

# 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 SODIMM socket, supporting DDR2 533 up to 2 GB (max.)
- > Dual independent displays (VGA + DVI-I)
- > 2 10/100/1000 Mbps Ethernet port
- > 4 RS-232/422/485 serial ports, supporting non-standard baudrates
- > 6 USB 2.0 ports for high speed peripherals
- > 4 DIs, 4 DOs
- > CompactFlash socket for storage expansion
- > 1 SATA-150 connector for hard disk drive expansion
- > EN50155 certified
- > Ready-to-run Embedded Linux, or Windows Embedded Standard 2009 platform



## 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 V2406 computers provide VGA and DVI-I outputs, and are EN50155 certified, making them particularly well-suited for railway and industrial applications.

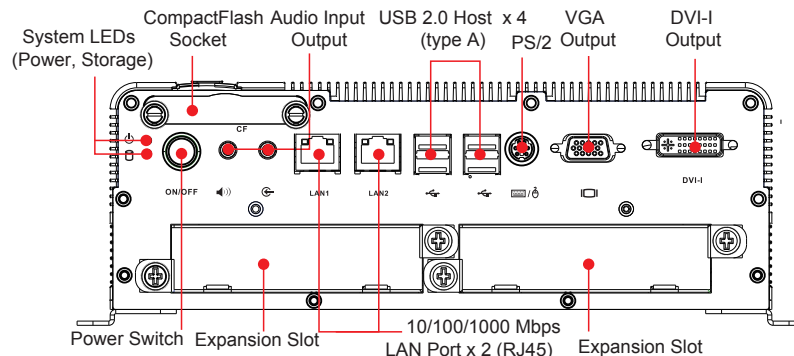
The dual 10/100/1000 Mbps Ethernet ports offer a reliable solution for network redundancy, promising continuous operation for data communication and management. As an added convenience, the V2422 computers have 4 DIs and 4 DOs for connecting digital input/output devices. In addition, the CompactFlash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

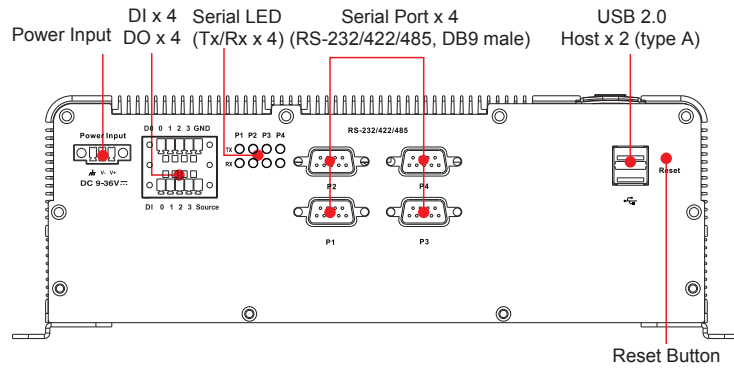
Pre-installed with Linux or Windows Embedded Standard 2009, the V2422 Series provides programmers with a friendly environment for developing sophisticated, bug-free application software at a low cost.

## Appearance

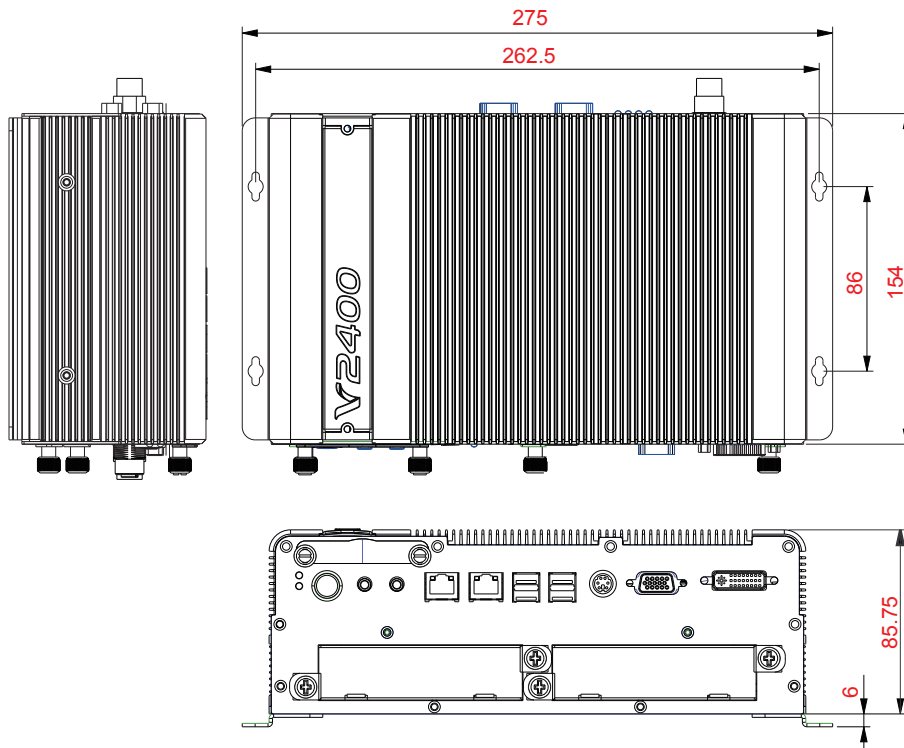
### Front View



**Rear View**



**Dimensions (unit = mm)**



## 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:** 1 x 200-pin DDR2 SODIMM socket support DDR2 533 up to 2 GB, built-in 1 GB  
**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-150 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 pin 9 signal can be selected 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, 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:** 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 5 VDC

**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. 20 mA per channel

**On-state Voltage:** 24 VDC nominal

**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:** 10M/Link x 2, 100M/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)

**Operating Humidity:** 5 to 95% RH

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

**Anti-vibration:** EN50155 standard

**Anti-shock:** EN50155 standard

### 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

### Regulatory Approvals

**EMC:** CE, FCC, CCC, EN50155

**Safety:** UL/cUL, LVD, CCC

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

## Software Specifications

### Linux

**Distribution:** Debian Etch 5.0

**Kernel Version:** 2.6.26

**Protocol Stack:** TCP, UDP, IPv4, SNMP V1, ICMP, ARP, HTTP, CHAP, PAP, SSH 1.0/2.0, SSL, DHCP, NTP, NFS, Telnet, FTP, PPP, PPPoE

**File System:** EXT2

**System Utilities:** bash, busybox, login, telnet, ftp, ssh, openssh-inetd, apt, apt-utils, dpkg, grub, udev

**telnetd:** telnet Server daemon

**ftpd:** FTP server daemon

**sshd:** secure shell server

**Apache:** web server daemon, supporting PHP and XML

**openvpn:** virtual private network service manager

**iptables:** Firewall service manager

**NAT:** Network Address Translation

**pppd:** dial in/out over serial port daemon & PPPoE

**pppoe:** PPP over ethernet

**ftftp/ftpd:** Trivial file transfer protocol client/server

**snmpd:** snmpd agent daemon

**usbmount:** supports USB PnP

**DHCP Client:** dhcp3-client

**cron:** to manage regular background processing

**grep:** GNU grep, egrep, and fgrep

**minicom:** friendly serial communication program

**watchdog:** software watchdog

**inetd:** TCP server manager program

**Application Development Environment:** GNU Make 3.8.1 (GNU make utility to maintain groups of programs)

**Automatic Configuration Script Builder:** autoconf 2.13

**gcc:** GNU C compiler

**g++:** GNU C++ compiler

**libc6-dev:** GNU C library (development libraries and headers)

**Perl:** Practical Extraction and Report Language

**Vim:** Vi Improved (enhanced vi editor)

### Windows XP Embedded

**Version:** Windows Embedded Standard 2009

**File System:** NTFS

**Protocol Stack:** DHCP, IPv4, DNS, IPsec, HTTP, TCP, UDP, ICMP, IGMP, ARP, TAPI, TSP, SNMP V2, NTP, ICS, PPP, CHAP, EAP, SNTP, Telnet, FTP, SMTP, PPPoE, PPTP, NetBIOS, remote Desktop Protocol 6.1

**Telnet Server:** Allows users to connect to Telnet servers from remote computers.

**IIS Web Server:** Allows you to create and manage Web sites.

**Terminal Server:** Microsoft Terminal Server client application (mstsc.exe).

**COM+ Services:** The next evolution of Microsoft Component Object Model (COM) and Microsoft Transaction Server (MTS).

**Computer Browser Service:** Computer browsing functionality exposed by Windows through Microsoft Networking. Allows a client machine to browse its network neighborhood for available computers exposing file and print sharing services.

**Internet Explorer 7:** The Internet Explorer Web browser that allows customers to connect to the Internet or to an intranet (see properties via inetctl.cpl)

**Windows Media Player 11:** Playback functionality for digital media that includes videos, CDs, and DVDs for end users and developers.

**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.

**Disk Management Services:** Support for disk and volume management operations. The component implements a Component Object Model (COM) interface that can be used to query and configure disks and volumes, both basic and dynamic. The component also monitors disk arrivals and removals and other changes in the storage subsystem.

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

**Watchdog:** A hardware function to reset CPU in a user specified time interval (triggered by calling a MOXA library function).

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

### Application Development Software:

- Microsoft .Net Framework 3.5 (CLR and the .NET Framework class library)
- Active Directory Service Interface (ADSI) Core
- Active Template Library (ATL), ASP.NET 2.0
- Certificate Request Client & Certificate Autoenrollment
- Common Control Libraries
- Common File Dialogs
- Direct3D, DirectPlay, DirectShow and Direct show filters
- Distributed Transaction Coordinator (MSDTC)
- Event Log, Internet Explorer
- Mapi32 Libraries
- Message Queuing (MSMQ) Core
- Microsoft Visual C++ Run Time Libraries
- Power Management dynamic-link library
- Registry Editor
- Registry Filter
- RPC
- Smart Card Cryptographic Service Providers
- USB 2.0 core drivers compliant with USB .95 or 1.0
- Windows API, Script Engines, and WMI
- XML paper specification

## 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 (11n)

**EPM-3438:** 8+8 DI/DO with 3 KV digital isolation protection, 3 KHz counter

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

**EPM-DK01-MPCI:** 1-slot mini PCI expansion adaptor with antenna connector (coming soon)

**EPM-DK01-MPCIE:** 1-slot PCI Express expansion adaptor with antenna connector (coming soon)

### 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

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

### Package Checklist

- V2422 embedded computer
- Terminal block to power jack converter
- PS2 to KB/MS Y-type cable
- Document and Software CD or DVD
- Quick Installation Guide (printed)
- Product Warranty Statement (printed)