

Smart I/O 234 Error Detector

User Manual

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<Smart I/O 234 Error Detector >

Brief Introduction

<Smart I/O 234 Error Detector > has multiple functions, the combination of simple operation interface, software and Smart I/O Error Detector allows users to experience higher speed and accuracy while using.

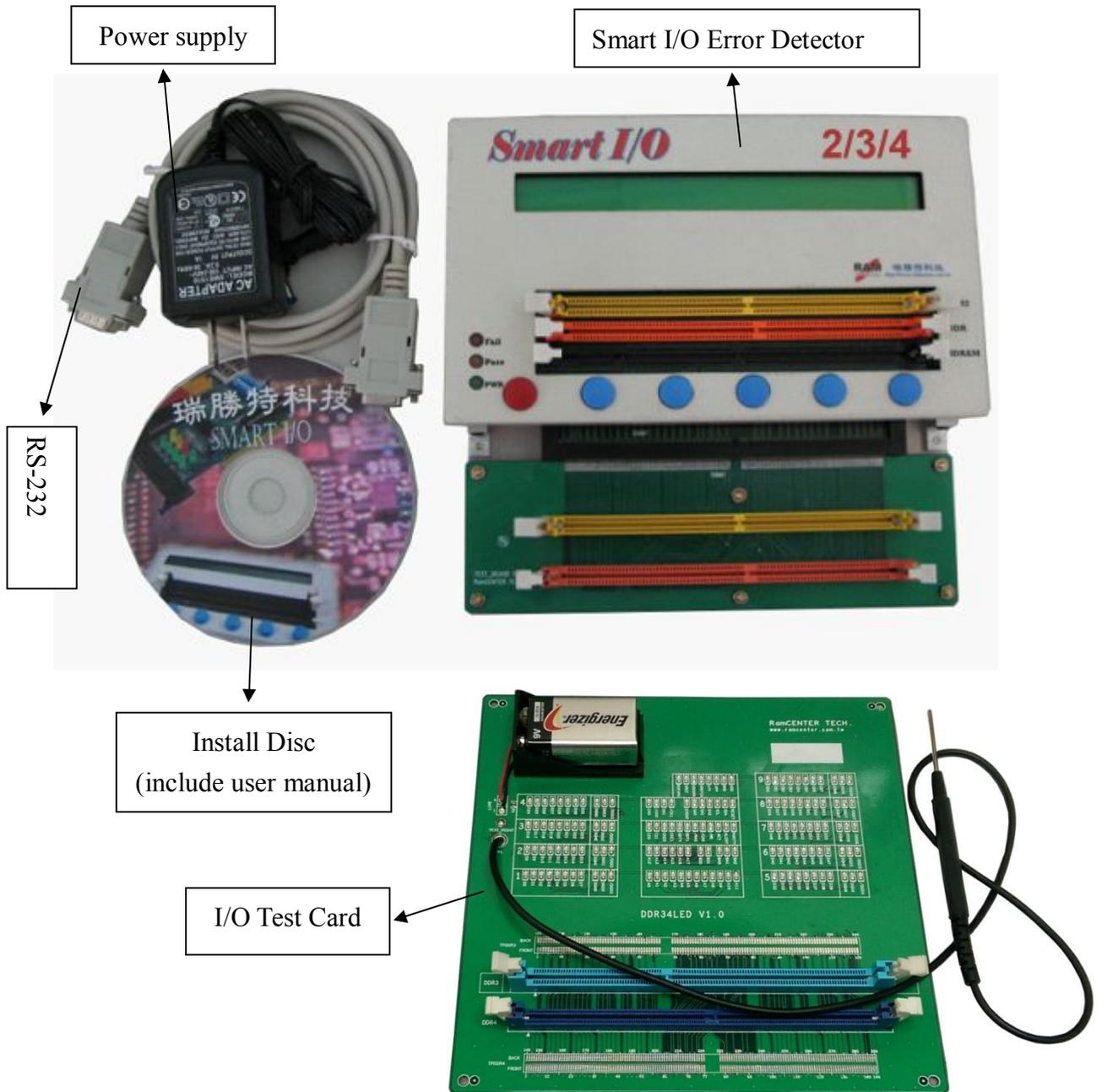
Function Description

<Smart I/O 234 Error Detector > provides the functions below:

1. .Applicable for DDR2, DDR3, DDR4 modules.
2. Able to run PCB cable Open/Short circuit functions on Smart I/O or through Windows system easily.
3. Provide a single module SPD recode function.
4. Wearable Error Detector allows you to use it anytime, anywhere.
5. Easy to operate with clear LCD functional interface.
6. Clear and easy understandable real-time display of module detecting status.
7. With RamCENTER I/O testing system software (Windows interface), you can run Intel XMP for Overclocked Edition, Compilation of Manufacturing Information, Auto-generate Serial Code Recoding and Date Code.
8. RS-232 interface can be applied to RamCENTER I/O testing system (Windows interface) for other functional Expansion DIMM Sockets.
9. I/O testing card help corresponding Address and Date on the module when detecting OPEN/SHORT Circuit.

Package Contents

Please check the package contents. If there is any device shortage, please connect us. The missing device will be delivered to you as soon as possible!

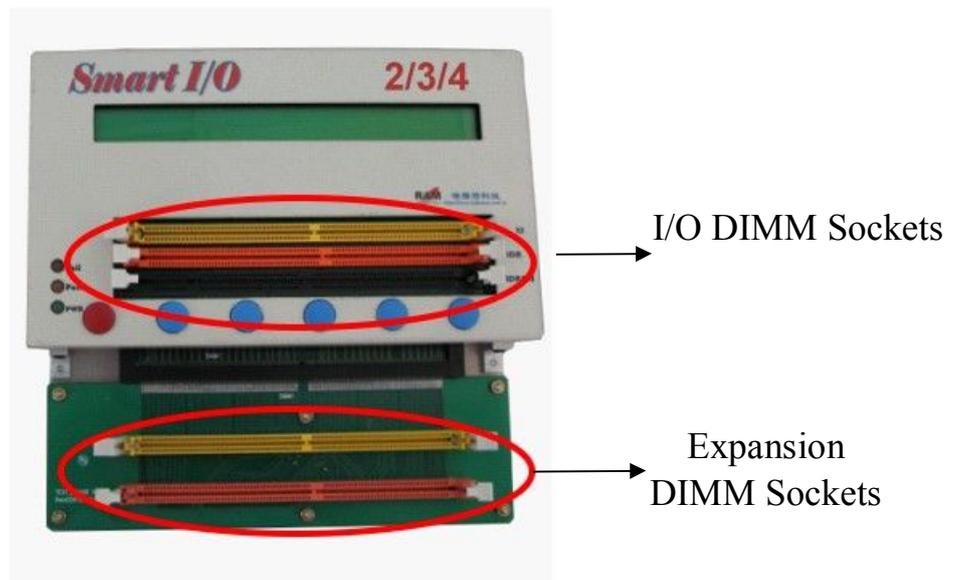


Instruction Guide

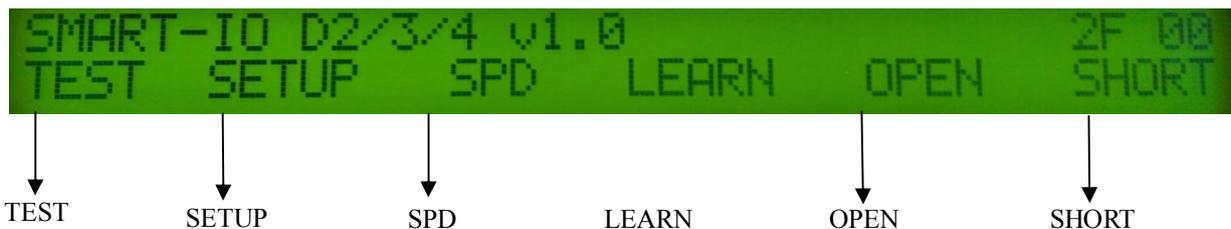
【Smart I/O 234 Error Detector】 contains two parts: I. Smart I/O, II. Windows software interface. The following pages will explain the use of each part.

I. I/O Host

Smart I/O DIMM Sockets / Expansion DIMM Sockets



After powered up Smart I/O Error Detector, 6 functions will be shown on the LCD screen. Please choose the button by contrasting the screen:



1. TEST : Test the condition of the module.
2. SETUP : Setting mode of < Power Short Circuit > 、< Cable Open Circuit> 、< Cable Short Circuit> 、< SPD Recode > 、< SPD Verify>
3. SPD : Single module SPD function.
4. LEARN : Expansion Sockets module learning mode.
5. OPEN : Module OPEN circuit testing.
6. SHORT : Module SHORT circuit testing.

Description of Error Detector Main Functions Page

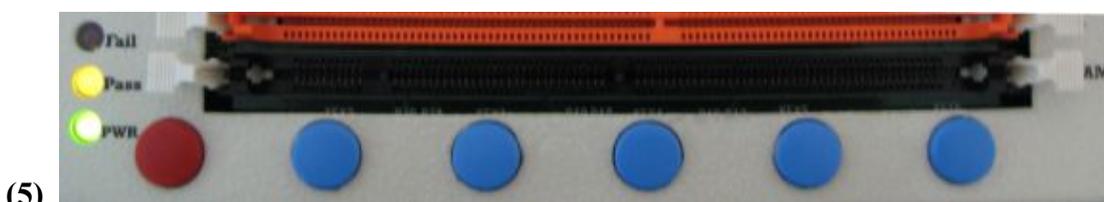
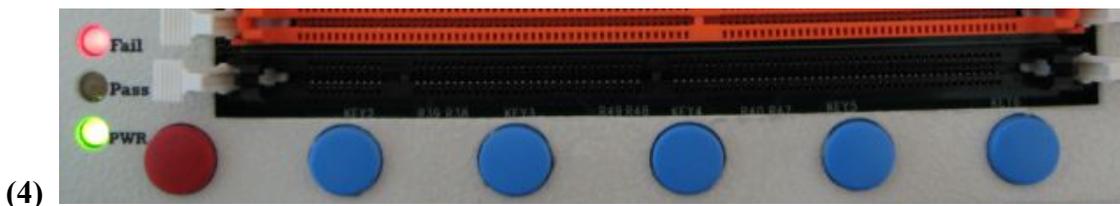
※ To run TEST, OPEN, SHORT functions, insert an OK module into the “Expansion DIMM Socket”, press <LEARN> to start the learning, then chose for TEST, OPEN and SHORT or other functions.



※IO Host port can run a single module READ, COPY, VERIFY functions. Expansion DIMM Socket support LEARN, TEST, OPEN, SHORT, READ, COPY, VERIFY functions.

1. TEST

Insert the module into “Expansion DIMM Socket”, then press <TEST> to show the images below:



2. SETUP

Press <SETUP> on the home page to show the following image on Smart I/O screen:



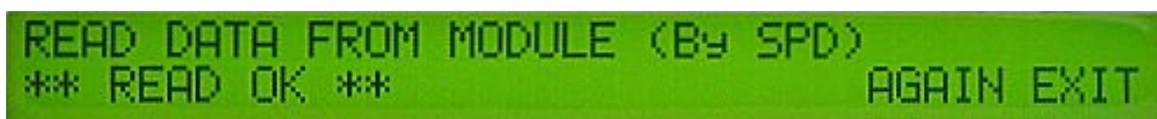
3. SPD

Press <SPD> to run for a single module recording, and the screen will show the following image:



READ

Press <READ>, Smart I/O will read the SPD data from module, Smart I/O screen will show the following images:



When shown the images above, press <AGAIN> to READ again. There is no need to return to <SPD> function page to restart the process. Press <SPD> to return to function page while finishing reading.

If the module is not well inserted or EEPROM is damaged, press <READ> to show the images below, press <AGAIN> to READ again. Press <Exit> to return to <SPD> function page while finishing reading.



Press <COPY> to copy SPD data to the module, the following images will be shown:

```
COPY DATA TO MODULE (By SPD)
COPY DATA NOW...
```

```
COPY DATA TO MODULE (By SPD)
VERIFY DATA NOW...
```

```
COPY DATA TO MODULE (By SPD)      04000002
** COPY OK **                       AGAIN EXIT
```

When the images above are shown, press <AGAIN> to <COPY> again. There is no need to return to <SPD> function page to restart the process. Press <SPD> to return to function page while finishing copying.

If the module isn't well inserted or EEPROM is damaged, press <COPY> to show the images below, press <AGAIN> to copy again. Press <Exit> to return to <SPD> function page while finishing copying.

```
COPY DATA TO MODULE (By SPD)
** COPY FAIL:DATA FAIL             AGAIN EXIT
```

VERIFY

Press <VERIFY>, Smart I/O will verify SPD data from the module, and the following images will be shown:

```
VERIFY DATA WITH MODULE (By SPD)
VERIFY DATA NOW...
```

```
VERIFY DATA WITH MODULE (By SPD)
** VERIFY OK **                AGAIN EXIT
```

When the images above are shown, press <AGAIN> to <VERIFY> again. There is no need to return to <SPD> function page to restart the process. Press <SPD> to return to function page while finishing verifying.

If the module is not well inserted or EEPROM is damaged, press <VERIFY> to show the images below, press <AGAIN> to verify again. Press <Exit> to return to <SPD> function page while finishing verifying.

```
VERIFY DATA WITH MODULE (By SPD)
** VERIFY FAIL:ADDRESS FAIL    AGAIN EXIT
```

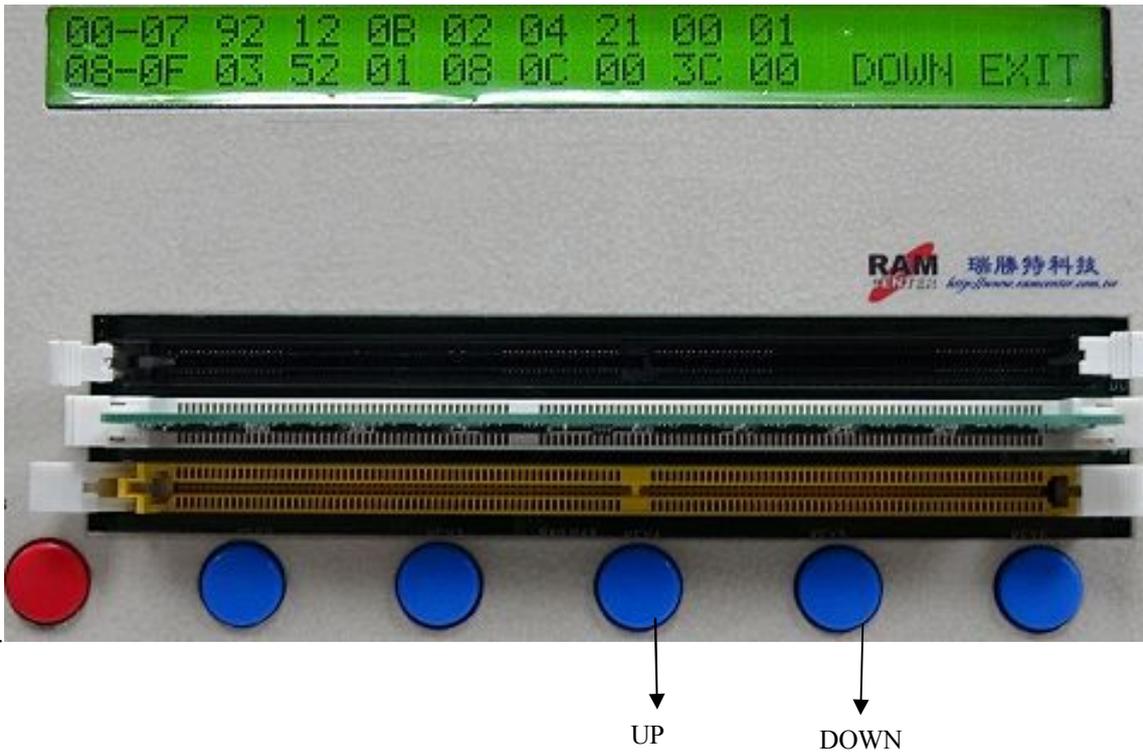
VIEW — MO-256 、 MO-512 、 TE-256 、 TE-512

Press <VIEW> to show the SPD data which are saved in the Smart I/O:

1. <MO-256>: Showing the SPD data of first 256 Byte in the module.
2. <MO-512> : Showing the SPD data of last 256 Byte in the module.
3. <TE-256> : Showing the SPD data of first 256 Byte in the I/O host.
4. <TE-512> : Showing the SPD data of last 256 Byte in the I/O host.

```
00-07 92 10 0B 02 03 19 00 01
08-0F 03 52 01 08 0C 00 3C 00  DOWN EXIT
```

Press<DOWN> to move to the next page. To move to the previous page please press <UP>, the first button on the LEFT of <DOWN>. For exiting, press <EXIT> to return to the <SPD> function



page.

SETUP — A_s/n 、 V_s/n 、 D_s/n 、 ROM_SIZE 、 CODE

Press <SETUP> to setup for < A_s/n >, < V_s/n >, <D_s/n >, < ROM_SIZE >, <CODE> modes.
Press the rightmost <EXIT> button to return to <SPD> function page, then press the rightmost <Exit> again to return to Smart I/O homepage.

< A_s/n >: On and Off button of Auto-generate serial number function.

<ON>: Auto-generate serial number on



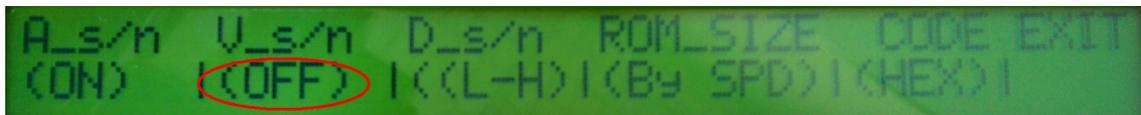
<OFF>: Auto-generate serial number off



< V_s/n >: On and Off button of verifying serial number function.



<ON>: Verify all SPD data including serial numbers. Verify will fail when all SPD data are the same, but serial numbers are different.



<OFF>: Verify all SPD data except serial number. Verify will success when all SPD data are the same and the serial numbers are different, because serial numbers are not included in the verification.

<D_s/n >: Auto-generate serial number direction button.

<H-L>: from high to low



<L-H> from low to high



<ROM_SIZE>: EEPROM capacity selection button.

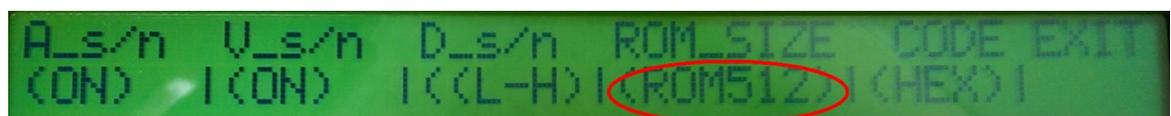
<By SPD>: Auto determine EEPROM capacity, 256MB or 512 MB.



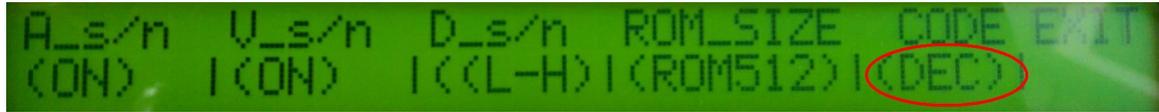
<ROM256>: The mandatory setting of EEPROM capacity is 256MB.



<ROM512>: The mandatory setting of EEPROM capacity is 512 MB



<CODE>: Select for Decimal system (DEC) or Hexadecimal system (HEX).



4. LEARN

Insert an OK module into “Expansion DIMM Socket”, press <Learn> to start learning then run for TEST, OPEN and SHORT functions.



(1)



(2)

5. OPEN

Insert the module into “Expansion DIMM Socket”, press <OPEN> to estimate if the module is having an OPEN Circuit.



(1)

If it is having an OPEN circuit, find out which Address or Date is wrong according to the shown information.



(2)

6. SHORT

Insert the module into “Expansion DIMM Socket”, press <SHORT> to see if the module is having a SHORT Circuit.



If it is not having a SHORT Circuit, the following image will be shown.



If it is having a SHORT Circuit, find out which is wrong according to the shown information.

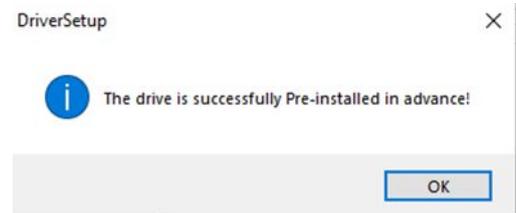


II. Windows I/O 234 Recording Software

Install USB to RS0232 driver

USB to RS-232 converter cable is needed when installing this driver.

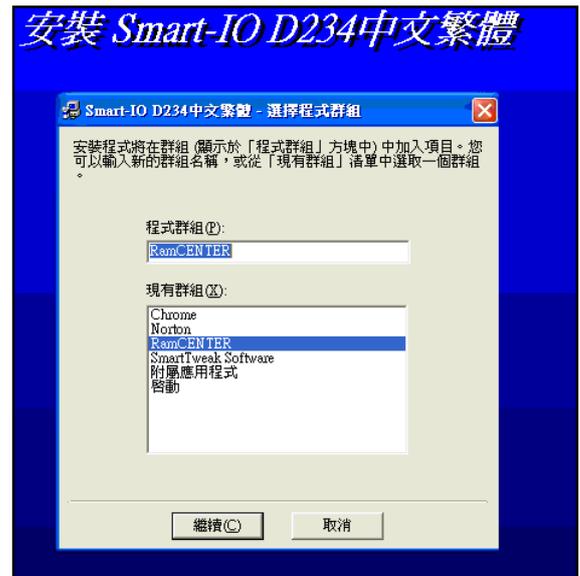
Install <HL-340.EXE> from disc driver.



Install I/O 234 Testing Software

Choose <SETUP.EXE> from the installing disc to execute, the following images will be shown:



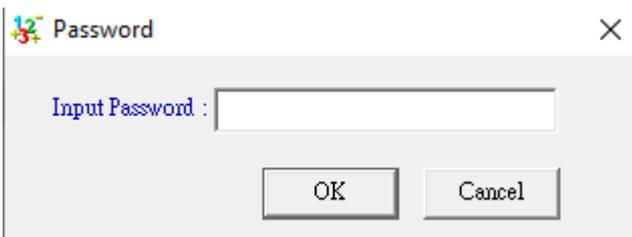


System Operation

The following image will be shown while entering I/O 234 software.



When entering the recoding system for the first time, users will be asked to set a code. After entering the system please log out then log in again.

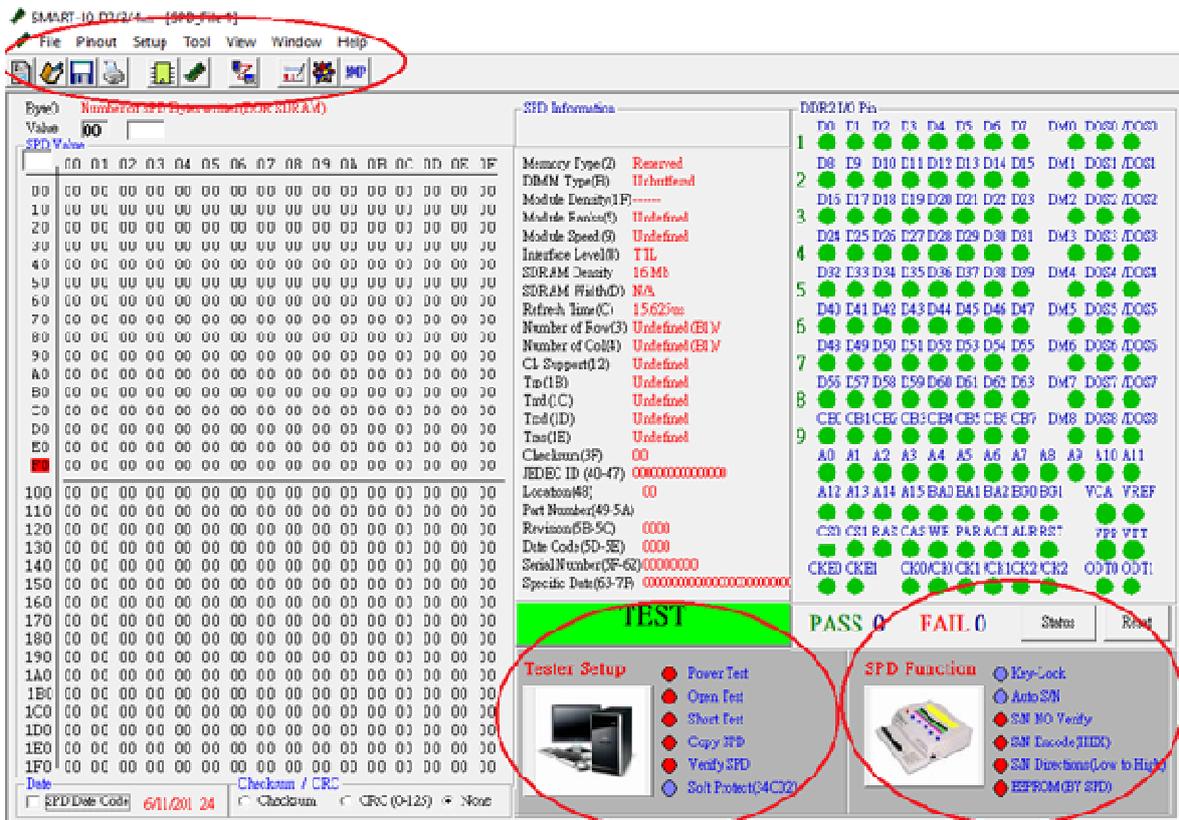


When users log in, a code is required, all function will be available only with a correct code.



Please make sure the power of the Smart I/O is switched on before entering the system, if not, the image on the left will be shown:

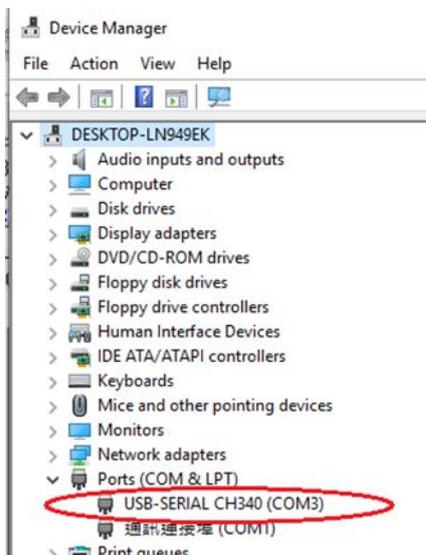
According to different functions chosen on Windows homepage, the following will be explained them in 3 parts :



Part I



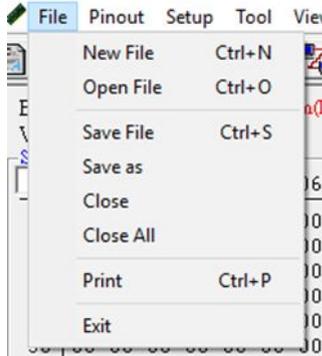
Please check if the connecting port is well connected when entering the page.



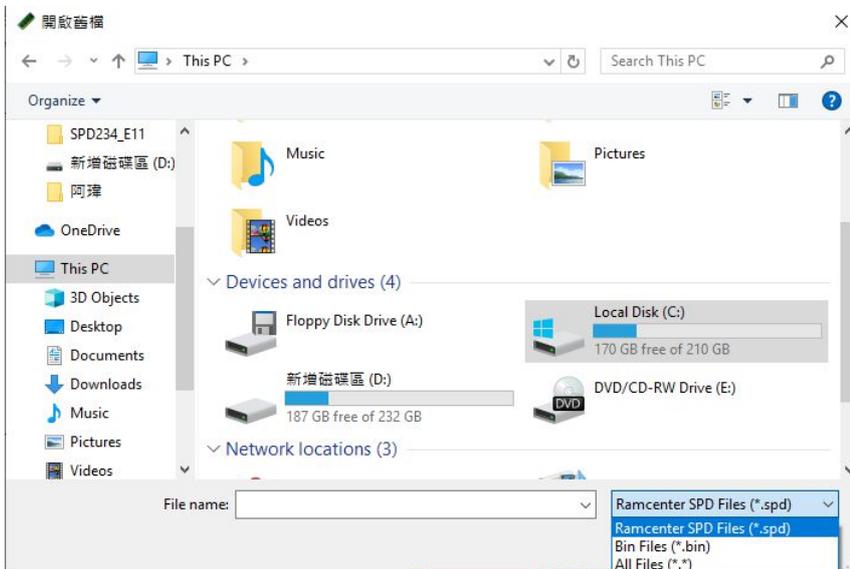
◆ Usually, RS-232 cable is preset as Com1. For USB to RS-232 converter cable, please check Device Manager for the COM port, as the shown image on the left:

<File> Function

Description for the selected functions:

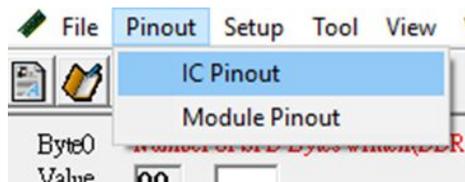


New File: After opening a new file, SPD data can be edit from the homepage.

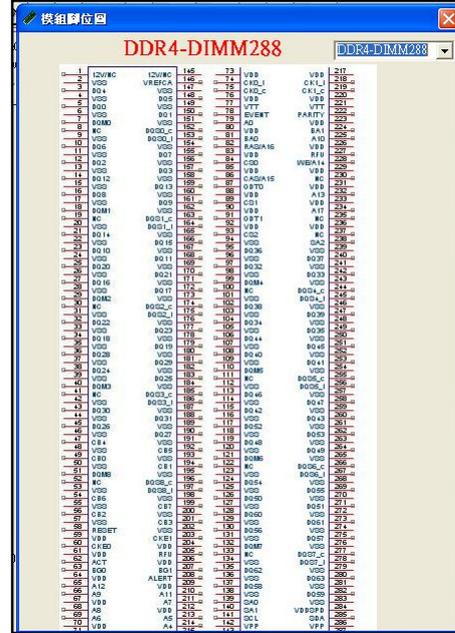
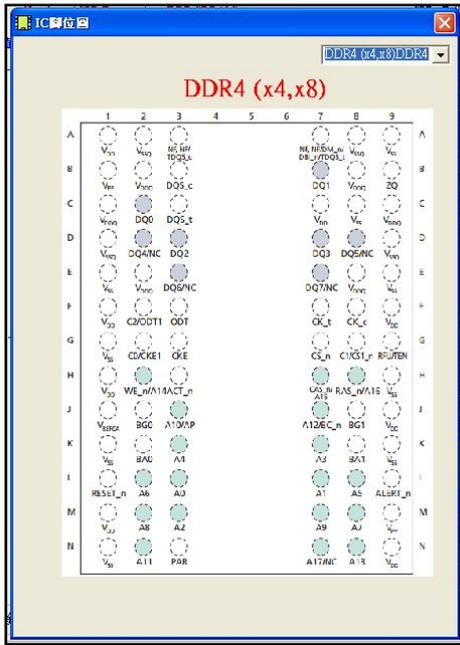


Open File: Open a file, it supports for *.BIN and *.SPD file format.

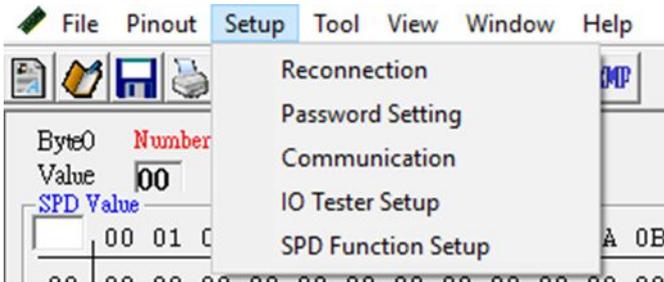
<Pinout> function



IC Pinout and Module Pinout.

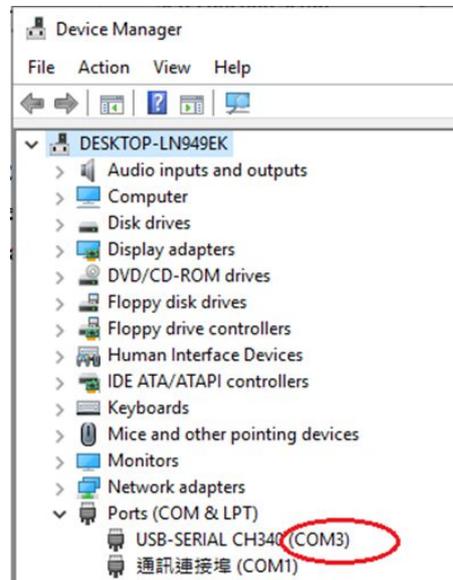
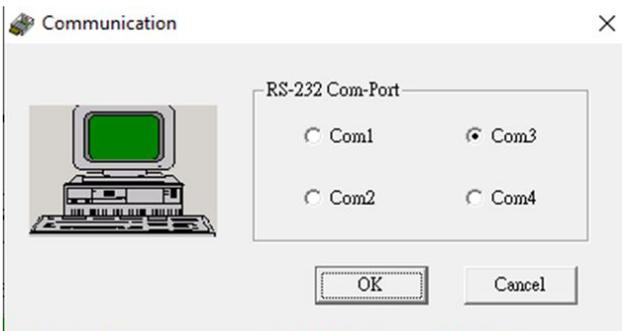


<Set up> Function

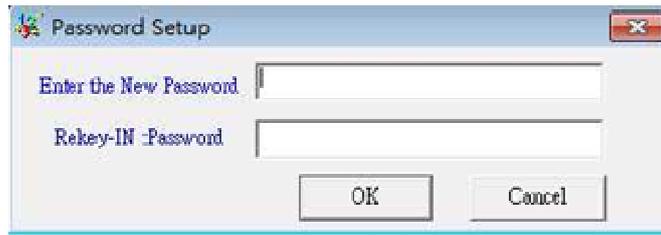


Communication: Choose the connecting port.

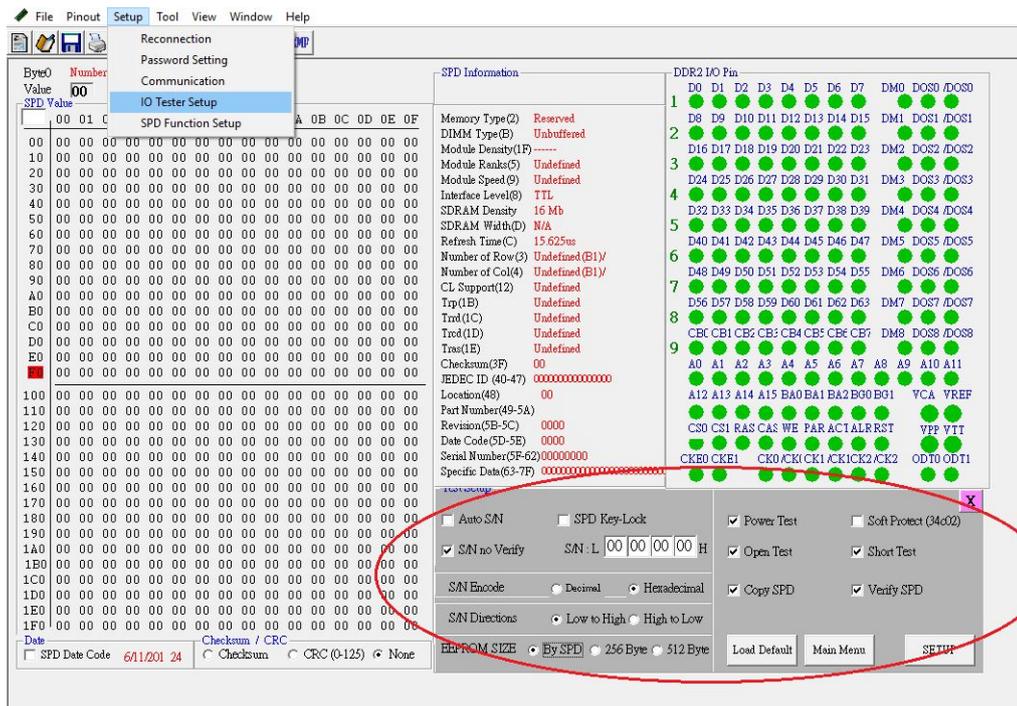
◆ RS-232 cable is preset to be Com1. For USB to RS-232 converter cable, please check Device Manager for the COM port, as the following images show:



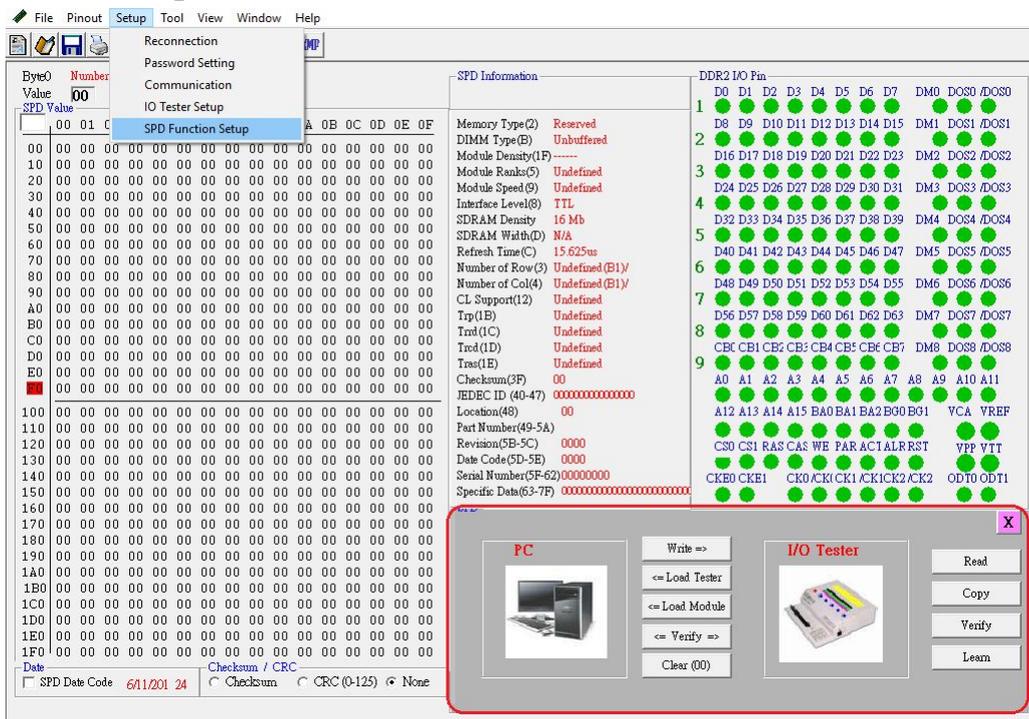
Code setting: Besides the first code setting, the code may be changed here.



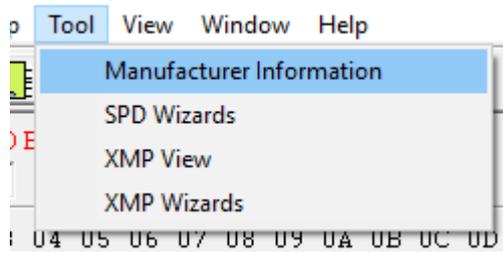
IO Test Setting



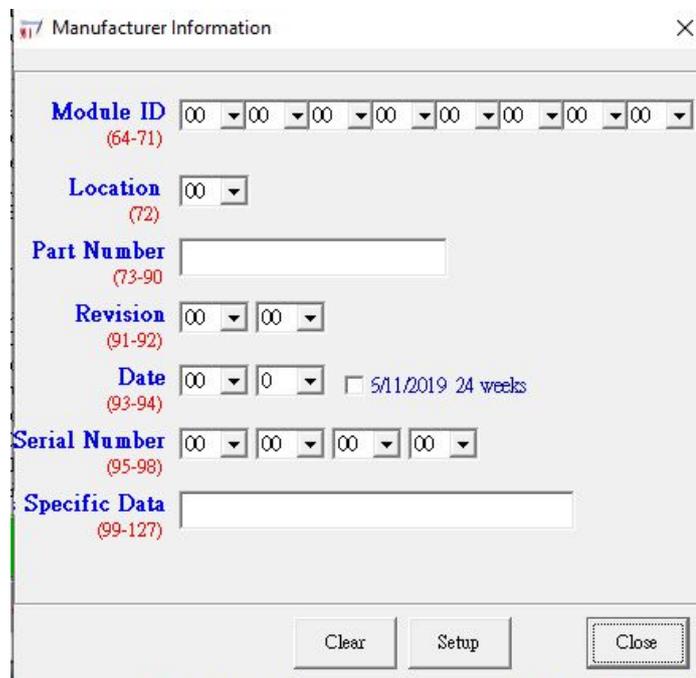
SPD Function Set up



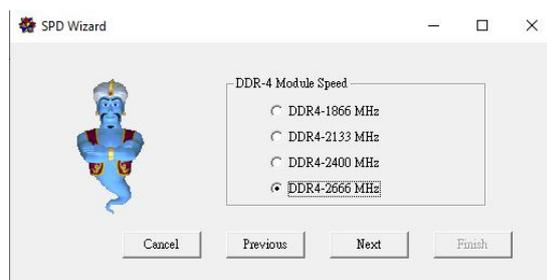
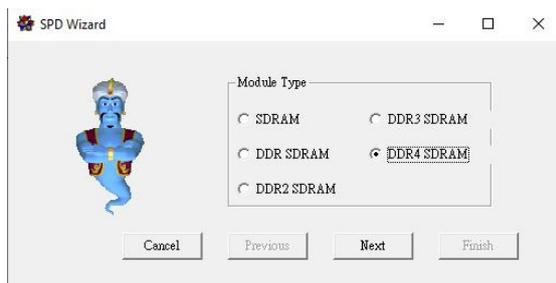
<Tool> Function

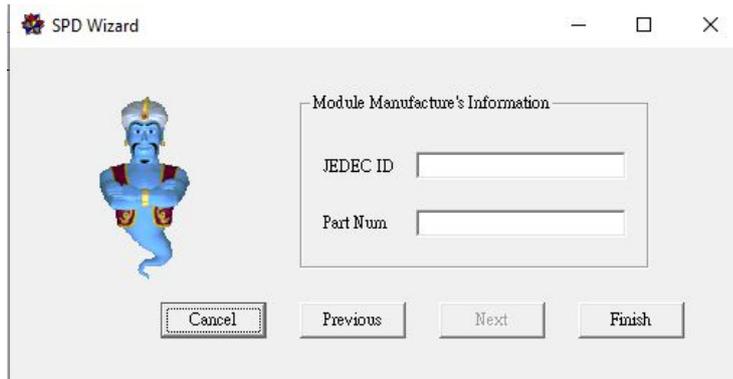
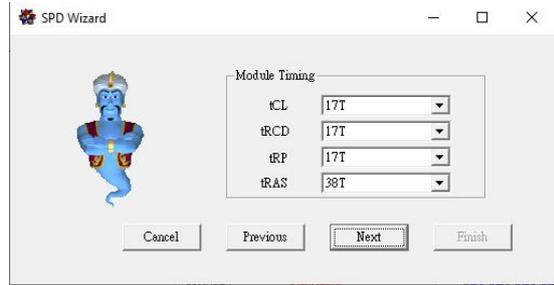
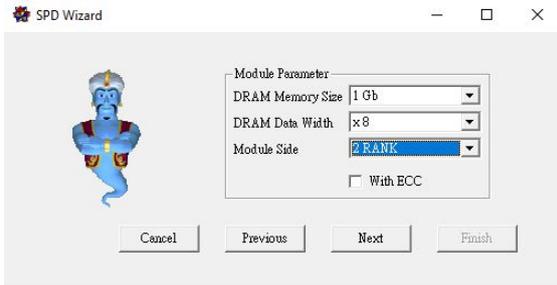


1. Manufacturing Information



2. SPD Wizards





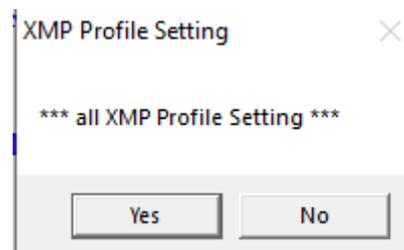
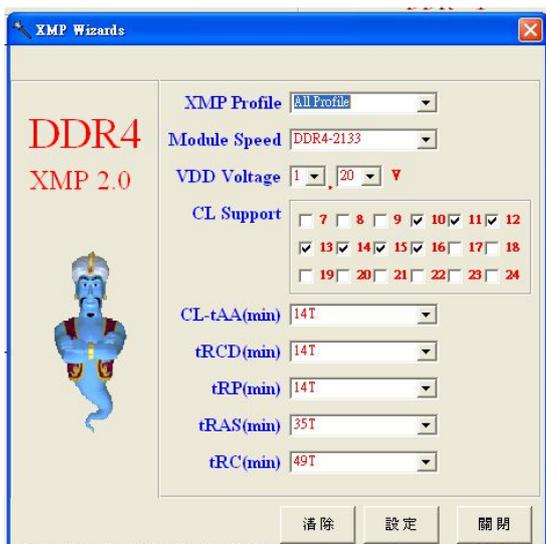
3. XMP View:

DDR4	JEDEC	Profile 1	Profile 2
Module Speed	2133 MHz	2133 MHz	2133 MHz
VDD Voltage	1.2 V	1.2 V	1.2 V
CL Support	10 11 13 14 15	10 11 13 14 15	10 11 13 14 15
CL-tAA(min)	13.1 ns(15T)	15.9 ns(17T)	15.9 ns(17T)
tRCD(min)	14 ns(15T)	13 ns(14T)	13 ns(14T)
tRP(min)	14 ns(15T)	17.8 ns(19T)	17.8 ns(19T)
tRAS(min)	33.6 ns(36T)	32.6 ns(35T)	32.6 ns(35T)
tRC(min)	46.1 ns(50T)	48.5 ns(52T)	48.5 ns(52T)
tRFC1(min)	1025	1025	1025
tRFC2(min)	160 ns(4Gb)	160 ns(4Gb)	160 ns(4Gb)
tRFC4(min)	110 ns(4Gb)	110 ns(4Gb)	110 ns(4Gb)
tFAW(min)	21 ns	21 ns	21 ns
tRRD_S(min)	3.7 ns	3.7 ns	3.7 ns
tRRD_L(min)	5.3 ns	5.3 ns	5.3 ns

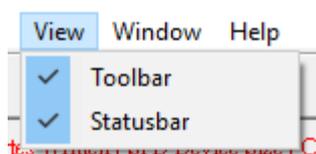
XMP Revision: 2.0

關閉

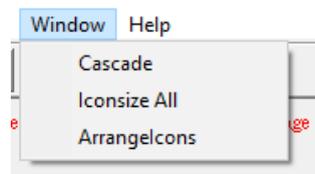
4. XMP Wizards:



<View> Function Function



<Window>

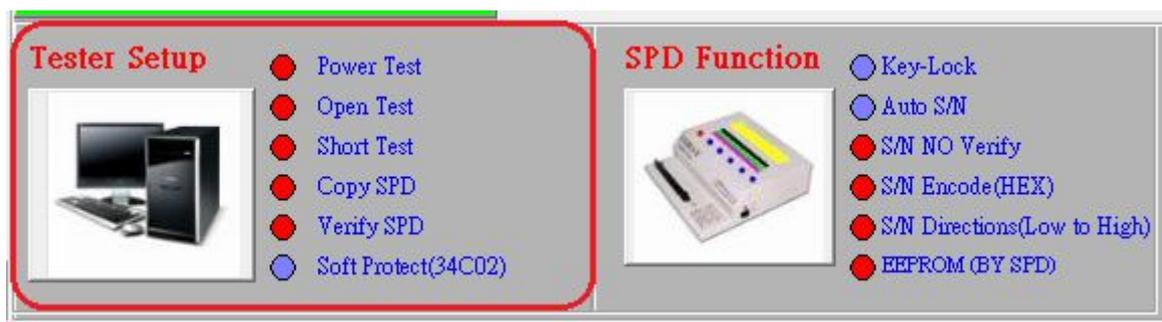


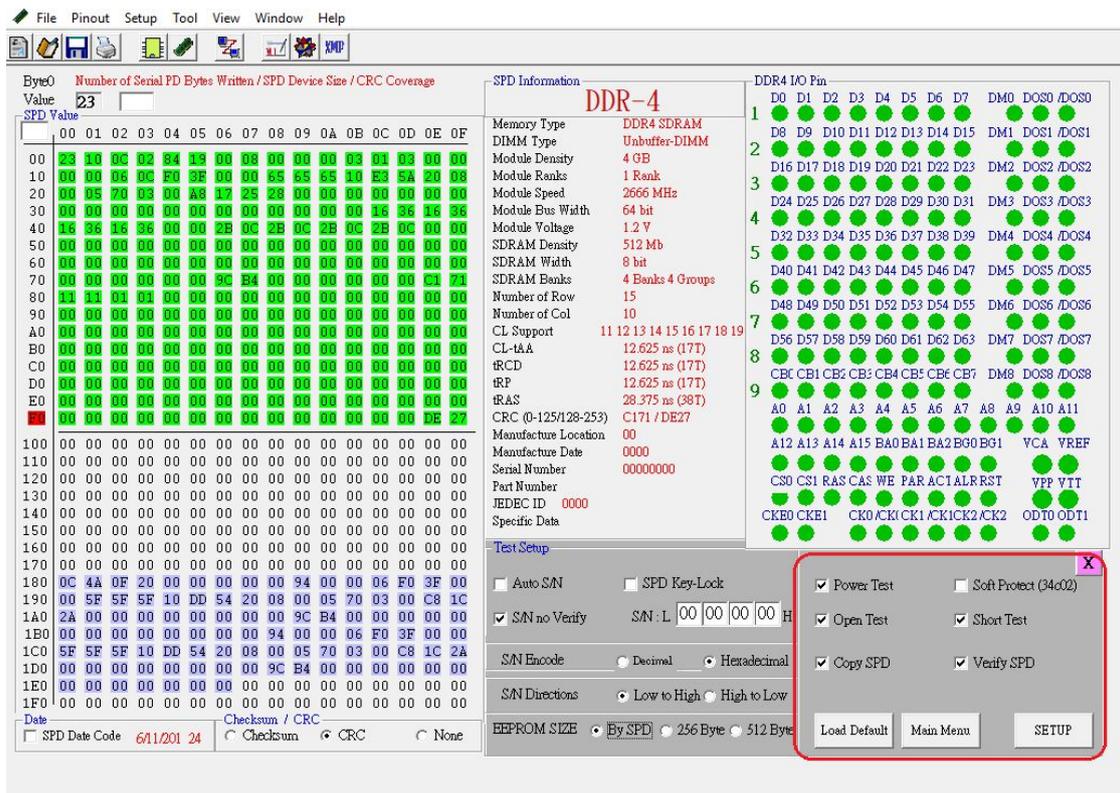
Part II Test Setting

Choose different functions according to your needs:

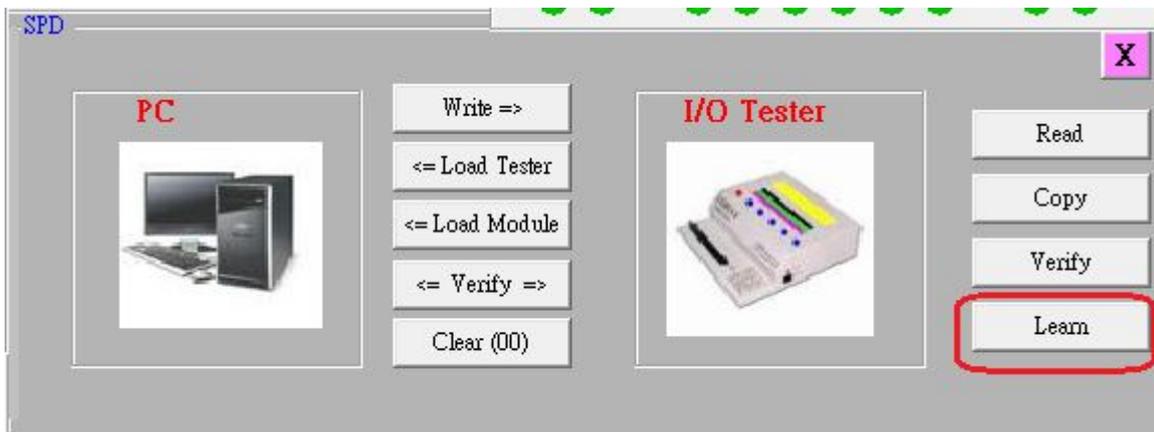
<Power Short Circuit>, <Cable Open Circuit>, <Cable Short Circuit>, <SPD Record>, <SPD Verify>, <Software Protect>

After setting, press <SETTING> to save and return to the homepage, then choose <TEST> for further testing instructions.





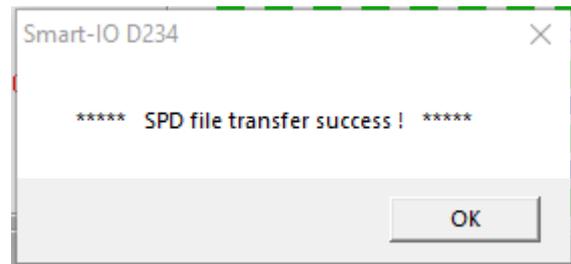
To run testing, insert an OK module into the “Expansion DIMM Socket”, press <LEARN> on Smart I/O or click <LEARN> on the software to start the learning, then run for further instructions.



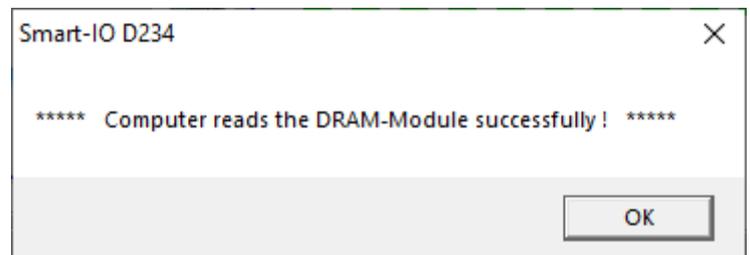
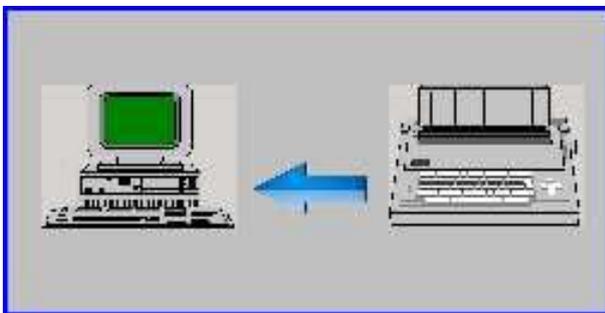
Part III SPD testing

SPD functions on client:

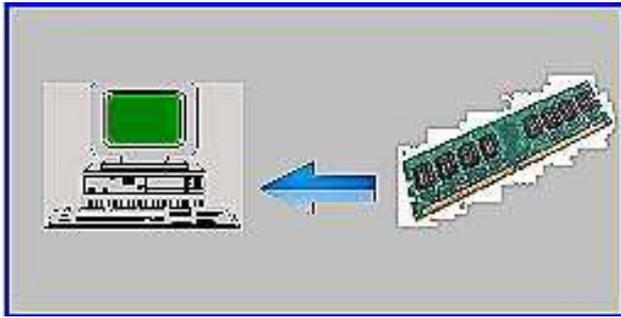
1. Write: Write in the SPD data from the module of Smart I/O shown on the client. The following images will be shown when writing success.



Load Tester: Load the SPD data which are saved in client and show the detail information on the computer screen. The following images will be shown when loading success.



Load Module: Loading SPD data of module into PC Smart I/O and show the detail information. The following images when loading success.

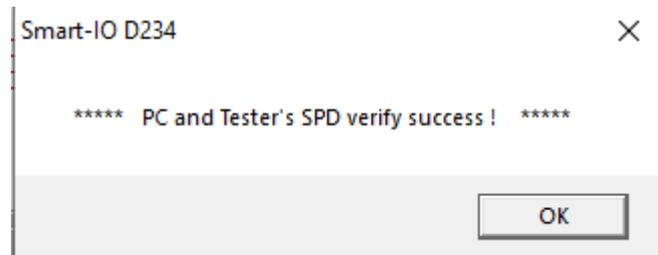
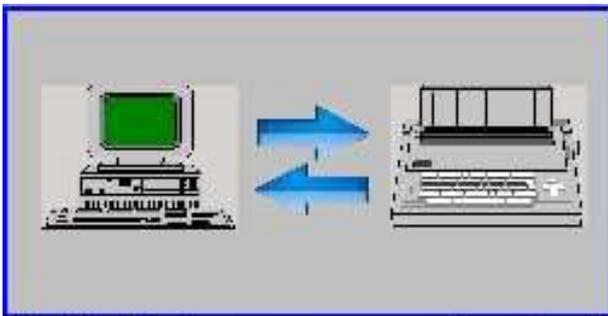


Error will be shown when the module is not well inserted or EEPROM is damaged:

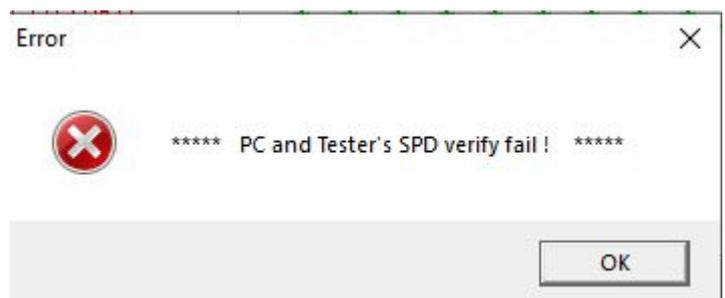
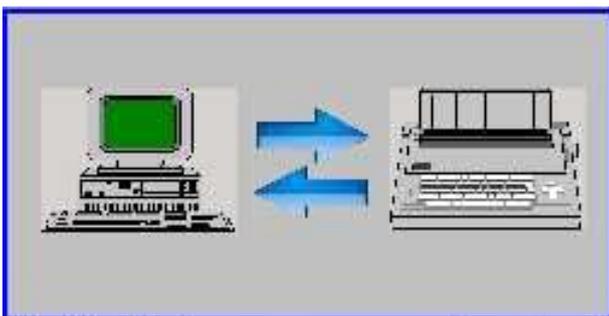


Verify: Verify if the SPD data on Smart I/O match to data on PC-side.

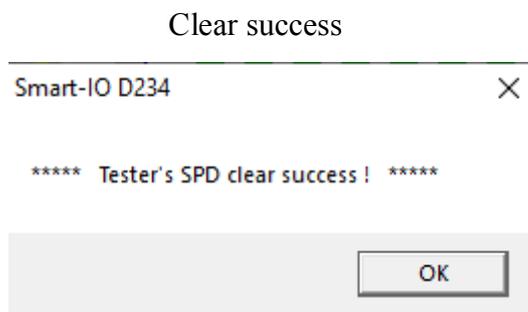
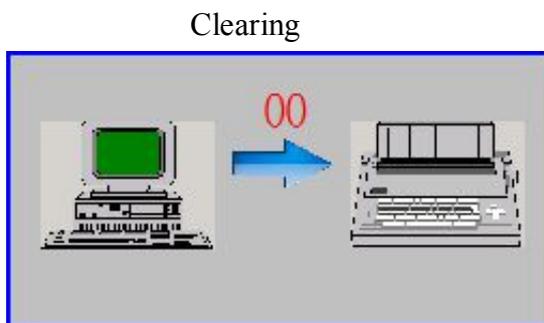
Verify Successfully



Verify Failure



Clear (00): Clear SPD data on Smart I/O.



IO Testing functions on the Smart I/O:

1. READ: Read the SPD data from module which is inserted in Smart I/O Error Detector and save the data in the host.
2. COPY: Copy SPD data from Smart I/O Error Detector to the module
3. VERIFY: Verify SPD data recorded from Smart I/O Error Detector with the SPD data from the module.
4. LEARN: Learn the mode of <Open Circuit> and <Short Circuit> on the module from Expansion Slot.

I/O Testing card:

I/O Testing card help corresponding Address and Date on the module while running OPEN/SHORT functions.

