

# V2422 Series

**x86 ready-to-run embedded computers with Intel Atom N270, VGA, DVI-I, audio, 2 Gigabit LANs, 4 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CompactFlash, 2 peripheral expansion slots**



- > Intel Atom N270 1.6 GHz processor
- > DDR2 SO-DIMM socket supporting DDR2 533 up to 2 GB (max.)
- > Dual independent displays (VGA + DVI-I)
- > 2 10/100/1000 Mbps Ethernet ports
- > 4 RS-232/422/485 serial ports (non-standard baudrates supported)
- > 6 USB 2.0 ports for high speed peripherals
- > 4 DIs, 4 DOs
- > CompactFlash socket for storage expansion
- > 1 SATA-II connector for hard disk drive expansion
- > Ready-to-run Embedded Linux, or Windows Embedded Standard 2009 platform

e Mark



## Overview

The V2422 Series embedded computers are based on the Intel Atom N270 x86 processor, and feature 4 RS-232/422/485 serial ports, dual Gigabit LAN ports, and 6 USB 2.0 hosts. In addition, the V2422 computers provide VGA and DVI-I outputs, making them particularly well-suited for railway and industrial applications.

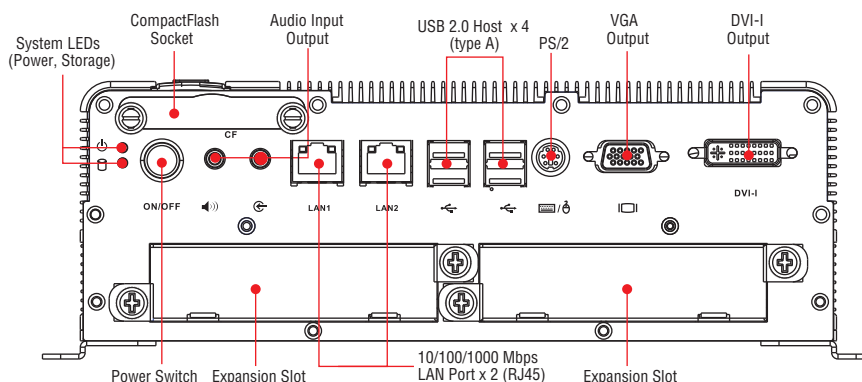
The dual 10/100/1000 Mbps Ethernet ports offer a reliable solution for network redundancy, promising continuous operation for data communication and management. As an added convenience, the V2422 computers have 4 DIs and 4 DOs for connecting digital input/output devices. In addition, the CompactFlash socket, SATA connector, and USB sockets provide the V2422 computers with the reliability

needed for industrial applications that require data buffering and storage expansion. Moreover, the V2422 computers come with 2 peripheral expansion slots for inserting different communication modules, such as a 2-port CAN module, an HSDPA, GPS, WLAN module, an 8+8 port digital input/output module, a 2-port serial module, a mini PCI expansion module, and a PCI Express module, providing greater flexibility for setting up different industrial applications at field sites.

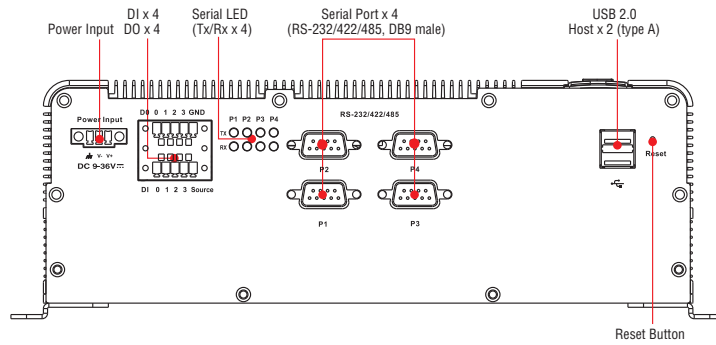
Pre-installed with Linux or Windows Embedded Standard 2009, the V2422 Series provides programmers with a friendly environment for developing sophisticated, bug-free application software at a low cost.

## Appearance

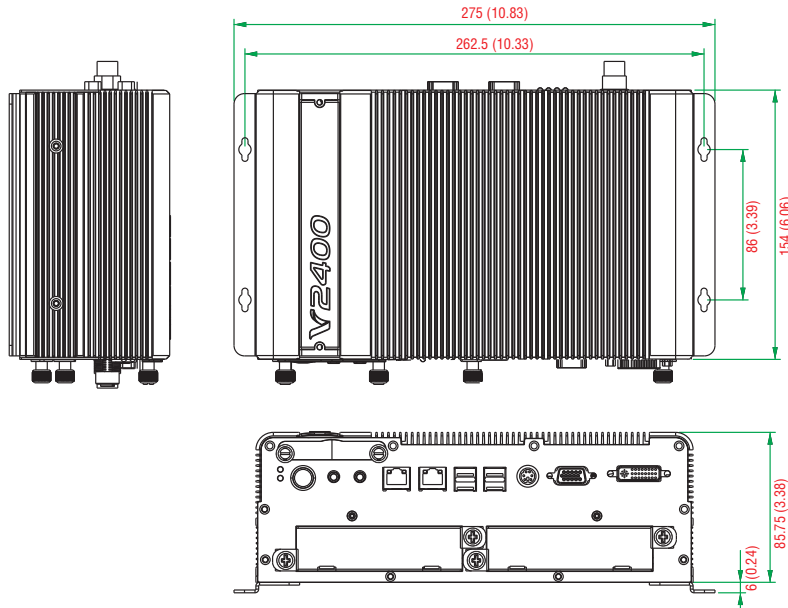
Front View



Rear View



Dimensions



Unit: mm (inch)

Hardware Specifications

Computer

**CPU:** Intel Atom N270 1.6 GHz processor  
**OS (pre-installed):** Linux or Windows Embedded Standard 2009  
**System Chipset:** Intel 945GSE + ICH7-M  
**BIOS:** 8 Mbit Flash BIOS, PLCC type, ACPI function supported  
**FSB:** 533 MHz  
**System Memory:** 2 GB capacity, 1 GB pre-installed: 1 slot of 2 GB DDR2-533 200 pin SO-DIMM SDRAM  
**Expansion Bus:** PCI interface reserved  
**USB:** USB 2.0 compliant hosts, type A connector x 6, supports system boot up

Storage

**Built-in:** 2 GB onboard industrial DOM to store OS  
**Storage Expansion:** CompactFlash socket for CF card expansion, supporting CF Type-I/II  
**HDD Support:** 1 SATA-II connector for HDD expansion

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 Gen 3.5 Integrated Graphics Engine, 250 MHz core render clock and 200 MHz core display clock at 1.05-V core voltage

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

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

Ethernet Interface

**LAN:** 2 auto-sensing 10/100/1000 Mbps ports (RJ45)

**Magnetic Isolation Protection:** 1.5 kV

Serial Interface

**Serial Standards:**

4 RS-232/422/485 ports\*, software selectable (DB9 male)

\*COM1's pin 9 signal can be set as N/C (default), +5 V, or +12 V by jumper

**ESD Protection:** 8 kV for all signals

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, ADDCC® (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:** TxD+, TxD-, RxD+, RxD-, GND

**RS-485-4w:** TxD+, TxD-, RxD+, RxD-, GND

**RS-485-2w:** Data+, Data-, GND

## Digital Input

**Input Channels:** 4, 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:** 4, 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 (4 DI points, 4 DO points, DI Source, GND)

**Isolation:** 3 kV optical isolation

## LEDs

**System:** Power, Storage

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

**Serial:** TX x 4, RX x 4

## Switches and Buttons

**Power Switch:** on/off (front panel)

**Reset Button:** For warm reboot (rear panel)

## Physical Characteristics

**Housing:** Aluminum

**Weight:** 4 kg

## Dimensions:

Without ears: 154 x 250 x 86 mm (6.06 x 9.84 x 3.39 in)

With ears: 154 x 275 x 92 mm (6.06 x 10.83 x 3.62 in)

**Mounting:** DIN rail, wall, VESA

## Environmental Limits

**Operating Temperature:** -10 to 60°C (14 to 140°F)

**Storage Temperature:** -20 to 80°C (-4 to 176°F)

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

**Anti-vibration:** 5 g rms @ IEC-68-2-34, random wave, 5-500 Hz, 1 hr/axis

**Anti-shock:** 50 g @ IEC-68-2-27, half sine wave, 11 ms

## Power Requirements

**Input Voltage:** 9 to 36 VDC (3-pin terminal block for V+, V-, SG)

**Power Consumption:** 48 W

5.3 A @ 9 VDC

2 A @ 24 VDC

1.3 A @ 36 VDC

## Standards and Certifications

**Safety:** UL 508, UL 60950-1, CSA C22.2 No. 60950-1-07, EN 60950-1, CCC (GB9254, GB17625.1)

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

55024, FCC Part 15 Subpart B Class A

**Wheeled Vehicles:** e-Mark (e4)

**Green Product:** RoHS, CRoHS, WEEE

## Reliability

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

**MTBF (mean time between failures):** 144,114 hrs

## Warranty

**Warranty Period:** 3 years

**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

## Software Specifications

### Linux

**OS:** Linux 2.6.26, Debian Lenny 5.0

**File System:** EXT2

**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)
- 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 2.0:** 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
- Active Template Library (ATL), ASP.NET 2.0
- 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

## Ordering Information

### Available Models

**V2422-XPE:** x86 ready-to-run embedded computer with Intel Atom N270, VGA, DVI-I, Audio, 2 LANs, 4 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CF, 2 peripheral expansion slots, Windows Embedded Standard 2009

**V2422-LX:** x86 ready-to-run embedded computer with Intel Atom N270, VGA, DVI-I, Audio, 2 LANs, 4 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CF, 2 peripheral expansion slots, Linux 2.6

### Expansion Modules (can be purchased separately)

**EPM-3112:** 2 isolated CAN ports, DB9 connector

**EPM-3337:** HSDPA, GPS, WLAN (11a/b/g/n)

**EPM-3438:** 8+8 DI/DO with 2 kV digital isolation protection, 2 KHz counter

**EPM-3032:** 2 isolated RS-232/422/485 ports with DB9 connectors

**EPM-DK01:** 1-slot mini PCI and mini PCIe expansion module

**EPM-3552:** 1 VGA or DVI-I display connector

### 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

**FK-75125-01:** Hard disk installation package (for SSD)

**DK-DC50131-01:** DIN-Rail mounting kit

### Package Checklist

- V2422 embedded computer
- Terminal block to power jack converter
- Wall mounting kit
- PS2 to KB/MS Y-type cable
- Documentation and software CD or DVD
- Quick installation guide (printed)
- Warranty card