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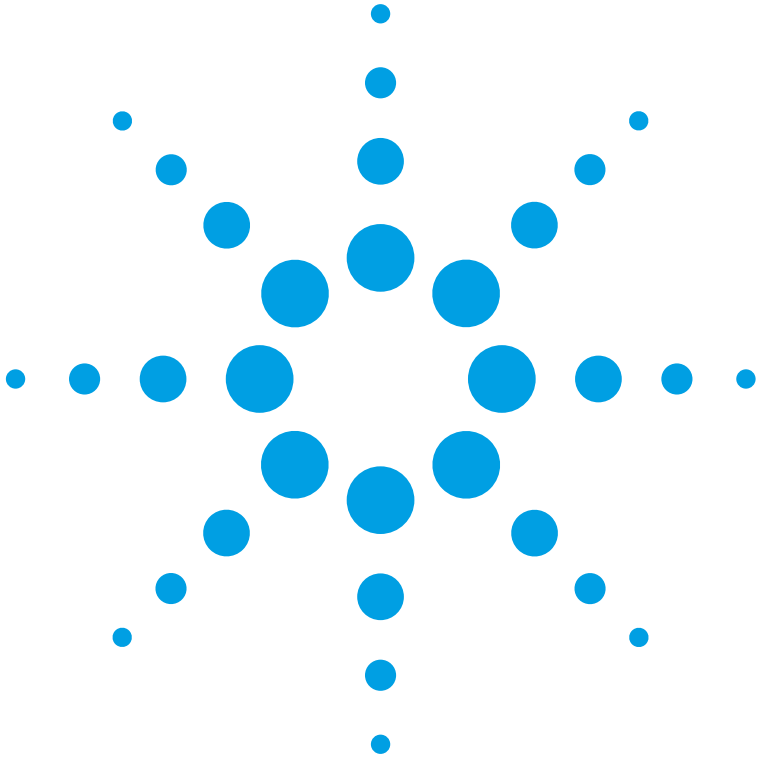
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Agilent 83480A Digital Communications Analyzer
Agilent 54750A Digitizing Oscilloscope
Quick Start Guide





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.


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The CE mark is a registered trademark of the European Community.


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

Typographical Conventions.
The following conventions are used in this book:

Key type for keys or text located on the keyboard or instrument.

Softkey type for key names that are displayed on the instrument's screen.

`Display type` for words or characters displayed on the computer's screen or instrument's display.

User type for words or characters that you type or enter.

Emphasis type for words or characters that emphasize some point or that are used as place holders for text that you type.

What You'll Find in This Book

This book gives you a quick introduction to the instrument. It is not intended as a comprehensive guide, but rather as a starting point to start using the instrument quickly. This book is divided into three sections:

Chapter 1	provides a description of the instrument and a quick tour of the front panel in a descriptive format, with examples that help to illustrate the text.
Chapter 2	provides several tutorials that show how to get up and running, how to scale a waveform vertically or horizontally, and how to use the Help menu.
Chapter 3	provides a few simple hints in case you are experiencing difficulty in either getting the mainframe or plug-in module to perform properly.

To best meet your learning needs, you can use this book in one of two ways:

1. Read "A Quick Tour of the Front Panel" on page 1-4 before performing the exercises.
2. Go straight to the exercises. This method is for users who prefer to learn how to use the front panel by experimenting with the front-panel controls.

If you are already familiar with the information in this book, you can refer to the *Agilent 83480A, Agilent 54750A User's Guide*, which shows you how to use the instrument to make many common measurements. It assumes you have already learned how to use the front panel of the instrument, by first reading this quick start guide.

All calibration and repair information is contained in the optional *Agilent 83480A, Agilent 54750A Service Guide*, while all programming information is contained in the *Agilent 83480A, Agilent 54750A Programmer's Guide*.

General Safety Considerations

This product has been designed and tested in accordance with IEC Publication 61010-1, Safety Requirements for Electrical Equipment for Measurement, Control and Laboratory Use, and has been supplied in a safe condition. The instruction 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.

WARNING **There are many points in the instrument which can, if contacted, cause personal injury. Be extremely careful. Any adjustments or service procedures that require operation of the instrument with protective covers removed should be performed only by trained service personnel.**

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

WARNING **To prevent electrical shock, disconnect the Agilent (Product variable) 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.**

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 product is likely to make the product dangerous. Intentional interruption is prohibited.**

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

WARNING **For continued protection against fire hazard, replace line fuse only with same type and ratings, (type T 0.315A/250V for 100/120V operation and 0.16A/250V for 220/240V operation). The use of other fuses or materials is prohibited. Verify that the value of the line-voltage fuse is correct.**

CAUTION *Before this instrument is switched on,* make sure its primary power circuitry has been adapted to the voltage of the ac power source. Failure to set the ac power input to the correct voltage could cause damage to the instrument when the ac power cable is plugged in.

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

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 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. Damage to the equipment could result.

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

CAUTION Electrostatic discharge (ESD) on or near input connectors can damage circuits inside the instrument. Repair of damage due to misuse is *not* covered under warranty. Before connecting any cable to the electrical input, momentarily short the center and outer conductors of the cable together. Personnel should be properly grounded, and should touch the frame of the instrument before touching any connector.

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Introducing the Instrument

The Agilent 83480A, Agilent 54750A—At a Glance

The Agilent 83480A-series digital communications analyzer or Agilent 54750A-series digitizing oscilloscope are modular, high-performance mainframes that contain digitizers, timebases, and display circuitry behind vertical channel plug-in modules containing samplers, IF amplifiers, power monitoring circuitry and O/E converter (Agilent 83485A).

The Agilent 83480A-series digital communications analyzer include these unique capabilities:

- A full range of custom and standard telecom and datacom masks and templates with automated conformance and margin testing.
- Automated extinction-ratio and q-factor measurements.
- The ability to set the timebase display to bit period, select the appropriate telecom bit rate, and enter the number of bits to be displayed.

If you wish to add these capabilities to an Agilent 54750A-series digitizing oscilloscope, *or* use the Agilent 83485A optical plug-in module, a firmware upgrade must first be installed. Order the Agilent 83480K communications firmware kit and follow the installation instructions.

NOTE

The Agilent 83480A and Agilent 54750A mainframes do *not* accept plug-in modules designed for use with the Agilent 54710A and Agilent 54720A.

The instrument also has software modularity by having a 3-1/2 inch disk drive and flash ROMs to allow for simple firmware upgrades of the firmware features.

The plug-in modules provide optical and electrical signal conditioning for the A/D converters that are inside the mainframe.

Certification

Agilent Technologies certifies that this product met its published specifications at the time of shipment from the factory. Agilent Technologies further certifies that its calibration measurements are traceable to the United States National Institute of Standards and Technology, to the extent allowed by the Institute's calibration facility, and to the calibration facilities of other International Standards Organization members.

A Quick Tour of the Front Panel

This section describes how to use the front panel. This information will help you gain the full use of your instrument in the shortest possible time. This section divides the front panel into the following areas:

- Entry devices
- Disk drive
- CAL signal
- Hardkeys
- Display
- Softkeys

Entry devices

The entry devices include the knob, arrow keys, and keypad. The knob provides continuous control, while the arrow keys are step controls. The keypad allows you to enter specific values.

Disk drive

The disk drive is a 3-1/2 inch, high-density, MS-DOS® compatible drive. You can use the disk drive for loading applications, storing and loading waveforms, storing and loading instrument setups, printing waveforms to a file, or loading new system firmware.

MS-DOS® is a registered trademark of Microsoft Corporation.

CAL signal

The CAL signal is a dc voltage level used during the calibration routines. It is internally generated and only activated during calibration routines. It can be controlled by the user by pressing:

Utility, *Calibrate*

Hardkeys

The two types of hardkeys are instant action and menu. Clear display and Run are examples of instant action keys because as soon as you press them, the instrument changes operating states. Time base and Trigger are examples of menu keys. Pressing them causes softkey menus to come up on the right side of the display.

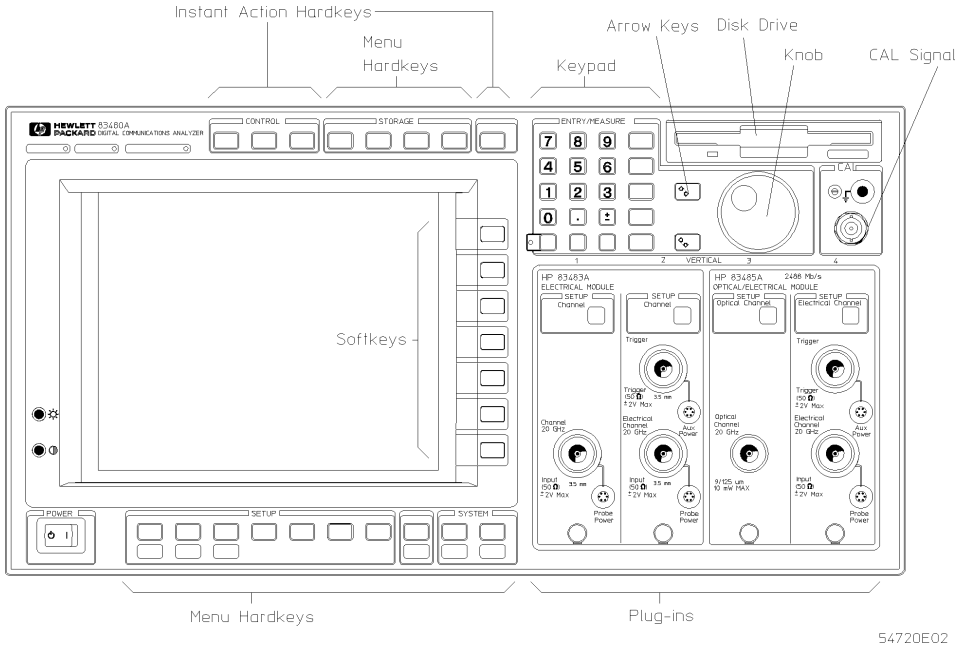


Figure 1-1. The front panel of the instrument

Display

Figure 1-2 shows the main areas of the display, and how you can interpret some of the instrument's settings from the display.

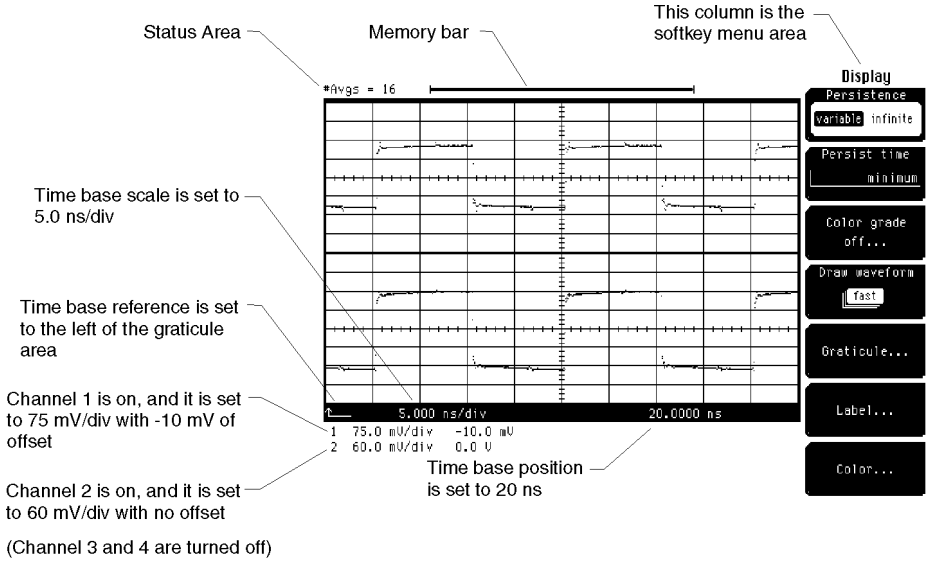


Figure 1-2. The instrument display

Softkeys

The softkeys are to the right of the display, and instead of placing a label on the softkey itself, the label is actually located on the display next to the softkey. These labels on the display are called menus, and the menu being displayed depends on which key has been pressed. For example, pressing Time base brings up the Time Base menu, while pressing Trigger brings up the Trigger menu.

There are five types of softkeys, and there are some differences on how each type of softkey operates. The five types of softkeys are toggle, menu, continuous, list, and single choice. Because the Trigger menu contains all five types of softkeys, it is used over the next few pages to demonstrate the differences among the softkeys.

When you press the Trigger key, the Trigger softkey menu comes up on the right side of the display as shown in Figure 1-3.

Toggle softkeys

A typical example of the toggle softkeys is *Sweep*. A toggle softkey allows you to choose between two or more selections, and you change selections by pressing that same softkey. *Sweep* has choices of either triggered or freerun.

The highlighted choice is the selection that is currently active. In Figure 1-3, triggered is highlighted, which indicates that the instrument is set to triggered sweep.

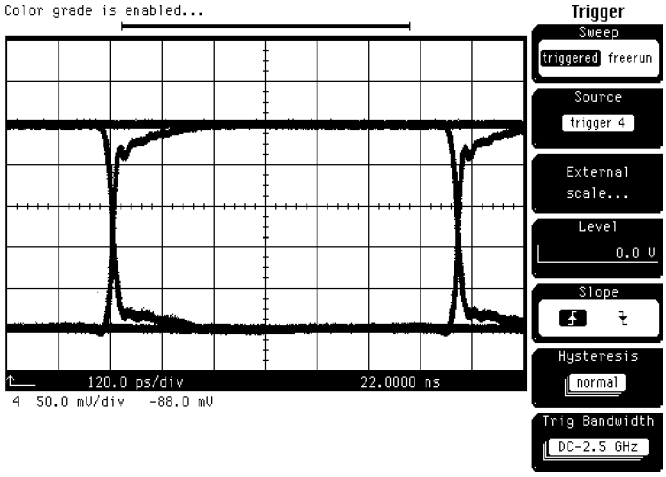


Figure 1-3. Toggle softkey selection

Menu softkeys

A typical example of the menu softkeys is *External Scale...* (refer to Figure 1-3 on page 1-7). The ellipses after the word "scale" indicate that when you press this softkey, a new softkey menu comes up on the display that allows you to make several additional choices (refer to Figure 1-4). To exit this menu, simply press the *Done* softkey. The display returns to the previous menu.

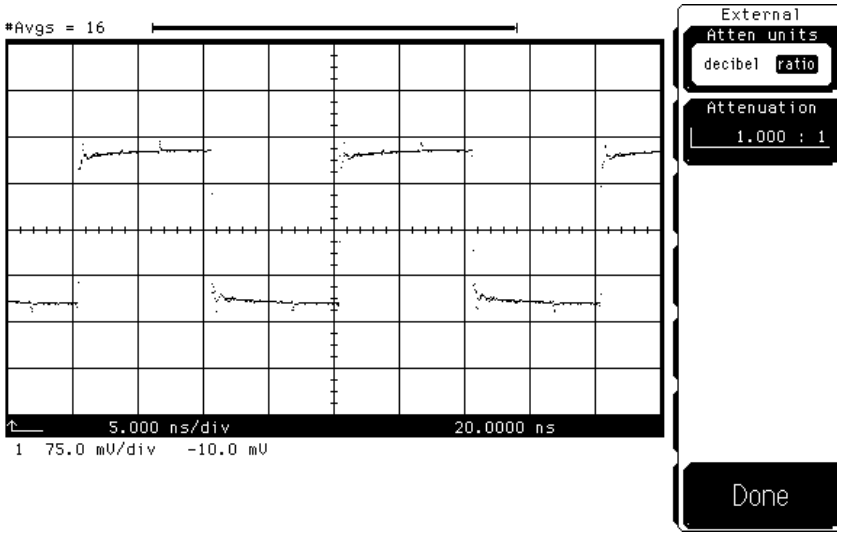


Figure 1-4. Menu softkey selection

Continuous softkeys

A typical example of the continuous softkeys is *Level*. It has a range of values that can be changed with the keypad, arrow keys, or knob.

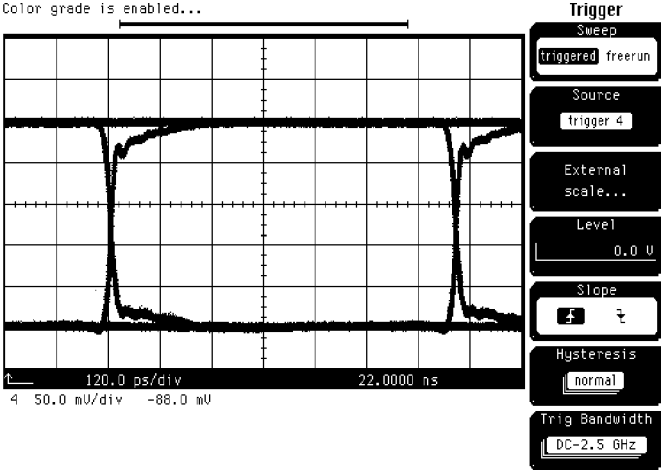


Figure 1-5. Continuous softkey selection

Because the Trigger menu only has one of this type of softkey, it is active when the menu comes up on the display. You do not need to press the *Level* softkey when you want to change the trigger level. However, the Time base menu has at least two of this type of softkey, *Bit Rate* (*Agilent 83480A only*) and *Scale and Position*. In this case, only one of the softkeys is active at a time. To make the other softkey active, you must press the corresponding softkey. You can tell which softkey is currently active because it has a different colored background from the rest of the softkeys.

When using time base scale or channel scale, the knob and arrow keys operate in two modes. One mode is a 1-2-5 sequence, while the other mode is a fine mode that allows you to make smaller incremental changes. You activate the fine mode by pressing Shift on the keypad, followed by pressing the arrow key with the word `Fine` written in blue above that key. When the fine mode is active, you will see the word `Fine` at the top-right corner of the graticule area. You get out of the Fine mode by simply pressing Shift on the keypad, followed by pressing the arrow key with the word `Fine` written above it.

List softkeys

A typical example of the list softkeys is *Hysteresis*. It has several stacked rectangles that represents a list of choices you can choose from. The top rectangle shows the selection that is currently active. In the example below, normal is the current selection.

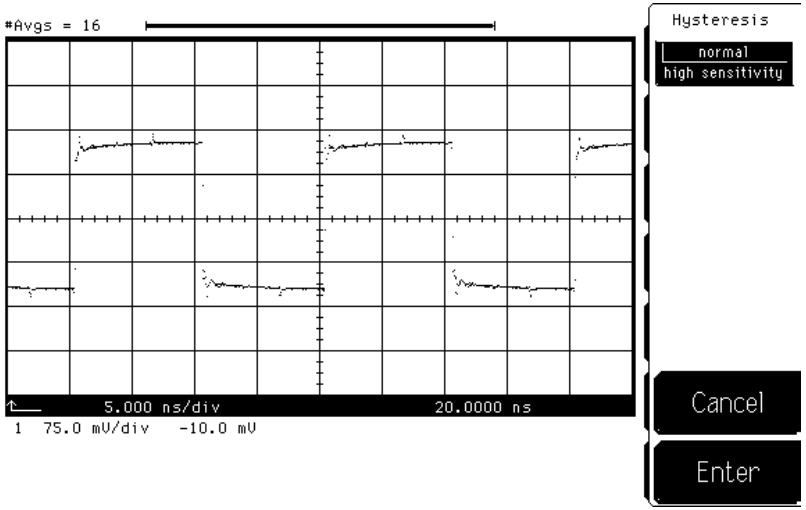


Figure 1-6. List softkey selection

You change selections by pressing the *Hysteresis* softkey, which brings up a second level softkey menu on the display. Then, you use the softkeys, arrow keys, or knob to change selections. To activate that selection, press the *Enter* softkey, then the display returns to the previous softkey menu. If you press the *Cancel* softkey, the instrument returns to the previous selection.

Single choice softkeys

A typical example of the single choice softkeys is *Enter*. There are several variations of this type of softkey throughout the many softkey menus. When you press the softkey, the instrument executes that softkey command.

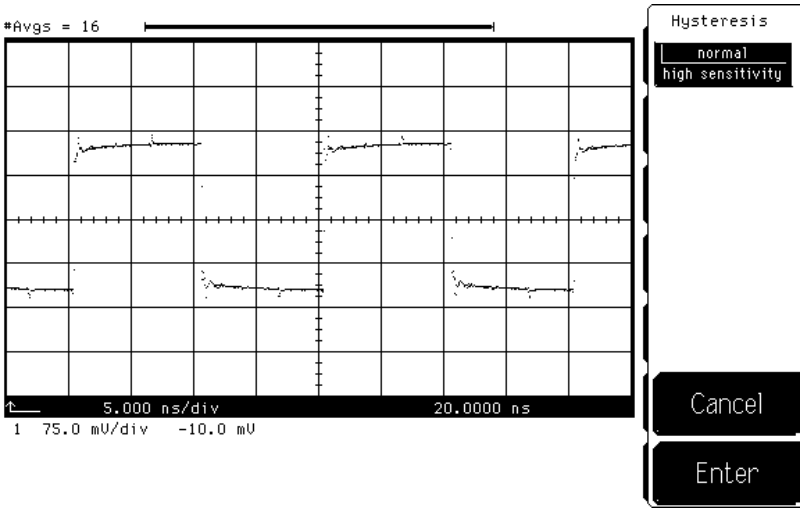


Figure 1-7. Single choice softkey selection

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Operating the Instrument

Operating the Instrument

This chapter contains several exercises that will familiarize you with the operation of the instrument.

Exercises 1–3	show how to get the instrument up and running.
Exercises 4 and 5	demonstrate the vertical, horizontal, and trigger menus by having you display a signal and then use the channel and time base menus to expand the signal.
Exercise 6	shows you how to use the markers and automatic measurement features to make a pulse width and voltage amplitude measurement.
Exercise 7	introduces you to the Help menu.

You will find it easier to perform these exercises if you are at least a little familiar with how to use the front panel. The best way to learn how to use the front panel is to read Chapter 1, “Introducing the Instrument”.

Note

Clean the cabinet using a damp cloth only.

Equipment Used in These Exercises

All of the pictures of the display in this book were generated using an Agilent 83480A with an Agilent 83483A, 54751A electrical plug-in module, and the signal from the Agilent 8133A pulse generator. If you are using a different plug-in module or signal source, your display and instrument settings may vary from the pictures in this book.

With the Agilent 83480A, the Agilent 83485A optical/electrical plug-in module could also have been used. In this case, we would connect the signal to the electrical input of the Agilent 83485A.

Exercise 1. Installing a Plug-in Module

The purpose of a plug-in module is to provide measurement channels, including sampling for the mainframe. A plug-in module scales the input signal, sets the bandwidth of the system, and allows the offset to be adjusted so the signal can be viewed. The output of the plug-in module is an analog signal that is applied to the A/D converters inside the mainframe.

1 Slide the plug-in module into either slots 1 and 2 *or* slots 3 and 4.

> **Note**
>
> The plug-in module will *not* operate if plugged into slots 2 and 3.

If the mainframe is already turned on, you do not need to turn it off before you install or remove a plug-in module. After a plug-in module is installed, the mainframe identifies the plug-in module and the slot in which it is installed.

> **Note**
>
> In the examples to follow, it is assumed the Agilent 83483A or Agilent 54751A plug-in module is resident in slots 1 and 2 of the mainframe.

2 Finger-tighten the knurled screw at the bottom of the plug-in module.

The RF connectors on the rear panel of the plug-in module are spring-loaded. Finger-tighten the knurled screw to ensure there is a good ground connection between the plug-in module and the mainframe.

3 To remove the module loosen the knurled screws and then pull on the screws to take out the module. Do *not* pull on the cables or connectors.

Exercise 2. Turning On the Instrument

1. Set the line-voltage switch on the rear panel to the correct voltage selection for your power source.
2. Connect a power cord from a power source to the rear-panel connector of the mainframe.
3. Set the rear-panel line switch to the ON position.

CAUTION

When the mainframe is set to the 115 VAC mode, use the supplied power cord. If you use an alternate power cord that *cannot* handle the power requirements of the instrument, the power cord may become warm or the instrument may not operate.

4. Set the front-panel power switch to ON.

   After a few seconds, you will see a graticule on the display and a softkey menu on the right side of the display. If the display is blank or if the message, `Power-On Test Failed`, appears at the top of the display, refer to Chapter 3, "In Case of Difficulty" or to the optional *Agilent 83480A, 54750A Service Guide*.

Exercise 3. Connecting a Signal

CAUTION Electrostatic discharge (ESD) on or near input connectors can damage circuits inside the instrument. Repair of damage due to misuse is *not* covered under warranty. Before connecting any cable to the electrical input, momentarily short the center and outer conductors of the cable together. Personnel should be properly grounded, and should touch the frame of the instrument before touching any connector. For more information regarding ESD, refer to the *Agilent 83480A, 54750A User's Guide*.

1 Using the Agilent 8133A pulse generator (or equivalent), set a trigger and square wave signal to the following:

Trigger level . . . . . 200 mV (do not exceed 2 Vp-p)
Pulse level . . . . . 500 mV (do not exceed 2 Vp-p)
Pulse frequency . . . . . 50 MHz

CAUTION Cables can build up high voltage levels that can discharge into the channel or trigger inputs and cause damage. Cables should be discharged using a short or a 50Ω terminator prior to connection.

2 Make sure the trigger and pulse signals are enabled.

3 Connect the trigger to the trigger input (channel 2) on the Agilent 83483A, 54751A electrical plug-in module.

4 Connect the pulse signal to the electrical input (channel 1) on the Agilent 83483A, 54751A electrical plug-in module.

5 Display the Setup menu (on the Agilent 83480A, 54750A) and select the default setup by pressing:

Setup, *Default setup*

The default setup puts the instrument in a predefined operating condition. This gives you a known starting point for the following exercises. The default conditions are listed in the setup section of the *Agilent 83480A, 54750A User's Guide*.

Exercise 4. Finding the Signal

The purpose of this exercise is to demonstrate the Autoscale function. The Autoscale function can be used to automatically set up the display for most input signals.

To activate the Autoscale function, press Autoscale. A screen similar to Figure 2-1 will be displayed.

When the Autoscale function is enabled, the instrument quickly analyzes the signal and sets up the vertical, horizontal, and trigger to optimize the display of the signal. Autoscale can find repetitive signals with:

- a frequency greater than or equal to 50 Hz
- a duty cycle greater than 1%
- an amplitude greater than 50 mV p-p

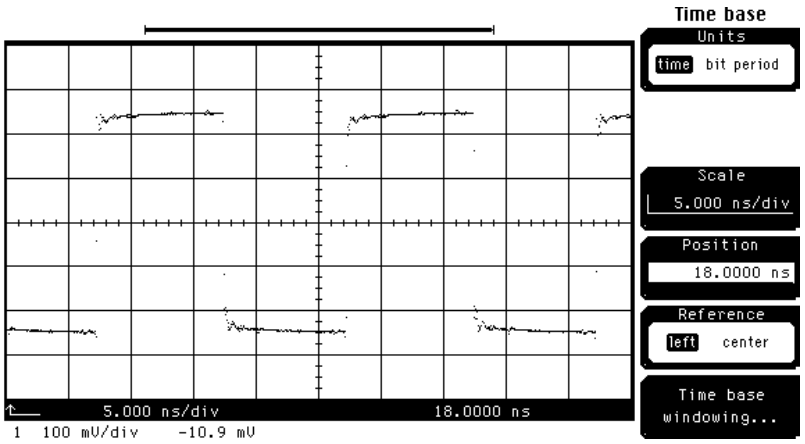


Figure 2-1. Signal displayed using the Autoscale function

If you unintentionally press the Autoscale key or wish to disable the Autoscale function, press Shift, Undo Autoscale. The instrument is reset to the settings that existed just prior to pressing the Autoscale key.

Exercise 5. Modifying the Setup

The purpose of this exercise is to show you the Channel and Time Base menus.

Changing the vertical scale

1 To display the Channel menu and change the vertical scaling, press:

Channel (located on the plug-in module), *Scale*

Change the scaling so the vertical height of the signal is about eight divisions, using the knob, arrow keys or keypad.

Selecting Fine mode

When the knob and arrow keys are *not* in the Fine mode, they change the scaling in a 1-2-5 sequence. You can change the scaling in 1 mV increments by using the keypad, or by setting the knob and arrow keys to the Fine mode.

2 To set the instrument to the Fine mode, press:

Shift, Fine

The word `FINE` appears at the top-right corner of the display area when the fine mode is activated.

Using the keypad

When using the Agilent 83483A, 54751A electrical plug-in module, the knob or arrow key changes the scaling from 50 mV/div to 100 mV/div, in one step. At 50 mV/div the signal is clipped, and at 100 mV/div the signal is *not* expanded to take advantage of the full vertical size of the display. In this case, you can use the keypad to set the scaling to 75 mV/div.

3 To set the scaling to 75 mV with the keypad, type the number 75 on the keypad. Then press milli, for millivolts, to select the unit of measure.

When you select a key with a unit of measure written on it, you do *not* need to press the Enter key. You only press the Enter key if you are entering numbers that do *not* require a unit of measure or that are in volts or seconds. Depending on the value you enter with the keypad, the instrument may round the value up or down. For example, if you try to enter 75.75 mV/div, the instrument will automatically round the entry to 75.8 mV/div.

Setting the offset

Offset is similar to the vertical position on analog instruments, except offset is calibrated. If offset is set to –10 mV, then you know the vertical center of the display is –10 mV. (For optical channels, offset is referenced two divisions above the bottom of the display.)

4 To move the waveform vertically on the display, press:

Offset

Readjust the scaling and offset until the signal is expanded vertically and is centered on the display as shown in Figure 2-2.

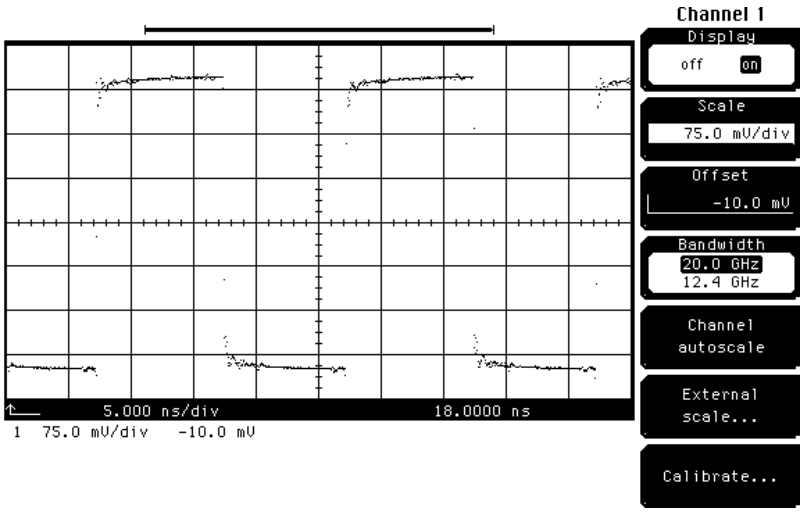


Figure 2-2. Signal vertical display

Note — Agilent 83480A only

You can automatically adjust the vertical scale, instead of following the preceding procedure by pressing:

Channel, *Channel autoscale*

The amplitude scale is optimized for the input signal while the timebase settings are left alone.

Changing the time base

5 To display the Time Base menu and change the horizontal scale, press:

Time base, *Scale*

Use the knob, arrow keys or keypad to change the scaling so the horizontal width of the positive portion of the signal is about eight divisions.

Using the keypad

6 When the knob and arrow keys are not in the Fine mode, they operate in a 1-2-5 sequence, changing the scale from 5 ns/div to 2 ns/div in one large step. You can use Fine mode so the knob and arrow keys adjust in smaller increments, or you can use the keypad to enter a smaller value, like 1.4 ns/div.

Using the Position function

7 To horizontally center the signal on the display, press:

Position

The Position function moves the waveform horizontally on the display. (Position is sometimes referred to as delay.) The reference point is indicated by an arrow at the bottom of the display as shown in Figure 2-3.

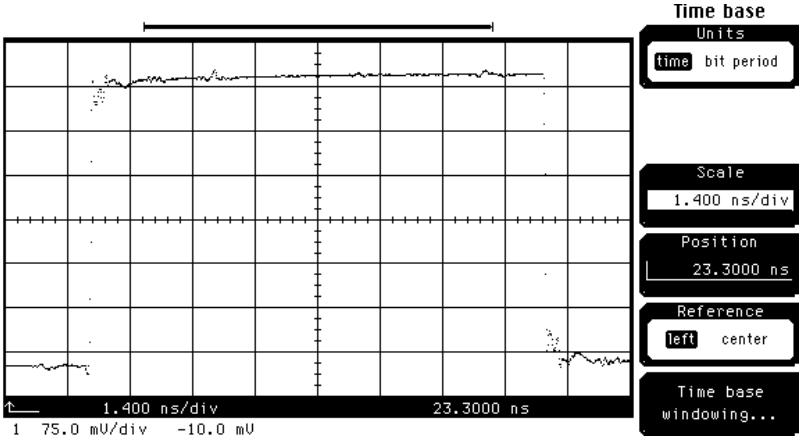


Figure 2-3. Signal horizontal display

Setting the reference

8 To set the reference to the left or center of the graticule area, press:

Reference

Exercise 6. Making Measurements on the Signal

The purpose of this exercise is to familiarize you with the Marker menu and the automatic measurement features of the instrument. You will begin by using the manual markers to make a pulse width and an amplitude measurement on channel 1. After that, you will make the same measurements using the automatic measurement features. There are many additional features built into the instrument. Refer to the *Agilent 83480A, 54750A User's Guide* for more information on making automatic measurements.

Selecting the manual marker mode

1 To select the manual marker mode, press:

Marker, *mode*, *manual*, *Enter*

Change the mode selection by using the knob, arrow keys, or softkeys.

Setting the X, Y source

In the manual marker mode, there are two X-markers and two Y-markers. You can position the X-markers horizontally and the Y-markers vertically on the display. Use the X-markers to make timing measurements and the Y-markers to make amplitude measurements.

2 To set the X1, Y1 Source to channel 1, press:

X1, Y1 Source, *channel 1*, *Enter*

3 To set the X2, Y2 Source to channel 1, press:

X2, Y2 Source, *channel 1*, *Enter*

Positioning the markers

4 To position the X1 marker, press:

X1 Position

Set the X1 marker to the left edge of the pulse.

5 To position the X2 marker, press:

X2 Position

Set the X2 marker to the right edge of the pulse.

6 To position the Y1 marker, press:

Y1 Position

Set the Y1 marker to the bottom of the pulse.

7 To position the Y2 marker, press:

Y2 Position

Set the Y2 marker to the top of the pulse.

The display will be similar to Figure 2-4.

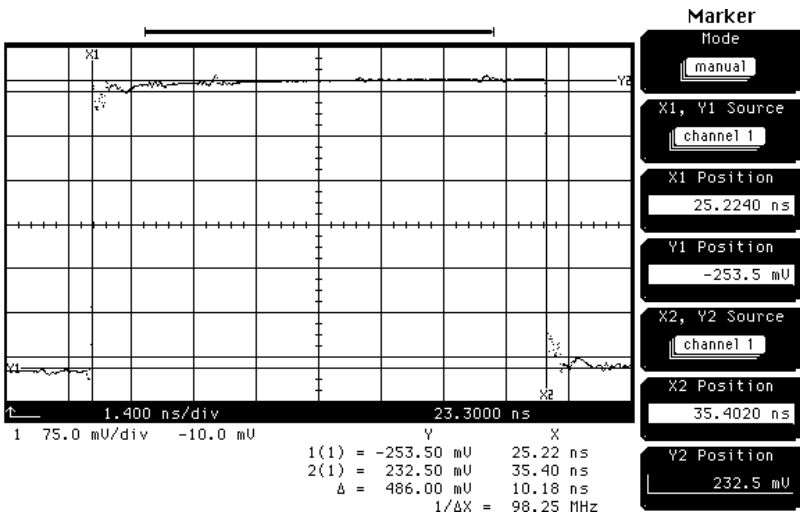


Figure 2-4. Signal custom measurements

Notice the ΔX and ΔY at the bottom of the display. The ΔX value is the width measurement, and the ΔY value is the amplitude measurement. The markers allow you to make custom measurements on signals. Remember, they are *not* tied directly to the waveform data stored in memory, they are just positions on the display.

Making an automatic +width measurement

8 To make an automatic +width measurement on channel 1, press:

Shift, +width, *channel 1*, *Enter*

The automatic measurement results are displayed at the bottom left of the screen.

Making an automatic amplitude measurement

9 To make an automatic amplitude measurement on channel 1, press:

Shift, V amptd, *channel 1, Enter*

The IEEE pulse parameter standards are used for all of the automatic measurements, unless changes are made in the define measurement menu.

Automatic measurements are preferred because they are faster and more repeatable than manual marker measurements. Automatic measurements use the waveform data stored in memory for all calculations, and the waveform data in memory has a higher resolution than the resolution of the display. The manual markers are *not* tied to the waveform data in memory, they are just positions on the display.

The automatic measurement results are placed on the display where the vertical scale and offset values are normally displayed as shown in Figure 2-5.

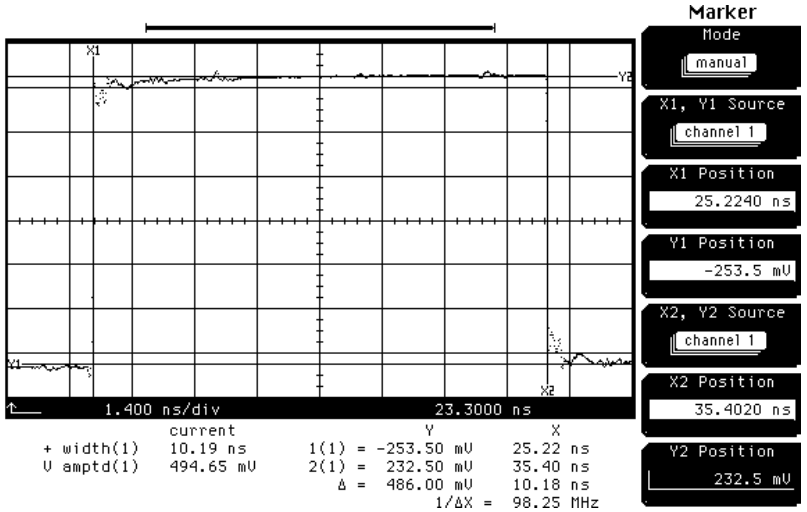


Figure 2-5. Signal automatic measurements

Displaying the scale and offset values

10 To redisplay the vertical scale and offset values, press:

Shift, Clr meas

The automatic measurement results are replaced by the vertical scale and offset values.

Exercise 7. Using the Help Menu

To display the Help menu, press Help. A screen similar to Figure 2-6 is displayed.

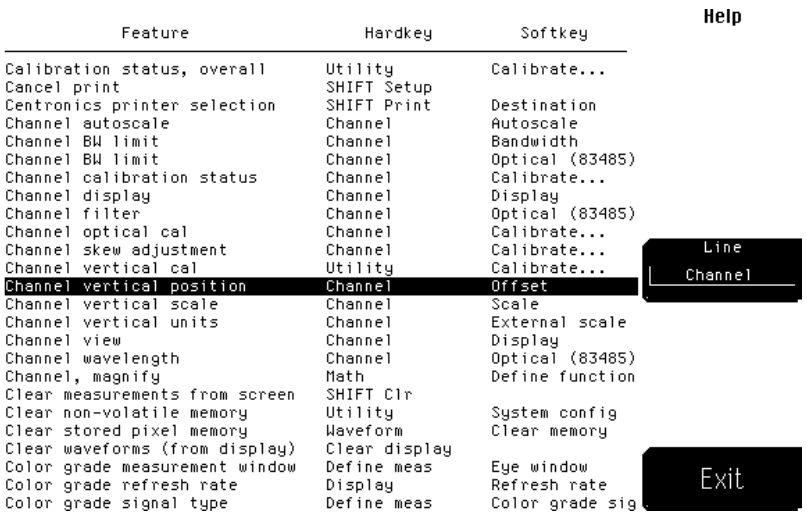


Figure 2-6. The instrument Help menu

A three-column index appears on the display. The left column lists the features of the instrument, the middle column lists the front-panel key, and (if needed) the right column lists the softkey you press to find that feature. You can use either the knob or arrow keys to scroll through the Help menu.

3

If the Mainframe Does Not Operate 3-3
If the Plug-in Does Not Operate 3-4

In Case of Difficulty

In Case of Difficulty

This chapter provides suggestions for you to follow if the mainframe or plug-in module fails to operate. For a complete listing of display messages, refer to the *Agilent 83480A, 54750A User's Guide*.

For complete service information, refer to the optional *Agilent 83480A, 54750A Service Guide*.

Review the procedure being performed when the problem occurred. A few minutes spent performing some simple checks, before calling Agilent Technologies or returning the unit for service, may save waiting for your instrument to be repaired.

CAUTION

Electrostatic discharge (ESD) on or near input connectors can damage circuits inside the instrument. Repair of damage due to misuse is *not* covered under warranty. Before connecting any cable to the electrical input, momentarily short the center and outer conductors of the cable together. Personnel should be properly grounded, and should touch the frame of the instrument before touching any connector. Refer to the *Agilent 83480A, 54750A User's Guide* for further information regarding ESD.

If the Mainframe Does Not Operate

If the mainframe does not operate, check the following:

1. Is the line fuse good?
2. Does the line socket have power?
3. Is the unit plugged in to the proper ac power source?
4. Is the mainframe turned on?
5. Is the rear-panel line switch set to on?
6. Will the mainframe power up *without* the plug-in module installed?

   If the mainframe still does not power up, refer to the optional *Agilent 83480A, 54750A Service Guide* or return the mainframe to a qualified service department. Refer to the *Agilent 83480A, 54750A User's Guide* for a complete listing of Agilent Sales and Service Offices.

If the Plug-in Does Not Operate

If the plug-in does not operate:

1 Make the following checks:

- Is the plug-in module firmly seated in the mainframe slot?
- Are the knurled screws at the bottom of the plug-in module finger-tight?
- If other equipment, cables, and connectors are being used with the plug-in module, are they connected properly and operating correctly?
- Review the procedure for the test being performed when the problem appeared. Are all the settings correct? Can the problem be reproduced?
- Are the connectors clean? Refer to the *Agilent 83480A, 54750A User's Guide* for more information about cleaning the connectors.
- Does the plug-in module work in the other two slots (1,2 *or* 3,4)?

2 Perform the following procedures:

- Make sure the instrument is ready to acquire data by pressing Run.
- Verify the pulse output is connected to channel 1 on the Agilent 83483A, 54751A electrical plug-in module.
- Verify the trigger output is connected to the trigger input.
- Find any signals on the channel inputs by pressing Autoscale.
- Verify the Agilent 8133A pulse generator is set to:

  Waveform . . . . . square wave
  Amplitude . . . . . 500 mV
  Frequency. . . . . 50 MHz
  Trigger . . . . . 200 mV
  Pulse/trigger . . . . . enabled

- See if any signals are present at the channel inputs by pressing:

  Trigger, *Sweep*, *freerun*

After viewing the signal, press *triggered*.

- Make sure Channel Display is on by pressing:

  Channel, *Display on off*

- Make sure the channel offset is adjusted so the waveform is not clipped off the display.

- If you are using the plug-in module only as a trigger source, make sure at least one other channel is turned on.

  If all of the channels are turned off, the mainframe will *not* trigger.

- Make sure the mainframe identifies the plug-in module by pressing:

  Utility, *System config...*

  The calibration status of the plug-in modules is listed near the bottom of the display, in the box labeled "`Plug-ins`". If the model number of the plug-in module is listed next to the appropriate slot number, then the mainframe has identified the plug-in.

  If "`~known`" is displayed, instead of the model number of the plug-in module, remove and reinsert the plug-in module in the same slot. If "`~known`" is still displayed, then the memory contents of the plug-in module are corrupt. Refer to the service guide for the plug-in module or contact a qualified service department. If all of the above steps check out okay, and the plug-in module still does not operate properly, then the problem is beyond the scope of this book. Refer to the plug-in module service guide or return the plug-in to a qualified service department.

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