Agilent E5023U Upgrade Kit

Upgrade Manual

Third Edition

Software Revision
This manual applies directly to system which has
the software revision B.01.00 and above

Agilent Technologies

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Notices

The information contained in this document is subject to change without notice.

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Manual Printing History

The manual's printing date and part number indicate its current edition. The printing date changes when a new edition is printed. (Minor corrections and updates that are incorporated at reprint do not cause the date to change.) The manual part number changes when extensive technical changes are incorporated.

June 2001 1st Edition

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March 2003 3rd Edition (part number: E5023-90311)

Assistance

Product maintenance agreements and other customer assistance agreements are available for Agilent Technologies products.

For any assistance, contact your nearest Agilent Technologies Sales and Service Office.

Addresses are provided at the back of this manual.

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1 Introduction

Overview

This manual provides the information to upgrade the E5022A/B (600 M / 750 M / 1 Gbps) to the E5023A (1.5 Gbps) or upgrade the E5023A (1.5 Gbps) to the E5023A (2.6 Gbps), using the E5023U Upgrade Kit.

Required Items for Installation

The following items are required for installation.

Required Tools

Table 1-1 Required Tools

Tools	Size	Purpose
Torque limiting wrench	8 mm-11 kgf•cm	SMC cable connector
	6 mm-3.5 kgf•cm	SMA cable connector
Phillips screwdriver	P1	On Stage Buffer Unit Detach
Hex key	T1.5 mm	Connection Board Detach
Slotted screwdriver	5.5 mm	Serial cable connector
Pozidriv screwdriver	Pz#1	VXI modules
Chain nose pliers		General purpose
Diagonal cutting pliers		Cutting cable ties, etc.
Knife		Opening carton, etc.
Soldering Iron		Modifying E8491A
Antistatic wrist band		Prevent ESD

Required Software

Table 1-2 Required Tools

Name	Description
E5022/E5023 System Software	Revision B.01.00 and above, for upgrading to E5023A Option 415 (1.5 Gbps)*1.
	Revision B.03.00 and above, for upgrading to E5023A Option 426 (2.6 Gbps)*1.
caltool.exe	E5023A Calibration Tool Software. You can download this software from the website: “http:\\dst.tm.agilent.com\”

*1. The latest system software CD-ROM is included in the upgrade kit.

2 Upgrade Procedure

Introduction

This section explains how to upgrade the E5022A/B (600 M / 750 M / 1 Gbps) to E5023A (1.5 Gbps) or the E5023A (1.5 Gbps) to the E5023A (2.6 Gbps).

The upgrade procedure is shown below.

Step 1. Check the E8491A serial number. If required, modify it in accordance with the service note.

See “Step 1: Checking the E8491A serial number” on page 11 for details.

Step 2. Install the backplane connectors into the VXI mainframe.

See “Step 2: Installing the Backplane Connector” on page 13 for details.

Step 3. Install the modules into the VXI mainframe and place the E5043A/C and E5029K on the spinstand.

See “Step 3: Installing new Components for E5023A” on page 14 for details.

Step 4. Connect the cables.

See “Step 4: Connecting Cables” on page 15 for details.

Step 5. Uninstall the old E5022/E5023 system software from the PC.

See “Step 5: Uninstalling the E5022A/B System Software from your PC” on page 24 for details.

Step 6. Install the appropriate E5022/E5023 system software.

See “Step 6: Installing the E5022/23 System Software into your PC” on page 24 for details.

Step 7. Install the compensation factor.

See “Step 7: Installing the Compensation Factor” on page 24 for details.

Step 8. Put the Upgrade Model label on the VXI Mainframe.

See “Step 8: Put the Upgrade Model Label on the VXI Mainframe” on page 25 for details.

Step 1: Checking the E8491A serial number

If the serial number of the E8491A IEEE-1394 PC Link to VXI is US39000231 and below, the modification is required.

Open the side cover of the E8491 and remove clamping diodes CR401, CR402, CR403 and CR404 using a soldering iron.

See the service note E8491-01 in the next page.

E8491A-01

S E R V I C E N O T E

SUPERSEDES: NONE

E8491A IEEE-1394 PC Link to VXI, C-Size
E8491-66501 PC Assembly - PC/VXI Interconnect

Serial Numbers: US39000231 and below

Clock and sync signals fail when using VXI backplane ECL trigger lines.

To Be Performed By: Customer or Agilent Personnel

Parts Required: None

Situation:

In multi-module systems, the clock and sync signals can be distributed between modules using the ECLTRG lines on the VXI backplane. This works as long as all modules are designed according to the current VXI specification. Unfortunately, the E8491A circuit design had clamping diodes on the ECL Trigger lines. These diodes corrupt the ECLTRG waveform causing commiunication failures between VXI modules.

Solution / Action:

Remove clamping diodes CR401, CR402, CR403 and CR404.

DATE: November 2000

ADMINISTRATIVE INFORMATION

SERVICE NOTE CLASSIFICATION: **MODIFICATION RECOMMENDED**				
ACTION CATEGORY:	☐ IMMEDIATELY ■ ON SPECIFIED FAILURE ☐ AGREEABLE TIME	STANDARDS: LABOR 0.5 Hours		
LOCATION CATEGORY:	■ CUSTOMER INSTALLABLE ☐ ON-SITE ☐ SERVICE CENTER	SERVICE INVENTORY:	☐ RETURN ☐ SCRAP ☐ SEE TEXT	USED PARTS: ☐ RETURN ■ SCRAP ☐ SEE TEXT
AVAILABILITY:	PRODUCT'S SUPPORT LIFE	AGILENT RESPONSIBLE UNTIL: November 2003		
AUTHOR: DMT	ENTITY: 0940	ADDITIONAL INFORMATION:		

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Step 2: Installing the Backplane Connector

Remove the modules from the VXI mainframe and install the backplane connectors.

Figure 2-1 **Installing the Backplane Connector**

Installing the E8400-80918 Kit

The following procedure describes installation of the backplane connector shields.

Parts List

The parts included in the E8400-80918 kit are shown in Table 2.

Table 2. HP E8400-80918 Parts List.

Quantity	Description	Part Number
54*	Torx Head Screw - 4-20x.25	0624-0702
26	Backplane Connector Shield	E1400-80601
* Includes two extra screws		

Procedure

1. Position the shields over the backplane connectors as shown in Figure 2. Two connector shields and four screws are required for each slot.

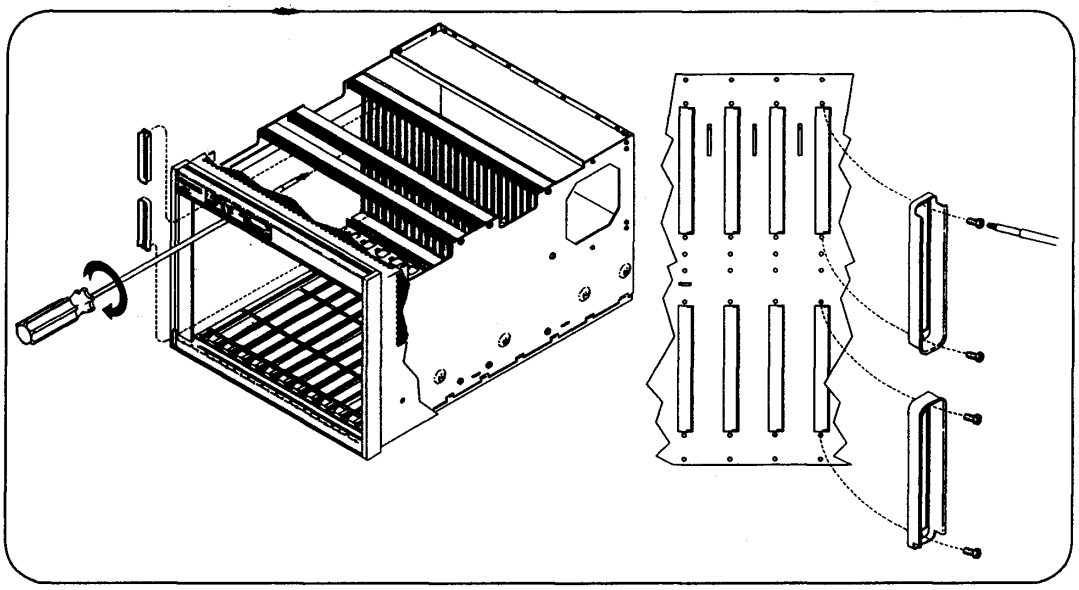


Figure 2 . Positioning the Backplane Shields on the Connectors.

2. To install the screws, firmly press the screw onto a Torx driver. This prevents the screw from falling off as you reach into the mainframe. Placing a sheet of paper under the backplane connectors will catch the screws if they fall.

3. Tighten the screws by turning them clockwise. The screws are thread-forming and will go in slowly when you install them the first time.

Step 3: Installing new Components for E5023A

Install the Modules in the VXI mainframe.

Exchange the old modules with the new modules. The old modules are no longer necessary.

Table 2-1Old and new modules (upgrade to E5023A Opt. 415, 1.5 Gbps)

Old Modules	New Modules
E5035A	E5035B
E5037A or B	E5037C
E5038A	E5038B

Table 2-2Old and new modules (upgrade to E5023A Opt. 426, 2.6 Gbps)

Old Modules	New Modules
E5035A	E5035B
E5037A, B, or C	E5037D
E5038A	E5038B

Place the E5043A/C and E5029K on the Spinstand

The E5043A is used to upgrade the old system to the E5023A Option 415 (1.5 Gbps), while the E5043C is used to upgrade the old system to the E5023A Option 426 (2.6 Gbps). See the spinstand installation manual since the location of these units depend on the type of spinstand.

NOTE

When you install the E5043C Head Amplifier Control Unit (main unit) on the Agilent spinstand cover for the E5010C, you should fix the angle (bracket) with the four M3 screws (p/n 0515-0372) and ***four washers (p/n 3050-0893)****. When you install the E5043C Head Amplifier Control Unit (main unit) on the Agilent spinstand cover for the E5013A, you should fix the angle (bracket) with the four M4 screws (p/n 0515-0380) (the washers are not used). The screws and washers are included in the upgrade kit.*

Step 4: Connecting Cables

Connect the cables between modules.

Cable Connection of E5023A Option 415 (1.5 Gbps)

See Table 2-3 and Figure 2-2. When the system has the E5029K Option 001, see Table 2-4 and Figure 2-3. When the system has the 4395A, see the Table 2-5 and the Figure 2-4.

Table 2-3 Cable Connection of E5023A Opt. 415 (1.5 Gbps) (VXI Modules)

No.	Description	Connection		Part No.
1	SMA(m)-SMA(m) Cable	E5029K Connection Board “R+”	E5029K Onstage Buffer Unit “R+”	E5029-61601
2	SMA(m)-SMA(m) Cable	E5029K Connection Board “R-”	E5029K Onstage Buffer Unit “R-”	E5029-61602
3	Flat Cable	E5029K Connection Board “Connection Board I/F”	E5029K Connection Board “Cable ”	E5029-61608
4	SMA(m)-SMA(m) Cable	E5043 “OUT D+”	E5029K “W+”	E5043-61611
5	SMA(m)-SMA(m) Cable	E5043 “OUT D-”	E5029K “W-”	E5043-61612
6	SMA(m)-SMA(m) Cable	E5036 “Sig In”	“Junction Read Sig”	E5023-61607
7	SMA(m)-SMA(m) Cable	“Junction Read Sig”	E5029K “Read Sig Out”	E5023-61608
8	50P Halfpitch	-	-	E5043-61613
9	SMA(m)-SMA(m) Cable	E5039 “Data Out Pos”	E5043 “Input2 Data+”	E5039-61606
10	SMA(m)-SMA(m) Cable	E5039 “Data Out Neg”	E5043 “Input2 Data-”	E5039-61607
11	SMA(m)-SMA(m) Cable	E5037 “Clk Out Pos”	E5043 “Input Clock+”	E5023-61601
12	SMA(m)-SMA(m) Cable	E5037 “Clk Out Neg”	E5043 “Input Clock-”	E5023-61602
13	SMA(m)-SMA(m) Cable	E5037 “Data Out Pos”	E5043 “Input1 Data+”	E5023-61603
14	SMA(m)-SMA(m) Cable	E5037 “Data Out Neg”	E5043 “Input1 Data-”	E5023-61604
15	MDR-MDR Cable	E5035 “Head Amp Ctrl”	E5043 “Head Amp Ctrl”	E5023-61605
16	BNC(m)-BNC(m) Cable	E5037 “Gate Out”	E5041A “Trig In”	E5041-61602
17	SMA(m)-SMA(m) Cable	E5036A “Fltrd Out 5”	E5041A “Signal In 50Ω”	E5041-61603
18	BNC(m)-BNC(m) Cable	E5037 “Ref Out”	E5040 “Ext Ref In”	E5023-61606
19	SMA(m)-SMA(m) Cable	E5036 “Thru Out”	Spectrum Ana In	E5023-61611
20	SMA(m)-SMA(m) Cable	E5036 “Filtr’d Out”	E5038 “Signal In”	E5023-61610
21	SMA(m)-SMA(m) Cable	E5035 “Trig Out 1”	Oscillo	E5023-61613
22	BNC(m)-BNC(m) Cable	E5036 “Filtr’d Out”	Oscillo Ch1	E5023-61612
23	SMA(f)-BNC(m) Adapter	-	-	1250-1700

Table 2-3 Cable Connection of E5023A Opt. 415 (1.5 Gbps) (VXI Modules)

No.	Description	Connection		Part No.
24	BNC(m)-BNC(m) Cable	E5035 “WG IN”	E5039 “WG OUT”	E5039-61609
25	SMA(m)-SMA(m) Cable	E5039 “Signal In”	E5036 “Out2”	E5039-61608
26	IEEE-1394 Cable	IEEE-1394 Port on PCI Board	E8491B “Port A”	8192-8688
27	GPIB Cable, 2m	GPIB Port on PCI Board	54845A GPIB port	10833B
28	GPIB Adapter Extender	-	-	10834A
29	BNC(m)-BNC(m) Cable	E5035 “Index In”	Spinstand Index	E5023-61609
30	SMA(m)-SMB(m) Cable	E5035 “Piezo Ctrl”	PZT Ctrl Analog	E5035-61601
31	Serial Cable	PC COM1 Port	Spinstand Serial Port	E5022-61628

Figure 2-2 Cable Connection of E5023A Opt. 415 (1.5 Gbps) (E5029K Option 002 Buffer Board)

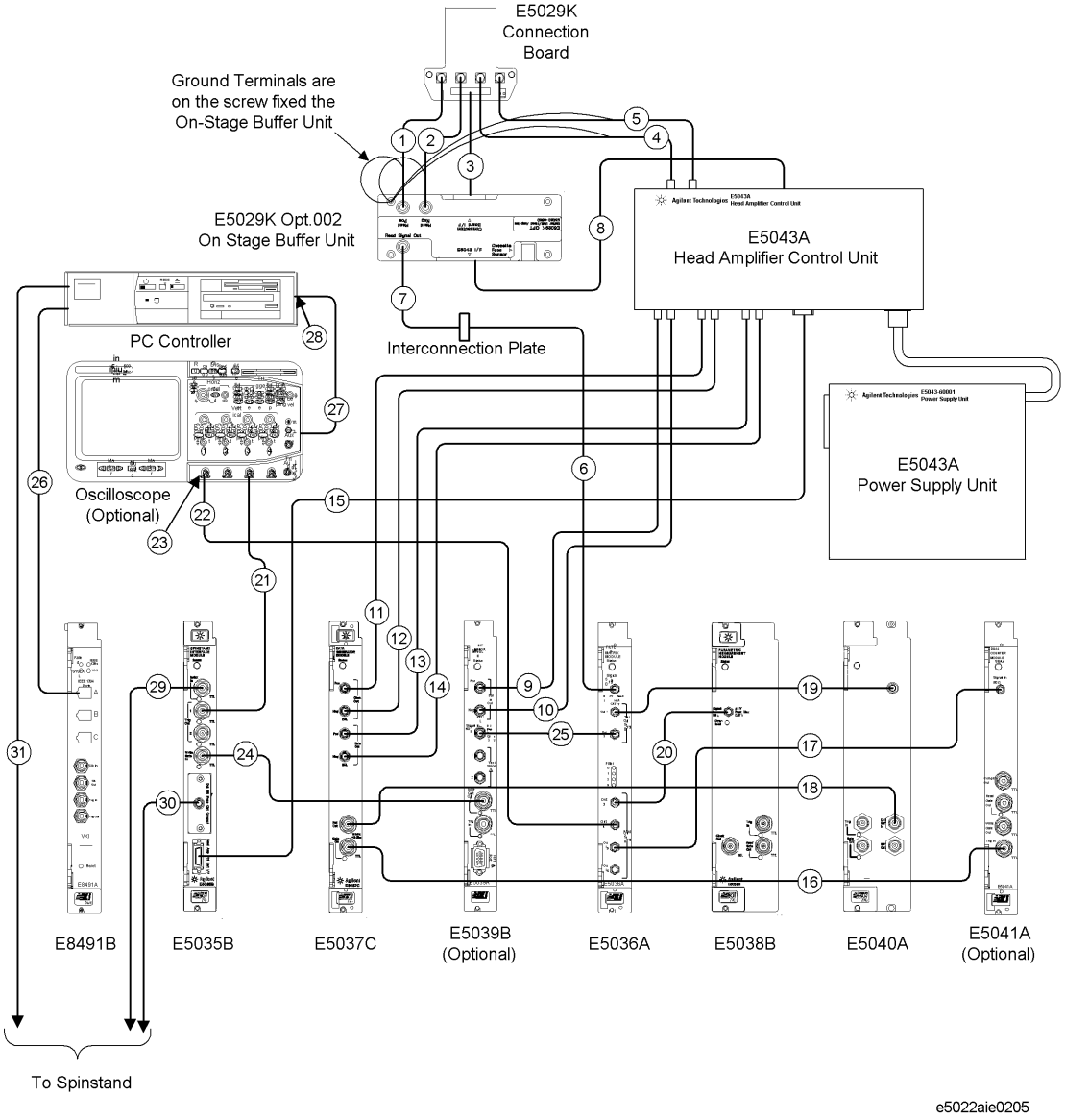


Table 2-4 **Cable Connection of E5023A Opt. 415 (1.5 Gbps) (VXI Modules)**

No.	Description	Connection		Part No.
32	SMA(m)-SMA(m) Cable	E5029K Connection Board "W+"	E5029K Onstage Buffer Unit "W+"	E5029-61604
33	SMA(m)-SMA(m) Cable	E5029K Connection Board "W-"	E5029K Onstage Buffer Unit "W-"	E5029-61605

Figure 2-3 **Cable Connection of E5023A Opt. 415 (1.5 Gbps) (E5029K Option 001 Buffer Board)**

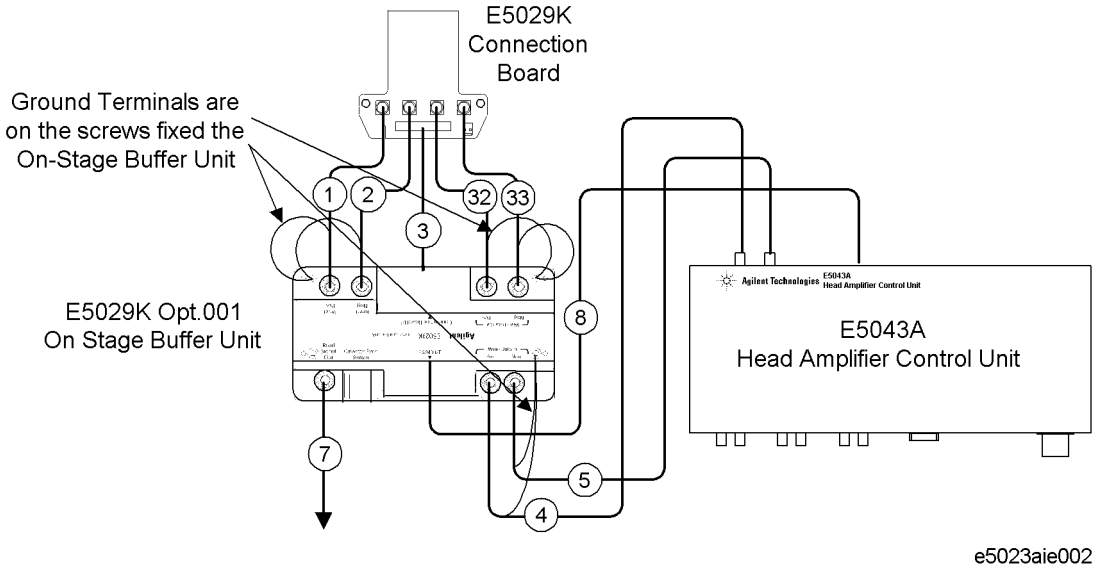
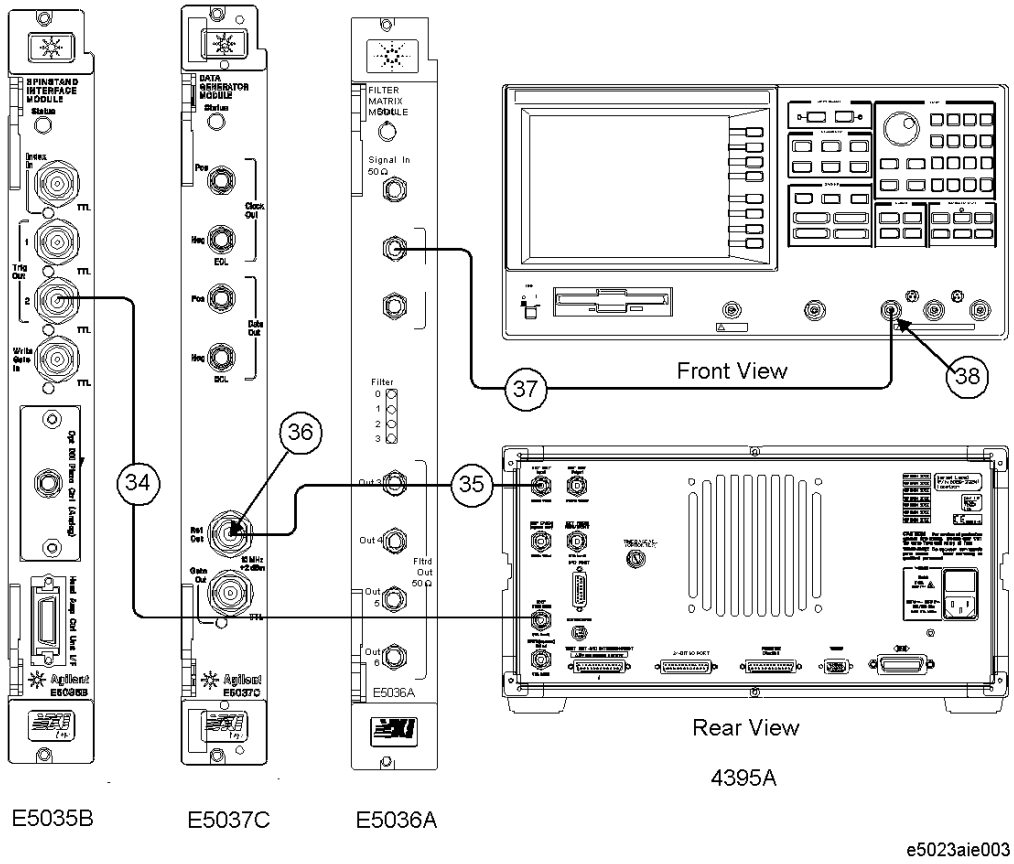


Table 2-5 **Cable Connection of E5023A Opt. 415 (1.5 Gbps) (VXI Modules)**

No.	Description	Connection		Part No.
34	BNC(m)-BNC(m) Cable	E5035 “Trig Out”	4395A “Ext Trigger”	E5022-61613*1
35	SMA(m)-BNC(m) Cable	E5037 “Ref Out”	4395A “Ext. Ref. Input”	E5022-61614*1
36	SMA(f)-BNC(m) Adapter	-	-	1250-1700
37	SMA(m)-SMA(m) Cable	E5036A “Filtrd Out 1”	4395A “R Input”	E5022-61623*1
38	SMA(m)-N(m) Adapter	-	-	1250-1250*1

*1. The cable is used in E5022A/B

Figure 2-4 **Cable Connection of E5023A Opt. 415 (1.5 Gbps) (4395A)**



Cable Connection of E5023A Option 426 (2.6 Gbps)

See Table 2-6 and Figure 2-5. When the system has the E5029K Option 001, see Table 2-7 and Figure 2-6. When the system has the 4395A, see the Table 2-8 and the Figure 2-7.

Table 2-6 Cable Connection of E5023A Opt. 426 (2.6 Gbps) (VXI Modules)

No.	Description	Connection		Part No.
1	SMA(m)-SMA(m) Cable	E5029K Connection Board “R+”	E5029K Onstage Buffer Unit “R+”	E5029-61601
2	SMA(m)-SMA(m) Cable	E5029K Connection Board “R-”	E5029K Onstage Buffer Unit “R-”	E5029-61602
3	Flat Cable	E5029K Connection Board “Connection Board I/F”	E5029K Connection Board “Cable ”	E5029-61608
4	SMA(m)-SMA(m) Cable	E5043 “OUT D+”	E5029K “W+”	E5043-61611
5	SMA(m)-SMA(m) Cable	E5043 “OUT D-”	E5029K “W-”	E5043-61612
6	SMA(m)-SMA(m) Cable	E5036 “Sig In”	“Junction Read Sig”	E5023-61607
7	SMA(m)-SMA(m) Cable	“Junction Read Sig”	E5029K “Read Sig Out”	E5023-61608
8	50P Halfpitch	-	-	E5043-61613
9	SMA(m)-SMA(m) Cable	E5039 “Data Out Pos”	E5043 “Input2 Data+”	E5039-61606
10	SMA(m)-SMA(m) Cable	E5039 “Data Out Neg”	E5043 “Input2 Data-”	E5039-61607
11	SMA(m) - SMA(m) Cable	E5037 “Clk Out Pos”	E5043 “Input Clock+”	E5037-61621
		E5037 “Clk Out Neg”	E5043 “Input Clock-”	
		E5037 “Data Out Pos”	E5043 “Input1 Data+”	
		E5037 “Data Out Neg”	E5043 “Input1 Data-”	
12	MDR-MDR Cable	E5037 “Ctrl”	E5043 “Control”	E5043-61622
15	MDR-MDR Cable	E5035 “Head Amp Ctrl”	E5043 “E5035B I/F”	E5023-61605
16	BNC(m)-BNC(m) Cable	E5037 “Gate Out”	E5041A “Trig In”	E5041-61602
17	SMA(m)-SMA(m) Cable	E5036A “Fltrd Out 5”	E5041A “Signal In 50Ω”	E5041-61603
18	BNC(m)-BNC(m) Cable	E5037 “Ref Out”	E5040 “Ext Ref In”	E5023-61606
19	SMA(m)-SMA(m) Cable	E5036 “Thru Out”	Spectrum Ana In	E5023-61611
20	SMA(m)-SMA(m) Cable	E5036 “Filtr’d Out”	E5038 “Signal In”	E5023-61610
21	SMA(m)-SMA(m) Cable	E5035 “Trig Out 1”	Oscillo	E5023-61613
22	BNC(m)-BNC(m) Cable	E5036 “Filtr’d Out”	Oscillo Ch1	E5023-61612
23	SMA(f)-BNC(m) Adapter	-	-	1250-1700
24	BNC(m)-BNC(m) Cable	E5035 “WG IN”	E5039 “WG OUT”	E5039-61609
25	SMA(m)-SMA(m) Cable	E5039 “Signal In”	E5036 “Out2”	E5039-61608
26	IEEE-1394 Cable	IEEE-1394 Port on PCI Board	E8491B “Port A”	8192-8688

Table 2-6 Cable Connection of E5023A Opt. 426 (2.6 Gbps) (VXI Modules)

No.	Description	Connection		Part No.
27	GPIB Cable, 2m	GPIB Port on PCI Board	54845A GPIB port	10833B
28	GPIB Adapter Extender	-	-	10834A
29	BNC(m)-BNC(m) Cable	E5035 “Index In”	Spinstand Index	E5023-61609
30	SMA(m)-SMB(m) Cable	E5035 “Piezo Ctrl”	PZT Ctrl Analog	E5035-61601
31	Serial Cable	PC COM1 Port	Spinstand Serial Port	E5022-61628

Figure 2-5 Cable Connection of E5023A Opt. 426 (2.6 Gbps) (E5029K Option 002 Buffer Board)

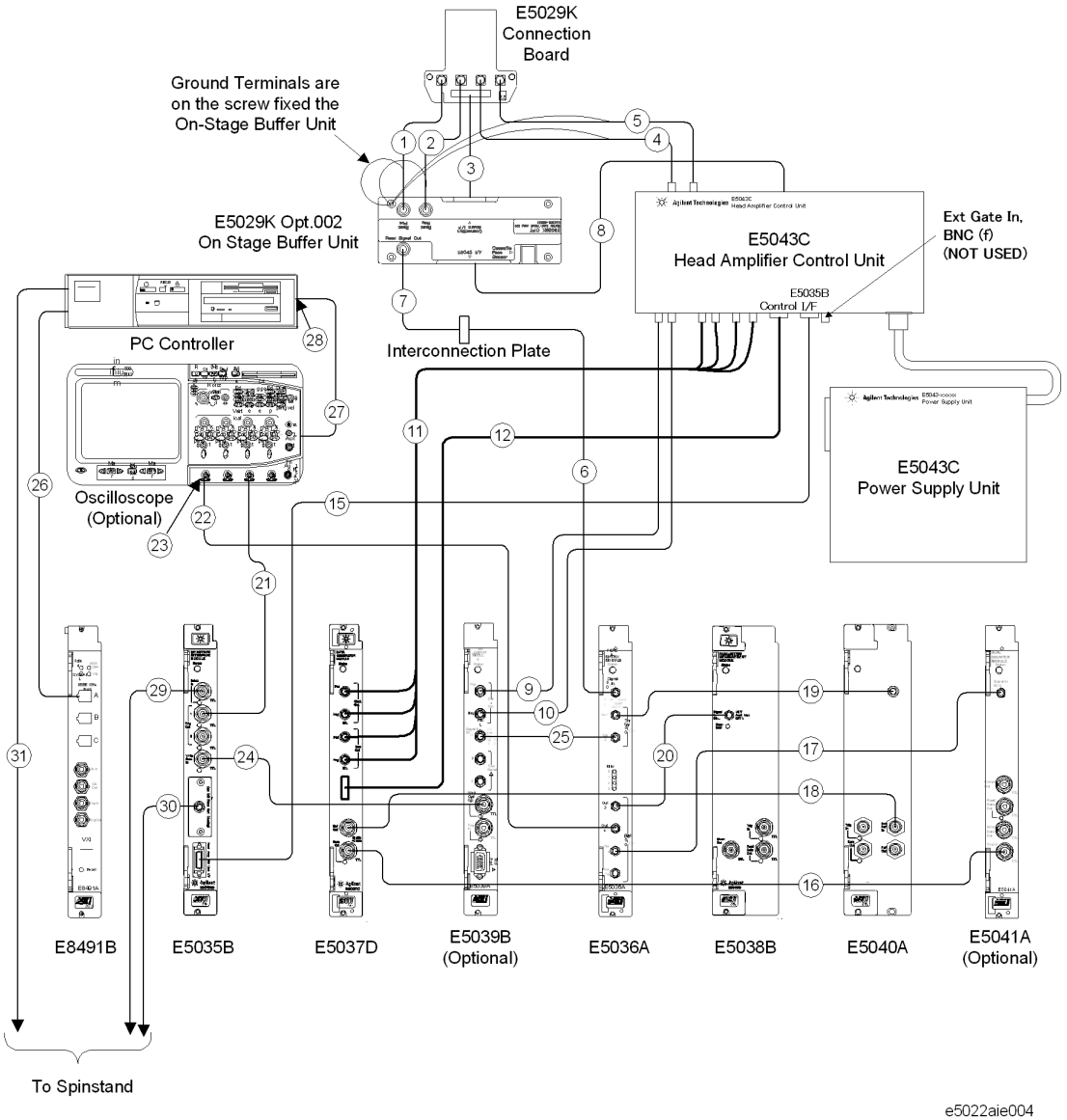


Table 2-7 Cable Connection of E5023A Opt. 426 (2.6 Gbps) (VXI Modules)

No.	Description	Connection		Part No.
32	SMA(m)-SMA(m) Cable	E5029K Connection Board "W+"	E5029K Onstage Buffer Unit "W+"	E5029-61604
33	SMA(m)-SMA(m) Cable	E5029K Connection Board "W-"	E5029K Onstage Buffer Unit "W-"	E5029-61605

Figure 2-6 Cable Connection of E5023A Opt. 426 (2.6 Gbps) (E5029K Option 001 Buffer Board)

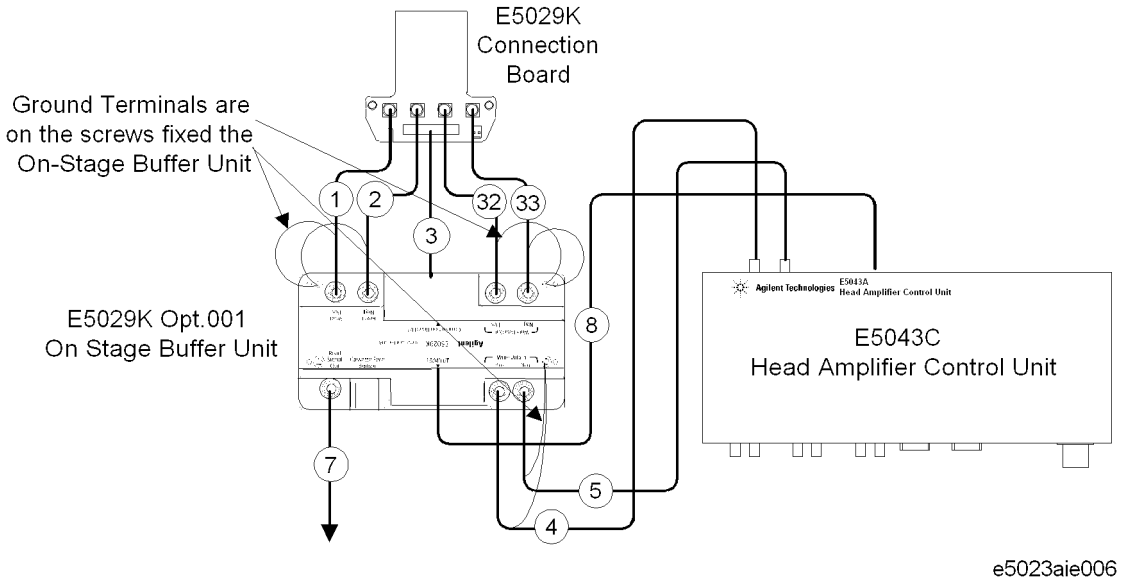
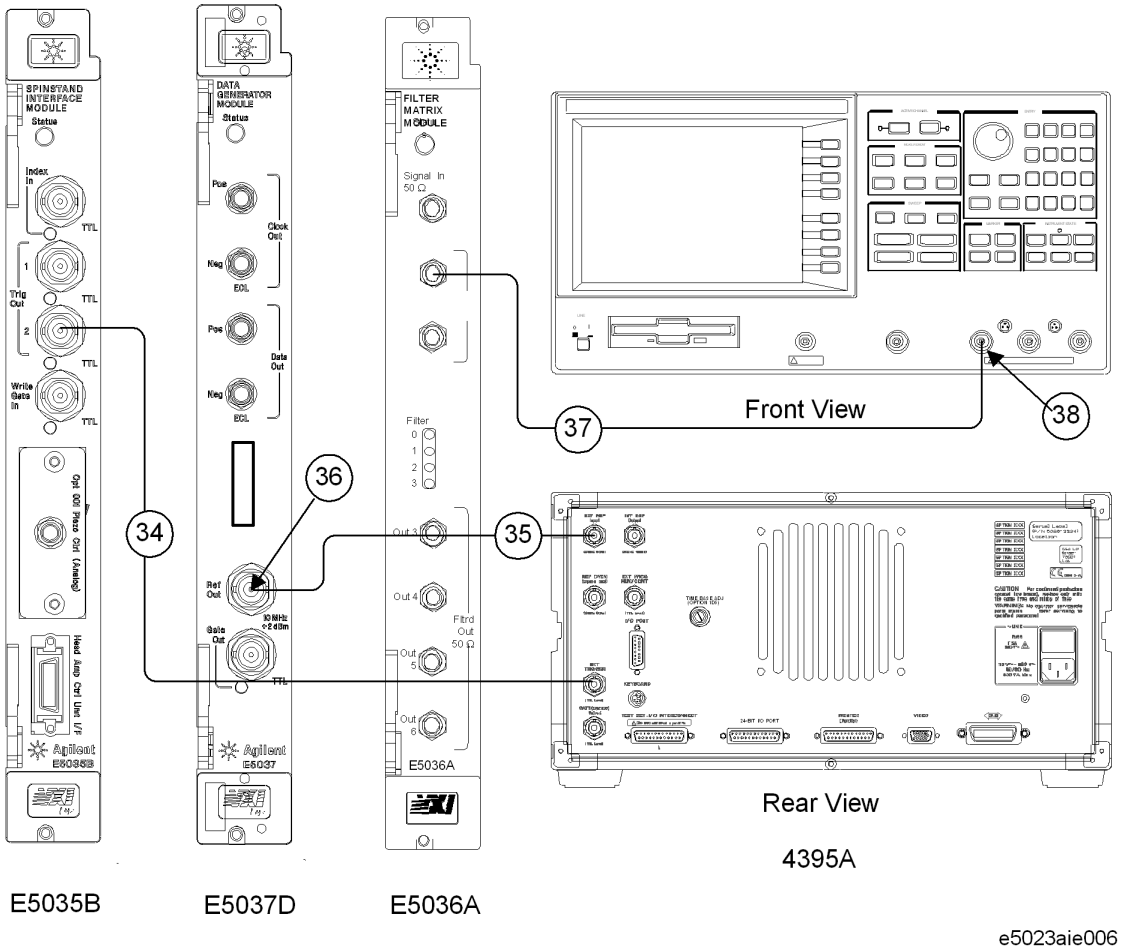


Table 2-8 Cable Connection of E5023A Opt. 426 (2.6 Gbps) (VXI Modules)

No.	Description	Connection		Part No.
34	BNC(m)-BNC(m) Cable	E5035 “Trig Out”	4395A “Ext Trigger”	E5022-61613*1
35	SMA(m)-BNC(m) Cable	E5037 “Ref Out”	4395A “Ext. Ref. Input”	E5022-61614*1
36	SMA(f)-BNC(m) Adapter	-	-	1250-1700
37	SMA(m)-SMA(m) Cable	E5036A “Filtrd Out 1”	4395A “R Input”	E5022-61623*1
38	SMA(m)-N(m) Adapter	-	-	1250-1250*1

*1. The cable is used in E5022A/B

Figure 2-7 Cable Connection of E5023A Opt. 426 (2.6 Gbps) (4395A)



e5023aie006

Step 5: Uninstalling the E5022A/B System Software from your PC

You had better to uninstall the old system software before installing a new system software. This is because the structure of the start menu and some register information have been changed and the uninstaller of the new system software might not delete them.

1. Select **Settings > Control Panel** from the windows start menu.
2. Select **Add/Remove Programs**.
3. Select **Agilent E5022/E5023**, then click **Add/Remove** to uninstall the system software.

Step 6: Installing the E5022/23 System Software into your PC

Install the appropriate E5022/23 system software into your PC.

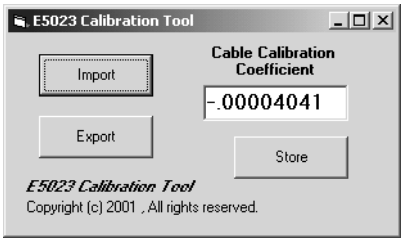
For Upgrading To	Required System Software Revision
E5023A Option 415 (1.5 Gbps)	B.01.00 and above
E5023A Option 426 (2.6 Gbps)	B.03.00 and above

Step 7: Installing the Compensation Factor

Execute the program named “caltool.exe” in order to install the calibration loss factor into the PC. You can download this software from the website of “Service” at the URL “http:\\dst.tm.agilent.com\”.

1. Execute the “caltool.exe” program on the PC.
2. The Figure 2-8 is displayed. The current stored value is displayed in the text box.

Figure 2-8 **Caltool Dialogue**



3. Input the value for the cable compensation in the text box, then click the **Store** button. The value of the provided cables for E5023A is **–0.00004041**.

NOTE The **Import** and **Export** buttons allow you to store the value into a file.

Step 8: Put the Upgrade Model Label on the VXI Mainframe

Put the label “E5023U UPGRADE PRODUCT Equivalent to E5023A” on the rear panel of the VXI Mainframe.