

# V2406 Series

**x86 ready-to-run embedded computer with Intel Atom N270 CPU, VGA, DVI-I, audio, 2 Ethernet LAN ports, 4 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 1 CompactFlash slot**



- > Intel Atom N270 1.6 GHz processor
- > Up to 2 GB DDR2 533 SO-DIMM RAM
- > Dual independent displays (VGA + DVI-I)
- > 2 M12 Fast Ethernet ports, 10/100 Mbps
- > 3 USB 2.0 ports for high speed peripherals
- > 6 Digital Inputs, 2 Digital Outputs
- > 1 CompactFlash slot for storage expansion
- > 1 internal SATA-II storage drive bus
- > M12 power connector
- > Compliant with EN 50121-4 and a portion of EN 50155 specifications
- > Ready-to-run Debian Linux 5.0, Windows Embedded Standard 2009, or Windows Embedded Standard 7 platform
- > -40° to 70°C wide temperature models available
- > 4 RS-232/422/485 serial ports (non-standard baudrates supported)



## Overview

The V2406 Series embedded computers are based on the Intel Atom N270 x86 processor, and feature 4 RS-232/422/485 serial ports, dual LAN ports, and 3 USB 2.0 ports. V2406 computers provide VGA and DVI-I outputs, and in addition are 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.

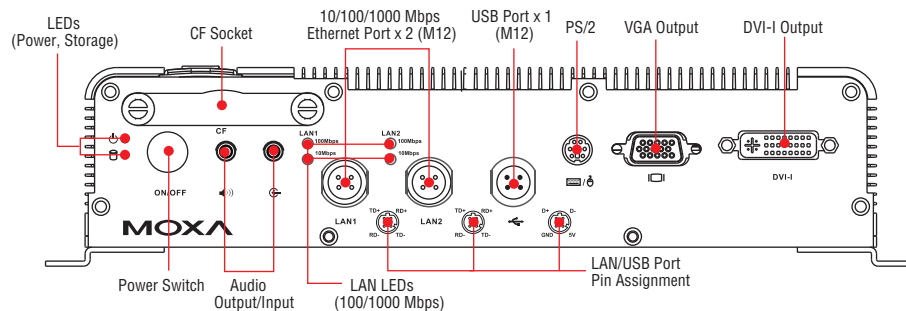
The dual 10/100 Mbps Ethernet ports with M12 connectors offer a reliable solution for network redundancy, promising continuous operation for data communication and management. As an added

convenience, the V2406 computers have 6 DIs and 2 DOs for connecting digital input/output devices, and the CompactFlash feature provides the reliability needed for industrial applications that require data buffering and storage expansion.

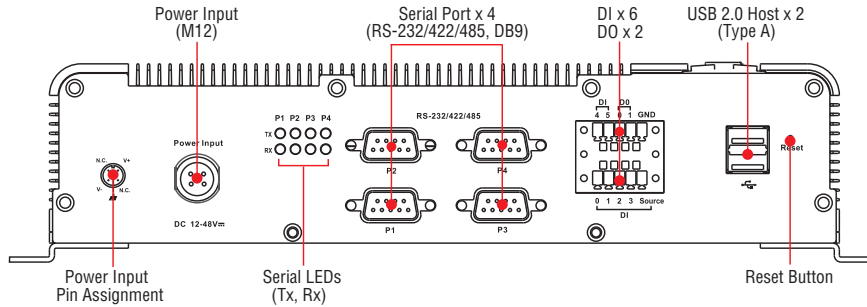
Pre-installed with a customized version of Debian Linux 5.0 ("Lenny"), Windows Embedded Standard 2009, or Windows Embedded Standard 7, the V2406 Series provides programmers with a friendly environment for developing sophisticated, bug-free application software at a low cost. Wide temperature models of the V2406 Series that operate reliably in a -40 to 70°C operating temperature range are also available, offering an optimal solution for applications subjected to harsh environments.

## Appearance

Front View



**Rear View**



**Hardware Specifications**

**Computer**

**CPU:** Intel Atom N270 1.6 GHz processor  
**System Chipset:** Intel 945GSE + ICH7-M  
**BIOS:** 8 Mbit PLCC, with ACPI  
**FSB:** 533 MHz  
**System Memory:** 2 GB capacity, 1 GB (LX and XPE models)/2 GB (W7E models) pre-installed: 1 slot of 200 pin DDR2-533 SO-DIMM SDRAM  
**USB:** 3 bootable USB 2.0 ports: 2 type A, 1 M12  
**OS (pre-installed):** Debian 5 ("Lenny") Linux, Windows Embedded Standard 2009, or Windows Embedded Standard 7

**Storage**

**Built-in:** 2 GB (LX and XPE models)/8 GB (W7E models) onboard industrial DOM to store OS  
**Storage Expansion:** 1 type I/II CompactFlash slot for memory expansion  
**HDD Support:** 1 internal SATA-II bus for mass storage

**Other Peripherals**

**KB/MS:** 1 PS/2 interface; supports keyboard and mouse via a Y cable  
**Audio:** Line-in, line-out interface

**Display**

**Graphics Controller:** Intel Generation 3.5 Integrated Graphics Engine, 250 MHz core render clock and 200 MHz core display clock at 1.05-V core voltage

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

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

**Ethernet Interface**

**LAN:** 2 auto-sensing 10/100 Mbps M12 ports

**Serial Interface**

**Serial Standards:**

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

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

**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:** 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-fastened Euroblock terminal (6 inputs, 2 outputs, DI Source, GND)

**Isolation:** 3 kV optical isolation

**LEDs**

**System:** Power, Storage

**LAN:** 2 on each port: 10 Mbps & 100 Mbps

**Serial:** 2 on each serial port: 1 Tx & 1 Rx

**Switches and Buttons**

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

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

**Physical Characteristics**

**Housing:** Aluminum

**Weight:** 2 kg

**Dimensions:**

Without ears: 250 x 57 x 154 mm (9.84 x 2.24 x 6.06 in)

With ears: 275 x 63 x 154 mm (10.83 x 2.48 x 6.06 in)

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

**Environmental Limits**

**Operating Temperature:**

Standard models: -25 to 60°C (-13 to 140°F)

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

**Storage Temperature:** -40 to 85°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:** 12 to 48 VDC (M12 connector)

**Note:** Compliant with EN 50155 on 24 VDC

**Power Consumption:** 26 W

• 2.16 A @ 12 VDC

• 1.08 A @ 24 VDC

• 542 mA @ 48 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

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

**Rail Traffic:** EN 50155\*, EN 50121-3-2, 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:** Software-programmable watchdog timer configurable from 1 to 255 seconds

**MTBF (mean time between failures):** 230,723 hrs

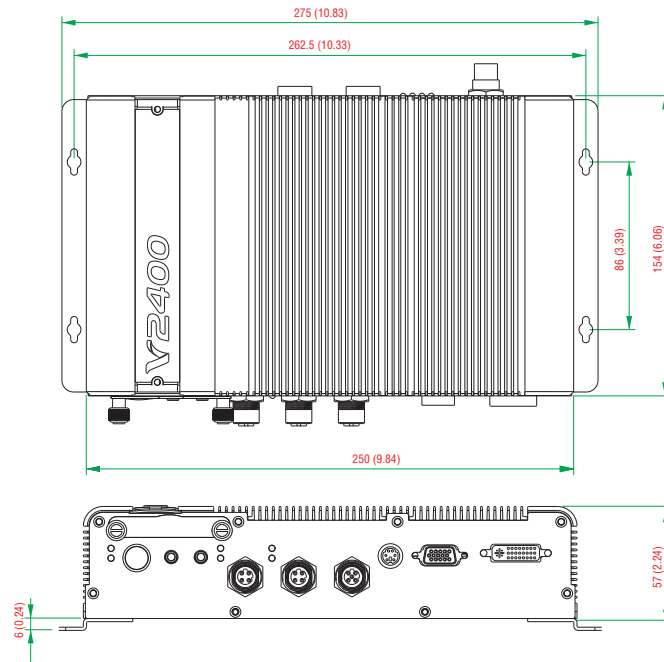
## Warranty

**Warranty Period:** 3 years

**Details:** See [www.moxa.com/warranty](http://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 adaptors and cables.

## Dimensions



Unit: mm (inch)

## Software Specifications

### Linux

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

**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, Moxa DI/DO API)
- GNU C/C++ compiler
- GNU C library
- Perl

### Windows Embedded Standard 7

#### Core OS:

- 32-bit support
- Remote Client
- Remote Procedure Call

#### Applications and Services Development:

- .Net Framework 3.5
- Remote Desktop Protocol 7.1
- COM OLE Application Support
- COM+ Application Support
- MSMQ

#### Internet Services:

- Internet Explorer 8.0
- IIS 7.0

#### Diagnostics:

- Common Diagnostic Tools
- Problem Reports and Solutions

**Fonts:** Chinese (Trad. and Simp.), Japanese, Korean, Western, Middle Eastern, South East Asian, and South Asian 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 Store:**

- Windows Data Access Components
- Windows Backup and Restore

**Windows XP Embedded**

**OS:** Windows Embedded Standard 2009 SP3

**File System:** NTFS

**Internet Protocol Suite:** DHCP, DNS, FTP, HTTP, SNMP, 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:** Silverlight is a powerful development tool for creating engaging, interactive user experiences for Web and mobile applications using the .NET framework.

**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 up to 60 seconds (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 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**

**V2406-XPE:** x86 ready-to-run embedded computer with Intel Atom N270 CPU, VGA, DVI-I, audio, 2 Ethernet LAN ports, 4 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 1 CompactFlash slot, Windows Embedded Standard 2009, -25 to 60°C operating temperature (EN 50155 Class T1)

**V2406-LX:** x86 ready-to-run embedded computer with Intel Atom N270 CPU, VGA, DVI-I, audio, 2 Ethernet LAN ports, 4 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 1 CompactFlash slot, Debian Linux 5.0 “Lenny”, -25 to 60°C operating temperature (EN 50155 Class T1)

**V2406-W7E:** x86 ready-to-run embedded computer with Intel Atom N270 CPU, VGA, DVI-I, audio, 2 Ethernet LAN ports, 4 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 1 CompactFlash slot, Windows Embedded Standard 7, -25 to 60°C operating temperature (EN 50155 Class T1)

**V2406-T-XPE:** x86 ready-to-run embedded computer with Intel Atom N270 CPU, VGA, DVI-I, audio, 2 Ethernet LAN ports, 4 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 1 CompactFlash slot, Windows Embedded Standard 2009, -40 to 70°C operating temperature (EN 50155 Class TX)

**V2406-T-LX:** x86 ready-to-run embedded computer with Intel Atom N270 CPU, VGA, DVI-I, audio, 2 Ethernet LAN ports, 4 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 1 CompactFlash slot, Debian Linux 5.0 “Lenny”, -40 to 70°C operating temperature (EN 50155 Class TX)

**V2406-T-W7E:** x86 ready-to-run embedded computer with Intel Atom N270 CPU, VGA, DVI-I, audio, 2 Ethernet LAN ports, 4 serial ports, 6 DIs, 2 DOs, 3 USB 2.0 ports, 1 CompactFlash slot, Windows Embedded Standard 7, -40 to 70°C operating temperature (EN 50155 Class TX)

*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

**FK-75125-02:** Hard disk installation package (for HDD, SSD, EN 50155)

**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

**M12D-4P-IP68:** Field-installation D-coded screw-in Ethernet connector, 4-pin male M12 connector, IP68-rated

**M12A-5PMM-IP68:** D-coded screw-in USB connector, 5-pin male 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-M12D(MM4P)/RJ45-100 IP67:** 1-meter D-coded M12-to-RJ45 Cat-5C UTP Ethernet cable, 4-pin male M12 connector, IP67-rated

**Package Checklist**

- V2406 embedded computer
- PS2 to KB/MS Y-type cable
- Documentation and software CD or DVD
- Quick installation guide (printed)
- Warranty card
- Wall mounting kit