC1.T5
A17	TC1.S6	A51	TC1.T6
A18	TC1.U6	A52	TC1.V6
A19	TC1.U1	A53	TC1.V1
A20	TC1.U2	A54	TC1.V2
A21	TC1.U6	A55	TC1.V6
A22	TC1.U3	A56	TC1.V3
A23	TC1.U4	A57	TC1.V4
A24	TC1.U6	A58	TC1.V6
A25	TC1.U6	A59	TC1.V6
A26	TC1.N3	A60	TC1.N3
A27	TC1.N3	A61	TC1.N3
A28	TC1.N4	A62	TC1.N5
A29	TC1.N6	A63	TC1.N3
A30	TC1.N3	A64	TC1.N3
A31	TC1.N3	A65	TC1.N3
A32	TC1.U6	A66	TC1.V6
A33	TC1.N2	A67	TC1.V6
A34	TC1.U6	A68	TC1.V6

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. This is ideal for powering high-current devices or for customizing the system for applications that require higher power.

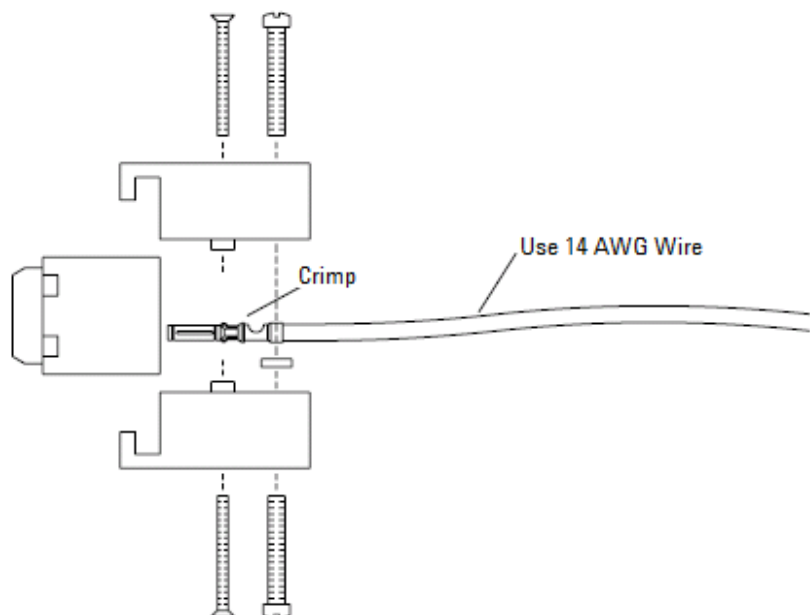
Connections to the High Power connectors are made using a Positronic Industries PLC18F connector. Refer to Chapter 3 for details on using this connector with the Agilent E6178B Heavy Duty Load Card. A kit of parts, available from Agilent (E6244A Opt. 020), provides the following:

- 20 Male contacts (Agilent 1252-8236) for shield-mounted connector
- 20 Female Contacts (Agilent 1252-8235) for Agilent 1252-8234 connector housing
- Mating female connector housing (Agilent 1252-8234)

WARNING

Do not exceed 60 VDC, 42VAC peak, or 30VAC rms or a maximum 15A on any pin of an HP connector.

Figure 4-21 Connecting to High Power (HP) Connector



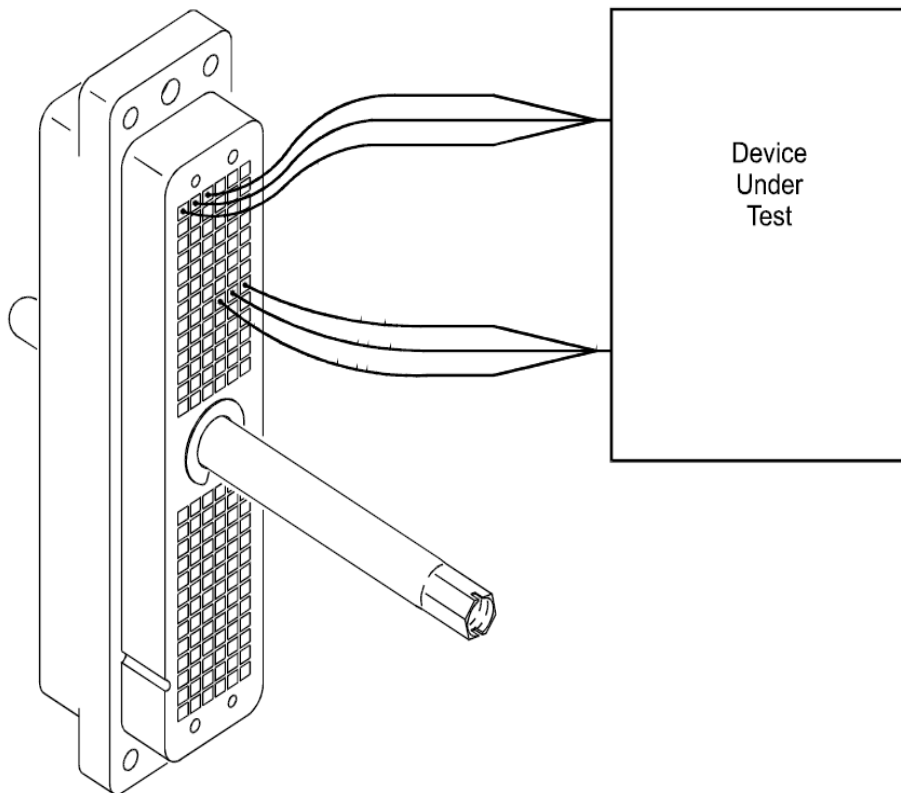
Connecting to the 8- and 16-Channel Load Cards

For the Agilent E6175A (8-channel) and the Agilent E6176A or N9377A (16-channel) load cards, each channel uses three pins on the Test Connector. See [Figure 3-1](#).

WARNING

To ensure sufficient PC board traces for the rated current, wire all three Test Connector pins in parallel when using the Agilent 6175A, E6176A, or N9377A load cards.

Figure 4-22 Sample Wiring of Test Connector with 8- or 16-Channel Load Card.



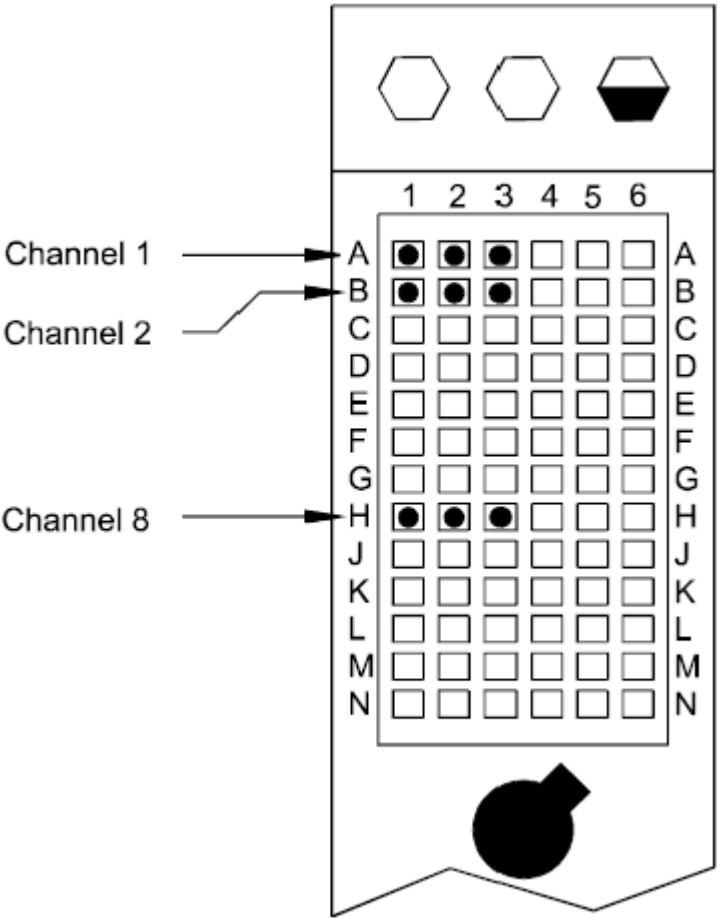
E6175A Connections

Table 4-2 and Figure 4-23 show how to make connections to the Agilent E6175A.

Table 4-2 Agilent E6175A 8-Channel Load Card Test Connector Pin Numbers

Load Card Channel Number	Test Connector Pin Numbers	Load Card Channel Number	Test Connector Pin Numbers
Channel 1	A1, A2, A3	Channel 5	E1, E2, E3
Channel 2	B1, B2, B3	Channel 6	F1, F2, F3
Channel 3	C1, C2, C3	Channel 7	G1, G2, G3
Channel 4	D1, D2, D3	Channel 8	H1, H2, H3

Figure 4-23 Agilent E6175A 8-Channel Load Card to Test Connector Pins.



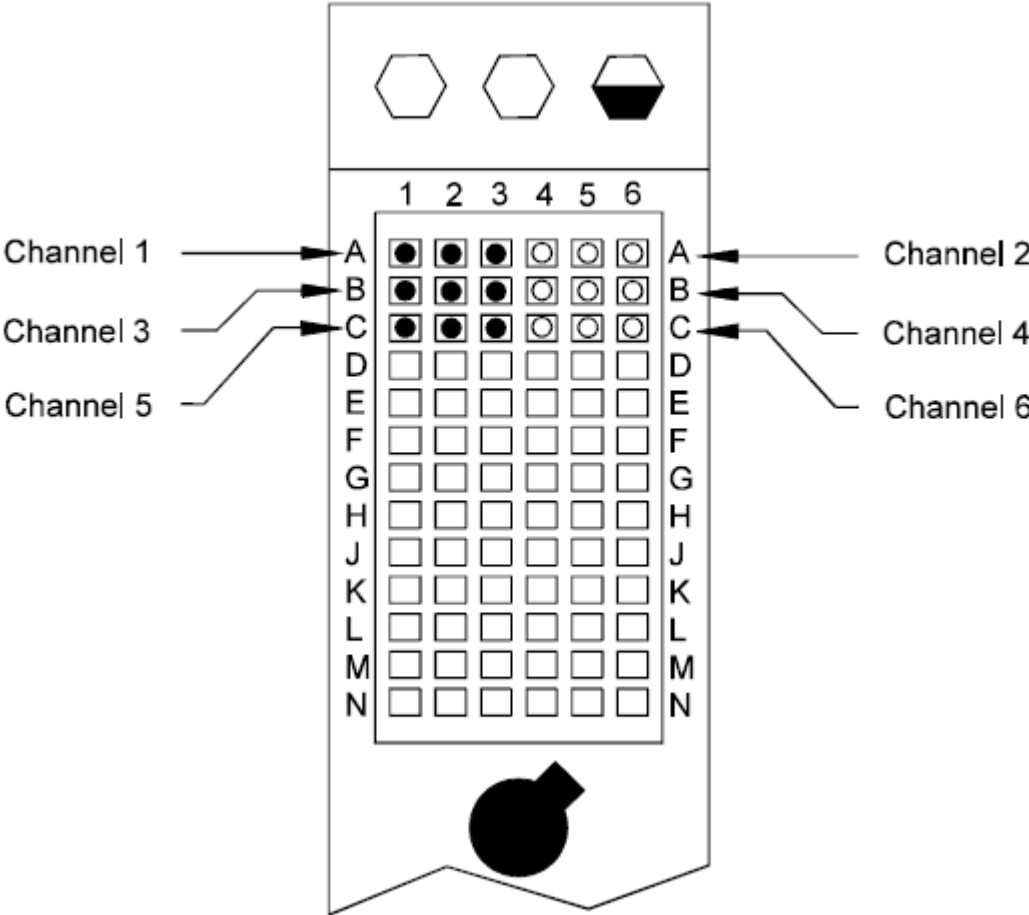
E6176 and N9377A Connections

Table 4-3 and Table 4-24 show how to make connections to the Agilent E6176A or N9377A.

Table 4-3 Agilent 16-Channel Load Card Test Connector Pin Numbers

Load Card Channel Number	Test Connector Pin Numbers	Load Card Channel Number	Test Connector Pin Numbers
Channel 1	A1, A2, A3	Channel 9	E1, E2, E3
Channel 2	A4, A5, A6	Channel 10	E4, E5, E6
Channel 3	B1, B2, B3	Channel 11	F1, F2, F3
Channel 4	B4, B5, B6	Channel 12	F4, F5, F6
Channel 5	C1, C2, C3	Channel 13	G1, G2, G3
Channel 6	C4, C5, C6	Channel 14	G4, G5, G6
Channel 7	D1, D2, D3	Channel 15	H1, H2, H3
Channel 8	D4, D5, D6	Channel 16	H4, H5, H6

Figure 4-24 16-Channel Load Card to Test Connector Pins.



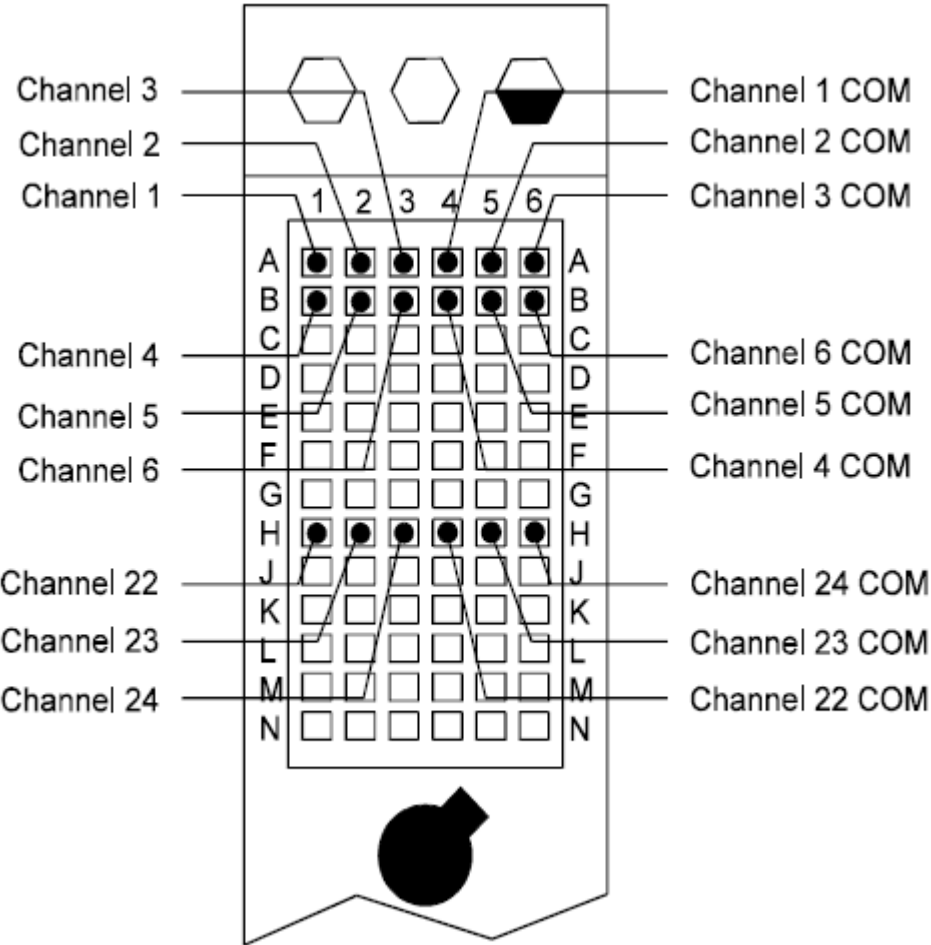
E6177A, U7717A and N9378A Connections

For the Agilent E6177A, U7717B or N9378A 24-channel load cards, each channel uses only one pin on the Test Connector plus one pin for the common or power connection.

Table 4-4 Agilent 24-Channel Load Card Test Connector Pin Numbers

Channel Number	Test Connector Pin Numbers	Channel Number	Test Connector Pin Numbers
Channel 1	A1	Channel 13	E1
Channel 1 COM	A4	Channel 13 COM	E4
Channel 2	A2	Channel 14	E2
Channel 2 COM	A5	Channel 14 COM	E5
Channel 3	A3	Channel 15	E3
Channel 3 COM	A6	Channel 15 COM	E6
Channel 4	B1	Channel 16	F1
Channel 4 COM	B4	Channel 16 COM	F4
Channel 5	B2	Channel 17	F2
Channel 5 COM	B5	Channel 17 COM	F5
Channel 6	B3	Channel 18	F3
Channel 6 COM	B6	Channel 18 COM	F6
Channel 7	C1	Channel 19	G1
Channel 7 COM	C4	Channel 19 COM	G4
Channel 8	C2	Channel 20	G2
Channel 8 COM	C5	Channel 20 COM	G5
Channel 9	C3	Channel 21	G3
Channel 9 COM	C6	Channel 21 COM	G6
Channel 10	D1	Channel 22	H1
Channel 10 COM	D4	Channel 22 COM	H4
Channel 11	D2	Channel 23	H2
Channel 11 COM	D5	Channel 23 COM	H5
Channel 12	D3	Channel 24	H3
Channel 12 COM	D6	Channel 24 COM	H6

Figure 4-25 24-Channel Load Card to Test Connector Pins.



N9379A Connections

On the Agilent N9379A 48-channel load card, each channel uses only one pin on the Test Connector, plus one pin for the common or power connection. This scheme is identical to that for the 24-channel load cards for channel 1-24. However, you must use an additional connector to accommodate channels 25-48 ([Figure 4-26](#)).

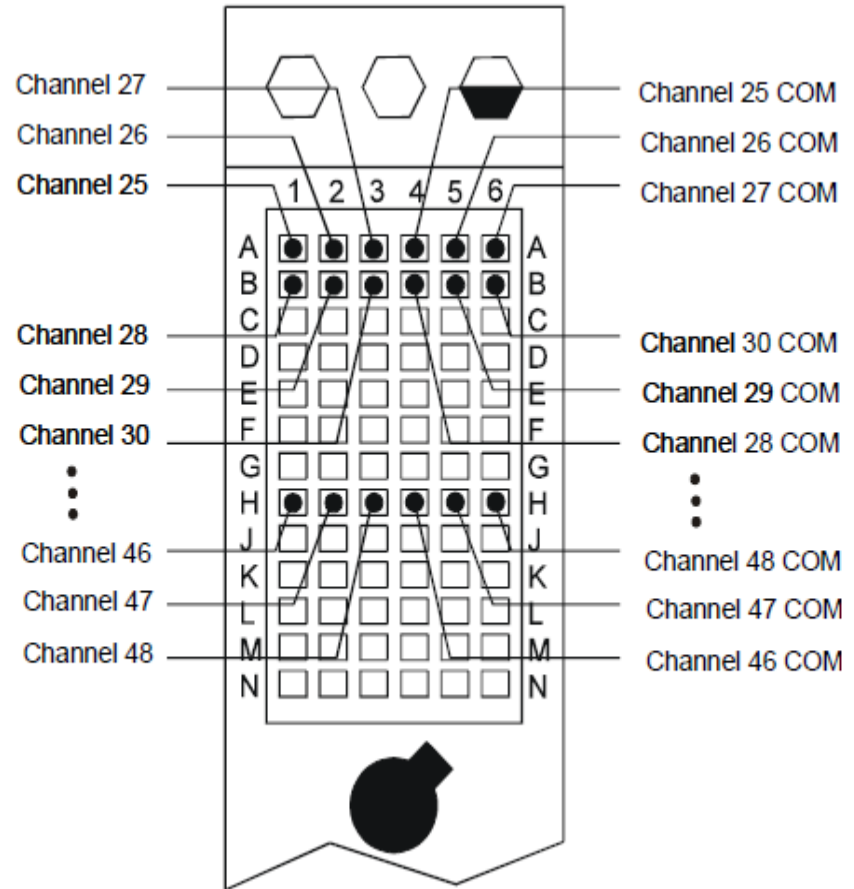
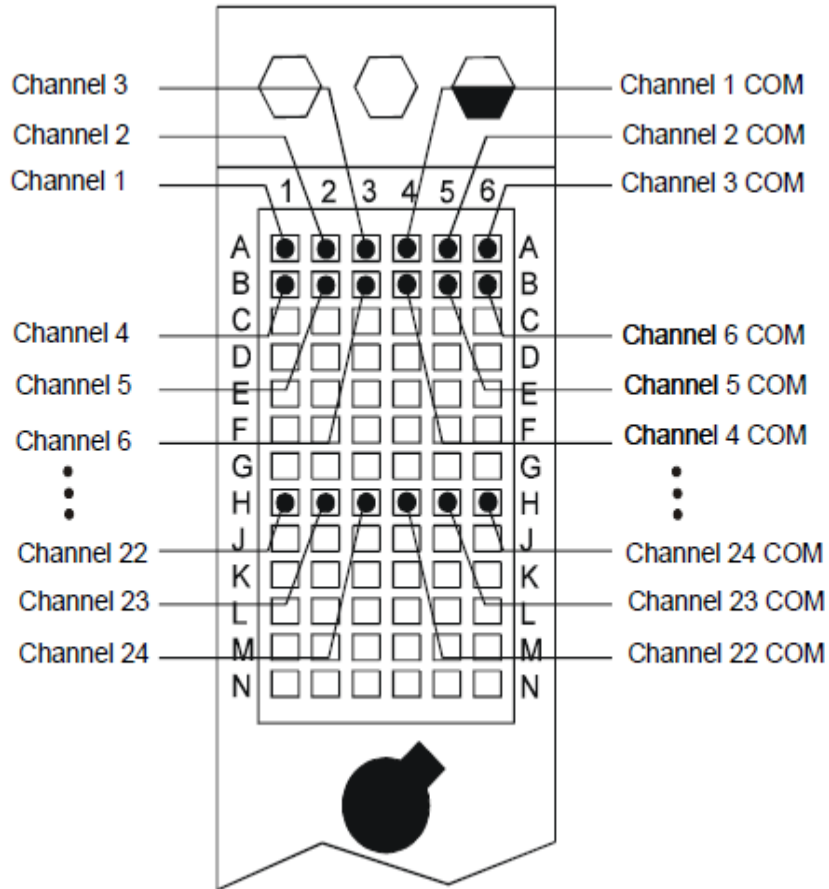
Table 4-5 Agilent N9379A 48-Channel Load Card to Test Connector Pins

Load Card Channel Number	Test Connector #1 Pin Numbers	Load Card Channel Number	Test Connector #2 Pin Numbers
Channel 1	A1	Channel 25	A1
Channel 1 COM	A4	Channel 25 COM	A4
Channel 2	A2	Channel 26	A2
Channel 2 COM	A5	Channel 26 COM	A5
Channel 3	A3	Channel 27	A3
Channel 3 COM	A6	Channel 27 COM	A6
Channel 4	B1	Channel 28	B1
Channel 4 COM	B4	Channel 28 COM	B4
Channel 5	B2	Channel 29	B2
Channel 5 COM	B5	Channel 29 COM	B5
Channel 6	B3	Channel 30	B3
Channel 6 COM	B6	Channel 30COM	B6
Channel 7	C1	Channel 31	C1
Channel 7 COM	C4	Channel 31COM	C4
Channel 8	C2	Channel 32	C2
Channel 8 COM	C5	Channel 32 COM	C5
Channel 9	C3	Channel 33	C3
Channel 9 COM	C6	Channel 33 COM	C6
Channel 10	D1	Channel 34	D1
Channel 10 COM	D4	Channel 34 COM	D4
Channel 11	D2	Channel 35	D2
Channel 11 COM	D5	Channel 35 COM	D5
Channel 12	D3	Channel 36	D3
Channel 12 COM	D6	Channel 36 COM	D6

Table 4-5 Agilent N9379A 48-Channel Load Card to Test Connector Pins (continued)

Load Card Channel Number	Test Connector #1 Pin Numbers	Load Card Channel Number	Test Connector #2 Pin Numbers
Channel 13	E1	Channel 37	E1
Channel 13 COM	E4	Channel 37 COM	E4
Channel 14	E2	Channel 38	E2
Channel 14 COM	E5	Channel 38 COM	E5
Channel 15	E3	Channel 39	E3
Channel 15 COM	E6	Channel 39 COM	E6
Channel 16	F1	Channel 40	F1
Channel 16 COM	F4	Channel 40 COM	F4
Channel 17	F2	Channel 41	F2
Channel 17 COM	F5	Channel 41 COM	F5
Channel 18	F3	Channel 42	F3
Channel 18 COM	F6	Channel 42 COM	F6
Channel 19	G1	Channel 43	G1
Channel 19 COM	G4	Channel 43 COM	G4
Channel 20	G2	Channel 44	G2
Channel 20 COM	G5	Channel 44 COM	G5
Channel 21	G3	Channel 45	G3
Channel 21 COM	G6	Channel 45 COM	G6
Channel 22	H1	Channel 46	H1
Channel 22 COM	H4	Channel 46 COM	H4
Channel 23	H2	Channel 47	H2
Channel 23 COM	H5	Channel 47 COM	H5
Channel 24	H3	Channel 48	H3
Channel 24 COM	H6	Channel 48 COM	H6

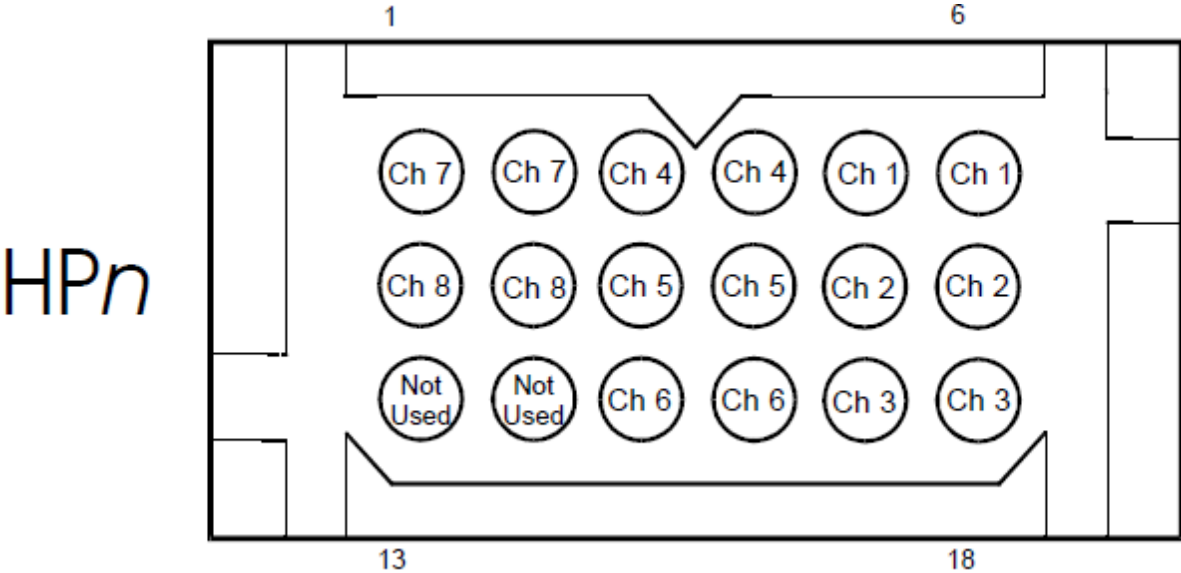
Figure 4-26 Agilent N9379A 48-Channel Load Card to Test Connector Pins.



E6178B Connections

Figure 4-27 shows the pinout of the HP1 through HP8 high-power load card connectors. Notice that two pins are used for each channel--this is for current sharing. Make certain that your mating connector wires to both pins to ensure proper current sharing. It is recommended to use 14 AWG wire from the high power mating connector to the UUT.

Figure 4-27 Agilent E6178B 8-Channel Heavy Duty Load Card Connections



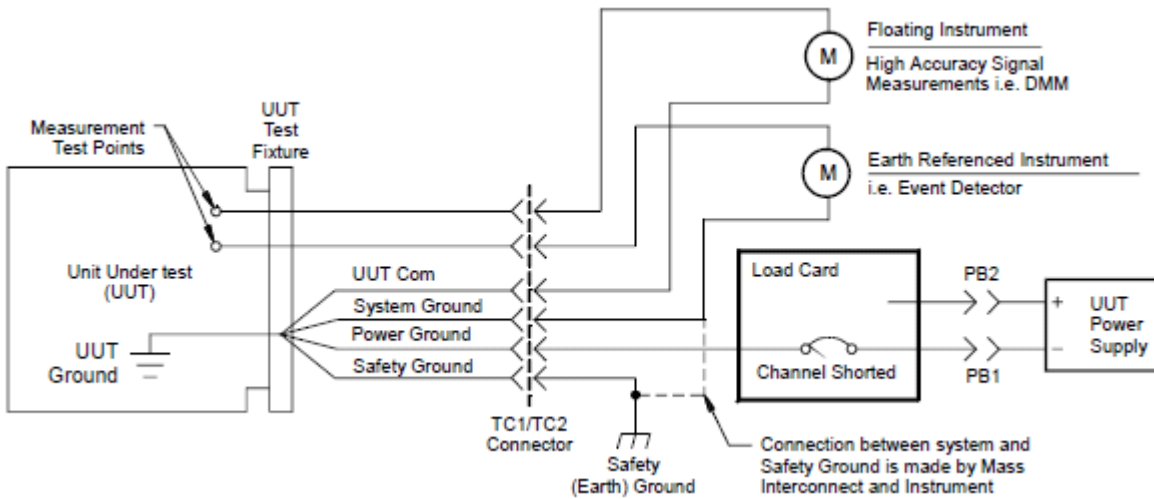
System Grounding

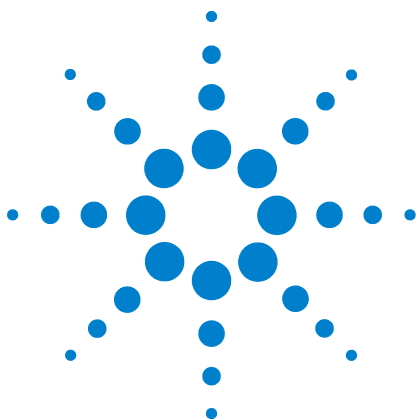
The Agilent TS-8900 Test System has these grounds:

- 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).

Figure 4-28 Recommended System Grounding





5 Test System Interface Cables

- Cables For Express Connect Interface [5-2](#)
- 8970-61707 Cable for PXI Voltage/Current Source to Instrument Matrix & Express Connect [5-3](#)
- U8970-61721 Cable for PXI DIO to Express Connect [5-4](#)
- U8970-61722 Cable for LXI DAC to Express Connect [5-5](#)
- U8970-61723 Cable for Pin Matrix Aux to Express Connect [5-6](#)
- U8970-61725 Cable for DAQ to Express Connect [5-7](#)
- U8970-61705 Cable for DAQ Aux to Pin Matrix Aux [5-8](#)
- U8970-61726 Cable for Pin Matrix to Express Connect [5-9](#)
- U8970-61700 Cable BNC Isolated to Instrument Matrix [5-10](#)
- U8970-61701 Cable BNC Coaxial to Instrument Matrix [5-10](#)
- U8970-61702 Cable Dual Banana for DMM to Instrument Matrix [5-11](#)
- E6170-61621 Cable for 48-CH High Density Loadcard to Express Connect [5-12](#)
- 8121-2094 Cable for PXI DAC (8-CH) to Express Connect [5-13](#)
- E6170-61630 CAN PCI To ICA Cable [5-14](#)
- E6230-61603 Cable for 8-CH Heavy Duty Load Card to Express Connect [5-15](#)
- E6170-61605 Cable for 8-CH/16-CH/24-CH Load Card to Express Connect [5-16](#)

This chapter shows the construction and pinouts of the system cables that connect to the Test System Interface.

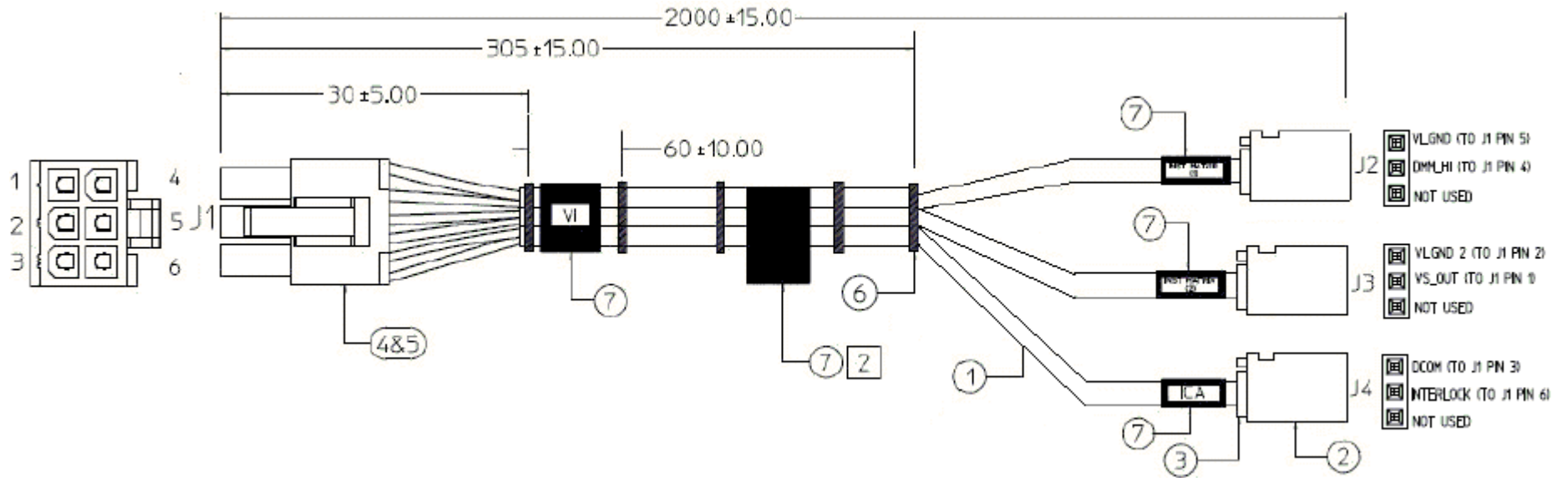


Cables For Express Connect Interface

The following section shows the construction and pinouts of the system cables for express interface.

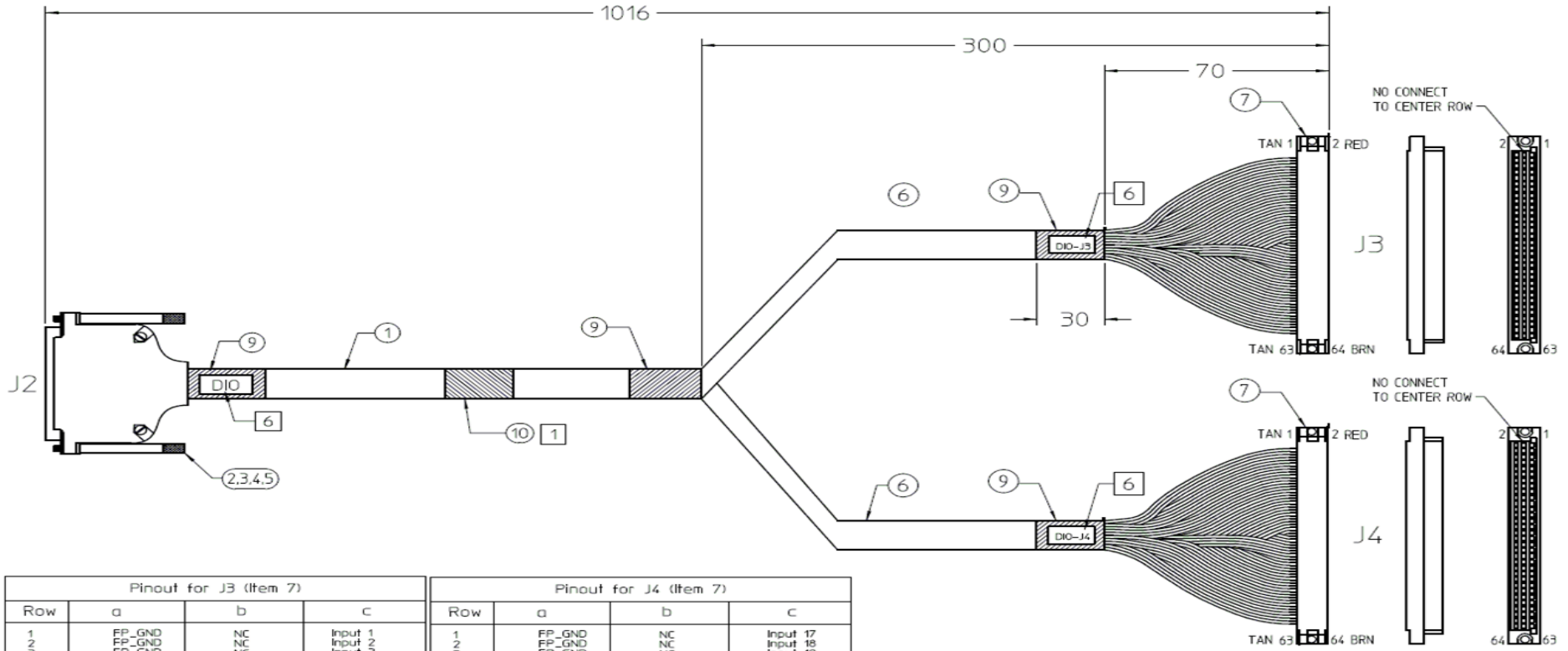
8970-61707 Cable for PXI Voltage/Current Source to Instrument Matrix & Express Connect

Figure 5-1 U8970-61707 Cable for PXI Voltage/Current Source to Instrument Matrix & Express Connect



5-4 U8970-61721 Cable for PXI DIO to Express Connect

Figure 5-2 U8970-61721 Cable for PXI DIO to Express Connect

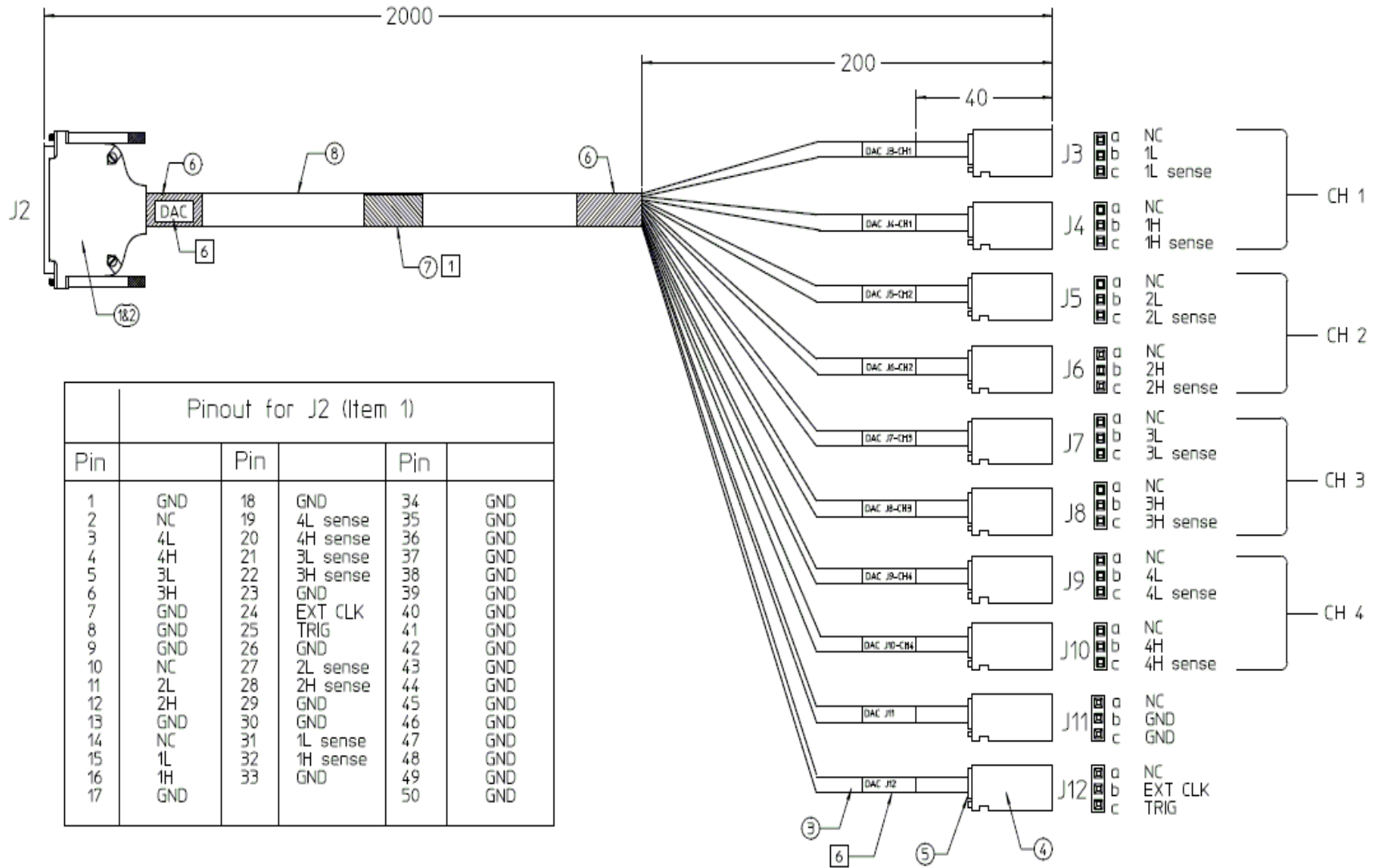


Pinout for J3 (Item 7)				Pinout for J4 (Item 7)			
Row	a	b	c	Row	a	b	c
1	FP_GND	NC	Input 1	1	FP_GND	NC	Input 17
2	FP_GND	NC	Input 2	2	FP_GND	NC	Input 18
3	FP_GND	NC	Input 3	3	FP_GND	NC	Input 19
4	FP_GND	NC	Input 4	4	FP_GND	NC	Input 20
5	FP_GND	NC	Input 5	5	FP_GND	NC	Input 21
6	FP_GND	NC	Input 6	6	FP_GND	NC	Input 22
7	FP_GND	NC	Input 7	7	FP_GND	NC	Input 23
8	FP_GND	NC	Input 8	8	FP_GND	NC	Input 24
9	FP_GND	NC	Input 9	9	FP_GND	NC	Input 25
10	FP_GND	NC	Input 10	10	FP_GND	NC	Input 26
11	FP_GND	NC	Input 11	11	FP_GND	NC	Input 27
12	FP_GND	NC	Input 12	12	FP_GND	NC	Input 28
13	FP_GND	NC	Input 13	13	FP_GND	NC	Input 29
14	FP_GND	NC	Input 14	14	FP_GND	NC	Input 30
15	FP_GND	NC	Input 15	15	FP_GND	NC	Input 31
16	FP_GND	NC	Input 16	16	FP_GND	NC	Input 32
17	FP_GND	NC	Output 1	17	FP_GND	NC	Output 17
18	FP_GND	NC	Output 2	18	FP_GND	NC	Output 18
19	FP_GND	NC	Output 3	19	FP_GND	NC	Output 19
20	FP_GND	NC	Output 4	20	FP_GND	NC	Output 20
21	FP_GND	NC	Output 5	21	FP_GND	NC	Output 21
22	FP_GND	NC	Output 6	22	FP_GND	NC	Output 22
23	FP_GND	NC	Output 7	23	FP_GND	NC	Output 23
24	FP_GND	NC	Output 8	24	FP_GND	NC	Output 24
25	FP_GND	NC	Output 9	25	FP_GND	NC	Output 25
26	FP_GND	NC	Output 10	26	FP_GND	NC	Output 26
27	FP_GND	NC	Output 11	27	FP_GND	NC	Output 27
28	FP_GND	NC	Output 12	28	FP_GND	NC	Output 28
29	FP_GND	NC	Output 13	29	FP_GND	NC	Output 29
30	FP_GND	NC	Output 14	30	FP_GND	NC	Output 30
31	FP_GND	NC	Output 15	31	FP_GND	NC	Output 31
32	FP_GND	NC	Output 16	32	FP_GND	NC	Output 32
	Vert	NC			Vert	NC	

Pinout for J2 (Item 3)							
Pin		Pin		Pin		Pin	
1	DIO.n - Vert	21	DIO.n - Vert	40	DIO.n - Vert	60	DIO.n - Vert
2	DIO.n - Output 1	22	DIO.n - Output 2	41	DIO.n - Output 3	61	DIO.n - Output 4
3	DIO.n - Output 5	23	DIO.n - Output 6	42	DIO.n - Output 7	62	DIO.n - Output 8
4	DIO.n - Output 9	24	DIO.n - Output 14	43	DIO.n - Output 11	63	DIO.n - Output 12
5	DIO.n - Output 13	25	DIO.n - Output 18	44	DIO.n - Output 15	64	DIO.n - Output 16
6	DIO.n - Output 17	26	DIO.n - Output 22	45	DIO.n - Output 19	65	DIO.n - Output 20
7	DIO.n - Output 21	27	DIO.n - Output 26	46	DIO.n - Output 23	66	DIO.n - Output 24
8	DIO.n - Output 25	28	DIO.n - Output 30	47	DIO.n - Output 27	67	DIO.n - Output 28
9	DIO.n - FP_GND	29	DIO.n - Output 34	48	DIO.n - Output 31	68	DIO.n - Output 32
10	DIO.n - FP_GND	30	DIO.n - FP_GND	49	DIO.n - FP_GND	69	DIO.n - FP_GND
11	DIO.n - Input 1	31	DIO.n - Input 2	50	DIO.n - Input 3	70	DIO.n - Input 4
12	DIO.n - Input 5	32	DIO.n - Input 6	51	DIO.n - Input 7	71	DIO.n - Input 8
13	DIO.n - Input 9	33	DIO.n - Input 10	52	DIO.n - Input 11	72	DIO.n - Input 12
14	DIO.n - Input 13	34	DIO.n - Input 14	53	DIO.n - Input 15	73	DIO.n - Input 16
15	DIO.n - Input 17	35	DIO.n - Input 18	54	DIO.n - Input 19	74	DIO.n - Input 20
16	DIO.n - Input 21	36	DIO.n - Input 22	55	DIO.n - Input 23	75	DIO.n - Input 24
17	DIO.n - Input 25	37	DIO.n - Input 26	56	DIO.n - Input 27	76	DIO.n - Input 28
18	DIO.n - Input 29	38	DIO.n - Input 30	57	DIO.n - Input 31	77	DIO.n - Input 32
19	DIO.n - FP_GND	39	DIO.n - FP_GND	58	DIO.n - FP_GND	78	DIO.n - FP_GND
20	DIO.n - FP_GND			59	DIO.n - FP_GND		

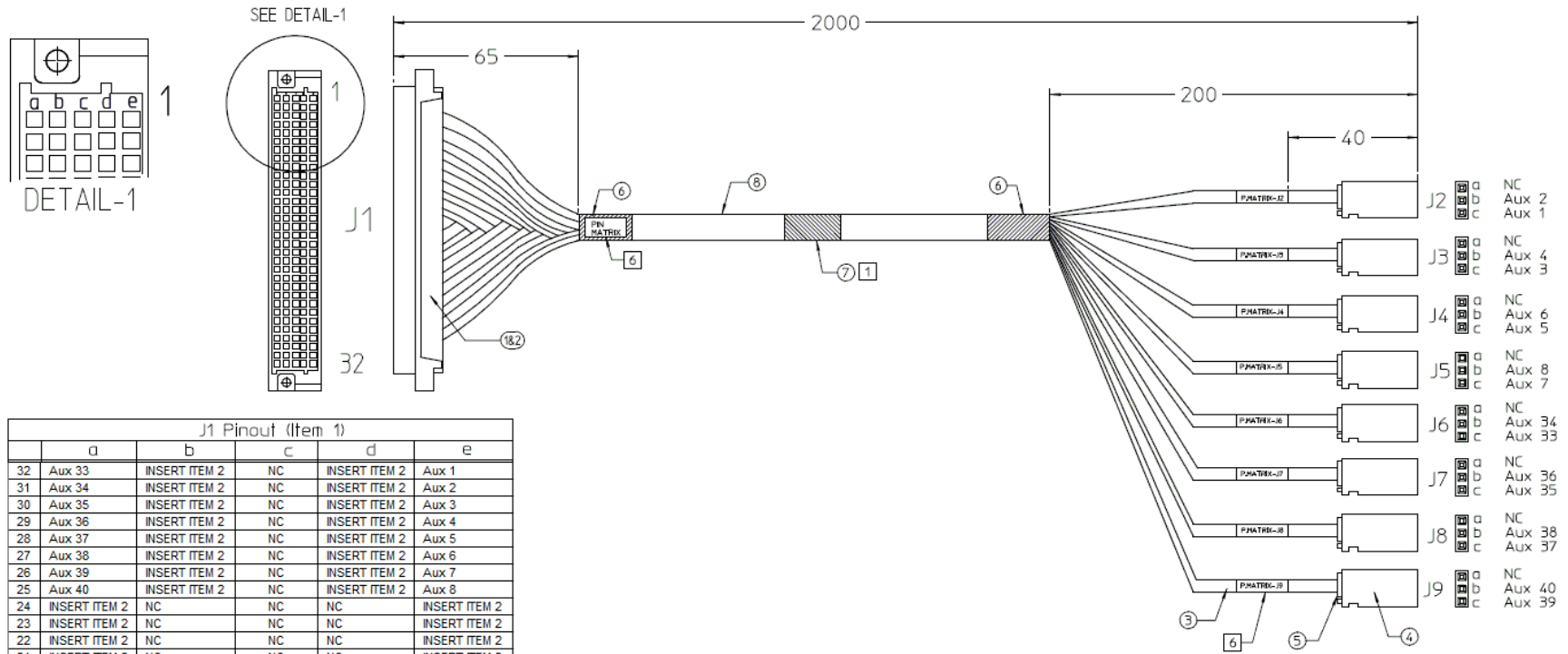
U8970-61722 Cable for LXI DAC to Express Connect

Figure 5-3 U8970-61722 Cable for LXI DAC to Express Connect



5-6 U8970-61723 Cable for Pin Matrix Aux to Express Connect

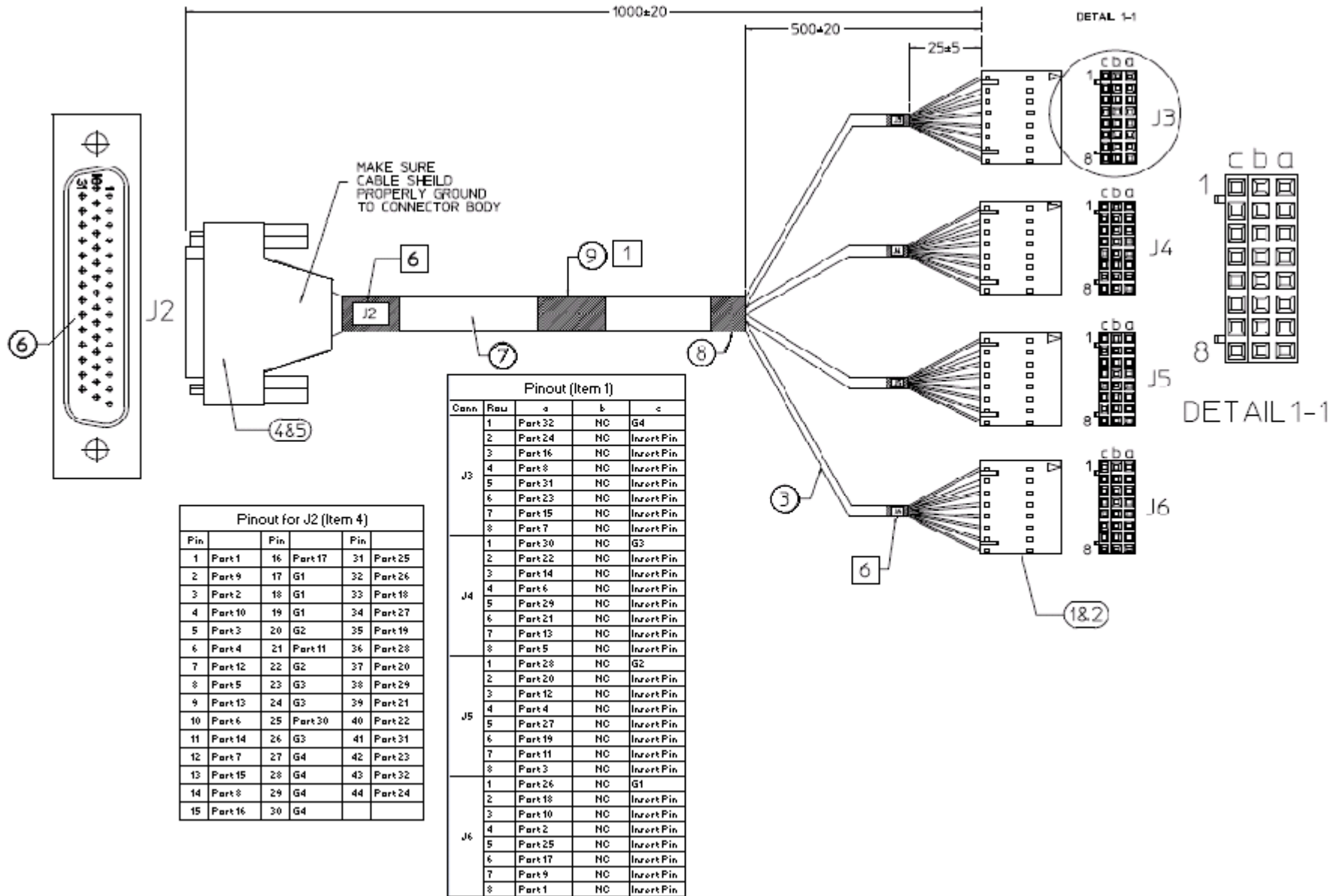
Figure 5-4 U8970-61723 Cable for Pin Matrix Aux to Express Connect



J1 Pinout (Item 1)					
	a	b	c	d	e
32	Aux 33	INSERT ITEM 2	NC	INSERT ITEM 2	Aux 1
31	Aux 34	INSERT ITEM 2	NC	INSERT ITEM 2	Aux 2
30	Aux 35	INSERT ITEM 2	NC	INSERT ITEM 2	Aux 3
29	Aux 36	INSERT ITEM 2	NC	INSERT ITEM 2	Aux 4
28	Aux 37	INSERT ITEM 2	NC	INSERT ITEM 2	Aux 5
27	Aux 38	INSERT ITEM 2	NC	INSERT ITEM 2	Aux 6
26	Aux 39	INSERT ITEM 2	NC	INSERT ITEM 2	Aux 7
25	Aux 40	INSERT ITEM 2	NC	INSERT ITEM 2	Aux 8
24	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
23	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
22	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
21	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
20	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
19	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
18	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
17	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
16	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
15	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
14	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
13	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
12	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
11	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
10	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
9	INSERT ITEM 2	NC	NC	NC	INSERT ITEM 2
8	INSERT ITEM 2	INSERT ITEM 2	NC	INSERT ITEM 2	INSERT ITEM 2
7	INSERT ITEM 2	INSERT ITEM 2	NC	INSERT ITEM 2	INSERT ITEM 2
6	INSERT ITEM 2	INSERT ITEM 2	NC	INSERT ITEM 2	INSERT ITEM 2
5	INSERT ITEM 2	INSERT ITEM 2	NC	INSERT ITEM 2	INSERT ITEM 2
4	INSERT ITEM 2	INSERT ITEM 2	NC	INSERT ITEM 2	INSERT ITEM 2
3	INSERT ITEM 2	INSERT ITEM 2	NC	INSERT ITEM 2	INSERT ITEM 2
2	INSERT ITEM 2	INSERT ITEM 2	NC	INSERT ITEM 2	INSERT ITEM 2
1	INSERT ITEM 2	INSERT ITEM 2	NC	INSERT ITEM 2	INSERT ITEM 2

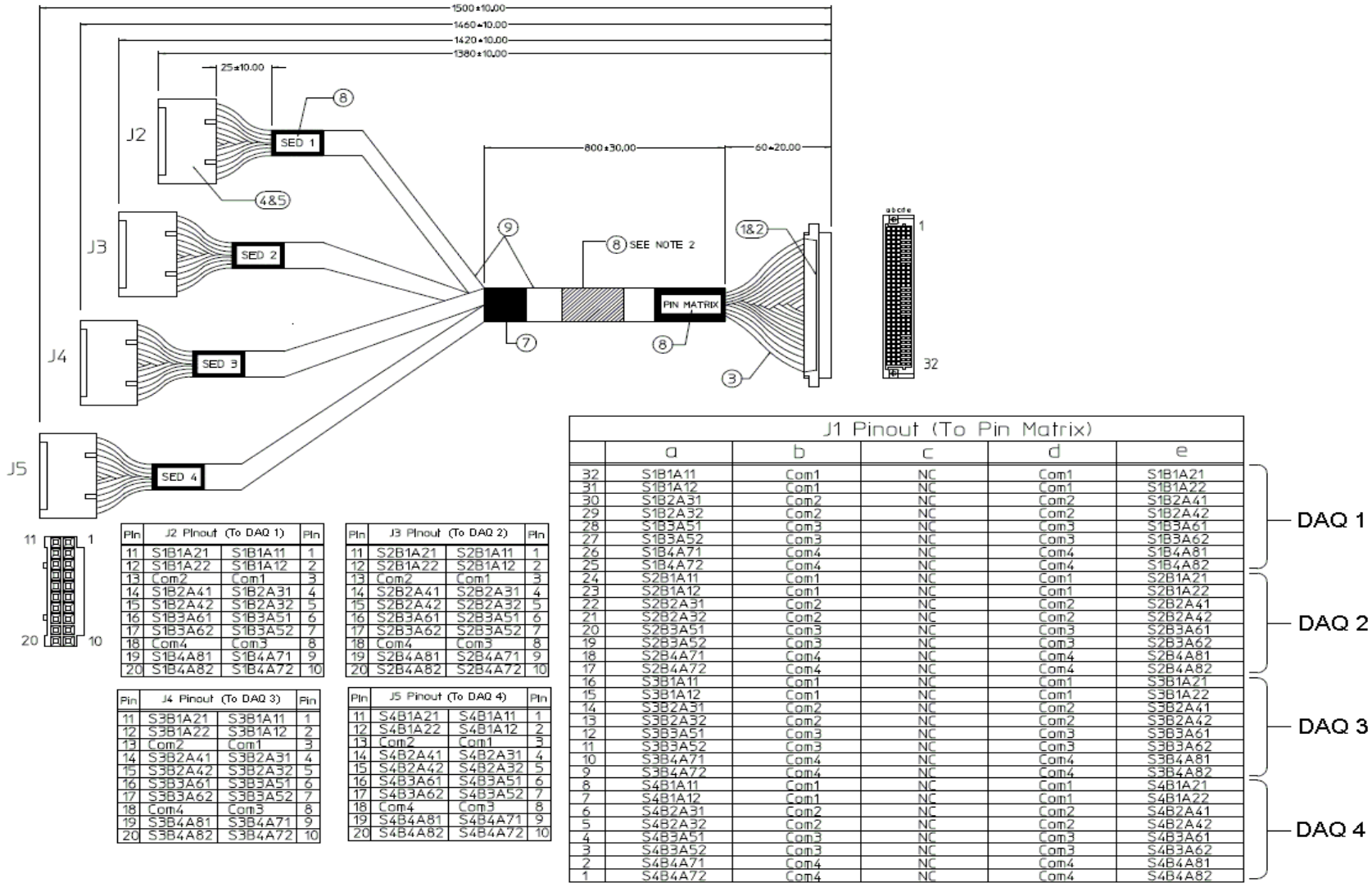
U8970-61725 Cable for DAQ to Express Connect

Figure 5-5 U8970-61725 Cable for DAQ to Express Connect



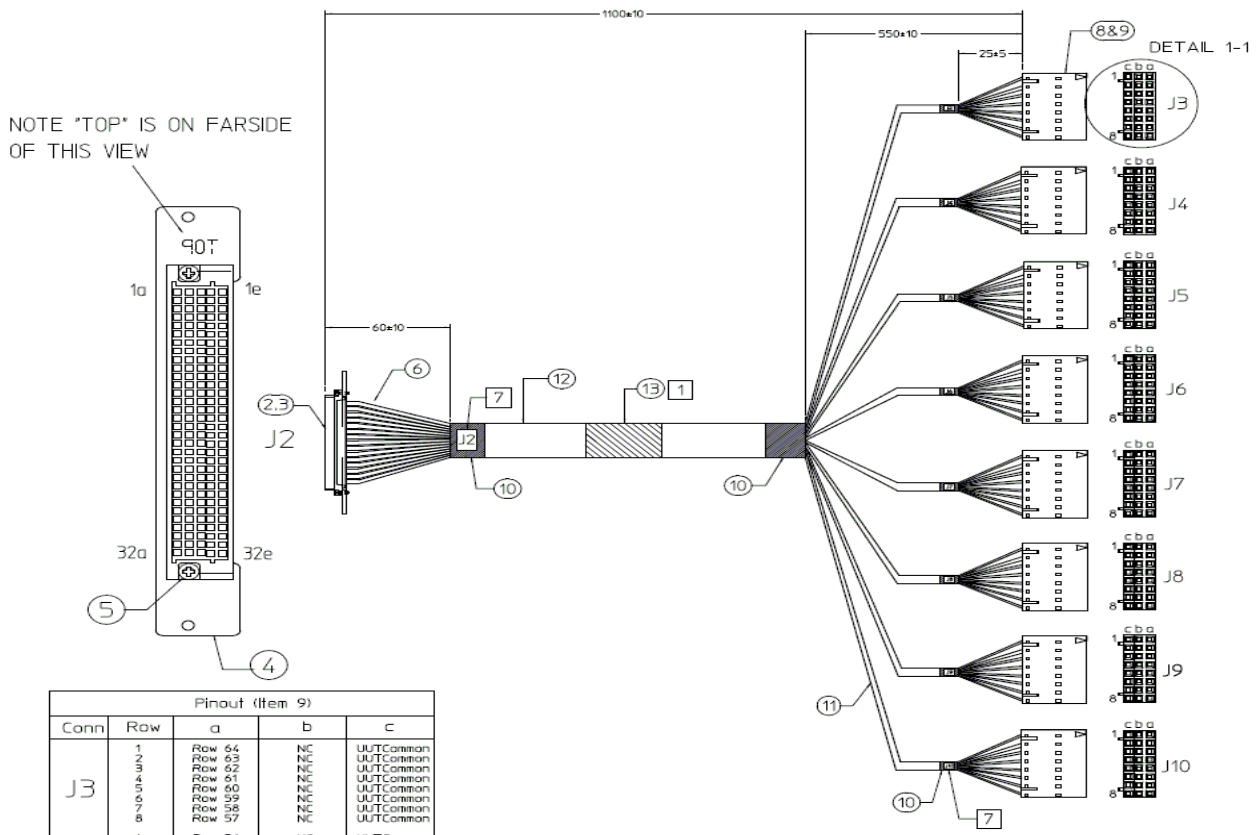
5-8 U8970-61705 Cable for DAQ Aux to Pin Matrix Aux

Figure 5-6 U8970-61705 Cable for DAQ Aux to Pin Matrix Aux. One U8970-61705 can be used for maximum four DAQ



U8970-61726 Cable for Pin Matrix to Express Connect

Figure 5-7 U8970-61726 Cable for Pin Matrix to Express Connect



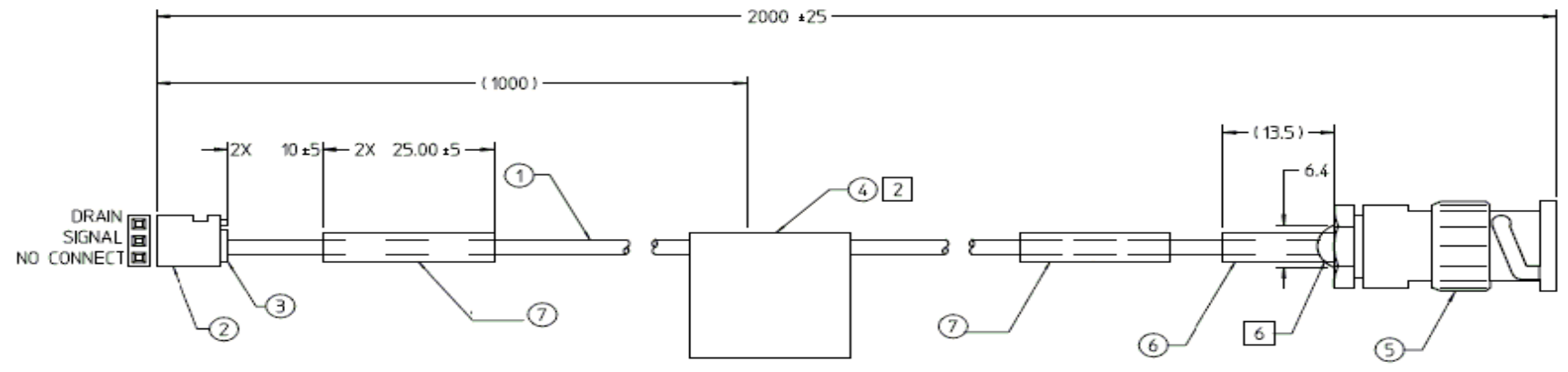
NOTE "TOP" IS ON FAR SIDE OF THIS VIEW

Pinout (Item 9)				
Conn	Row	a	b	c
J3	1	Row 64	NC	UUT Common
	2	Row 63	NC	UUT Common
	3	Row 62	NC	UUT Common
	4	Row 61	NC	UUT Common
	5	Row 60	NC	UUT Common
	6	Row 59	NC	UUT Common
	7	Row 58	NC	UUT Common
	8	Row 57	NC	UUT Common
J4	1	Row 56	NC	UUT Common
	2	Row 55	NC	UUT Common
	3	Row 54	NC	UUT Common
	4	Row 53	NC	UUT Common
	5	Row 52	NC	UUT Common
	6	Row 51	NC	UUT Common
	7	Row 50	NC	UUT Common
	8	Row 49	NC	UUT Common
J5	1	Row 48	NC	UUT Common
	2	Row 47	NC	UUT Common
	3	Row 46	NC	UUT Common
	4	Row 45	NC	UUT Common
	5	Row 44	NC	UUT Common
	6	Row 43	NC	UUT Common
	7	Row 42	NC	UUT Common
	8	Row 41	NC	UUT Common
J6	1	Row 40	NC	UUT Common
	2	Row 39	NC	UUT Common
	3	Row 38	NC	UUT Common
	4	Row 37	NC	UUT Common
	5	Row 36	NC	UUT Common
	6	Row 35	NC	UUT Common
	7	Row 34	NC	UUT Common
	8	Row 33	NC	UUT Common
J7	1	Row 32	NC	UUT Common
	2	Row 31	NC	UUT Common
	3	Row 30	NC	UUT Common
	4	Row 29	NC	UUT Common
	5	Row 28	NC	UUT Common
	6	Row 27	NC	UUT Common
	7	Row 26	NC	UUT Common
	8	Row 25	NC	UUT Common
J8	1	Row 24	NC	UUT Common
	2	Row 23	NC	UUT Common
	3	Row 22	NC	UUT Common
	4	Row 21	NC	UUT Common
	5	Row 20	NC	UUT Common
	6	Row 19	NC	UUT Common
	7	Row 18	NC	UUT Common
	8	Row 17	NC	UUT Common
J9	1	Row 16	NC	UUT Common
	2	Row 15	NC	UUT Common
	3	Row 14	NC	UUT Common
	4	Row 13	NC	UUT Common
	5	Row 12	NC	UUT Common
	6	Row 11	NC	UUT Common
	7	Row 10	NC	UUT Common
	8	Row 9	NC	UUT Common
J10	1	Row 8	NC	UUT Common
	2	Row 7	NC	UUT Common
	3	Row 6	NC	UUT Common
	4	Row 5	NC	UUT Common
	5	Row 4	NC	UUT Common
	6	Row 3	NC	UUT Common
	7	Row 2	NC	UUT Common
	8	Row 1	NC	UUT Common

Pinout for J2 (Item 2)					
Row	e	d	c	b	a
1	Row 1	Row 33	NC	NC	UUT Common
2	Row 2	Row 34	NC	NC	UUT Common
3	Row 3	Row 35	NC	NC	UUT Common
4	Row 4	Row 36	NC	NC	UUT Common
5	Row 5	Row 37	NC	NC	UUT Common
6	Row 6	Row 38	NC	NC	UUT Common
7	Row 7	Row 39	NC	NC	UUT Common
8	Row 8	Row 40	NC	NC	UUT Common
9	Row 9	Row 41	NC	NC	UUT Common
10	Row 10	Row 42	NC	NC	UUT Common
11	Row 11	Row 43	NC	NC	UUT Common
12	Row 12	Row 44	NC	NC	UUT Common
13	Row 13	Row 45	NC	NC	UUT Common
14	Row 14	Row 46	NC	NC	UUT Common
15	Row 15	Row 47	NC	NC	UUT Common
16	Row 16	Row 48	NC	NC	UUT Common
17	Row 17	Row 49	NC	NC	UUT Common
18	Row 18	Row 50	NC	NC	UUT Common
19	Row 19	Row 51	NC	NC	UUT Common
20	Row 20	Row 52	NC	NC	UUT Common
21	Row 21	Row 53	NC	NC	UUT Common
22	Row 22	Row 54	NC	NC	UUT Common
23	Row 23	Row 55	NC	NC	UUT Common
24	Row 24	Row 56	NC	NC	UUT Common
25	Row 25	Row 57	NC	NC	UUT Common
26	Row 26	Row 58	NC	NC	UUT Common
27	Row 27	Row 59	NC	NC	UUT Common
28	Row 28	Row 60	NC	NC	UUT Common
29	Row 29	Row 61	NC	NC	UUT Common
30	Row 30	Row 62	NC	NC	UUT Common
31	Row 31	Row 63	NC	NC	UUT Common
32	Row 32	Row 64	NC	NC	UUT Common

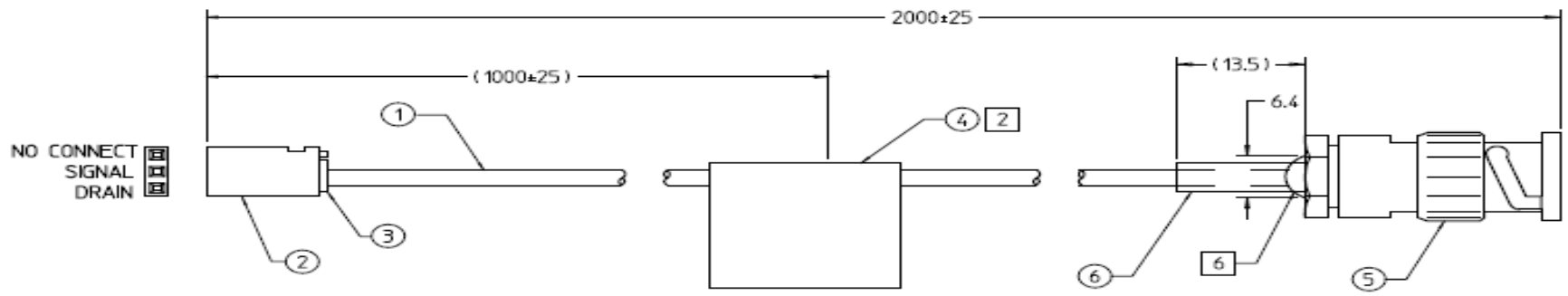
5-10 U8970-61700 Cable BNC Isolated to Instrument Matrix

Figure 5-8 U8970-61700 Cable BNC Isolated to Instrument Matrix



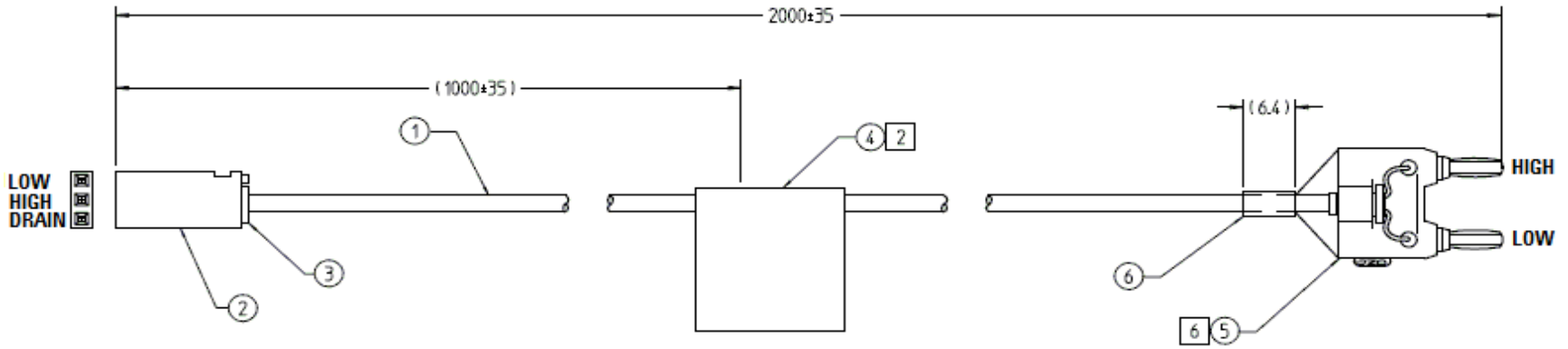
U8970-61701 Cable BNC Coaxial to Instrument Matrix

Figure 5-9 U8970-61701 Cable BNC Coaxial to Instrument Matrix



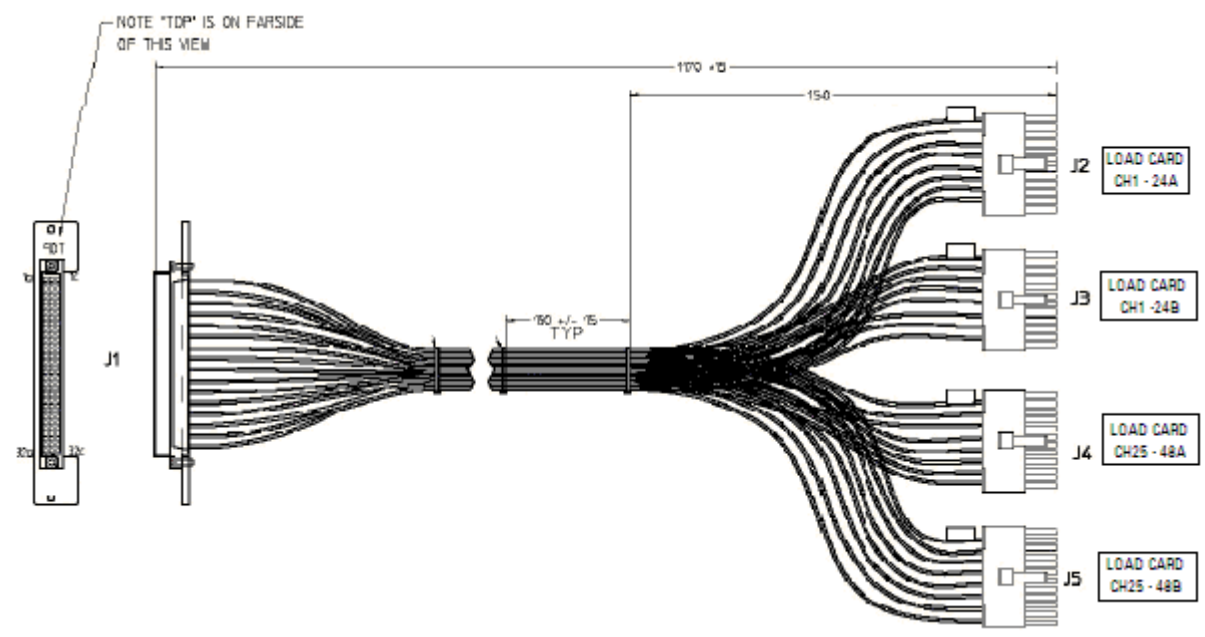
U8970-61702 Cable Dual Banana for DMM to Instrument Matrix

Figure 5-10 U8970-61702 Cable Dual Banana for DMM to Instrument Matrix



5-12 E6170-61621 Cable for 48-CH High Density Loadcard to Express Connect

Figure 5-11 E6170-61621 Cable for 48-CH High Density Loadcard to Express Connect



8121-2094 Cable for PXI DAC (8-CH) to Express Connect

Figure 5-12 8121-2094 Cable for PXI DAC (8-CH) to Express Connect. Use 2 of 8121 - 2094 for PXI DAC (16-CH)



WIRE CHART

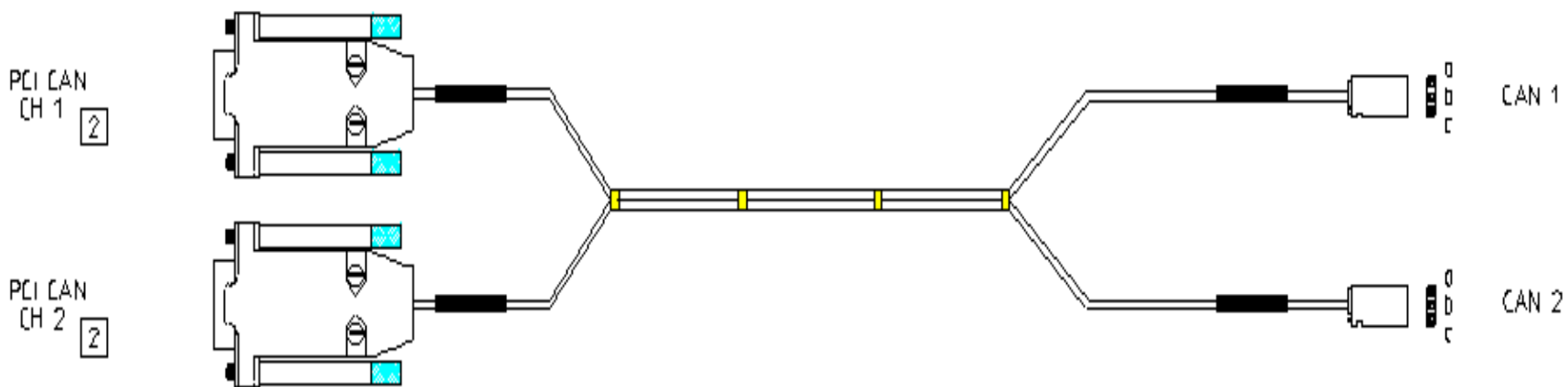
CONNECTOR		
A	B	
1	1	TWISTED PAIR #1
2	2	
3	3	TWISTED PAIR #2
4	4	
5	5	TWISTED PAIR #3
6	6	
7	7	TWISTED PAIR #4
8	8	
9	9	TWISTED PAIR #5
10	10	
11	11	TWISTED PAIR #6
12	12	
13	13	TWISTED PAIR #7
14	14	
15	15	TWISTED PAIR #8
16	16	
17	17	TWISTED PAIR #9
18	18	
19	19	TWISTED PAIR #10
20	20	
21	21	TWISTED PAIR #11
22	22	
23	23	TWISTED PAIR #12
24	24	

CONNECTOR		
A	B	
25	25	TWISTED PAIR #13
26	26	
27	27	TWISTED PAIR #14
28	28	
29	29	TWISTED PAIR #15
30	30	
31	31	TWISTED PAIR #16
32	32	
33	33	TWISTED PAIR #17
34	34	
35	35	TWISTED PAIR #18
36	36	
37	37	TWISTED PAIR #19
38	38	
39	39	TWISTED PAIR #20
40	40	
41	41	TWISTED PAIR #21
42	42	
43	43	TWISTED PAIR #22
44	44	
45	45	TWISTED PAIR #23
46	46	
47	47	TWISTED PAIR #24
48	48	

CONNECTOR		
A	B	
49	49	TWISTED PAIR #25
50	50	
51	51	TWISTED PAIR #26
52	52	
53	53	TWISTED PAIR #27
54	54	
55	55	TWISTED PAIR #28
56	56	
57	57	TWISTED PAIR #29
58	58	
59	59	TWISTED PAIR #30
60	60	
61	61	TWISTED PAIR #31
62	62	
63	63	TWISTED PAIR #32
64	64	
65	65	TWISTED PAIR #33
66	66	
67	67	TWISTED PAIR #34
68	68	

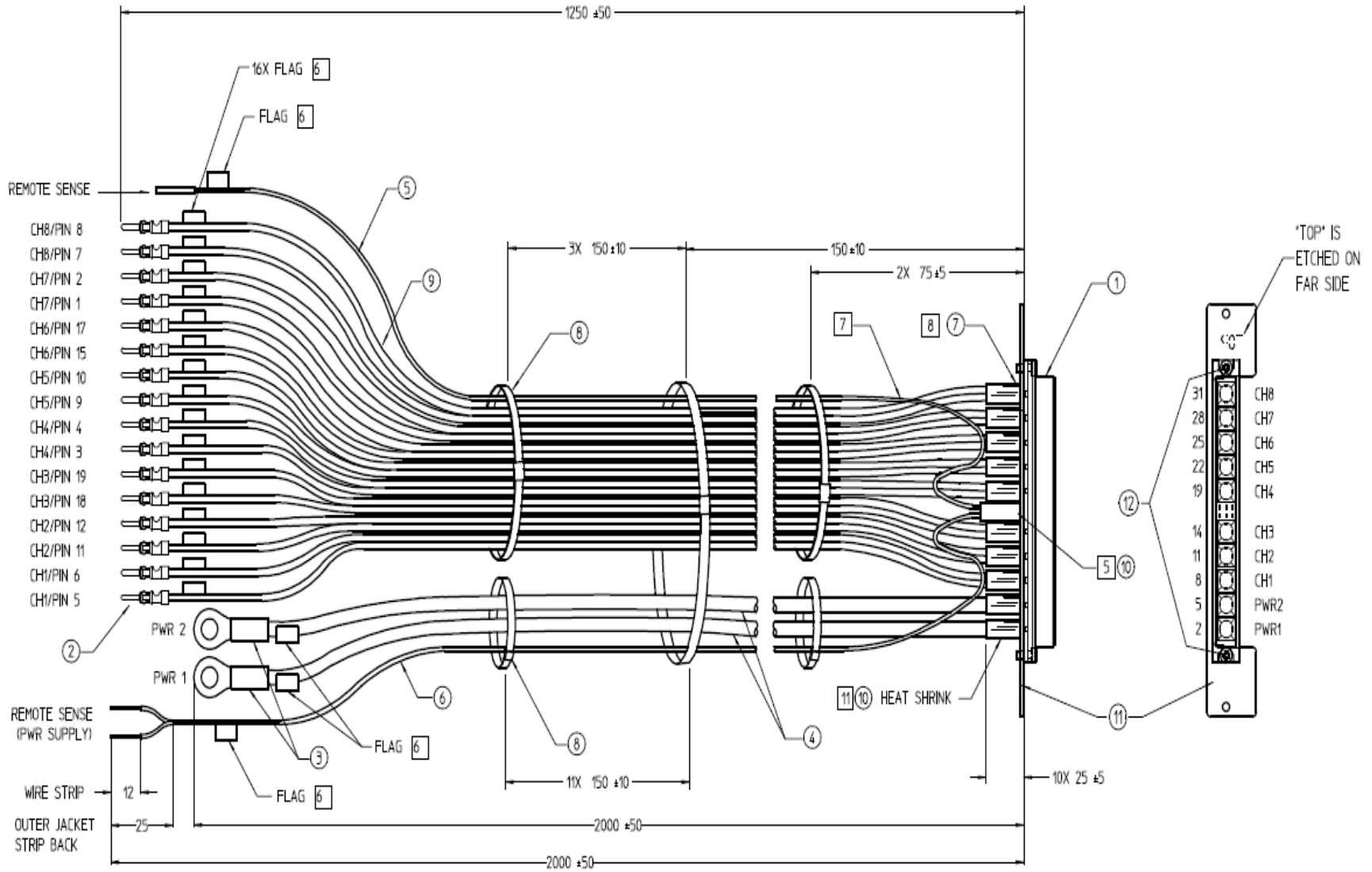
5-14 E6170-61630 CAN PCI To ICA Cable

Figure 5-13 TC1-TC8 Connector Key Configuration



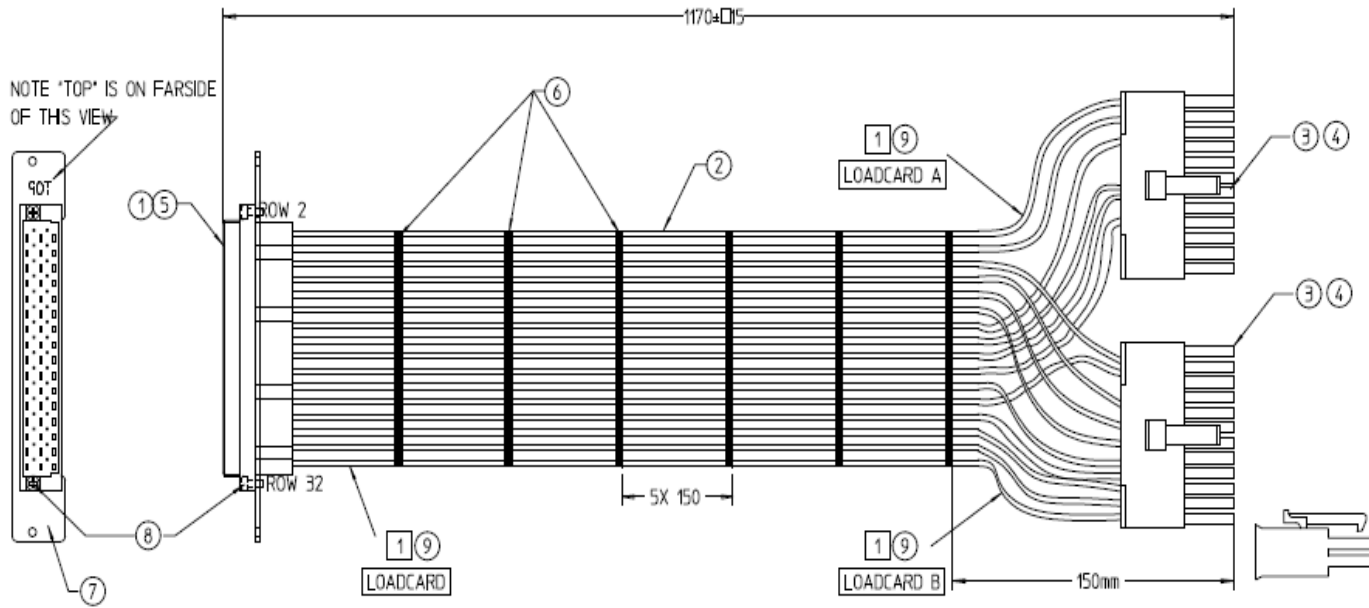
E6230-61603 Cable for 8-CH Heavy Duty Load Card to Express Connect

Figure 5-14 Cable for E6178B 8-CH Heavy Duty Load card to Express Connect

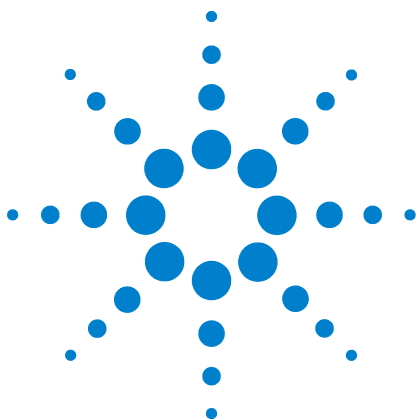


E6170-61605 Cable for 8-CH/16-CH/24-CH Load Card to Express Connect

Figure 5-15 E6170-61605 Cable for Load card to Express Connect. This cable can be used for E6175A, E6177B and N9377A



CONNECTOR PINOUT TABLE	
FROM	TO
LOADCARD A2	LOADCARD A 12
LOADCARD C2	LOADCARD A 11
LOADCARD E2	LOADCARD A 10
LOADCARD A4	LOADCARD B 24
LOADCARD C4	LOADCARD B 23
LOADCARD E4	LOADCARD B 22
LOADCARD A6	LOADCARD A 09
LOADCARD C6	LOADCARD A 08
LOADCARD E6	LOADCARD A 07
LOADCARD A8	LOADCARD B 21
LOADCARD C8	LOADCARD B 20
LOADCARD E8	LOADCARD B 19
LOADCARD A10	LOADCARD A 06
LOADCARD C10	LOADCARD A 05
LOADCARD E10	LOADCARD A 04
LOADCARD A12	LOADCARD B 18
LOADCARD C12	LOADCARD B 17
LOADCARD E12	LOADCARD B 16
LOADCARD A14	LOADCARD A 03
LOADCARD C14	LOADCARD A 02
LOADCARD E14	LOADCARD A 01
LOADCARD A16	LOADCARD B 15
LOADCARD C16	LOADCARD B 14
LOADCARD E16	LOADCARD B 13
LOADCARD A18	LOADCARD A 13
LOADCARD C18	LOADCARD A 14
LOADCARD E18	LOADCARD A 15
LOADCARD A20	LOADCARD B 01
LOADCARD C20	LOADCARD B 02
LOADCARD E20	LOADCARD B 03
LOADCARD A22	LOADCARD A 16
LOADCARD C22	LOADCARD A 17
LOADCARD E22	LOADCARD A 18
LOADCARD A24	LOADCARD B 04
LOADCARD C24	LOADCARD B 05
LOADCARD E24	LOADCARD B 06
LOADCARD A26	LOADCARD A 19
LOADCARD C26	LOADCARD A 20
LOADCARD E26	LOADCARD A 21
LOADCARD A28	LOADCARD B 07
LOADCARD C28	LOADCARD B 08
LOADCARD E28	LOADCARD B 09
LOADCARD A30	LOADCARD A 22
LOADCARD C30	LOADCARD A 23
LOADCARD E30	LOADCARD A 24
LOADCARD A32	LOADCARD B 10
LOADCARD C32	LOADCARD B 11
LOADCARD E32	LOADCARD B 12



6 Replaceable And Spare Parts

Agilent U8971A Replaceable Parts [6-2](#)

Agilent U8971A Recommended Spare Parts for Express Connect [6-3](#)

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

Note that cable part numbers are listed here, cable drawings are shown in [Chapter 5](#).

In the event the E6198 optional loadcard is present, additional spare parts may be required. Refer to “TS-5400 System Integrators Manual” for additional spare parts information.



Agilent U8971A Replaceable Parts

Table 6-1 PC Kits

Part Number	Description
E2235C	PC-IND CTRLR CR2 DUO DT 3.0GHZ IPC-610 (5067-4802)
	Optical Wheel Mouse Mouton 2D Combo with Ferrite-Core inside (1150-7913)
	OEM keyboard SK-1688 (1150-7970)
	GPIO Extender (1252-6133)

Table 6-2 Monitors

Part Number	Description
2090-0952	DISPLAY LCD 17-IN 1280X1024-PIXELS 377X490X301-MM

Table 6-3 Plug-in Cards

Part Number	Description
82350-66511	Agilent PCI GPIB INTERFACE
0960-2461	ROCKERPORT UNIVERSAL PCI CARD RS-232/422, 8P, DB25 MALE, SURGE
1150-7983	CAN PCI-INTERFACE CARD 2 CHANNEL
M9047A	PCIE DESKTOP ADAPTOR: GEN 2, X8

Table 6-4 Express Connect PC Board

Part Number	Description
U8970-66601	EXPCONN ACCUMULATOR CARD

Agilent U8971A Recommended Spare Parts for Express Connect

Table 6-5 Recommended Spare Parts

Part Number	Description
U8970-66601	EXPCONN ACCUMULATOR CARD
U8970-61707	Cable for PXI Voltage/Current Source to Instrument Matrix & Express Connect
U8970-61721	Cable for PXI DIO to Express Connect
U8970-61725	Cable for DAQ to Express Connect
U8970-61705	Cable for DAQ Aux to Pin Matrix Aux
8121-2094	Cable for PXI DAC (8-CH) to Express Connect
U8970-61722	Cable for LXI DAC to Express Connect
U8970-61700	Cable BNC Isolated to Instrument Matrix
U8970-61701	Cable BNC Coaxial to Instrument Matrix
U8970-61702	Cable Dual Banana for DMM to Instrument Matrix
U8970-61726	Cable for Pin Matrix to Express Connect
U8970-61723	Cable for Pin Matrix Aux to Express Connect
E6170-61621	Cable for 48-CH High Density Loadcard to Express Connect
E6230-61603	CABLE-HEAVY DUTY LOAD CARD
E6170-61605	16 CH LD CARD TO EXPRESS CONN CABLE

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