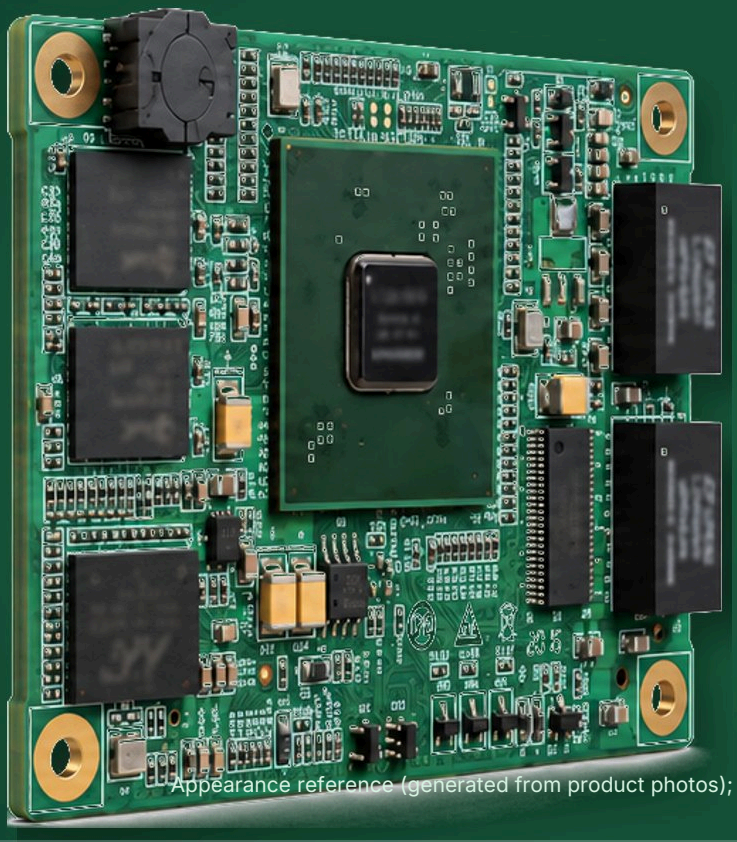
EQIO

COMe-2K1000

PRODUCT MANUAL

Loongson 2K1000 COM Express Module

Loongson 2K1000 series dual core processor



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

Measurement and control, made easy.

EQIO.COM

Easy · Quick · Input · Output

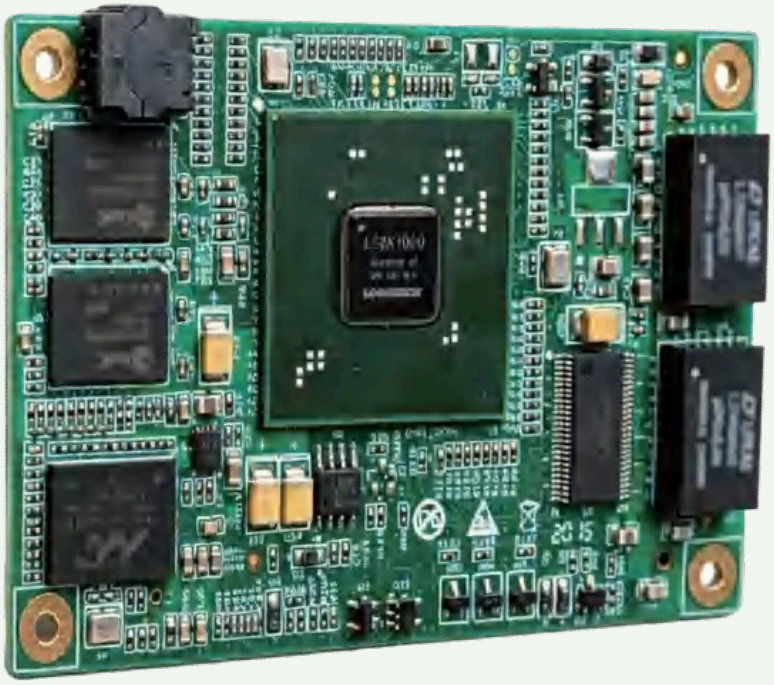
01 OVERVIEW

Loongson 2K1000 COM Express Module

COM Express compute module · Industrial embedded control · Communications terminal · Low power edge computing · COM Express · Loongson

COMe-2K1000 uses Loongson 2K1000 dual core processor and soldered DDR3 memory, provides display, USB, serial, GPIO, network, SATA and PCIe I/O, 84 × 55mm compact module form used for embedded control and communications terminal.

4-ch TTL serial, 12-ch GPIO and USB can and external control device connection, DVO and LVDS facilitates organize display UI. Module equipped with PMON firmware, carrier carries storage and peripherals routing, suited to space limited industrial control and field data acquisition node.



Product appearance reference; shipped units may differ.

Key features

- Loongson 2K1000 dual core platform
- Up to 4GB soldered DDR3
- 84 × 55mm compact module
- 4-ch TTL serial, 12-ch GPIO
- DVO, LVDS and Gigabit Ethernet

02 FUNCTIONS

Functions and engineering value

Dual core compact compute basic

Loongson 2K1000 dual core platform and up to 4GB soldered DDR3 integrates 84 × 55mm module internal, board-level clock 800MHz to 1GHz. PMON firmware and matching operating system forms equipment boot basic, suited to module method organize control application and communications task, and carrier retain I/O design space.

Serial and digital peripheral connection

4-ch TTL serial and 12-ch can configured with GPIO facilitates attach external control unit, including 1-ch TTL used for CPU debug. 4-ch USB2.0 in 1-ch supports OTG, can per peripheral connection direction planning used; serial signal level conversion, digital isolated and protection should carrier end completes.

Display and storage resources selection

DVO can from carrier conversion required display interfaces, additional has 24-bit single channel LVDS connect; these conversion form not should as at the same time storage multiple output. SATA2.0 and PCIe2.0 resources used for storage and expansion, onboard 4GB SPI NAND flash belongs to optional configuration.

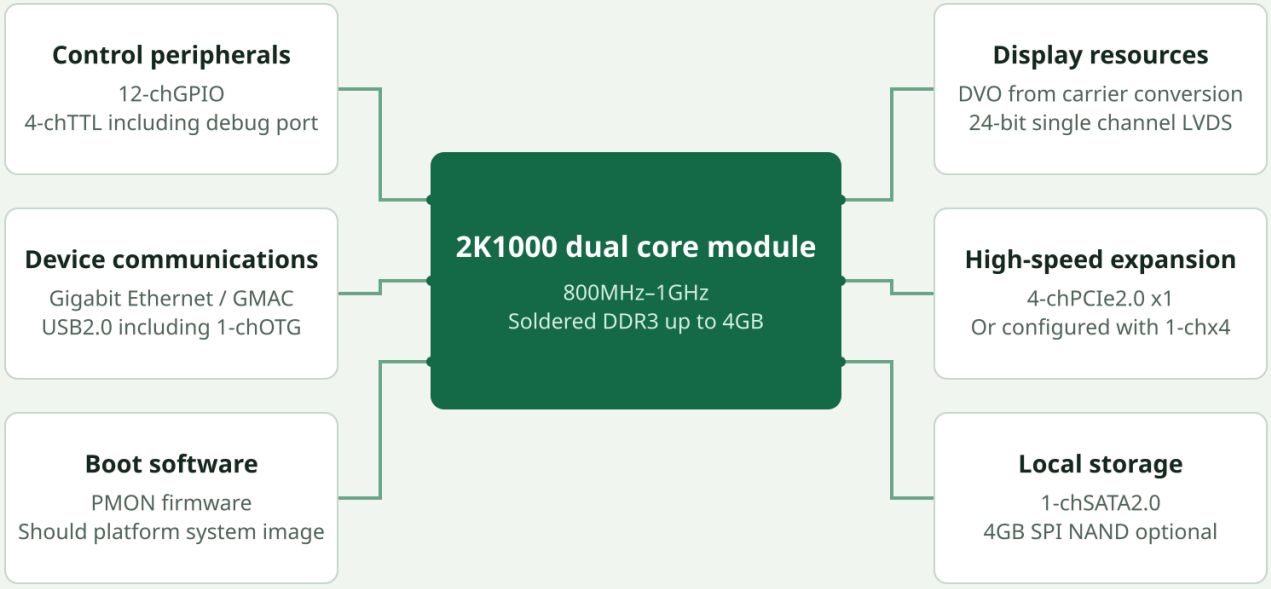
The functional notes explain the product's role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Compute platform and functional relationships

FUNCTIONAL BLOCK DIAGRAM

COMe-2K1000



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

According to module published specification drawn functional relationship; DVO conversion, GMAC and I/O signal level from carrier design determines, flash and link mode must follow configured with confirm.

Platform and I/O

This module Loongson 2K1000 dual core processor, soldered DDR3 and PMON firmware forms compute basic, via carrier organize display, network and industrial peripherals. Board-level memory upper limit 4GB, PCIe2.0 split, DVO conversion and optional flash belongs to different integrates selection, not cannot from module I/O list inferred all peripheral device 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	Loongson 2K1000 series dual core processor, board-level frequency 800MHz–1GHz
System memory	Soldered DDR3 memory, maximum 4GB
Display	Integrates GPU2K1000
BIOS	PMON firmware
Operating system	Loongnix, Kylin OS, UOS etc.

Environmental conditions

Operating temperature	-40°C ~ 70°C (operating temperature), -40°C ~ 85°C (storage temperature)
Humidity	5%~95%humidity non-condensing

Mechanical specifications and system requirements

Specification	84mm×55mm

I/O and expansion

USB	4-chUSB 2.0, including 1-chUSB 2.0 supports OTG function
GPIO	12-chGPIO, can configured with input or output
Serial	4-chTTL serial, maximum baud rate 115200bps, including 1-chCPU debug serial
Display interfaces	1-chDVO supports base plate expansion DVI/HDMI/VGA/EDP, 1-ch24bit single channel LVDS, maximum resolution 1920*1080@60Hz
Network interfaces	1-ch Gigabit Ethernet I/O, 1-chGMAC (optional 2-chGMAC)
Storage interfaces	1-chSATA 2.0 I/O, onboard 4GB SPI NANDFLASH (optional)
Expansion slots	4-chPCIe 2.0 × 1, supports configured with 1-chPCIe 2.0 × 4

05 APPLICATIONS

From product capability to applications

Equipment control and status panel

Module connect dedicated GPIO, serial transceiver unit and display carrier, can used for equipment parameters settings and run status show. LVDS or from DVO conversion display solution should based on display specification determine, application serial quantity required subtract debug port, and verification control protocol and UI load under stable run.

Industrial communications terminal

Uses Gigabit Ethernet and TTL serial organize network devices and serial terminal between application HMI, can used for industrial gateway or communications management node. GMAC requires carrier matching, software the side should combined with Loongnix, Kylin or UOS specific platform version verification driver and target application compatible.

Local data log node

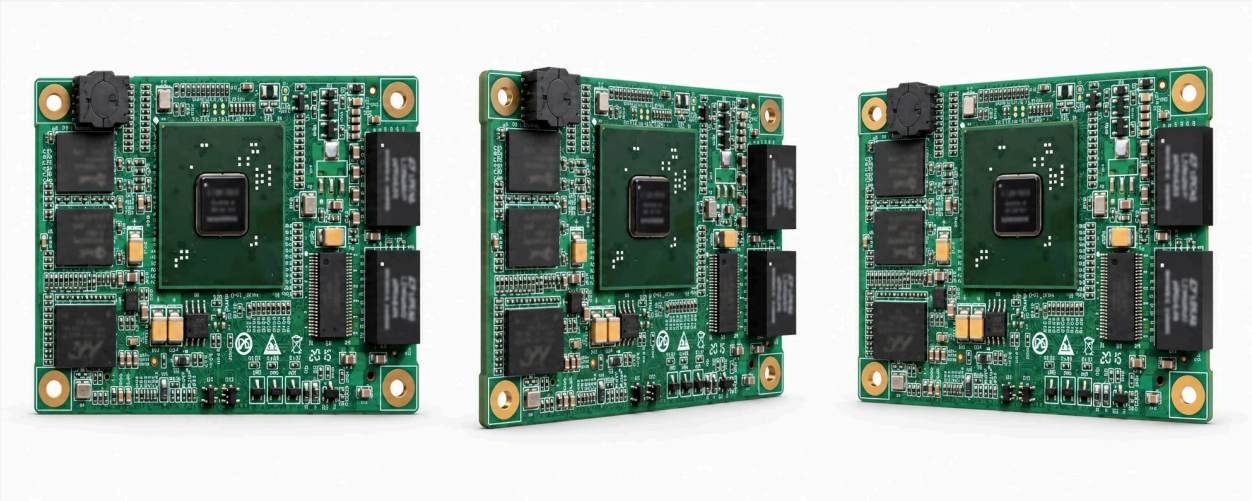
Via SATA2.0 connect storage devices, combined with PCIe2.0 expansion resources can build with local logging capability acquisition node. Published specification not gives continuous write performance, actual task must follow sampling data amount, storage media and system load verification capacity and throughput, flash option also requires single independent confirm.

Integration checks

Platform software	2K1000 platform software packaging must and should architecture and PMON boot method match, not reuse other Loongson architecture image.
Display conversion	DVO to DVI/HDMI/VGA/eDP from carrier implements; LVDS single channel 24-bit, required check panel timing.
Resources trade-off	4-ch PCIe2.0 x1 or 1-ch x4 per configured with selection; 4GB SPI NAND and 2-ch GMAC all per option confirm.
Serial and environment	4-ch TTL including CPU debug port; check carrier signal level, −40–70°Coperating temperature and 5%–95%non-condensing conditions.

06 CONFIGURATION

Appearance, configuration and selection



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

Configuration

Provides SATA2.0 and PCIe2.0 connect, supports optional onboard flash; USB I/O in 1-ch has OTG function.

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

Email lyping@eqio.com Phone +86 182 8191 2988
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

Email lyping@eqio.com Phone +86 182 8191 2988 Web EQIO.COM