

# V2101 Series

**x86 ready-to-run embedded computers with Intel Atom Z510PT, VGA, LVDS, audio, 2 LANs, 2 serial ports, 3 DIs, 3 DOs, 4 USB 2.0 ports, SD**



- > Intel Atom Z510PT 1.1 GHz processor, 400 MHz FSB
- > DDR2 SODIMM socket supporting DDR2 400 up to 2 GB
- > Dual Independent Displays (VGA+ LVDS)
- > 2 Gigabit Ethernet ports
- > 4 USB 2.0 ports for high speed peripherals
- > 3 DIs, 3 DOs
- > 2 RS-232/422/485 ports
- > Built-in CompactFlash for storing OS
- > LED indicators for power, storage
- > Ready-to-run Embedded Linux, WinCE 6.0, or Windows Embedded Standard 2009 platform
- > -40 to 85°C wide operating temperature models available



## Overview

The V2101 embedded computers are based on the Intel Atom Z510PT x86 processor, and feature 2 serial ports, dual Gigabit LAN ports, 4 USB 2.0 hosts, and SD socket. The V2100 Series offers both VGA and LVDS outputs, making it particularly well-suited for industrial applications, such as SCADA and factory automation.

The V2101 computers' 2 serial ports make 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 V2101 computers have 3 DIs and 3 DOs for connecting digital input/output devices. In addition, the SD and

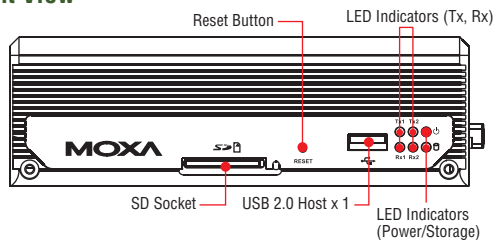
USB sockets provide the V2101 computers with the reliability needed for industrial applications that require data buffering and storage expansion.

Pre-installed with Linux, Windows CE 6.0, or Windows Embedded Standard 2009, the V2101 Series provides programmers with a friendly environment for developing sophisticated, bug-free application software at a lower cost.

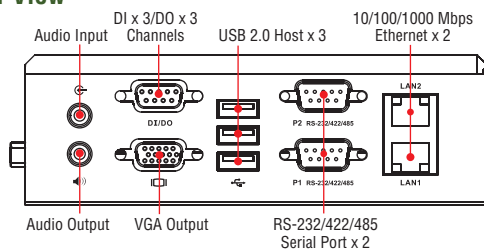
All V2101 models support a wide operating temperature range of -40 to 85°C for harsh industrial environments.

## Appearance

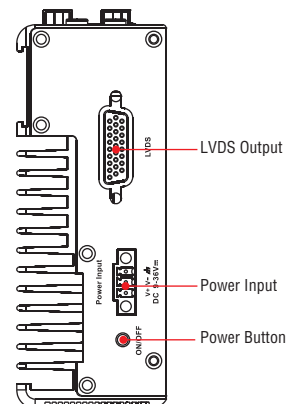
### Front View



### Rear View



### Side View



## Hardware Specifications

### Computer

**CPU:** Intel Atom Z510PT 1.1 GHz processor  
**OS (pre-installed):** Linux, Windows CE 6.0 or Windows Embedded Standard 2009  
**System Chipset:** Intel US15WPT  
**BIOS:** 8 Mbit Flash BIOS, ACPI function supported (XPe model only)  
**FSB:** 400 MHz  
**System Memory:** 2 GB capacity, 1 GB pre-installed: 1 x 2 GB DDR2-400 200 pin SO-DIMM SDRAM slot  
**USB:** USB 2.0 compliant hosts x 4, type A connector, supports system boot up

### Storage

**Built-in:** 2 GB CompactFlash to store OS  
**Storage Expansion:** SD socket for storage expansion

### Other Peripherals

**Audio:** AC97 audio, with line-in and line-out interface

### Display

**Graphics Controller:** Intel Graphics Media Accelerator, 500 Graphics, for 2D and 3D graphics  
**Video:** The Poulsbo XL SCH supports full hardware acceleration of video decode standards such as H.264, MPEG2, MPEG4, and WMV9.  
**SDVO:** Chrontel CH7317 for VGA output (1280 x 1024 @ 85 Hz)  
**VGA Interface:** DB15 female connector  
**LVDS Interface:** 18-bit or 24-bit single channel LVDS (1366 x 768 @ 85 Hz)

### Ethernet Interface

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

### Serial Interface

**Serial Standards:** 2 RS-232/422/485 ports, software selectable (DB9 male)

**ESD Protection:** 2 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

**Baudrate:** 50 bps to 115.2 Kbps

### 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:** 3, source type

**Input Voltage:** 0 to 30 VDC at 5 KHz

**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 (COM to DI)

**Connector Type:** DB9 female

### Digital Output

**Output Channels:** 3, sink type

**Output Current:** Max. 200 mA per channel

**Output Voltage:**

- Logic 0: 0-0.55 V
- Logic 1: 2.5-3.3 V

**On-state Voltage:** 24 VDC nominal, open collector to 30 V

**Connector Type:** DB9 female

### LEDs

**System:** Power, Storage

**LAN:** 100M/Link x 2, 1000M/Link x 2 (on connector)

**Serial:** Tx, Rx

### Switches and Buttons

**Power Switch:** on/off (side)

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

### Physical Characteristics

**Housing:** Aluminum

**Weight:** 940 g

**Dimensions:**

Without ears: 150 x 49 x 125 mm (5.91 x 1.93 x 4.92 in)

With ears: 178 x 52 x 125 mm (7.01 x 2.05 x 4.92 in)

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

### Environmental Limits

**Operating Temperature:** -40 to 85°C (-40 to 185°F)

**Storage Temperature:** -40 to 85°C (-40 to 185°F)

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

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

**Anti-shock:** 20 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:** (without LVDS output)

With no load on 4 USB ports:

- 1.88 A @ 9 VDC, 17 W
- 583 mA @ 24 VDC 14 W
- 422 mA @ 36 VDC 15 W

With full load on 4 USB ports:

- 3 A @ 9 VDC, 27 W
- 1 A @ 24 VDC, 24 W
- 700 mA @ 36 VDC, 25.2 W

### 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

**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):** 231,633 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.

## 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, 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
- 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 R2

**File System:** FAT (for on-board flash)

**Internet Protocol Suite:** TCP, UDP, IPv4, SNMPv2, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SMTP, 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

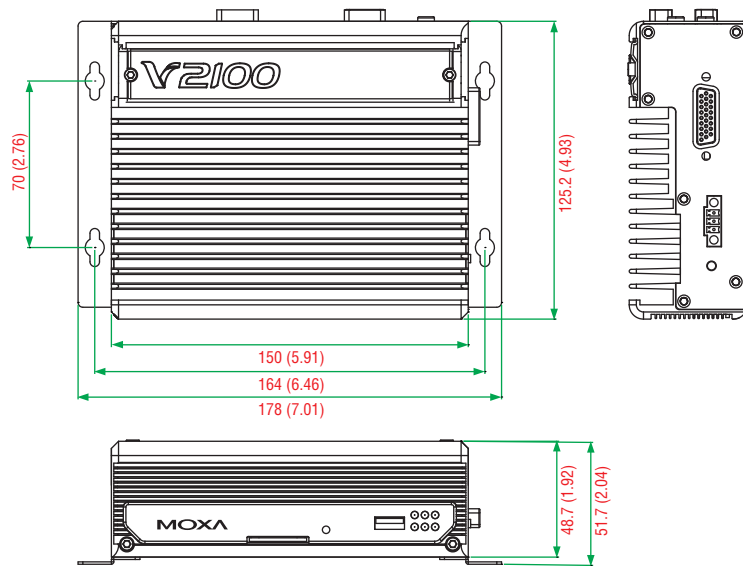
**Watchdog:** Features a hardware function to trigger system reset in a user specified time interval. (Moxa API provided)

**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 3.5
- XML, including DOM, XQL, XPATH, XSLT, SAX, SAX2
- SOAP Toolkit Client
- Winsock 2.2

## Dimensions

Unit: mm (inch)



## Ordering Information

### Available Models

**V2101-T-CE:** x86 ready-to-run embedded computer with Intel Atom Z510PT, VGA, LVDS, Audio, 2 LANs, 2 serial ports, 3 DIs, 3 DOs, 4 USB 2.0 ports, SD, WinCE 6.0, -40 to 85°C operating temperature

**V2101-T-XPE:** x86 ready-to-run embedded computer with Intel Atom Z510PT, VGA, LVDS,

Audio, 2 LANs, 2 serial ports, 3 DIs, 3 DOs, 4 USB 2.0 ports, SD, Windows Embedded Standard 2009, -40 to 85°C operating temperature

**V2101-T-LX:** x86 ready-to-run embedded computer with Intel Atom Z510PT, VGA, LVDS, Audio, 2 LANs, 2 serial ports, 3 DIs, 3 DOs, 4 USB 2.0 ports, SD, Linux 2.6, -40 to 85°C operating temperature

### 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

### Package Checklist

- V2101 embedded computer
- Terminal block to power jack converter
- DIN-Rail mounting kit
- Wall mounting kit
- Documentation and software CD or DVD
- Quick installation guide (printed)
- Warranty card