

V2616 Series

x86-based embedded computer with Intel Core 2 Duo, dual LANs (M12 connectors), serial ports, 6 DIs, 2 DOs, VGA, DVI-D, 3 USB ports, 1 SATA storage connector, 2 removable storage trays, CompactFlash



- > High performance network video recorder for rolling stock applications
- > Compliant with EN 50121-4 and a portion of EN 50155 specifications
- > IEC 61373 certified for shock and vibration resistance
- > Two removable drive trays for 2.5" SSDs or HDDs
- > Supports RAID 1/0 functions for data reliability



Introduction

V2616 Series embedded computers are based on the Intel Core 2 Duo x86 processor, and feature 2 RS-232/422/485 serial ports, dual LAN ports, and 3 USB 2.0 hosts. V2616 computers also provide VGA and DVI-I outputs, and are also compliant with a portion of EN 50155 specifications, covering operating temperature, power input voltage, power surges, ESD, and vibration, making them particularly well-suited for railway and industrial applications.

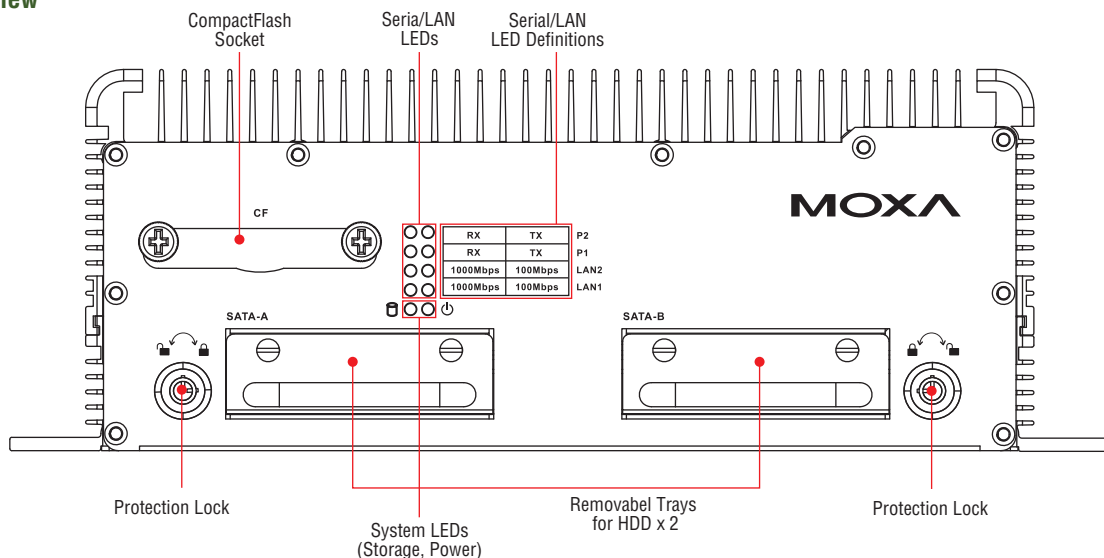
The V2616's CompactFlash socket and internal SATA II storage tray provide these computers with the reliability needed for industrial

applications that require data buffering and storage expansion. Most importantly, the V2616 computers come with 2 removable slots for inserting additional storage media, such as hard disks or SSD drives, and can offer RAID 0 and RAID 1 functions for data reliability.

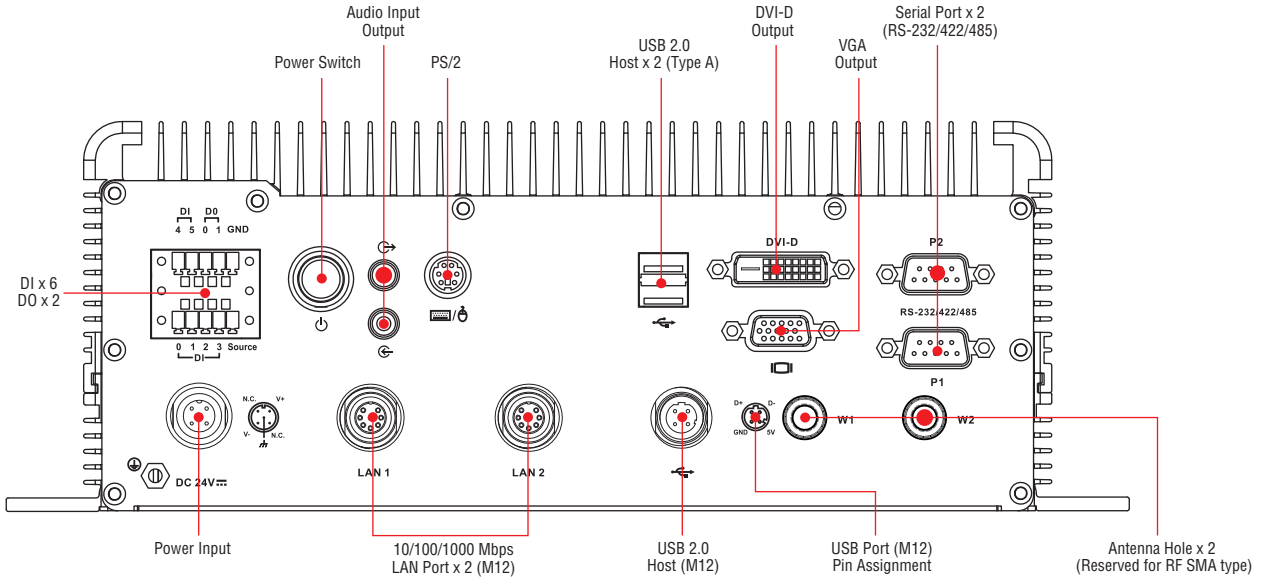
The V2616 series come pre-installed with Linux or Windows Embedded Standard 2009 to provide programmers with a familiar environment in which to develop sophisticated, bug-free application software at a low cost.

Appearance

Front View



Rear View



Hardware Specifications

Computer

CPU: Intel Core 2 Duo SP9300, dual core 64 bit threaded 2.26 GHz, 6 MB for L2 cache

System Chipset: Intel GS45 + ICH9-M

FSB: 1066

System Memory: 4 GB capacity, 2 GB pre-installed: 2 slots of 2 GB DDR3-1066 200 pin SO-DIMM SDRAM

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

OS (pre-installed): Linux, or Windows Embedded Standard 2009

Storage

Built-in: 2 GB onboard industrial CompactFlash card, for root file system

Storage Device Support:

- 2 removable drive trays, for 2.5" SSD or HDD
- (Optional) Internal SATA II drive slot, for 2.5" SSD or HDD

Other Peripherals

KB/MS: 1 PS/2 interface supporting standard PS/2 keyboard and mouse through Y-type cable

Audio: Line-in, line-out interface

Display

Graphics Controller: Intel GS45 integrated graphics engine

DVI Interface: DVI-D connector (chrontel CH7307 SDVO to DVI transmitter), up to 1600 x 1200 resolution

VGA Interface: DB15 female connector, up to 2048 x 1536 resolution

Ethernet Interface

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

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 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)

Serial Signals

RS-232: Tx/D, Rx/D, 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

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: Power x 1, Storage x 1

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

Serial: TX x 2, RX x 2

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: (with SSD installed) -25 to 55°C (-13 to 140°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

Conformal Coating: Available on request

Power Requirements

Input Voltage: 24 VDC (9 to 36 V), M12 connector

Note: 24 VDC is EN 50155 compliant

Power Consumption: 50 W

• 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

Green Product: RoHS, CRoHS, WEEE

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

*Complies with a portion of EN 50155 specifications. Please contact Moxa or a Moxa distributor for details.

Reliability

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

Warranty

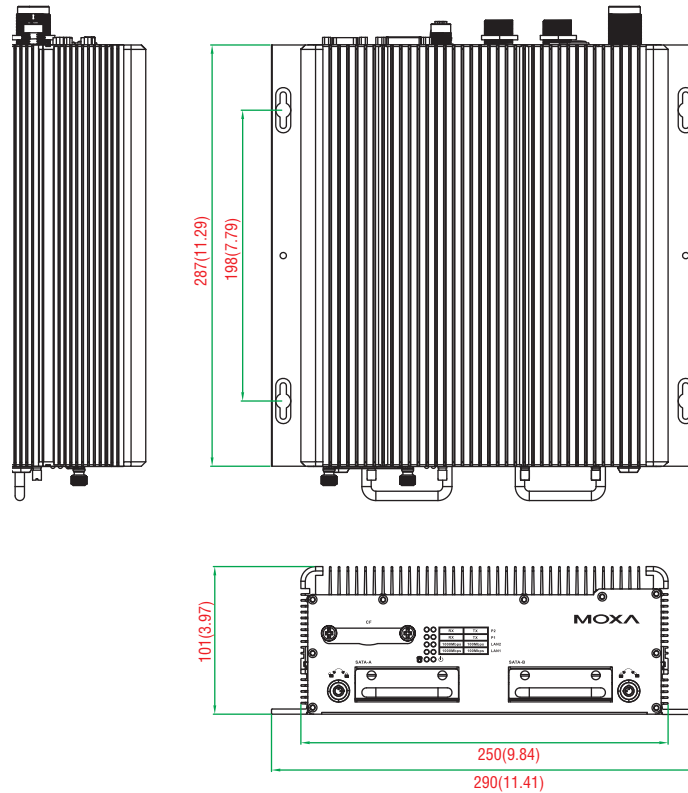
Warranty Period: 3 years

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: Debian Linux 5.0, "Lenny", kernel 2.6.32

File System: EXT2/EXT3

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

Internet Security: OpenVPN, iptables firewall

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

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

Dial-up Networking: PPP (Linux) allows machines to connect to the Internet through dialup lines as either PPP server or client. Works with 'chat', 'dip', and 'diald', among (many) others. Supports IP, TCP, UDP, and Novell IPX.

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

Watchdog: Features a hardware function to trigger system reset in a user specified time interval (Moxa API provided)

Application Development Software:

- Moxa API library (Watchdog timer, Moxa serial I/O control, Moxa DI/DO API)
- GNU C/C++ compiler
- GNU C library
- Perl

Windows XP Embedded

OS: Windows Embedded Standard 2009 SP3

File System: NTFS

Internet Protocol Suite: DHCP, DNS, FTP, HTTP, SMTP, NTP, Telnet, SMTP, SNMPv2, TCP, UDP, IPv4, ICMP, IGMP, IPsec, TAPI, ICS, PPP, CHAP, EAP, PPPoE, PPTP, NetBIOS

Web Server (IIS): Allows users to create and manage websites

Remote Desktop: The Terminal Server Remote Desktop component provides remote access for the desktop of a computer running Terminal Services

Remote Registry Service: Enables remote users to modify registry settings on this computer

Watchdog: Features a hardware function to trigger system reset in a user specified time interval (Moxa API provided)

Enhanced Write Filter: Redirect disk write operations to volatile (RAM) or non-volatile (disk) storage

File-based Write Filter: The File Based Write Filter (FBWF) component redirects all write requests directed at protected volumes to the overlay cache, which records and displays the changes while preserving the protected status of the target volume.

Application Development Software:

- Moxa API library
- Microsoft .NET 3.5, with SP1
- Active Directory Service Interface (ADSI) Core
- Common control libraries
- Common file dialogs
- Direct3D, DirectPlay, DirectShow, and Direct show filters
- Mapi32 libraries
- Message Queuing (MSMQ) Core
- Microsoft Visual C++ run time libraries
- Power management dynamic-link library
- RPC
- Windows API, script engines, and WMI

Silverlight 4: A free runtime framework that powers rich application experiences and delivers high quality, interactive video across multiple platforms and browsers, using the .NET framework

Ordering Information

Available Models

V2616-XPE: x86 Embedded computer with Intel Core 2 Duo, VGA, DVI, 2 LANs, 2 Serial Ports, 6 DIs, 2 DOs, 3 USB 2.0 Ports, 24 VDC Power, Windows XPE, -25 to 55°C operating temperature (EN 50155 Class T1)

V2616-LX: x86 Embedded computer with Intel Core 2 Duo, VGA, DVI, 2 LANs, 2 Serial Ports, 6 DIs, 2 DOs, 3 USB 2.0 Ports, 24 VDC Power, Linux, -25 to 55°C operating temperature (EN 50155 Class T1)

Note: Conformal Coating is available on request.

Optional Accessories (can be purchased separately)

PWR-24250-DT-S1: Power adapter

PWC-C7US-2B-183: Power cord with 2-pin connector, USA plug

PWC-C7EU-2B-183: Power cord with 2-pin connector, Euro plug

PWC-C7UK-2B-183: Power cord with 2-pin connector, British plug

PWC-C7AU-2B-183: Power cord with 2-pin connector, Australia plug

PWC-C7CN-2B-183: Power cord with 2-pin connector, China plug

DK-DC50131-01: DIN rail mounting kit

M12 Connectors (can be purchased separately)

M12A-5P-IP68: Field-installation A-coded screw-in power connector, 5-pin female M12 connector, IP68-rated

M12A-5PMM-IP68: D-coded screw-in USB connector, 5-pin male M12 connector, IP68-rated

M12A-8PMM-IP68: Field-installation A-coded screw-in Gigabit Ethernet connector, 8-pin female M12 connector, IP68-rated

M12 Cables (can be purchased separately)

CBL-M12(FF5P)/Open-100 IP67: 1-meter A-coded M12-to-5-pin power cable, 5-pin female M12 connector, IP67-rated

CBL-M12MM8PRJ45-BK-100-IP67: 1-meter A-coded M12-to-RJ45 Cat-5E UTP Gigabit Ethernet cable, 8-pin male M12 connector, IP67-rated

Package Checklist

- V2616 embedded computer
- Wall mounting Kit
- PS2 to KB/MS Y-type cable
- Documentation and software CD or DVD
- Quick installation guide (printed)
- Warranty card