

B920+

Burn-in system specifications

Signality System Engineering Co., Ltd.

Note: This specification may be changed without notice.

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B920 is a test burn-in system manufactured with the view of executing the batch test and the life test during memory IC burn-in.

B920 is organized 48 burn-in boards at 2 zones and it can communicate with categorized loader / unloader machines by connection to the network.

1. General Specification

1.1 Object Devices	Semiconductor Memory Components (DRAM,SDRAM,SRAM,etc.)
1.2 Application	Burn-in / Batch Test / Life Test
1.3 System Operation Temperature Range	5°C < 35°C
1.4 Temperature Range in the Chamber	RT. + 35°C ~ 150°C
1.5 Number of Zones	2 Zones
1.6 Number of Slots	48 Slots (24 Slots per Zone)
1.7 Address Size	16 Bit (DRAM) / 32 Bit (SRAM)
1.8 I/O Channel	72 Channels

2. Burn-in Board

2.1 Size 450 mm × 570 mm (thickness : 1.6 mm)

2.2 Pin Assignment

Pin Description	Notation	Maximum No. of Channels	Comments
Address Channel	An	32 × 2	n = 0~31
Data Channel	DIO	72	0~71
Scan/Clock Channel	SCAN	32	0~31
BS_CLK Channel		16	
SP_CLK Channel		16	
Board ID Data Channel	BID	8	0~7
	IDSEL	4	0~3
INUSE Channel	INUSE	1	
	CLIP-H	2	
	CLIP-L	2	
	VT_POW	2	
SIG GND	GND	26	
Power Supply	PS1 IN	9	
	PS2 IN	9	
	PS3 IN	10	
	PS4 IN	10	
	PS1 SENSE	1	
	PS2 SENSE	1	

	PS3 SENSE	1	
	PS4 SENSE	1	
	PS1 RET	9	
	PS2 RET	1	
	PS3 RET	1	
	PS4 RET	1	
	PS1 GND	9	
	PS2 GND	9	
	PS3 GND	9	
	PS4 GND	9	

2.3 Connector

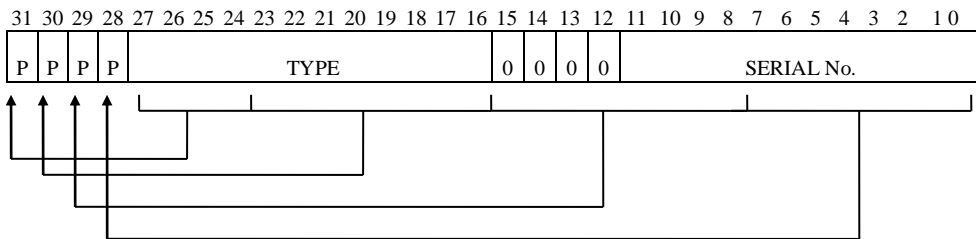
Yamaichi Electric Industry Co.Ltd.

PS44-44h-4311-KS 6462×2 pcs. (86P)

PS44-44H-5011-KS 6462×1 pcs. (100P)

2.4 Board ID

It is possible to set up a 32-bit board ID by diode mounting on the burn-in board.



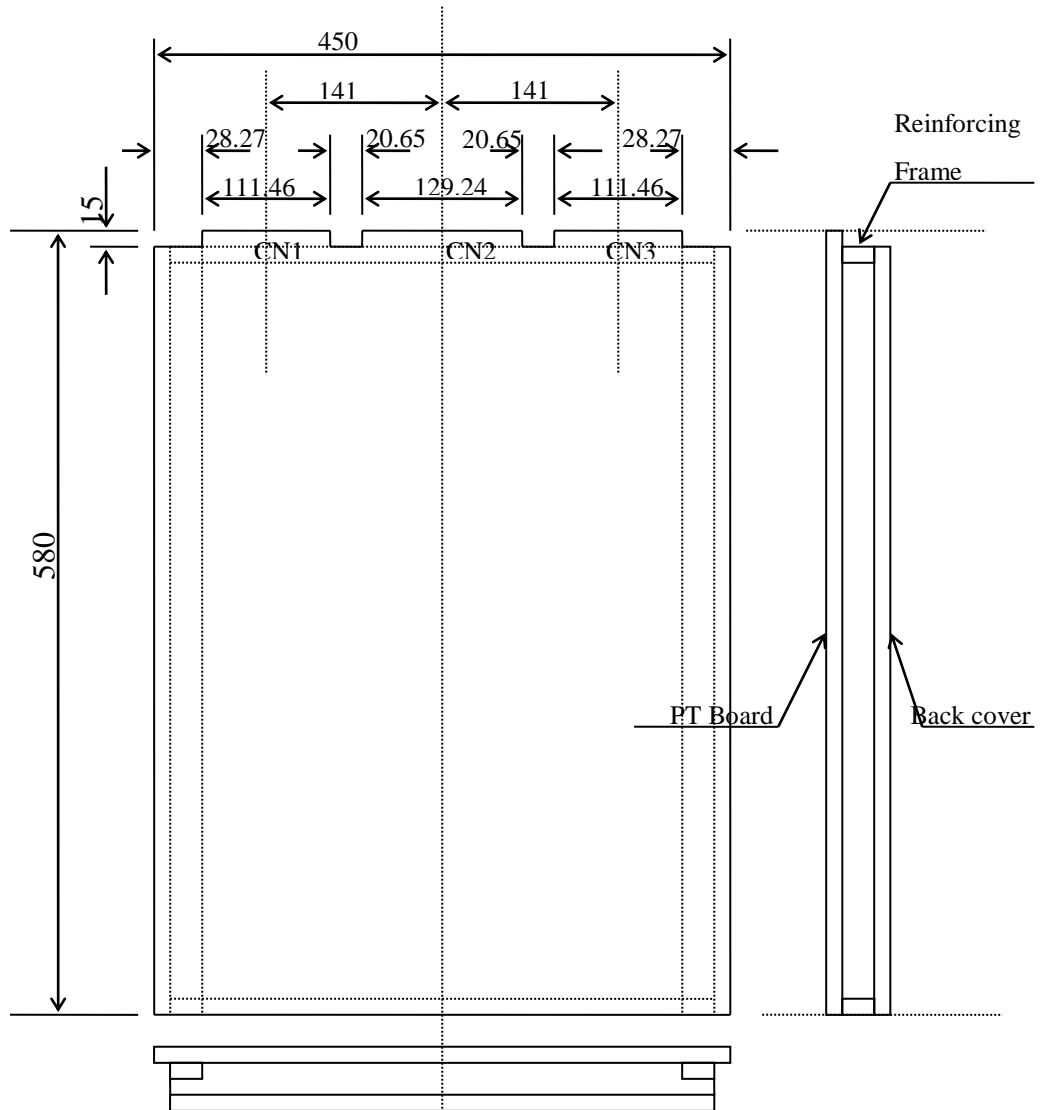
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2.5 External figure

CN1,3 : Yamaichi PS44 . 44H . 4311 (86pin)

CN2 : Yamaichi PS44 . 44H . 5011 (100pin)

Unit : mm



2.6 Connector pin signals

CN1 (86p)			
Parts Side	A	B	Sold Side
DIO0A	1		A0A
DIO1A	2		A1A
DIO2A	3		A2A
DIO3A	4		A3A
DIO4A	5		A4A
DIO5A	6		A5A
DIO6A	7		A6A
DIO7A	8		A7A
GND	9		GND
DIO8A	10		A8A
DIO9A	11		A9A
DIO10A	12		A10A
DIO11A	13		A11A
DIO12A	14		A12A
DIO13A	15		A13A
DIO14A	16		A14A
DIO15A	17		A15A
GND	18		GND
DIO16A	19		A16A
DIO17A	20		A17A
DIO18A	21		A18A
DIO19A	22		A19A
DIO20A	23		A20A
DIO21A	24		A21A
DIO22A	25		A22A
DIO23A	26		A23A
GND	27		GND
DIO24A	28		A24A
DIO25A	29		A25A
DIO26A	30		A26A
DIO27A	31		A27A
DIO28A	32		A28A
DIO29A	33		A29A
DIO30A	34		A30A
DIO31A	35		A31A
GND	36		GND
DIO32A	37		DIO33A
DIO34A	38		DIO35A
(PS1RET)	39		PS1 GND
PS1 GND	40		PS1 GND
PS1GND	41		PS1 GND
PS1GND	42		PS1 GND
PS1GND	43		PS1 GND

CN2 (100p)			
Parts Side	A	B	Sold Side
PS1 OUT	1		PS1 OUT
PS1 OUT	2		PS1 OUT
PS1 OUT	3		PS1 OUT
PS1 OUT	4		PS1 OUT
PS1 SENSE	5		PS1 OUT
GND	6		GND
SCAN0	7		CLK0A
SCAN1	8		CLK1A
SCAN2	9		CLK2A
SCAN3	10		CLK3A
SCAN4	11		CLK4A
SCAN5	12		CLK5A
SCAN6	13		CLK6A
SCAN7	14		CLK7A
GND	15		GND
SCAN8	16		IDOT0
SCAN9	17		IDOT1
SCAN10	18		IDOT2
SCAN11	19		IDOT3
SCAN12	20		IDOT4
SCAN13	21		IDOT5
SCAN14	22		IDOT6
SCAN15	23		IDOT7
GND	24		GND
CLIP-H	25		CLIP-L
CLIP-H	26		CLIP-L
	27		INUSE
SCAN16	28		IDSEL0
SCAN17	29		IDSEL1
SCAN18	30		IDSEL2
SCAN19	31		IDSEL3
SCAN20	32		IDSEL4
SCAN21	33		IDSEL5
SCAN22	34		IDSEL6
SCAN23	35		IDSEL7
GND	36		GND
SCAN24	37		CLK0B
SCAN25	38		CLK1B
SCAN26	39		CLK2B
SCAN27	40		CLK3B
SCAN28	41		CLK4B
SCAN29	42		CLK5B
SCAN30	43		CLK6B
SCAN31	44		CLK7B
GND	45		GND
PS2 SENSE	46		PS2 OUT
PS2 OUT	47		PS2 OUT
PS2 OUT	48		PS2 OUT
PS2 OUT	49		PS2 OUT
PS2 OUT	50		PS2 OUT

CN3 (86p)			
Parts Side	A	B	Sold Side
PS2 GND	1		PS2 GND
PS2 GND	2		PS2 GND
PS2 GND	3		PS2 GND
PS2 GND	4		PS2 GND
PS2 RET	5		PS2 GND
DIO32B	6		DIO33B
DIO34B	7		DIO35B
GND	8		GND
DIO0B	9		A0B
DIO1B	10		A1B
DIO2B	11		A2B
DIO3B	12		A3B
DIO4B	13		A4B
DIO5B	14		A5B
DIO6B	15		A6B
DIO7B	16		A7B
GND	17		GND
DIO8B	18		A8B
DIO9B	19		A9B
DIO10B	20		A10B
DIO11B	21		A11B
DIO12B	22		A12B
DIO13B	23		A13B
DIO14B	24		A14B
DIO15B	25		A15B
GND	26		GND
DIO16B	27		A16B
DIO17B	28		A17B
DIO18B	29		A18B
DIO19B	30		A19B
DIO20B	31		A20B
DIO21B	32		A21B
DIO22B	33		A22B
DIO23B	34		A23B
GND	35		GND
DIO24B	36		A24B
DIO25B	37		A25B
DIO26B	38		A26B
DIO27B	39		A27B
DIO28B	40		A28B
DIO29B	41		A29B
DIO30B	42		A30B
DIO31B	43		A31B

CN4		(100p)	
Parts Side	A	B	Sold Side
PS4 OUT	1	PS4 OUT	
PS4 OUT	2	PS4 OUT	
PS4 OUT	3	PS4 OUT	
PS4 OUT	4	PS4 OUT	
PS4 OUT	5	PS4 OUT	
PS4 SENSE	6	PS4 RET	
GND	7	GND	
GND	8	GND	
GND	9	GND	
GND	10	GND	
VT	11	VT	
GND	12	GND	
BBS_B3	13	BCLK7	
BBS_B2	14	BCLK6	
BBS_B1	15	BCLK5	
BBS_B0	16	BCLK4	
BBS_A3	17	BCLK3	
BBS_A2	18	BCLK2	
BBS_A1	19	BCLK1	
BBS_A0	20	BCLK0	
GND	21	GND	
AUX4	22	GND	
GND	23	VREF_OUT	
GND	24	VREF_OUT	
GND	25	VREF_OUT	
GND	26	VREF_OUT	
GND	27	VREF_RET	
GND	28	VREF_SENS	
AUX3	29	GND	
GND	30	GND	
ABS_B3	31	ACLK7	
ABS_B2	32	ACLK6	
ABS_B1	33	ACLK5	
ABS_B0	34	ACLK4	
ABS_A3	35	ACLK3	
ABS_A2	36	ACLK2	
ABS_A1	37	ACLK1	
ABS_A0	38	ACLK0	
GND	39	GND	
AUX1	40	AUX2	
GND	41	GND	
GND	42	GND	
GND	43	GND	
GND	44	GND	
PS3_SENS	45	PS3_RET	
PS3OUT	46	PS3 OUT	
PS3 OUT	47	PS3 OUT	
PS3 OUT	48	PS3 OUT	
PS3 OUT	49	PS3 OUT	
PS3 OUT	50	PS3 OUT	

3. Power supply

3.1 Specification

Power Supply	Remark	Output Voltage	Capacity per board	Resolution	setting accuracy
DPS1	DUT Power Supply	0V ~ 8V	20A	10mV	$\pm 0.1V$
DPS2	DUT Power Supply	0V ~ 8V	20A	10mV	$\pm 0.1V$

3.2 Safeguard Functions

- 1) Guard from Excess Current Possible to set value from 0A to 20A
(for each burn-in board)
- 2) On / Off Sequence Possible to set on / off sequence of each power supply by a program.

4. Chamber

4.1 Method	Forced-hot blast-circulation Method
4.2 Temperature Adjust Range	$\pm 3^{\circ}\text{C}$
4.3 Allowable Thermal Load	Inside of Chamber : at $+125^{\circ}\text{C}$: 5.0kw, $\pm 3^{\circ}\text{C}$
4.4 Operational Temperature Range	$5^{\circ}\text{C} \sim 35^{\circ}\text{C}$
4.5 Size and Weight	
(a) Outer Size	2,900 (W) \times 1,580 (D) \times 2,450 (H) mm (Except protruding portions)
4.6 Construction	
1) External Material	SECC zinc plating steel
2) Painting Color	Main Body ML401T Doors FL401T
3) Material of Inside	SUS 430 Stainless steel plate chamber
4) Insulator	Glass wool
4.7 Heater	Strip Heater 18kw
4.8 Blower	
1) Method	Sirocco fan
2) Capacity of Motor	3.7kw \times 1
4.9 Exhausting Device	Loaded automatic exhaust adjust method
4.10 Chamber Controller	
(a) Method	Direct Digital Control by Micro Computer
(b) Set Range	R.T + $35.0^{\circ}\text{C} \sim + 150^{\circ}\text{C}$
(c) Resolution	0.1°C
(d) Precision Setting	$\pm (0.3 \% \text{ F.S} + 1 \text{ DIGIT})$
4.11 Temperature Recorder	
1) Method	Dot-Printing Type Recorder
2) Scale Range	$0.0^{\circ}\text{C} \sim + 160^{\circ}\text{C}$
3) Number of Measured Points	6 points
4.12 Security Functions	
(a) Automatic High Limit	Auto-setting at setting temperature + 10°C
(b) High Temperature Limit Setting	Set on a rotary switch.

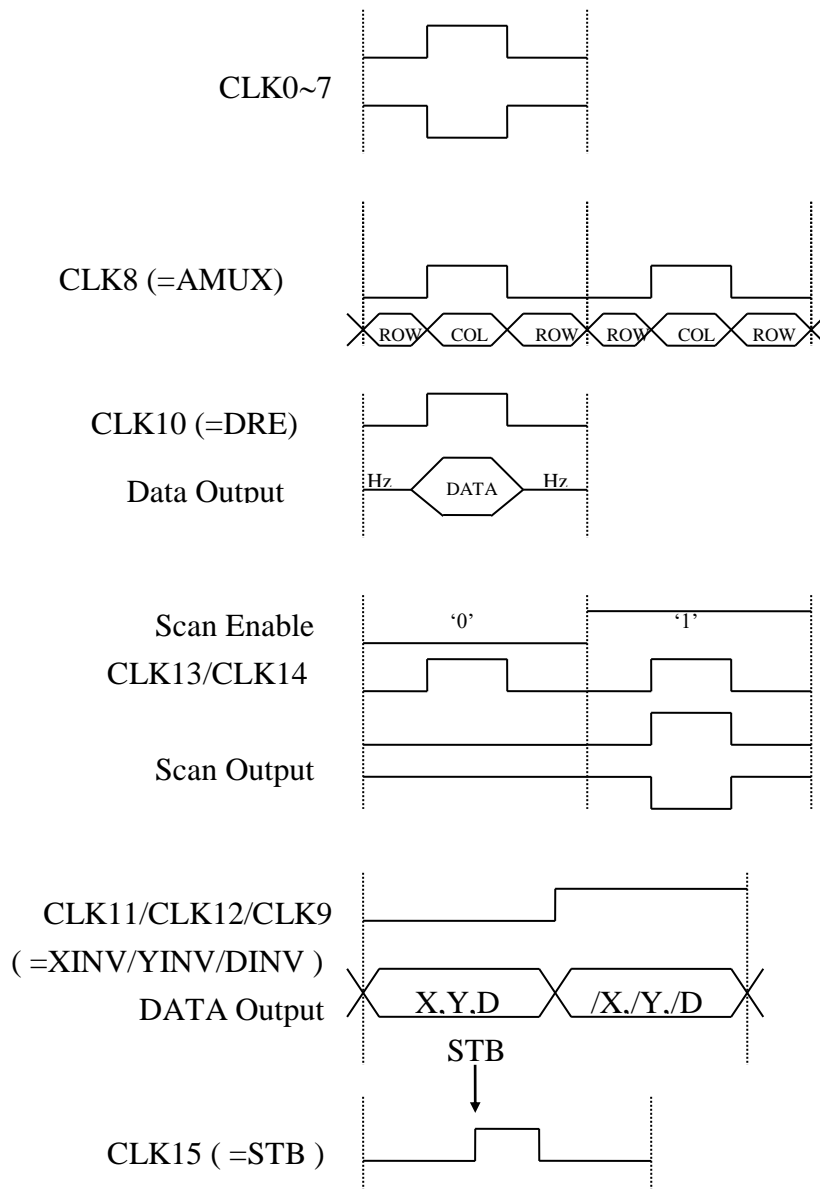
5. Timing Generator

5.1 Cycle Time	100ns to 40.96 μ s ,1ns resolution
5.2 Number of Clock Phases	16 phases
5.3 Clock setting range and resolution	0s to cycle time, 1ns resolution.
5.4 Assignment	<div style="display: flex; align-items: center;"> <div style="margin-right: 10px;"> <p>CLK0</p> <p>CLK1</p> <p>CLK2</p> <p>CLK3</p> <p>CLK4</p> <p>CLK5</p> <p>CLK6</p> <p>CLK7</p> </div> <div style="border-left: 1px solid black; border-right: 1px solid black; border-bottom: 1px solid black; width: 20px; height: 100px; margin-right: 10px;"></div> <div> <p>CLK Pin for DUT</p> </div> </div> <p>CLK8 for Address Multiplex</p> <p>CLK9 Data Reverse</p> <p>CLK10 for Driver enable(I/O driver)</p> <p>CLK11 X Reverse</p> <p>CLK12 Y Reverse</p> <p>CLK13 1st. SCAN Clock</p> <p>CLK14 2nd. SCAN Clock</p> <p>CLK15 Strobe</p>
5.5 Timing Setting Method	Specify leading edge and trailing
5.6 On The Fly	64 Sets

6. Pattern Generator

6.1 Method	Generating Algorithmic Logic Pattern on Micro-Program
6.2 Micro-command Length	176 bits
6.3 Micro-command Step Number	4k steps
6.4 ALPG	
Address generator :	X= 16 bit , Y= 16 bit
Pattern function	+ , - , LOAD
Address mode	Normal , Multiplex
Data generator :	16 bit max.
Data Function	LOAD , AND , OR ,XOR , $\times 2$, $\div 2$, + , -
6.5 Pattern Control	1) By Loop Counter Operation 2) Branches depending on the contents of status register 3) Unconditional branch 4) Branches depend on interrupt signal
6.6 Timer	Use either Refresh Timer or Pause Timer 1 us to 100 sec.
6.7 Interrupt	Timer Interrupt

7. Wave Format



8. Scrambler

8.1	Method	Programmable Memory Method
8.2	Address	XOR,INVERT
8.3	Data	XOR,INVERT

9. Driver Control Board

9.1 Driver

a) Channel Number	184 channels address : 32ch x 2 groups clock (general) : 8ch x 2 groups scan :32ch I/O / compactor : 72ch
b) Driving capability	Isink : 30mA Isource : 30mA
c) Driver Voltage	Vih : 1.5V to 8V setting resolution : 10mV setting accuracy : +/- 100mV Vil : 0.4V (IOL=30mA) fixed below that
d) Over-shoot / Under-shoot	Within±10% of Vih provided by a standard board (=DIAG board)
e) Tr / Tf	Less than 30ns
f) High-Z Control	I/O driver for only 72 channels available)
g) Skew	10ns (Proof with driver output terminal)

9.2 Comparator

a) Channel Number	72 channels
b) Threshold Voltage	1 level , Vth : 0V to 10V (setting resolution : 10mV, setting accuracy : ±100mV)
c) Mask	Possible per Channel Unit
d) Decision Method	Based on comparison of Expected Value pattern and DUT output.
e) Skew	10ns

10. Self Diagnosis (Option)

10.1 Method

The Compactor judge by driver signals which are returned from diagnosis boards via relays.

10.2 Check Items

- Interference between signals
- Skew
- Tr/Tf
- Voltage level

11. Burn-in Controller Unit

11.1 Processor	Pentium iii 700Mhz PC with 128M DRAM
11.2 Hard Disk	40 GB
11.3 Floppy Disk	Supported 3.5 inches 2 HD (1.44MB format)
11.4 Operator Panel	15 inches VGA monitor
11.5 Software	Novellus application software

12. Software

12.1 Burn-In Program

a) Burn-in Flow	Burn-in plan sequence with temperature and duration.
Burn-in Plan	1) DUT power setting 2) Burn-in Pattern selection (multiple) 3) Debug Utility setting (one pattern at a time).

12.2 Burn-In Pattern

Up to n Pattern files are usable per burn-in condition.	1) Device Define 2) Header Define
(n is limited only a hard disk capacity.)	3) Pin Group Define 4) Timing Set Define 5) Wave Format Define

13. Essential Equipment Preparation

13.1 Power Supply for Burn-in System

AC 208V 3Φ, 5W 60Hz , Capacity 100A

13.2 Power Supply for Burn-in Controller

AC 110V±10%, 1Φ, 60Hz, Capacity 10A

13.3 Total Weight 1600 kg