

J830F HIGH-SPEED NAND BURN-IN TESTER

Product Brief

Improve your performance with our fast, high productivity burn-in tester.



Sep.2020

Solution Brief

Connect

High-Speed BIB Solution

- At-speed test
- SoC-based behavioral test
- Advanced thermal solution
- Fast control and gathering data with on-board FPGA



Test

Test Solution

- Environmental test chambers with accurate and wide range of temperature control
- Programmable power supplies
- Self-diagnostics & easy maintenances



Trace

Trace Solution

- Trace and debug with JKI log trace and search tool
- Temperature monitoring with JKI chamber tool
- DUT monitoring with JTMS operating user interface



Verify

Analysis Solution

- Test software development environment with user APIs
- Test recipe generation and editing tool
- Concurrent running test process per target DUT

J830F Overview

J830F High Speed NAND Burn-In Tester Overview

: J830F은 솔루션을 기반으로 한 NAND Burn-In Test를 목적으로 개발되었으며, 기존의 NAND Burn-in Tester의 낮은 Test 주파수에 비해 실제 NAND Controller의 동작 Speed (667Mbps ~1.2Gbps)로 Test할 수 있는 솔루션을 제공한다.

High-Speed

- At-speed test with cost-effective burn-in socket (667 Mbps ~ 1200 Mbps)
- Advanced thermal solution to spread out heat of devices for high-speed operation
- Fast control and gathering data with on-board FPGA

Productivity

- 32 slots with 2 independent chamber, Up to 4608 devices
- Concurrent test thread per target DUT

Reliability

- Environmental test chambers with accurate and wide range of temperature control (-30°C~125°C)
- Programmable device power supplies
- Comply with environment and safety
- Self-diagnostics & easy maintenances

Applications

- Solution (SoC) based high-speed NAND burn-in test, reliability and qualification test



J830F

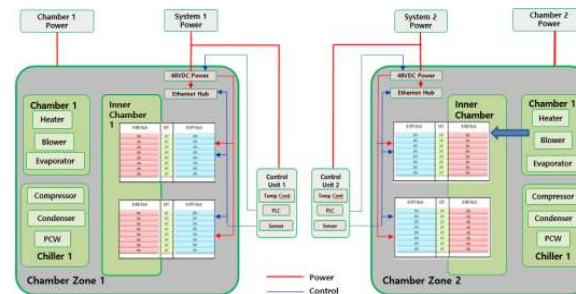
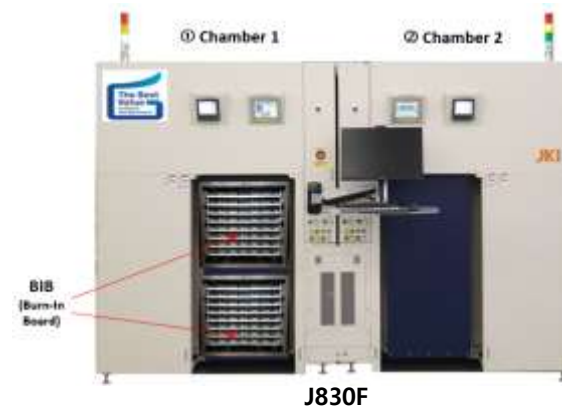


*J830F Engineering Station

: Engineering test 목적으로 BIB*1장을 Test 할 수 있는 작은 장비로 TAT를 줄일 수 있다.

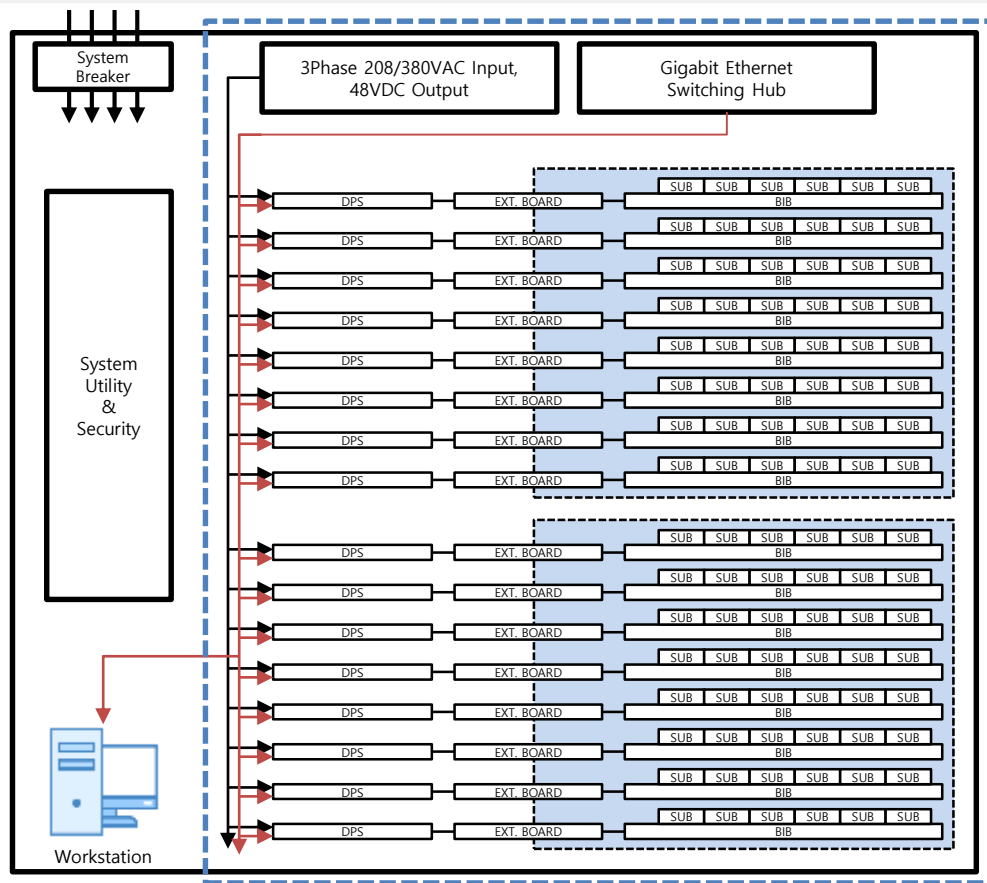
Product Feature

- **Target Application:** Solution based high speed NAND burn-in system
- **Parallel Testing :** Up to 4608 devices. (144 para per BIB * 32 sloes)
- **Test Speed :** up to SoC (SSD controller) Clock Speed
- **Chamber**
 - 32 slots with 2 chamber system (16 Slots per Chamber)
 - Temperature range: -30°C~125°C (@Ambient)
- **Test System**
 - Power Supply
 - Main Power Supply: 3phase 380/480VAC input, 48VDC output
 - Device Power Supply (DPS): fixed and programmable power supply for BIB
 - Extension Board (EXT) : DPS to BIB control signal & power extension
- **System Controller**
 - Workstation: managing test system and saving test results.
- **Burn-in Board (BIB) :**
 - up to 144 Para for 152 FBGA (Total 4608 para : 144x32 slots)
 - BIB Main Board: delivering power and control signals
 - BIB Sub Module: SSD design based sub module (SoC + DRAM + NAND)
 - Heat sink for thermal dissipation
- **Software**
 - System O/S and Applications
 - FPGA Software for fast and parallel UART or SPI communication to SoC.
- **Security**
 - Over-temperature, Over-voltage, Over-current, Fan & Smoke sensors
- **Utility Specifications**
 - Power, Air, Water, Installation Area



J830F System Block Diagram

System Configuration



x2 for 32 slot

System Main Power Unit (AC/DC)

- System Main Power Unit convert AC input power to 48V DC power for each DPS boards.

- **Features**

- Input power: 3phase 208VAC (or 380AC)
- Output power: 48 VDC
- Output overvoltage and overload protection
- AC Input overvoltage and undervoltage protection
- Over-temperature warning and protection
- CUR**† recognized/ TUV* certified/CE Mark§
- Shock & Vibration: Meets IPC 9562 Class II standards

- **System Power Specification (AC/DC) – 208V**

Power Source	Input Voltage	Output Voltage	Output Power	# of Source (per Zone)	# of Source (Total)	Total System Power
Main Power	3P 208Vac	48VAC	3 KW	8	16	48 KW

- **System Power Specification (AC/DC) – 380V**

Power Source	Input Voltage	Output Voltage	Output Power	# of Source (Per Zone)	# of Source (per system)	Total System Power
Main Power	3P 380/408VAC	48VDC	6KW	4	8	48KW

Device Power Supply (DPS)

Device Power Supply (DPS) generates DUT powers and communicates SoC in BIB board.

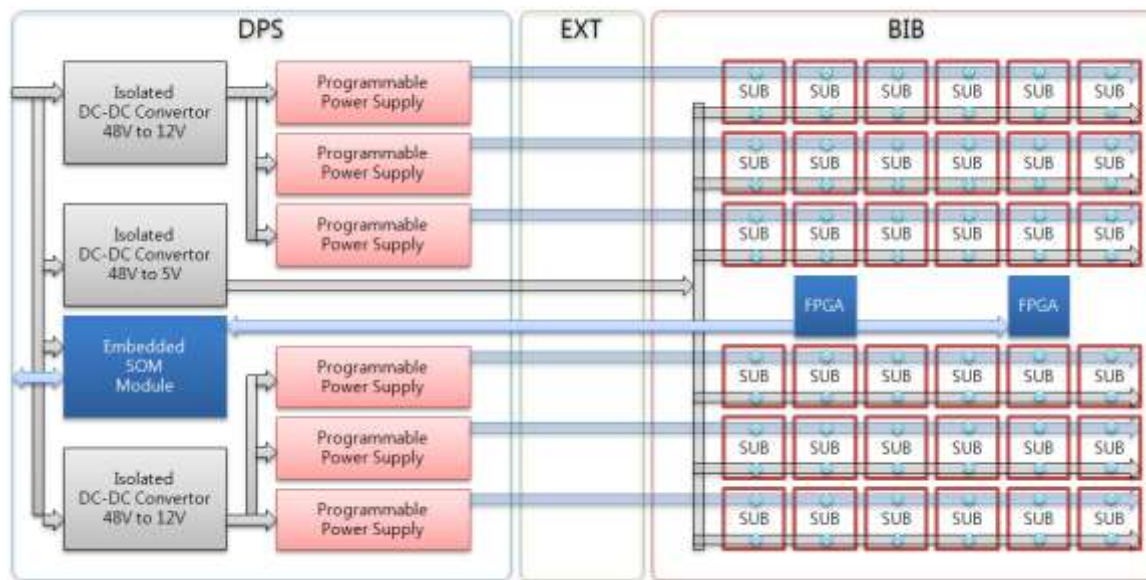
- DPS Main Board
- DC-DC Converters
- DPS Sub Module
- Embedded SOM Module



Power Distribution Network

Power Distribution Network

- 6 DUTs (1 Column) shares PPS power source.
- Each DUT has short-circuit protection.
- Each DUT has On/Off switch.



Power Specification

System Power Specification (AC/DC) – *208V Model

Power Source	Input Voltage	Output Voltage	Output Power	# of Source (per Zone)	# of Source (per System)	Total System Power
Main Power	3P 208Vac	48VAC	3 KW	8	16	48 KW

DPS Power Specification (PPS)

Power Source	Setting Range	Resolution	DC Accuracy	Max. Output Current	# of Source (per Slot)	# of Source (32 Slot)
NVCC	1.0 to 4.0V	1mV	+/- (2% + 25mV)	40A	6	192
NVCCQ	1.0 to 4.0V	1mV	+/- (2% + 25mV)	4A	6	192
NVPP	5.0 to 20V 30V (option)	10mV	+/- (2% + 50mV)	2A	6	192
P5V	5V (for SoC)	-	+/- (5% + 20mV)	40A	1	32
P12V	12V (for FPGA)	-	+/- (5% + 20mV)	5A	1	32

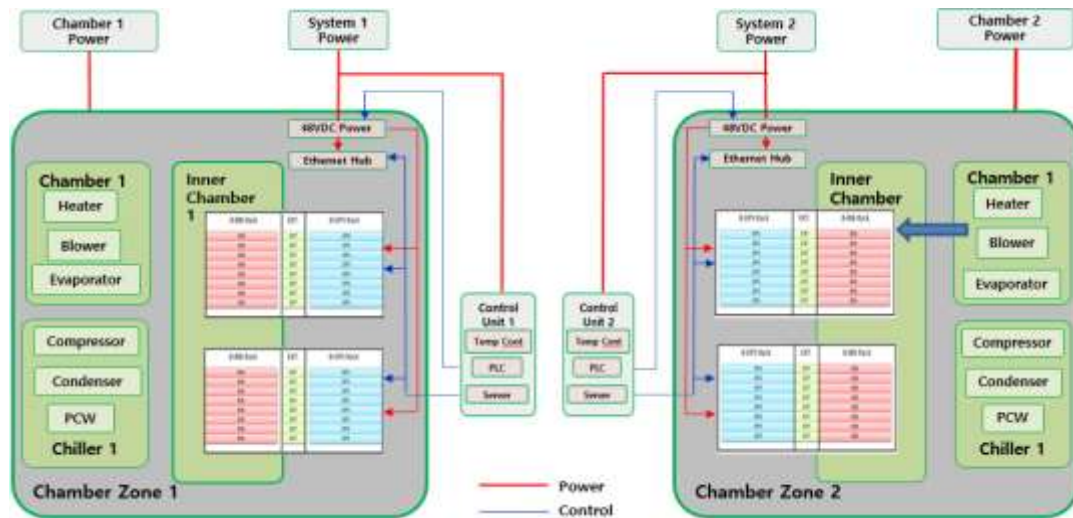
BIB Power Specification (PMIC)

Power Source	Setting Range	Resolution	DC Accuracy	Max. Output Current	# of Source (per Slot)	# of Source (32 Slot)
SOC_CORE	0.9V	-	+/- (2% + 20mV)	5A	36	1152
LPD_VDDQ	1.1V	-	+/- (2% + 20mV)	1.5A	36	1152
LPD_VDD	1.8V	-	+/- (2% + 20mV)	0.5A	36	1152
SOC_3P3	3.3V	-	+/- (5% + 20mV)	0.1A	36	1152

Chamber Configuration

Chamber Configuration

- 2 Inner Chamber Zone (2 Rack per Zone)
- Chamber Power Unit
- Hot Chamber Module (Heater, Blower, Evaporator)
- Cold Chiller Module (Compressor, Condenser, PCW)
- Temperature Control Unit (TCU, PLC)



Chamber Specification

Item	Description	Remarks
Chamber Configuration	2 Chamber Zone	2 Rack per Zone
Number of Slot	32 Slots	8 Slots per Rack
Slot Pitch[mm]	45mm	
Operating Temp Range[°C]	-30°C~125°C	*Ambient temperature (TA)
Temperature Uniformity (Load[W] / Uniformity[°C])	3.0kw[Zone] / [±3.0°C] 4.5kw[Zone] / [±4.0°C] 6.0kw[Zone] / [±5.0°C]	
Ramp-Up/Down Rate	Within 60 min. @-30°C to 125°C Within 60 min. @125°C to -30°C	*No load condition
Continuous Operation Time	-30.0°C to -15.0°C : 72 hour -14.9°C to +15.0°C : 5 days +15.1°C to +125°C : Every days	
Contact	Auto Contact	
Door	Auto Door	
Refrigerator	Compressor Rating: 15hp * 4 Dual stage refrigerating method	
Control Unit	PLC: YOKOGAWA FA-M3 or LS PLC Temp Controller: F3CU04-OS	
Monitor	17 inch built-in monitor 24 inch wall mount monitor (option)	
Power Source	Chamber: 208Vac, 3Φ, 60Hz, 200A x 2 line System: 208Vac, 3Φ, 60Hz, 75A x 2 line	
Environment Conditions	Temperature / 25 deg(c) +/-5 deg(c) Humidity /20% ~ 60 Rh%	
Dimension and Weight	(W) 3300 × (D) 1910 × (H) 2276 mm / 4500 Kg	

Computing System

Workstation Specification

Typical Computing System Configuration

Option	Selection
Processor	Intel Xeon Silver 4114 CPU @ 2.20GHz 2ea
Memory	64GB (16GB 2666MHz DDR4 RDIMM ECC 4ea)
Storage (option)	500GB SATA3 SSD 2ea (OS), up to 4TB SATA3 SSD 2ea (Data)
LAN Port	4 Port Gigabit Network Card 2ea, Internal Network 1ea
Graphics	NVIDIA Quadro or GeForce
Operating System	Windows 10 Pro for Workstations (4 Cores Plus)



Embedded SOM Specification

Linux-ready ZYNQ-based SOM (System on Module)

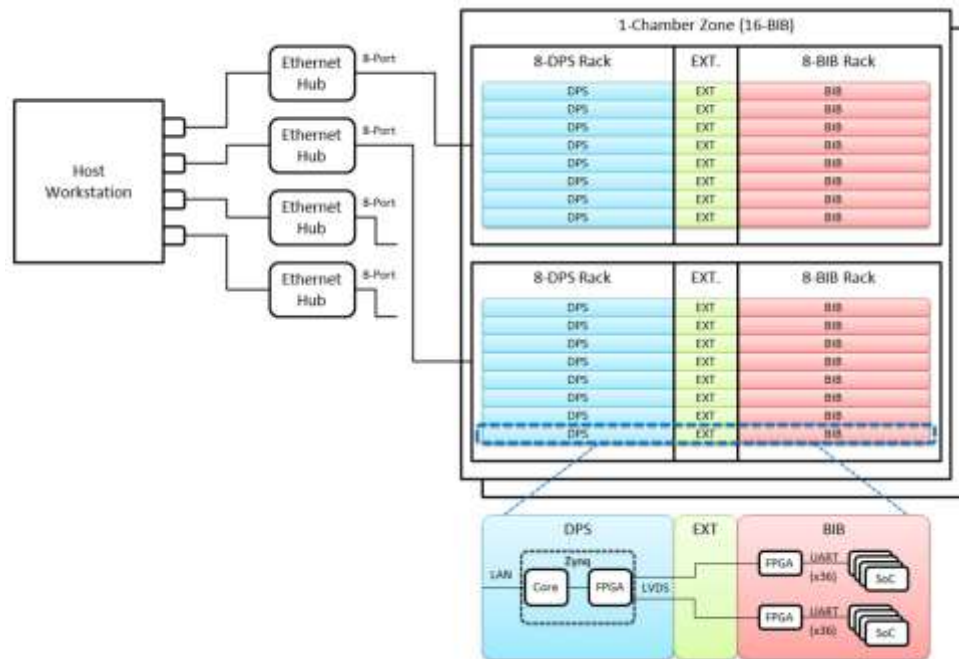
Option	Selection
Processor	667MHz Xilinx XC7Z020 Dual-core ARM Cortex-A9 Processor
Memory	1GB DDR3 SDRAM (2 x 512MB, 32-bit)
Storage	SD Card 8GB
LAN Port	On-board Gigabit Ethernet PHY
Operating System	Linux version 3.13.0-mlnx



System Control Buses

System Control Buses

- Gigabit Ethernet Switch Hub : Host Workstation to SOM
- SOM to BIB Main FPGA : Local High Speed LVDS Interface
- BIB Main FPGA to BIB Sub SoC : UART or SPI Interface



Contact Information

- The JKI Product Support Group, Training Center, and Sales Department can be reached using the following information:

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■ *trace*

▲ *test*

● *verify*

+ *connect*