# 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 Editon, 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 Adress 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:



- 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.





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

COPY DATA TO MODULE COPY DATA NOW	(By SPD)
COPY DATA TO MODULE VERIFY DATA NOW	(By SPD)
COPY DATA TO MODULE ** COPY OK **	(By SPD) 04000002 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.



### VERIFY

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







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.



#### 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.  $\langle TE-256 \rangle$ : 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.



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





## SETUP – A\_s/n $\cdot$ V\_s/n $\cdot$ D\_s/n $\cdot$ ROM\_SIZE $\cdot$ CODE

Press  $\langle SETUP \rangle$  to setup for  $\langle A_s/n \rangle$ ,  $\langle V_s/n \rangle$ ,  $\langle D_s/n \rangle$ ,  $\langle ROM_SIZE \rangle$ ,  $\langle CODE \rangle$  modes. Press the rightmost  $\langle EXIT \rangle$  button to return to  $\langle SPD \rangle$  function page, then press the rightmost  $\langle Exit \rangle$  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.

A\_s/n U\_s/n D\_s/n ROM\_SIZE CODE EXIT

<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)	LE	ARN:	ING.					
(2)						AND		EXIT

#### 5. OPEN

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



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





### 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:





Z	安裝 Smart-IO D234中文繁體
÷	3 安装 Smart-IO D234中文繁整 ▼ Smart-IO D234中文繁整 ■ 戦迎使用 Smart-IO D234中文繁麗 安装投式。
	安装程式無法安装使用中的系统檔案,也無法更新使用中的共用檔案。建議您在安裝前,開開所有的應用程式。
	確定 結束安装(区)



安裝 Smart-IO D2.	34中文繁體
一般 安装 Smart-IO D234中文繁整 目的檔案: C:\WINDOWSkystem32\RCHTXCHT.DLL	×
5% 取消	







## System Operation

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



Enter the New Passwo	d I	
Data Di Dana		
Rekey-IN Tasswolu		

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.

😽 Password			×
Input Password :			
	OK	Cancel	

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

🥒 File	e Pinout	Setup	Tool	View	Window	Help
	1 🔒 🦫	R	econne asswor	ection d Settin	g	MB
Byte0 Value	Number	C	ommu	nicatior	n	
SPD V	alue ——	IC	) Tester	Setup		
	00 01 0	S	PD Fun	ction Se	tup	A 0
0.0	00 00 0	0 00	00 00	000		00.0

Help

Audio inputs and outputs

View 🖛 🄿 📅 🔢 🕎 DESKTOP-LN949EK

DVD/CD-ROM drives

Floppy drive controllers

Ports (COM & LPT)

Human Interface Devices

TIDE ATA/ATAPI controllers

Mice and other pointing devices

USB-SERIAL CH340 (COM3) 逋訊連接理(COMI)

Eloppy disk drives

Device Manager

Action

4 Computer

5

>

>

>

>

>

Disk drives Display adapters

Keyboards

Monitors Network adapters

> 🖻 Print queues

File

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:



#### <Pinout> function





#### IC Pinout and Module Pinout.





#### <Set up> Function

1	File	Pinout	Setup	Tool	View	Window	Help	
	0	8	R	econne	ction		Ø₽	
B	nen.	Number	P	assword	d Settin	9		<b>Communication:</b> Choose the connecting port.
Va	alue	00	C	ommu	nication	n		
SP	DVa	lue	IC	) Tester	Setup			
<u> </u>	-10	0 01 0	S	PD Fun	ction Se	tup	A OB	
	0.0		0 00	00 00	00 0	0 00 00	00.00	

★ 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:

				📇 Device Manager
				File Action View Help
				🗢 🔿   🖬   🚺 🖬   💭
				V 📇 DESKTOP-LN949EK
				> 🖬 Audio inputs and outputs
				> Computer
				> 👝 Disk drives
Communication			×	> 🏣 Display adapters
				> PVD/CD-ROM drives
	D0 000 C D .			> 🚽 Floppy disk drives
	RS-232 Com-Port		7	> 🚽 Floppy drive controllers
	C Com1	G Com3     ■		> 🗛 Human Interface Devices
		· · · · · · · · · · · · · · · · · · ·		> 📷 IDE ATA/ATAPI controllers
		~ ~ .		> 🔤 Keyboards
	C Com2	C Com4		> Mice and other pointing devices
				> 🛄 Monitors
				> 🖵 Network adapters
	OK	Cancel		V 🛱 Ports (COM & LPT)
				USB-SERIAL CH340(COM3)
				💭 通訊連接埠 (COM1)

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

Password Setup			
Enter the New Password	1		1
Rekey-IN Password	1		
	OH	Cancel	1

## **IO Test Setting**

				Pa	ssw	ord	Setti	na			E															
) yte	1	Jumbe	r	0			icatio										SPD Information	DDR2 IA	D Pin –							
/alu	1	00		0	-	num	icatii	211										DO I	D1 D2	D3	D4 I	05 D6	5 D7	DM0	DOSO	/DOS0
SPD	/alue			IC	Tes	ter S	ietup	)										-1 🛡 1			•					•
	00	01	9	SF	DF	unct	ion	Setu	р		À	0B	0C	0D	0E	OF	Memory Type(2) Reserved	D8 I	09 D1	0 D11	D12 I	013 DI	4 D15	DM1	DOSI	/DOS1
00	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	DIMM Type(B) Unbuffered	2			-		-	-	20000	-
10	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	Module Density(IP)	2 0101		8 019	D20 I	J21 D.	12 D23	DM2	DOSZ	/DOS2
20	00	00	00	00 0	00	00	00	00	00	00	00	00	00	00	00	00	Module Sneed (0) Undefined	D24 T	25 D2	6 D27	D29 T	20 D	0 021	DM2	DOSS	0082
30	00	00	00	00 0	00	00	00	00	00	00	00	00	00	00	00	00	Interface Level(8) TTL	1 0241		0 027	0201	D 0		DBID	0.00	0000
40	00	00	00	00 0	00	00	00	00	00	00	00	00	00	00	00	00	SDRAM Density 16 Mb	D32 T	133 D3	M D35	D36 I	137 D	8 039	DM4	DOS4	/DOS4
50	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	SDRAM Width(D) N/A	5						-		
60	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	Refresh Time(C) 15.625us	D40 I	041 D4	2 D43	D44 I	045 D4	6 D47	DM5	DOS5	/DOS5
70	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	Number of Row(3) Undefined (B1)/	6						-		
80	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	Number of Col(4) Undefined (B1)/	D48 I	049 D5	50 D51	D52 I	053 D	54 D55	DM6	DOS6	/DOS6
90	00	00	00	00 0	10	00	00	00	00	00	00	00	00	00	00	00	CL Support(12) Undefined	7 🔴 (								•
AU	00	00	00	00 1	10	00	00	00	00	00	00	00	00	00	00	00	Trp(1B) Undefined	D56 I	057 D5	8 D59	D60 I	061 D6	52 D63	DM7	DOS7	/DOS7
BU	00	00	00	00 1	10	00	00	00	00	00	00	00	00	00	00	00	Trrd(IC) Undefined	8 🔴 (			•					•
DO	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	Trcd(1D) Undefined	CBCC	CB1 CE	32 CB3	CB4 (	CB5 CI	BE CB7	DM8	DOS8	/DOS8
50	00	00	00	00 1	0	00	00	00	00	00	00	00	00	00	00	00	Tras(1E) Undefined	9 🗣 (			•					•
E	00	00	00	00 1	10	00	00	00	00	00	00	00	00	00	00	00	Checksum(3F) 00	A0 /	11 A2	A3	A4 1	15 A6	5 A7	A8 A	9 A10	A11
-		00					00	00							00		JEDEC ID (40-47) 000000000000000000000000000000000000				•	9.6		•		•
100	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	Location(48) 00	A12 /	13 A1	4 A15	BAOR	BA1 BI	12 BG0	BG1	VCA	VREF
110	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	Part Number(49-5A)		9.6		•				- •	
120	00	00	00	00 0	10	00	00	00	00	00	00	00	00	00	00	00	Revision(5B-5C) 0000	C20 C	CS1 RA	IS CAS	WE H	ARA	CIALR	RST	VPP	VIT
130	00	00	00	00 1	10	00	00	00	00	00	00	00	00	00	00	00	Date Code (5D-5E) 0000				•			•		
140	00	00	00	00 0	10	00	00	00	00	00	00	00	00	00	00	00	Senai Number (57-02)0000000	CKEUC	CKE1	CKU	CKIC	CK1 /C	KICK2	ICK2	ODTU	ODTI
100	00	00	00	00 1	10	00	00	00	00	00	00	00	00	00	00	00	specific Data(05-7F)	m 🔹 (			-		-	-		•
170	00	00	00	00 1	0	00	00	00	00	00	00	00	00	00	00	00	Torociup								-	Y
180	00	00	00	00 1	10	00	00	00	00	00	00	00	00	00	00	00	Auto SAL CSP Ver Lock		17.1	Dame	Test		-			-071
190	00	00	00	00 1	0	00	00	00	00	00	00	00	00	00	00.	10	SPD Key-LOCK	x - 10 - 10		rower	Itat		2	SOILPIC	neut (34	(02)
140	00	00	00	00 1	10	00	00	00	00	00	00	00	00	00	on of	00	SN no Verify SN I. 00 00	00 00 H		Onen T				hart Te	-	
180	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	i bitta i bitta			open i	ωı			most It	21	
1C0	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	CATE 1									
1D0	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	10	00	S/IN Encode C Decimal • H	exadecimal	V (	Copy S	PD		1	/erify S	PD	
1E0	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	00	CAIDianian C. Lump IV. L.C. II									
1F0	00	00	00	00 1	00	00	00	00	00	00	00	00	00	00	00	08	SAV Directions . Low to High C H:	ign to Low								
Date							C	necks	um /	CR	-1						FROM CITE C PUCTOD C 166 Puto	C 510 Date				Male			017.7	
L 2	PD De	ate Coo	le	6/11/2	01	24	C	Cht	ecksu	m	C	CRC	(0-12	25)	• N	one	BUT NEW SIGE ( Dy SPD ( 250 Byte )	512 Dyte	LO	an Dela	non	Main	menu		SE	1

## **SPD** Function Set up

🕨 File	Pi	nout	Setu	p To	lo	View	Wir	dow	H	elp																	
alm		A		Reco	nnec	tion				m																	
a 💟	.01			Daces	vord	Settin	a			ru-																	
Byte0	N	umber			·····									SPD Information		DD	R2 I/O I	in —							1		
Value	Ī	0		Com	mun	icatio	n									1	D0 D1	D2 1	03 D4 I	05 D6	D7	DM0	DC	SO /DOSO			
SPD V	alue			IO Te	ster S	Setup	6			-				-		1	• •	•			•						
	00	01 C		SPD F	unct	tion S	ietup			A 01	3 OC	OD	OE OF	Memory Type(2) Reserved			D8 D9	D10 1	D11 D12 I	013 D14	1 D15	DM1	DC	S1 /DOS1			
00	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 01	0 00	00	00 00	DIMM Type(B) Unbuffered	d	2					•						
10	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00	Module Density(IF)		2	DIE DI	7 D18	J19 D20 I	121 D2	2 D23	DM2	DC	IS2 ADOS2			
20	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00	Module Sneed (9) Undefined		3	D24 D2	5 026 1	027 D28 I	120 1130	1 1 21	DM2	DC	83 0083			
30	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	00 0	00	00 00	Interface Level(8) TTL		4		0				DI					
40	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00	SDRAM Density 16 Mb			D32 D3	3 D34 1	035 D36 I	037 D38	3 D39	DM4	DC	S4 /DOS4			
50	00	00 0	0 00	00	00	00	00 0	0 0	00	0 0	0 00	00	00 00	SDRAM Width(D) N/A		5						(					
50	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	00 1	00	00 00	Refresh Time(C) 15.625us		1	D40 D4	1 D42 I	043 D44 I	45 D46	5 D47	DM5	DC	S5 /DOS5			
0	00	00 0	0 00		00	00	00 0	00	00	0 0	00 0	00	00 00	Number of Row(3) Undefined	(B1)/	6	• •	•			٠						
90	00	00 0	0 00		00	00	00 0	0 0	0 0	0 0	1 00	00	00 00	Number of Col(4) Undefined	(B1)/	_ 1	D48 D4	9 D50 I	051 D52 I	)53 D54	1 D55	DM6	DC	S6 /DOS6			
AO	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00	CL Support(12) Undefined		17					•						
BO	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	00 0	00	00 00	Trp(IB) Undefined		0	D56 D5	7 D58 1	559 D60 I	061 D61	2 D63	DM7	DC	IST IDOST			
CO	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 01	0 00	00	00 00	Trad(IC) Undefined		0	CPC CP	1 CPS	PROPAG	DECR	CP5	DMO	DC	0000 000			
DO	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00	Tras(1E) Undefined		a	BL CE	I CB2	B3 CB4 C			DMG	DC	150 10050			
EO	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00	Checksum(3F) 00		1	A0 A1	A2	3 A4 A	5 A6	A7	A8 A	9 A	10 A11			
FO	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00	JEDEC ID (40-47) 000000000	00000												
100	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00	Location(48) 00			A12 A1	3 A14 J	15 BAOH	A1 BA	2 BG0	BG1	VC	A VREF			
110	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00	Part Number(49-5A)									1				
120	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00	Revision(5B-5C) 0000			CSO CS	I RAS	CAS WE H	ARAC	TALR	RST	V	PP VTT			
130	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 01	0 00	00	00 00	Date Code (5D-5E) 0000		1		•			٠	•					
140	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00	Serial Number(5F-62)0000000	0	C	KE0 CK	E1 (	CKOACKIO	CK1 /CK	ICK2	/CK2	OL	TO ODT1			
150	00	00 0	0 UL 0 0C		00	00	00 0	00	00	0 0	J UU	00	00 00	Specific Data(63-7F)		1	• •				•	•	- (				
170	00	00 0	0 00 0 00		00	00	00 0	00	00	0 0	) UU ) OO	00	00 00	Care										Y			
180	00	00 0	0 00		00	00	00 0	00	0 0 0 0	0 0	, 00 1 NN	00	00 00	e conge													
190	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 01	0 00	00	00 00	PC	Write	e =>			/O Tes	ter		100		D.u.			
140	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 01	0 00	00	00 00		r= Lood	Teste	r l		-			-	_	Keaa			
1B0	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00		<= 1.080.	Teste	1		0.0				-	Conv			
1C0	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00		<= Load	Modu	de		6	>		-	_	Copy			
1D0	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00						10	•			8	Verify			
1E0	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 0	0 00	00	00 00		<= Ven	ify =:			1000			-	-				
1F0	00	00 0	0 00	00	00	00	00 0	0 0	0 0	0 01	0 00	00	00 00		Chor	/00\			-					Leam			
Date -	۰n•	le Code	<i>ca</i>	1 001	24	TCh	Check	17C. Sumo	KU-	CR	۳ (n. 1	25)	None		Clear	(00)						-					
1 61.	J Da		6/1	1/201	24	1	CHUCK	Juili	×.	UIV	0,0-1	ω)	. 1.010	1											1		
																									Ŧ	限し	1
														17				04	atre a	R	Ram	CEN	TE	R Technol	au	Cornor	ation
																							-		33	- pon	

#### <Tool> Function



## 1. Manufacturing Information

Module ID (64-71)	
Location (72)	00 -
Part Number (73-90	
<b>Revision</b> (91-92)	
<b>Date</b> (93-94)	00 • 0 • 5/11/2019 24 weeks
Serial Number (95-98)	
Specific Data (99-127)	

#### 2. SPD Wizards





SPD Wizard		-		×		🏶 SPD Wizard			<u></u>		×
Cancel	Module Parameter DRAM Memory Size 1 Gb DRAM Deta Width X8 Module Side 2 RANK With ECC Previous Next	:	Finish			Cancel Pre	ule Timin, tCL tRCD tRP tRAS	g 17T 17T 17T 38T Next	• • •	inish	J
4	SPD Wizard					- 0	×				
	<b>1</b>		Mod	lule Mar	nufact	ue's Information					
	<b>V</b>		JE. Pa	rt Num	Γ						
	Cancel		Pre	evious		Next Finish					

#### 3. XMP View:

DDR4	JEDEC	Profile 1	Profile2
Module Speed	2133 MHz	2133 MHz	2133 MHz
VDD Voltage	1.2 V	1.2 V	1.2 V
CL Support	10 11 12 13 14 15	10 11 12 13 14 15	10 11 12 13 14 15
CL-tAA(min)	13.1 ns(15T)	159 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



#### 4. XMP Wizards:

🔨 XMP Wizards		
DDR4 XMP 2.0	XMP Profile       All FROME       •         Module Speed       DDR4-2133       •         VDD Voltage       1       •       20       •         CL Support       7       8       9       •       10       11       •         VDD Voltage       1       •       20       • <td< th=""><th>12 18 24</th></td<>	12 18 24
		Ą

XMP Profile Setting	$\times$
*** all XMP Profile Setting ***	
Yes No	

<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.





Byte0 Number of Serial PD Bytes Written / SPD Device Size / CRC Coverage	_SPD Information	DDR4 I/O Pin
Value 23	DDR-4	D0 D1 D2 D3 D4 D5 D6 D7 DM0 D0S0 /D0S0
SPD *40         · </td <td>Memory Type         DDRA SDRAM         1           DIM Type         Unbuffer-DIMM         2           Module Density         4 GB         2           Module Ranks         1 Rank         3           Module Speed         2666 MHz         3           Module Speed         2666 MHz         4           Module Speed         2066 MHz         4           SDRAM Writh         64 bit         4           Module Voltage         1.2 V         5           SDRAM Writh         8 bit         5           SDRAM Writh         8 bit         5           SDRAM Banks         4 Banks 4 Groupe         6           Number of Col         10         11 12 13 14 15 16 17 18 19           CL-tAA         12.625 ns (17T)         8           RP         12.625 ns (17T)         8           RP         12.625 ns (38T)         9           CRC 0-12.54/32-253)         CI71 / DE27         7</td> <td>D8         D9         D10         D11         D12         D13         D14         D15         DM1         DOS1         //DOS1           D16         D17         D18         D19         D20         D21         D22         D23         DM2         DOS2         //DOS1           D24         D25         D26         D27         D28         D29         D30         D31         DM3         DOS3         //DOS3           D32         D33         D34         D35         D36         D37         D38         D39         DM4         DOS4         //DOS4           D40         D41         D42         D43         D44         D45         D46         D47         DM5         DOS5         //DOS5           D48         D49         D50         D51         D52         D53         D54         D55         DM6         DOS6         //DOS6         //DOS6           D56         D57         D58         D59         D60         D61         D62         D63         DM7         DOS7         //DOS7           CBC         CB1         CB2         CB3         CB4         CB5         CB6         CB7         D38         DOS8         //DOS8</td>	Memory Type         DDRA SDRAM         1           DIM Type         Unbuffer-DIMM         2           Module Density         4 GB         2           Module Ranks         1 Rank         3           Module Speed         2666 MHz         3           Module Speed         2666 MHz         4           Module Speed         2066 MHz         4           SDRAM Writh         64 bit         4           Module Voltage         1.2 V         5           SDRAM Writh         8 bit         5           SDRAM Writh         8 bit         5           SDRAM Banks         4 Banks 4 Groupe         6           Number of Col         10         11 12 13 14 15 16 17 18 19           CL-tAA         12.625 ns (17T)         8           RP         12.625 ns (17T)         8           RP         12.625 ns (38T)         9           CRC 0-12.54/32-253)         CI71 / DE27         7	D8         D9         D10         D11         D12         D13         D14         D15         DM1         DOS1         //DOS1           D16         D17         D18         D19         D20         D21         D22         D23         DM2         DOS2         //DOS1           D24         D25         D26         D27         D28         D29         D30         D31         DM3         DOS3         //DOS3           D32         D33         D34         D35         D36         D37         D38         D39         DM4         DOS4         //DOS4           D40         D41         D42         D43         D44         D45         D46         D47         DM5         DOS5         //DOS5           D48         D49         D50         D51         D52         D53         D54         D55         DM6         DOS6         //DOS6         //DOS6           D56         D57         D58         D59         D60         D61         D62         D63         DM7         DOS7         //DOS7           CBC         CB1         CB2         CB3         CB4         CB5         CB6         CB7         D38         DOS8         //DOS8
100         00	Manufacture Location 00 Manufacture Date 0000 Serial Number 00000000 Part Number JEDEC ID 0000 Specific Data Test Setup	A12 A13 A14 A15 BAOBA1BA2B00B01 VCA VREF CS0 CS1 RAS CAS WE PAR ACTALRRST VFP VTT CKE0 CKE1 CK0.CK1.CK1.CK1.CK2.CK2 ODT0 ODT1
170         00	Auto SAN SPD Key-Lock	Power Test     Soft Protect (34:002)     Dren Test     Short Test
1E0         00	SAN Encode C Decimal   Hexade	ecimal IZ Copy SPD IZ Verify SPD
1F0 00 00 00 00 00 00 00 00 00 00 00 00 0	S/N Directions • Low to High C High to EEPROM SIZE • By SPD C 256 Byte C 51	D LOW 12 Byte Load Default Main Menu SETUP

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.







Choose <Status> to check the testing process records

Specific Data	CKE0 CKE1		K1CK2/CK2 ODT0 ODT1
TEST	PASS 0	FAIL 4	Status Reset
1:35:33 PM Test Fail <short fail=""> 1:35:53 PM Test Fail <short fail=""> 1:39:30 M Test Fail <open fail=""> 1:39:43 PM Test Fail <open fail=""></open></open></short></short>			240 MA Power Fail Open Fail Short Fail SPD Fail



# 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.



Smart-IC	D234	×
****	* SPD file transfer success ! *****	
-	ОК	

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 SDP data on Smart I/O.



Clear success							
Smart-IO D234	×						
***** Tester's SPD clear success ! *****							
ОК							

#### 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.



