

WHEN YOUR INSTRUMENT IS DELIVERED

CHECK THAT YOU HAVE EVERYTHING

First, verify that all items on the packing list or invoice copy have been shipped to you. (The items are also listed below.) Contact your nearest LeCroy customer service center or national distributor if anything is missing or damaged. If there is something missing or damaged, and you do not contact us immediately, we cannot be responsible for replacement.

The following is shipped with the standard Jitter and Timing Analyzers:

10:1 10M ohm PP005 Passive Probe — one per channel

AC Power Cord and Plug

Performance or Calibration Certificate

Front Scope Cover

Two 6.3 A/250 V “T” Rated Fuses

J250/260 Operator’s Manual

WavePro Operator’s Manual

WavePro Remote Control Manual

Quick Reference Guide

Declaration of Conformity

CD ROM

NOTE: The warranty that follows replaces all other warranties, expressed or implied, including but not limited to any implied warranty of merchantability, fitness, or adequacy for any particular purpose or use. LeCroy shall not be liable for any special, incidental, or consequential damages, whether in contract or otherwise. The customer is responsible for the transportation and insurance charges for the return of products to the service facility. LeCroy will return all products under warranty with transport prepaid.



BE SURE TO READ THIS WARRANTY

The Jitter and Timing Analyzers are warranted for normal use and operation, within specifications, for a period of three years from shipment. LeCroy will either repair or, at our option, replace any product returned to one of our authorized service centers within this period. However, in order to do this we must first examine the product and find that it is defective due to workmanship or materials and not due to misuse, neglect, accident, or abnormal conditions or operation.

Spare and replacement parts, and repairs, all have a 90-day warranty.

The analyzer's firmware has been thoroughly tested and is presumed to be functional. Nevertheless, it is supplied without warranty of any kind covering detailed performance. Products not made by LeCroy are covered solely by the warranty of the original equipment manufacturer.

TAKE ADVANTAGE OF MAINTENANCE AGREEMENTS

We offer a variety of services under the heading of Maintenance Agreements. These give extended warranty and allow you to budget maintenance costs after the initial three-year warranty has expired. Installation, training, enhancements, and on-site repairs — among other services — are available through special supplemental support agreements. Inquire at your LeCroy customer service center or national distributor.

OBTAIN ASSISTANCE

Help with installation, calibration, and the use of your Jitter and Timing Analyzer in a range of applications is also available from your customer service center.

RETURN A PRODUCT FOR SERVICE OR REPAIR

If you do need to return a LeCroy product, identify it by its model and serial numbers (see page xliii). Describe the defect or failure, and provide your name and contact number.

For factory returns, use a Return Authorization Number (RAN), obtainable from customer service. Attach it so that it can be

clearly seen on the outside of the shipping package to ensure rapid forwarding within LeCroy.

Return those products requiring only maintenance to your customer service center. **Tip:** If you need to return your scope, use the original shipping carton. If this is not possible, the carton used should be rigid. The scope should be packed so that it is surrounded by a minimum of four inches (10 cm) of shock absorbent material.

Within the warranty period, transportation charges to the factory will be your responsibility, while products under warranty will be returned to you with transport prepaid by LeCroy. Outside the warranty period, you will have to provide us with a purchase order number before the work can be done. You will be billed for parts and labor related to the repair work, as well as for shipping.

You should prepay return shipments. LeCroy cannot accept COD (Cash On Delivery) or Collect Return shipments. We recommend using air freight.

STAY UP-TO-DATE

To maintain your Jitter and Timing Analyzer's performance within specifications, have us calibrate it at least once a year. LeCroy offers state-of-the-art technology by continually refining and improving the instrument's capabilities and operation. We frequently update both firmware and software during service, free of charge during warranty.

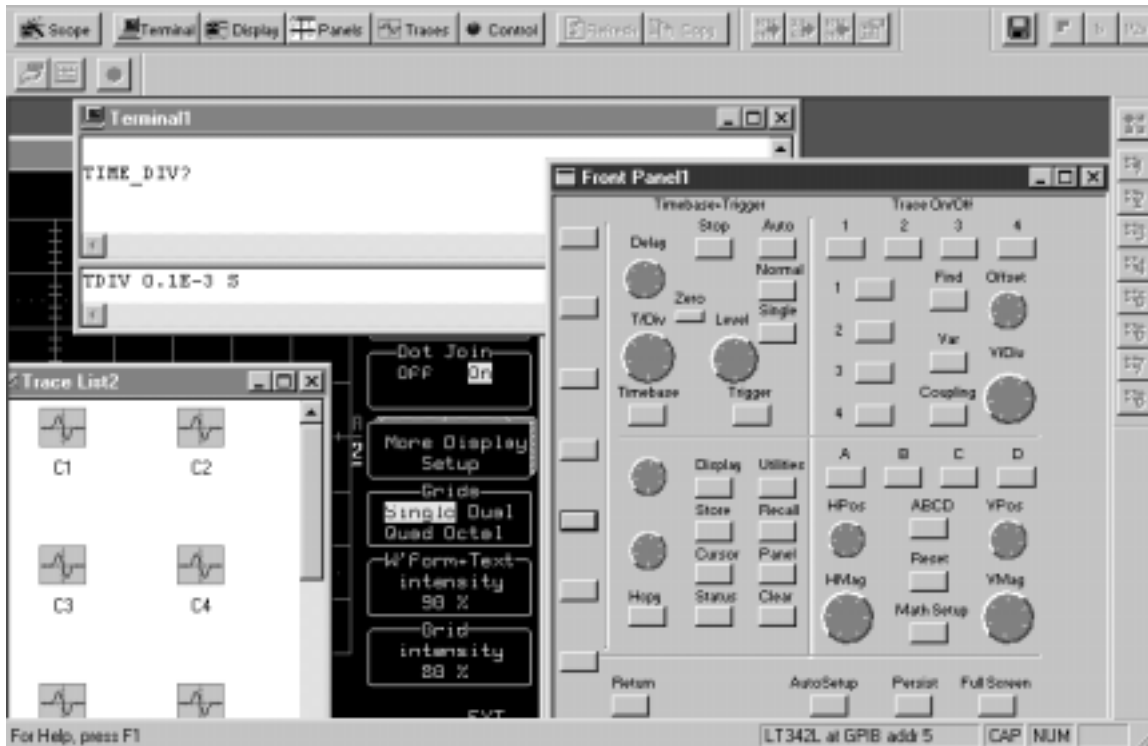
You can also install new firmware yourself, without the need to return it to the factory. Simply provide us with your Jitter and Timing Analyzer serial number and ID, and the version number of the software already installed, along with ordering information. We will provide you with a unique option key that has a code to be entered through the instrument's front panel to upgrade your software. In addition, the very latest versions of LeCroy's unique oscilloscope software applications can be downloaded from the Internet, free of charge. Included are ScopeExplorer and ActiveDSO.

ScopeExplorer is a highly practical PC-based connectivity tool that interfaces J-260 Jitter and Timing Analyzer to a PC that is running Microsoft Windows® via the rear panel GPIB (IEEE 488) or RS-232 port or Ethernet connector (optional). Specially designed by LeCroy for its products, ScopeExplorer allows you to



Jitter and Timing Analyzers

perform data and image transfers and other remote operations from scope to PC with just a few keyboard strokes or mouse clicks. See Chapter 12, "Use the J-260 Jitter and Timing Analyzer with a PC," for more about using ScopeExplorer with your J-260 Jitter and Timing Analyzer.



ScopeExplorer now has a virtual front panel to allow full control of remote scopes.

ActiveDSO, which works on any PC running Windows 95, 98, NT, 2000, or Me, enables you to exchange data with a variety of Windows applications or programming languages that support the ActiveX standard, such as MS Office, Internet Explorer, Visual Basic, Visual C++ and Visual Java. ActiveDSO hides the intricacies of programming for each of these interfaces and provides a simple and consistent interface to the controlling application. You can also visually embed ActiveDSO in any OLE

automation compatible client and use it manually without programming. You could, for example, generate a report by importing








scope data straight into Excel or Word, analyze your waveforms by bringing them directly into Mathcad, archive measurement results “on the fly” in a Microsoft Access database, and automate tests using Visual Basic, Java, C++, or Excel (VBA).

Visit our web site at <http://www.lecroy.com> to download these and other free software applications.



SAFETY SYMBOLS

Where the following symbols appear on the Jitter and Timing Analyzer's front or rear panels, or in this manual, they alert you to important safety considerations.

Symbol	Meaning
WARNING	Incorrect operation or failure to heed warnings may result in death or serious injury. If a WARNING is indicated on the instrument, do not proceed until its conditions are understood and met.
CAUTION	Incorrect operation or failure to heed cautions may result in injury or damage to equipment. If a CAUTION is indicated, do not proceed until its conditions are understood and met.
	Refer to accompanying documents (for safety related information). See elsewhere in this manual wherever the symbol is present, as indicated in the Table of Contents.
	Risk of Electric Shock
	Stand-by (Power) State
	Earth (Ground) Terminal
	Protective Conductor Terminal
	Alternating Current Only
	Chassis Terminal


OPERATE IN A SAFE ENVIRONMENT


The Jitter and Timing Analyzer is intended for indoor use only. Ensure that its operating environment will be maintained within these parameters:

- Temperature Range: 5 to 45 °C
- Humidity: 75% max. RH (non-condensing) up to 35 °C
Derates to 50% max. RH at 45 °C
- Altitude: 3000 m max. up to 25 °C
Derates to 2000 m max. at 45 °C

Note: This instrument has been qualified to the following EN 61010-1 category:

Protection Class	I
Installation (Overvoltage) Category	II
Pollution Degree	2

**CAUTION**
Do not block the air inlet or exit ports.

**CAUTION**
Do not allow any foreign matter to enter the instrument through air inlet ports, etc.



AC POWER SOURCE

Jitter and Timing Analyzers operate from a single-phase, 115 V (90 to 132 V) AC power source at 45 to 440 Hz, or 220 V (180 to 250 V) AC power source at 45 Hz to 66 Hz. Maximum power consumption: < 350 VA.

No manual voltage selection is required because the instrument automatically adapts to line voltage. The power supply of the analyzer is protected against short circuit and overload by two 5x20 mm fuses (T 6.3 A/250 V). See "Fuse Replacement."

Note: The instrument automatically adapts itself to the line voltage present within the following limits:

Voltage

Range: 100 – 120 VAC 200 – 240 VAC

Frequency

Range: 50/60/400 HZ 50/60 HZ

POWER AND GROUND CONNECTIONS

The Jitter and Timing Analyzer is provided with a three-wire electrical cord containing a three-terminal polarized plug for line voltage and safety ground connection. The plug's ground terminal is connected directly to the frame of the analyzer. For adequate protection against electrical hazard, this plug must be inserted into a mating outlet containing a safety ground contact.



WARNING

Maintain the ground line to avoid electric shock. The power cord's protective grounding conductor must be connected to ground.

Note: Set the power switch to STANDBY before connecting or disconnecting the power cord.

On/standby Switch

The On/Standby toggle switch controls the basic operational state of the analyzer. A portion of the analyzer will remain powered in the standby state (13 watts dissipation).

Power Off State

The analyzer can only be placed in a complete power off state by unplugging the analyzer's power cord from the primary power source (AC outlet). It is recommended that the analyzer's power cord be unplugged from the AC outlet during any extended period of analyzer inactivity.

Fuse Replacement

Set the power switch to STANDBY and disconnect the power cord before inspecting or replacing a fuse. Open the fuse holder (located directly to the left of the power receptacle) using a small, flat-bladed screwdriver. Remove the old fuse(s) and replace with new 5x20 mm fuses (T 6.3 A/250 V).

Calibration

The recommended calibration interval is one year. Calibration should only be performed by qualified personnel.

Cleaning

Clean only the exterior of your Jitter and Timing Analyzer, using a damp, soft cloth. Do not use chemicals or abrasive elements. Under no circumstances allow moisture to penetrate the analyzer. To avoid electric shocks, disconnect the instrument from the power supply before cleaning.

Abnormal Conditions

Operate the Jitter and Timing Analyzer only as intended by the manufacturer.

Do not operate the analyzer with covers removed. If you suspect the analyzer is damaged or has failed, immediately set the power switch to STANDBY and disconnect the power cord. Refer servicing to qualified personnel.



Up and Running

GET TO KNOW YOUR JITTER AND TIMING ANALYZER FRONT PANEL



Jitter and Timing Analyzer main front panel controls and features.

JITTER AND TIMING ANALYZER CONTROLS

Jitter and Timing Setup, Clock Zoom and Jitter Views Buttons:

- | | |
|--------------------------------------|---|
| Setup | Invokes the Setup Wizard to allow automated setup of analyzer settings, jitter measurement type, and acquisition modes. Contains a “Start Acquisition” soft key to initiate clock or data signal acquisition. |
| Clock Zoom
(toggle switch) | Automatically displays magnified view of the single-ended or differential clock or data signal. |

Jitter Track (toggle switch)	Automatically displays a time vs. time display of a timing parameter based on the jitter-type selection made in the Setup Wizard, JitterTrack or Histogram menu.
Histogram (toggle switch)	Automatically displays a statistical distribution of a timing parameter's set of values based on the jitter-type selection made in the Setup Wizard, JitterTrack or Histogram menu.
Measure (toggle switch)	Automatically displays a set of measurement data for a pre-defined or user-defined group.
Analysis	Displays a menu of analysis functions, and a list of analysis package options (if installed).





Special Features Buttons:

Auto Setup	Automatically sets the scope's horizontal timebase (acquisition system), vertical gain and offset, as well as trigger conditions, to display a wide variety of signals.
Analog Persist	Provides a three dimensional view of the signal: time, voltage, and a third dimension related to the frequency of occurrence, as shown by a color-graded (thermal) or intensity-graded display.
Cursors (toggle switch)	Turns on cursors to measure signal details. Select from a wide variety including absolute and relative cursors, with readout in volts or dBm.

Channel Buttons:

1, 2, 3, 4	These buttons activate the menu that lets you change the channel's setup conditions including coupling, gain, and offset. They are used also to select multiple grids, to automatically set the gain (FIND), or to automatically display a zoom of the signal. Press twice to toggle the trace on and off.
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Analysis Control Knobs:

 Position	Adjusts the horizontal position of a zoom trace on the display. The zoom region is highlighted in color on the source trace.
 Zoom	Adjusts the horizontal zoom (magnification factor) of the selected zoom trace.
 Position	Adjusts the vertical position of the selected zoom trace on the display.
 Zoom	Adjusts the vertical zoom (magnification factor) of the selected zoom trace on the display.



Analysis Control Buttons:

- A, B, C, D** Activates a setup menu for the selected zoom trace so you can select a source trace for the zoom: either a channel trace or another zoom trace. Press A, B, C, or D to set up signal processing, including averaging, integration, re-scaling, and other math (signal processing) functions. Press a second time to turn the trace off.
- Reset** Resets the zoom factors and clears the results from signal processing (math operations).
- Math Tools** Provides access and an overview of the setup of zooms and signal processing on all zoom traces.

Trigger Knobs:

- Level** Selects the trigger threshold level. The Level is indicated on the display grid and at the bottom of the screen.

Trigger Buttons:

- Setup** Activates the trigger setup menu to select the trigger type and the trigger conditions. Graphics shown at the bottom of the display indicate the trigger setup.
- Stop** Prevents the scope from triggering on a signal.
- Auto** Triggers the scope after a selectable time-out, even if the trigger conditions are not met.
- Normal** Triggers the scope each time a signal is present that meets the conditions set for the type of trigger selected.
- Single** Arms the scope to trigger once (single-shot acquisition) when the input signal meets the trigger conditions set for the type of trigger selected.

Horizontal Knobs:

- Delay** Horizontally positions the scope trace on the display so you can observe the signal prior to the trigger time. Delay adjusts the pre- and post-trigger time.
- Time/Division** Sets the time/division of the scope timebase (acquisition system). LeCroy SMART Memory automatically optimizes the memory and sample rate for maximum resolution.

Horizontal Buttons:

- Zero Delay** Sets the horizontal delay to zero. The trigger point is positioned at the start of the display grid.

Setup Activates the TIMEBASE menu to allow you to select acquisition conditions, including the sample mode, maximum memory length, external clocking, etc.

Vertical Knobs:

Offset Adjusts the vertical offset of the channel selected by pressing one of the Channels buttons (1, 2, 3, or 4).
Volts/Div Adjusts the Volts/Division setting (vertical gain) of the channel selected at the press of one of the "Channel" buttons (1, 2, 3, or 4).

General Control Buttons:

Panels Store scope setting files (Panels) to internal non-volatile virtual disk (VDISK) or to PC Cards and diskettes. These Panel files can be recalled to configure the scope to the previously stored settings.
Utility For setup of scope features including hardcopy devices and formats, date and time, mass storage devices, and remote control interfaces.
Display For setup of a wide variety of display characteristics including, X-Y mode, persistence, custom trace colors, bold data points, etc.
Wave Storage Store or recall waveform data to optional PC Cards or to a diskette.
Scope Status Displays the status of the scope including installed options, available memory, serial number, as well as most setup conditions including the acquisition system, and general waveform information.
Clear Sweeps Clears data from multiple sweeps (acquisitions) with the exception of the last acquisition including: persistence trace displays, averaged traces, FFT averaging, etc. During waveform readout, cancels readout.
Print Screen Prints the screen displayed to a diskette or to the optional: internal printer, PC Card Hard Drive, memory card, or network printer.

Soft Keys and Control Knobs:

Two control knobs linked to display screen These control knobs are context sensitive controls whose function depends on the feature selected. They are used to control measurement cursors, navigate through menus, and select items and conditions displayed in menus.
7 buttons linked to display These buttons are context sensitive buttons whose function



- screen** depends on the features selected and the menu displayed directly to the left of the buttons.
- 1 button with Return Icon** This button returns the display to the previous menu, or clears the menu from the screen if the top-level menu is being displayed.
- STANDBY Lamp:** The STANDBY lamp indicates when the scope has placed itself in standby (screen saver) mode. In this mode, current settings are retained. The lamp does not indicate the standby mode that is induced when you turn off the power switch.

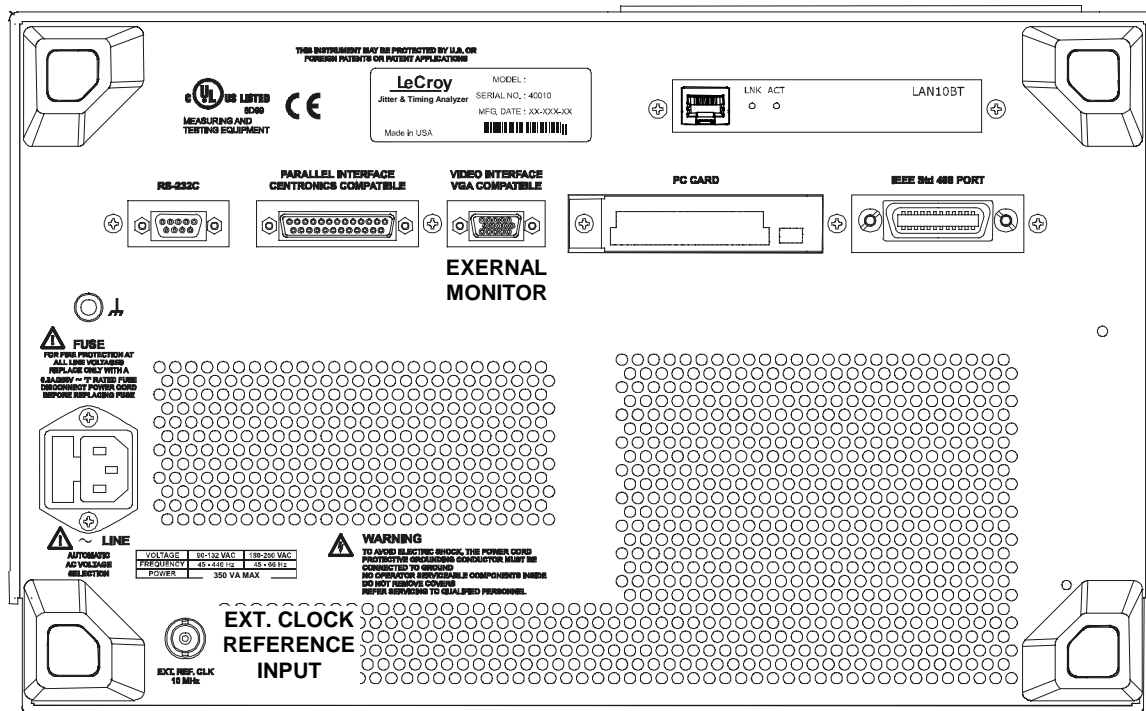
INSTALL AND POWER UP

1. Before powering up, check that the local power source corresponds to the Jitter and Timing Analyzer power range (see page).
2. Use the cable provided to connect the scope to the power outlet through its rear panel receptacle (see next page).
3. Turn the scope on by pressing the On button at the bottom left-hand corner of the Jitter and Timing Analyzer front panel.

Before a display appears, the instrument will automatically perform hardware and software self-tests, followed by a full system calibration. The front panel STANDBY LED will be lit during this sequence. The full testing procedure will take about 10 seconds, after which a display appears.

4. Press to display the UTILITIES on-screen menus.
5. Then press the button beside the menu to set the time and date.

GET TO KNOW YOUR JITTER AND TIMING ANALYZER BACK PANEL




Use the RS-232-C, GPIB, and Ethernet ports to connect instrument to a computer or terminal, the external monitor port to display your waveforms on another monitor, and the Centronics port to connect compatible printers or other devices. Use the PC Card slot for the PC Memory Card and portable Hard Disk options, and the BNC input for external reference clock signal.



Jitter and Timing Analyzers


TO NAVIGATE THROUGH MENUS

Menus such as  enable you to perform actions or adjust settings.



The menu button beside each displayed menu controls that menu.

Longer menus that span the breadth of two buttons are controlled by both buttons.


Capitalized menus —  for example — perform specific actions.


The two menu knobs work together with the two menu buttons beside them.


Combinations of knobs and buttons control continuously adjustable variables. The button selects or changes the variable, while the knob adjusts its value.



Menus are grouped and shown together according to their function. Press a button or turn a knob to select a particular menu or an item on a menu. Travel up or down in the menu list and change the selection. Or change values and settings.

PANELS

The darker, labeled buttons also play a role in menu selection:  — for example — was used to select the menus for initialization. When you press any one of these, it offers access to related menus in its group.

Menus with shadows  lead to other menus: Press their buttons to display those others.


Press  to return to a shadowed menu. Also use this button whenever you wish to go back to the previous menu display.

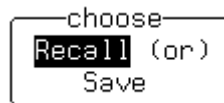
Arrows on the side of a long menu indicate that you can scroll up  or  down the menu list. Press one or the other of these menus' buttons to move in the desired direction, and to view or select any menu item not displayed. Arrows disappear when you reach the beginning or end of the menu list.

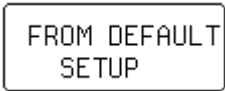
INITIALIZE

Initialize your instrument to its basic default waveform display settings:

PANELS

1. Press  to display the PANEL SETUPS menu group.
2. If **Recall** is not selected, press the button once to select it:




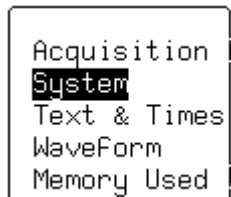
3. Then press the button beside .

Initialize to default settings whenever you wish to clear your settings and make a fresh start on a new measurement.

CHECK YOUR JITTER AND TIMING ANALYZER

SCOPE STATUS

4. Press  to show the STATUS menus:

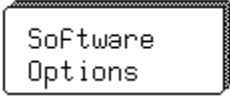


5. Press the top button to highlight and select **System**. The screen will show your Instrument's serial number, the version of software installed and the date of its release, as well as a full list of your currently installed software and hardware.

Contact LeCroy customer service immediately if any of the options you ordered have not been installed.

ADD AN OPTION

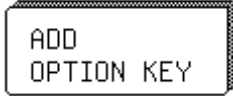
This menu will also be displayed when you select **System**:



Software
Options

Use it to install new options — without the need to return your Instrument for a refit.

1. Press that menu's button to display




ADD
OPTION KEY

2. Then press that menu's button to display the ADD OPTION menus. Use them whenever you wish to add a Instrument option by means of a special code. Contact your LeCroy sales or service center to obtain the code.

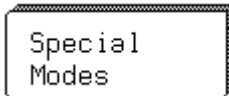
UPDATE TO THE LATEST FIRMWARE

Your Instrument comes with the latest firmware installed. But to take advantage of our continuous improvement, contact us to obtain a floppy disk or card containing the latest firmware. Then use these menus to install it:

UTILITY

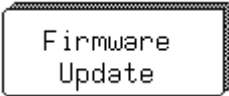
3. Press  to display the UTILITIES menus.

4. Press the button for



Special
Modes

for



Firmware
Update


5. Place the floppy or card in the Instrument and press the buttons to select **Floppy** or **Card** and then Update Flash. The newly installed firmware will appear on the System Status screen (see above).

You may also download the firmware from the internet, using ScopeExplorer.

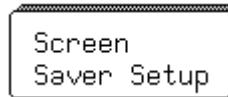
SAVE THE SCREEN (AND ENERGY)

Enable or disable your Instrument's screen saver:

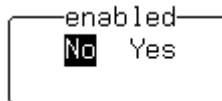
DISPLAY

6. Press  to show the DISPLAY SETUP menus.
7. Press the button for "More Display Setup" to access this

menu:



8. Press its button, then select **Yes** or **No** from




When enabled, the built-in screen saver is activated 10 minutes after the last use of a front panel control. This is a complete display shutdown of the internal screen — an "Energy-Saver." The front panel LED light will indicate when the scope is in the screen-saving STANDBY state. Press any front panel button to restore the screen.

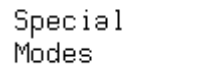
DO YOU PREFER YOUR CONTROLS WITH SOUND AND AUTO-REPEAT?

Have your buttons and knobs repeat their actions and make an audible sound when used:

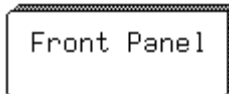
UTILITY

9. Press  to display the UTILITIES menus. These you will find useful for a variety of functions.

10. Press the button for



, then the button for



11. Make your preferences by means of the USER PREF'S menus displayed.



With Pushbutton auto-repeat **On**, all front panel buttons, when pressed and held in, will move the selection automatically and sequentially through all items in a menu.

With audible feedback for buttons and knobs **On**, an audible “click” will sound when any front panel button is pressed or any knob is turned.

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