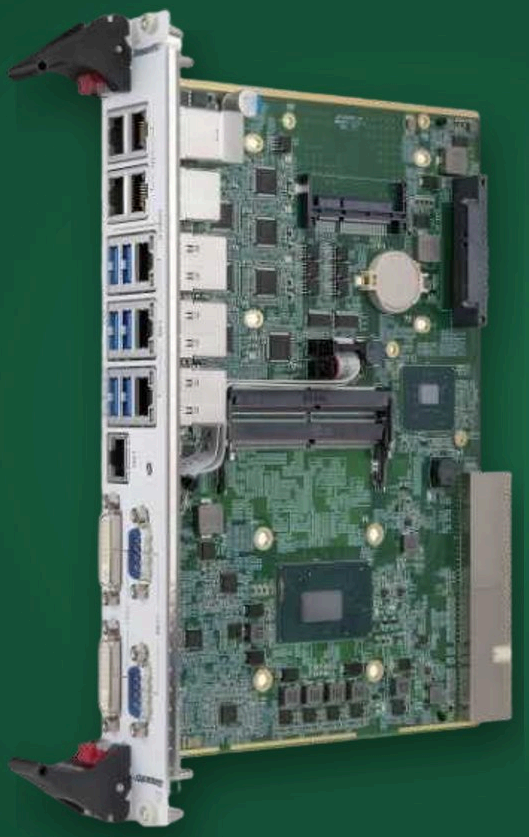
EQIO

CPCI-21005

PRODUCT MANUAL

6U Zhaoxin DDR4 CompactPCI System Controller

Zhaoxin KX-6640MA 4-core processor



Measurement and control, made easy.

Easy · Quick · Input · Output

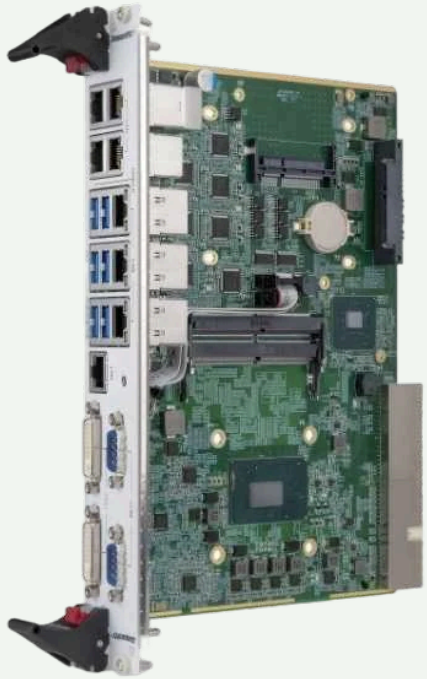
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01 OVERVIEW

6U Zhaoxin DDR4 CompactPCI System Controller

CPCI system controller · Rail transit · Industrial measurement and control · Embedded equipment · CompactPCI · Zhaoxin

CPCI-21005 uses Zhaoxin KX-6640MA 4-core processor and DDR4 slot, supports optional ZX200 chip group, integrates front rear I/O display, network, USB, serial and audio I/O, used for CPCI system integration.
Dual memory slot facilitates per task configured with capacity, front panel VGA, USB and RS-232 convenient local operation, rear part connect LVDS, audio and serial. Gigabit Ethernet and onboard HDD location can consists of complete compute node, suited to automation test and industrial data processing.



Product appearance reference; shipped units may differ.

Key features

- Zhaoxin KX-6640MA 4-core platform
- Dual DDR4 slot, up to 32GB
- 64-bitCompactPCI bus
- Gigabit Ethernet and front I/O USB3.1
- VGA, LVDS and SATA storage

02 FUNCTIONS

Functions and engineering value

Slot type memory configured with

KX-6640MA 4-core 2.2GHz platform uses 2-ch DDR4 slot, up to supports 32GB, facilitates per application memory requirement configured with. ZX200 optional I/O expansion chip, hardware material, firmware and driver required and actual solution should, not can optional chip as all version fixed consists of.

Front rear I/O and network connect

Front panel dual USB3.1, VGA and RS-232 facilitates operation maintenance, rear I/O LVDS, serial and audio suited to chassis internal connect. 1-ch I210AT Gigabit Ethernet used for equipment or control network, specific network purpose from application planning, port quantity not represent has extra switch or redundant function.

CPCI and local storage integrates

64-bit66MHz CompactPCI bus used for connect match function module, SATA location supports installation 2.5-inch onboard storage. 4HP or 8HP panel, memory and HDD assembly will affect internal space, selection when at the same time check structure, backplane voltage and thermal design, avoid only per CPU solution determine product.

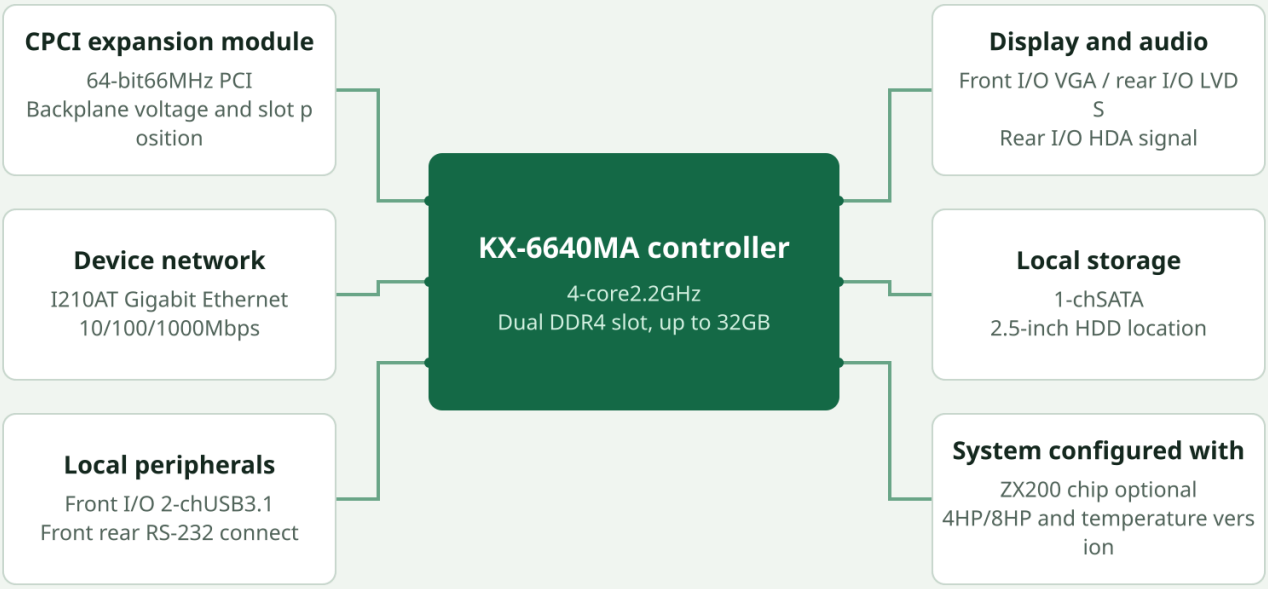
The functional notes explain the product’s role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Platform and functional relationships

FUNCTIONAL BLOCK DIAGRAM

CPCI-21005



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

Illustration this board functional relationship; ZX200 per option processing, rear I/O, memory and CompactPCI backplane compatible must based on actual delivery version confirm.

Platform and I/O

This board uses KX-6640MA 4-core x86 platform, dual DDR4 slot and CompactPCI bus, ZX200 per solution option. Compared with onboard memory solution, SODIMM memory more so requires check assembly and compatible list; network, display, storage and rear I/O resources per this product specification organize, not inferred optional bridge chip already installation.

> **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.

Core system

CPU	Zhaoxin KX-6640MA, 4-core2.2GHz; optional ZX200 I/O expansion chip
Bus	PCI64Bit/66MHZ bus, 3.3V/5V general-purpose voltage
BIOS	Storage SPI I/O FLASH in, SPI FLASH select SM25QH128M, capacity 16MB
System memory	2 × DDR4-2400/2666 slot, maximum supports 32GB
PICMG standard	PICMG®R2.0 CompactPCI®specification R3.0, PICMG®R2.16 CompactPCI®specification R1.0
Operating system	Microsoft Windows®7/10, Ubuntu18.04, Kylin OS V7.0 B54, Kylin OS V10

I/O and expansion

USB	Front panel supports 2 USB3.1 I/O
Display	Front panel supports 1 VGA I/O, 1 LVDS connect to rear routing
Storage	1 SATA I/O, used for installation 2.5-inch onboard HDD
Serial	1 RS-232 I/O, position to front panel, 1 RS-232 connect to rear wiring board
Network	1-chIntel®I210AT Gigabit Ethernet controller, provides 10/100/1000M adaptive
Audio	HDAudio signal connect to rear wiring board

Mechanical specifications and system requirements

Specification	6U 4HP/8HP CompactPCI®, dimensions 233.3mm × 160mm

Environmental conditions

Operating temperature	Operating temperature: 0°C ~ 60°C (commercial temperature); -40°C ~ 60°C (wide temperature), storage temperature: -40°C ~ 75°C
Humidity	40°C@95%, non-condensing

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-6640MA

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
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

Zhaoxin KX-6640MA (continued)

Hardware virtualization	Processor and IO virtualization
Acceleration command	SM3、SM4

Zhaoxin ZX-200 IO expansion chip (Optional)

Chip role	IO expansion chip, built-in SATA and USB controller
PCIe expansion resources	Most multi 9-channelPCIe2.0 transmission
USB I/O total upper limit	11 ports
USB3.1 Gen2	2 ports
USB3.1 Gen1	3 ports
USB2.0	6 ports
SATA expansion	Most multi 4 SATA I/O, compatible SATA3.0

Sources: 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; Shanghai Zhaoxin integrates Co., Ltd., ZX-200 IO expansion chip.

06 APPLICATIONS

From product capability to applications

Industrial measurement and control compute host

Dual memory slot can per acquisition cache and application requirement configured with, CPCI expansion connect corresponding acquisition or communications card, Gigabit Ethernet handles on position data HMI. System should selected operating system and driver version under bring-up, and per continuous acquisition and storage load verification performance and cooling.

Rail equipment control node

Board can as match CPCI chassis in equipment compute node, via serial, network and expansion module connect field equipment. Specific rail application required separately confirm product standard, power and mechanical environment, wide temperature version temperature metrics not can replace vibration or system grade can reliability verification.

Embedded display and HMI system

VGA or rear I/O LVDS provides operation video, USB and serial attach corresponding peripherals, audio via rear I/O matching, can forms equipment internal HMI platform. Display timing, audio conversion and cables definition required based on delivery data confirm, SODIMM memory and HDD should structure design when reserved installation space.

Integration checks

Memory and bridge chip	Dual DDR4-2400/2666 slot up to 32GB, ZX200 optional; check memory compatible and firmware configured with.
Backplane and slot position	Confirm 64-bit66MHz CPCI, 3.3V/5V I/O and PICMG specification and chassis match.
External connect	Check front I/O dual USB3.1/VGA/RS-232, I210AT Gigabit Ethernet and rear I/O LVDS, audio wiring definition.
Structure and temperature	4HP or 8HP, commercial temperature 0–60°C or wide temperature−40–60°Crespectively option, check onboard HDD and memory cooling space.

07 CONFIGURATION

Appearance, configuration and selection



Multi-angle reference (generated from product photos); shipped units may differ.

Configuration

Optional select ZX200 bridge chip and different temperature version, provides 4HP, 8HP panel solution.

Temperature version	Commercial temperature 0~60°C / wide temperature-40~60°C; different version
Bridge chip	ZX200 optional

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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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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