# Notebook Combo-Debug-Card User Guide

This notebook Combo-Debug-Card supports three bus interfaces: MINI PCI, Mini PCI-E and LPC. When using this Combo-Debug-Card, only one interface needs to be connected, and please keep the left two interfaces unconnected. This product is easy to use, and is designed with good stability. It is your ideal tool for notebook repair.

- ◆ **1. Combo-Debug-Card structure and usage**
- ◆ **2. The Mini-PCI interface in the Combo-Debug-Card**
- ◆ **3. The Mini PCI-E interface in the Combo-Debug-Card**
- ◆ **4. The LPC interface in the Combo-Debug-Card**
- ◆ **5. The LED-Display in the Combo-Debug-Card**
- ◆ **6. Part of Error-Code explanation**

Copyright: **You are not allowed to copy/duplicate/sell this product without authorization**

➢ **1. Combo-Debug-Card structure and usage**
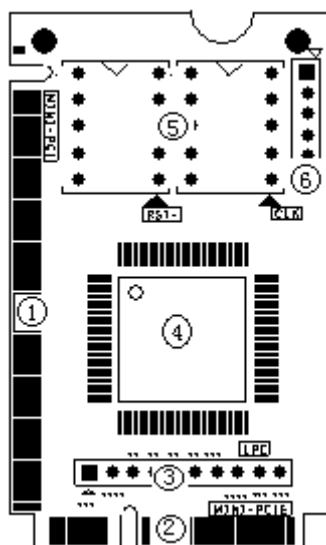
① Mini-PCI interface:

This is used to connect this Combo-Debug-Card to notebook's Mini-PCI slot.

② Mini-PCIe interface:

This is used to connect this Combo-Debug-Card to notebook's Mini-PCIe slot.

③ LPC interface:

This is used to connect this Combo-Debug-Card to notebook's LPC connector.

④ ASIC:

⑤ Two 7-segment LEDs:

This is used to display the Error-code and RST/CLK signals.

⑥Test port: This port is reserved, and end-user should not use this port.

➢ **2. The Mini-PCI interface in the Combo-Debug-Card**

Mini PCI is a general interface, which is used in notebook. It includes 124 pins. This Combo-Debug-Card doesn't fully use those pins, and only 101 pins are used. When installing this Combo-Debug-Card to your notebook main-board, you will find the Combo-Debug-Card is shorter than the notebook Mini-PCI slot. This is correct, and it servers better for you to plug or unplug this Combo-Debug-Card.

➢ **3. The Mini-PCIe interface in the Combo-Debug-Card**

Mini-PCIe is used as a trend in the new notebooks. Comparing to Mini-PCI, Mini-PCIe occupies less space. This Combo-Debug-Card doesn't use all of the Mini-PCIe bus pins. And only the below pins are used: PIN-8, PIN-10, PIN-12, PIN-14, PIN-16, PIN-17, and PIN-19. In the Mini-PCIe spec, those pins are reserved, and it is not standard, so some of Notebook manufacturers define it as a LPC debug-port. And more and more notebook manufacturers are using this standard, such as IBM, Toshiba, HP, ASUS, TCL and etc… This Combo-Debug-Card can only work in the notebooks, which are with the LPC debug-port definition. For the notebooks, which don't support this LPC debug-port definition, this Combo-debug-card PCI-E interface will not work.

Note: Please be aware that Mini-PCIe is supported with limitation, and it can works in most of notebooks, but not all.

➢ **4. The LPC interface in the Combo-Debug-Card**

For the user, whose notebooks don't support the Mini-PCI interface and the Mini-PCIe interface, you can use the third port: LPC interface. LPC interface exists in all notebook main-boards. In the Combo-Debug-Card, from left to right, the LPC definition is: PIN1-3.3V, PIN2-LFRAME#, PIN3-LAD3,

PIN4-LAD2   PIN5-LAD1   PIN6-LAD0,
PIN7-GND   PIN8-LRESET#   PIN9-LCLK   PIN10-3.3V

Usually, the notebook boards haven't LPC connectors or slots. And the users will need to connect this LPC port to the notebook by using wires. Below is some description for how to connect the Combo-Debug-Card to your notebook through this LPC interface.

✧ If your notebooks use LPC VBIOS, you can connect the Combo-Debug-Card to your notebook's VBIOS bus.

   >> LPC VBIOS Pin definition:
    PIN2-RST#   PIN13-LAD0
    PIN14-LAD1   PIN15-LAD2
    PIN16-GND   PIN17-LAD3
    PIN23-LFRAME#   PIN25-VCC
    PIN31-CLK

>>The connection between Combo-Debug-Card and the notebook's main-board.

<u>Combo-Debug-Card</u>   <u>Notebook VBIOS 的 BIOS</u>

Combo-Debug-Card	Notebook VBIOS 的 BIOS
PIN1-3.3V	PIN25-VCC
PIN2-LFRAME#	PIN23-LFRAME#
PIN3-LAD3	PIN17-LAD3
PIN4-LAD2	PIN15-LAD2
PIN5-LAD1	PIN14-LAD1
PIN6-LAD0	PIN13-LAD0
PIN7-GND	PIN16-GND
PIN8-LRESET#	PIN2-RST#
PIN9-LCLK	PIN31-CLK
PIN10-3.3V	PIN25-VCC
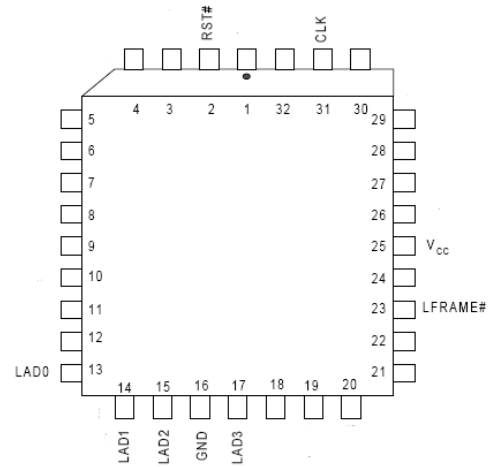
✧ You can connect this Combo-Debug-Card to any LPC bus. Some LPC interface chips are listed as below. You can connect the Combo-Debug-Card to the corresponding pins. For more information, please refer those chips' datasheets.
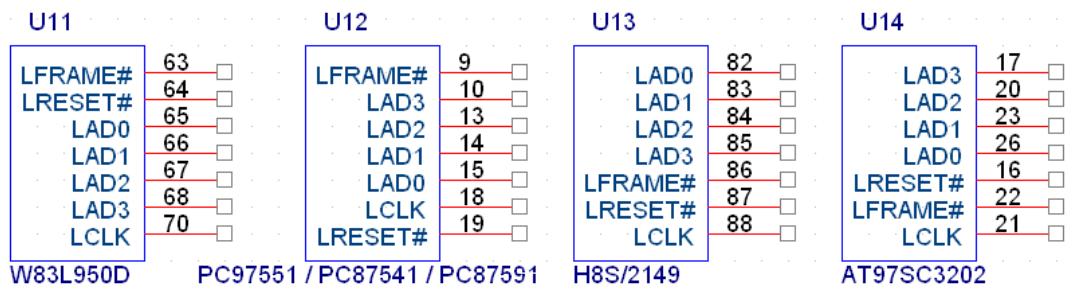
Note: This Combo-Debug-Card uses 3.3V as power supply, and you can use any 3V3 and GND signals in your notebook main-board. Please be aware that connecting the Combo-Debug-Card to a non-3.3V power may damage this Combo-Debug-Card.

✧ For IBM X 60 notebooks, the LPC interfaces are located in the U39 slot of the main-board. The Pin definitions are as below:
A2->LRESET#   A3->LFRAME#
A5->LCLK   A9->LAD3
A10->LAD2   A11->LAD1
A12->LAD0

✧ For IBM T6 R6 notebooks, the LPC interfaces are located in the J26 slot of the main-board. The Pin definitions are as below:
A1->LCLK,   A3->LFRAME#
B2->LRESET#   B7->LAD3
A7->LAD2   B6->LAD1   A6->LAD0

➢ **5. The LCD-Display in the Combo-Debug-Card**

The Display portion is composed with two 7-segment LEDs.   The two "Dots" of the LEDs are used to indicate the notebook "RST" and "CLK" status. The left side "Dot" is for "RST", and the right side "Dot" is for "CLK".   When the notebook is in "Reset" status, the left side "Dot" will be lighted. And when the notebook has a correct CLK output, the right side "Dot" will be lighted.

When you hold on the notebook's "RESET" button, the left side LED "Dot" will be lighted, and the right side LED "Dot" will be off. When you release the notebook "RESET" button, the left side LED "Dot" will be off, and the right side LED "Dot" will be lighted. Then the two LEDs will show the corresponding debug code.

If the left side LED "Dot" is always on, it means your notebook main-board has "RESET" problem.

➢ **6. Part of Error-Code explanation**

When the notebooks are running, this Combo-Debug-Card will show the corresponding debug code. If there is a problem in the notebook, you can judge the problem by the debug code. Below is the explanation for some main error codes.

✧ AWARD BIOS:

The explanation when the Combo-Debug-Card shows the below debug codes.

Code	Explanation	Note
C0	Close cache	
01	Processor test	
07	CMOS test	
C1	Memory size test	
0A	Set the interrupt table	
0C	Initiate the keyboard	
0D	Initiate the Graphic card	
1A	Show CPU frequency	
3C	CMOS setting	
42	Initiate hardware	
52	Test the extended ROM	
FF	Boot	

✧ AMI BIOS:

The explanation when the Combo-Debug-Card shows the below debug codes.

Code	Explanation	Note
00	Error in self test	
01	Error in processor test	
0D, 0F	Error in CMOS test	
1A 至 22	Error in Memory test	
3A	Error in graphic card	
FF	Pass the self test	