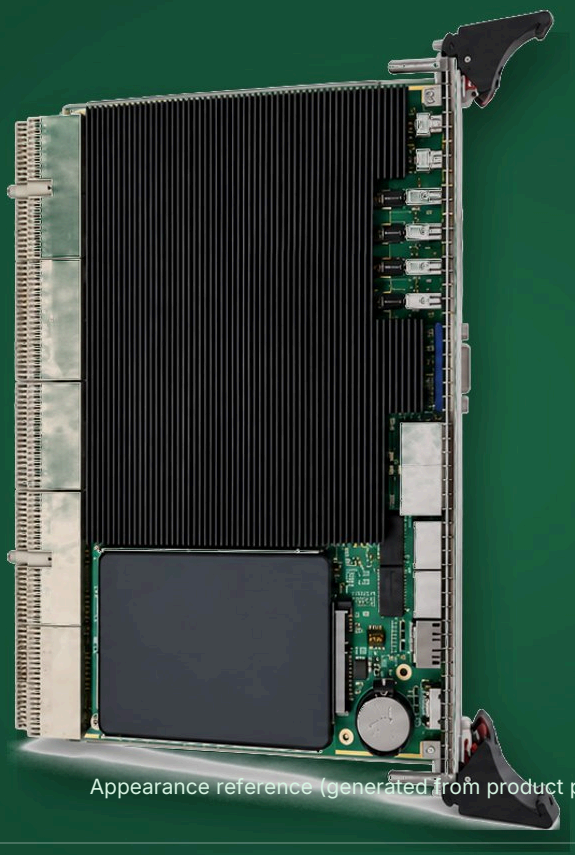
EQIO

CPCI-6048

PRODUCT MANUAL

6U Phytium D2000 CompactPCI System Controller

Phytium D2000 8-core processor



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

Measurement and control, made easy.

Easy · Quick · Input · Output

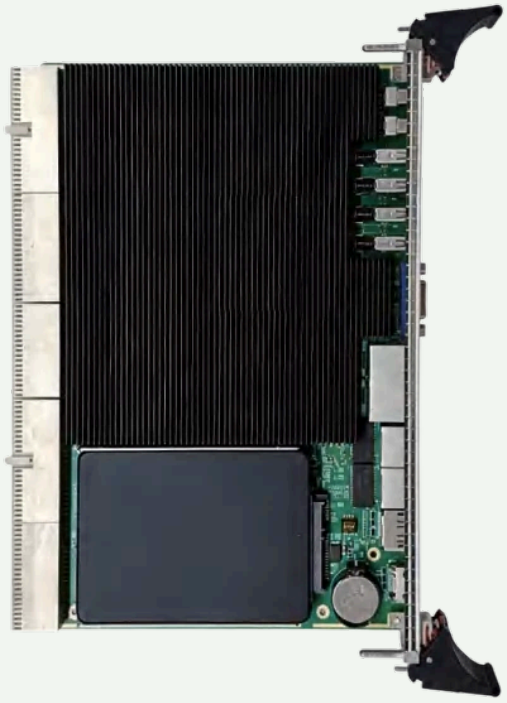
EQIO.COM

01 OVERVIEW

6U Phytium D2000 CompactPCI System Controller

CPCI system controller · Industrial measurement and control · Network safety equipment · Industrial gateway · CompactPCI · Phytium

CPCI-6048 uses Phytium D2000 8-core processor and X100 bridge chip, onboard 16GB DDR4 memory, provides front rear I/O USB, display, network and serial I/O, supports Kylin OS, Debian and CentOS etc.system.
Front panel and rear I/O respectively provides Gigabit Ethernet, USB, display and serial connect, facilitates arrangement operation end and cabinet routing. Board uses 6U module form, can combined with acquisition, communications and control module build measurement and control platform, suited to field equipment management and industrial data processing.



Product appearance reference; shipped units may differ.

Key features

- Phytium D2000 8-core and X100
- Onboard 16GB DDR4
- 64-bitCompactPCI bus
- Front rear I/O Gigabit Ethernet and USB3.0
- VGA, DP and composite industrial serial

02 FUNCTIONS

Functions and engineering value

8-core and memory configured with selection

D2000 8-core processor together with X100 bridge chip, standard onboard 16GB DDR4, optional select 32GB particle solution. Industrial grade 2.0GHz and commercial grade 2.3GHz belongs to different processor configured with, purchasing and software verification should fixed actual version, not clock, memory and wide temperature upper limit arbitrarily combination.

Front rear I/O assign

Front panel and rear routing each provides Gigabit Ethernet and USB3.0, facilitates distinguish operation end and chassis internal device connection. Front I/O VGA and rear I/O DP handles display, front I/O RS-232 and rear I/O composite serial used for control equipment; composite serial must follow actual RS-232/422/485 mode check wiring.

CPCI compute node integrates

64-bit66MHz CompactPCI bus used for connect match system module, 6U 4HP/8HP structure facilitates per chassis conditions selection. Kylin OS, Debian and CentOS solution required match ARM platform driver, peripherals compatible and system real-time should product bring-up in verification.

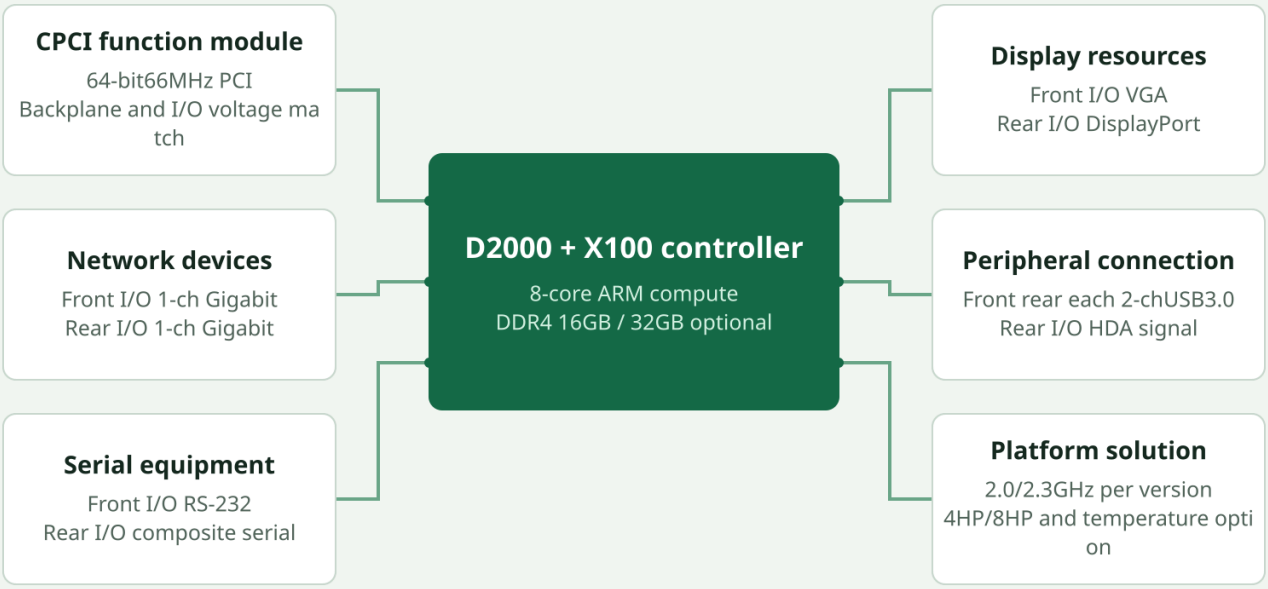
The functional notes explain the product’s role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Platform and functional relationships

FUNCTIONAL BLOCK DIAGRAM

CPCI-6048



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

Only published functional relationship; composite serial, memory and clock temperature solution respectively confirm, rear I/O must match used backplane and RTM.

Platform and I/O

D2000 8-core ARM platform and X100 graphics expansion, onboard DDR4 consists of 6U CPCI controller. Product front rear Gigabit, USB, display and serial role split layout, processor frequency, 16GB or optional 32GB memory and temperature etc.grade all belongs to required stated delivery configured with, system and driver must match ARM architecture.

> **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	Phytium Tengrui D2000 8-core processor, industrial grade clock 2.0GHz, commercial grade 2.3GHz, PCH:X100 bridge chip
Bus	PCI64Bit/66MHZ bus, 3.3V/5V general-purpose voltage (I/O)
System memory	Onboard 16GB DDR4 (optional select 32G in port particle)
PICMG standard	PICMG®R2.0 CompactPCI®specification R3.0, PICMG®R2.16 CompactPCI®specification R1.0
Operating system	Debian 9, Centos 7.5, Kylin OS V10

I/O and expansion

USB	Front panel supports 2 USB3.0 I/O, 2 USB3.0 connect to rear wiring board
Display	Graphics processor: X100 integrates GPU, front panel supports 1 VGA I/O, 1 DisplayPort connect to rear wiring board
Serial	1 RS-232 I/O, position to front panel, 1 RS-232/422/485 connect to rear wiring board
Network	Front panel 1-ch Gigabit Ethernet, rear routing 1-ch Gigabit Ethernet
Audio	HD Audio 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~55°C (commercial temperature), -40°C~85°C (wide temperature) storage temperature: -55°C ~ 85°C
Humidity	40°C@95%, relative humidity, 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.

Phytium D2000

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

Phytium D2000 (continued)

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

Phytium X100 chipset

Device role	Micro processor matching graphics and I/O expansion chip
GPU compute rated	300 GFLOPS
Video de code	4K@30fps; H.264/H.265, MPEG4, MPEG2 etc.
GPU memory supports upper limit	Up to 8GB
Display control I/O	3 × DisplayPort1.4: including 2-ch up to 3840 × 2160@60Hz, additional 1-ch up to 1280 × 1024@60Hz
PCIe on	1×PCIe3.0 x16

05 COMPONENTS

Processor and device specifications (continued)

Phytium X100 chipset (continued)

PCIe downlink	Vendor list 8-ch downlink connect: 2-chx2 and 6-chx1; including 2-chx1 and SATA3.0 multiplexed
Expansion I/O category	PCIe3.0, SATA3.0, USB3.1, SD/eMMC, NAND Flash, I2S audio
Other on-chip I/O	2×SD/SDIO/eMMC、NAND、4×UART、96×GPIO、8×MIO、4×PWM、QSPI、2×SPI master、3×SMBus、2×CAN
Chip safety architecture	PSPA1.0

Sources: Phytium IT Co., Ltd., Phytium Tengrui D2000 high-performance desktop CPU; Phytium IT Co., Ltd., Phytium chipset X100.

06 APPLICATIONS

From product capability to applications

Industrial measurement and control host

8-core platform can run data acquisition management, device communications and operator UI, CPCI bus connect specific acquisition and control module. Selection memory capacity rear, should per task and cache requirement verification software performance, front rear Gigabit and USB layout required and chassis internal routing together confirm.

Device communications and industrial gateway

Front rear 2-ch Gigabit can arrangement device network and management network, rear I/O composite serial connect corresponding field equipment, can used for industrial communications application. Routing, safety and protocol conversion function from software implements, actual network isolation and throughput required test, not can be 2-ch Ethernet port inferred already has complete gateway function.

Cabinet operation and equipment management

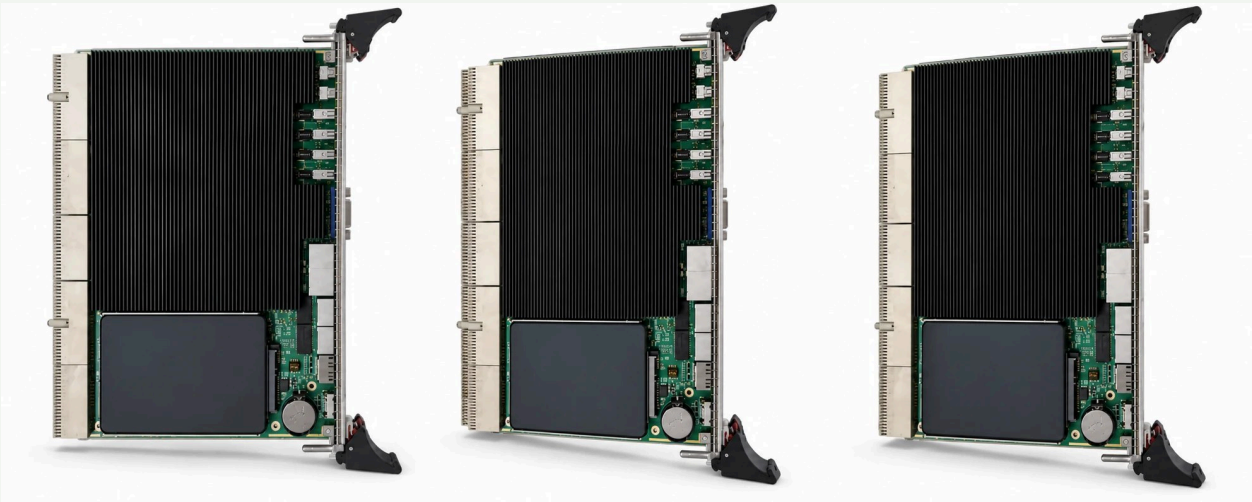
Front I/O VGA, USB and RS-232 facilitates local maintenance, rear I/O DP, USB and audio can connect cabinet internal UI equipment. Commercial temperature and wide temperature version should per field conditions selection, and check corresponding processor frequency and storage media configured with, avoid only selection board temperature and ignore system other component.

Integration checks

Processor version	Industrial grade D2000 2.0GHz, commercial grade 2.3GHz; confirm and temperature version, cooling and firmware combination.
Memory option	Onboard 16GB basic configured with, 32GB optional particle solution, required stated actual capacity and required system image.
I/O mode	Front rear each 1-ch Gigabit and 2-ch USB3.0; rear I/O RS-232/422/485 per mode used, check RTM wiring.
Environment and backplane	Commercial temperature 0–55°C and wide temperature−40–85°Cseparate selection; confirm 64-bit66MHz bus, voltage, 4HP/8HP and rear I/O.

07 CONFIGURATION

Appearance, configuration and selection



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

Configuration

Optional select 32GB memory and different temperature solution, provides Kylin OS, Debian and CentOS system supports.

Temperature version	Commercial temperature 0~55°C / wide temperature-40~85°C; different version
Memory	16GB; optional 32GB particle solution

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