

PalmLogic

User's Manual

Design Gateway Co., Ltd.

Rev 2.0

(PD0304-6-00-02E)

*** Please read this manual carefully before using PalmLogic ***

Revision History

Revision	Date	Detail of change
1.0	14 August 2003	Initial Release
1.1	27 August 2003	Changing the order and adding the detail in section 1 introduction (adding the detail in section 1.5 limitation and inserting section 1.4 after sale's service, 1.6 warning, and 1.7 warranty policy)
		Changing Figure 3-1 – 3-3 and modifying Table 3-1
		Adding the details in section 3.1
1.2	29 August 2003	Changing character font
		Modifying section 1.7
1.3	9 October 2003	Modifying section 1.5, 1.6, 1.7, and Figure 1-1
1.4	23 January 2004	Modifying section 1.4
2.0	5 August 2004	Changing Design Gateway Co.,Ltd address

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1. Introduction

1.1. Summary feature

- 1 Compact-size portable logic analyzer
- 2 USB port communication
- 3 No need external power supply (use from USB port)
- 4 Can change sampling rate (Maximum rate is 100 MHz) and can use external clock
- 5 32 Channels
- 6 Deep data buffer (128K per channel)
- 7 Can set trigger position (from 0 to 128K)
- 8 Two kinds of Trigger Condition
 1. Normal condition: occur rising edge, falling edge, high level, or low level on the specific channel (can select from channel 1 to channel 16)
 2. Composition condition: occur rising edge, falling edge, high level, or low level on channel1 simultaneous with channel28 to channel32 have the specific value
- 9 Software can show waveform and save the sampled data for using with Waveformer Pro 4.5.

1.2. System requirement

- 1 PalmLogic software and device driver support Windows ME, Windows 2000, and Windows XP.
- 2 PC must have an available USB port.

1.3. Kit content

- 1 PalmLogic
- 2 USB cable
- 3 32 probe wires + 2 pincers wires
- 4 CD (contains PalmLogic software, driver, and document)
- 5 User's manual

1.4. Limitation

- 1 PalmLogic can sample only TTL or CMOS (3.3 or 5V) signal. The voltage must be 0 – 5V.
- 2 If the input of each channel is hi-impedance, that channel will be “low” logic.
- 3 PalmLogic works with timing analysis method (sampling data synchronized with clock signal). It can not work with state analysis method (saving data when occur the transition only).
- 4 Timing property of the sampled waveform has error not more than two times of sampling clock period (± 2 of the sampling clock).

1.5. Warning

- 1 PalmLogic does not have input protection. If the voltage is out of range (0 – 5V), the circuit may be damaged. For protection, user should use buffer (74HC244) before connecting signal to PalmLogic channel (Figure 1-1).

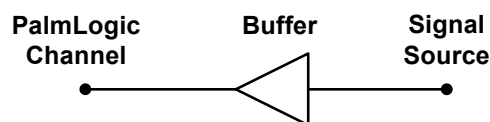


Figure 1-1 Recommended Protection

- 2 Plugging and removing probe line while the measured circuit has power supply (hot-plugging) may damage PalmLogic circuit. For protection, user should turn off the power supply of measured circuit before plugging or removing probe line.
- 3 The 3.3V and 5V at connector of PalmLogic can be used for being reference voltage only. User can not use them for being power supply because PalmLogic consumes power from USB port of computer (which can supply not more than 500 mA). The usage of these reference voltages to be power supply may cause some damage to PalmLogic or user's computer.
- 4 Do not short circuit between reference voltage (3.3V or 5V) and ground.

1.6. Warranty policy

- 1 Product warranty is valid for 6 months from purchasing date.
- 2 Warranty is void if any modification has been made to this product and any incorrect operation from this manual or warranty sticker is torn or damaged.
- 3 In order to claim for product exchange or technical support within warranty period, official receipt is required for unregistered customer as an evidence of purchasing whereas official receipt is unnecessary for registered customer (please fill up registration card attached herewith the product and send back to Design Gateway Co.,Ltd).

2. Installation

2.1. Installation step

- 1 Install software (see how to install software in section 2.2). This step prepares the program file and device driver files that are necessary for next step.
- 2 Connect PalmLogic with PC (by USB cable). After that your PC will be able to detect and update driver for PalmLogic (see detail in section 2.3).
- 3 Now, PalmLogic is ready for use (see how to use PalmLogic in section 3).

Note : The installation steps are the same as in Windows ME, Windows 2000, and Windows XP.

2.2. Software installation

- 1 Run setup program at “X:\Setup.exe” (“X:” is your CD drive name).
- 2 After running this setup program, on your screen, it will appear the welcome windows (Figure 2-1). Click “Next” to continue.



Figure 2-1 Welcome to the PalmLogic Setup Program

- 3 Choose the destination folder for installing PalmLogic’s program file (Figure 2-2). You can change this folder by clicking at “Browse”. After you finish setting the destination folder, click “Next” to start the file copying process.

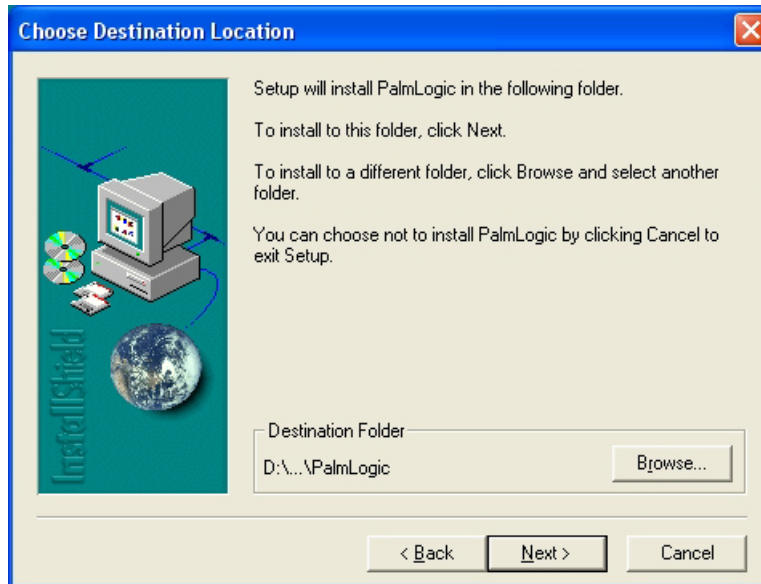


Figure 2-2 Choose the Destination Location

- 4 After the file copying process finish, the “setup complete” window appears (Figure 2-3). Click “Finish” to end the software installation process.



Figure 2-3 Setup Complete

Note : The software installation process is the same as in Windows ME, Windows 2000, and Windows XP.

2.3. Driver installation

Windows ME and Windows 2000

- 1 Before driver installation, the software installation must be finished.
- 2 Connect PalmLogic with PC (by USB cable).
- 3 Windows will automatically detect and update the device driver for PalmLogic. This process is fully automatic, because PalmLogic's driver files are copied into the appropriate folder during the software installation process.
- 4 Now, PalmLogic is ready to be used.

Windows XP

- 1 Before driver installation, the software installation must be finished.
- 2 Connect PalmLogic with PC (by USB cable).



Figure 2-5 Windows XP finds PalmLogic

- 3 Windows XP will automatically detect PalmLogic and appear “Found new hardware wizard” window (Figure 2-5).
- 4 Select the first choice (“Install the software automatically (Recommended)”) and click “Next” to continue. Windows will automatically find the suitable driver for PalmLogic, because PalmLogic’s driver files are copied into the appropriate folder during the software installation process.
- 5 During the driver installation process, a warning message will appear (Figure 2-6). Click “Continue anyway” to continue the installation process.



Figure 2-6 Warning Message

- 6 After the driver installation complete, the “Completing the found new hardware wizard” window will appear. Click “Finish” to end the driver installation process. (Figure 2-7)
- 7 Now, PalmLogic is ready to use.

Note : For Windows 2000 and Windows XP, you must be administrator (or super user) for installing the driver files of PalmLogic.



Figure 2-7 Completing Driver Installation

3. How to use PalmLogic

3.1. How to connect PalmLogic

- 1 After the installation finish (if user has not yet installed, please see section 2 installation), now you can use PalmLogic.
- 2 Before opening PalmLogic software, you must connect PalmLogic with PC by USB port (Figure 3-1).



Figure 3-1 Connect USB Cable with PalmLogic

- 3 On the opposite side of USB connector, there is a connector for connecting probe wire. Figure 3-2 shows layout of this connector and Table 3-1 shows the full name of each pin.
- 4 User must connect ground of the measured circuit with ground of PalmLogic before starting sampling process.
- 5 On top of PalmLogic, there is a status LED (Figure 3-3). This LED is on while PalmLogic is sampling data. When the sampling process is finished, this LED is off.



Figure 3-2 Layout of Probe Connector in PalmLogic

Table 3-1 Full Name of each Pin on Probe Connector

Label on PalmLogic	Full name
1 - 32	Channel#1 - Channel#32
CK	Clock 24 MHz
EX	External Clock
3V	VCC 3.3 Volt
5V	VCC 5 Volt
G	Ground



Figure 3-3 Top view of PalmLogic

3.2. PalmLogic software

- 1 Before opening the PalmLogic program, you must connect PalmLogic with PC. If you open this program before connecting PalmLogic, the error message will appear (Figure 3-4). You must click "OK" in the error message window, and after you connect PalmLogic with PC, you can open the PalmLogic program again.



Figure 3-4 Error Message

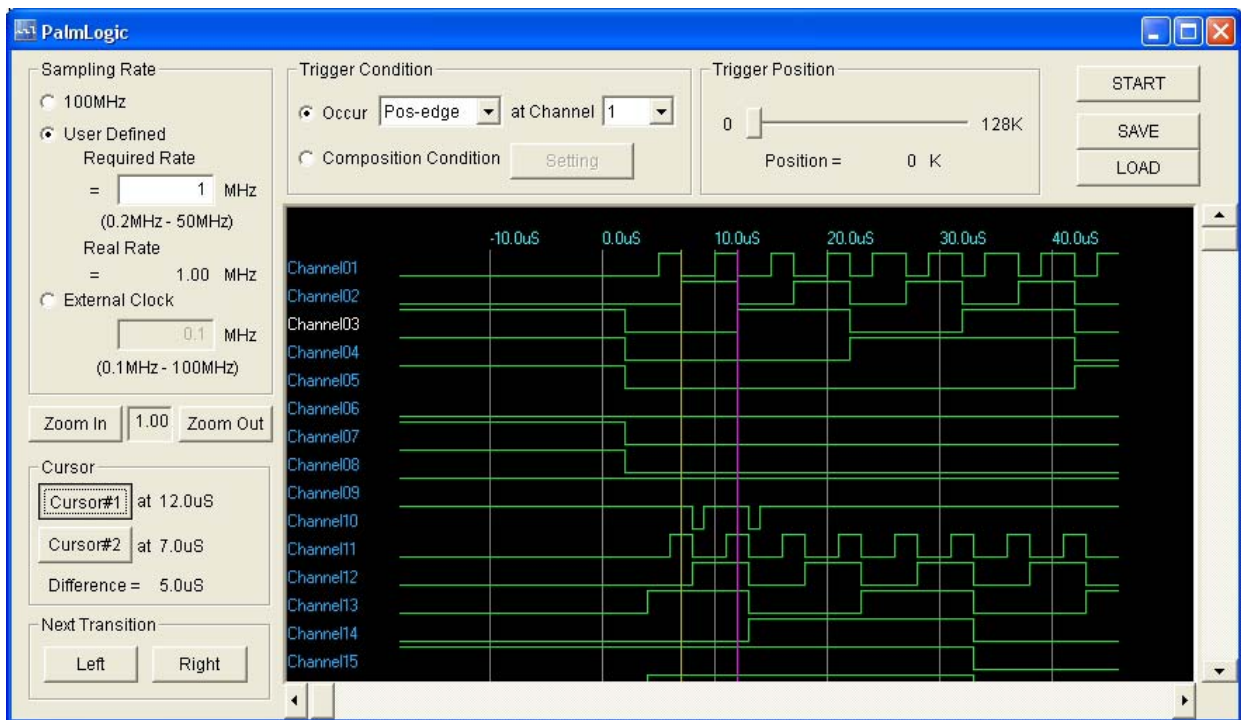


Figure 3-5 Software Graphic User Interface

The GUI (Graphic User Interface) of PalmLogic software is composed of:

Waveform display

- 1 It shows waveform of the sampled data (can display 13 channels simultaneously). You can use vertical scroll bar (at right side of the display) to scroll up-down for showing other channels.
- 2 You can use horizontal scroll bar (below the display) to scroll left-right for showing other part of the waveform.
- 3 The color of waveform is normally green. If the color is red, it means this section of waveform does not have data (and every channel is low). This situation appears when the trigger condition occurs very closely after starting the sampling process, thus PalmLogic can not record any data before the trigger condition occurred.

Sampling rate setting frame

- 1 It is used for setting the sampling rate of PalmLogic. There are 3 choices: 100 MHz, User defined, and External clock.
- 2 If you select the first choice, 100 MHz clock is used as the sampling rate. This is the maximum sampling rate that PalmLogic can support.
- 3 If you select the second choice (user defined sampling rate), you must specify the required sampling rate between 0.2MHz to 50 MHz. And because PalmLogic can not provide every sampling rate, in this frame there is the real sampling rate that PalmLogic can use.
- 4 If you select the last choice (external clock), you must specify the clock frequency between 0.1 MHz to 100MHz. This frequency is used for generating the time data in the waveform.

Trigger condition setting frame

- 1 It is used for setting the trigger condition of PalmLogic. There are 2 choices: normal condition and composition condition.
- 2 If you select the first choice (“occur ...”), this is the normal condition. You can select the trigger condition (positive edge, negative edge, high level, or low level) and select the trigger line (between channel1 to channel16).
- 3 If you select the second choice, this is the composition condition. It means that trigger happens when trigger condition occurred (positive edge, negative edge, high level, or low level) on channel1 simultaneous with channel28 to channel32 have the specific value.
- 4 You can set the trigger condition by clicking the “Setting” button. After clicking this button, the setting window will appear.

- In the setting window (Figure 3-6), you can select the trigger condition which will happen on channel1 and set the specific value of channel28 to channel32 (for each channel you can set its value to be low or high).

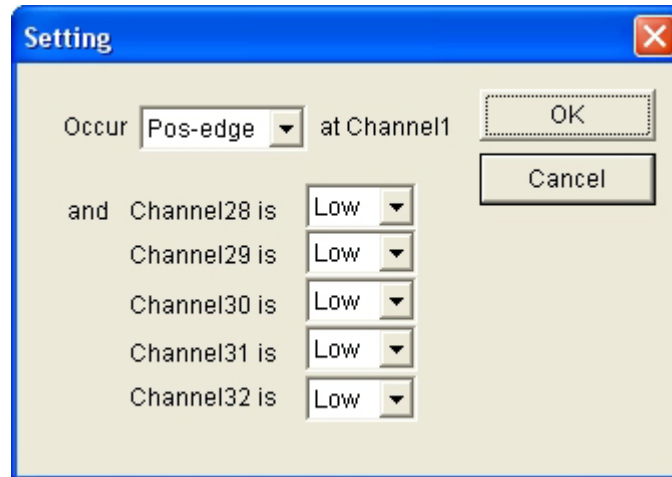


Figure 3-6 Setting Window

Trigger position setting frame

- It is used for selecting trigger position. The trigger position means the position at the trigger condition occurring and it defines the number of sampled data after the trigger condition occurs.
- For example, if you set the trigger position to be 0K, it means PalmLogic will sample data 128K (=128K-0K) after the trigger condition occurs. If you set this value to be 64K, it means PalmLogic will sample data 64K (=128K-64K) after the trigger condition occurs. And if you set this value to be 128K, it means PalmLogic will sample data 0K (128K-128K) after trigger condition occurred.
- You can set trigger position by dragging your mouse on the slider bar (in this frame) or using left-right arrow key to change this value. The value of trigger position is showed below the slider bar. The trigger position value can be in the range of 0K to 128K.

Start button

- 1 After you finish setting configuration of PalmLogic, you must click this button to start sampling process. During the sampling process, the text on this button is changed to “Stop” (you can click at this button to stop the sampling process).
- 2 After the sampling process finished, this text will change back to “Start” automatically and the sampled data will be showed in the waveform display.

Save button

- 1 After the sampling process finished, you can save the sampled data to files for opening them later.
- 2 PalmLogic software can save the sampled data with 2 formats: PalmLogic’s format (*.lga) and WaveformerPro 4.5’s format (*.tim).
- 3 The *.lga file can be saved and opened only with PalmLogic software.
- 4 The *.tim file can be opened with WaveformerPro version 4.5. This program can zoom (in and out) and measure timing property of waveform.

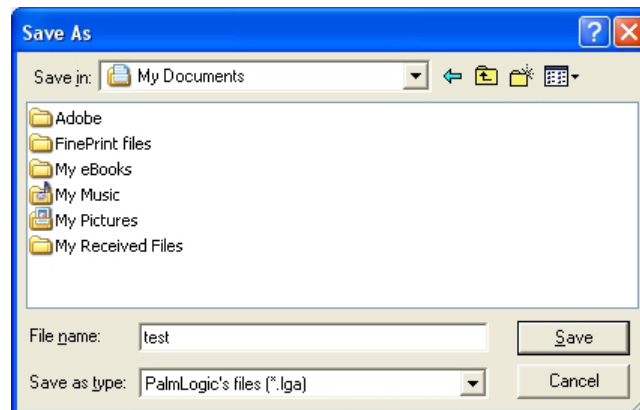


Figure 3-7 Saving Window

Load button

- 1 PalmLogic can access sampled data from a file to show in waveform display.
- 2 Loadable file format is PalmLogic's format (*.lga).

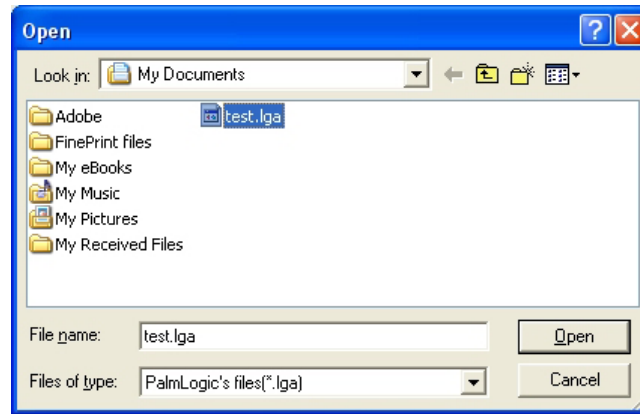


Figure 3-8 Loading Windows

Zoom In button and Zoom Out button

- 1 You can click these buttons to zoom waveform in or out.
- 2 The number between zoom in and zoom out button is the scale of waveform. "1.00" means the original scale. "8.00" means that the displayed waveform is zoomed in eight times of the original waveform. "0.12" means that the displayed waveform is zoomed out eight times of the original waveform ($0.12=1/8$).
- 3 When you click zoom in or zoom out button, the scale is multiplied or divided by two. For example, if the current scale is "1.00" and you click zoom in button, the scale will be changed to "2.00" ($2.00=1.00 \times 2$). Another example, if the current scale is "0.50" and you click zoom out button, the scale will be changed to "0.25" ($0.25=0.50/2$).
- 4 The possible scales are such as 8.00, 4.00, 2.00, 1.00, 0.50, 0.25, and 0.12. If the scale is "8.00", the zoom in button is disabled. And if the scale is "0.12", the zoom out button is disabled.

Cursor frame

- 1 This frame has two buttons: Cursor#1 button and Cursor#2 button. Beside these buttons there are the current positions of these two cursors. Below these positions the difference between the two positions is appeared (Different = Cursor#1 position – Cursor#2 position).
- 2 The cursor#1 and cursor#2 buttons are used for selecting the active cursor. These two cursors can not be active simultaneously.
- 3 The cursor#1 is pink and the cursor#2 is yellow. When they are inactive, their colors are darkened (to be dark pink or dark yellow). And when one of them is active, its color is lightened (to be light pink or light yellow).
- 4 If you click at cursor#1 button, the cursor#1 will be active and the waveform display will show the area that cursor#1 appears. After cursor#1 is active, you can click left button of mouse to set the position of cursor#1 or use left and right arrow key to move cursor#1 (you can use the same method with cursor#2).

Next transition frame

- 1 This frame has two buttons: Left button and Right button. These two buttons are used for finding next transition on the specific channel from the current position of last active cursor.
- 2 The left button is used for finding next transition on the left side from the current position. The right button is used for finding next transition on the right side from the current position.
- 3 The finding process depends on the specific channel, thus before finding the transition you must select the specific channel by clicking left button of mouse in the waveform area. The selected channel is highlighted.

Note



54 BB Building, 13th Floor, Room No.1302, Sukhumvit 21 Rd. (Asoke)

Klongtoey-Nua, Wattana, Bangkok 10110 Thailand

Tel. (662)664-3069, (662)261-2277 Fax. (662)261-2290

www.design-gateway.com