

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
- > EN 50155 certified for temperature ranges up to Class T1
- > EN 50121-3-2 certified for railway applications
- > IEC 61373 certified for shock and vibration resistance
- > One internal SATA II storage tray for 2.5" SSD or HDD
- > Two removable storage trays for 2.5" SSDs or HDDs
- > Supports RAID 1/0 functions for data reliability



Introduction

The V2616 Series EN 50155 certified embedded computers are based on the Intel Core 2 Duo SP9300 x86 processor and feature 2 RS-232/422/485 serial ports, dual LAN ports, and 3 USB 2.0 hosts. In addition, the V2616 computers provide VGA and DVI-D outputs and their EN 50155 certification makes them robust enough for railway and industrial applications.

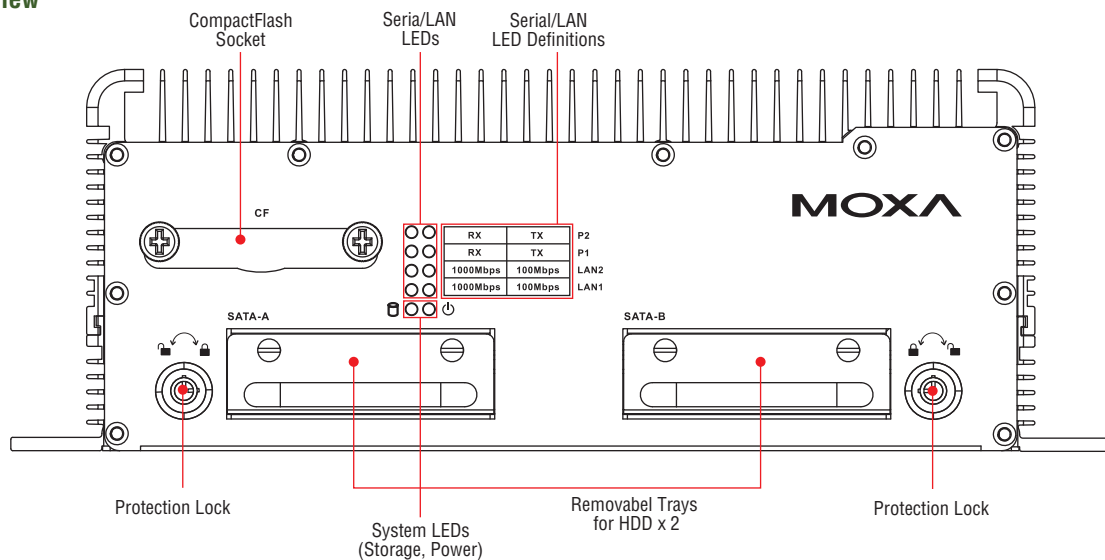
In addition, the CompactFlash socket and the internal SATA II storage tray provide the V2616 computers with the reliability needed

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.

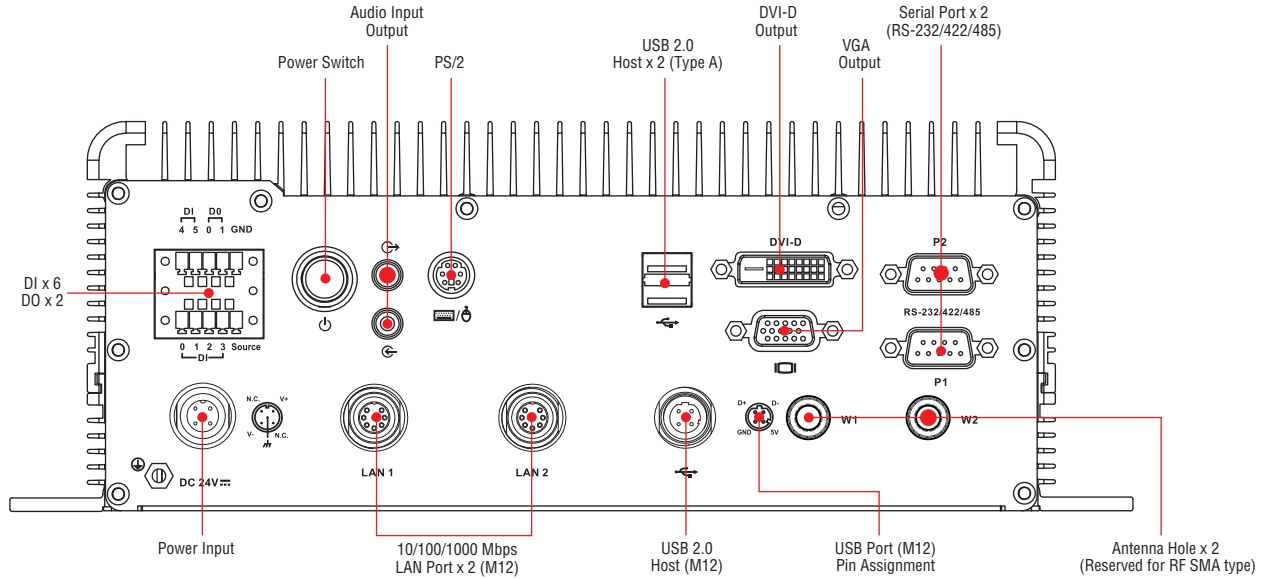
The V2616 series come pre-installed with Linux or Windows Embedded Standard 2009 to provide programmers with a familiar environment in which to develop sophisticated, bug-free application software at a low cost.

Appearance

Front View



Rear View



Hardware Specifications

Computer

CPU: Intel Core 2 Duo SP9300 2.26 GHz, 6 MB for L2 cache
OS (pre-installed): Linux or Windows Embedded Standard 2009
System Chipset: Intel GS45 + ICH9-M
System Memory: 2 200-pin DDR3 SODIMM sockets supporting DDR3 up to 4 GB, with 2 GB built in
USB: 3 USB 2.0 compliant hosts; 2 with type A connectors supporting system bootup, 1 with M12 connector

Storage

Built-in: 2 GB onboard industrial CompactFlash card to store OS
HDD Support:
 HDD: 1 internal SATA II storage tray for 2.5" SSD or HDD
 Removable Trays: Support for 2 storage trays 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
VGA Interface: DB15 female connector, up to 2048 x 1536 resolution
DVI Interface: DVI-D connector (chrontel CH7307 SDVO to DVI transmitter), up to 1600 x 1200 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: 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

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

Switches and Buttons

Power Switch: on/off (front panel)
Reset Button: For warm reboot (front panel)

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

Power Requirements

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

Power Consumption: 50 W

- 2 A @ 24 VDC

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 level time interval system reset, software programmable

Warranty

Warranty Period: 3 years

Details: See www.moxa.com/warranty

Note: The Hardware Specifications apply to the embedded computer unit itself, but not to accessories. In particular, the wide temperature specification does not apply to accessories such as the power adaptor and cables.

Software Specifications

Linux

OS: Linux 2.6.32, Debian Squeeze 6.0

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 Daemon for Linux that allows Unix machines to connect to the Internet through dialup lines, using the PPP protocol, as a PPP server or client. Works with 'chat', '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: 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

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

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

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

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

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

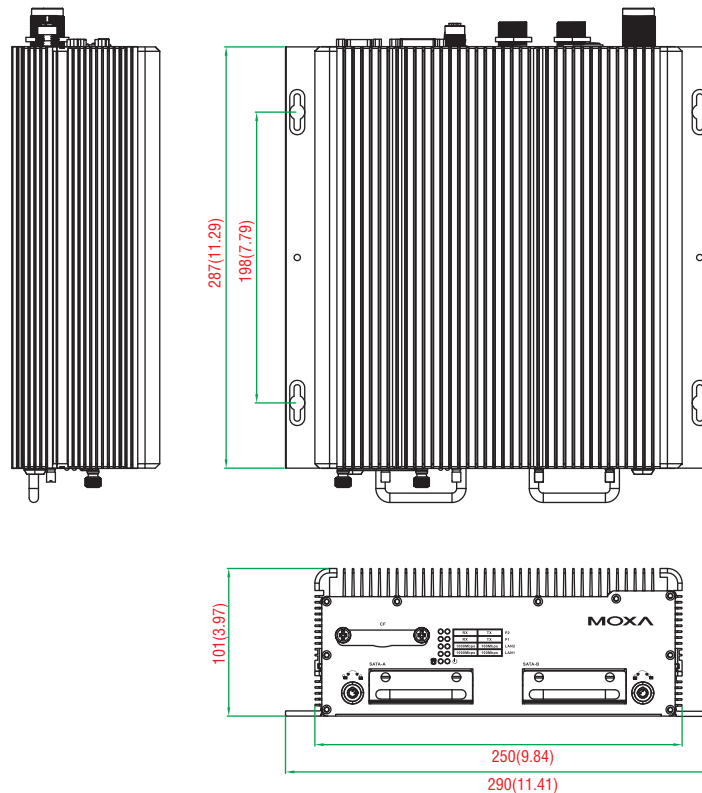
File Based Write Filter: The File Based Write Filter (FBWF) component redirects all write requests directed at protected volumes to the overlay cache, which records and displays the changes while preserving the protected status of the target volume.

Application Development Software:

- Moxa API Library
- Microsoft .Net Framework 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

Dimensions

Unit: mm (inch)



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)

Optional Accessories (can be purchased separately)

PWR-24250-DT-S1: Power adaptor

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

M12A-8PMM-IP68: Field-installation A-coded screw-type Gigabit Ethernet connector, 8-pin male M12 connector, IP68-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

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

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

CBL-M12[FF5P]/OPEN-100 IP67: 1-meter A-coded M12-to-5-pin power cable, 5-pin female M12 connector, IP67-rated

DK-DC50131-01: DIN-Rail mounting kit

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