EQIO

COMe-D3000

PRODUCT MANUAL

Phytium D3000 COM Express Type 6 Module

Phytium D3000 8-core processor



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

Measurement and control, made easy.

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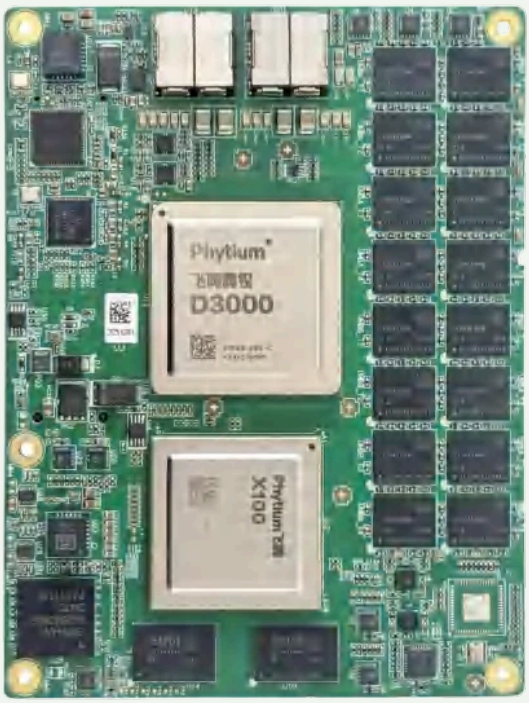
Easy · Quick · Input · Output

01 OVERVIEW

Phytium D3000 COM Express Type 6 Module

COM Express compute module · High-performance embedded terminal · Edge service unit · Industrial control · COM Express · Phytium

COMe-D3000 uses Phytium Tengrui D3000 8-core processor, provides high-speed PCIe, network and display expansion, supports Kylin OS, UnionTech and Ubuntu system, used for embedded terminal, industrial control and edge service unit integrates.
Gigabit Ethernet and 10GbE serial I/O facilitates organize device communications, USB, serial, GPIO and industrial bus can combined with carrier brought out. Module uses 125 × 95mm dimensions, display, storage and expansion card reserved connect path, facilitates integrate embedded controller system.



Product appearance reference; shipped units may differ.

Key features

- Phytium D3000 8-core compute platform
- Type6 module, 125 × 95mm
- DP and HDMI/VGA dual display solution
- Gigabit Ethernet and USXGMII I/O
- PCIe, SATA and industrial bus connect

02 FUNCTIONS

Functions and engineering value

8-core compute platform integrates

Module uses D3000 8-core processor, up to clock 2.5G Hz, together with X100 graphics resources forms Type6 embedded compute platform. 125 × 95mm module processing platform and application carrier isolation, suited to around current has operating system and peripherals requirement establish can multiplexed equipment controller solution.

For high-speed expansion carrier connect

Product lists multi generation PCIe connect capability and SATA3.0 storage interfaces, can according to expansion card and system disk requirement arrangement carrier resources. Data still not item by item gives channel quantity and combination limit, design stage should first confirm complete pins definition and link configured with, again determine slot and equipment connect quantity.

Dual display and hybrid network connect

DP and HDMI/VGA solution supports independent dual display, can used for operation video and status show. 1-ch Gigabit BASE-T and 1-ch USXGMII10G I/O provides different network connect form; USXGMII belongs to carrier side I/O, not can directly treat as already fully fitted 10GbE RJ45 or optical port.

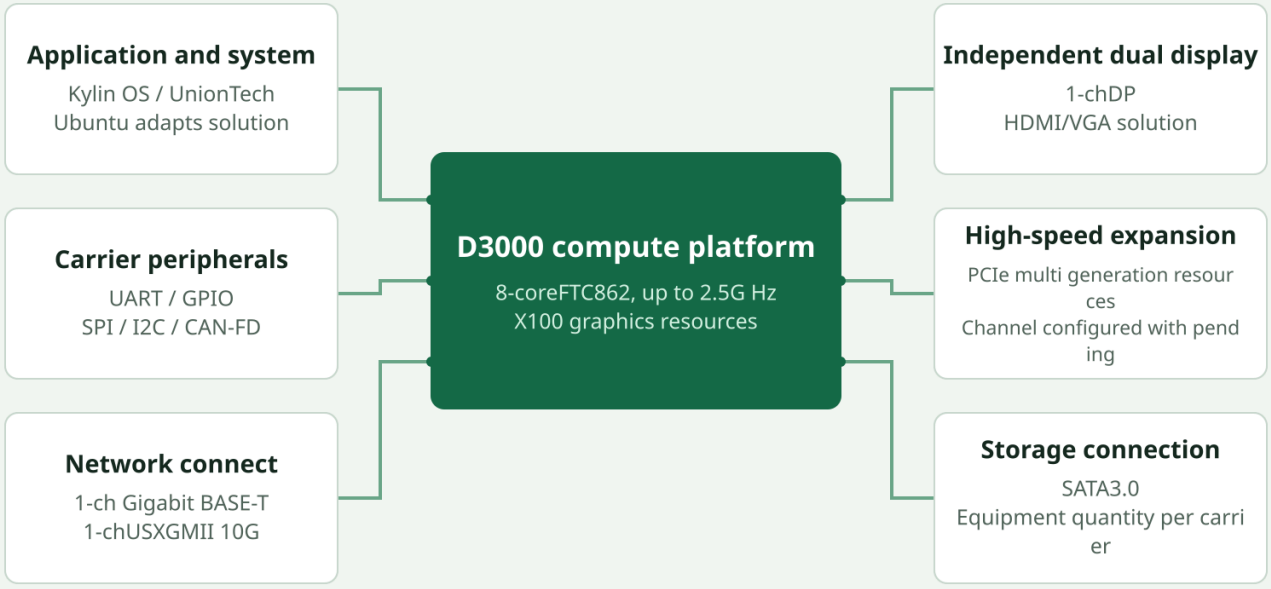
The functional notes explain the product’s role from published configuration. Optional functions, software and peripherals follow the project definition. Chip capability is not the same as implemented I/O.

03 ARCHITECTURE

Compute platform and functional relationships

FUNCTIONAL BLOCK DIAGRAM

COMe-D3000



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

Only illustration published functional relationship; USXGMII not etc. To finished product 10GbE port, PCIe assign, memory and display select relationship must per delivery configured with confirm.

Platform and I/O

D3000 8-coreFTC862, ARMv8 processing platform, product X100 handles graphics expansion and provides Type6 carrier connect. Published specification emphasize dual display, Gigabit and USXGMII network and high-speed expansion, but memory configured with and each generation PCIe channel assign still requires per specific delivery version complete.

> **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 D3000 8-core processor, up to 2.5G Hz
Display	Phytium X100 bridge chip integrates graphics controller
BIOS	Phytium UEFI BIOS
Operating system	Kylin OS, UnionTech, Ubuntu etc.operating system

Environmental conditions

Operating temperature	-40°C ~ 65°C (operating temperature), -50°C ~ 85°C (storage temperature)
Humidity	5%~95%humidity non-condensing

I/O and expansion

Other I/O	Multiple USB3.0/2.0 I/O SPI, I2C, CAN-FD etc.bus I/O serial (UART), GPIO I/O
Display interfaces	1-chDP, 1-chHDMI/VGA (independent dual display output), supports HD display output
Network interfaces	1 10/100/1000 Base-T Ethernet port, 1 USXGMII10G Ethernet I/O
Storage interfaces	Supports SATA3.0 I/O
Expansion slots	PCIe5.0/4.0/3.0, supports multi type high-speed expansion

Mechanical specifications and system requirements

Specification	Type6 base this type, 125mm x 95mm

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 D3000

Processor core count	8-core
Processor micro architecture	FTC862
ISA and actuation mode	ARMv8; supports ARM64 and ARM32 actuation mode
Up to clock	2.5 GHz
CPU memory controller	2 DDR5 I/O, compatible DDR4
CPU PCIe resources	28 lanes PCIe 5.0/4.0/3.0
CPU network controller	2 Ethernet I/O, supports SGMII and USXGMII
CPU storage controller	3×SATA3.0
Other on-chip I/O	4×UART、64×GPIO、4×PWM、2×SPI master、3×I2C/PMBUS、2×I3C、2×CAN-FD、1×LocalBus
Hardware virtualization	Supports

Phytium D3000 (continued)

Floating-point and SIMD	Single/dual accuracy floating-point and ASIMD
Chip safety architecture	PSPA 2.0

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., Phytium Tengrui D3000 high-performance desktop CPU; Phytium IT Co., Ltd., Phytium chipset X100.

06 APPLICATIONS

From product capability to applications

High-performance embedded operation end

Equipment requires parallel run operator UI, data compiled and communications task when, can base to D3000 8-core platform planning software role split. Dual display resources suited to respectively present operation and status video, actual graphics mode, memory configured with and application load should and selected Kylin, UnionTech or Ubuntu image together verification.

Edge data aggregation node

Via Gigabit BASE-T connect current has device network, and carrier completes USXGMII I/O matching rear evaluate high-speed network attach, can forms edge data aggregation solution. Storage and expansion card quantity should based on confirm rear PCIe and SATA assign, avoid first per chip resources quantity arrangement peripheral device.

Industrial control carrier platform

UART, GPIO, SPI, I2C and CAN-FD resources dedicated carrier provides multi type device connection method, can used for controller and external control unit between data HMI. Field side signal level conversion, isolated and connector requires from carrier implements, control performance and protocol compatible should via actual equipment verification.

Integration checks

Memory configured with	Current has product the table does not stated memory type and capacity; quotation and technical protocol in must add complete actual configured with rear again determine software resources budget.
High-speed I/O	Stated PCIe generation, channel number, split and multiplexed limit; USXGMII10G external PHY and connector from carrier solution confirm.
Display solution	Confirm DP and HDMI/VGA select relationship, resolution and dual display combination, not two kinds of I/O solution and list confirm as all standard.
System and temperature	Check system image, driver and firmware version, and product in verification−40–65°Coperating temperature and cooling design.

07 CONFIGURATION

Appearance, configuration and selection



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

Configuration

Via carrier connect display and peripherals, provides Kylin OS, UnionTech and Ubuntu system supports.

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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