EQIO

VPX-FTD2K-KB

PRODUCT MANUAL

3U Phytium FT-2000 Quad-Core VPX System Controller

Phytium FT-2000/4 4-core processor



Measurement and control, made easy.

Easy · Quick · Input · Output

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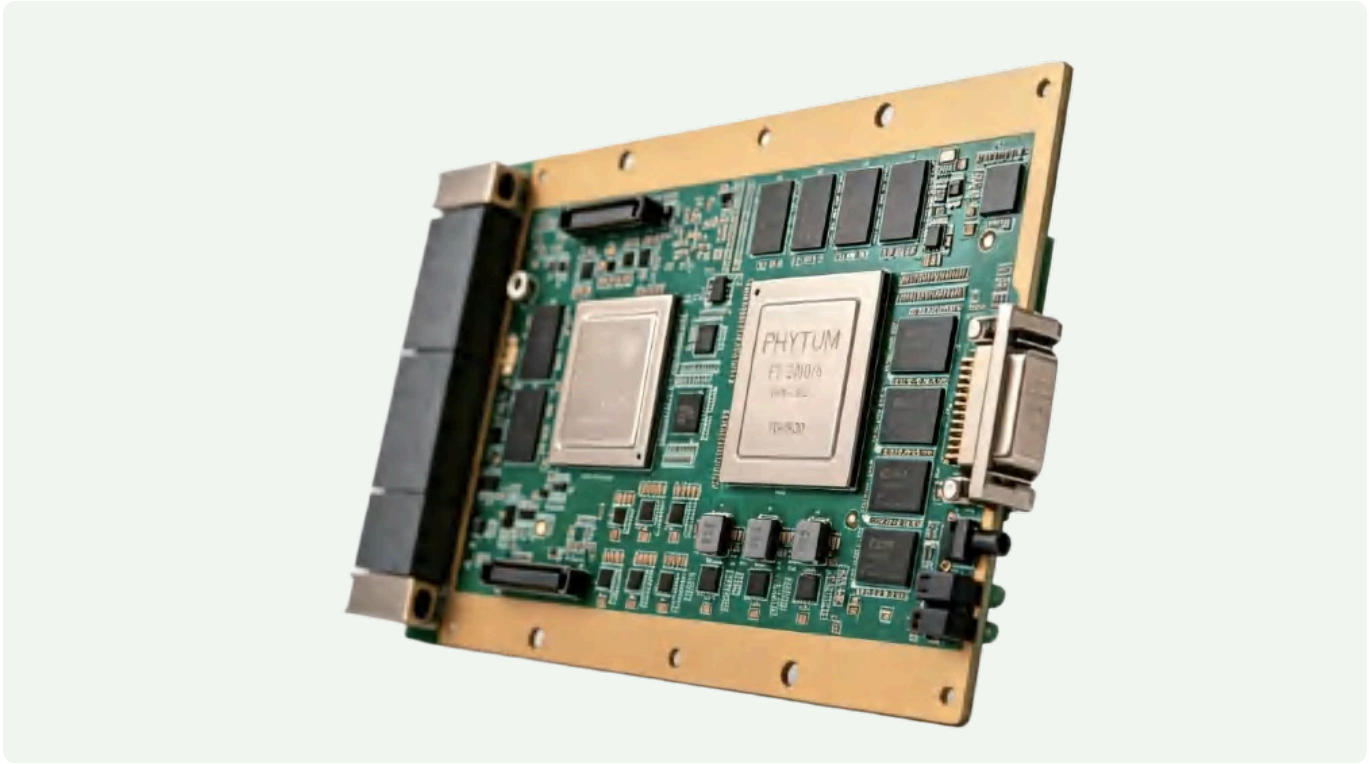
01 OVERVIEW

3U Phytium FT-2000 Quad-Core VPX System Controller

VPX system controller · Industrial gateway · Edge computing node · Embedded control · VPX · Phytium

VPX-FTD2K-KB uses Phytium FT2000/4 and X100 chip group, supports up to 16GB soldered DDR4 memory, integrates VGA, optoelectronic network, serial and mSATA I/O, can paired with Kylin OS and UOS system used.

2-ch BASE-T and 2-ch BASE-X rear I/O network facilitates organize chassis internal and external communications, function serial and debug port respectively settings. VGA and USB can connect operation peripherals, onboard mSATA location facilitates installation storage, suited to field measurement and control, communications and equipment management node.



Product appearance reference; shipped units may differ.

Key features

- Phytium FT2000/4 and X100 bridge chip
- 3U VPX、100×158.5mm
- Up to 16GB soldered DDR4
- BASE-T and BASE-X network connect
- VGA, serial and mSATA I/O

02 FUNCTIONS

Functions and engineering value

4-core compute and boot environment

FT2000/4 and X100 consists of 4-core compute and graphics platform, product board-level clock 2.0GHz, up to 16GB soldered DDR4. Processor vendor up to frequency not as this board operation frequency, UEFI firmware and Kylin, UOS system requires per actual delivery version matching confirm.

Optoelectronic network connect organize

Product lists 2-ch Gigabit BASE-T and 2-ch rear I/O BASE-X network, can used for arrangement different media and connect location communications solution. BASE-X signal external optoelectronic conversion, backplane routing and connector requires according to system solution confirm, not can directly resources quantity wording finished product optical port quantity.

Local HMI and serial maintenance

VGA provides up to 1080p display, 2-ch rear I/O USB2.0 and onboard mSATA I/O supports operation peripherals and storage. 2-ch RS-232 used for application connect, additional 1-ch CPU debug serial facilitates maintenance; firmware if selection Kylin or Kehua solution, must first completes corresponding adapts verification.

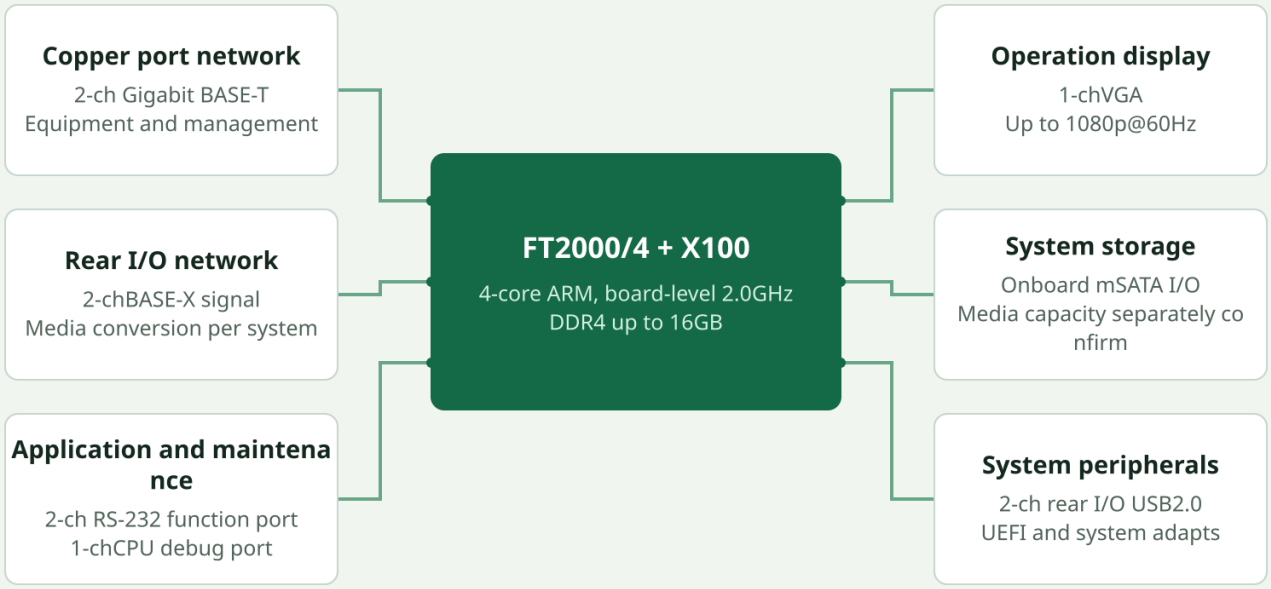
The functional notes explain the product’s role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Platform and functional relationships

FUNCTIONAL BLOCK DIAGRAM

VPX-FTD2K-KB



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

Based on board-level specification express functional relationship; BASE-X not directly etc.same finished product optical port, firmware option and processor vendor frequency upper limit respectively processing.

Platform and I/O

FT2000/4 uses 4-core FTC663 and ARMv8 architecture, this controller stated used 2.0GHz board-level configured with, X100 provides graphics and expansion resources. Up to 16GB soldered DDR4, mSATA and optoelectronic network resources forms 3U VPX controller basic, actual I/O media and firmware option must per delivery solution 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 FT2000/4 processor, clock 2.0GHz, chip group Phytium X100
System memory	Soldered DDR4 memory, maximum 16GB
BIOS	UEFI firmware, optional Kylin, Kehua firmware (required adapts)
Display	Integrates GPU X100
Operating system	Kylin OS, UOS etc.

I/O and expansion

USB	2-chUSB2.0 rear I/O
Storage	1-chMSATA I/O, 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, maximum resolution 1920*1080@60Hz
Network interfaces	2-ch Gigabit BASE-T, 2-chBASE-X rear I/O

Environmental conditions

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

Mechanical specifications and system requirements

Specification	100mm*158.5mm

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 FT-2000/4

Processor core count	4-core
Processor micro architecture	FTC663
ISA and actuation mode	ARMv8; supports ARM64 and ARM32
Up to clock	2.6 GHz
Layer-2 cache	4 MB
L3 cache	4 MB
CPU memory controller	2 DDR4 I/O
CPU PCIe resources	34 lanes PCIe3.0
CPU network controller	2 Gigabit Ethernet I/O
Other on-chip I/O	SD2.0, 4 × UART, 32 × GPIO, 4 × I2C, QSPI, 2 × SPI, 3 × CAN, 2 × WDT, 16 × external interrupt
Hardware virtualization	Supports

Phytium FT-2000/4 (continued)

Floating-point and SIMD	Single/dual accuracy floating-point and ASIMD
Chip safety architecture	PSPA1.0

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
PCIe downlink	Vendor list 8-ch downlink connect: 2-chx2 and 6-chx1; including 2-chx1 and SATA3.0 multiplexed

05 COMPONENTS

Processor and device specifications (continued)

Phytium X100 chipset (continued)

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., FT-2000/4 high-performance desktop CPU; Phytium IT Co., Ltd., Phytium chipset X100.

06 APPLICATIONS

From product capability to applications

Industrial device communications gateway

Uses BASE-T and BASE-X network resources can planning device network and chassis internal communications, 4-core platform processing application protocol and data compiled. Selection specific media should first check BASE-X electrical definition and matching module, application throughput and network isolation policy should complete software solution in verification.

Compact edge management node

3U board outline, soldered memory and onboard mSATA location suited to modular chassis internal edge management node. VGA and rear I/O USB can used for installation maintenance, application data via network HMI; storage capacity, log write and boot recovery method required according to actual run task configured with.

Serial equipment monitoring terminal

2-ch RS-232 can connect uses should signal level standard field controller, together with Gigabit Ethernet aggregation equipment status and toward on position application provides data. CPU debug the port should and application link respectively management, system debug when needed log serial purpose, baud rate and protocol settings, avoid wiring confuse.

Integration checks

Clock and memory	This board FT2000/4 per 2.0GHz configured with, up to 16GB DDR4; not reuse processor vendor up to frequency as board-level rated.
Network media	2-ch BASE-T and 2-ch rear I/O BASE-X respectively check; optical module, conversion and backplane connect not default all fully fitted.
Firmware adapts	Default UEFI; Kylin, Kehua required adapts optional solution, confirm firmware, system and driver combination.
Mechanical and environment	Check 100 × 158.5mm board outline, mSATA installation and backplane pinout, and verification−40–65°Crun cooling.

07 CONFIGURATION

Appearance, configuration and selection



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

Configuration

Uses UEFI firmware, provides Kylin OS and UOS system solution, function serial RS-232.

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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