V2401/2402 Series

x86 ready-to-run embedded computers with Intel Atom N270, VGA, DVI, LVDS, audio, 2 LANs, 12 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CompactFlash

> Intel Atom N270 1.6 GHz processor
> DDR2 SO-DIMM socket supporting DDR2 533 up to 2 GB (max.)
> Dual independent displays (VGA, DVI, LVDS)
> 2 Gigabit Ethernet ports
> 4 RS-232/422/485 serial ports (non-standard baudrates supported)
> 8 RS-232 serial ports
> 6 USB 2.0 ports for high speed peripherals
> 4 DIs, 4 DOs
> CompactFlash socket for storage expansion
> Ready-to-run Embedded Linux, Windows CE 6.0, or Windows Embedded Standard 2009 platform
> -40° to 70°C operating temperature for harsh environment (V2402-T models only)

e Mark

Windows® Embedded | CCC | e | RoHS | c UL us LISTED | CE | FC

: Overview

The V2401/2402 Series embedded computers are based on the Intel Atom N270 x86 processor, and feature 4 RS-232/422/485 serial ports, 8 RS-232 serial ports, dual Gigabit LAN ports, 6 USB 2.0 hosts, and a CompactFlash socket. The V2401 computer provides VGA, DVI, and LVDS outputs, and the V2402 computer provides both VGA and DVI outputs, making them particularly well-suited for industrial applications such as SCADA and factory automation.

The V2401 and V2402 come with 4 RS-232/422/485 serial ports, and the V2401 has an additional 8 RS-232 ports, making them ideal for connecting a wide range of serial devices, and the dual 10/100/1000 Mbps Ethernet ports offer a reliable solution for network redundancy,
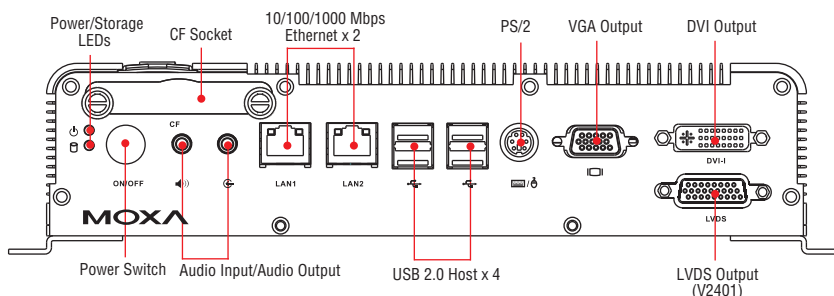
promising continuous operation for data communication and management. As an added convenience, the V2401/2402 computers have 4 DIs, and 4 DOs for connecting digital input/output devices. In addition, the CompactFlash and USB sockets provide the V2401/2402 computers with the reliability needed for industrial applications that require data buffering and storage expansion.

Pre-installed with Linux, Windows CE 6.0, or Windows Embedded Standard 2009, the V2401/2402 Series provides programmers with a friendly environment for developing sophisticated, bug-free application software at a low cost.
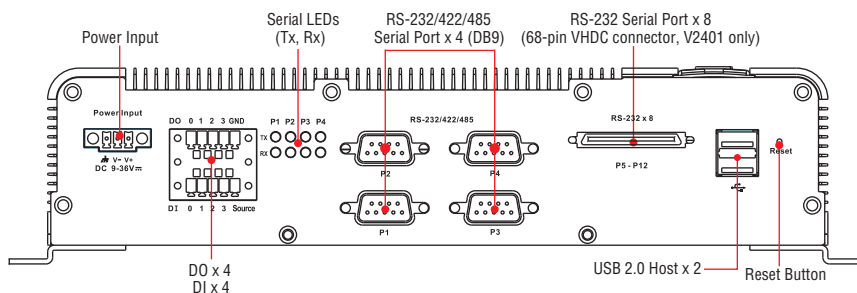
In addition, the V2402 series also offers -40 to 70°C wide temperature models for harsh environments.

: Appearance

Front View

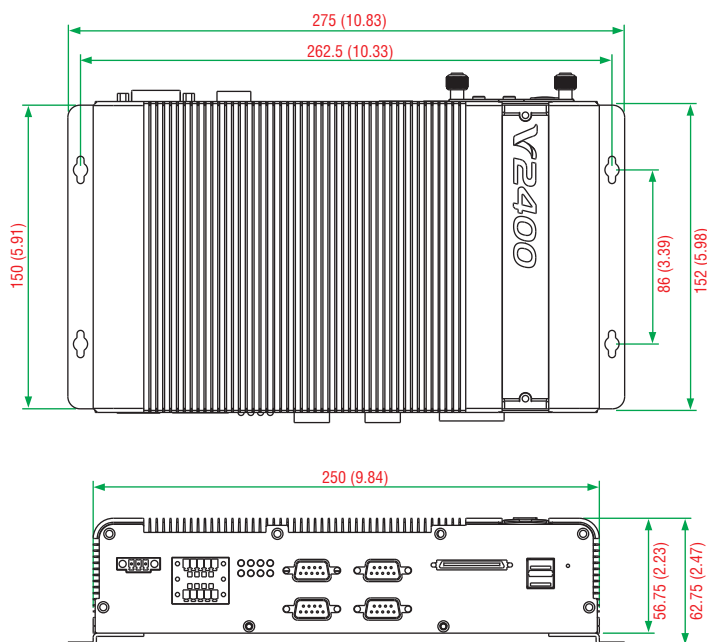Power/Storage LEDs | CF Socket | 10/100/1000 Mbps Ethernet x 2 | PS/2 | VGA Output | DVI Output
Power Switch | Audio Input/Audio Output | USB 2.0 Host x 4 | LVDS Output (V2401)

MOXA®   www.ipc2u.ru   wwww.moxa-net.ru   www.moxatech.ru   Date: 01/2015 Rev.01

Rear View

Power Input

Serial LEDs
(Tx, Rx)

RS-232/422/485
Serial Port x 4 (DB9)

RS-232 Serial Port x 8
(68-pin VHDC connector, V2401 only)

Power Input

DO 0 1 2 3 GND   P1 P2 P3 P4

V+ V+
DC 9-36V

TX
RX

RS-232/422/485

RS-232 x 8

P2

P4

P5 - P12

Reset

P1

P3

DI 0 1 2 3 Source

DO x 4
DI x 4

USB 2.0 Host x 2

Reset Button

Dimensions

Unit: mm (inch)

275 (10.83)

262.5 (10.33)

150 (5.91)

86 (3.39)

152 (5.98)

250 (9.84)

56.75 (2.23)

62.75 (2.47)

Hardware Specifications

Computer
CPU: Intel Atom N270 1.6 GHz processor
OS (pre-installed): Linux, Windows CE 6.0 or Windows Embedded Standard 2009
System Chipset: Intel 945GSE + ICH7-M
BIOS: 8 Mbit Flash BIOS, SPI type, ACPI function supported
FSB: 400/533 MHz
System Memory: 2 GB capacity, 1 GB pre-installed: 1 x 2 GB DDR2-533 200 pin SO-DIMM SDRAM slot
USB: USB 2.0 compliant hosts x 6, type A connector, 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 socket with DMA mode
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: HD audio, with line-in and line-out interface

Display
Graphics Controller: Intel Gen 2.5 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
LVDS Interface: Onboard HIROSE DF13-40DP-1.25 V connector (V2401 only)
DVI Interface: DVI-connector (chrontel CH7307 SDVO to DVI transmitter)

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

Serial Interface
Serial Standards:
• V2401/2402: 4 RS-232/422/485 ports*, software selectable (DB9 male connector)
• V2401 only: 8 RS-232 ports (68-pin VHDC connector)
*COM1's pin 9 signal can be set by jumper as N/C (default), +5 V, or +12 V
ESD Protection: 4 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 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

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 (on connector)

Switches and Buttons
Power Switch: on/off (front panel)
Reset Button: For warm reboot (rear panel)

Physical Characteristics
Housing: Aluminum
Weight:
• V2401: 2.1 kg
• V2402: 2 kg
Dimensions:
Without ears: 250 x 57 x 152 mm (9.84 x 2.24 x 5.98 in)
With ears: 275 x 63 x 152 mm (10.83 x 2.48 x 5.98 in)
Mounting: DIN rail, wall, VESA

Environmental Limits
Operating Temperature:
• Standard models: -10 to 60°C (14 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: 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: 26 W (without LVDS output)
2.9 A @ 9 VDC
1.08 A @ 24 VDC
720 mA @ 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):
V2401: 238,762 hrs
V2402: 228,172 hrs

Warranty
Warranty Period: 3 years
Details: See 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, 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, SNTP, 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

Windows Embedded CE 6.0
OS: Windows Embedded CE 6.0 R3
File System: FAT (for on-board flash)
Internet Protocol Suite: TCP, UDP, IPv4, SNMPv2, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP
Web Server (WinCE IIS): Supports ASP, ISAPI Secure Socket Layer (SSL 2/3) and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions
Dial-up Networking: Supports RAS client API and PPP, Extensible

Authentication Protocol (EAP), and RAS scripting
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 WinCE 6.0 SDK
• Moxa API Library
• C Libraries and Run-times
• Component Services (COM and DCOM)
• Microsoft® .NET Compact Framework 2.0
• XML, including DOM, XQL, XPATH, XSLT, SAX, SAX2
• SOAP Toolkit Client
• Winsock 2.2

:: Ordering Information

Available Models
V2401-CE: x86 ready-to-run embedded computer with Intel Atom N270, VGA, LVDS, DVI, Audio, 2 LANs, 12 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CF, WinCE 6.0
V2401-XPE: x86 ready-to-run embedded computer with Intel Atom N270, VGA, LVDS, DVI, Audio, 2 LANs, 12 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CF, Windows Embedded Standard 2009
V2401-LX: x86 ready-to-run embedded computer with Intel Atom N270, VGA, LVDS, DVI, Audio, 2 LANs, 12 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CF, Linux 2.6
V2402-CE: x86 ready-to-run embedded computer with Intel Atom N270, VGA, DVI, Audio, 2 LANs, 4 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CF, WinCE 6.0
V2402-XPE: x86 ready-to-run embedded computer with Intel Atom N270, VGA, DVI, Audio, 2 LANs, 4 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CF, Windows Embedded Standard 2009, -10 to 60°C operating temperature
V2402-LX: x86 ready-to-run embedded computer with Intel Atom N270, VGA, DVI, Audio, 2 LANs, 4 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CF, Linux 2.6, -10 to 60°C operating temperature
V2402-T-XPE: x86 ready-to-run embedded computer with Intel Atom N270, VGA, DVI, Audio, 2 LANs, 4 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CF, Windows Embedded Standard 2009, -40 to 70°C operating temperature
V2402-T-LX: x86 ready-to-run embedded computer with Intel Atom N270, VGA, DVI, Audio, 2 LANs, 4 serial ports, 4 DIs, 4 DOs, 6 USB 2.0 ports, CF, Linux 2.6, -40 to 70°C operating temperature

Optional Accessories (can be purchased separately)
CBL-M68M9x8-100: 8-port RS-232 cable with VHDC connector
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
• V2401 or V2402 embedded computer
• Terminal block to power jack converter
• PS2 to KB/MS Y-type cable
• Wall mounting kit
• Documentation and software CD or DVD
• Quick installation guide (printed)
• Warranty card

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Compact/Fanless Computers > V2401/2402 Series