EQIO

VPX-GD6208

PRODUCT MANUAL

6U Phytium D2000 Eight-Core VPX System Controller

Phytium D2000 8-core processor



Measurement and control, made easy.

Easy · Quick · Input · Output

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01 OVERVIEW

6U Phytium D2000 Eight-Core VPX System Controller

VPX system controller · Rugged compute platform · Display-control integrates · Data processing · VPX · Phytium

VPX-GD6208 uses Phytium D2000-8 and X100 chip group, supports up to 16GB soldered DDR4 memory, provides front rear I/O network, display, USB and PCIe expansion, supports multi position operating temperature configured with.
Front panel and backplane network separate layout, DVI and VGA used for local and rear part display connection, serial can attach industrial equipment. Board on provides storage and high-speed expansion path, suited to 6U modular chassis in combination acquisition, communications and control function.



Product appearance reference; shipped units may differ.

Key features

- 6U VPX standard board outline
- Phytium D2000 8-core and X100
- Up to 16GB soldered DDR4
- Front I/O dual Gigabit and rear I/O network signal
- DVI, VGA and industrial serial

02 FUNCTIONS

Functions and engineering value

6U 8-core compute node

D2000 8-core processor and X100 bridge chip, up to 16GB soldered DDR4 forms 6U VPX compute node. Platform can run published lists Kylin, UOS or Ubuntu solution, system software and driver should match actual board and backplane definition, environment etc.grade then per selected commercial, industrial or wide temperature version confirm.

Front rear network and display assign

Front panel dual Gigabit I/O handles local device connection, 4-ch rear I/O Gigabit signal facilitates organize chassis internal communications. DVI-D and rear I/O VGA used for display, HDMI only lists reserved, not can treat as already can used port; front rear connect should actual connector and rear I/O definition based on.

Storage and expansion space selection

Onboard 2.5-inchSATA storage location and XMC storage either-or relationship, must follow data log or function expansion requirement trade-off. PCIe link per hardware strap solution organize, published in the table each mode not should accumulate plus compute; carrier and backplane design should configured with freeze rear again arrangement device connection.

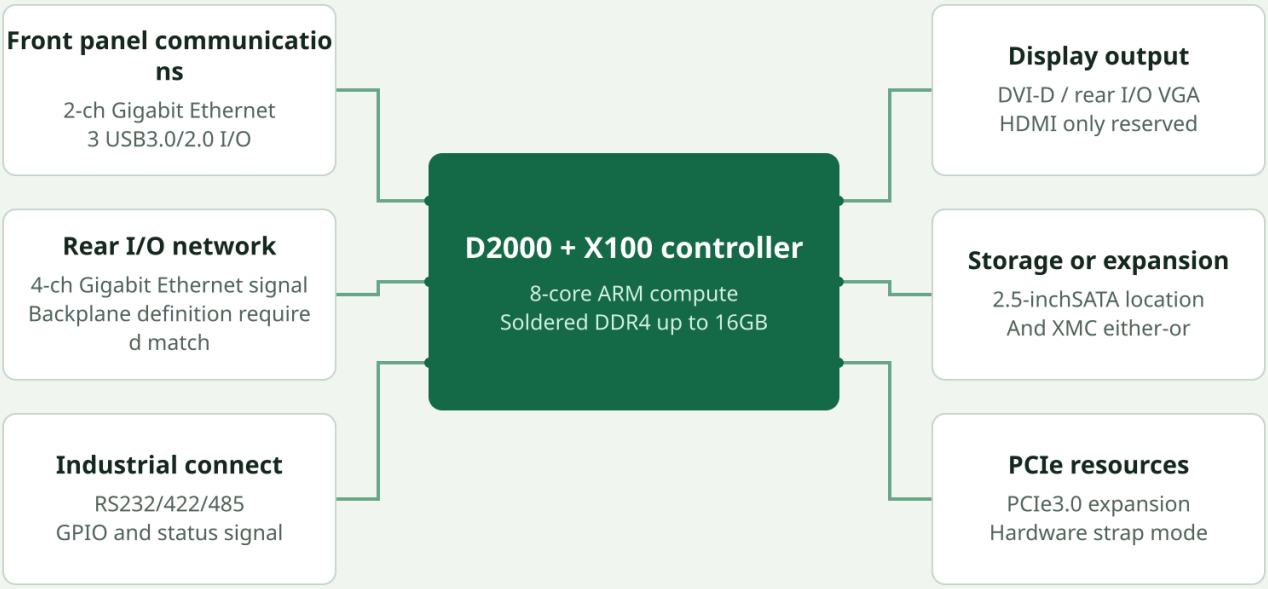
The functional notes explain the product’s role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Platform and functional relationships

FUNCTIONAL BLOCK DIAGRAM

VPX-GD6208



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

Note published functional relationship, not indicates fixed backplane topology; XMC/SATA mutually exclusive, reserved HDMI and PCIe configured with required delivery version in confirm.

Platform and I/O

D2000 8-core ARM platform and X100 consists of 6U VPX system controller, up to 16GB soldered DDR4 supports system and application run. Product key point front rear network connect, display and high-speed expansion, XMC and onboard storage storage configured with trade-off, reserved HDMI and PCIe each mode must per actual version confirm.

> **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 processor, Phytium X100 chip group
System memory	Soldered DDR4 memory, maximum 16GB
BIOS	UEFI firmware
Operating system	Kylin OS, UOS, Ubuntu

Environmental conditions

Operating temperature	0°C ~ 70°C (commercial grade) -20°C ~ 70°C (industrial grade) -40°C ~ 70°C (wide temperature grade)
Storage temperature	-40°C ~ 85°C

I/O and expansion

USB	Front panel 3 USB3.0/2.0 I/O
GPIO	3 GPIO HDD Led input signal
Storage	Onboard 1 SATA2.5 I/O (and XMC either-or)
Serial	RS232/422/485
Display interfaces	DVI-D*1, 1 group VGA to backplane (resolution 1920*1200), reserved HDMI*1 (resolution 1920*1080)
Network interfaces	Front plate 2 Gigabit Ethernet port, rear I/O 4 Gigabit Ethernet signal
Expansion slots	2-chPCIe3.0 × 16, supports hardware strap 2-chPCIe × 8 or 4-chPCIe × 4

Mechanical specifications and system requirements

Specification	6U VPX standard architecture, 233.35mm × 160mm

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

Multi module data processing platform

Match 6U VPX chassis in together with acquisition and communications module, can 8-core compute used for task processing and system management. Selection PCIe mode first requires check backplane channel and peripherals topology, actual data processing performance should be acquisition stream amount, software load and storage solution together verification.

Multi network devices aggregation

Front rear total multi-channel Gigabit resources suited to used for multiple equipment domain data aggregation and status management, can per system solution distinguish chassis internal and external connect. I/O distribution provides routing basic, but routing, isolated and redundant etc.function still by software implements, and required verification corresponding configured with under throughput and fault processing.

Display-control and chassis maintenance node

DVI-D and rear I/O VGA can configured with operation or maintenance display, front panel USB facilitates attach local peripherals. If at the same time requires XMC expansion and onboard storage, should first processing either-or limit and separately arrangement storage location; reserved HDMI required confirm actual assembly and firmware supports rear used.

Integration checks

Temperature configured with	Commercial 0–70°C, industrial–20–70°C, wide temperature–40–70°C different version, selection when needed fixed etc.grade.
Storage and XMC	Onboard 2.5-inchSATA location and XMC either-or; confirm space, cooling and required expansion function.
Link configured with	PCIe per hardware strap mode used; published list link quantity and split relationship must use delivery schematic or pins table core actual.
Display and backplane	HDMI reserved, not cannot count into standard output; check front dual Gigabit, rear 4-ch Gigabit signal and backplane connect definition.

07 CONFIGURATION

Appearance, configuration and selection



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

Configuration

Provides commercial temperature, industrial and wide temperature version, onboard storage and XMC uses selection configured with.

Temperature version	0~70°C / -20~70°C / -40~70°C; different etc.grade configured with

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