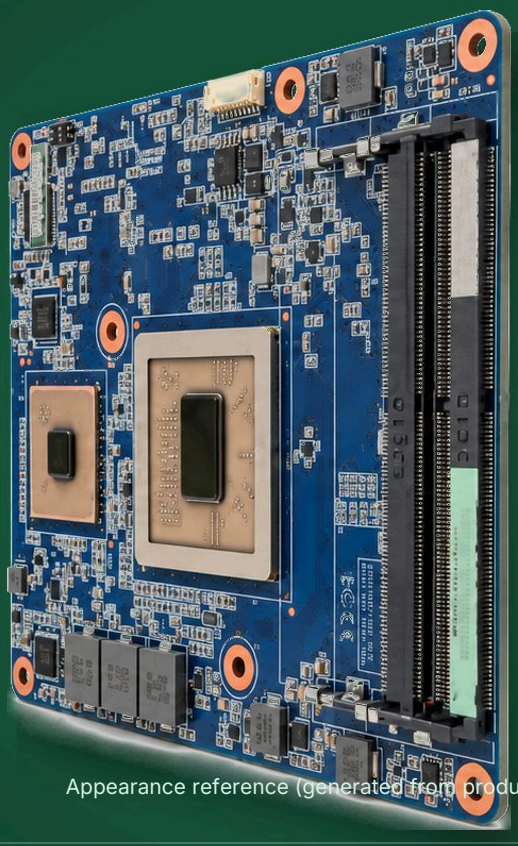
EQIO

COMe-6640

PRODUCT MANUAL

Zhaoxin KX6640 COM Express Type 6 Module

Zhaoxin KX-6640MA / KX-6640A (optional)



Appearance reference (generated from product photos); shipped units may differ.

Measurement and control, made easy.

Easy · Quick · Input · Output

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01 OVERVIEW

Zhaoxin KX6640 COM Express Type 6 Module

COM Express compute module · Industrial control · Network safety equipment · Embedded terminal · COM Express · Zhaoxin

COMe-6640 provides KX-6640MA and KX-6640A processor option, uses dual DDR4 SO-DIMM slot, memory up to 32GB, supports optional ZX200 bridge chip and different PCIe resources configured with, used for x86 embedded carrier integrates.
Gigabit Ethernet, VGA, LVDS and dual SATA I/O facilitates build display and storage system, serial, GPIO and monitoring connect meets carrier peripherals attach. Module can per bridge chip and link solution organize expansion resources, suited to industrial terminal, equipment gateway and data processing node.



Product appearance reference; shipped units may differ.

Key features

- Zhaoxin KX-6640 4-core platform
- Dual DDR4 SO-DIMM, up to 32GB
- 125 × 95mm Type6 module
- VGA, LVDS and Gigabit Ethernet
- Dual SATA3.0 and PCIe expansion

02 FUNCTIONS

Functions and engineering value

X86 processing platform optional

Module KX-6640MA 4-core 2.2GHz basic, optional KX-6640A 4-core 2.6GHz, uses dual DDR4 SO-DIMM, up to 32GB memory. Different processor solution handle should independent material and software verification log, not two kinds of clock combination into the same hardware automatic run position.

Display and basic connect centralized

VGA and dual channel LVDS supports equipment display, Gigabit Ethernet, USB, UART and GPIO carries peripheral connection. Dual SATA3.0 can used for system and data storage arrangement, module still provides watchdog and hardware status monitoring resources, specific monitoring project and software call method must follow matching firmware confirm.

Bridge chip affect expansion resources

Module optional ZX200 bridge chip, PCIe channel configured with bridge chip solution change; not plus bridge chip when stored multi type x1, x2, x4 and x8 combination. Carrier design should first determine processor, bridge chip and link mode, again layout slot and peripherals, not can has lists PCIe configured with at the same time view can used resources.

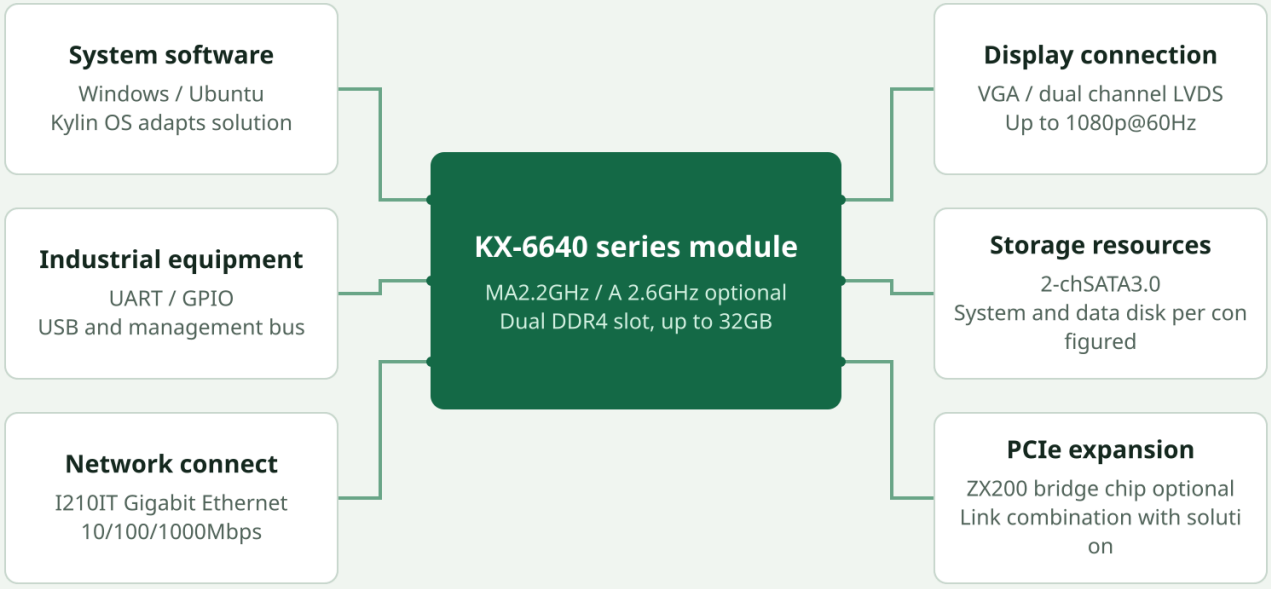
The functional notes explain the product’s role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Compute platform and functional relationships

FUNCTIONAL BLOCK DIAGRAM

COMe-6640



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

Only functional relationship diagram; processor, temperature etc.grade and ZX200 respectively option, PCIe combination not can overlay single one configured with.

Platform and I/O

Zhaoxin KX-6640 series provides x86 4-core compute, module via dual DDR4 slot, display and storage connection forms embedded controller basic. ZX200 optional I/O expansion chip, assembly will change change PCIe resources assign; diagram only express each type function, not different processor and bridge chip configured with overlay.

> **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 KX-6640A, 4-core2.6GHz
System memory	2 × 260-Pin DDR4 2666MHz SO-DIMM, maximum supports 32GB
Operating system	Ubuntu18.04, Kylin OS V10, Windows 7/10

Environmental conditions

Operating temperature	Operating temperature: (commercial temperature grade) 0°C–60°C, (wide temperature grade) -40°C–60°C; storage temperature: -40°C–75°C
Humidity	95% RH, not condensation

Mechanical specifications and system requirements

Specification	125mm×95mm

I/O and expansion

USB	2 × USB 3.0，6 × USB 2.0
COM port	2 × UART
DIO/MIO	8bit GPIO, WDG/HW monitoring unit/FAN; 1 x SMBus, 1 × LPC, 1 × I2C
Display interfaces	VGA: 1920×1080 @60Hz；LVDS: 1920×1080 @60Hz，Dual-channel 18/24-bit
Network interfaces	Intel®I210IT, Gigabit Ethernet 10/100/1000Gbe
Storage interfaces	2×SATA 3.0 6.0Gb/s
PCIe configured with (not plus ZX200)	KX-6640MA: configured with 1 (default) 5 × PCIe x1 + 1 × PCIe x8; configured with 2: 5 × PCIe x1 + 2 × PCIe x4; configured with 3: 1 × PCIe x1 + 1 × PCIe x4 + 1 × PCIe x8; configured with 4: 1 × PCIe x1 + 3 × PCIe x4; configured with 5: 3 × PCIe x1 + 1 × PCIe x2 + 1 × PCIe x8
PCIe configured with (plus ZX200)	Configured with 1 (default): 4 × PCIe x1 (Gen2); configured with 2: 1 × PCIe x4 (Gen2)

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 KX-6640A (Optional)

Processor core count	4-core
Technical news listed clock	2.6 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

05 COMPONENTS

Processor and device specifications (continued)

Zhaoxin KX-6640A (Optional) (continued)

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

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., Avalue can expansion fanless industrial computer (website technical news); Shanghai Zhaoxin integrates Co., Ltd., ZX-200 IO expansion chip.

06 APPLICATIONS

From product capability to applications

Industrial panel and equipment controller

Module and VGA or LVDS display carrier combined with, can used for industrial operation panel and equipment procedure control. UART, GPIO and USB suited to arrangement maintenance and control peripherals, actual signal signal level, display timing and system driver should target Windows, Ubuntu or Kylin version under verification.

Device communications and network gateway

Gigabit I/O together with PCIe communications expansion can used for equipment data aggregation and gateway application, dual memory slot facilitates per application capacity option. Requires multi expansion equipment when, should first check ZX200 solution and can used channel, software protocol processing capability then per actual packet stream amount and connect test.

Can maintenance embedded compute node

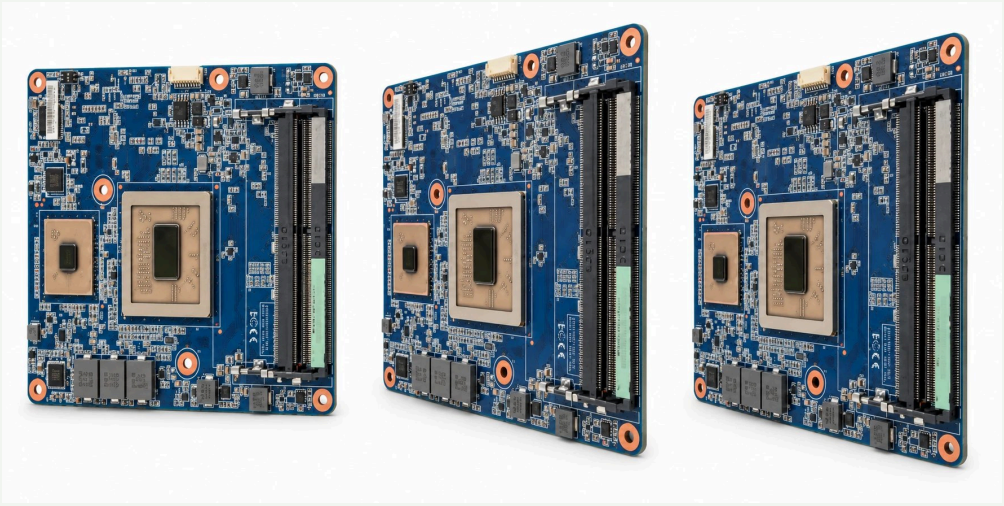
125 × 95mm module and application carrier isolation, dual SO-DIMM and dual SATA facilitates per project arrangement memory and storage capacity. Maintenance plan should log processor, bridge chip and temperature version, replace when keep carrier channel mapping and system image match, avoid same outline module configured with difference make into fault.

Integration checks

Processor solution	KX-6640MA 4-core 2.2GHz, KX-6640A optional 4-core 2.6GHz, respectively confirm firmware and cooling configured with.
Bridge chip and PCIe	ZX200 optional; has without bridge chip PCIe assign belongs to different solution, should per confirm rear channel table design carrier.
Memory and display	Dual DDR4-2666 SO-DIMM up to 32GB; VGA and LVDS all per 1920 × 1080@60Hz upper limit planning.
Temperature version	Commercial temperature 0–60°C and wide temperature−40–60°Cseparate selection, and check connector, cooling and selected storage media temperature etc.grade.

07 CONFIGURATION

Appearance, configuration and selection



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

Configuration

Provides different processor, ZX200 bridge chip and temperature solution, PCIe configured with hardware solution selection.

Processor	KX-6640MA: 4-core2.2GHz; KX-6640A: 4-core2.6GHz; different processor solution
Temperature version	0~60°C / -40~60°C
Bridge chip	Optional ZX200; PCIe can used resources with bridge chip solution change

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

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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