Agilent U2751A USB Modular Switch Matrix

User's and Service Guide

Agilent Technologies

Notices

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Agilent Technologies, Inc.
5301 Stevens Creek Blvd.
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Safety Notices

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.

Safety Symbols

The following symbols on the instrument and in the documentation indicate precautions which must be taken to maintain safe operation of the instrument.

| Symbol	Description	Symbol	Description
⎓	Direct current (DC)	◯	Off (supply)
∼	Alternating current (AC)	I	On (supply)
≂	Both direct and alternating current	⚡	Caution, risk of electric shock
3∼	Three-phase alternating current	⚠	Caution, risk of danger (refer to this manual for specific Warning or Caution information)
⏚	Earth (ground) terminal	🔥	Caution, hot surface
⏛	Protective conductor terminal		Out position of a bi-stable push control
⏢	Frame or chassis terminal		In position of a bi-stable push control
⏦	Equipotentiality	CAT I	Measurements performed on circuits not directly connected to MAINS
⧈	Equipment protected throughout by double insulation or reinforced insulation		

General Safety Information

<table>
<tr><td>WARNING</td><td>

Do not operate the device around explosive gas, vapor, or dust.
Observe all markings on the device before establishing any connection.
The device is under CAT I measurement category, do not connect the 25-pin connector to MAINS.

</td></tr>
</table>

⚠️ **CAT I:**
Maximum working voltage:
Standalone 35 Vrms
Modular (Used with U2781A) 180 Vrms

Maximum transient voltage: 300 Vrms

- Do not measure higher than the rated voltage (as marked on the device).
- Do not operate the device with the cover removed or loosened.
- Use only the power adapter provided by the manufacturer to avoid any unexpected hazards.

<table>
<tr><td>CAUTION</td><td>

Electrostatic discharge (ESD) can cause damage to the components in the instrument and accessories. The cables or wires should be connected to the plug-in connectors first and covered with the wire casing prior to plugging it into the output connector to prevent ESD from occurring.
If the device is used in a manner not specified by the manufacturer, the device protection may be impaired.
Always use dry cloth to clean the device. Do not use ethyl alcohol or any other volatile liquid to clean the device.
Do not permit any blockage of the ventilation holes of the device.

</td></tr>
</table>

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Environmental Conditions

This instrument is designed for indoor use and in an area with low condensation. The table below shows the general environmental requirements for this instrument.

Environmental conditions	Requirements
Operating temperature	0 °C to 50 °C
Operating humidity	20% to 85% RH non-condensing
Storage temperature	−20 °C to 70 °C
Storage humidity	5% to 90% RH non-condensing

CAUTION   The U2751A USB modular switch matrix complies with the following safety and EMC requirements.

- IEC 61010-1:2001/EN61010-1:2001 (2nd Edition)
- Canada: CAN/CSA-C22.2 No. 61010-1-04
- USA: ANSI/UL 61010-1:2004
- IEC 61326-2002/EN 61326:1997+A1:1998+A2:2001+A3:2003
- Canada: ICES-001:2004
- Australia/New Zealand: AS/NZS CISPR11:2004

Regulatory Markings

CE ISM 1-A	The CE mark is a registered trademark of the European Community. This CE mark shows that the product complies with all the relevant European Legal Directives.	N10149	The C-tick mark is a registered trademark of the Spectrum Management Agency of Australia. This signifies compliance with the Australia EMC Framework regulations under the terms of the Radio Communication Act of 1992.
ICES/NMB-001	ICES/NMB-001 indicates that this ISM device complies with the Canadian ICES-001. Cet appareil ISM est confomre a la norme NMB-001 du Canada.		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 household waste.
CSA C US	The CSA mark is a registered trademark of the Canadian Standards Association.		

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Waste Electrical and Electronic Equipment (WEEE) Directive 2002/96/EC

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 household waste.

Product Category:

With reference to the equipment types in the WEEE directive Annex 1, this instrument is classified as a "Monitoring and Control Instrument" product.

The affixed product label is as shown below.

Do not dispose in domestic household waste

To return this unwanted instrument, contact your nearest Agilent Technologies, or visit:

www.agilent.com/environment/product

for more information.

In This Guide...

1 Getting Started

This chapter provides an overview of the U2751A USB modular switch matrix, which includes the product outlook, product dimensions, and product layout. This chapter also contains instructions on how to install and configure the U2751A.

2 Operation and Features

This chapter describes the operation and features that are offered by the U2751A, such as switch controls and relay usage monitoring.

3 Characteristics and Specifications

This chapter contains the characteristics and specifications of the U2751A.

4 Service Information

This chapter provides the guidelines for returning the U2751A to Agilent Technologies for servicing or for servicing it yourself. It also contains the list of replaceable parts.

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Declaration of Conformity (DoC)

The Declaration of Conformity (DoC) for this instrument is available on the Web site. You can search the DoC by its product model or description.

http://regulations.corporate.agilent.com/DoC/search.htm

NOTE	If you are unable to search for the respective DoC, please contact your local Agilent representative.

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U2751A USB Modular Switch Matrix
User's and Service Guide

1

Getting Started

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Introduction

The U2751A USB modular switch matrix offers a high quality, low cost switching solution for automated test. It can operate as a standalone or modular unit when used with the U2781A USB modular instrument chassis.

The U2751A is a compact 4×8, two-wire modular switch matrix which is controlled remotely over a USB interface via the Agilent Measurement Manager software. The U2751A can also be programmed using the provided drivers or via SCPI commands.

The U2751A has the following features.

- 32 two-wire cross-points organized in a 4 rows by 8 columns configuration
- any combination of rows and columns can be connected at a time. Multiple channels can be closed at the same time
- relay cycle counter

The U2751A offers you the most flexible connection path between your device under test (DUT) and your test equipment, allowing different instruments to be connected to multiple points on your DUT at the same time.

Using the Agilent Measurement Manager, you can instruct the matrix to make or break any of the 32 row-column intersections over the USB interface. More details will be covered in the *Agilent Measurement Manager help file*.

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Product at a Glance

Product Outlook

Top View

Bumpers

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Front View

USB indicator

Power indicator

DSub connector

Rear View

55-pin backplane connector

USB inlet

Fastening hole for USB cable with locking mechanism

Power inlet

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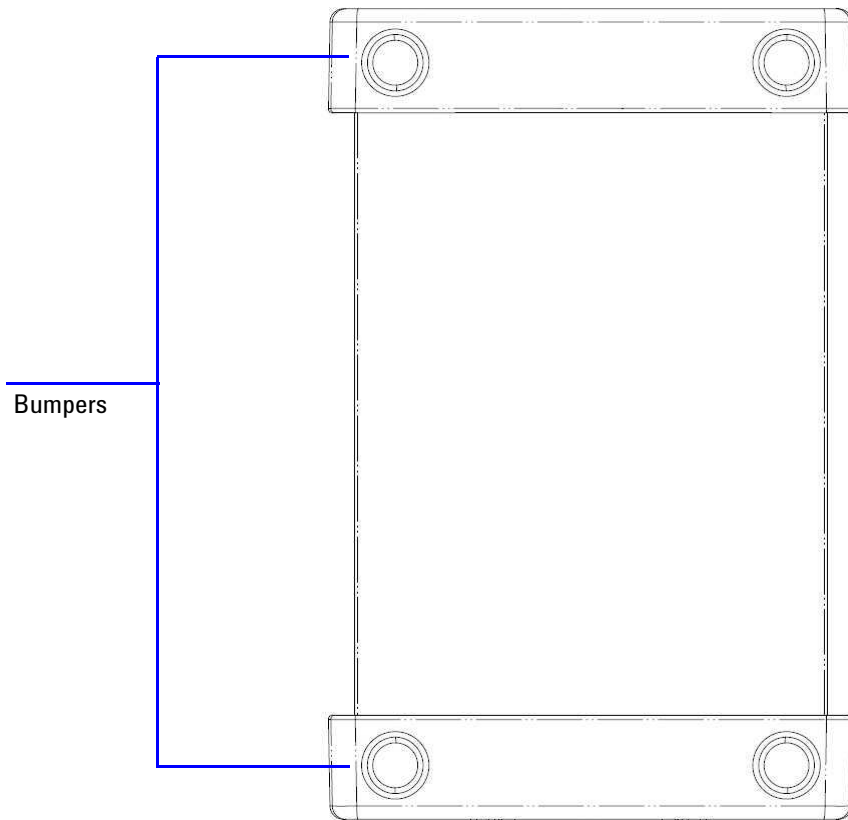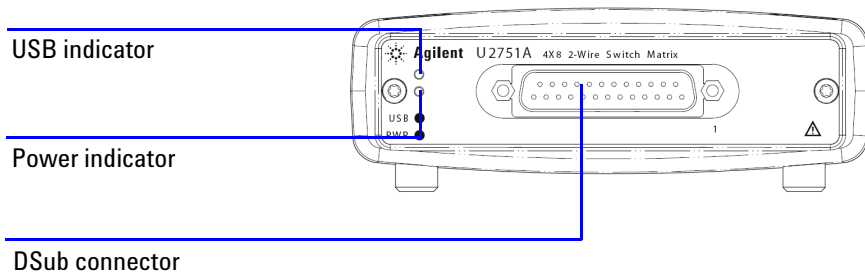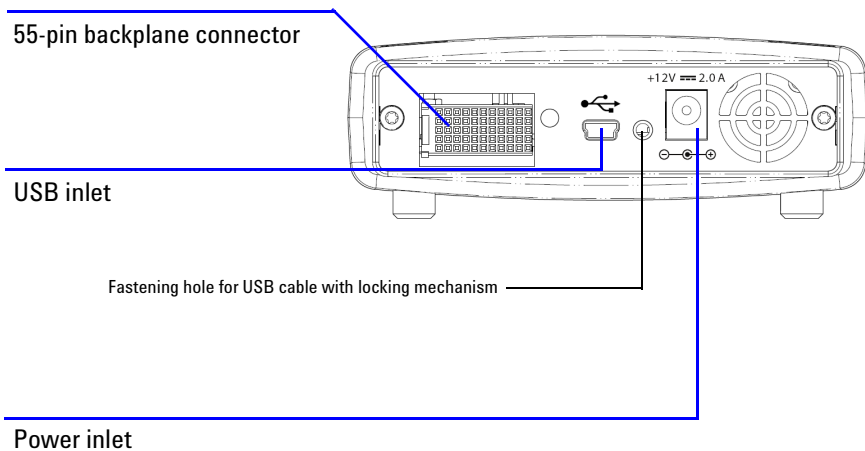
Product Dimensions

Dimensions Without Bumpers

Top View

|← 105.00 mm →|

175.00 mm

Front View

Agilent U2751A 4X8 2-Wire Switch Matrix

USB
PWR

1

25.00 mm
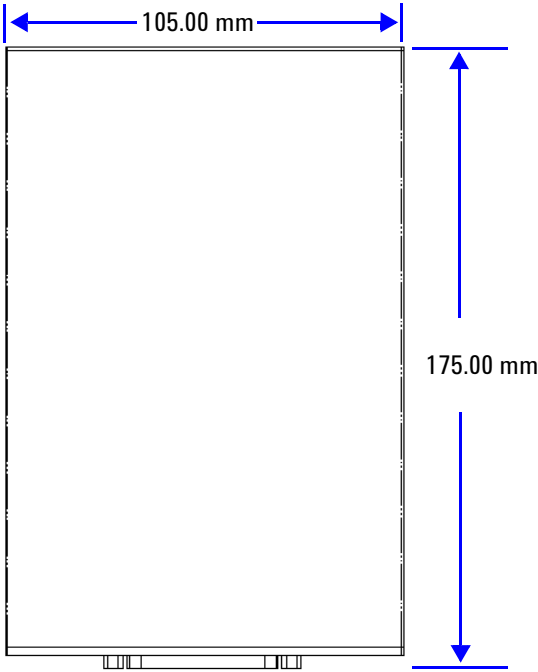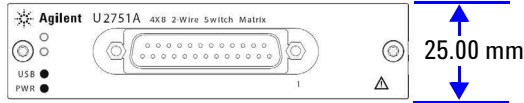
Dimensions With Bumpers

Top View

117.00 mm

180.00 mm

Front View

41.00 mm

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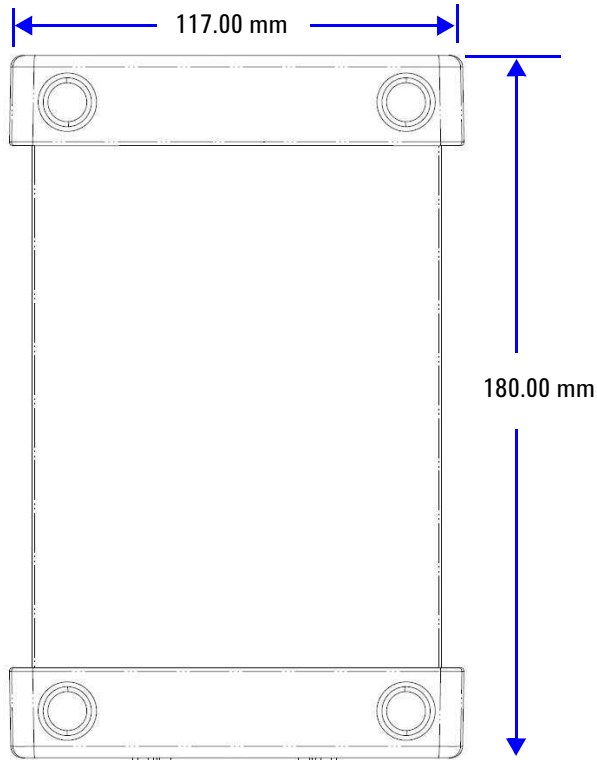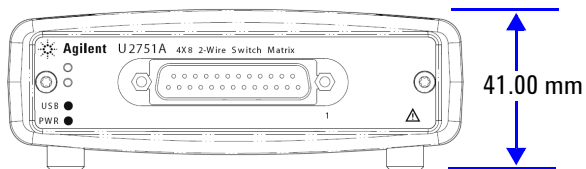
Standard Shipped Items

Verify that you have received the following items with your unit. If anything is missing or damaged, please contact the nearest Agilent Sales Office.

✔ 12 V, 2 A AC/DC adapter

✔ Power cord

✔ USB Standard-A to Mini-B interface cable

✔ L-Mount kit (used with the modular instrument chassis)

✔ Agilent Automation-Ready CD-ROM (contains the Agilent IO Libraries Suite)

✔ Agilent USB Modular Products and Systems Quick Start Guide

✔ Agilent USB Modular Products and Systems Product Reference DVD-ROM

✔ Agilent Measurement Manager Quick Reference Card

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Inspection and Maintenance

Initial Inspection

When you receive your U2751A, inspect the unit for any obvious damage such as broken terminals or cracks, dents, and scratches on the casing that may occur during shipment. If any damage is found, notify the nearest Agilent Sales Office immediately. The front of this manual contains the warranty information.

Keep the original packaging in case the U2751A has to be returned to Agilent in the future. If you return the U2751A for service, attach a tag identifying the owner and model number. Also include a brief description of the problem.

Electrical Check

Chapter 4, "Service Information" on page 33 will provide the complete verification procedure. The procedure will verify to a high level of confidence that the U2751A is operating in accordance with its specifications.

General Maintenance

NOTE	Any repair that is not covered in your modular product manuals should only be performed by qualified personnel.

1 Power off your module and remove the power cord and I/O cable from your device.

2 Remove your module from the bumper casing.

3 Shake off any dirt that may have accumulated on the module.

4 Wipe your module with a dry cloth and install the bumper back in place.

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Installation and Configuration

Follow the step-by-step instructions shown in the *Agilent USB Modular Products and Systems Quick Start Guide* to get started with the preparations and installation of your U2751A.

NOTE	You need to install the IVI-COM driver if you are going to use the U2751A with Agilent VEE Pro, LabVIEW, or Microsoft® Visual Studio®.

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U2751A DSub Connector

The U2751A is equipped with one 25-pin male DSub connector as shown in Figure 1-1.
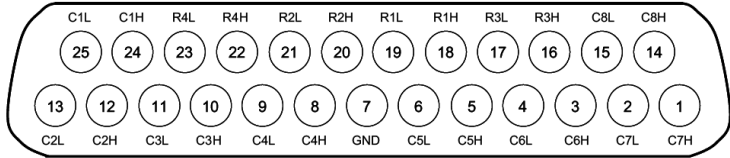
Figure 1-1   25-pin male DSub connector

Pin Assignments

Table 1-1   Pin assignments

Pin	Description	Pin	Description
18	R1H	10	C3H
19	R1L	11	C3L
20	R2H	8	C4H
21	R2L	9	C4L
16	R3H	5	C5H
17	R3L	6	C5L
22	R4H	3	C6H
23	R4L	4	C6L
24	C1H	1	C7H
25	C1L	2	C7L
12	C2H	14	C8H
13	C2L	15	C8L
7	GND		

R represents "Row" and C represents "Column".

H represents "High" and L represents "Low".

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U2922A Terminal Block

The U2922A terminal block is an optional accessory to be used with the U2751A. The U2922A which weighs approximately 100 g and has screw-type terminals, offers you a convenient and simple way of making connection to the switch matrix for prototyping applications or an actual system deployment. It allows the user to configure a wide variety of routing options and matrix topologies.

The U2922A pin configuration is in accordance to the 25-pin male DSub connector of the U2751A as shown in the following:
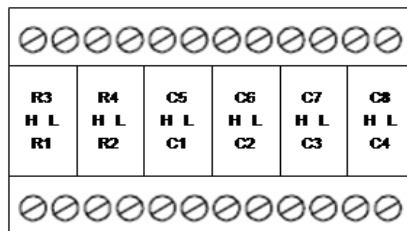
R represents "Row" and C represents "Column".

H represents "High" and L represents "Low".

Figure 1-2   U2922A pin configuration

You may also develop your own terminal block by using a compatible mating 25-pin female DSub connector to the front panel.

| NOTE | Ensure that your design meets the clearance and creepage requirements for high voltage application as defined by IEC/EN 61010-1. |

The outlook and dimensions of the U2922A are shown in Figure 1-3 and Figure 1-4.

Female DSub connector

Terminal block   Retractable cover   Jack screw
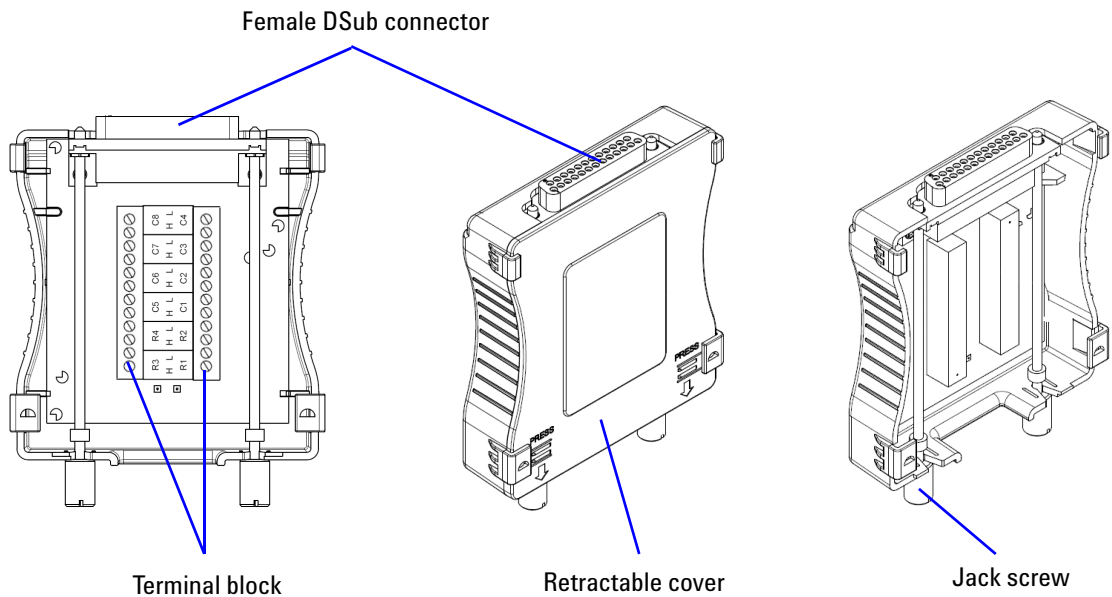
Figure 1-3   U2922A outlook

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Rear View

85.00 mm

23.00 mm

Top View

90.00 mm   105.00 mm

PRESS   PRESS

Front View

85.00 mm

23.00 mm

Side View

105.00 mm

23.00 mm
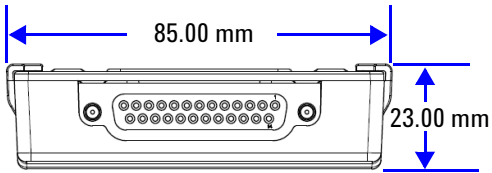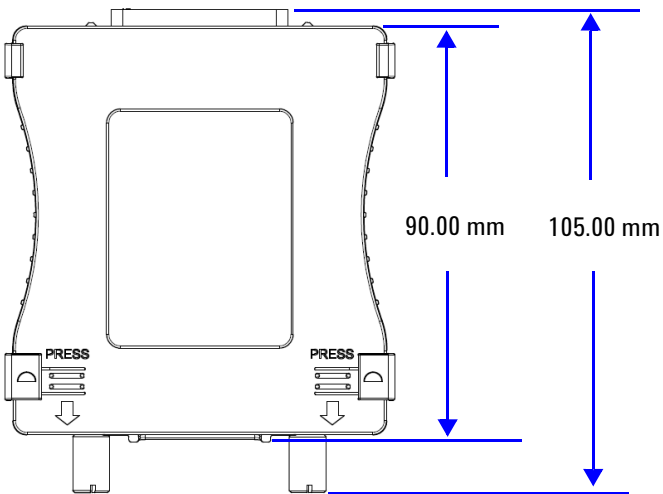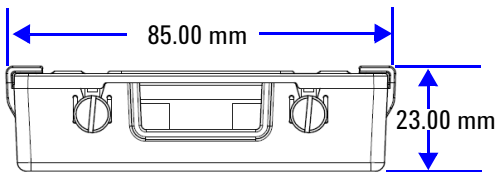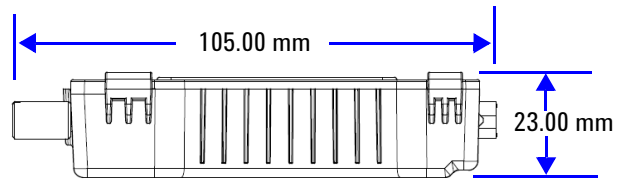
Figure 1-4   U2922A dimensions

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U2922A Terminal Block Installation

This section provides the recommended procedure for connecting the U2922A terminal block to the U2751A.

WARNING	⚠	• **The maximum working voltage of the U2751A with the terminal block for standalone is 35 Vrms and for modular (when used with the U2781A) is 180 Vrms.**
		• **The maximum transient voltage is 300 Vrms.**
	⚡	• **Do not remove the retractable cover from the U2922A terminal block during operation to avoid any unexpected hazard.**

NOTE	• You are required to connect the cables to the U2922A terminal block prior to attaching the U2922A to the U2751A.
	• Ensure that you power-off your device and unplug the U2922A from the U2751A to change the cable connection on the U2922A.
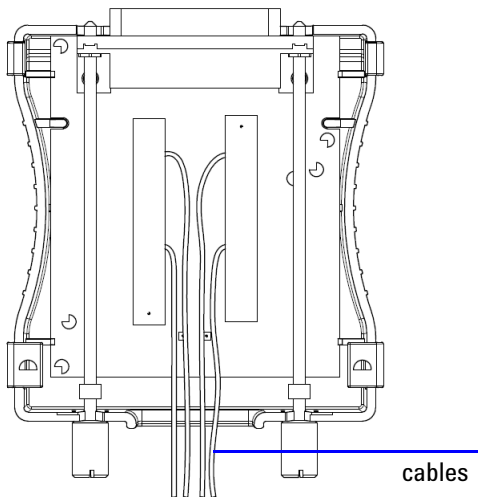
cables

Connect the cables to the terminal block as desired.

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Snap-fit clasp of the
retractable cover and
the housing
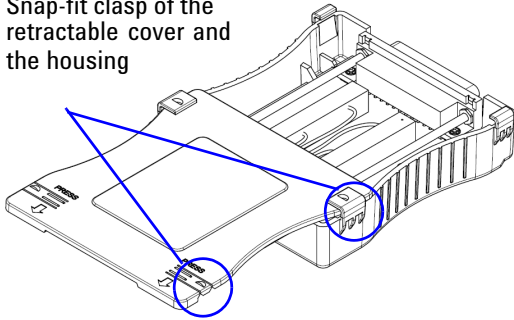
Close your terminal block by slotting in the
retractable cover. Check the snap-fit clasp on
the cover and the housing to ensure correct
orientation of the retractable cover before
slotting it in.
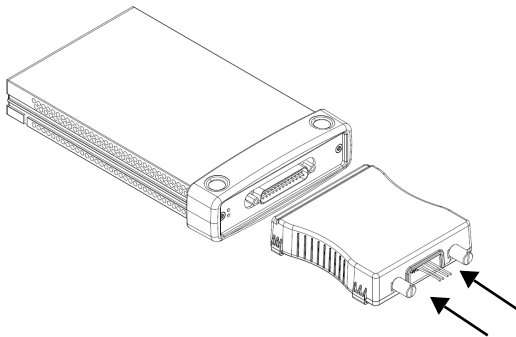
Turn over the U2922A with the retractable
cover facing downwards. Then, insert the
U2922A to the U2751A as shown.

Tighten the jack screws using a screw driver
to secure the connection. Ensure that the
terminal block is installed correctly with the
screws properly tighten for secure operation.
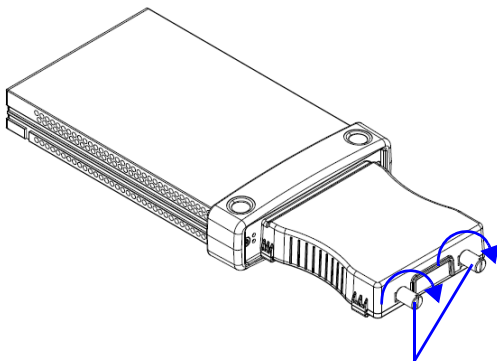
Jack screws of the U2922A

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55-Pin Backplane Connector Pin Configuration

The 55-pin backplane connector is used when the U2751A module is inserted into the U2781A USB modular instrument chassis. For more details, refer to the *Agilent U2781A USB Modular Instrument Chassis User's Guide*.

GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	GND	**F**
NC	NC	NC	NC	NC	NC	NC	NC	VBUS	GND	USB_D–	**E**
GND	TRIG3	GND	TRIG2	GND	TRIG1	GND	TRIG0	GND	GND	USB_D+	**D**
TRIG4	GND	TRIG5	GND	TRIG6	GND	TRIG7	GND	+12 V	+12 V	GND	**C**
nBPUB	CLK10M	GND	STAR_TRIG	GA2	GA1	GA0	NC	+12 V	+12 V	+12 V	**B**
NC	NC	NC	NC	NC	NC	NC	NC	+12 V	+12 V	+12 V	**A**
11	**10**	**9**	**8**	**7**	**6**	**5**	**4**	**3**	**2**	**1**	

Figure 1-5   55-pin backplane connector pin configuration

Table 1-2   Synchronous Simultaneous Interface (SSI) connector pin description

SSI timing signal	Functionality
GND	Ground
NC	Not connected
VBUS	USB bus power sensing input
USB_D+, USB_D–	USB differential pair
TRIG0~TRIG7	Trigger bus
+12 V	+12 V power with 4 A current
nBPUB	USB backplane input detect
CLK10M	10 MHz clock source
STAR_TRIG	Star trigger
GA0,GA1,GA2	Geographical address pin

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Chassis Installation

The L-Mount kit is to be installed to your U2751A module. The following instructions describe the simple procedure of installing the L-Mount kit and your module in the U2781A chassis.

1 Unpack the L-Mount kit from its packaging.

2 Remove your U2751A module from the bumper casing.

3 Using a Phillips screwdriver, fasten the L-Mount kit to your U2751A module.

4 Insert your U2751A module into the U2781A chassis with the 55-pin backplane connector positioned at the bottom of the module.

5 Once you have slotted the module into the chassis, tighten the screws of the L-Mount kit to secure the connection.

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2
Operation and Features

This chapter describes the features and operation of the U2751A.

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Power Up

Take note of the following when you power up the U2751A.

- The U2751A can only be operated via the USB interface.

- Before you can control the U2751A, you need to install the hardware driver and the IO Libraries Suite 14.2 or higher. Both of these are included when you purchase the U2751A. Refer to the *Agilent USB Modular Products and Systems Quick Start Guide* for the installation procedure.

- On the front panel of the U2751A, there are two LED indicators. Refer to Chapter 1, "Product Outlook" on page 3.

- Power indicator lights up once the U2751A is powered up.

- USB indicator will only blink when there is data exchange activity between the U2751A and the PC.

Switch Control

A matrix switch connects multiple inputs to multiple outputs. A matrix is arranged in rows and columns. For example, the U2751A is a 4×8 matrix that can be used to connect four sources to eight test points as shown in Figure 2-1.

Any column can be connected to any row by activating the corresponding relay that connects the column to the row as shown in Figure 2-1. Each cross-point relay on this module has its own unique channel label representing the row and column. For example, channel 302 represents the cross-point connection between row 3 and column 2.

Be aware that it is possible to connect more than one source to the same point with a matrix. It is vital to make sure that these connections do not create dangerous or unwanted conditions.

Note: Three-digit channel numbers are derived from the intersection of the rows and columns, with the last two digits representing the columns. The intersection shown represents channel 202 (Row 2, Column 2)
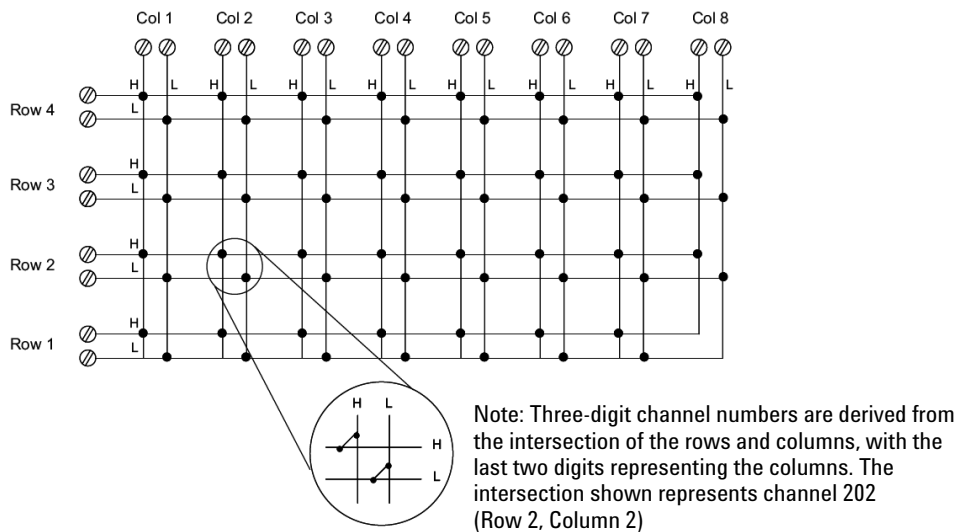
Figure 2-1   Switch matrix concept

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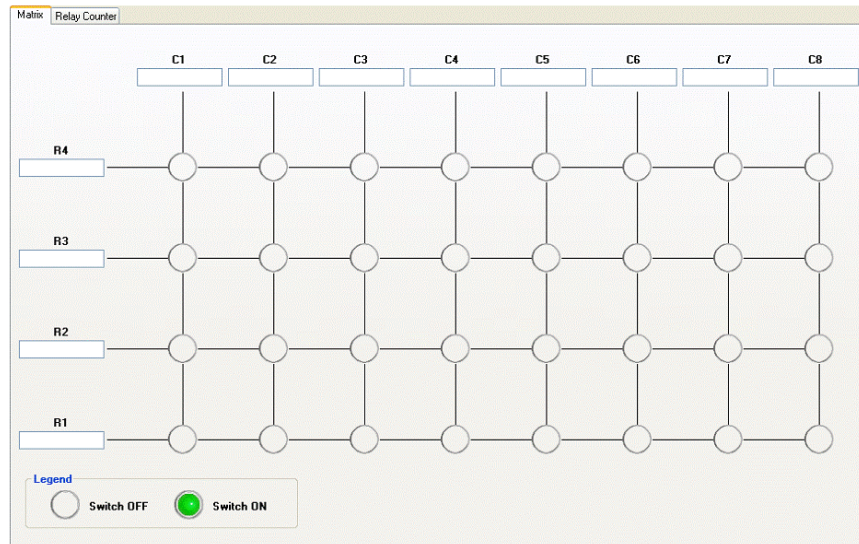
Figure 2-2   Panel view of the Agilent Measurement Manager

Agilent Measurement Manager Operation

Launch the Agilent Measurement Manager software and select the **Matrix** tab. The keyboard shortcut key is **Ctrl+M**.

Connect the instruments and devices as per your application. Key in the names of the instruments and devices in the available text boxes.

Click the cross-point circles on the software to toggle the contact on or off. The connection from the row to the column will be highlighted when the circuit is closed.

SCPI Commands

The following examples show the SCPI commands for executing the closing and opening of the relays.

Example 1, Make contact at channel 302

```
-> *CLS; *RST          // Resets the switch to the
                          default power-on state.
                          This command can be
                          ignored if this operation is
                          not required.
-> ROUTe:CLOSe (@302)  // Closes the relay at row 3,
                          column 2.
```

Example 2, Break contact at channel 302

```
-> ROUTe:OPEN (@302)   // Opens the relay at row 3,
                          column 2.
```

Example 3, Make contact at channel 101, 302

```
-> ROUTe:CLOSe (@101,302)  // Closes relays at row
                              1, column 1 and row
                              3, column 2.
```

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Relay Cycle Counter
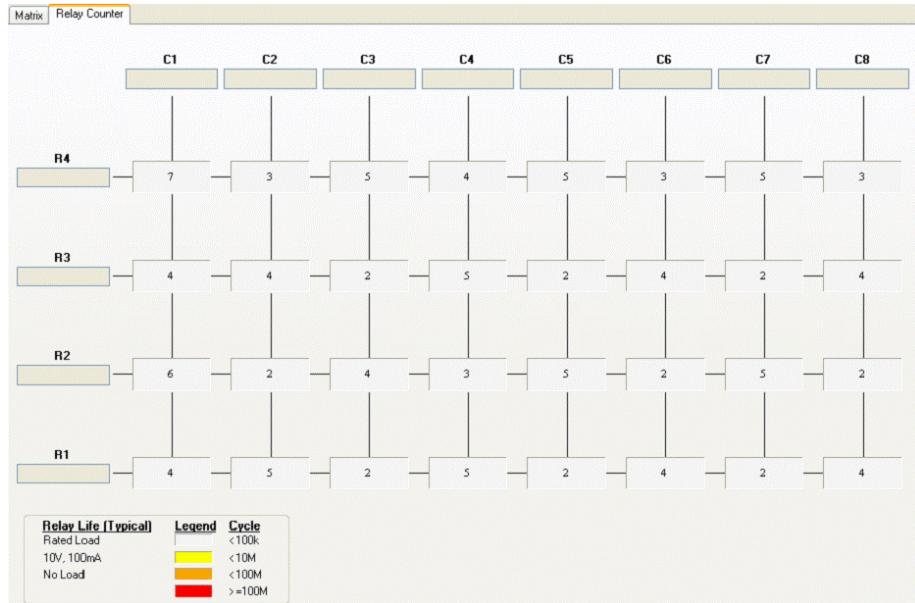
Figure 2-3   Panel view of the relay cycle counter

Agilent Measurement Manager Operation

At the main panel, select the **Relay Cycle Counter** tab. The panel in Figure 2-3 will be displayed. The keyboard shortcut key is **Ctrl+R**.

This feature allows the user to carry out preventive maintenance, which is to replace those relays that are at the end of their life span.

Relay cycles that are above a certain limit will be highlighted in red. Refer to the example in Figure 2-3.

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System-Related Operation

This section provides information on system-related topics such as executing a self-test, performing self-calibration routine, and reading error conditions.

NOTE	Do not connect any terminal block or cables prior to performing self-test process.

Self-Test

To perform the self-test, proceed as follows.

Agilent Measurement Manager Operation

Ensure that the switch terminals are not connected to any instrument. Turn on the U2751A. On the application panel, select **Tools > Self-Test**. This will perform a series of communication tests on the module, which take a couple of seconds to complete.

Error Conditions

Agilent Measurement Manager Operation

A message box will appear once an error occurs while operating the U2751A using the Agilent Measurement Manager.

SCPI Commands for System-Related Tasks

The following examples show the SCPI commands for performing certain system-related tasks.

Example 4, Performing system-related tasks

```
-> *CLS; *RST          // Resets the switch to the
                          default power-on state.
                          This command can be
                          ignored if this operation is
                          not required.

-> *TST?               // Executes the self-test.

<- +0                  // Returns a +0 if the test
                          pass else it will return a
                          +1 if it fails.

-> SYST:ERR?           // Returns the error number
                          and its corresponding
                          message string from the
                          error queue.

<- +0, "No Error"
```

3
Characteristics and Specifications

This chapter specifies the characteristics, environmental conditions, and specifications of the U2751A.

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Product Characteristics

REMOTE INTERFACE[1]	

- Hi-Speed USB 2.0
- USBTMC 488.2 Class device[2][3]

POWER CONSUMPTION

- +12 VDC, 2 A maximum
- Installation Category III

OPERATING ENVIRONMENT

- Operating temperature from 0 °C to +50 °C
- Relative humidity at 20% to 85% RH (non-condensing)
- Altitude up to 2000 meters
- Pollution degree 2
- For indoor use only

STORAGE COMPLIANCE

–20 °C to +70 °C

SAFETY COMPLIANCE

Certified with:

- IEC 61010-1:2001/EN61010-1:2001 (2nd Edition)
- Canada: CAN/CSA-C22.2 No. 61010-1-04
- USA: ANSI/UL 61010-1:2004

EMC COMPLIANCE

- IEC 61326-2002/EN61326:1997+A1:1998+A2:2001+A3:2003
- Canada: ICES-001:2004
- Australia/New Zealand: AS/NZS CISPR11:2004

SHOCK AND VIBRATION

Tested to IEC/EN 60068-2

I/O CONNECTOR

DSub 25 male

DIMENSIONS (W $\times$ D $\times$ H)

- $105.00 \times 175.00 \times 25.00$ mm (without bumpers)
- $117.00 \times 180.00 \times 41.00$ mm (with bumpers)

WEIGHT

- 428 g (without bumpers)
- 480 g (with bumpers)

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WARRANTY

• Please refer to http://www.agilent.com/go/warranty_terms
  • 3 years for the product
  • 3 months for the product's standard accessories, unless otherwise specified
• Please take note that for the product, the warranty does not cover:
  • Damage from contamination
  • Normal wear and tear of mechanical components
  • Manuals

CALIBRATION

Annual calibration is not required

1 For remote connections using Agilent E5813A, refer to Chapter 1.

2 Compatible with Microsoft Windows operating systems only.

3 Requires a direct USB connection to the PC so the appropriate driver can be installed in the USB modular instrument or USB DAQ module.

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Product Specifications

Table 3-3   Electrical and mechanical specifications update per attached data sheet

	U2751A	
	Without U2922A Terminal Block	**With U2922A Terminal Block**
Channels/configurations	4×8, 2-wire	
Switch type	Armature latching	
Input characteristics (per channel)		

Max volts[1]
  Standalone
  Modular (Used with U2781A)
	42 VDC/35 Vrms
	180 VDC/180 Vrms	

Max transient voltage	300 Vrms	

Max current
  Switch current
  Carry current
	2 A
	2 A	

Power (W, VA)[2]	60 W, 62.5 VA	
Volt-Hertz limit	10^8	
General specifications		
Thermal emf (differential)	<3 µV	
Initial closed channel resistance	<1.5 Ω	
DC isolation (ch-ch, ch-earth)	>10 GΩ	
AC characteristics		
Bandwidth[3]	45 MHz	30 MHz

Insertion loss
  100 kHz
  1 MHz
  10 MHz
  45 MHz
	0.2 dB
	0.3 dB
	<2 dB
	<3 dB
		0.2 dB
		0.3 dB
		<2 dB
		<4.5 dB

Capacitance
  HI-LO
  LO-Earth
	55 pF
	35 pF
		85 pF
		45 pF

Crosstalk at terminal block (ch-ch)[3]
  300 kHz
  1 MHz
  20 MHz
  45 MHz
	−70 dB
	−60 dB
	−35 dB
	−30 dB	

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Table 3-**1**   Electrical and mechanical specifications update per attached data sheet (continued)

General characteristics	

Relay life, typical
  No load
  10 V, 100 mA
  Related load
	100 M
	10 M
	100 k

Open/close time	4 ms/4 ms

1 DC or AC rms, channel-to-channel or channel-to-earth.

2 Limited to 6 W channel resistance power loss per module.

3 50 Ω source, 50 Ω load, differential measurements verified with a 4-port network analyzer (Sdd21).

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4

Service Information

This chapter provides guidelines for returning your instrument to Agilent for service or repair, and for servicing it yourself. A list of replaceable parts is also provided.

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33
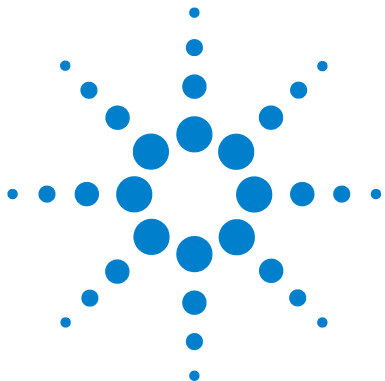
Checking Defective Relay(s)

NOTE	It is recommended to have the relay(s) checked when it reaches 10 million cycle counts. The relay cycle count can be obtained by using the Agilent Measurement Manager or sending the following SCPI command:

```
DIAGnostic:RELay:CYCLes? (@<ch_list>)
```

To check for any defective relay, the equipment required is a digital multimeter with continuity feature.

1 Close the particular relay(s). For example: The relay located at Row **x** Column **y**.

2 By referring to the connector configuration of the DSub connector, connect one of the DMM test leads to pin R**x**L and another test lead to pin C**y**L. The DMM should indicate that these two pins are connected or shorted.

3 Once this is done, use the same method and perform the same test on pins RxH and C**y**H. These two pins should be connected or shorted as well.

4 Now, open the particular relay(s). Using the same method, check if pins R**x**L and C**y**L are disconnected. Perform the same test on pins R**x**H and C**y**H as well.
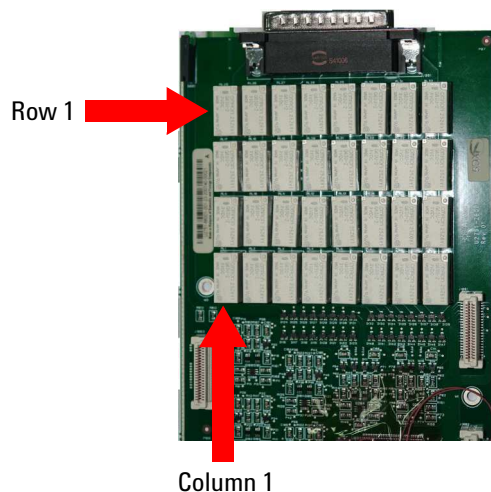

Row 1

Column 1

Figure 4-4   Defective relay(s) check

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Replaceable Parts

This section contains the information for ordering replacement parts for your instrument. To order the parts, please do the following.

- Contact your nearest Agilent Sales Office or Service Center.
- Provide the part number for the relay.
- Provide the instrument model and serial number.

The part number of the replaceable part and its description are shown in the table below.

Table 4-2   Part number and description of replaceable part

Part number	Description
0490-1896	RELAY 2C 3 VDC-COIL 2A 30 VDC

<table>
<tr><td>

CAUTION

</td><td>

Electrostatic Discharge (ESD) Precautions

Almost all electrical components can be damaged by electrostatic discharge (ESD) during handling. The following guidelines will help prevent ESD damage when servicing the instrument or any electronic device.

</td></tr>
</table>

- Disassemble the instruments in a static-free work area *only*.
- Use a conductive work area to dissipate static charge.
- Use a conductive wrist strap to dissipate static charge accumulation.
- Minimize handling.
- Keep the replacement parts in original static-free packaging.
- Remove all plastics, styrofoams, vinyls, papers, and other static-generating materials from the immediate work area.
- Use *only* antistatic solder extractor.
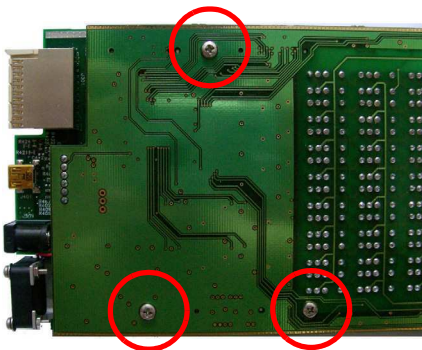
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Disassembly Instructions
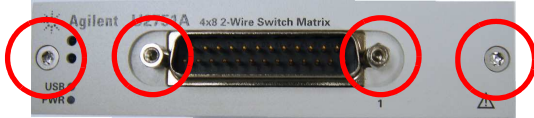
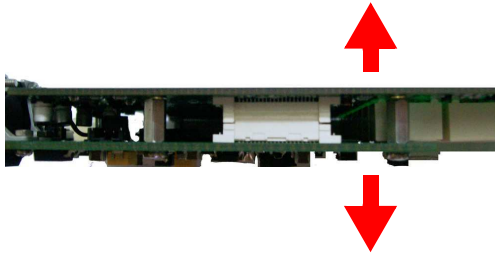Remove the screws and nuts as shown.
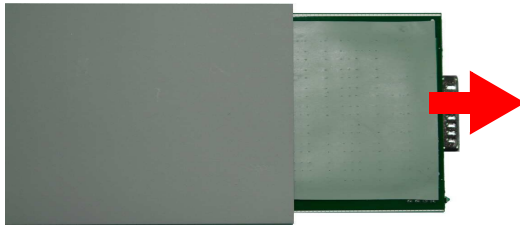
Take the measurement board and carrier board out from the module.

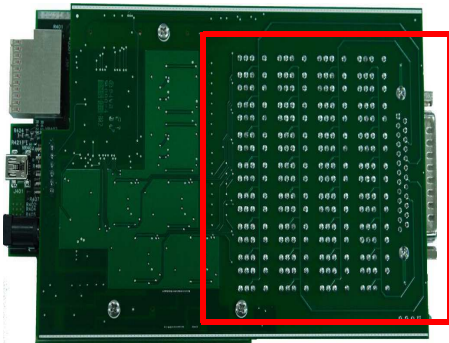Remove the screws as indicated.

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Separate the carrier and measurement board.
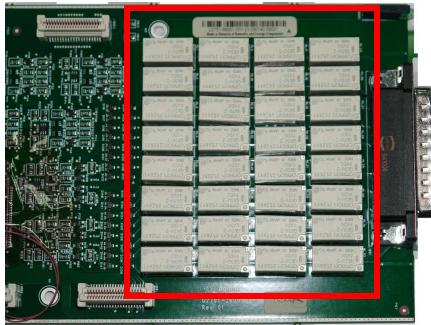
There are 32 relays as shown.

Turn to the opposite side of the measurement board and ensure that only the *defective* relays are desoldered.

Upon replacing the relay(s), reset the relay cycle count to zero by issuing the following SCPI command:

```
DIAGnostic:RELay:CYCLes:CLEar (@<ch_list>)
```

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Reassembly Instructions

The reassembly process is simply the reverse of disassembly.

Contacting Agilent Technologies

Types of Service Available

If your instrument fails during the warranty period, Agilent will replace the unit for free. The replacement units will be shipped with new calibration certificates.

NOTE	Every replacement unit has its own serial number. The serial number of the defective unit does not transfer to the replacement unit. The warranty period of the replacement unit is based on the remaining warranty of the defective U2751A.

Agilent Unit Exchange

Contact your nearest Agilent Service Center to arrange for the replacement of your instrument. In the U.S., please call 800-829-4444 and then select "Option 3" followed by "Option 1."

NOTE	The defective unit must be returned to Agilent before the replacement unit is shipped to you. Additional information regarding the unit exchange will be provided when you contact Agilent.

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Contact us

To obtain service, warranty or technical assistance, contact us at the following phone or fax numbers:

United States:
(tel) 800 829 4444   (fax) 800 829 4433
Canada:
(tel) 877 894 4414   (fax) 800 746 4866
China:
(tel) 800 810 0189   (fax) 800 820 2816
Europe:
(tel) 31 20 547 2111
Japan:
(tel) (81) 426 56 7832   (fax) (81) 426 56 7840
Korea:
(tel) (080) 769 0800   (fax) (080) 769 0900
Latin America:
(tel) (305) 269 7500
Taiwan:
(tel) 0800 047 866   (fax) 0800 286 331
Other Asia Pacific Countries:
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www.agilent.com/find/assist

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