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Quick Start Guide

infiniium DCA

Agilent 86100A
Wide-Bandwidth Oscilloscope



Agilent Technologies

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CAUTION
The *caution* sign denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in damage to or destruction of the product. Do not proceed beyond a caution sign until the indicated conditions are fully understood and met.

WARNING
The *warning* sign denotes a hazard. It calls attention to a procedure which, if not correctly performed or adhered to, could result in injury or loss of life. Do not proceed beyond a warning sign until the indicated conditions are fully understood and met.


The instruction manual symbol. The product is marked with this warning symbol when it is necessary for the user to refer to the instructions in the manual.


The laser radiation symbol. This warning symbol is marked on products which have a laser output.


The AC symbol is used to indicate the required nature of the line module input power.


| The ON symbols are used to mark the positions of the instrument power line switch.


❍ The OFF symbols are used to mark the positions of the instrument power line switch.


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ISM1-A
This text denotes the instrument is an Industrial Scientific and Medical Group 1 Class A product.

In This Book

This book gives you the information you need to begin using the Infiniium DCA. It contains five chapters:

Chapter 1, "Setting Up the Infiniium DCA" contains inspection, power requirements, air flow, and setup information.

Chapter 2, "Working in Comfort" contains recommendations for working comfortably and safely while operating the Infiniium DCA.

Chapter 3, "Using the Infiniium DCA" gives an overview of the front panel and the graphical user interface, and tells you how to perform basic operations with the Infiniium DCA.

Chapter 4, "Using the Built-In Information System" describes the built-in information system contents and navigation. The built-in information system contains all of the information that is generally found in a user's guide.

Chapter 5, "Regulatory Information" contains important regulatory information.

- For detailed information on how the Infiniium DCA makes measurements and how to use the instrument, see the built-in information system in the instrument.
- For information on programming the Infiniium DCA using a computer with a GPIB interface card, refer to the *Infiniium DCA Programmer's Guide*.

CAUTION

The Infiniium DCA uses a specially designed Windows 98 application program (Windows ® is a U.S. registered trademark of Microsoft Corp.) All Infiniium DCA functionality is directly available from within the Infiniium DCA application. Windows 98 configuration changes made outside of the Infiniium DCA application may not work correctly and could cause the instrument to become inoperable. Do not try to access or make changes to the Windows Operating system. Repairs caused by the improper use of the Infiniium DCA will not be covered under warranty.

General Safety Considerations

This product has been designed and tested in accordance with the standards listed on the Manufacturer's Declaration of Conformity, and has been supplied in a safe condition. The documentation contains information and warnings that must be followed by the user to ensure safe operation and to maintain the product in a safe condition.

Install the instrument according to the enclosure protection provided. This instrument does not protect against the ingress of water. This instrument protects against finger access to hazardous parts within the enclosure.

WARNING **If this product is not used as specified, the protection provided by the equipment could be impaired. This product must be used in a normal condition (in which all means for protection are intact) only.**

WARNING **No operator serviceable parts inside. Refer servicing to qualified service personnel. To prevent electrical shock do not remove covers.**

WARNING **To prevent electrical shock, disconnect the instrument from mains before cleaning. Use a dry cloth or one slightly dampened with water to clean the external case parts. Do not attempt to clean internally.**

CAUTION Do not use too much liquid in cleaning the instrument. Water can enter the front-panel keyboard, damaging sensitive electronic components.

Contents

In This Book iii

1 Setting Up the Infiniium DCA
Installing the Infiniium DCA 1–3
Cleaning Connections for Accurate Measurements 1–29
Returning the Instrument for Service 1–38
Agilent Technologies Service Offices 1–41

2 Working in Comfort

3 Using the Infiniium DCA
Eye/Mask Mode 3–7
Oscilloscope Mode 3–8
TDR/TDT Mode 3–9
Using Plug-in Modules 3–10
Using the Touch Screen 3–12
Using the Quick Measure Feature 3–14
If the Display Goes Blank 3–15
Hiding and Moving Dialog Boxes 3–16
Menus 3–17

4 Using the Built-In Information System
The Contents Topic 4–3
Using Setup Guides 4–4
Getting Help While Changing Instrument Settings 4–6
Learning About Measurements Results 4–7
Hiding the Built-in Information System 4–8
Printing the Contents of a Topic 4–9
Selecting the Built-in Information System Language 4–10

5 Regulatory Information

1

Installing the Infiniium DCA 1-3
Step 1. Inspect the shipment 1-3
Step 2. Install any modules 1-7
Step 3. Connect the keyboard and mouse 1-8
Step 4. Connect the line cord 1-9
Step 5. Turn on the line power 1-14
Step 6. Set the time and date 1-16
Step 7. Connect a printer 1-17
Step 8. Configure the touch screen 1-22
Step 9. Configure the instrument on a LAN 1-24
Step 10. Avoid costly repairs 1-25
Step 11. Perform a vertical calibration 1-26
Step 12. For more information 1-29
Cleaning Connections for Accurate Measurements 1-30
Returning the Instrument for Service 1-39
Agilent Technologies Service Offices 1-42

Setting Up the Infiniium DCA

Setting Up the Infiniium DCA

This chapter shows you how to set up your Infiniium DCA and connect the power and the accessories. It also shows you how to use proper optical connection cleaning techniques to avoid *costly* repairs.

WARNING **This is a Safety Class 1 Product (provided with a protective earthing ground incorporated in the power cord). The mains plug shall only be inserted in a socket outlet provided with a protective earth contact. Any interruption of the protective conductor inside or outside of the instrument is likely to make the instrument dangerous. Intentional interruption is prohibited.**

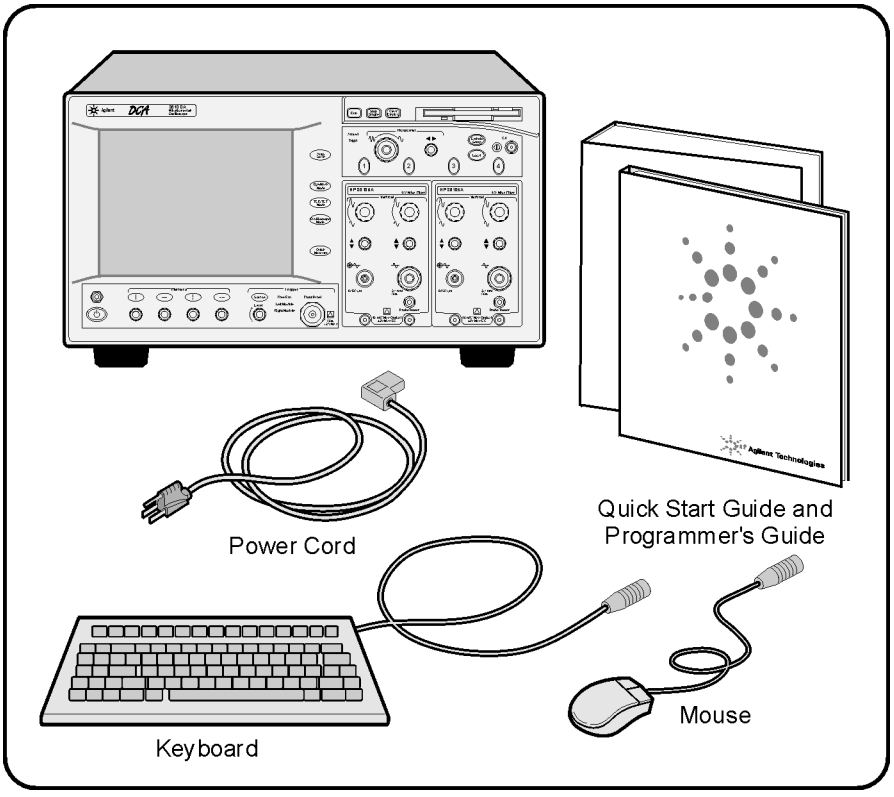
CAUTION VENTILATION REQUIREMENTS: When installing the product in a cabinet, the convection into and out of the product must not be restricted. The ambient temperature (outside the cabinet) must be less than the maximum operating temperature of the product by 4° C for every 100 watts dissipated in the cabinet. If the total power dissipated in the cabinet is greater than 800 watts, then forced convection must be used.

CAUTION This product is designed for use in Installation Category II and Pollution Degree 2 per IEC 1010 and 664 respectively.

Installation Category: Installation Categories (overvoltage categories) are determined by the transient overvoltage levels that may be expected. CAT I: Mains isolated. CAT II: Line voltage in appliance and to wall outlet. CAT III: Line voltage behind wall outlet to next level of distribution.

Installing the Infiniium DCA

Step 1. Inspect the shipment



- ❒ Inspect the shipping container for damage.
- ❒ Inspect the instrument.
- ❒ Verify that you received the options and accessories you ordered.

Keep the shipping container and cushioning material until you have inspected the contents of the shipment for completeness and have checked the instrument mechanically and electrically.

If anything is missing or defective, contact your nearest Agilent Technologies Sales Office. Refer to "Agilent Technologies Service Offices" on page 1-42. If the shipment was damaged, contact the carrier, then contact the nearest Agilent Sales Office. Keep the shipping materials for the carrier's inspection. The Agilent Sales Office will arrange for repair or replacement at Agilent's option without waiting for claim settlement.

Table 1-1. Standard Accessories

Accessory	Part Number
Keyboard	E2610-68700
Mouse	C3751-60201
Quick Start Guide (this book)	86100-90033
Programmer's Guide	86100-90017
Programmer's Guide Manual Change Supplement	86100-90034
APC 3.5 (f-f)	5061-5311

Table 1-2. Product Options

Option	Description
001	12 GHz Trigger Bandwidth
AX4	Rack mount flange kit
AXE	Rack mount flange kit with handles
UK6	Commercial calibration certificate with test data

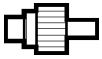
Table 1-3. Optional Accessories

Accessory	Description
83446A	Lightwave clock and data receiver
11982A	High-speed lightwave receiver
83440B/C/D	High-speed lightwave receiver
54118A	500 MHz to 18 GHz trigger
N1020A	TDR probe kit
54006A	6 GHz hand-held probe
54701	2.5 GHz active probe
83480A-K17	Switch matrix
83480A-K17	RIMM fixture
10086A	ECL terminator
83430A	Lightwave digital source
11898A	Plug-in module remote/extender
54008B	24 ns delay line

Table 1-4. Additional Adapters for Electrical Channels

Adapter	Agilent Part Number
SMA (f-f)	1250-1158
APC 3.5 (f-f)	5061-5311

Table 1-5. Fiber-Optic Adapters for Optical Channels

Front Panel Fiber-Optic Adapter	Description	Agilent Part Number
	Diamond HMS-10	81000AI
	FC/PC	81000FI
	D4	81000GI
	SC	81000KI
	DIN	81000SI
	ST	81000VI
	Biconic	81000WI

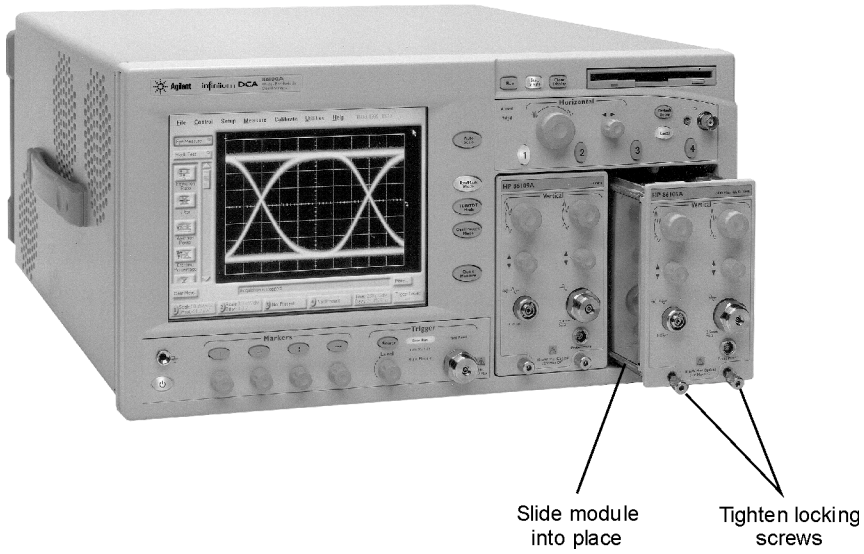
Step 2. Install any modules

Up to two modules can be inserted into the Infiniium DCA. All documentation (including specifications) for plug-in modules is located in the Infiniium DCA's built-in information system. To access the built-in information system, touch or click Contents on the Help menu.

1 Slide the module into an available front-panel slot.

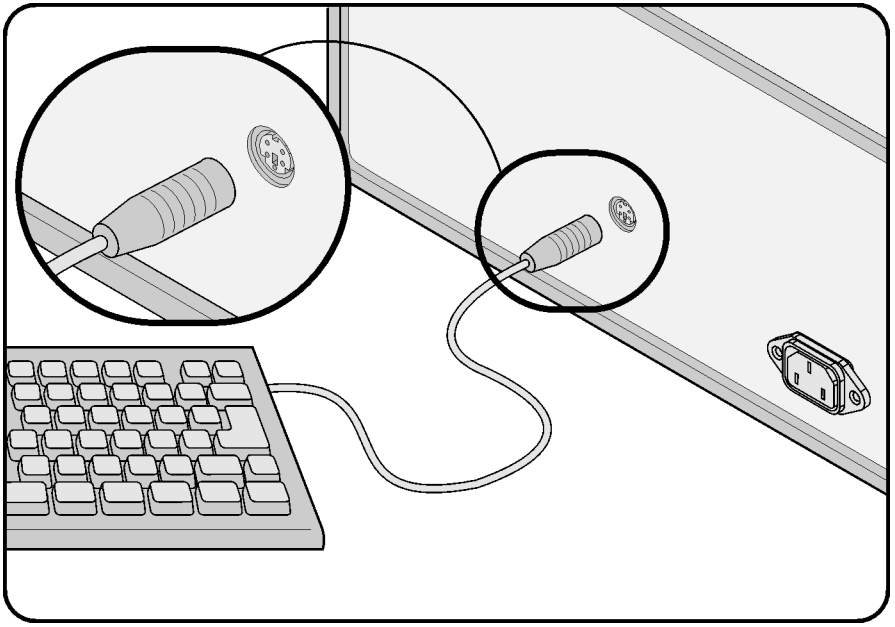
You can remove or install a module while the instrument is operating.

2 Finger tighten the two knurled screws on the module's front panel.



Step 3. Connect the keyboard and mouse

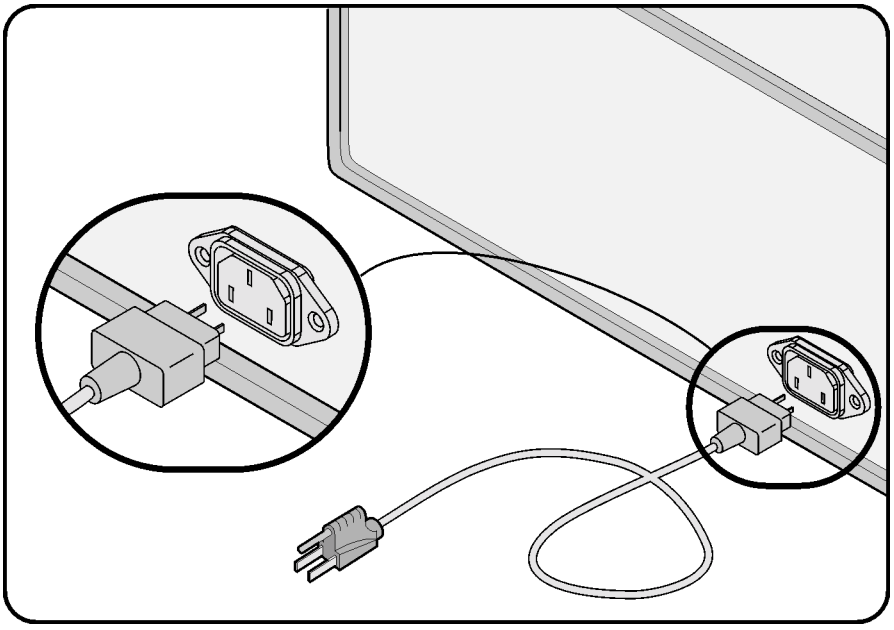
- Connect the standard PC-compatible mouse and keyboard.



Although you can operate all instrument functions using a keyboard and mouse, the touch screen feature makes your Infiniium DCA even easier to use. The touch screen feature is always available, even when you connect the mouse. For more information, refer to Chapter 4, “Using the Built-In Information System”, or use the built-in information system.

Do *not* stack other objects on the keyboard; this will cause self-test failures on power-on.

Step 4. Connect the line cord



The Infiniium DCA automatically adjusts for line input voltages in the range of 100 to 240 VAC. There is no manual selection switch. The line cord provided is matched by Agilent to the country in which the order originates. Refer to Table 1-8, “Available Line Cords,” on page 1-12 for a list of available line power cords.

Install the instrument so that the detachable power cord is readily identifiable and is easily reached by the operator. The detachable power cord is the instrument disconnecting device. It disconnects the mains circuits from the mains supply before other parts of the instrument. The front panel switch is only a standby switch and is not a LINE switch. Alternatively, an externally installed switch or circuit breaker (which is readily identifiable and is easily reached by the operator) may be used as a disconnecting device.

CAUTION

Always use the three-prong AC power cord supplied with this instrument. Failure to ensure adequate earth grounding by not using this cord may cause instrument damage.

CAUTION *Do not* connect ac power until you have verified the line voltage is correct as described in Table 1-6. Damage to the equipment could result.

CAUTION This instrument has autoranging line voltage input. Be sure the supply voltage is within the specified range.

Table 1-6. Line Power Requirements

Power	115 VAC: 110 VA MAX. / 60 WATTS MAX. / 1.1 A MAX. 230 VAC: 150 VA MAX. / 70 WATTS MAX. / 0.6 A MAX.
Voltage	nominal: 115 VAC / 230 VAC CAT II range 115 VAC: 90–132 V range 230 VAC: 198–254 V
Frequency	nominals: 50 Hz / 60 Hz range: 47–63 Hz

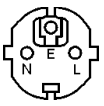
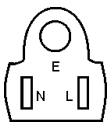
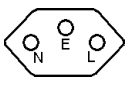
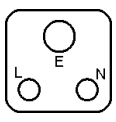
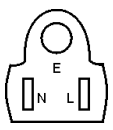
Table 1-7. Environmental Specifications

Use	indoor
Temperature	
Operating	10 °C to +40 °C (50 °F to + 104 °F)
Non-operating	-40 °C to +70 °C (-40 °F to +158 °F)
Humidity	
Operating	Up to 90% humidity (non-condensing) at +40 °C (+104 °F)
Non-operating	Up to 95% relative humidity at + 65 °C (+149 °F)
Altitude	
Operating	Up to 4,600 meters (15,000 ft)
Non-operating	Up to 15,300 meters (50,000 ft)
Vibration	
Operating	Random vibration 5-500 Hz, 10 minutes per axis, 2.41 g(rms)
Non-operating	Random vibration 5-500 Hz, 10 minutes per axis, 0.3 g(rms); Resonant search, 5-500Hz swept sine, 1 octave/minute sweep rate, 0.75g, 5 minute resonant dwell at 4 resonances per axis.
Power requirements	
Voltage	90 to 132 or 198 to 264 Vac, 48-66 Hz CAT II
Power (including modules)	545 VA; 375 W
Weight	
Mainframe	12.7 kg (28 lb)
Modules	1.2 kg (2.6 lb)
Dimensions	

Table 1-7. Environmental Specifications

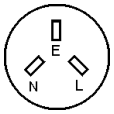
Height	215.1 mm (8.47 in)
Width	425.5 mm (16.75 in)
Depth	521 mm (20.5 in)
Depth with front connectors and rear feet	584 mm (23.0 in)

Table 1-8. Available Line Cords

Plug Type		Cable Part No.	Plug Description	Length (in/cm)	Color	Country
250V		8120-1351C 8120-8705	Straight *BS1363A 90°	90/228 90/228	Gray Mint Gray	United Kingdom, Cyprus, Nigeria, Zimbabwe, Singapore
250V		8120-1369C 8120-0696	Straight *NZSS198/ASC 90°	79/200 87/221	Gray Mint Gray	Australia, New Zealand
250V		8120-1689C 8120-1692	Straight *CEE7-Y11 90°	79/200 79/200	Mint Gray Mint Gray	East and West Europe, Saudi Arabia, So. Africa, India (unpolarized in many nations)
125V		8120-1378C 8120-1521	Straight *NEMA5-15P 90°	90/228 90/228	Jade Gray Jade Gray	United States, Canada, Mexico, Philippines, Taiwan
250V		8120-2104C 8120-2296	Straight *SEV1011 1959-24507 Type 12 90°	79/200 79/200	Mint Gray Mint Gray	Switzerland
220V		8120-2956C 8120-2957	Straight *DHCK107 90°	79/200 79/200	Mint Gray Mint Gray	Denmark
250V		8120-4211 8120-4600	Straight SABS164 90°	79/200 79/200	Jade Gray	Republic of South Africa India
100V		8120-4753C 8120-4754	Straight MITI 90°	90/230 90/230	Dark Gray	Japan

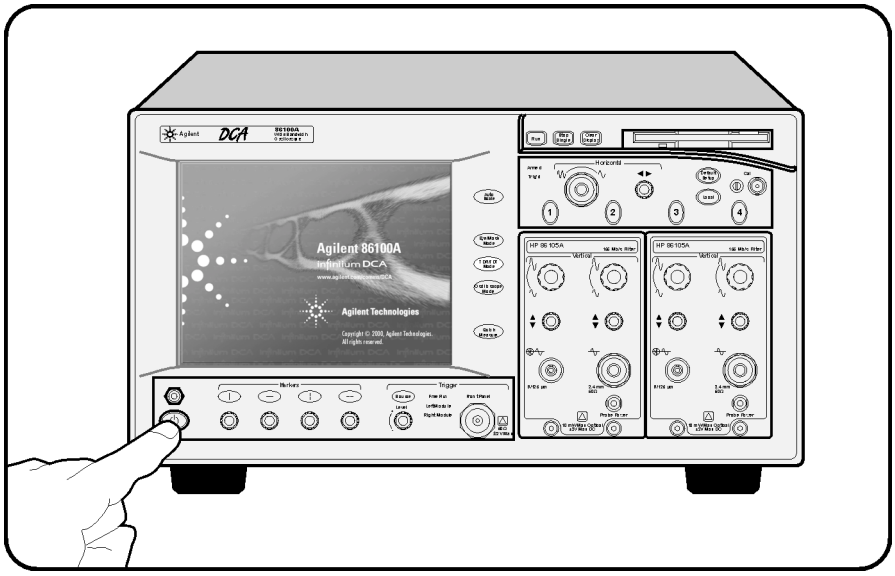
* Part number shown for plug is the industry identifier for the plug only. Number shown for cable is the Agilent Technologies part number for the complete cable including the plug.

Table 1-8. Available Line Cords

Plug Type	Cable Part No.	Plug Description	Length (in/cm)	Color	Country
250V 	8120-5181	Straight	79/200	Gray	Israel

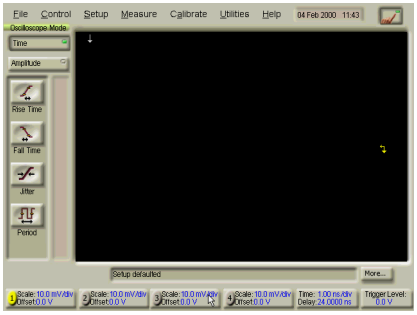
* Part number shown for plug is the industry identifier for the plug only. Number shown for cable is the Agilent Technologies part number for the complete cable including the plug.

Step 5. Turn on the line power



- Press the power switch at the lower left-hand corner of the front panel.

  After about one minute, the display will look similar to the following figure. The Infiniium DCA is ready to use.



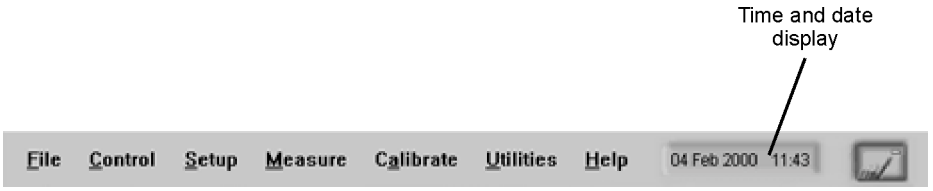
NOTE

The detachable power cord is the instrument disconnecting device. It disconnects the mains circuits from the mains power supply before other parts of the instrument. The front panel switch is only a standby switch and is not a LINE switch disconnecting device.

Install the instrument so that the detachable power cord is readily identifiable and is easily reached by the operator.

Step 6. Set the time and date

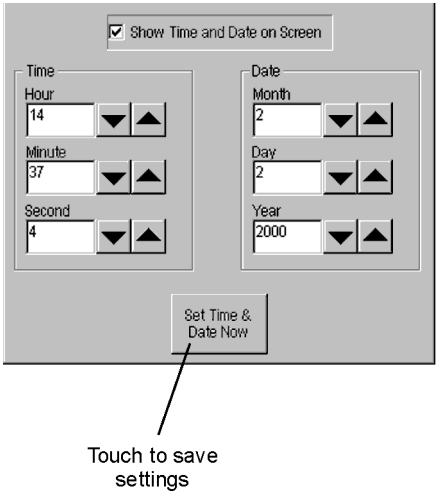
1 Touch the current time and date shown near the top of the display. Notice how the instrument responds to your touch by displaying the current time and date settings. You can touch the screen with your finger, ballpoint pen, or a stylus.



You can also click the current time and date with a mouse. Although this book uses the term “touch” to encourage you to experience using the touch screen, you can always click using the mouse instead.

CAUTION Avoid touching the screen with a sharp object as this could result in damage to the display.

2 Touch the various displayed settings to set the correct time for your location. After setting the correct time, touch or click Set Time & Date Now to change the time.



Step 7. Connect a printer

Use of a printer with the Infiniium DCA is optional. Table 1-9 lists the PCL-language printers that are currently supported for use with the instrument. You must use the Add Printer Wizard to select the printer driver for the printer as outlined in this procedure; the Add Printer Wizard does not run automatically. For more information on connecting and using a printer, refer to the built-in information system.

Unsupported printers

If your printer is not in the list of supported printers, you will need the printer driver disk that came with your printer. To install the printer driver from this disk, click Have Disk on the Add Printer Wizard dialog box. The instrument will then prompt you to put your printer driver disk into the front-panel disk drive (drive A). Be sure to install the Windows 98 printer driver for your printer. If a printer driver disk was not provided or you cannot find the disk, you can contact the printer's manufacturer to obtain the appropriate Windows 98 printer driver.

Table 1-9. Supported Printers

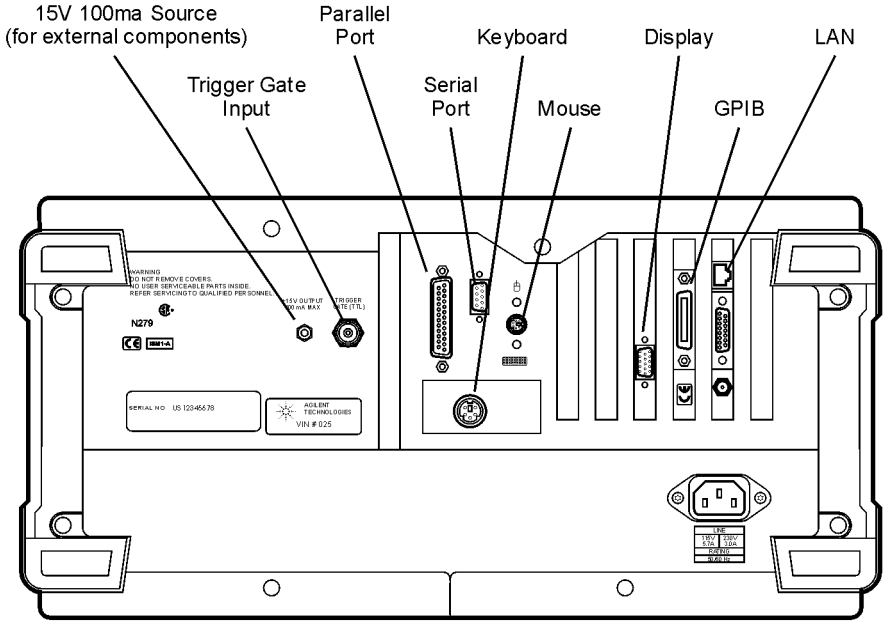
HP DeskJet 850	HP DeskJet 1600C
HP DeskJet 890C	HP LaserJet 4P
HP DeskJet 970	HP LaserJet 4000N
HP DeskJet 1200C	

To connect a printer

1. Connect the printer to the instrument's rear-panel Parallel port. Use the cable that came with your printer.
2. On the File menu, select Print Setup and then Add Printer.
3. Select Printer that is Plug and Play.

   An online Help window opens with instructions for connecting a printer. You do not need to read the displayed instructions at this time.
4. Turn the Infiniium DCA's power off. Do not exit the online Help before turning the instrument off.
5. Turn the printer's power on.

.



6 Wait five seconds and then turn the Infiniium DCA's power on again.

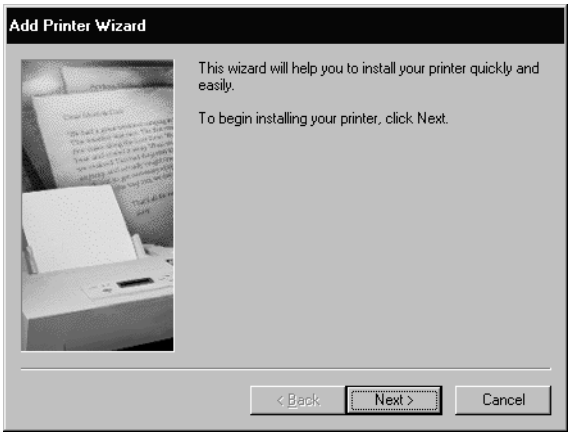
7 When the following message appears, select "No".



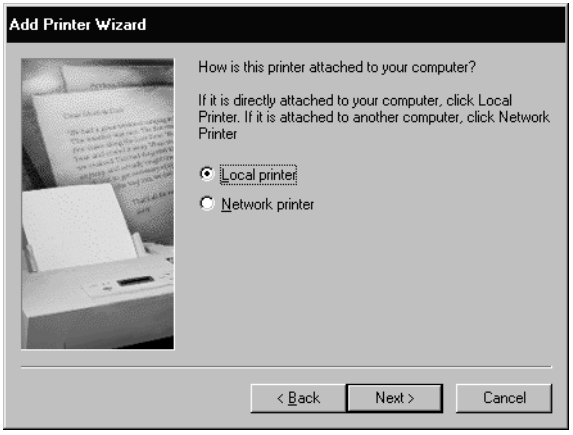
8 When the following message appears select "OK".



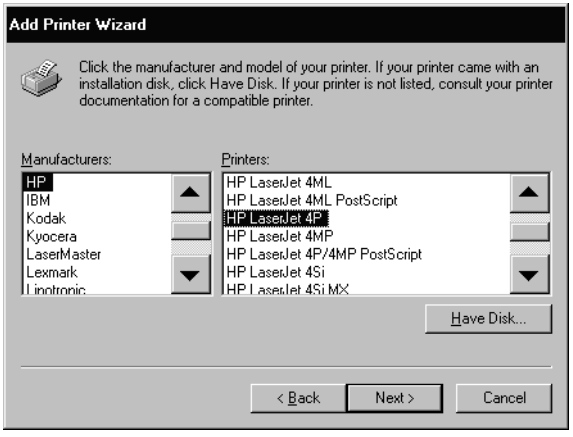
9 The instrument automatically recognizes the printer connected on the printer port and displays the Add Printer Wizard. Touch Next.



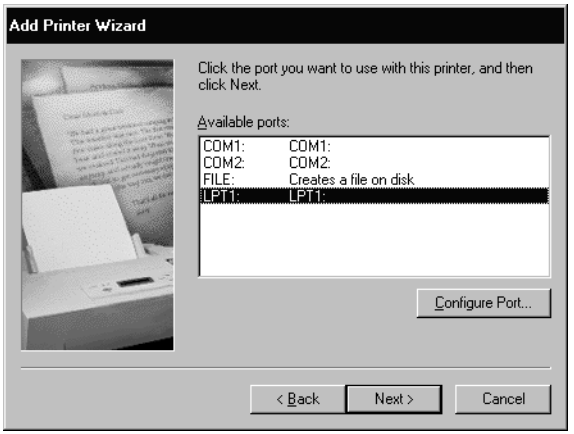
10 Select Local printer and then touch Next.



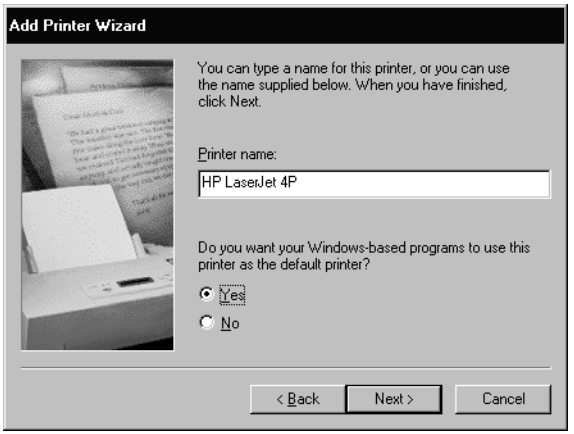
11 Select the printer manufacturer and then printer. Then, touch Next. If your printer is not listed, click Have Disk. The instrument will then prompt you to put your printer driver disk into the front-panel disk drive (drive A). Be sure to install the Windows 98 printer driver for your printer.



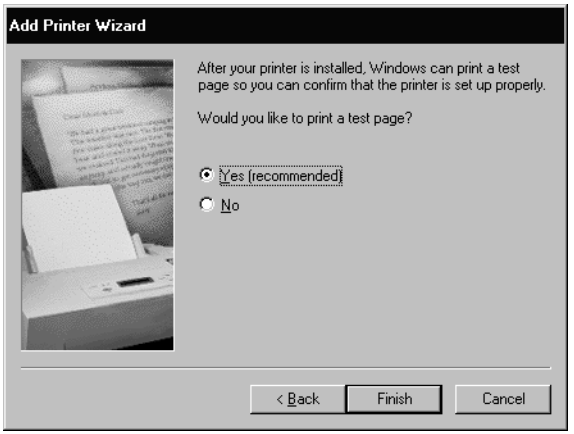
12 Select LPT1 for the printer port. Touch Next.



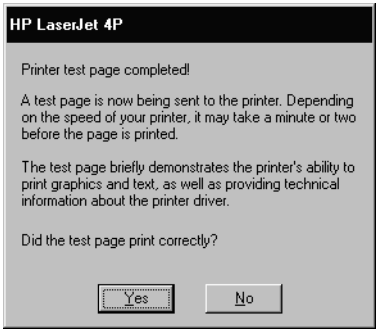
13 Select Yes and then touch Next.



14 Select Yes to print a test page. Then, touch Next.



15 After confirming that the test page printed correctly, touch Yes.



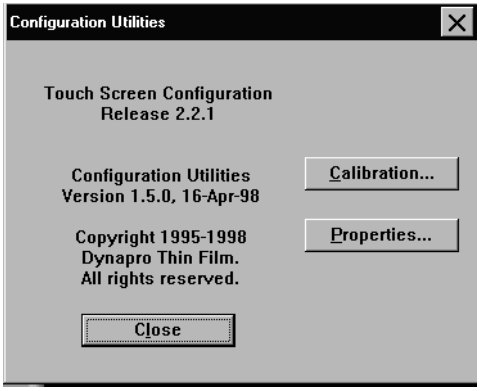
16 Turn the Infiniium DCA's power off and then on again. The printer is now installed and ready to use.

Step 8. Configure the touch screen

The touch screen configuration utility ensures that the touch screen is both aligned and orientated with the display. It also allows you to adjust the touch screen speed to simulate a double-click and to turn the touch screen sound on or off.

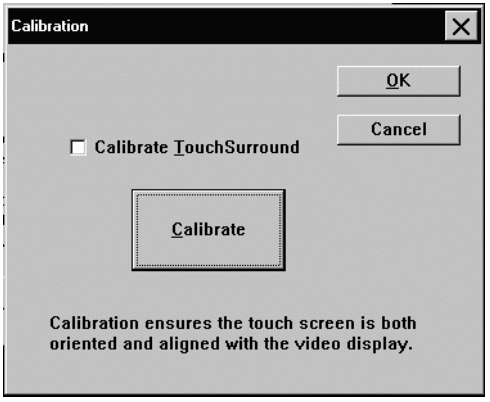
1 On the Utilities menu, select Touch Screen Config. The touch screen configuration utility is displayed.

2 Touch Calibration.

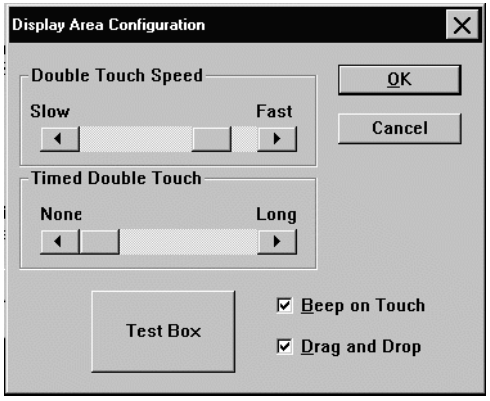


3 Touch the Calibrate button and follow the displayed instructions. You do not need to select Calibrate TouchSurround; this feature is not used in configuring the touch screen.

4 After returning to the Configuration Utilities dialog box shown in Step 1, touch Properties.



5 The Display Area Configuration dialog box shown here is displayed. Although the Beep on Touch and the Drag and Drop settings are best left selected, you can turn them off if desired. This figure shows the default settings. Pressing the front-panel Default Setup button does not change these settings.



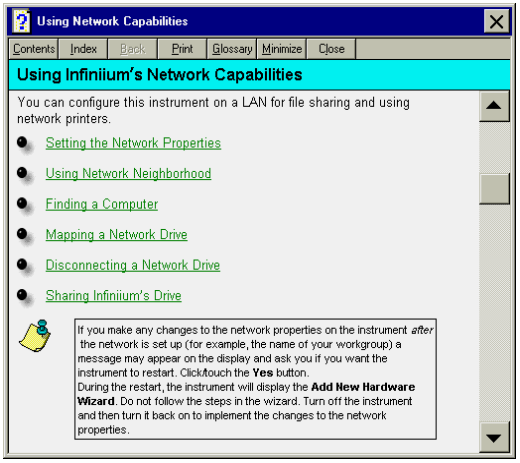
The Double Touch Feature

Since the double touch feature is rarely used in the Infiniium DCA, you'll probably never need to adjust Double Touch Speed or Timed Double Touch. One example of using double touch is when you open a file. You can double touch the file name instead of pressing the Open button.

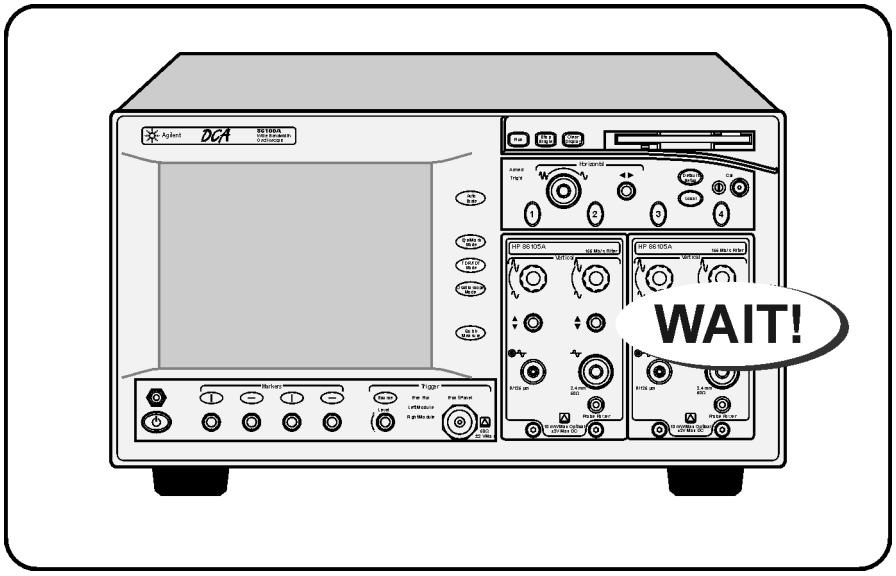
Timed Double Touch allows a single touch to be interpreted as a double touch if you continue the touch for a set amount of time. If this setting is set to None (the default setting), two touches are required. You then set the Double Touch Speed for the time needed between two touches. The Test Box button is used to test your double touch settings.

Step 9. Configure the instrument on a LAN

You can configure this instrument on a LAN for file sharing and using network printers. Contact your company's network administrator to set up your instrument with the appropriate client, protocol, and configuration for your local area network (LAN). The network setup is different for every company. If you plan on sharing your instrument hard disk drive with other computers on your LAN, you should have the network administrator enable file sharing as part of the network setup. For more information on setting up a network drive, refer to the built-in information system.



Step 10. Avoid costly repairs



CAUTION Electrical channel input circuits and the trigger input circuit can be damaged by electrostatic discharge (ESD). Therefore, avoid applying static discharges to the front-panel input connectors. Prior to connecting any coaxial cable to the connectors, momentarily short the center and outer conductors of the cable together. Avoid touching the front-panel input connectors without first touching the frame of the instrument. Be sure that the instrument is properly earth-grounded to prevent buildup of static charge. Wear a wrist-strap or heel-strap.

CAUTION Optical channel fiber-optic connectors are easily damaged when connected to dirty or damaged cables and accessories. When you use improper cleaning and handling techniques, you risk expensive instrument repairs, damaged cables, and compromised measurements. Before you connect any fiber-optic cable to the Infiniium DCA, refer to “Cleaning Connections for Accurate Measurements” on page 1-30.

Step 11. Perform a vertical calibration

A vertical (amplitude) calibration, also referred to as module calibration, establishes calibration factors for all installed modules. The calibration factors compensate for imperfections in the measurement system (for example, variations due to ambient temperature), resulting in the best instrument precision. It is recommended that you perform this calibration routinely for best measurement accuracy.

The vertical calibration is recommended whenever the following occurs:

- Instrument power has been cycled
- A module has been removed and then reinserted
- A change in the temperature of the mainframe exceeds 5°C compared to the temperature of the last vertical (amplitude) calibration ($\Delta T > 5°C$)
- The time since the last calibration has exceeded 10 hours

Refer to the Infiniium DCA's built-in information system for more information concerning calibrations.

Warm-up time

Allow the instrument, with modules installed, to warm up for a period of at least one hour before performing a vertical calibration. This ensures that the module reaches its equilibrium temperature.

CAUTION

Electrical channel input circuits and the trigger input circuit can be damaged by electrostatic discharge (ESD). Therefore, avoid applying static discharges to the front-panel input connectors. Prior to connecting any coaxial cable to the connectors, momentarily short the center and outer conductors of the cable together. Avoid touching the front-panel input connectors without first touching the frame of the instrument. Be sure that the instrument is properly earth-grounded to prevent buildup of static charge. Wear a wrist-strap or heel-strap.

To perform a vertical calibrations

1 On the Calibrate menu, choose All Calibrations.

The All Calibrations dialog box opens. This dialog box allows you to view the calibration status of modules and initiate the calibration.

2 Touch the Vertical (Amplitude) tab.

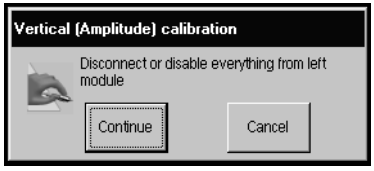
The Vertical (Amplitude) tab opens and allows you to perform a vertical calibration on either the left or right module.

3 Touch the vertical calibration button (located at the bottom of the tab) for the module you need to calibrate. This starts the vertical calibration.

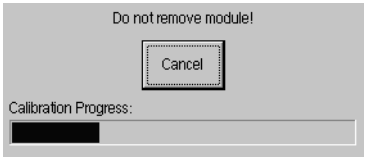


4 Remove all external devices and signals from the module.

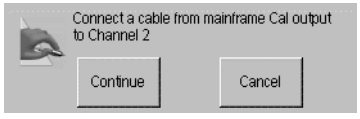
The vertical calibration uses known signal levels in the instrument. Introducing an outside signal source will interfere with the calibration factors and decrease the accuracy of the calibration.



5 Touch Continue. A progress indicator appears.

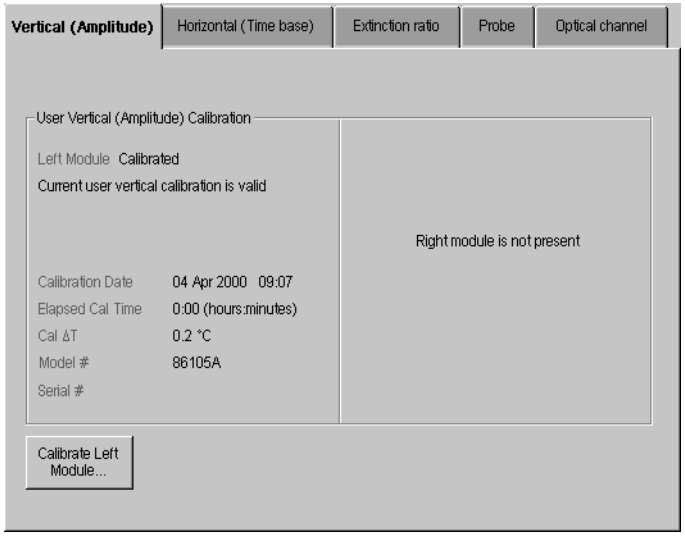


If the module has an electrical input channel, the following message will appear instructing you to connect the front-panel calibration output to the input channel.



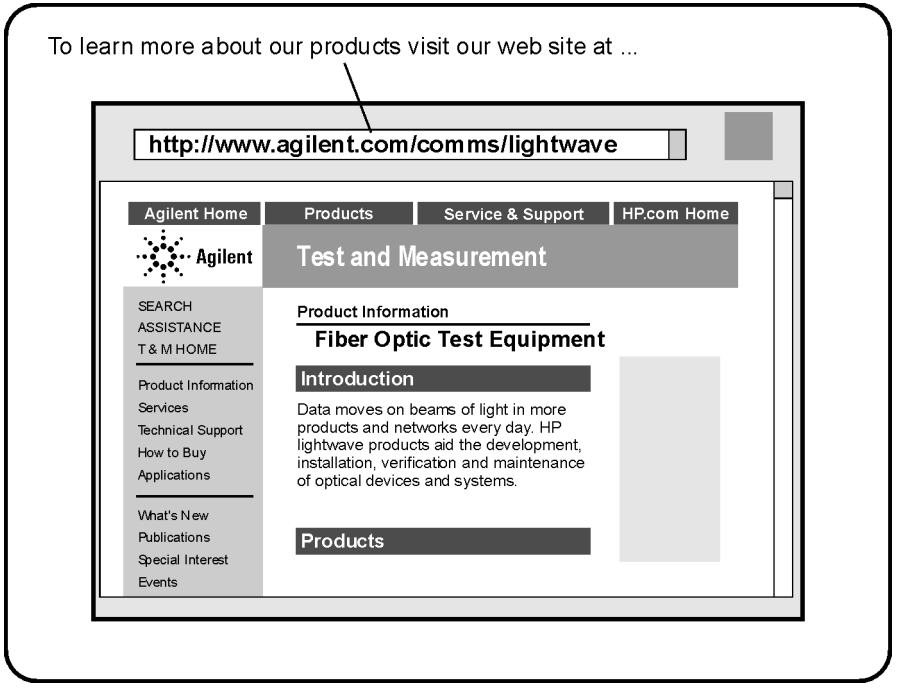
6 After the calibration completes, choose All Calibrations on the Calibration menu.

7 The Vertical (Amplitude) tab shows the status of the calibration. The tab will look similar to the following figure. Notice that the tab indicates that the "Current user vertical calibration is valid."



Step 12. For more information

To learn more about this or any Agilent Technologies product, use your personal computer to visit our website at http://www.agilent.com. You cannot access the Internet from the Infiniium DCA.



To learn more about Fiber Optic Test Equipment, go to the Agilent Technologies home page shown above, and follow this path:

1. Click Products.
2. Click Test and Measurement.
3. Click Product Information, and then click Fiber Optic Test Equipment.

   This path will take you to the Fiber Optic Test Equipment page. You can also enter the URL for this page directly:

   http://www.tm.agilent.com/tmo/Products/English/FiberOpticTestEquipment.html

Cleaning Connections for Accurate Measurements

Today, advances in measurement capabilities make connectors and connection techniques more important than ever. Damage to the connectors on calibration and verification devices, test ports, cables, and other devices can degrade measurement accuracy and damage instruments. Replacing a damaged connector can cost thousands of dollars, not to mention lost time! This expense can be avoided by observing the simple precautions presented in this book. This book also contains a brief list of tips for caring for electrical connectors.

Choosing the Right Connector

A critical but often overlooked factor in making a good lightwave measurement is the selection of the fiber-optic connector. The differences in connector types are mainly in the mechanical assembly that holds the ferrule in position against another identical ferrule. Connectors also vary in the polish, curve, and concentricity of the core within the cladding. Mating one style of cable to another requires an adapter. Agilent Technologies offers adapters for most instruments to allow testing with many different cables. Figure 1-1 on page 1-31 shows the basic components of a typical connectors.

The system tolerance for reflection and insertion loss must be known when selecting a connector from the wide variety of currently available connectors. Some items to consider when selecting a connector are:

- How much insertion loss can be allowed?
- Will the connector need to make multiple connections? Some connectors are better than others, and some are very poor for making repeated connections.
- What is the reflection tolerance? Can the system take reflection degradation?
- Is an instrument-grade connector with a precision core alignment required?
- Is repeatability tolerance for reflection and loss important? Do your specifica-

tions take repeatability uncertainty into account?

- Will a connector degrade the return loss too much, or will a fusion splice be required? For example, many DFB lasers cannot operate with reflections from connectors. Often as much as 90 dB isolation is needed.

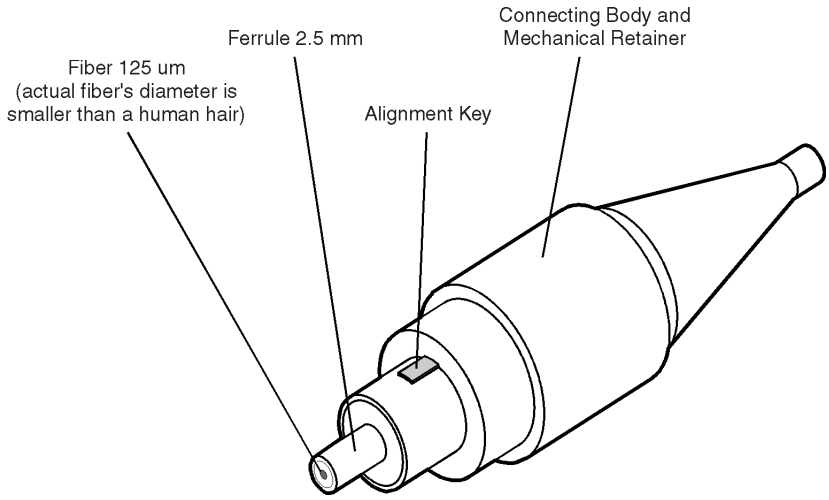


Figure 1-1. Basic components of a connector.

Over the last few years, the FC/PC style connector has emerged as the most popular connector for fiber-optic applications. While not the highest performing connector, it represents a good compromise between performance, reliability, and cost. If properly maintained and cleaned, this connector can withstand many repeated connections.

However, many instrument specifications require tighter tolerances than most connectors, including the FC/PC style, can deliver. These instruments cannot tolerate connectors with the large non-concentricities of the fiber common with ceramic style ferrules. When tighter alignment is required, Agilent Technologies instruments typically use a connector such as the Diamond HMS-10, which has concentric tolerances within a few tenths of a micron. Agilent Technologies then uses a special universal adapter, which allows other cable types to mate with this precision connector. See Figure 1-2.



Figure 1-2. Universal adapters to Diamond HMS-10.

The HMS-10 encases the fiber within a soft nickel silver (Cu/Ni/Zn) center which is surrounded by a tough tungsten carbide casing, as shown in Figure 1-3.

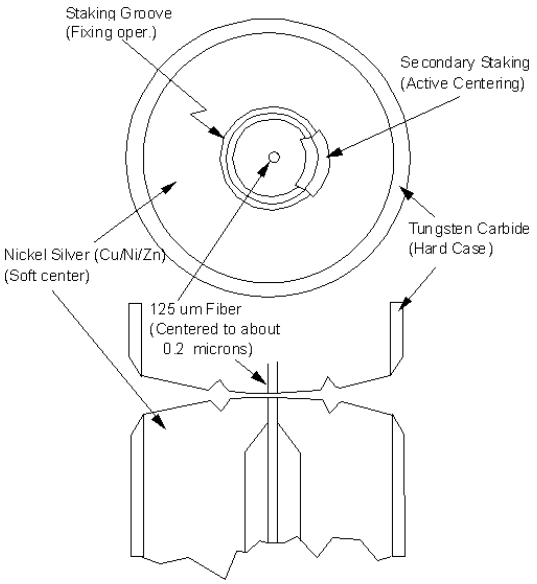


Figure 1-3. Cross-section of the Diamond HMS-10 connector.

The nickel silver allows an active centering process that permits the glass fiber to be moved to the desired position. This process first stakes the soft nickel silver to fix the fiber in a near-center location, then uses a post-active staking to shift the fiber into the desired position within 0.2 µm. This process, plus the keyed axis, allows very precise core-to-core alignments. This connector is found on most Agilent Technologies lightwave instruments.

The soft core, while allowing precise centering, is also the chief liability of the connector. The soft material is easily damaged. Care must be taken to minimize excessive scratching and wear. While minor wear is not a problem if the

glass face is not affected, scratches or grit can cause the glass fiber to move out of alignment. Also, if unkeyed connectors are used, the nickel silver can be pushed onto the glass surface. Scratches, fiber movement, or glass contamination will cause loss of signal and increased reflections, resulting in poor return loss.

Inspecting Connectors

Because fiber-optic connectors are susceptible to damage that is not immediately obvious to the naked eye, bad measurements can be made without the user even being aware of a connector problem. Although microscopic examination and return loss measurements are the best way to ensure good connections, they are not always practical. An awareness of potential problems, along with good cleaning practices, can ensure that optimum connector performance is maintained. With glass-to-glass interfaces, it is clear that any degradation of a ferrule or the end of the fiber, any stray particles, or finger oil can have a significant effect on connector performance.

Figure 1-4 shows the end of a clean fiber-optic cable. The dark circle in the center of the micrograph is the fiber's 125 µm core and cladding which carries the light. The surrounding area is the soft nickel-silver ferrule. Figure 1-5 shows a dirty fiber end from neglect or perhaps improper cleaning. Material is smeared and ground into the end of the fiber causing light scattering and poor reflection. Not only is the precision polish lost, but this action can grind off the glass face and destroy the connector.

Figure 1-6 shows physical damage to the glass fiber end caused by either repeated connections made without removing loose particles or using improper cleaning tools. When severe, the damage on one connector end can be transferred to another good connector that comes in contact with it.

The cure for these problems is disciplined connector care as described in the following list and in "Cleaning Connectors" on page 1-36.

Use the following guidelines to achieve the best possible performance when making measurements on a fiber-optic system:

- Never use metal or sharp objects to clean a connector and never scrape the connector.
- Avoid matching gel and oils.

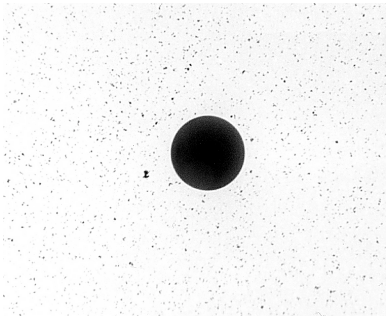


Figure 1-4. Clean, problem-free fiber end and ferrule.

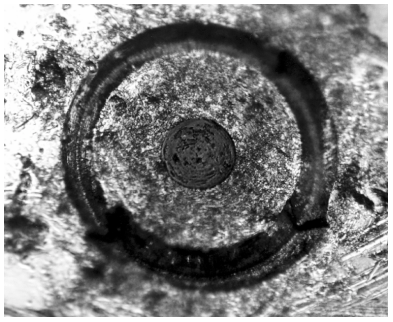


Figure 1-5. Dirty fiber end and ferrule from poor cleaning.

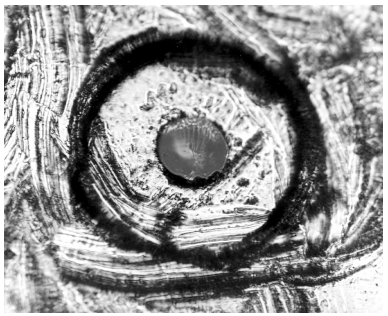


Figure 1-6. Damage from improper cleaning.

While these often work well on first insertion, they are great dirt magnets. The oil or gel grabs and holds grit that is then ground into the end of the fiber. Also, some early gels were designed for use with the FC, non-contacting con-

nectors, using small glass spheres. When used with contacting connectors, these glass balls can scratch and pit the fiber. If an index matching gel or oil must be used, apply it to a freshly cleaned connector, make the measurement, and then immediately clean it off. Never use a gel for longer-term connections and never use it to improve a damaged connector. The gel can mask the extent of damage and continued use of a damaged fiber can transfer damage to the instrument.

- When inserting a fiber-optic cable into a connector, gently insert it in as straight a line as possible. Tipping and inserting at an angle can scrape material off the inside of the connector or even break the inside sleeve of connectors made with ceramic material.
- When inserting a fiber-optic connector into a connector, make sure that the fiber end does not touch the outside of the mating connector or adapter.
- Avoid over tightening connections.

  Unlike common electrical connections, tighter is *not* better. The purpose of the connector is to bring two fiber ends together. Once they touch, tightening only causes a greater force to be applied to the delicate fibers. With connectors that have a convex fiber end, the end can be pushed off-axis resulting in misalignment and excessive return loss. Many measurements are actually improved by backing off the connector pressure. Also, if a piece of grit does happen to get by the cleaning procedure, the tighter connection is more likely to damage the glass. Tighten the connectors just until the two fibers touch.
- Keep connectors covered when not in use.
- Use fusion splices on the more permanent critical nodes. Choose the best connector possible. Replace connecting cables regularly. Frequently measure the return loss of the connector to check for degradation, and clean every connector, every time.

  All connectors should be treated like the high-quality lens of a good camera. The weak link in instrument and system reliability is often the inappropriate use and care of the connector. Because current connectors are so easy to use, there tends to be reduced vigilance in connector care and cleaning. It takes only one missed cleaning for a piece of grit to permanently damage the glass and ruin the connector.

Measuring insertion loss and return loss

Consistent measurements with your lightwave equipment are a good indication that you have good connections. Since return loss and insertion loss are key factors in determining optical connector performance they can be used to determine connector degradation. A smooth, polished fiber end should pro-

duce a good return-loss measurement. The quality of the polish establishes the difference between the “PC” (physical contact) and the “Super PC” connectors. Most connectors today are physical contact which make glass-to-glass connections, therefore it is critical that the area around the glass core be clean and free of scratches. Although the major area of a connector, excluding the glass, may show scratches and wear, if the glass has maintained its polished smoothness, the connector can still provide a good low level return loss connection.

If you test your cables and accessories for insertion loss and return loss upon receipt, and retain the measured data for comparison, you will be able to tell in the future if any degradation has occurred. Typical values are less than 0.5 dB of loss, and sometimes as little as 0.1 dB of loss with high performance connectors. Return loss is a measure of reflection: the less reflection the better (the larger the return loss, the smaller the reflection). The best physically contacting connectors have return losses better than 50 dB, although 30 to 40 dB is more common.

Visual inspection of fiber ends

Visual inspection of fiber ends can be helpful. Contamination or imperfections on the cable end face can be detected as well as cracks or chips in the fiber itself. Use a microscope (100X to 200X magnification) to inspect the entire end face for contamination, raised metal, or dents in the metal as well as any other imperfections. Inspect the fiber for cracks and chips. Visible imperfections not touching the fiber core may not affect performance (unless the imperfections keep the fibers from contacting).

Cleaning Connectors

The procedures in this section provide the proper steps for cleaning fiber-optic cables and Agilent Technologies universal adapters. The initial cleaning, using the alcohol as a solvent, gently removes any grit and oil. If a caked-on layer of material is still present, (this can happen if the beryllium-copper sides of the ferrule retainer get scraped and deposited on the end of the fiber during insertion of the cable), a second cleaning should be performed. It is not uncommon for a cable or connector to require more than one cleaning.

CAUTION

Agilent Technologies strongly recommends that index matching compounds *not* be applied to their instruments and accessories. Some compounds, such as gels, may be difficult to remove and can contain damaging particulates. If you think the use of such compounds is necessary, refer to the compound manufacturer for information on application and cleaning procedures.

Table 1-10. Cleaning Accessories

Item	Agilent Part Number
Isopropyl alcohol	8500-5344
Cotton swabs	8520-0023
Small foam swabs	9300-1223
Compressed dust remover (non-residue)	8500-5262

Table 1-11. Dust Caps Provided with Lightwave Instruments

Item	Agilent Part Number
Laser shutter cap	08145-64521
FC/PC dust cap	08154-44102
Biconic dust cap	08154-44105
DIN dust cap	5040-9364
HMS10/dust cap	5040-9361
ST dust cap	5040-9366

To clean a non-lensed connector

CAUTION Do not use any type of foam swab to clean optical fiber ends. Foam swabs can leave filmy deposits on fiber ends that can degrade performance.

1. Apply pure isopropyl alcohol to a clean lint-free cotton swab or lens paper.

   Cotton swabs can be used as long as no cotton fibers remain on the fiber end after cleaning.

2. Clean the ferrules and other parts of the connector while avoiding the end of the fiber.
3. Apply isopropyl alcohol to a new clean lint-free cotton swab or lens paper.
4. Clean the fiber end with the swab or lens paper.

   Do *not* scrub during this initial cleaning because grit can be caught in the swab and become a gouging element.

5. Immediately dry the fiber end with a clean, dry, lint-free cotton swab or lens paper.
6. Blow across the connector end face from a distance of 6 to 8 inches using

filtered, dry, compressed air. Aim the compressed air at a shallow angle to the fiber end face.

Nitrogen gas or compressed dust remover can also be used.

CAUTION Do not shake, tip, or invert compressed air canisters, because this releases particles in the can into the air. Refer to instructions provided on the compressed air canister.

7 As soon as the connector is dry, connect or cover it for later use.

If the performance, after the initial cleaning, seems poor try cleaning the connector again. Often a second cleaning will restore proper performance. The second cleaning should be more arduous with a scrubbing action.

To clean an adapter

The fiber-optic input and output connectors on many Agilent Technologies instruments employ a universal adapter such as those shown in the following picture. These adapters allow you to connect the instrument to different types of fiber-optic cables.



Figure 1-7. Universal adapters.

1 Apply isopropyl alcohol to a clean foam swab.

Cotton swabs can be used as long as no cotton fibers remain after cleaning. The foam swabs listed in this section's introduction are small enough to fit into adapters.

Although foam swabs can leave filmy deposits, these deposits are very thin, and the risk of other contamination buildup on the inside of adapters greatly outweighs the risk of contamination by foam swabs.

2 Clean the adapter with the foam swab.

3 Dry the inside of the adapter with a clean, dry, foam swab.

4 Blow through the adapter using filtered, dry, compressed air.

Nitrogen gas or compressed dust remover can also be used. Do not shake, tip, or invert compressed air canisters, because this releases particles in the can into the air. Refer to instructions provided on the compressed air canister.

Returning the Instrument for Service

The instructions in this section show you how to properly package the instrument for return to a Agilent Technologies service office. For a list of offices, refer to “Agilent Technologies Service Offices” on page 1-42.

If the instrument is still under warranty or is covered by an Agilent maintenance contract, it will be repaired under the terms of the warranty or contract (the warranty is at the front of this manual). If the instrument is no longer under warranty or is not covered by an Agilent maintenance plan, Agilent will notify you of the cost of the repair after examining the unit.

When an instrument is returned to a Agilent service office for servicing, it must be adequately packaged and have a complete description of the failure symptoms attached.

When describing the failure, please be as specific as possible about the nature of the problem. Include copies of additional failure information (such as the instrument failure settings, data related to instrument failure, and error messages) along with the original cal data disks and the instrument being returned.

Please notify the service office before returning your instrument for service. Any special arrangements for the instrument can be discussed at this time. This will help the Agilent service office repair and return your instrument as quickly as possible.

Preparing the instrument for shipping

1 Write a complete description of the failure and attach it to the instrument. Include any specific performance details related to the problem. The following

information should be returned with the instrument.

- Type of service required.
- Date instrument was returned for repair.
- Description of the problem:
  - Whether problem is constant or intermittent.
  - Whether instrument is temperature-sensitive.
  - Whether instrument is vibration-sensitive.
  - Instrument settings required to reproduce the problem.
  - Performance data.
- Company name and return address.
- Name and phone number of technical contact person.
- Model number of returned instrument.
- Full serial number of returned instrument.
- List of any accessories returned with instrument.
- The original cal data disks.

2 Cover all front or rear-panel connectors that were originally covered when you first received the instrument.

CAUTION Cover electrical connectors to protect sensitive components from electrostatic damage. Cover optical connectors to protect them from damage due to physical contact or dust.

CAUTION Instrument damage can result from using packaging materials other than the original materials. Never use styrene pellets as packaging material. They do not adequately cushion the instrument or prevent it from shifting in the carton. They may also cause instrument damage by generating static electricity.

3 Pack the instrument in the original shipping containers. Original materials are available through any Agilent office. Or, use the following guidelines:

- Wrap the instrument in antistatic plastic to reduce the possibility of damage caused by electrostatic discharge.
- For instruments weighing less than 54 kg (120 lb), use a double-walled, corrugated cardboard carton of 159 kg (350 lb) test strength.
- The carton must be large enough to allow approximately 7 cm (3 inches) on all sides of the instrument for packing material, and strong enough to accommodate the weight of the instrument.
- Surround the equipment with approximately 7 cm (3 inches) of packing material, to protect the instrument and prevent it from moving in the carton. If packing foam is not available, the best alternative is S.D-240 Air Cap™ from

Sealed Air Corporation (Commerce, California 90001). Air Cap looks like a plastic sheet filled with air bubbles. Use the pink (antistatic) Air Cap™ to reduce static electricity. Wrapping the instrument several times in this material will protect the instrument and prevent it from moving in the carton.

4 Seal the carton with strong nylon adhesive tape.

5 Mark the carton “FRAGILE, HANDLE WITH CARE”.

6 Retain copies of all shipping papers.

Agilent Technologies Service Offices

Before returning an instrument for service, call the Agilent Technologies Instrument Support Center at (800) 403-0801, visit the Test and Measurement Web Sites by Country page at http://www.tm.agilent.com/tmo/country/English/index.html, or call one of the numbers listed below.

Agilent Technologies Service Numbers

Austria	01/25125-7171
Belgium	32-2-778.37.71
Brazil	(11) 7297-8600
China	86 10 6261 3819
Denmark	45 99 12 88
Finland	358-10-855-2360
France	01.69.82.66.66
Germany	0180/524-6330
India	080-34 35788
Italy	+39 02 9212 2701
Ireland	01 615 8222
Japan	(81)-426-56-7832
Korea	82/2-3770-0419
Mexico	(5) 258-4826
Netherlands	020-547 6463
Norway	22 73 57 59
Russia	+7-095-797-3930
Spain	(34/91) 631 1213
Sweden	08-5064 8700
Switzerland	(01) 735 7200
United Kingdom	01 344 366666
United States and Canada	(800) 403-0801

2

Working in Comfort

Working in Comfort

To optimize your comfort and productivity, it is important that you set up your work area correctly and use your Agilent product properly. With that in mind, we have developed some setup and use recommendations for you to follow based on established ergonomic principles.

Improper and prolonged use of keyboards and input devices are among those tasks that have been associated with repetitive strain injury (RSI) to soft tissues in the hands and arms. If you experience discomfort or pain while using your Agilent Technologies product, discontinue use immediately and consult your physician as soon as possible.

Please study the recommendations offered here in this chapter. You may also wish to consult your employer's human resources department or other relevant departments for guidance specific to your company.

About Repetitive Strain Injury

Because your comfort and safety are our primary concern, we strongly recommend that you use the infiniium DCA in accordance with established ergonomic principles and recommendations. Scientific literature suggests that there may be a relationship between injury to soft tissues - especially in the hands and arms - and prolonged improper use of keyboards or other equipment requiring repeated motions of the hands and forearms. This literature also suggests that there are many other risk factor that may increase the chance of such injury, commonly called Repetitive Strain Injury.

What is RSI?

Repetitive Strain Injury (RSI—also known as cumulative trauma disorder or repetitive motion injury) is a type of injury where soft tissues in the body, such as muscles, nerves, or tendons, become irritated or inflamed. RSI has been a reported problem for those who perform repetitive tasks such as assembly line work, meatpacking, sewing, playing musical instruments, and computer work.

RSI has also been observed in those who frequently engage in activities such as carpentry, knitting, housework, gardening, tennis, windsurfing and lifting children.

What causes RSI?

The specific causes of RSI have not been established. Nevertheless, the incidence of RSI has been associated with a variety of risk factors, including:

- Too many uninterrupted repetitions of an activity or motion.
- Performing an activity in an awkward or unnatural posture.
- Maintaining a static position for prolonged periods.
- Failing to take frequent short breaks.
- Other environmental and social factors.

In addition, there have been reports associating the occurrence of RSI with the use of keyboards, mice, and other input devices. Also, certain medical conditions, such as rheumatoid arthritis, obesity and diabetes, may predispose people to this type of injury.

What if I experience discomfort?

If you are experiencing any discomfort, seek professional medical advice immediately. Typically, the earlier a problem is diagnosed and treated, the easier it is to resolve.

Mice and Other Input Devices

Various aspects of using mice and other input devices may increase your risk of discomfort or injury. Observing the following recommendations may reduce that risk.

- Try to keep your hand, wrist, and forearm in a neutral position while using your mouse or other input device.
- If you use your thumb to rotate the ball on a trackball or spaceball, keep it in a relaxed, natural shape, and maintain a neutral posture in your hand, wrist, and forearm.
- Hold the mouse gently by draping your fingers over it. Keep your hand relaxed and fingers loose. Do not grip the mouse tightly.
- It takes very little pressure or force from your fingers to activate the buttons or scroll wheel on your mouse, scrolling mouse, trackball, or other input device. Using too much force can place unnecessary stress on the tendons and muscles

in your hands, wrists, and forearms.

- If you are using a scrolling mouse, be sure to keep your fingers and hand in a relaxed, neutral position when activating the scroll wheel. Also, this type of mouse features software that can minimize the number of mouse movements or button clicks.
- When using a mouse, trackball, or other input device, position it as close to the keyboard as possible, and keep it at the same level as you do not have to stretch while using it.
- Use a good quality mouse pad to enable the mouse to work most effectively and reduce unnecessary hand and wrist movements.
- Be sure to keep your mouse and trackball clean. Regular removal of accumulated dust and dirt helps ensure proper tracking and reduces unnecessary hand and wrist motions.

3

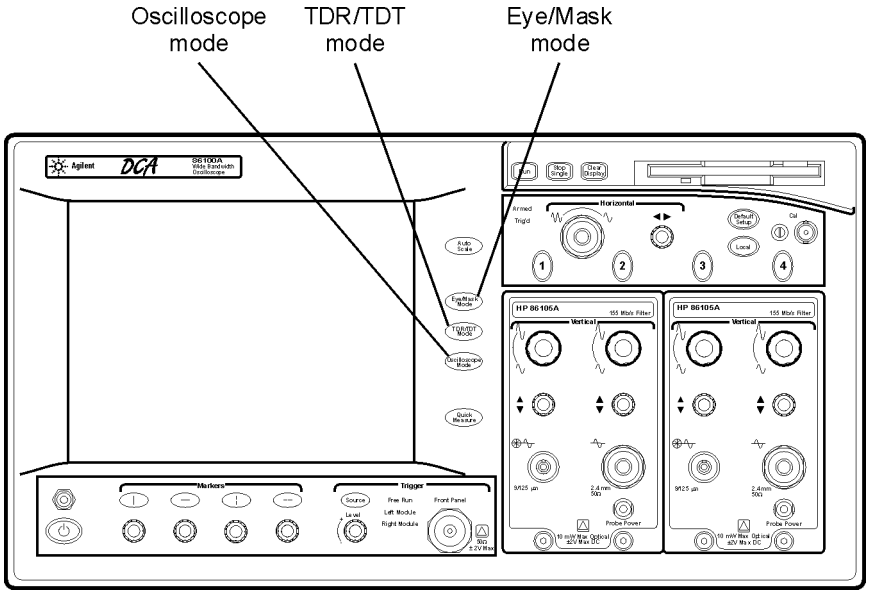
Introduction 3-2
Oscilloscope Mode 3-8
Eye/Mask Mode 3-7
TDR/TDT Mode 3-9
Using Plug-in Modules 3-10
Using the Touch Screen 3-12
Using the Quick Measure Feature 3-14
If the Display Goes Blank 3-15
Hiding and Moving Dialog Boxes 3-16
Menus 3-17

Using the Infiniium DCA

Introduction

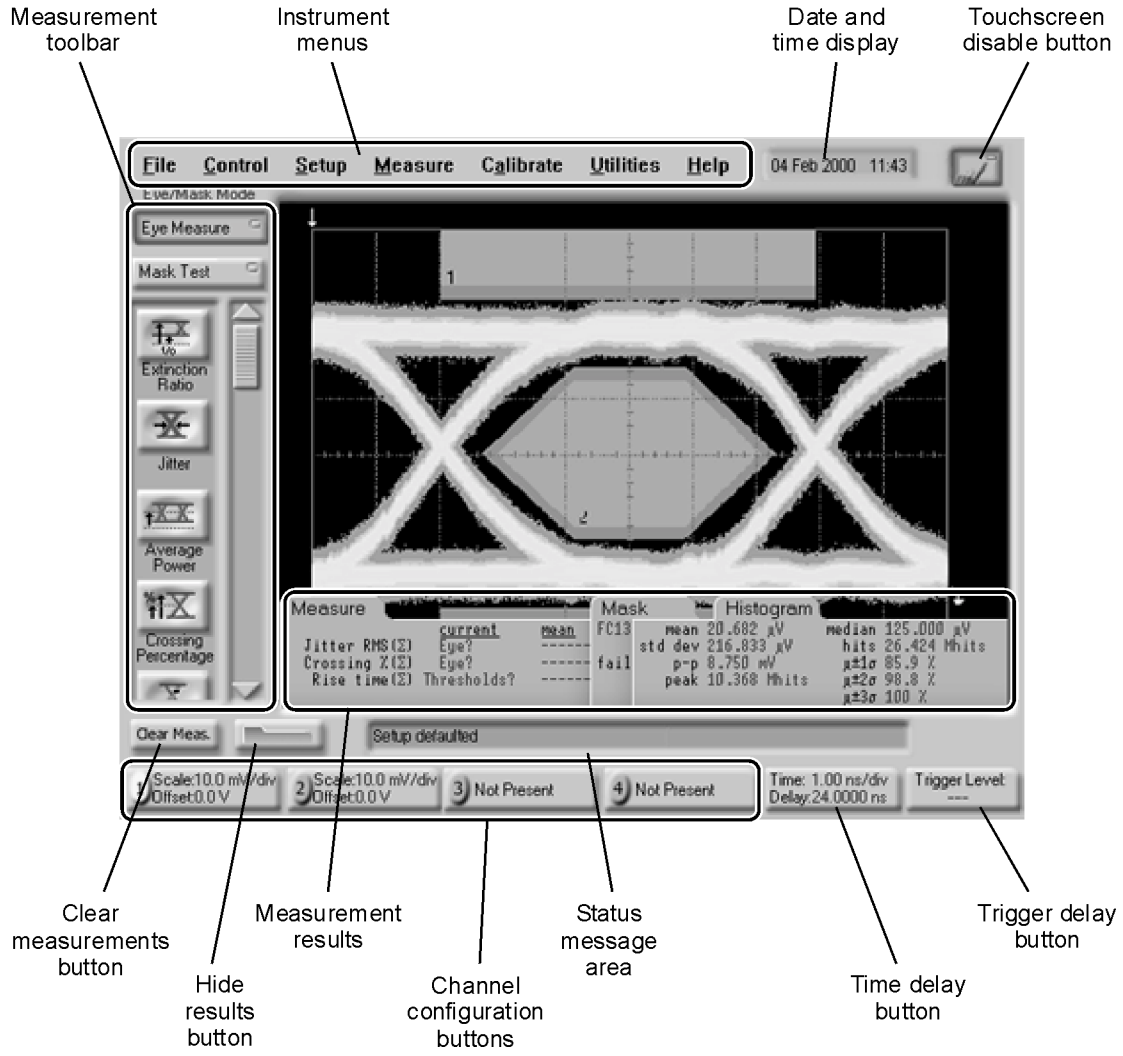
The Infiniium DCA is designed to measure a variety of high speed digital communication waveforms. You can operate it in any of the following three instrument modes:

- Eye/Mask Mode (100 Mb/s to 10 Gb/s) for eye diagram analysis and standards testing (for example, SONET/SDH, Gigabit Ethernet, and Fiber Channel).
- TDR/TDT Mode for time domain reflectometry measurements
- Oscilloscope Mode (DC to 20 GHz or 50 GHz)



Use the touch screen

You can explore the instrument's menus and change its settings by touching the display. Notice that the measurement toolbar changes depending on the selected instrument mode. Touch the channel, time and delay, and trigger level buttons located at the bottom of the display to change the horizontal and vertical scales. Or, you can change these settings using front-panel knobs and buttons.

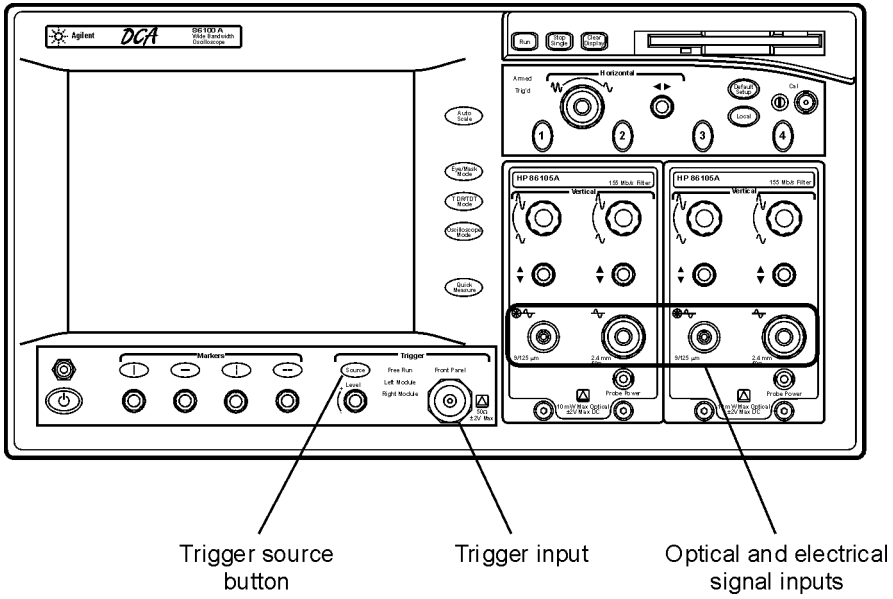


Refer to the built-in information system

To learn how to use your Infiniium DCA and to locate information on specifications (including plug-in modules), instrument features, and measurement configuration refer to Chapter 4, “Using the Built-In Information System” in this book.

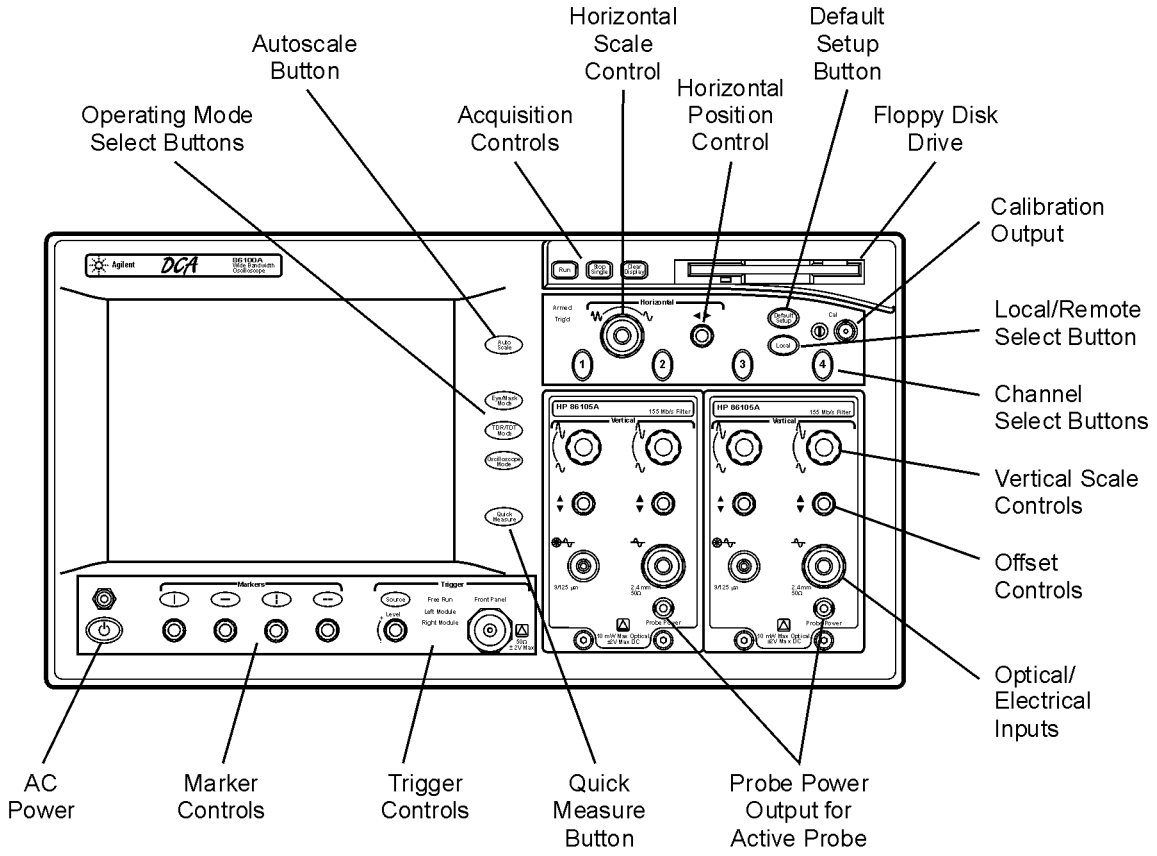
You must provide a trigger input signal

Because high-speed oscilloscopes are not capable of triggering directly on a test signal, you must first connect an external timing reference signal to the front-panel trigger input connector. This input allows the Infiniium DCA to synchonize to the input signal. You can select free-run triggering when an external trigger is unavailable. However, you will only be able to view the waveform for amplitude information only without any timing information. This is an easy way to examine the amplitude of a signal.

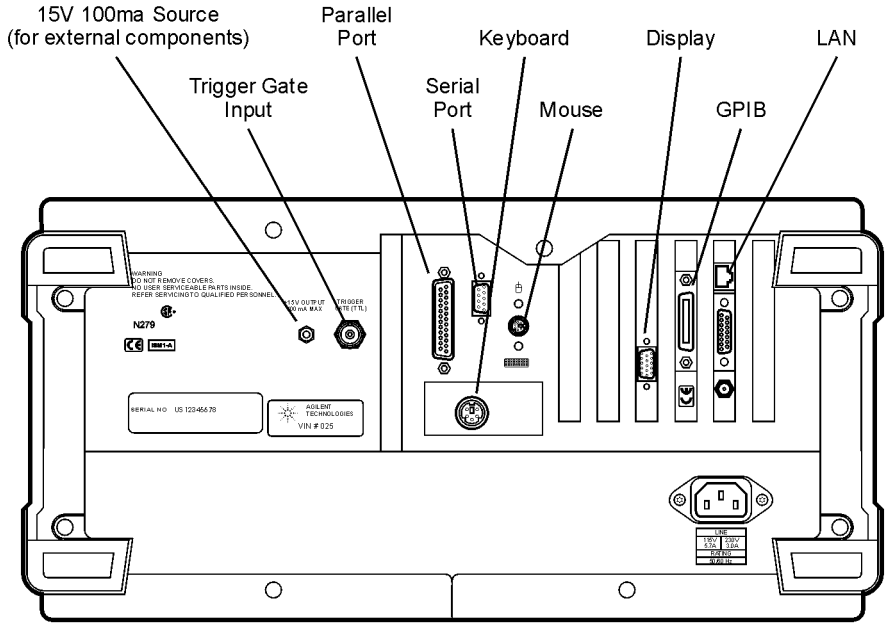


Front-panel features

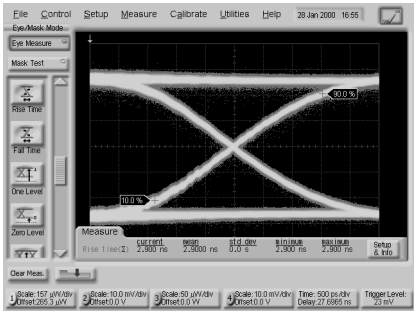
The following figure shows the input connectors, controls, power switch, and other front-panel features available on the Infiniium DCA.



Rear-panel features



Eye/Mask Mode



The Eye/Mask mode allows you to perform eye diagram measurements and eye mask tests. The eye diagram is typically produced by triggering the instrument with a synchronous clock signal.

Eye/Mask mode measurements only work when an eye diagram, and not a pulse, is present on the screen. Measurements made on a pulse waveform while in Eye/Mask mode will fail.

Once you are in Eye/Mask mode, press the Autoscale button. This ensures that an optimum eye diagram is displayed on the graticule. An optimum eye diagram consists of a full display of the eye in addition to portions of the waveform preceding and following the eye.

When you select the Eye/Mask mode, the measurement toolbars shown here appear. These measurement toolbars include measurements such as rise time, fall time, jitter, and extinction ratio, as well as the mask test start and stop controls.



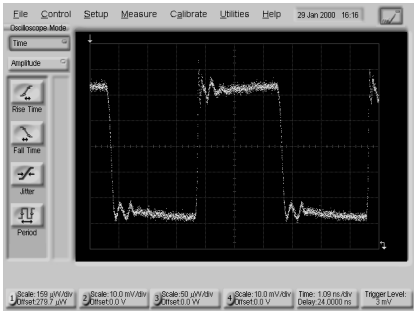


Eye measurement and mask test results appear below the display graticule. A maximum of four eye measurement test results are displayed and include any failures or instrument messages that may occur.

To learn more about the Eye/Mask mode, consult the instrument's built-in information system.

Oscilloscope Mode

Use the Oscilloscope mode for pulse type waveforms that are triggered by an external signal. Oscilloscope mode measurements only work when a single valued waveform, and not an eye diagram, is present on the screen.



When you select the Oscilloscope mode, the measurement toolbars shown here appear. These measurement toolbars include measurements such as rise time, fall time, overshoot, and Vp-p. All measurements, with the exception of jitter, can be performed on any of the following sources: channels, waveform memories, and math functions. One of the above sources must be turned on in order to perform an oscilloscope measurement.



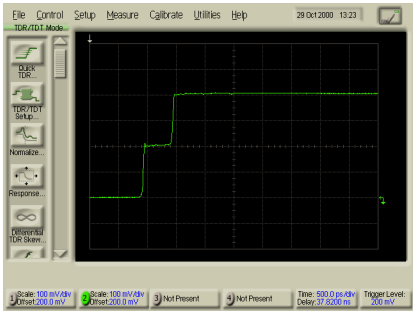


If more than one source is turned on and you initiate a measurement, the Enter Measurement Info dialog box opens. This dialog box allows you to select the source you want to use for the measurement.

Measurement results appear below the display graticule. A maximum of four pulse measurement test results are displayed and include any failures or instrument messages that may occur.

To learn more about the Oscilloscope mode, consult the instrument's built-in information system.

TDR/TDT Mode



The TDR/TDT mode allows you use time domain reflectometry (TDR) to verify the proper functioning of the physical components of your device under test using a time-delayed electrical pulse. You can also use time domain transmission (TDT) to measure both the attenuation and propagation delay of your device under test.

TDR/TDT mode measurements when using a single-ended or differential TDR/TDT 5475x series plug-in module.



When you select the TDR/TDT mode, the measurement toolbar shown here appears. This measurement toolbar includes measurements such as Quick TDR, normalization, rise time, and fall time. Quick TDR allows you to view an immediate display of the characteristics of your device under test. You can also use this toolbar to perform tasks such as setting up the stimulus and destination for your measurement.

You can use markers to to verify the impedance, voltage, and percent of reflection of a selected point on the waveform trace. TDR/TDT markers are initiated by turning on the X-axis marker(s) only. The Y-axis marker(s) will then track the waveform at the position determined by the X-axis marker. You can view the position of the marker values in the marker values tab located below the display graticule.

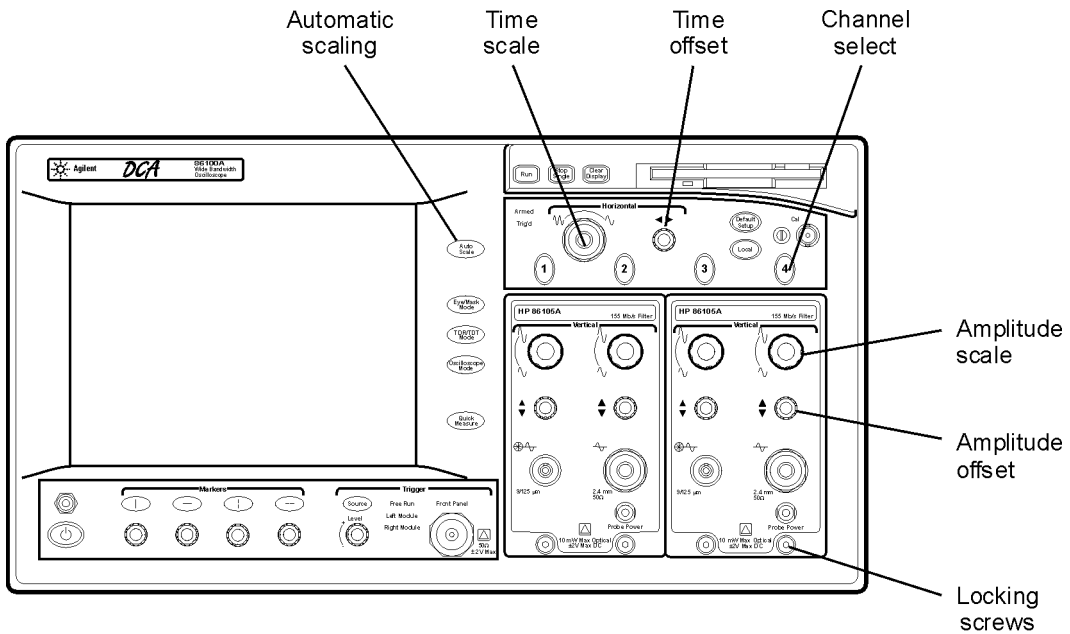
To learn more about the TDR/TDT mode, consult the instrument's built-in information system.

Using Plug-in Modules

The Infiniium DCA holds up to two plug-in modules which can provide up to four measurement channels. Each input channel has its own vertical controls. The amplitude scale knob adjusts the amplitude scale used for the input channel. Use the amplitude offset knob to position the displayed signal. You can also set the amplitude scale and offset to specific values by touching of channel buttons shown to at the bottom of the display.

To install a module

- Slide the module into an available slot and finger tighten the two front-panel locking screws.



You can use 8348x and 5475x series plug-in modules

In addition to a complete line of modules designed specifically for this instrument, modules designed for use with HP/Agilent 83480A and 54750A mainframes can also be installed into the Infiniium DCA. The 8348x and 5475x series plug-in modules are equipped with a trigger input on the individual module front panels. Repeatedly press the Infiniium DCA's front-panel Trigger Source button until the label for the desired trigger source is lit.

CAUTION

Electrical channel input circuits and the trigger input circuit can be damaged by electrostatic discharge (ESD). Avoid applying static discharges to the front-panel input connectors. Prior to connecting any coaxial cable to the connectors, momentarily short the center and outer conductors of the cable together. Avoid touching the front-panel input connectors without first touching the frame of the instrument. Be sure that the instrument is properly earth-grounded to prevent buildup of static charge. Wear a wrist-strap or heel-strap.

CAUTION

Optical channel fiber-optic connectors are easily damaged when connected to dirty or damaged cables and accessories. When you use improper cleaning and handling techniques, you risk expensive instrument repairs, damaged cables, and compromised measurements. Before you connect any fiber-optic cable to the digital communications analyzer, refer to "Cleaning Connections for Accurate Measurements" on page 1-30.

Using the Touch Screen

There may be times when you would like to disable the touch screen feature. For example, when pointing out a measurement result without initiating a change to the instrument. You can temporarily disable the touch screen for this purpose.

A touch screen configuration utility can be used to ensure that the touch screen is both aligned and orientated with the display. It also allows you to adjust the touch screen speed to simulate a double-click and to turn the touch screen sound on or off.

To temporarily disable the touch screen

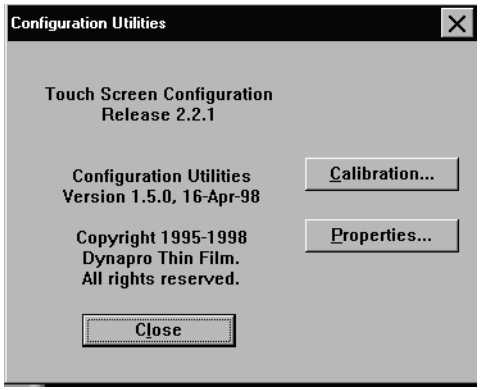
- Touch the disable button which is located at the top of the display. Touch the button a second time to reenable the touch screen.



To configure the touch screen

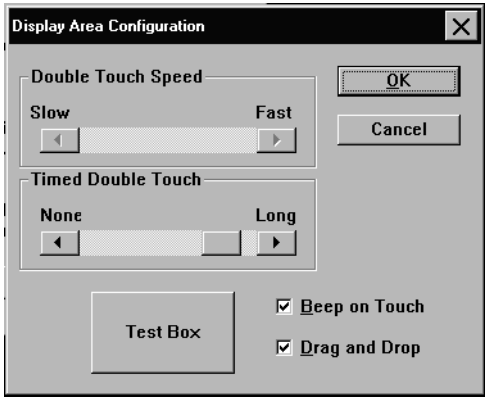
1 On the Utilities menu, select Touch Screen Config.

The touch screen configuration utility is displayed.



2 Touch Calibration and follow the displayed instructions.

3 After returning to the Configuration Utilities dialog box shown above, touch Properties. Make any desired changes.

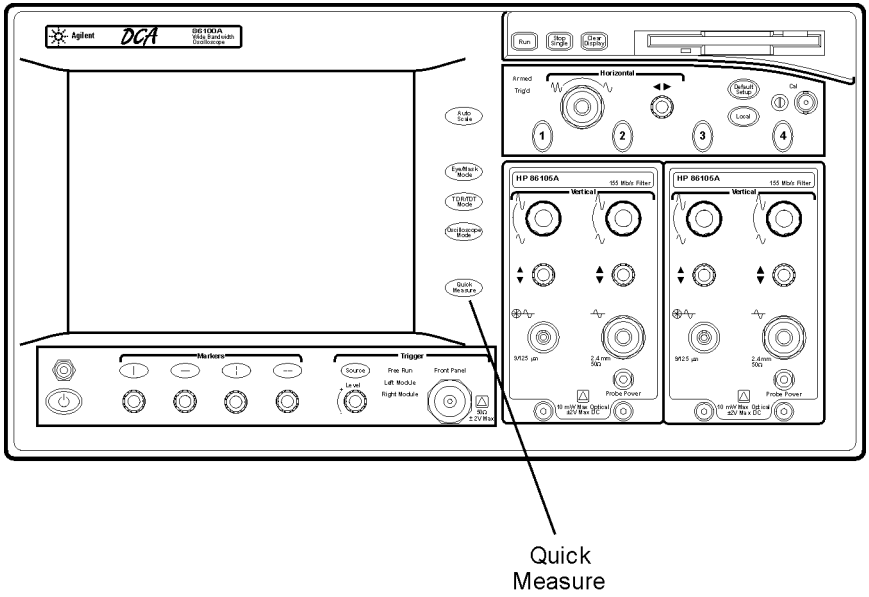


Using the Quick Measure Feature

Press the user-definable Quick Measure button and the Infiniium DCA automatically performs four measurements on a displayed signal. You can configure Quick Measure to include any four measurements located on the measurement tool bar. Quick Measure has a default set of measurements for each instrument mode. For example, in Oscilloscope mode the default measurements are: peak-to-peak voltage, period, frequency, and rise time. In Eye/Mask mode you can also configure Quick Measure to perform a mask test.

To configure Quick Measure

- On the Measure menu, select Quick Measure Config.



If the Display Goes Blank

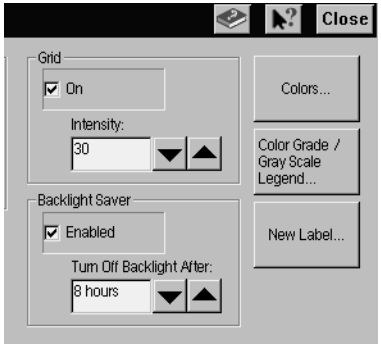
The display automatically turns off if the Infiniium DCA is powered over an eight hour period without being used. The purpose of this feature is to extend the life of the display. You can adjust the amount of time that must elapse before the screen is turned off by the backlight saver utility (for example, 2, 4, 6, or 8 hours). This feature is especially useful if you are using remote measurements or leaving the instrument unattended for long periods of time. Although not recommended, you can disable this control so that the backlight is never turned off during inactivity.

To reactivate the display

- Touch the display screen
- Move the mouse (if applicable)
- Touch any button on the instrument front panel
- Turn any knob on the instrument front panel

To configure the backlight saver

1. Choose Display from the Setup menu.
2. Touch or click the Enabled check box to enable or disable the backlight control.



Hiding and Moving Dialog Boxes

Sometimes, dialog boxes may cover portions of a displayed signal and graticule that you wish to see. You can either move the dialog box or make it transparent.

To move a dialog box

- Touch the top of the dialog box, and drag your finger across of display to move the dialog box to a more convenient location.

To make a dialog box transparent

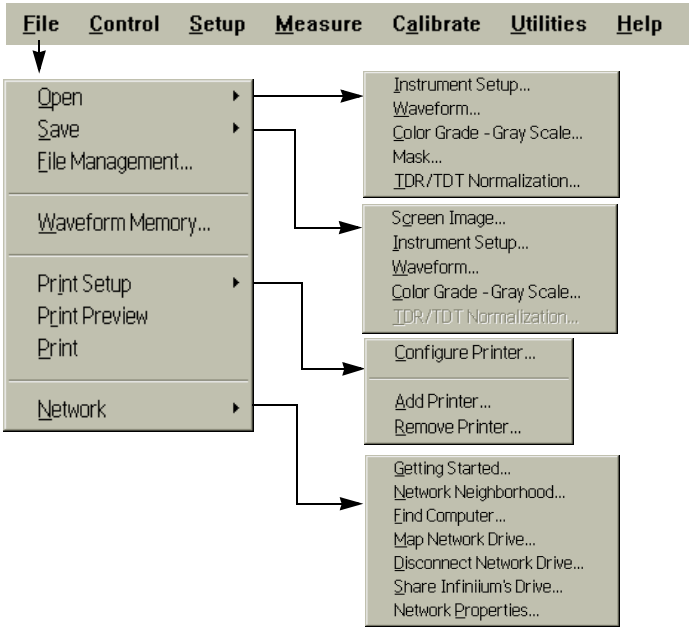
1. Select Dialog Boxes from the Setup menu.
2. Touch or click Opaque or Transparent.



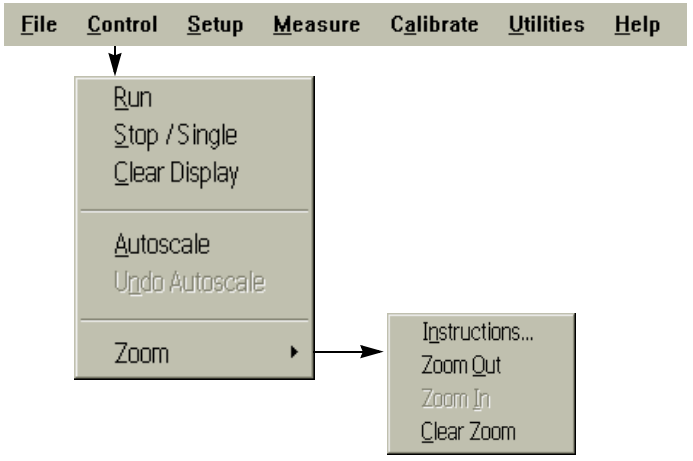
Menus

The menu includes the File, Control, Setup, Measure, Calibrate, Utilities, and Help drop-down menus. For detailed information on each of these menus, see the built-in information system.

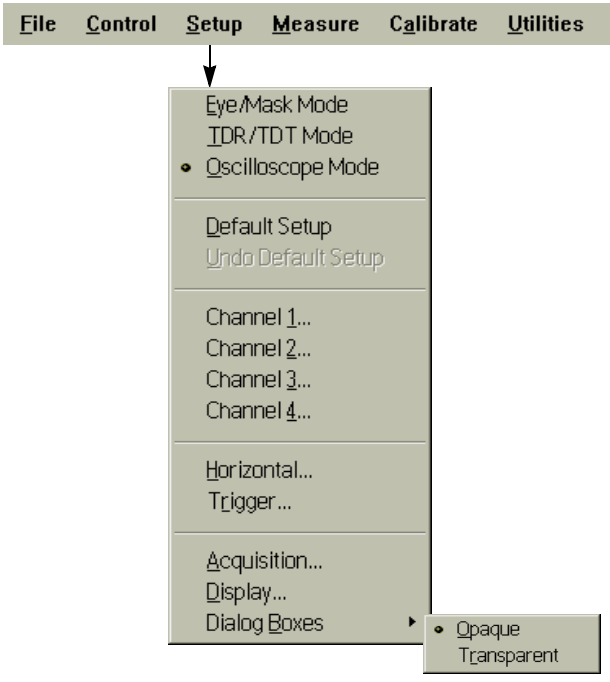
The File menu



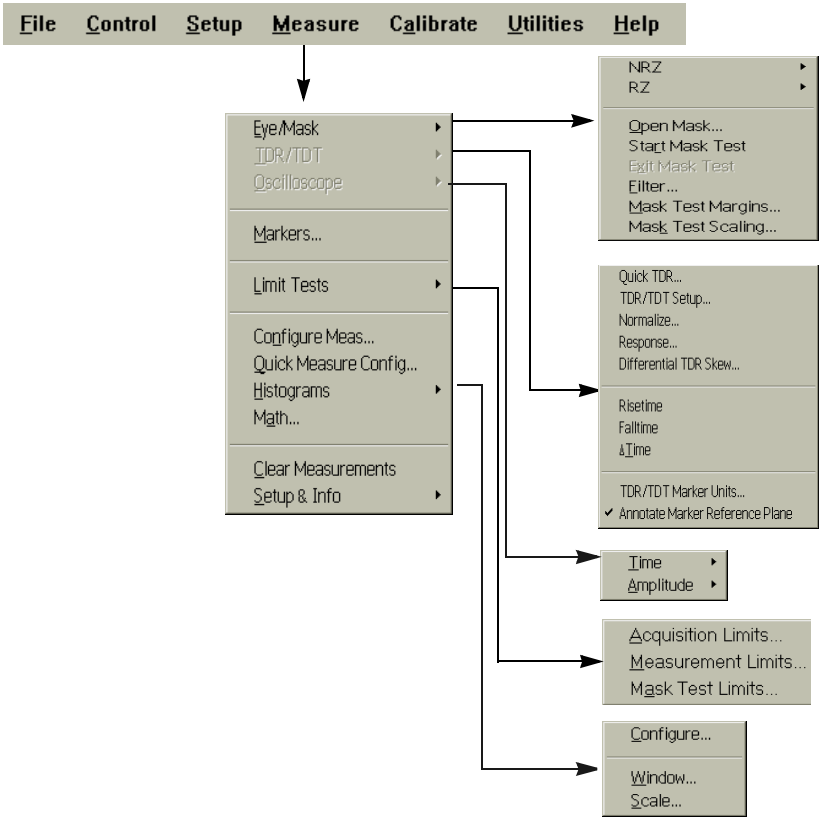
The Control menu



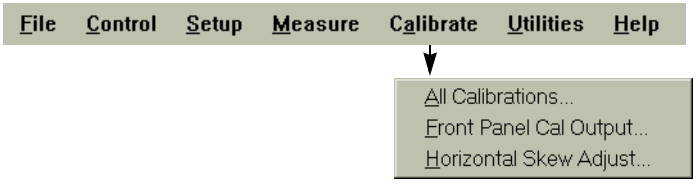
The Setup menu



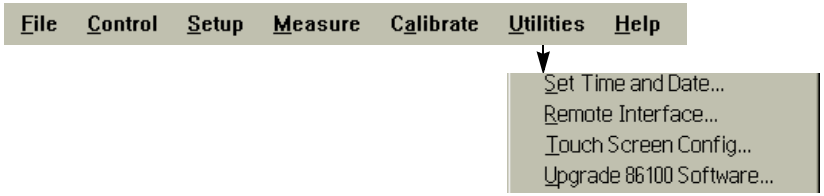
The Measure menu



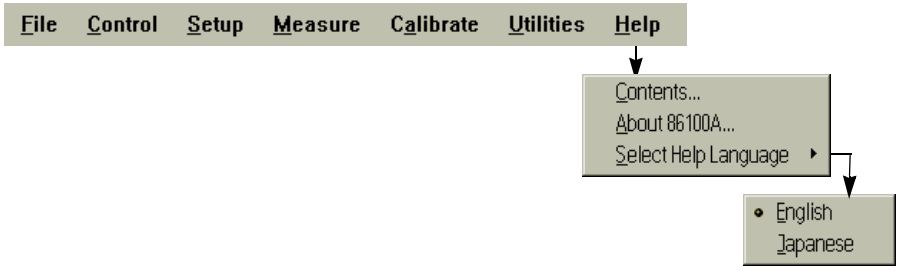
The Calibrate menu



The Utilities menu



The Help menu



4

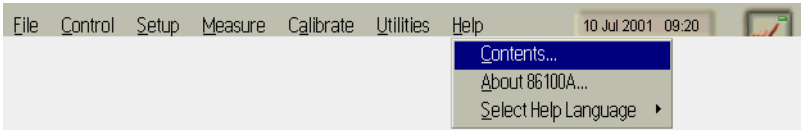
The Contents Topic 4-3
Using Setup Guides 4-4
Getting Help While Changing Instrument Settings 4-6
Learning About Measurements Results 4-7
Hiding the Built-in Information System 4-8
Printing the Contents of a Topic 4-9
Selecting the Built-in Information System Language 4-10

Using the Built-In Information System

Using the Built-In Information System

Where is the operating manual for your infiniium DCA? It is built into your instrument! To access the built-in information system, simply touch Contents on the Help menu. This will display the contents topic that is shown in the figure on the following page. In this chapter, you'll learn features that are unique to the Infiniium DCA's built-in information system as well as tips that will make the system more useful to you.

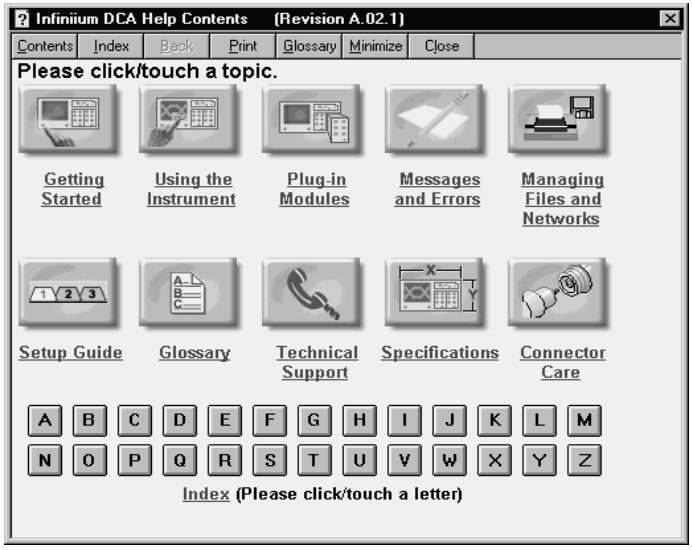
Navigating through the system should be familiar to you because it is similar to other Windows applications. You can, of course, navigate through the help by either using the touch screen capability or the mouse.



The Contents Topic

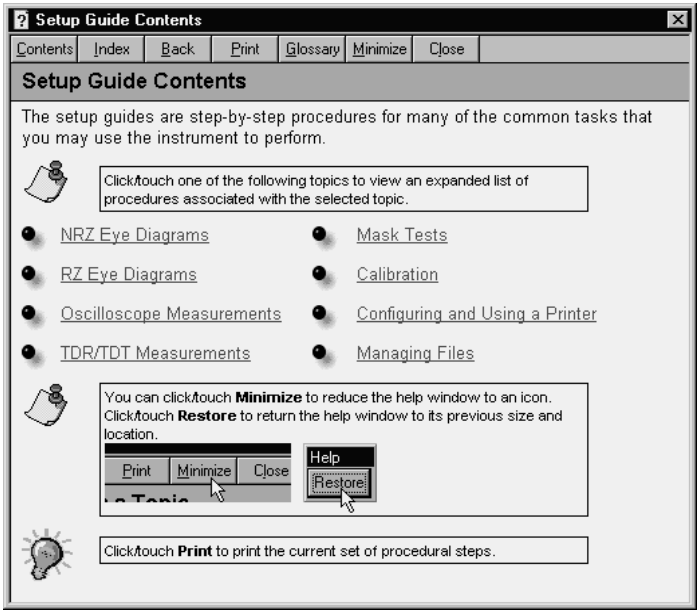
The following figure shows the contents for the built-in information system. This is the starting point for learning how to use your Infiniium DCA. From this location, you can also access information such as instrument specifications and the algorithms used in the measurements.

In addition to the 10 topics presented in the contents, be sure to use the index buttons located along the bottom. These can be very helpful in locating a topic of interest.

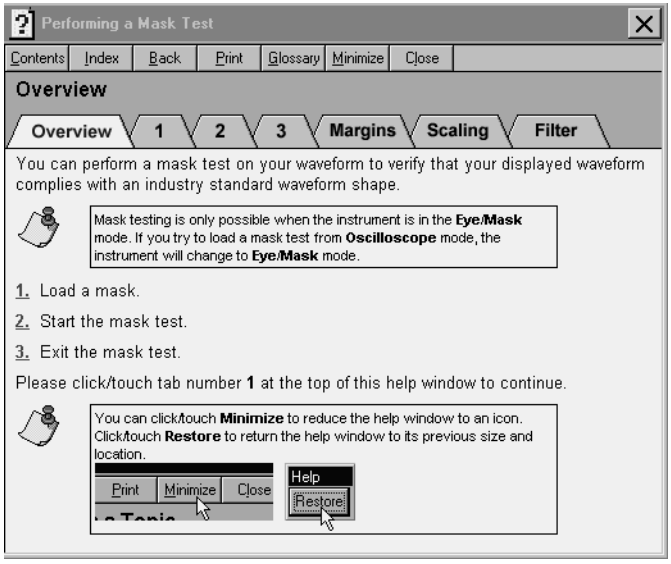


Using Setup Guides

The setup guides give you step-by-step procedures for many configuration and measurement tasks. To find the setup guides, touch the Setup Guide button in the contents. This brings up the Setup Guide Contents shown in the following figure. From this topic you can access a variety of step-by-step procedures.



The following figure shows an example of a setup guide. Notice that it shows several tabs including the Overview tab. Simply follow the steps shown, and then touch the next tab to proceed further.



Viewing the screen to perform the steps

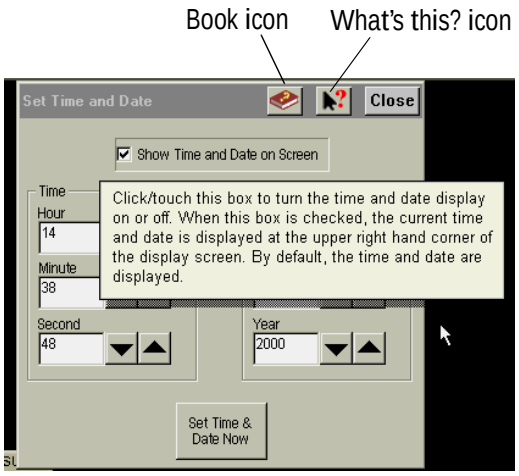
Sometimes, the setup guide may cover portions of the display that you wish to see. Use the following techniques to view the display:

- Touch the top of the setup guide, and drag your finger across of display to move the setup guide to a more convenient location.
- Temporarily hide the information system. Refer to "Hiding the Built-in Information System" on page 4-8.
- Print the instructions if you have a printer connected to the instrument.

Getting Help While Changing Instrument Settings

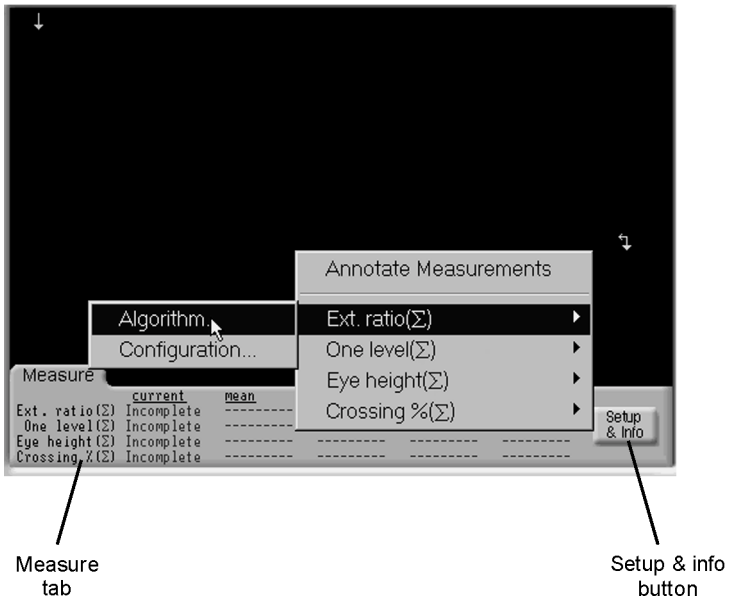
Help is available directly from dialog boxes in the graphical user interface.

- To see overview information in an open dialog box, touch the Book icon. A topic window opens and describes the dialog box and its controls.
- To get information on a specific item in the dialog box, touch the What's this? icon. Then touch the desired control on the dialog box. A window appears with a description of the selected control, as shown in the following figure.



Learning About Measurements Results

After a measurement is performed, the displays shows the Measure tab which includes the measurement results. The fastest way to get help on measurement configuration or algorithms is to touch the Setup & Info button. The following figure shows the location of this button.



Hiding the Built-in Information System

When using the built-in information system, you can temporarily hide it so that you can see the entire display. Then, you can re-display the built-in information system with the same topic still showing.

- To hide the built-in information system, touch the Minimize button located at the top of the built-in information system.



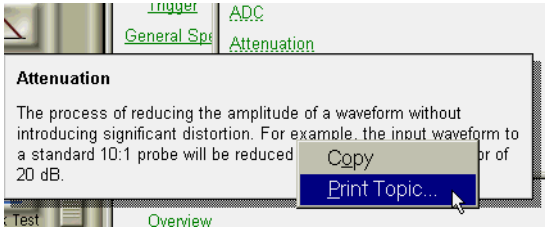
- To re-display the built-in information system, touch the Restore button that is shown on the display.



Printing the Contents of a Topic

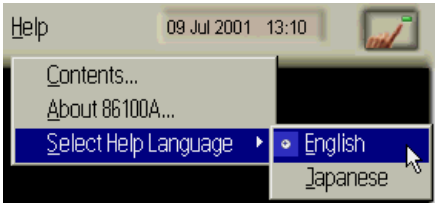
You can print the entire contents of a help topic or a pop-up window.

1. Connect a printer and a mouse pointing device to the Infiniium DCA.
2. Place the pointer over the topic, and click the right button. Then click on Print Topic.



Selecting the Built-in Information System Language

Help is available in more than one language. On the Help menu, touch Select Help Language, and then touch the language you want to view. You can only one version of help at a time.



Help Version

Refer to the English version of help to view the most current information about instrument features and specifications.

5

Regulatory Information

Regulatory Information

Notice for Germany: Noise Declaration

Acoustic Noise Emission	Geraeuschemission
LpA < 70 dB	LpA < 70 dB
Operator position	am Arbeitsplatz
Normal position	normaler Betrieb
per ISO 7779	nach DIN 45635 t.19

Notice for Canada: Compliance with Canadian EMC Requirements

This ISM device complies with Canadian ICES-001.

Cet appareil ISM est conforme a la norme NMB du Canada.

DECLARATION OF CONFORMITY

According to ISO/IEC Guide 22 and CEN/CENELEC EN 45014

Manufacturer's Name: Agilent Technologies, Inc.
Manufacturer's Address: 1400 Fountaingrove Parkway
Santa Rosa, CA 95403-1799
USA

Declares that the product:

Product Name: Infiniium DCA

Model Number: 86100A

Product Options: This declaration covers all options of the above product.

Is in conformity with:

Safety: IEC 61010-1:1990 +A1:1992+A2:1995 / EN 61010-1:1994+A2:1995
CAN/CSA-C22.2 No. 1010.1-92

EMC: CISPR 11:1990/EN 55011:1991 Group 1, Class A
IEC 61000-4-2:1995+A1:1998 / EN 61000-4-2:1995, 4 kV CD, 8 kV AD
IEC 61000-4-3:1995 / EN 61000-4-3:1995, 3 V/m, 80-1000 MHz
IEC 61000-4-4:1995 / EN 61000-4-4:1995, 0.5 kV sig. lines, 1 kV pow. lines
IEC 61000-4-5:1995 / EN 61000-4-5:1995, 0.5 kV l-l, 1 kV l-e
IEC 61000-4-6:1996 / EN 61000-4-6:1996, 3V 80% AM, power line
IEC 61000-4-11:1994 / EN 61000-4-11:1994, 100 %, 20 ms

Supplementary Information:
The product herewith complies with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC and carries the CE-marking accordingly.



Santa Rosa, CA, USA 4 Feb. 2000

Greg Pfeiffer/Quality Engineering Manager

For further information, please contact your local Agilent Technologies sales office, agent or distributor.

DECLARATION OF CONFORMITY

According to ISO/IEC Guide 22 and CEN/CENELEC EN 45014

Manufacturer's Name:	Agilent Technologies, Inc.
Manufacturer's Address:	1400 Fountaingrove Parkway Santa Rosa, CA 95403-1799 USA

Declares that the products:

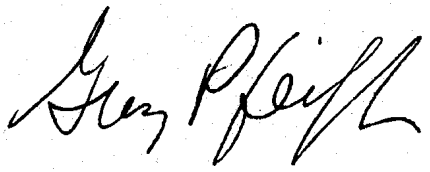
Product Name:	Infiniium DCA Agilent 86100A-series plug-in modules
Model Number:	86101A, 86102U, 86103A, 86105A, 86106A, 86106B, 86109A, 86109B, 86112A
Product Options:	This declaration covers all options of the above products.

Is in conformity with:

Safety: IEC 61010-1:1990 +A1:1992+A2:1995 / EN 61010-1:1994+A2:1995
CAN/CSA-C22.2 No. 1010.1-92

EMC: CISPR 11:1990/EN 55011:1991 Group 1, Class A
IEC 61000-4-2:1995+A1:1998 / EN 61000-4-2:1995, 4 kV CD, 8 kV AD
IEC 61000-4-3:1995 / EN 61000-4-3:1995, 3 V/m, 80-1000 MHz
IEC 61000-4-4:1995 / EN 61000-4-4:1995, 0.5 kV sig. lines, 1 kV pow. lines
IEC 61000-4-5:1995 / EN 61000-4-5:1995, 0.5 kV l-l, 1 kV l-e
IEC 61000-4-6:1996 / EN 61000-4-6:1996, 3V 80% AM, power line
IEC 61000-4-11:1994 / EN 61000-4-11:1994, 100 %, 20 ms

Supplementary Information:
The products herewith comply with the requirements of the Low Voltage Directive 73/23/EEC and the EMC Directive 89/336/EEC and carry the CE-marking accordingly.



Santa Rosa, CA, USA 24 May 2001

Greg Pfeiffer/Quality Engineering Manager

For further information, please contact your local Agilent Technologies sales office, agent or distributor.

Index

Numerics

12 GHz trigger bandwidth, 1–4
5475x series plug-in modules, 3–11
8348x series plug-in modules, 3–11

A

accessories
  connecting, 1–8
adapters
  APC 3.5 (f-f), 1–5
  SMA (f-f), 1–5
Add Printer Wizard, 1–16
Agilent offices, 1–41
Agilent website, 1–28
algorithms, 4–7
amplitude calibration, 1–25
amplitude offset, 3–10
amplitude scale, 3–10
Applications menu, 3–18
Autoscale button, 3–7

B

Beep on Touch setting, 1–22
blank screen, 3–15
Book icon, 4–6
built-in information system, 3–4, 4–2
  temporarily hiding, 4–8

C

Calibrate TouchSurround, 1–21
calibration
  amplitude, 1–25
  vertical, 1–25
calibration certificate, 1–4
care of fiber optics, 1–24, 3–11
cleaning, iv
  adapters, 1–37
  fiber-optic connections, 1–29, 1–36
  non-lensed connectors, 1–36
clock signal, 3–7
compressed dust remover, 1–36
connecting
  accessories, 1–8
  printer, 1–9
connector
  care, 1–29
Contents topic, 4–2
contents topic, 4–3
cotton swabs, 1–36

D

Default Setup button, 1–22
dialog box
  making transparent, 3–16
  moving, 3–16
dialog boxes, 4–6
dimensions, 1–10
Display Area Configuration, 1–22
double touch, 1–22
Double Touch Speed, 1–22
Drag and Drop setting, 1–22
dust caps, 1–36

E

electrical channel input circuits, 1–25
electrostatic discharge, 1–25
EMC requirements, 5–2
Eye/Mask Mode, 3–2, 3–7

F

fiber optics
  care of, 1–24, 3–11
  cleaning connections, 1–29
  connectors, covering, 1–39
fiber-optic adapters, 1–6
File menu, 3–17
file sharing, 1–23
foam swabs, 1–36
front panel
  power switch, 1–24

H

help, 4–2
help language, selecting, 4–10
help topic, printing, 4–9

I

input

connector, 1–29
instrument
checking the shipment, 1–3
positioning, 1–8
powering up, 1–24
returning for service, 1–38
instrument modes, 3–2
isopropyl alcohol, 1–36

K

keyboard, 1–4, 1–8

L

LAN, 1–23
language version, 4–10
line cords, 1–12
line power
requirements, 1–13

M

Measure menu, 3–18
measurement channels, 3–10
measurement results, 4–7
measurement toolbar, 3–3
measurement toolbars, 3–7, 3–8, 3–9
menu
bar, 3–17
menus, 3–17
Minimize button, 4–8
module, installing, 3–10
modules, installing, 1–7
mouse, 1–4, 1–8

N

network printers, 1–23
network setup, 1–23
noise declaration, 5–2

O

online help, 4–2
Options menu, 3–19
Oscilloscope Mode, 3–2, 3–8

P

package contents, 1–3
packaging for shipment, 1–39
plug-in modules, 3–10
positioning the instrument, 1–8
power
requirements, 1–13
switch, 1–24
power switch, 1–13
Print Setup, 1–16
printer, 4–5
connecting, 1–9
printer driver, 1–16, 1–18
procedures, step-by-step, 4–4

Q

Quick Measure button, 3–14

R

rack mount, 1–4
Restore button, 4–8

S

Safety Class 1 Product, 1–2
safety information, iv
sales and service offices, 1–41
service, 1–38
sales and service offices, 1–41
Setup & Info button, 4–7
setup guides, 4–4
shipment, checking package content, 1–3
shipping procedure, 1–38
step-by-step procedures, 4–4
supported printers, 1–16, 1–18
swabs, 1–36
synchronous clock signal, 3–7

T

TDR/TDT Mode, 3–2, 3–9
Test Box button, 1–22
time and date, 1–15
Timed Double Touch, 1–22
time-domain reflectometry, 3–2
timing reference signal, 3–4

touch calibration, 1–21
touch screen, 1–8, 3–3
  configuration, 1–21
  configuring, 3–12
  disabling, 3–12
  double touch, 1–22
Touch Screen Config, 1–21
trigger input signal, 3–4
Trigger Source button, 3–11

U

Utilities menu, 1–21, 3–12

V

vertical calibration, 1–25

W

warm-up time, 1–25
website, Agilent, 1–28
weight, 1–10
What's this? icon, 4–6
Windows 98, iii
wire bail, positioning, 1–8

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