EQIO

VPX-FTD2K-KC

PRODUCT MANUAL

3U Phytium D2000 VPX System Controller

Phytium D2000 8-core processor



EQIO brand background · product photo to be confirmed.

Measurement and control, made easy.

Easy · Quick · Input · Output

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01 OVERVIEW

3U Phytium D2000 VPX System Controller

VPX system controller · Industrial automation · Edge computing · Embedded measurement and control · VPX · Phytium

VPX-FTD2K-KC uses Phytium D2000 and X100 chip group, soldered DDR4 memory, provides front rear I/O USB, display, network, serial and PCIe I/O, supports Kylin OS and UOS system, used for 3U VPX compute platform.
Front rear I/O I/O facilitates assign operation end and backplane routing, dual Gigabit Ethernet, serial and storage connection can and acquisition equipment together with. Compact board outline suited to modular chassis, display, communications and compute resources centralized system controller in, facilitates consists of industrial measurement and control node.



EQIO brand display · product photo to be confirmed.

Key features

- 3U VPX、100×158.5mm
- Phytium D2000 and X100 bridge chip
- Up to 16GB soldered DDR4
- Dual Gigabit Ethernet and front rear I/O display
- PCIe3.0, SATA and mSATA

Applications

Industrial automation

Edge computing

Embedded measurement and control

02 FUNCTIONS

Functions and engineering value

8-core ARM controller platform

3U VPX controller per published text specification uses D2000 and X100 platform, up to 16GB soldered DDR4, matching UEFI and Kylin, UOS system. Compute resources used for equipment control and data processing, product platform and I/O describe text parameters based on, not according to current has reference image infer chip or connect layout.

Front rear I/O role split

Product USB, HDMI and storage interfaces divided into front I/O and rear I/O, facilitates local operation connect and backplane routing respectively arrangement. Dual Gigabit Ethernet, function RS-232 and CPU debug each port has purpose, debug port not should automatic into application serial quantity, front rear I/O actual pinout must follow delivery drawing check.

Expansion and log path

2-ch PCIe3.0 x4 can via hardware strap configured with 1-ch x8, suited to per expansion equipment quantity and bandwidth requirement selection. 2-ch rear I/O SATA3.0 and onboard mSATA location provides storage connection, specific media capacity, boot sequence and compatible must system solution in stated.

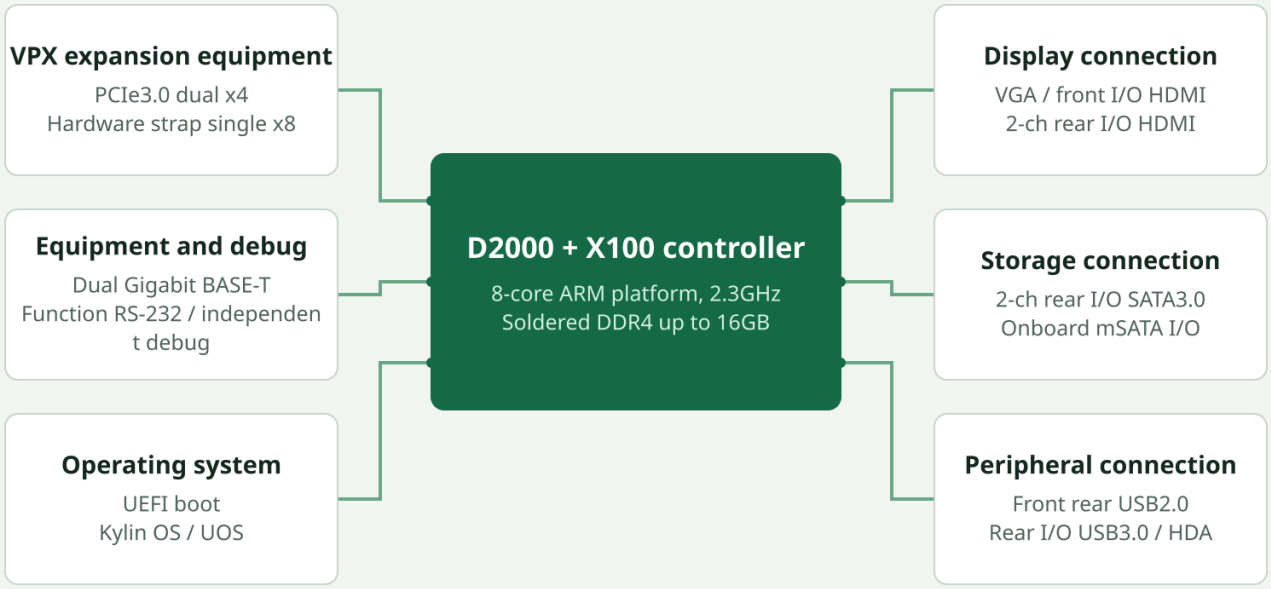
The functional notes explain the product’s role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Platform and functional relationships

FUNCTIONAL BLOCK DIAGRAM

VPX-FTD2K-KC



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

According to D2000 product text specification express functional relationship, not based on uncertain reference image inferred on-board chip, I/O location or internal topology.

Platform and I/O

D2000 8-core FTC663, ARMv8 platform, product together with X100 handles graphics and I/O expansion, used up to 16GB soldered DDR4. Functional relationship based on text parameters establish, PCIe jumper select, front rear I/O and storage configured with from board-level drawing confirm, current has reference image not as platform recognition or I/O infer based on.

> **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 D2000 processor, clock 2.3GHz, Phytium X100 chip group
System memory	Soldered DDR4 memory, maximum 16GB
BIOS	UEFI firmware
Operating system	Kylin OS, UOS etc.

Environmental conditions

Operating temperature	-40°C–65°C (operating temperature), -45°C ~ 85°C (storage temperature)
Relative humidity	5% to 95%humidity non-condensing

Mechanical specifications and system requirements

Specification	100mm*158.5mm

I/O and expansion

USB	3-chUSB2.0 I/O, including 2-ch rear I/O, 1-ch front I/O; 1-chUSB 3.0 I/O rear I/O
Storage	2-ch SATA3.0 I/O rear I/O, 1-ch MSATA onboard
Serial	1-chCPU debug serial, maximum baud rate 115200 BPS; 2-ch RS-232 function serial, maximum baud rate 115200 BPS
Display interfaces	1-chVGA output, maximum resolution 1920*1080@60HZ 3-chHDMI output, 1-ch front I/O (1920*1080@60HZ) 2-ch rear I/O (3840*2160@30HZ)
Network interfaces	2-ch Gigabit BASE-T I/O
Audio	1-chHDA I/O, supports expansion audio function
Expansion slots	2-chPCIe3.0 × 4, supports hardware strap 1-chPCIe3.0 × 8

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

Modular industrial measurement and control host

Controller installation to match 3U VPX chassis, via selected PCIe link connect acquisition or communications module, can forms modular measurement and control system. Application software responsible for procedure and data processing, required combined with backplane definition, peripherals driver and task load verification performance, not can be board outline inferred backplane completely compatible.

Front rear isolation operation node

Front I/O HDMI and USB can used for local operation, rear I/O display, USB and storage connection facilitates chassis internal routing. Multi video system should respectively check front I/O 1080p and rear I/O 4K display specification, again per actual combination test software and cables, not different output upper limit unified 1 used.

Edge equipment data management

Dual Gigabit Ethernet can used for equipment end and management end communications, mSATA or rear I/O SATA used for system and data save. D2000 8-core resources can hosts multiple application task, but actual acquisition throughput, data library write and fault recovery procedure required combined with selected storage media and operating system verification.

Integration checks

Product recognition	This product per D2000 text specification en write; current has image apparent other platform, must confirm rear product photo or delivery drawing check appearance.
Backplane configured with	Check 100 × 158.5mm board outline, VPX pinout and PCIe dual x4/single x8 jumper select relationship, not assume has 3U backplane general-purpose.
Display role split	Front I/O HDMI per 1920 × 1080@60Hz, rear I/O HDMI per 3840 × 2160@30Hz; confirm actual display combination.
System and environment	Up to 16GB DDR4; distinguish debug port and 2-ch function RS-232, and check−40–65°Ccooling and system adapts.

07 CONFIGURATION

Configuration, options and selection

Configuration

PCIe optional select dual x4 or single x8 link solution, supports Kylin OS and UOS system.

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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