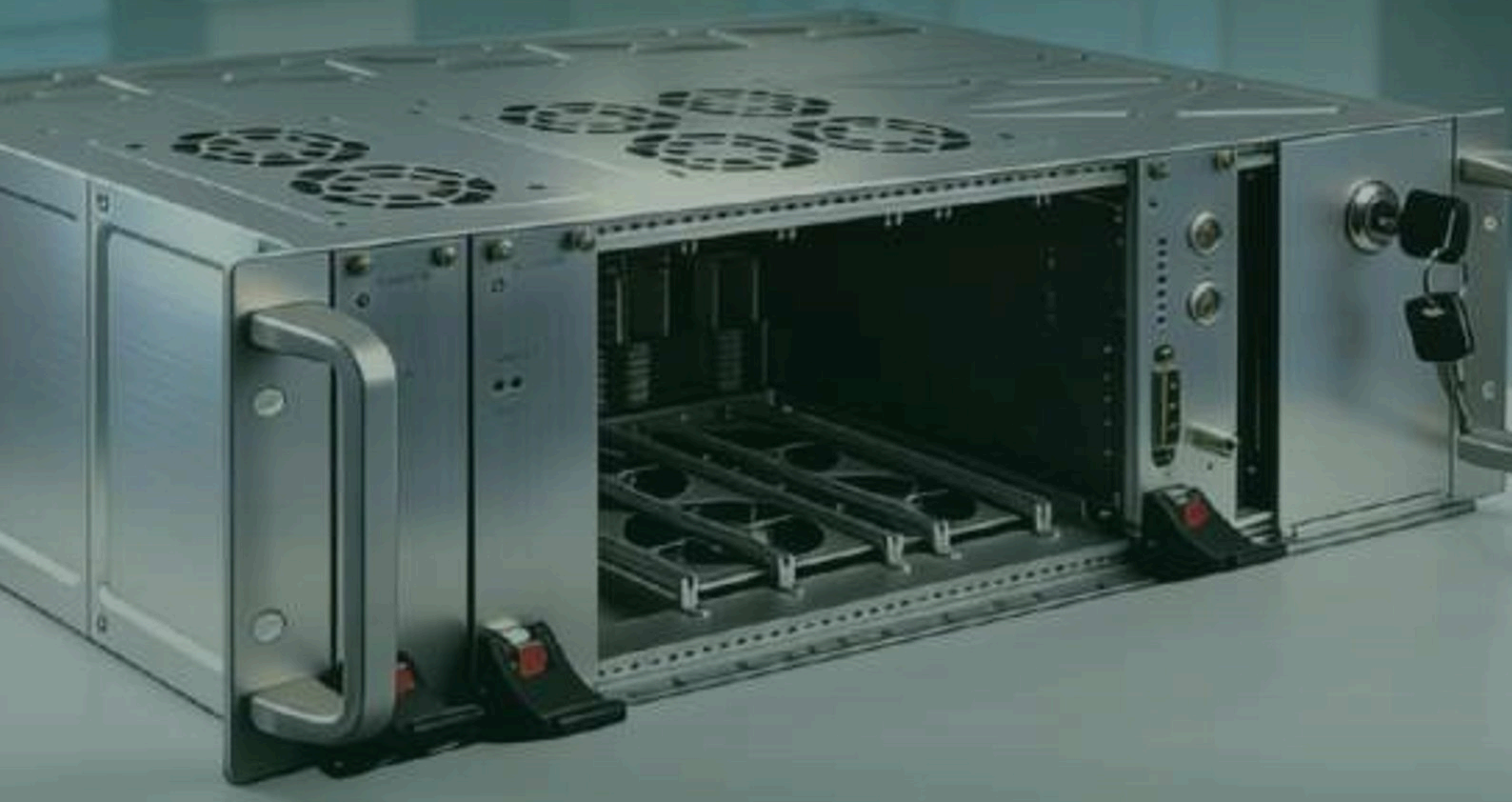
EQIO

PXIe-RM309

PRODUCT MANUAL

3U Nine-Slot PXIe Hybrid Chassis

PXIe desktop and rack chassis · Multi module test · Data acquisition



Application illustration (not a product photo); shipped units may differ.

Measurement and control, made easy.

Easy · Quick · Input · Output

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01 OVERVIEW

3U Nine-Slot PXIe Hybrid Chassis

PXIe desktop and rack chassis · Multi module test · Data acquisition · Test system integration · PXI Express

PXIe-RM309 configured with 1 system controller slot and 8 hybrid peripheral slot, system bandwidth rated 8GB/s, single slot bandwidth rated 2GB/s, provides industrial AC power, VCXO clock and chassis status monitoring, used for multi module test system.
Backplane uses PCIe3.0 dual link topology, shared clock and power facilitates multi module combination. Chassis run status monitoring can used for view system status, suited to communications, acquisition and measurement board centralized installation, build automation test and multi-channel equipment bring-up platform.



Application illustration (not a product photo); shipped units may differ.

Key features

- 1 system slot, 8 hybrid peripheral slot
- PCIe3.0 dual link backplane
- System bandwidth up to 8GB/s
- VCXO clock and status monitoring
- Industrial AC power

02 FUNCTIONS

Functions and engineering value

9-slot module centralized integrates

PXIe-RM309 provides 1 system controller slot and 8 hybrid peripheral slot, suited to multiple acquisition, measurement and communications module centralized installation. Controller handles application compute, chassis provides backplane, power and thermal management basic, slot position planning should combined with controller occupancy space and each module compatible requirements.

Data topology and shared clock

Backplane uses PCIe3.0 two link topology, system bandwidth rated up to 8GB/s, single slot up to 2GB/s, and configured with VCXO clock. Multiple module shared system connect when, should per actual data stream arrangement load, not can single slot rated bandwidth directly accumulate plus system can continuous throughput.

Monitoring and temperature conditions

Chassis provides run status monitoring and industrial AC power, facilitates multi module system in observe chassis status. Website gives 38W single slot cooling should 0–55°C, 58W should 0–40°C 2 conditions, power consumption higher board should and required operating temperature together selection.

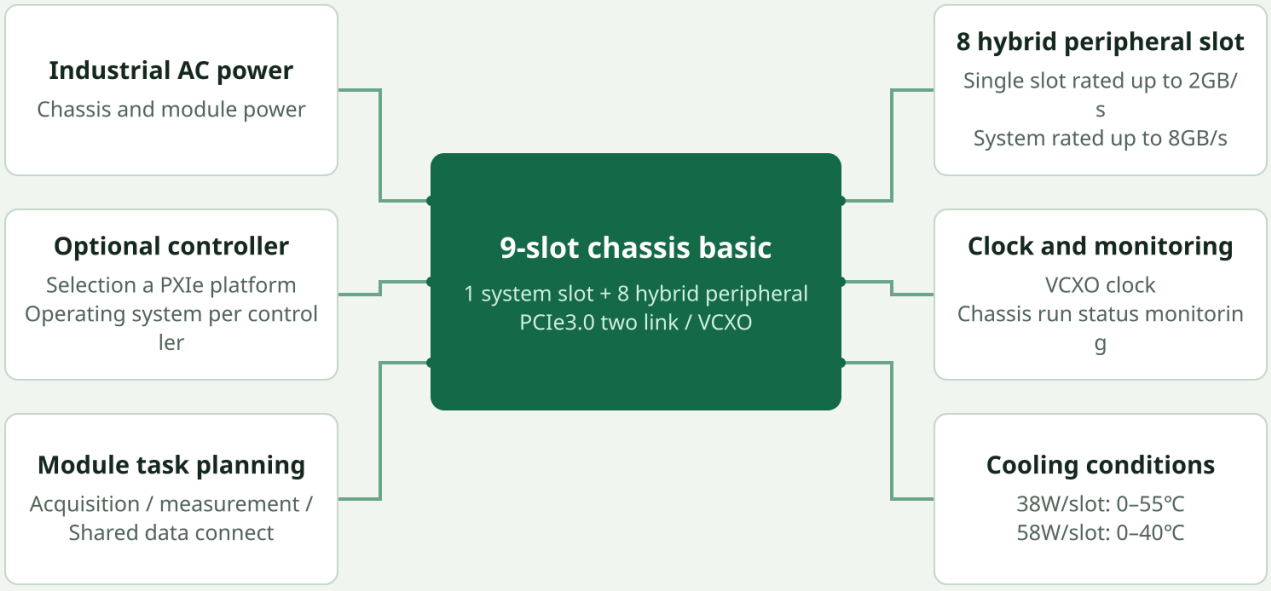
The functional notes explain the product’s role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Functional blocks and system connections

FUNCTIONAL BLOCK DIAGRAM

PXIe-RM309



Functional relationships · lines do not show internal circuits, pins or dedicated bus topology

Chassis function relationship illustration; controller and I/O board per solution option, in the diagram controller represent a optional configuration, not indicates at the same time installation all processing platform.

Platform and I/O

The chassis provides PCIe3.0 dual link backplane, 9-slot layout, VCXO clock and status monitoring, compute capability from selected system controller determines. Zhaoxin, Phytium or Loongson CPU data only used for optional controller; chassis itself system and single slot bandwidth should keep independent, not can be controller peak replace.

> **Reading the diagram**
>
> Solid lines show published functional relationships, not on-board buses, bridge chips or connector pins. Optional controllers, radios, storage and software follow the configuration and interface files.

04 SPECIFICATIONS

Technical specifications

Compiled from published product data. Batch, I/O and environmental ratings follow the order confirmation.

Chassis and backplane

Module specifications	3U
Slot layout	1 system controller slot + 8 hybrid peripheral slot
Maximum system bandwidth	8GB/s
Maximum single slot bandwidth	2GB/s
Backplane	PCIe3.0, two link topology, VCXO clock
Input power	Built-in industrial grade AC power
Single slot cooling	38W (environment 0~55°C); 58W (environment 0~40°C)
Status monitoring	Chassis run status monitoring
Dimensions	485×320×113mm
Weight	≤7.4kg
Interface specification	PXI-5 PXI Express hardware specification 1.0 version

05 COMPONENTS

Processor and device specifications

Device figures come from vendor publications and describe the chip or module. The implemented product follows the specification tables. Optional devices are supplied with the selected configuration.

Zhaoxin KX-6000G series (Optional)

Series CPU core count	4-core
Series published high-speed cache	4 MB
Series memory controller	Dual channel DDR4-3200
ISA	X86 32/64-bit, SSE4.2/AVX
Display interfaces capability	DP/HDMI/VGA, 4K display
Native PCIe resources	16 lanes PCIe3.0
Native USB resources	4×USB3.2 Gen1、2×USB2.0
Native storage interfaces	2×SATA3.2
Low-speed expansion i/O	SPI, LPC etc.

Zhaoxin KX-6000G series (Optional) (continued)

Acceleration command	SM2、SM3、SM4
Hardware virtualization	Processor and IO virtualization

Zhaoxin KX-6640MA (Optional)

Processor core count	4-core
Hardware threads number	4 threads
Website partnership data listed clock	2.2 GHz
CPU series ISA	X86 32/64-bit; SSE4.2, AVX
Series memory controller	Dual channel DDR4-2666, chip series up to 64GB

05 COMPONENTS

Processor and device specifications (continued)

Zhaoxin KX-6640MA (Optional) (continued)

Series integrates graphics and display	Integrates 3D graphics and video de code; supports DP/HDMI/VGA category and 4K display
Series PCIe resources	Up to 16 lanes PCIe3.0
Series native USB/SATA resources	2×USB3.1、4×USB2.0、2×SATA 3.2
Hardware virtualization	Processor and IO virtualization
Acceleration command	SM3、SM4

Phytium D2000 (Optional) (continued)

Hardware virtualization	Supports
Floating-point and SIMD	Single/dual accuracy floating-point and ASIMD
Chip safety architecture	PSPA 1.0

Phytium D2000 (Optional)

Processor core count	8-core
Processor micro architecture	FTC663
ISA and actuation mode	ARMv8; supports ARM64 and ARM32 actuation mode
Up to clock	2.3 GHz
Layer-2 cache	8 MB
L3 cache	4 MB
CPU memory controller	2 DDR4 I/O
CPU PCIe resources	34 lanes PCIe 3.0
CPU network controller	2 Gigabit Ethernet I/O
Other on-chip I/O	1 × SD2.0, 4 × UART, 32 × GPIO, 4 × I2C, 1 × QSPI, 2 × general-purpose SPI, 3 × CAN, 2 × WDT, 16 × external interrupt

05 COMPONENTS

Processor and device specifications (continued)

Loongson Chinese Academy 3A6000 (Optional)

ISA	LoongArch
Physical core number	4-core
Logic processor number	8 threads
Processor core	64-bitLA664, 6-issue out-of-order actuation
Frequency	2.0–2.5GHz
Vector unit	128-bit and 256-bit
Per core layer-1 command cache	64 KB/core
Per core layer-1 data cache	64 KB/core
Per-core private has layer-2 cache	256 KB/core
Shared L3 cache	16 MB

Loongson Chinese Academy 3A6000 (Optional) (continued)

Memory controller	2-ch72-bitDDR4-3200, supports ECC
High-speed bridge chip interconnect	1-chHyperTransport 3.0
Native low-speed I/O	1-chSPI, 1-chUART, 2-chI2C, 16-chGPIO
Package	BGA, 35 × 35mm, 1190 pins
Typical power consumption	38W@2.5GHz
Dual accuracy peak compute	240 GFLOPS

Sources: Shanghai Zhaoxin integrates Co., Ltd., KX KX-6000G series processor; Shanghai Zhaoxin integrates Co., Ltd., Lenovo Zhaoyang CF4620 custom model parameters (website case study); Shanghai Zhaoxin integrates Co., Ltd., High-performance Micro ATX industrial main board (website technical news); Shanghai Zhaoxin integrates Co., Ltd., KX KX-6000 series processor; Phytium IT Co., Ltd., Phytium Tengrui D2000 high-performance desktop CPU; Loongson Chinese Academy, Loongson 3A6000 product parameters.

06 APPLICATIONS

From product capability to applications

Multi-channel acquisition platform

Can 8 hybrid peripheral slot in combination different acquisition module, from system controller unified run acquisition and log program. Planning high data amount task when, should respectively compute module data stream, single slot connect and system shared bandwidth, and verification log storage and software processing whether match target load.

Automation test system

Suited to measurement, switch, communications etc.function combination the same chassis in, around DUT equipment arrangement test step and result uplink. VCXO clock and backplane connect provides system basic, specific trigger synchronous, hybrid slot compatible and module driver still requires from selection solution item by item confirm.

Equipment centralized bring-up

Requires at the same time attach multiple equipment or signal category bring-up platform in, can uses 9-slot layout centralized layout controller and peripherals card. Run status monitoring has to observe chassis operation condition, rack installation when reserved routing and ventilation space, and per module thermal load selection environmental conditions.

Integration checks

Slot position and occupancy	1 system slot and 8 hybrid peripheral slot; check 8HP controller attached plus placeholder and module installation space.
Bandwidth planning	System up to 8GB/s, single slot up to 2GB/s, PCIe3.0 two link; per backplane shared relationship check.
Cooling conditions	38W/slot should 0–55°C; 58W/slot should 0–40°C, not remove open temperature conditions cite.
Option and installation	Controller single independent selection; chassis 485 × 320 × 113mm, ≤7.4kg, check AC power and rack space.

07 CONFIGURATION

Configuration, options and selection

Configuration

Can paired with different PXIe system controller; single slot cooling 38W suited used 0–55°C, 58W suited used 0–40°C.

System controller	Zhaoxin KX-6000G / Zhaoxin KX-6640MA / Phytium D2000 / Loongson 3A6000

Selection guide

Order confirmation	Batch, I/O and environmental ratings follow the order confirmation
Published data	Compiled from published product data; EQIO provides selection and system integration
Configuration talk	Share the application, I/O count, environment and software so a configuration can be proposed

Request a quotation and selection support

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Web eqio.com

EQIO

Easy · Quick · Input · Output

BRAND

Measurement and control, made easy.



EQIO product family · concept rendering

Brand story

EQIO builds measurement and control products and systems. The name stands for Easy Quick Input Output: Easy is a clear structure that is quick to learn, Quick is a direct path to efficient delivery, and Input / Output is every link between the device under test and the control system.
The soft single-cycle wave inside the Q links the brand to signals, acquisition and I/O. “Measurement and control, made easy” is our promise for every selection, integration and delivery.

What we do

Products

Data acquisition, test instruments, control and I/O, modular platforms, software, cables

Systems

Configured to the measurand, channels, accuracy and software, from design to commissioning

Support

Selection advice, training, maintenance and calibration

How we deliver

01
Requirements

02
Solution design

03
Build & integration

04
Factory test

05
Delivery & training

06
Ongoing support

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