LOGPLOT library for HP-50G/49G+/49G

1 Introduction

This library makes logarithmic scale graphs for the 50G, 49G+ and 49G. Plot types "Function", "Scatter" and "Parametric" with (semi)log-scale are implemented. In the type "Function", TRACE and (X,Y) in the HP-49G plot menu are available. In the type "Scatter" and "Parametric", (X,Y) in the HP-49G plot menu is available. Non-uniform logarithmic tick, zoom-in, zoom-out and recenter are implemented. Faster than previous versions.

The library is written in SysRPL. The library ID is 784.

2 Files

`logplot.hp`	The library file for the HP49G(ROM 1.18, 1.19-6 - ROM 1.24), HP49G+(ROM 1.23 - ROM 2.09) and HP50G(ROM 2.08, ROM2.09)
`readme.pdf`	This file

3 Command

SETLOG : to set parameters for LOGPLOT

LOGPLOT : to plot function or data.

4 Version

Ver1.0 :	2005.7.19	First release
Ver1.01 :	2005.7.20	The place of showing Label is changed.
Ver1.02 :	2005.7.29	Nonuniform logarithmic tick is added.
Ver1.03 :	2005.7.31	Some error checking are added.
Ver1.04 :	2005.8.2	Errors on menu are fixed.
Ver1.05 :	2005.8.3	Some error checking are added.
Ver1.06 :	2005.8.11	Errors on nonuniform tick are fixed.
Ver1.07 :	2005.8.11	Errors on nonuniform tick are fixed.
Ver1.08 :	2005.8.12	Messages in SETLOG are changed.
Ver1.09 :	2005.8.14	Errors on shift-keys are fixed. The file size is reduced.

Ver1.10 :	2005.9.1	Menu of SETLOG is slightly changed. Default values in SETLOG are fixed.
Ver1.11 :	2005.9.2	Errors on nonuniform tick are fixed.
Ver1.12 :	2005.9.2	When the left value of V-View is larger than the right value, these values are automatically exchanged.
Ver1.13 :	2005.9.5	Library file for ROM1.19-6 and ROM1.18 is added.
Ver1.14 :	2005.9.10	Small bugs are fixed.
Ver1.15 :	2005.9.28	Small bugs are fixed.
Ver2.00 :	2006.12.18	Holding cursor key is available. Zoom-in, zoom-out and recenter are available. Faster than previous versions.
Ver2.01 :	2006.12.25	Bug on clock display is fixed. Check mark on TRACE is implememted.
Ver2.02 :	2006.12.29	Bug on recenter is fixed. Two library files for different ROM versions are united to one file. The behavior of left-shift + cursor key is changed.
Ver2.03 :	2007.1.08	AUTO and BOXZ are implemented.
Ver2.04 :	2007.1.16	Faster than previous versions. Unnecessary changing to RAD mode is removed. Built-in command MAP fouces this change of mode. Now MAP is removed from LOGPLOT. The Mode changes automatically to Approx mode. At the end of LOGPLOT the mode returns to the original state. When menu were turned on/off by MENU then scrolling window was not correct. This bug is fixed.
Ver2.05 :	2007.5.7	A bug on check mark of TRACE is fixed.

5 Installation

Send the file `logplot.hp` to the calculator by conn4x or SD-card. Using the filer of calculator, move the file to port0, 1 or 2 (port2 is recommended). Press ON+C (warmboot), then the library can be used.

6 Usage

1. Press APPS and select LogPlot.

   The commands “SETLOG”, “ERASE” (built-in command), “LOGPLOT”, “RESET” are shown in the menu. If you press RESET, then PPAR, ZPAR and LOGPAR (parameters for this library) are purged.

2. Use “2D/3D” menu (Left-shift + F3).

   Choose the type of plot (only “Function”, “Scatter” or “Parametric” is available in this library). Set the equations or data.

If you check AXES, x-axis and y-axis are drawn. If you check Pixels, the values of ticks are rounded by one pixcel width or hight. Since H-Tick and V-Tick are set in SETLOG menu, do not input these values in this step. After setting, press ENTER key.

3. Execute SETLOG (F1)

   Choose H-type and V-type from Linear, log10 or dB. Linear is linear scale. log10 is log scale. dB means decibel. (z (linear) $= 20\log_{10}(z)$ (dB))

   Set minimum and maximum of H-View and V-View. If you check AXES in step2, set H-tick and V-tick ((dec) means decade).

   For example,

H-type:Log10	H-tick(dec): 1.
V-type:dB	V-tick(dB) : 5.
H-View: .1	10.
V-View: -20.	0.

   This means: The range of horizontal view is from 0.1 to 10 (in PPAR, the range is from LOG(0.1)=-1 to LOG(10)=1) The range of vertical view is from -20dB to 0dB (in PPAR, the range is from -20 to 0) H-tick is 1 decade (that is, tick mark is given in the places $x = 0.1$, $x = 1$, $x = 10$.) V-tick is 5dB.

   To check Auto means autoscale for axes If you want to show label for axes, check Label. Step is the same in the buit-in "Plot Window" menu (left-shift + F3).

   After setting, press ENTER or F6(OK).

   If you check AXES in step2, another setting menu is shown. H-center and V-center mean the crossing point of axes. An example of these values is that H-center is the minimum of H-View and V-center is the maximum of V-View. If you check Log-tick, nonuniform log-tick will be displayed for axis with type log10 and corresponding H-tick and/or V-tick are set to be zero.

   After setting, press ENTER or F6(OK).

   If an error "Undefined Result" or "Infinite Result" occurs, check the value of H-View and V-View. When H-type (V-type) is log10, the values of H-View (V-View) must be positive.

4. Press ERASE (F2), if you want to erase previous graph.

5. Press LOGPLOT (F3)

   After drawing graph, below commands in the menu (F1-F6) are available.

   - Press MENU to turn off/on the menu.
   - Press (X,Y) to display the coordinate of the current cursor position.
   - Press TRACE to trace the curve. If y-coordinate is not real number (eg. when $y < 0$, $\log_{10}(y)$ is not real), the coordinate is displayed as "y:not real."
   - Press X,Y$\rightarrow$ to copy the current coordinate into level1 stack.

- Press AUTO for auto scaling of y-axis.
- Press QUIT or ON to quit.
- Press NXT then another menu is shown.

- Press ZFACT to set parameters H-Factor (horizontal zoom factor, default:4), V-Factor (vertical zoom factor, default:4) and recenter (default:Yes) for ZIN, ZOUT.
- Press ZIN to zoom in.
- Press ZOUT to zoom out.
- Press CNTR to recenter plot on the current cursor position.
- Press BOXZ to zoom the selected rectangular sector (cf. built-in BOXZ). First move the cursor to one of the corners of the rectangular that you want to zoom, and press BOXZ. Move the cursor to the opposite corner of the rectangular, then press ZOOM.

- Cursor key : moving cursor 1 dot.
  Holding-down cursor key moves cursor continuously. (When a cursor key is held-down, cursor moves continuously after small waiting time.)
- Left-shift + cursor key : moving cursor 10 dot. Holding-down cursor key do not moves cursor continuously.
- Right-shift + cursor key : moving cursor to one of the boundary.

6. If you meet an error, press RESET (F4) (i.e. purge PPAR, ZPAR and LOGPAR) and try to start from step1.

If you find any problems, please let me know in comp.sys.hp48 or by E-mail.

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