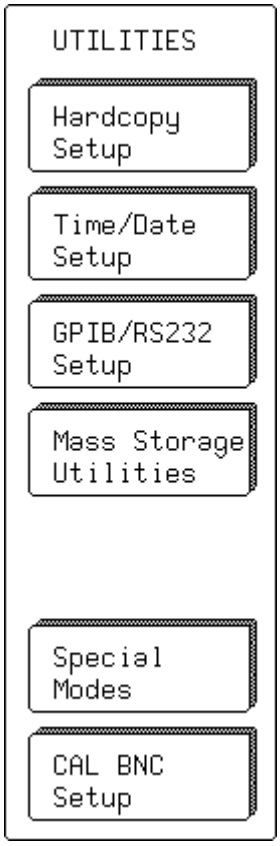
Printing, Storing, Using Special Modes

UTILITIES

Press 

to access the primary menus for:

- **Hardcopy settings**
- **Time and date settings for the real-time clock**
- **GPIB and RS-232-C settings**
- **Mass storage utilities (including copy and format and delete files)**
- **Special modes of operation (including offset behavior, sequence time-out, cursor units, and auto-calibration)**
- **Signal function at the CAL BNC connector (magnitude, frequency, shape, trigger out, pass/fail use)**



Hardcopy Setup (*see page 12–2*)

To access secondary menu for viewing, changing printer settings.

Time/Date Setup (*page 12–4*)

To access secondary menu for adjusting the real-time clock displayed in the upper left-hand corner of the screen.

GPIB/RS232 Setup (*page 12–5)*

To access secondary menu for viewing, changing interface settings.

Mass Storage Utilities (*page 12–10*)

For accessing the “Mass Storage UTILITIES” menus.

Special Modes (*page 12–19*)

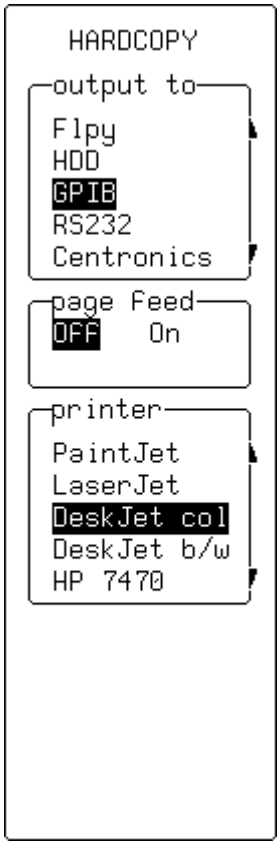
For accessing the “Special Modes” menus.

CAL BNC Setup (*page 12–21*)

For accessing the “CAL BNC” menus.

Hardcopy Setup

HARDCOPY



When "Hardcopy Setup" is selected from "UTILITIES" these menus appear:

output to

To select the device to which the instrument is to output. This menu shows the options installed in the instrument. The device can be either a port — GPIB, RS232 or Centronics — to which a printer is connected, a storage unit such as Floppy or portable hard disk (HDD), or the internal printer. If a port, the "GPIB & RS232" menu should be checked to ensure settings are correct. File names are assigned automatically when copying to storage units.

page feed

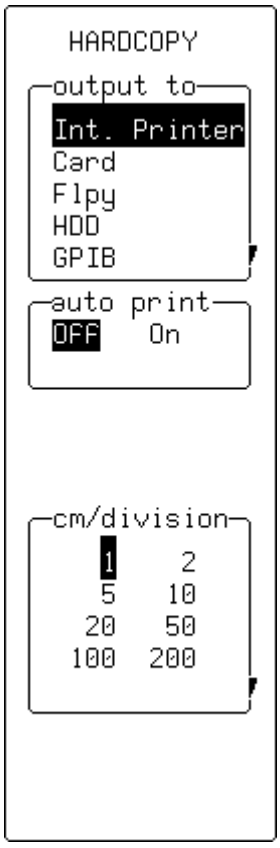
For starting (when "**On**" is selected) a new page each time SCREEN DUMP is pressed.

Press SCREEN DUMP to make a copy of the screen display.

printer

To select the type of printer, or graphics file format ("**TIFF**", "**BMP**") protocols, using the corresponding menu buttons or knob.

HARDCOPY — Internal Printer *(OPTION)*



output to

To select the device to which the instrument is to output: in this case, the optional "**Int. Printer**". This menu shows the options installed in the instrument. The device can be either a port — GPIB, RS232 or Centronics — to which a printer is connected, a storage unit such as Floppy or portable hard disk (HDD), or the internal printer. If a port, the "GPIB & RS232" menu should be checked to ensure settings are correct. File names are assigned automatically when copying to storage units.

auto print

For generating ("**On**") a hard copy of the screen and send to the internal printer after every acquisition.

cm/division

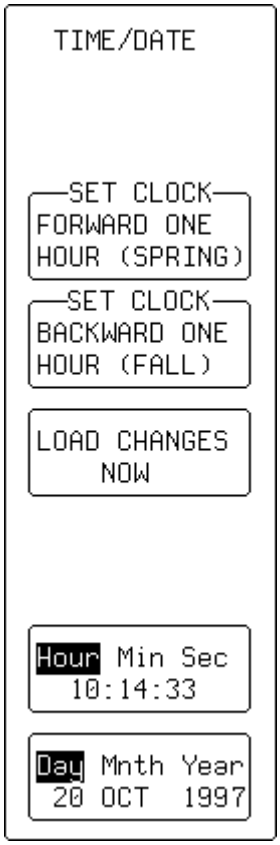
For selecting the expansion factor.

> ***Note:*** *A "persistence" trace cannot be expanded, nor do cursors show on an expanded printout.*

Time/Date Setup

TIME/DATE

When "Time Date Setup" is selected from "UTILITIES" these menus appear:



SET CLOCK FORWARD ONE HOUR

For changing to summer time.

SET CLOCK BACKWARD ONE HOUR

For changing back to standard time.

LOAD CHANGES NOW

To activate the changes made with the "Hour Min Sec" and "Day Mnth Year" buttons and knobs (*see below*).

Hour/Min/Sec

Using the corresponding menu button, for toggling between "**Hour**", "**Min**"utes, and "**Sec**"onds, and the associated menu knob to adjust the value.

Day/Mnth/Year

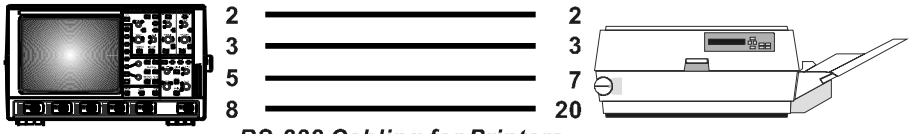
Using the corresponding menu button, for toggling between "**Day**", "**Mnth**", and "**Year**", and the associated menu knob to adjust the corresponding value.

GPIB/RS232 Setup

When "GPIB/RS232 Setup" is selected from "UTILITIES" the RS-232-C port on the rear panel can be used for remote operation of the oscilloscope, and for direct interfacing to a hard-copy device for copying of displayed waveforms and other screen data. ***See below and on next page for printer and computer cabling.***

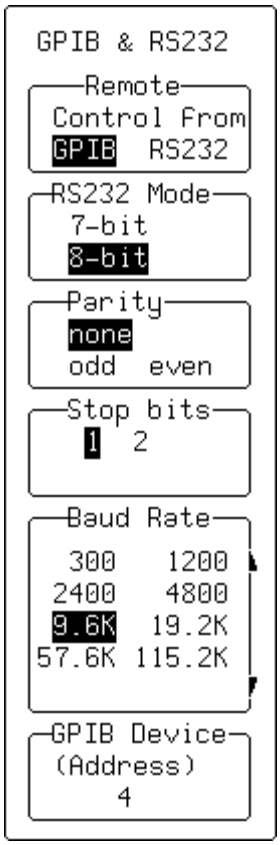
A printer unit whose connected to the scope by RS-232-C port can be controlled from a host computer using the scope's GPIB port. The oscilloscope's built-in drivers also allow hard copies to be made without an external computer..

RS-232-C Connector Pin Assignments		
DB9 Pin No.	**Line Name**	**Description**
3	T × D	Transmitted Data (from the oscilloscope).
2	R × D	Received Data (to the oscilloscope).
7	RTS	Request To Send (from the oscilloscope). If the software Xon/Xoff handshake is selected, it is always TRUE. Otherwise (hardware handshake) it is TRUE when the oscilloscope is able to receive characters and FALSE when the oscilloscope is unable to receive characters.
8	CTS	Clear To Send (to the oscilloscope). When TRUE, the oscilloscope can transmit; when FALSE, transmission stops. It is used for the oscilloscope output hardware handshake.
4	DTR	Data Terminal Ready (from the oscilloscope). Always TRUE.
5	SIG GND	Signal Ground
Corresponds to a DTE (Data Terminal Equipment) Configuration		



RS-232 Cabling for Printers
(can be used in almost every case)

GPIB & RS232



When "GPIB/RS232 Setup" is selected from "UTILITIES" these menus appear:

Remote Control from

For selecting the port for remote control.

RS232 Mode

To select "**7–bit**" or "**8–bit**" mode for RS-232 communication. When "**RS-232**" is selected, the GPIB interface is in "Talk Only" mode. Any change becomes effective immediately.

Parity

To select the "**odd**" or "**even**" parity, or "**none**", for RS-232 communication.

Stop bits

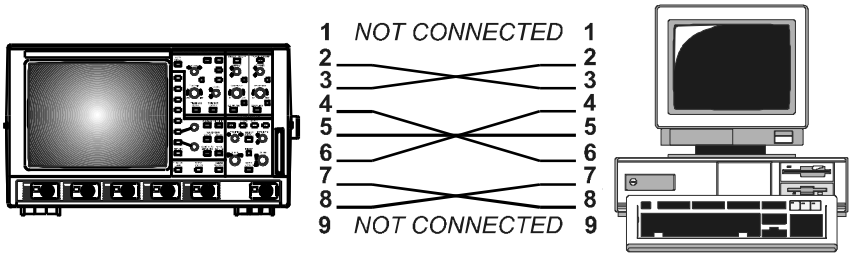
For selecting the number of stop bits for RS-232 communication.

Baud Rate

To set the Baud Rate for RS-232 communication using the attributed menu knob.

GPIB Device (Address)

To choose the appropriate GPIB address.



RS-232 nine-pin communication cabling for PC

Mass Storage Utilities

When "Mass Storage Utilities" is selected from "UTILITIES" the "MASS STORAGE" menu group appears (*12–10*) to give access to the mass-storage file system controls. The system supports storage and retrieval of data files to and from memory cards, floppy disks and removable hard disk (HDD) media.

Memory Card Format

The Memory Card structure, based on the PCMCIA II / JEIDA 4.0 standard, and as found in any DOS floppy or hard disk, consists of a DOS partition containing files. The oscilloscope formats the card in segmented contiguous sectors, each of 512 bytes. The scope does *not* support error-detection algorithms such as CRCs or checksum inserted between the sectors, and when this is done the instrument may only be able to read, but not write, the card.

Floppy Disk Format

The floppy supports DOS 1.44 MB and 720 kB formats.

Hard Disk (HDD) Format

The removable hard disk structure is based on the PCMCIA III / JEIDA 4.0 standard. The media is arranged as a DOS partition containing files as in any DOS floppy or hard disk.

The HDD format uses 512 bytes per sector and four sectors per cluster. One cluster is the minimum file size: any files smaller than 2048 bytes in size will still use one cluster's allocation of 2048 bytes of disk space.

Subdirectories

All files are written to and read from the media from the current working directory. The default name of the working directory is LECROY_1.DIR. This directory is automatically created when the media is formatted. If the media is formatted elsewhere — for instance on a PC — the directory will be created the first time a file is stored to the memory card, floppy disk or removable hard disk.

The working directory can be changed to any valid DOS directory name, using the file-name preferences menu. All working directories are created as sub-directories from the root directory.

The maximum number of files allowed in any one directory is 2400.

File-naming Conventions

As in MS-DOS, the file name can take up to eight characters followed by an extension of three characters.

A file is treated as:

- Panel setup if its extension is PNL
- Waveform if its extension is a three-digit number
- Waveform template if its extension is TPL
- Hardcopy if its extension is TIF, BMP, or PRT.

The instrument has a pre-defined naming convention for the eight-character file names and directory names, and these default names can be customized, as shown in this table.

If the new file being stored bears the same name as an existing file on the same storage medium, the old file will be deleted.

Type	Default Name	Customized Name
Manually stored waveform files	Stt.nnn	xxxxxxxx.nnn
Automatically stored waveform files	Att.nnn	xxxxxxxx.nnn
Panel files	Pnnn.PNL	xxxxxnnn.PNL
Hard copy files	Dnnn.TIF Dnnn.BMP Dnnn.PRT	xxxxxnnn.TIF xxxxxnnn.BMP xxxxxnnn.PRT
Template files	LECROYvv.TPL	Cannot be changed
Directory name	LECROY_1.DIR	xxxxxxxx
Spreadsheet	Sttnnn.TXT	xxxxxnnn.TXT
Matlab	Sttnnn.DAT	xxxxxnnn.DAT
Mathcad	Sttnnn.PRN	xxxxxnnn.PRN

KEY

x	*any legal DOS file-name character*	w	*the template version number: for example, for a version 2.2, the template is saved as LECROY22.TPL*
tt	*the trace name of C1, C2, C3, C4, TA, TB, TC, TD*	TIF BMP	*hardcopy graphics image files*
nnn	*a 3-digit decimal sequence number starting at 001 that is automatically assigned*	PRT	*hardcopy printer files.*

Auto-Store Waveform File Naming

The default notation for waveform files is Stt.nnn for manually stored files and Att.nnn for automatically stored files, the characters S and A representing the two storage methods, respectively.

When automatically generating a file name, the system uses the assigned name plus a three-digit sequence number. If the assigned waveform name is already in the default 'Stt' form — such as SC1, STB — the name will be modified to the 'Att' form: AC1, ATB and so on. All other user-assigned names remain as entered.

More on Auto-Stored Files

If "**Fill**" is selected and default names are used, the first waveform stored will be Axx.001, the second Axx.002, and so on, continuing until the storage medium is filled, the file number reaches 999, or there are more than 2400 files in the current working directory.

If "**Wrap**" is selected, the oldest auto-stored waveform files will be deleted whenever the medium becomes full. And the remaining auto-stored waveform files will be renamed — the oldest group of files will be named "Axx.001", the second oldest "Axx.002" and so on.

The current sequence number is deduced from inspection of all file names in the working directory, regardless of file type — panel, hard copy or waveform. The highest occupied numeric file-name extension of the form 'nnn' is determined, and the next highest number is used as the current generation number for storage operations.

Deleting Files

When a file generation is deleted, all files designated with the three-digit sequence number of the file-name extension will be deleted, regardless of file type.

Media Size/Storage Availability

The mass-storage file system indicates media size and storage availability in kbytes where 1 kbyte = 1024 bytes. Many media manufacturers specify the available storage in Mbytes where 1 Mbyte = 1 million bytes. This results in an apparent mismatch in specified versus actual media storage availability, when in fact the availability in bytes is identical.

Write Protect Switch

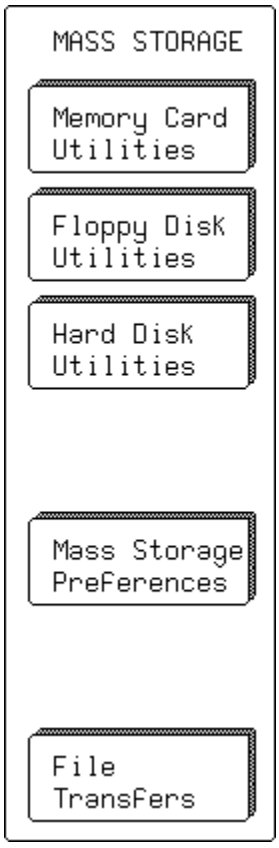
If the write-protection switch of the card or floppy being used has been pushed to the active position, the message "Device is Write Protected" will be displayed on the upper part of the grid whenever the medium is accessed for writing.

SRAM Card Battery

The SRAM memory card contains a button-size battery for preserving data. When this needs replacing, the message "BAD BATTERY" appears. The battery can and should be changed while the memory card is still in the oscilloscope, in order to prevent loss of information. To access the battery, remove the panel on the bottom edge of the card by removing the small screw.

MASS STORAGE

— offers the primary menus for controlling mass storage. The range of "UTILITIES" available depends on the options installed — all shown here:



Memory Card Utilities ***(OPTION)***

To delete files, format, or copy a machine template onto memory card. (The Utilities menus accessed by selection of this menu for the optional Memory Card are similar to those accessed for Floppy Disk *shown on the following pages*.)

Floppy Disk Utilities

To delete files, format, or copy a machine template onto floppy disk. *The examples on the following pages illustrate this selection.*

Hard Disk Utilities ***(OPTION)***

To delete files, format, or copy a machine template onto hard disk. *See page 12–14*

Mass Storage Preferences

To set, add or delete it a working directory, or for customizing file names. *See page 12–15.*

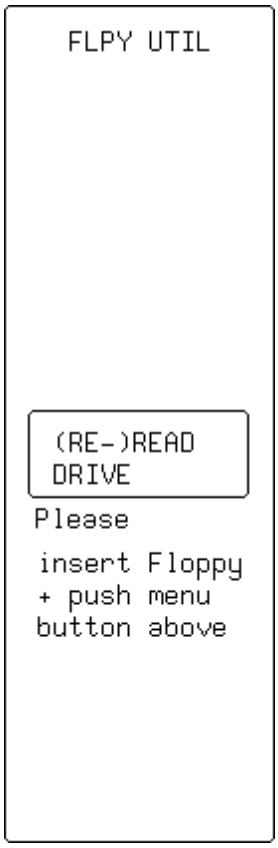
File Transfers ***(If more than one mass-storage device available)***

For copying files from one storage device to another. *See page 12–18.*

FLPY UTIL

These menus appear when “Floppy Disk UTILITIES” is selected from “MASS STORAGE” and

- a floppy has been newly inserted, or
- there is no floppy in the drive.



(RE–)READ DRIVE

To read the floppy and display directory contents.

FLPY UTIL

Once the floppy has been read, these menus appear, displaying information on the installed storage media:

- Last “format” date and time
- Media size and available free space
- Date, time and size information of the selected file on the media.

TEMPLATE AND FORMATTING

To access a secondary menu for formatting storage media or copying to it the machine template. The template is an ASCII text-file containing all information required for decoding the descriptor part of a binary waveform.

DO DELETE

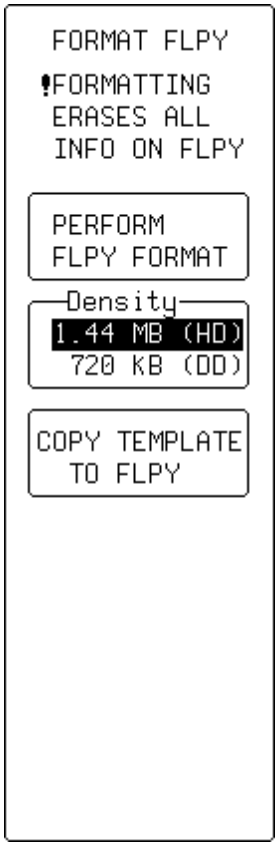
To delete the file selected in the “File” menu (*below*).

File

For selecting the file to be deleted with the attributed menu knob or buttons.

FORMAT FLPY

These menus appear when “TEMPLATE AND FORMATTING” is selected from “FLOPPY UTIL”.



PERFORM FLPY FORMAT

To format the floppy, in DOS format with an interleave factor of two, which optimizes throughput to and from the scope.

Density

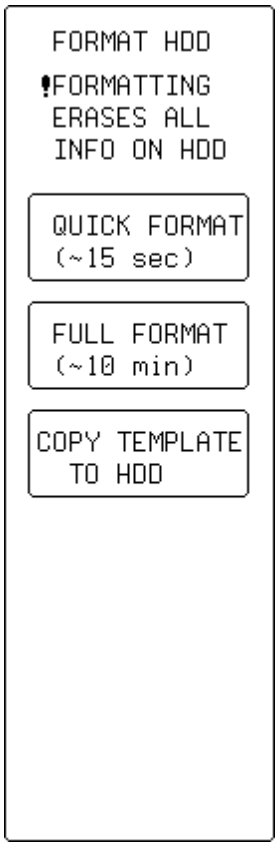
This menu appears only in “FORMAT FLOPPY”. For selecting density — “**1.44 MB (HD)**” or “**720 kB (DD)**”.

COPY TEMPLATE TO

For copying the machine template — an ASCII text-file containing all the information required to decode the descriptor part of a binary waveform — to the medium.

FORMAT HDD

These menus appear when “MASS STORAGE” “Hard Disk UTILITIES” “TEMPLATE AND FORMATTING” is selected.



QUICK FORMAT

To quickly (15 seconds) clear the portable hard disk drive.

FULL FORMAT

For a complete formatting of the HDD — recommended if the disk is non-readable.

COPY TEMPLATE TO

For copying the machine template — an ASCII text-file containing all the information required to decode the descriptor part of a binary waveform — to the medium.

PREFERENCES

These menus appear when "MASS STORAGE" "Mass Storage Preferences" is selected and are for:

- Selecting the working directory
- Deleting a directory
- Accessing the "File Name Preferences" menu
- Accessing the "Add New Directory" menu.

on drive

For selecting the medium.

File Name Preferences

To access the secondary menu for defining custom names for waveform, setup, or hardcopy files (*see next page*).

DELETE THIS DIRECTORY

To delete the directory selected in "**work with**" menu (*see below*).

work with

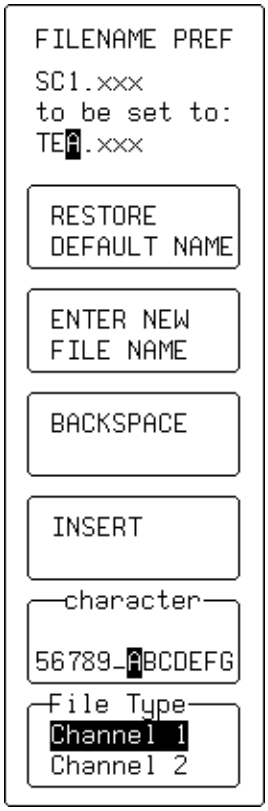
For selecting the directory to be used for file storage and retrieval.

Add new Directory

To access secondary menu for adding a new directory.

FILENAME PREF

This menu group appears when “File Name Preferences” is selected from the preceding menu — for defining custom names for waveform, setup, or hardcopy files.



to be set to:

To select the character for modification.

RESTORE DEFAULT NAME

For restoring the file type selected in the “File Type” menu (*see below*) to its default name.

ENTER NEW FILE NAME

To validate the newly defined name.

BACKSPACE

For moving back one space and erasing the previous character.

INSERT

To move forward to create a space for insertion of a character.

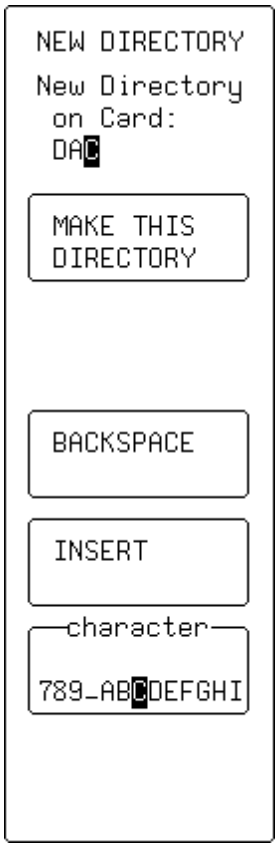
character

For selecting a character using the menu knob.

File Type

To select the file type for customizing.

NEW DIRECTORY — used to define a new directory with a custom name.



New Directory on Card:

For selecting the character to be modified.

MAKE THIS DIRECTORY

For validating the new directory.

BACKSPACE

To move back one space and erase the previous character.

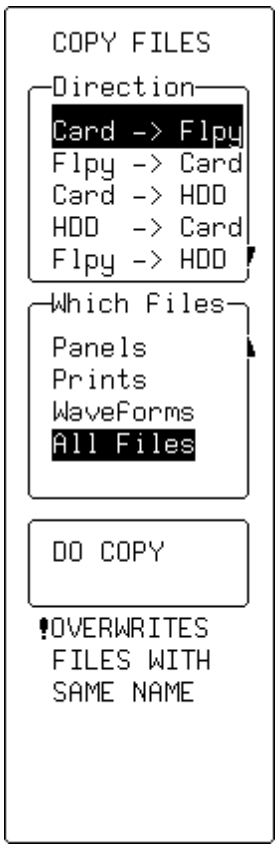
INSERT

For moving forward to create a space for the insertion of a character.

character

For selecting a character using the menu knob.

COPY FILES



These menus appear when “MASS STORAGE” “File Transfers” is selected, and copies files from one medium to another.

Direction *(DEPENDING ON OPTIONS INSTALLED)*

To select source (copy from) and destination (copy to).

Which files

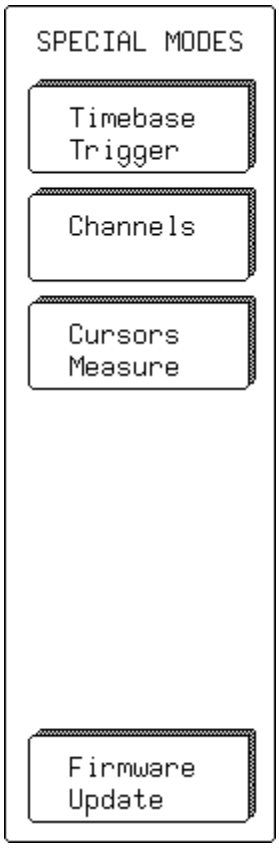
For selecting the type of file for copying.

DO COPY

To execute the copying.

Special Modes

SPECIAL MODES



When "Special Modes" is selected from "UTILITIES", the primary and secondary menus described here become available.

Timebase Trigger

Accesses the secondary menu:

- **AUTO sequence**
  For specifying the time-out in Sequence mode using the associated menu knob to change the value.

Channels

Accesses the secondary menus:

On GAIN Changes, all OFFSETS fixed

- **In**
  For specifying the offset behavior of a gain (VOLTS/DIV) change. The offset can be fixed either in "Volts" or vertical "Divisions".

- **Automatic Recalibration**
  For turning the automatic recalibration "ON" or "OFF". Default is ON. Turning this off may speed up the acquisition, but during that time calibration is not guaranteed.

Cursors Measure

Accesses the secondary menu:

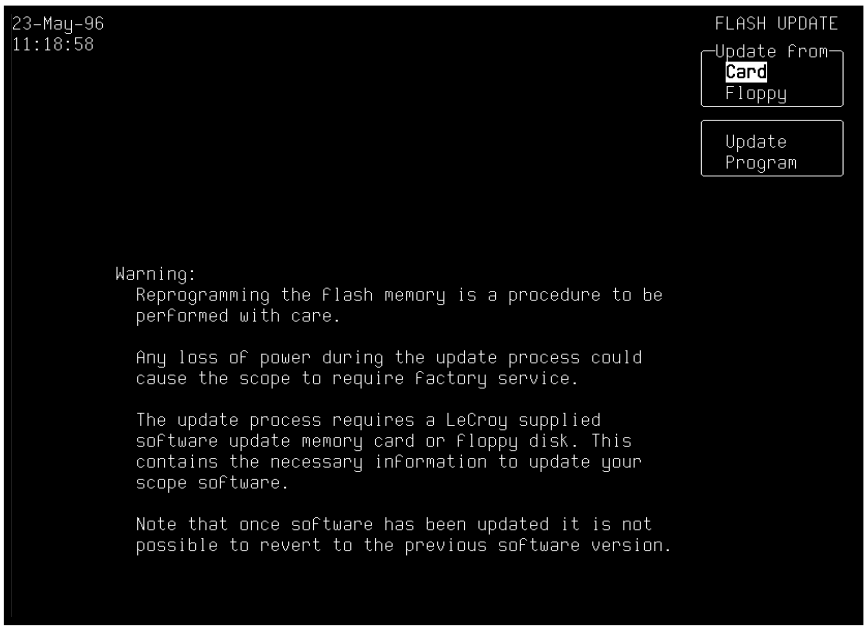
- **Read time cursor amplitudes**
  For selecting from "In" the time cursor amplitude units in "Volts" or "dBm".

Firmware Update

Accesses the secondary menu:

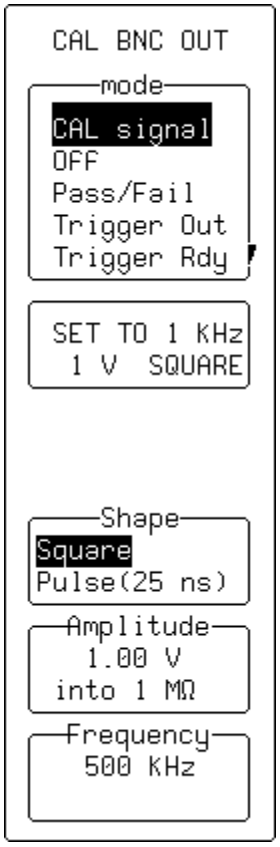
- **FLASH UPDATE**
  Offering the "Update from" and "Update Program" menus (*illustrated next page*).

The full screen warning message shown when “FLASH UPDATE” has been selected.



CAL BNC Setup

CAL BNC OUT



When "CAL BNC Setup" is selected from "UTILITIES", selection can be made of the type of signal put out at the CAL BNC connector. The frequency, amplitude and pulse shape of the calibration signal can also be chosen.

In addition, the CAL BNC connector can be used to provide a pulse:

- as an action for PASS/FAIL testing
- at the occurrence of each accepted trigger event (Trigger Out)
- when the scope is ready to accept a trigger event (Trigger Rdy).

When the instrument is switched on, the calibration signal is automatically set to its default state, 1 kHz 1 V square wave.

mode

To change the kind of signal.

SET TO

To quickly reset the CAL BNC output to its default state.

Shape

To change the form of the calibration signal.

Amplitude

Using the associated knob, for setting the desired high level for all CAL BNC applications. If the BNC output is connected to an input channel with 50 Ω, the amplitude will be halved.

Frequency

Using the associated knob, for setting the desired frequency of a CAL signal in the range 500 Hz–2 MHz.