

V2616A Series

Preliminary

x86 embedded computer with Intel Core i5/i7 processor, dual M12 Ethernet ports, serial interfaces, 6 DIs, 2 DOs, VGA and DVI-D, 3 USB ports, 3 SATA interfaces, 2 removable drive trays, CFast card



- > High performance network video recorder for rolling stock applications
- > Compliant with EN 50121-4 and essential sections of EN 50155
- > IEC 61373 certified for shock and vibration resistance
- > Two hot-swappable storage trays for 2.5" SSDs or HDDs
- > RAID 1 mirroring for full data redundancy



Introduction

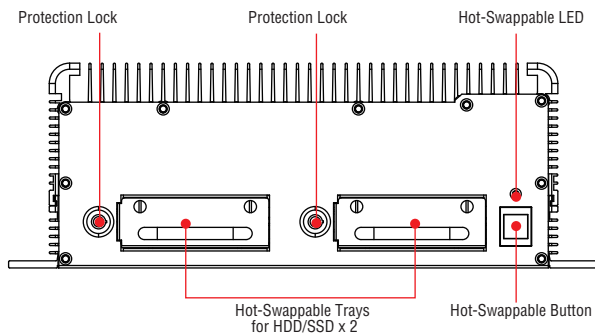
The V2616A series of embedded computers are based on the Intel Core i5/i7 processor, and feature 2 RS-232/422/485 serial ports, dual Gigabit LAN ports, 3 USB 2.0 ports, and dual VGA/DVI-D video output. V2616A computers are compliant with the essential sections of EN 50155 covering operating temperature, power supply, ESD and vibration tolerance, and surge protection, making them ideal for railway and other industrial transport applications.

V2616A computers come with a CFast socket that provides ample and secure data buffering or additional storage expansion, as well as 2 hot-swappable storage trays that accept 2.5" solid state or hard disk storage drives, and may be arranged in RAID 1 arrays to give full data redundancy.

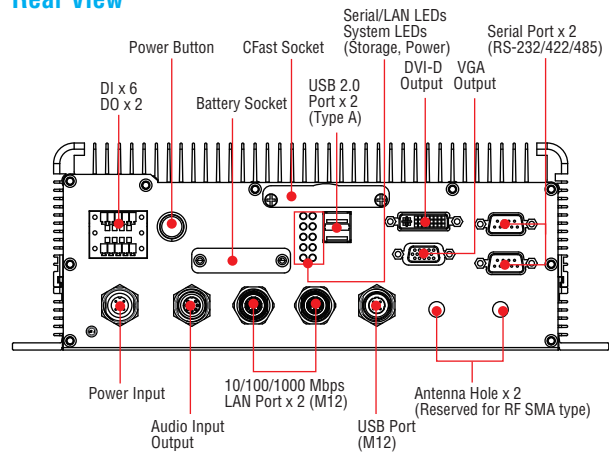
The V2616A series comes with pre-installed Windows Embedded Standard 7 or Debian 7 environments, allowing programmers and system integrators their choice of preferred computing and development platform.

Appearance

Front View



Rear View



Hardware Specifications

Computer

CPU:

- Intel® Core™ i5-3610ME dual-core processor (3M Cache, 2.7 GHz) for V2616A-C5 series
- Intel® Core™ i7-3517UE dual-core processor (4M Cache, 1.7 GHz) for V2616A-C7-T series
- Intel® Core™ i7-3612QE quad-core processor (6M Cache, 2.1 GHz) for V2616A-C8 series

OS (pre-installed): Linux or Windows Embedded Standard 7

System Chipset: Mobile Intel HM65 Express Chipset

System Memory: 16 GB capacity, 4 GB pre-installed: 2 slot of 8 GB DDR3-1600 SO-DIMM SDRAM

USB: 3 USB 2.0 compliant hosts; 2 with type A connectors supporting system bootup, 1 with M12 connector

Storage

Built-in: 8 GB CFast to store OS

Storage Expansion: 2 hot-swappable storage trays for 2.5" SATA SSD or HDD

HDD Support: 1 internal SATA-II storage connector for 2.5" SSD or HDD

Expansion Slot:

1 full-size/half-size mini PCIe socket with 1 SIM card socket. Mini PCIe socket supports power on/off control

Other Peripherals

Audio: Line-in, line-out (M12)

Display

Graphics Controller: Intel® HD Graphics 4000 (integrated)

VGA Interface: DB15 female connector, max. resolution 2048 x 1536

DVI Interface: DVI-D connector (Chrontel CH7307 SDVO to DVI transmitter), max. resolution 1920 x 1200

Ethernet Interface

LAN: 2 auto-sensing 10/100/1000 Mbps ports (M12 X-coded)

Serial Interface

Serial Standards: 2 software-selectable RS-232/422/485 ports (DB9 male)

Optical Isolation Protection: 2 kV

ESD Protection: 4 kV for all signals

Magnetic Isolation Protection: 1.5 kV built-in

Serial Signals

RS-232: TxD, RxD, DTR, DSR, RTS, CTS, DCD, GND

RS-422: TxDA(-), TxDB(+), RxDB(+), RxDA(-), GND

RS-485-4w: TxDA(-), TxDB(+), RxDB(+), RxDA(-), GND

RS-485-2w: DataA(-), DataB(+), GND

Serial Communication Parameters

Data Bits: 5, 6, 7, 8

Stop Bits: 1, 1.5, 2

Parity: None, Even, Odd, Space, Mark

Flow Control: RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485

Baudrate: 50 bps to 921.6 Kbps (non-standard baudrates supported; see user's manual for details)

Digital Input

Input Channels: 6, source type

Input Voltage: 0 to 30 VDC at 25 Hz

Digital Input Levels for Dry Contacts:

- Logic level 0: Close to GND
- Logic level 1: Open

Digital Input Levels for Wet Contacts:

- Logic level 0: +3 V max.
- Logic level 1: +10 V to +30 V (Source to DI)

Isolation: 3 kV optical isolation

Digital Output

Output Channels: 2, sink type

Output Current: Max. 200 mA per channel

On-state Voltage: 24 VDC nominal, open collector to 30 VDC

Connector Type: 10-pin screw terminal block (6 DI points, 2 DO points, DI Source, GND)

Isolation: 3 kV optical isolation

LEDs

System: 1 Power, 1 Storage

LAN: 2 100M/Link, 2 1000M/Link

Serial: 2 TX, 2 RX

Physical Characteristics

Housing: Aluminum

Weight: 5 kg

Dimensions:

Without ears: 287 x 250 x 101 mm (11.29 x 9.84 x 3.97 in)

With ears: 287 x 290 x 101 mm (11.29 x 11.41 x 3.97 in)

Mounting: wall

Environmental Limits

Operating Temperature: (without HDD installed)

Standard models: -25 to 55°C (-13 to 131°F)

Wide temp. models: -40 to 70°C (-40 to 158°F)

Storage Temperature: (with SSD installed) -30 to 60°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Anti-vibration: EN 50155 standard

Anti-shock: EN 50155 standard

Power Requirements

Input Voltage: 24 to 110 VDC, M12 connector

Note: 24 and 110 VDC are EN 50155 compliant

Power Consumption:

- 50 W (no SSD/HDD attached)
- 2 A @ 24 VDC

Power Button: On/off (front panel)

Standards and Certifications

Safety: UL 60950-1, CSA C22.2 No. 60950-1-07, EN 60950-1

EMC: EN 55022 Class A, EN 61000-3-2 Class D, EN 61000-3-3, EN

55024, FCC Part 15 Subpart B Class A

Rail Traffic: EN 50155, EN 50121-2-3, EN 50121-4, IEC 61373

Green Product: RoHS, CRoHS, WEEE

Reliability

Automatic Reboot Trigger: Built-in WDT (watchdog timer) supporting 1-255 second system reset, software programmable

Warranty

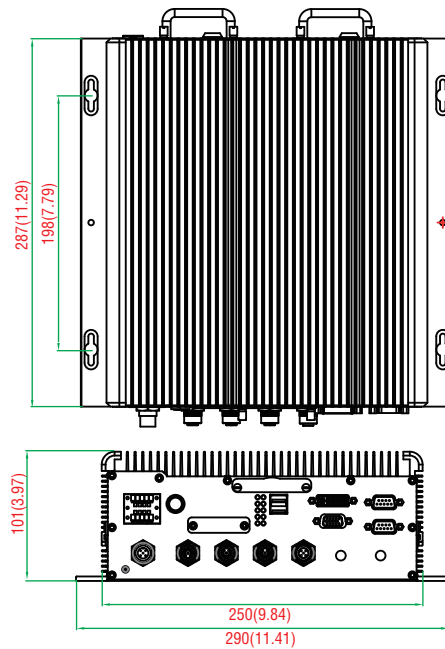
Warranty Period: 3 years

Details: See www.moxa.com/warranty

Note: These hardware specifications describe the embedded computer unit itself, but not its official accessories. In particular, the wide temperature specification does not apply to accessories such as power adapters and cables.

Dimensions

Unit: mm (inch)



Software Specifications

Linux

OS: Linux Debian 7

File System: EXT 4

Internet Protocol Suite: TCP, UDP, IPv4, SNMPv1/v2c/v3, ICMP, ARP, HTTP, SSH 1.0/2.0, SSL, DHCP, NTP, NFS, Telnet, FTP, TFTP, PPP, PPPoE

Internet Security: OpenVPN, Netfilter/iptables

Web Server (Apache): Allows you to create and manage web sites; supports PHP and XML

Secure Shell for Remote Access: SSH allows remote logins to a secure encrypted console from any connected network

Terminal Server (SSH): Provides secure encrypted communications between two un-trusted hosts over an insecure network

Dial-up Networking: PPP Daemon for Linux that allows Unix machines to connect to the Internet through dialup lines, using the Point-to-Point Protocol (PPP). Works with 'chat', 'dip', and 'dialup', 'dip', and 'diald', among (many) others. Supports IP, TCP, UDP, and (for Linux) IPX (Novell).

File Server: Enables remote clients to access files and other resources over the network

Watchdog: A watchdog timer that triggers a system reset upon software freezes, for both specific applications and system-wide failures.

Application Development Software:

- Moxa API library
- GNU C/C++ cross compiler
- GNU C library
- Perl

Software Package:

- SNMP
- SafeGuard technology

Windows Embedded Standard 7

Core OS:

- Windows 7 Embedded, 32 bit
- Sensor and Location Platform
- Remote Procedure Call

Applications and Services Development:

- .Net Framework 4.5
- Remote Desktop Protocol 7.1
- COM OLE Application Support
- COM+ Application Support
- MSMQ

Internet Services:

- Internet Explorer 11
- IIS 7.0

Diagnostics:

- Common Diagnostic Tools
- Problem Reports and Solutions

Fonts:

- Chinese (Trad. and Simp.), Middle East, South East Asian, and South Asian Fonts
- True Type Fonts

Graphics and Multimedia:

- MPEG DTV-DVD Audio Decoder (MPEG-2, AAC)
- MPEG Layer-3 Audio Codecs(MP3)
- MPEG4 Decoders
- Windows Media Video VC-1 (WMV) Codecs
- DirectX and Windows Device Experience
- Windows Media Player 12

Management:

- Group Policy Management
- Windows Management Instrument (WMI)
- Windows Update

Networking:

- Extensible Authentication Protocol (EAP)
- Internet Authentication Service
- Telnet Server
- Bluetooth
- Domain Services
- Network Access Protection
- Network and Sharing Center
- Quality of Service
- Remote Access Service (RAS)
- Telephony API Client
- Windows Firewall
- Wireless Networking

Security:

- Credential Roaming Service
- Credentials and Certificate Management
- Windows Authorization Manager (AZMAN)
- Windows Security Center
- Active Directory Rights Management
- Security Base
- Encrypted File System (EFS)

Embedded Features:

- Enhanced Write Filter (EWF)
- File-Based Write Filter (FBWF)
- Message Box Default Reply
- Registry Filter
- WSDAPI for .NET

File Systems and Data Storage:

- Windows Data Access Components
- Windows Backup and Restore

Embedded Self-Health Diagnostics: SNMP-based remote scripting layer for monitoring, reporting, and control

Ordering Information

Available Models

V2616A-C5: (Barebone) x86 embedded computer with Intel Core i5-3610ME, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, -25 to 55°C operating temperature (EN 50155 Class T1)

V2616A-C5-W7E: x86 embedded computer with Intel Core i5-3610ME, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 Ports, 24 to 110 VDC Power, Win7 Embedded, -25 to 55°C operating temperature (EN 50155 Class T1)

V2616A-C5-CT-W7E: x86 embedded computer with Intel Core i5-3610ME, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, Windows Embedded Standard 7, -25 to 55°C operating temperature (EN 50155 Class T1), conformal coating

V2616A-C5-LX: x86 embedded computer with Intel Core i5-3610ME, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, Linux, -25 to 55°C operating temperature (EN 50155 Class T1)

V2616A-C5-CT-LX: x86 embedded computer with Intel Core i5-3610ME, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, Linux, -25 to 55°C operating temperature (EN 50155 Class T1), conformal coating

V2616A-C7-T: (Barebone) x86 embedded computer with Intel Core i7-3517UE, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, -40 to 70°C operating temperature (EN 50155 Class TX)

V2616A-C7-T-W7E: x86 embedded computer with Intel Core i7-3517UE, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC Power, Windows Embedded Standard 7, -40 to 70°C operating temperature (EN 50155 Class TX)

V2616A-C7-T-LX: x86 embedded computer with Intel Core i7-3517UE, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, Linux, -40 to 70°C operating temperature (EN 50155 Class TX)

V2616A-C8: (Barebone) x86 embedded computer with Intel Core i7-3612QE, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, -25 to 55°C operating temperature (EN 50155 Class T1)

V2616A-C8-W7E: x86 embedded computer with Intel Core i7-3612QE, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, Windows Embedded Standard 7, -25 to 55°C operating temperature (EN 50155 Class T1)

V2616A-C8-LX: x86 embedded computer with Intel Core i7-3612QE, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, Linux, -25 to 55°C operating temperature (EN 50155 Class T1)

V2616A-C7-CT-T-W7E: x86 embedded computer with Intel Core i7-3517UE, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC Power, Windows Embedded Standard 7, -40 to 70°C operating temperature (EN 50155 Class TX), conformal coating

V2616A-C7-CT-T-LX: x86 embedded computer with Intel Core i7-3517UE, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, Linux, -40 to 70°C operating temperature (EN 50155 Class TX), conformal coating

V2616A-C8-CT-W7E: x86 embedded computer with Intel Core i7-3612QE, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, Windows Embedded Standard 7, -25 to 55°C operating temperature (EN 50155 Class T1), conformal coating

V2616A-C8-CT-LX: x86 embedded computer with Intel Core i7-3612QE, VGA, DVI, 2 LANs, 2 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 24 to 110 VDC power, Linux, -25 to 55°C operating temperature (EN 50155 Class T1), conformal coating

Package Checklist

- V2616A embedded computer
- Documentation and software CD or DVD
- Quick installation guide (printed)
- Warranty card
- Wall mounting kit