NAME

   frmsel − select frames for analysis

SYNOPSIS

   frmsel [runfile]

DESCRIPTION

   Frmsel allows you to examine the frame file produced by one of the capture programs (dsepr(1)), for the
   given *runfile* name. You can display any trace from any frame in the file, delete bad frames either manu-
   ally or automatically, and tag frames based on the presence of certain tag pulses. You can also zero-
   adjust any trace to correct for any DC shift from frame to frame. The *runfile* may be specified either
   with or without the **.frm** suffix. If no runfile name is specified as an argument, the *File* selection (below)
   will be required before other operations can be performed.

   At the bottom of the display, *frmsel* prints the following menu prompt line:

   > Auto-del Display File Interpolate List Manual-del Number-tags Quit Rows-cols-scale Set-tags
   > Trace Undelete View-stats Zero-adjust

   An operation is initiated by typing a single letter, the first letter of an item in the menu line. You can
   also step through the menu using the space bar and the backspace (or erase) key, to highlight the item
   you want, then press RETURN to select that item.

   Auto-del

   This selection allows you to perform two validity tests on the current trace in a series of frames in the
   file, and mark any frames that fail either test as deleted, which will cause them to be ignored in subse-
   quent analysis. You will first be asked whether you want to delete clipped traces, i.e. traces containing
   spikes that exceed bounds that you will specify. Respond by typing the letter **Y** or **N**. You are then
   asked whether you want to delete traces with bad or missing calibration pulses. You are next asked to
   enter the frame number of the trace you want to use for setting the auto-deletion parameters. Respond
   by entering a single frame number. The current trace for this frame is then displayed. You will then
   have to set various parameters using the pointing device.

   Parameters are set by using the pointing device to move the cursor to the desired position on the dis-
   played trace, then pressing either pointing device button **A** or **B** to set the marker for the desired parame-
   ter to that position. Once the markers have been set to the desired position, press button **C** or **D** to go on
   to the next step.

   If the test for clipping was selected, you will first have to set the parameters *Tl* and *Tu*, and the left and
   right bounds of the clipping test range. If a trace contains any points outside of the range of levels *[Tl,
   Tu]*, within the left and right bounds of the test range, then the frame containing that trace will be
   marked as deleted due to clipping. Pressing button **A** will set the marker for *Tl* and the left bound (i.e.
   the bottom-left corner of the box) to the current Y coordinate of the cursor; pressing button **B** will do
   likewise for *Tu* and the right bound (i.e. the top-right corner of the box).

   If the test for calibration pulses was selected, there will be 8 parameters to set, in four steps. In the first
   step, you must choose the reference level measurement range. Use buttons **A** and **B** to set markers at the
   two end points of the desired range. All points in this range will be averaged to compute the reference
   level for that trace. Next, the parameters *T1* and *T2* must be set. These parameters are heights relative
   to the computed reference level. In order to be valid, a calibration pulse must rise to a height greater
   than *T1*, then fall to a height less than *T2*. Button **A** sets *T1*, button **B** sets *T2*. Next, the parameters
   PWmin and *PWmax* must be set. These indicate the minimum and maximum valid pulse widths. The
   pulse width for a particular trace is the time from the crossing of *T1* to the crossing of *T2*. Finally, the
   parameters *Dmin* and *Dmax* must be set. These indicate the minimum and maximum valid delays to the
   start of the calibration pulse, i.e. the time of the crossing of *T1*.

   After all parameters have been set, you are prompted to enter a list of frames to be deleted. Each of
   these frames will be tested for validity, and marked as deleted if it fails either test. The number of
   frames deleted will be reported at the end.

Display

This selection allows you to display the current trace in each frame in a list of frames, and individually delete any frame. You are first prompted to enter a list of frames to be displayed. You are then asked whether deleted frames are to be displayed also. Respond by typing the letter **Y** if you want to display deleted frames, or **N** if you do not. The traces for the selected frames will be displayed, up to 20 per screen (by default). The frame number for each frame is shown above the trace, along with the values of the deletion flags for that frame, and the tag value if this is set. The deletion flags will be shown as **M**, **C** and **P**, for frames deleted manually, by clipping, or by calibration pulse (see *Auto-del* above), or a hypen (−) if not set. These are followed by a number **1** or higher if the frame has a tag value. Tag values can be set by the *Number-tags* and *Set-tags* operations below, or by the automatic tagging feature in *cap*(1) or *dsepr*(1).

You can now delete any of the displayed traces by using the pointing device to move the cursor to the desired trace, and then pressing button **A**. An X will then be displayed through that trace. Any manually deleted trace can be undeleted by pointing to it and pressing button **A** again. The X on that trace will then disappear. When done with the current screen-full, press button **D** to continue. If there are more frames left, they will be displayed, and the above procedure repeated. Pressing button **B** causes you to break from (or abort) this procedure, and immediately return to the main menu. In this case, any changes made to the current screen will be lost; i.e. no frames from this screen-full will be deleted or undeleted.

File

This selection allows you to examine the frames of a specified run. You will be prompted for a run file name. Respond by entering the file name of a captured run, with or without the **.frm** suffix. If the file can be opened, the run header information will be displayed, as for *View-stats* below.

Interpolate

This selection allows you to set the *interpolation* option. If this option is enabled, the data points of the displayed traces will be connected by line segments. If disabled, only the data points are displayed. Initially, this option is disabled.

List

This selection allows you to quickly list the frame number and deletion flags for any frames. You are prompted for a list of frames. By default, all frames will be listed. The frame number and setting of each of the deletion flags will be shown for each selected frame, several per line. The deletion flags will be shown as **M**, **C** and **P**, for frames deleted manually, by clipping, or by calibration pulse (see *Auto-del* above), or a hypen (−) if not set. These are followed by a number **1** or higher if the frame has a tag value. The listing will pause when the screen is full, and let you hit RETURN before it resumes.

Manual-del

This selection allows you to quickly delete entire ranges of frames. You are first asked which deletion flags you wish to set. You respond by typing any or all of the letters **M**, **C** and **P**, then hitting RETURN. By default, only the manual-deletion flag, **M**, is set. Next, you are prompted for a list of frames, and finally, for a list of tag values. Each frame in the specified list of frames will be marked as deleted according to the flags you selected, as long as its tag value is in the tag value list. The initial default is to include all tag values. The number of frames deleted (i.e. whose flags were modified) will be reported.

Number-tags

This selection allows you to manually mark frames with tag values. Subsequent analysis can be limited to a certain set of tag values, excluding all other frames. You are first asked for a list of numbers for the tag value sequence. This list specifies the repeating sequence of tag values to be assigned to the frames. The format of this list is the same as for a *frame list*. Tag values can be specified in any order, and can appear more than once in a list. Next, you are prompted for a list of frames. The first frame in the frame list is assigned the first value in the tag value list, the second frame gets the second value, and so on. Once the end of the tag value list is reached, the program goes back to the start of this list. The tag sequence is repeated as often as necessary, until the end of the frame list is reached. The number of

frames modified will be reported.

Quit

This selection causes the program to terminate.

Rows-cols-scale

This selection allows you to change the number of frames shown per screen by the *Display* operation, and control the magnification. You are asked first for the number of rows, then for the number of columns of frames to be displayed. The allowed range for each is shown in parentheses, and the current setting is shown as well. Next, you are asked for the display magnification factor. Enter the magnification factor you want, if fixed magnification is desired, or enter **0** for automatic magnification. During automatic magnification, the program determines the best factor for each frame, and shows the factors used.

Set-tags

This selection allows you to perform tests on the tag trace, and mark frames based on the tag pulses detected. Subsequent analysis can be limited to a certain set of tag values, excluding all other frames. You are first asked for the tag pulse trace number. Respond by entering a valid trace number. You are next asked to enter the frame number of the trace you want to use for setting the parameters. Respond by entering a single frame number. You should choose a frame which contains both a short and a long tag pulse, to facilitate parameter setting. The tag trace for this frame is then displayed. You will then have to set various parameters using the pointing device.

Parameters are set by using the pointing device to move the cursor to the desired position on the displayed trace, then pressing either pointing device button **A** or **B** to set the marker for the desired parameter to that position. Once the markers have been set to the desired position, press button **C** or **D** to go on to the next step.

First, you must choose the reference level measurement range. Use buttons **A** and **B** to set markers at the two end points of the desired range. All points in this range will be averaged to compute the reference level for that trace. Next, *frmsel* attempts to find two tag pulses on the displayed trace, and displays the latency (the time from the start of the first pulse to the start of the second). Now the parameters *TP1* and *TP2* must be set. These parameters are heights relative to the computed reference level. Button **A** sets *TP1*, button **B** sets *TP2*. Finally, the parameter *TP3* must be set. It is also a height relative to the reference level, and is set using either button **A** or button **B**. These last three parameters are used to measure tag pulses. If a tag pulse rises above *TP1*, but not above *TP2*, it is called tag pulse #1. If a tag pulse rises above *TP2*, but not above *TP3*, it is called tag pulse #2. If a tag pulse rises above *TP3*, it is assumed to be both tag pulses (#1 and #2) overlapping. Tag values are assigned to frames as follows:

Tag Value	Frame contains
0	no tag pulses
1	tag pulse #1 only
2	tag pulse #2 only
3	both tag pulses #1 and #2
	(either separate or overlapping)

After all parameters have been set, you are prompted to enter a list of frames to be tagged. Each of these frames will be tested, and marked with the appropriate tag. The number of frames modified will be reported at the end.

Trace

This selection allows you to choose the trace to be displayed by the *Display* operation, or tested by the *Auto-del* operation. By default, the trace used is the first one (trace 0), but you can select any other triggered channel trace. You will be prompted for the trace number. Respond by entering a valid trace number, and hitting RETURN.

Undelete

This selection allows you to clear any of the deletion flags on any list of frames. You are first asked which flags you wish to clear. You respond by typing any or all of the letters **M**, **C** and **P**, then hitting

RETURN. By default, only the auto-deletion flags, **C** and **P**, are cleared. Next, you are prompted for a list of frames, and finally, for a list of tag values. The specified flags in each frame in the specified list will be cleared, as long as the frame's tag value is in the tag value list. The initial default is to include all tag values. The number of frames modified will be reported.

View-stats

This selection allows you to view the run header information, which includes a list of all the traces in the run that contain data.

Zero-adjust

This selection allows you to eliminate any DC shift on the current trace in a series of frames in the file. You are first asked to enter the frame number of the trace you want to use for setting the parameters. Respond by entering a single frame number. You should choose a frame which clearly indicates the range of point you want to use to measure a baseline reference level. The current trace for this frame is then displayed. You will then have to set the reference level measurement range using the pointing device.

The two end-points of this range are set by using the pointing device to move the cursor to the desired position on the displayed trace, then pressing either pointing device button **A** or **B** to set the marker for the desired end-point to that position. Once the markers have been set to the desired position, press button **C** or **D** to go on to the next step.

All points in this range will be averaged to compute the reference level for that trace in each frame. Zero-adjusting involves subtracting the reference level from the trace data in each frame, so that the new baseline level will be zero Volts.

After setting the range, you are asked to enter a list of frames to be zero-adjusted. The sweeps of the current trace in each of these frames will be adjusted. Before making any modifications to the frame file, you are asked for confirmation to proceed. Note that unlike deletion and tagging, this procedure is irreversible – do not proceed unless you are sure you want to remove the DC shifts from this trace. If you proceed, the program will also modify the calibration information for the current trace to indicate the new zero level. The number of frames modified will be reported at the end.

!command

Whenever the menu line has just been printed, instead of typing a letter to select a menu item, you can type an exclamation point, followed by any UNIX command, then hit RETURN. A UNIX shell is invoked to interpret and execute this command. You can recall and edit the last command entered, by hitting the "up arrow" key, or Control-K, after typing the exclamation point.

$ or %

Whenever the menu line has just been printed, you can also type either a dollar sign (**$**), to invoke an interactive Bourne shell, or a percent sign (**%**), to invoke an interactive C shell. In either case, the shell will continue accepting commands until you type a **Control-D**, to exit from the shell, and return to *frmsel*.

? or /

Whenever the menu line has just been printed, you can also type either a question mark (**?**), or slash (**/**), to get a short description of all choices available in the current menu.

X WINDOW SUPPORT

When the X Window version of this program is run on an X Window terminal, a new window will be shown for displaying program output. Unless the input was redirected from a file, it will be taken from the keyboard when this window is the "input focus", i.e. the active window. When running this way, it is essentially detached from the *xterm* window from which you run the command, and it can be run in the background.

As for most other X Window programs in this package, the following X command line options are accepted:

−cursor *num*

    You can specify any cursor number (not cursor names) in the Standard Cursor Symbols described in the *X Window System User's Guide* using the **−cursor** or **−curs** option. The default value is 68, the left pointer symbol. This can also be specified using the **CURSOR** environment variable.

−display [*host*]**:***server*[**.***screen*]

    By default, the host, server and screen, which identify your X terminal, are obtained from the environment variable **DISPLAY**. However, you can also specify them using the **−display** or **−disp** option. The *host* is the name of the machine or terminal, on which the window is to be created, *server* is the server number, and *screen* is the screen number (default is 0).

−fn *font*

    You can specify any fixed-width font to be used for text display using the **−fn** or **−font** option. The default value is **9x15** if the window is at least 900 pixels wide initially, and **fixed** otherwise. This can also be specified using the **SCRFONT** environment variable.

−geometry *geometry*

    By default, the program will create a window that covers most of the display. However, you can specify custom window dimensions and location using the **−geometry** or **−geom** option. The format of the *geometry* string is described in the *X Window System User's Guide*. This can also be specified using the **GEOMETRY** environment variable.

−iconic

    This option will cause the program to start up in an iconified state, which can be reactivated by double-clicking on the icon.

−rev This option will cause the program to use reverse video in its display window.

−title *name*

    This option will change the name shown on the window's title bar, which is usually just the program name. It can also be given as **−name** *name*.

NOTES

Frmsel should be run from a graphics terminal, or X terminal, in order to view traces of data or set parameters. It can be run from other types of terminals, to list textual information about the frame file, but no graphs will be generated on screen.

All operations in this program require that a *frame list* be specified. This list is simply a line containing one or more frame numbers, each separated by one comma and/or one or more blanks. Ranges of frames can also be specified, by entering two frame numbers, separated by a colon or a dash. For example, if you enter the frame list

        1:3, 6 9-11 14,16 20

the operation will be performed on frames 1, 2, 3, 6, 9, 10, 11, 14, 16, and 20. Instead of typing in a list of frames, you may also type in the word **all** to select all frames in the *runfile*.

FILES

    *.frm

SEE ALSO

    analysis(1), cap(1), dsepr(1)