V2101 Series

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

-40°C | 85°C

> Intel Atom Z510PT 1.1 GHz processor, 400/533 MHz FSB
> DDR2 SODIMM socket, supports DDR2 400/533 up to 2 GB
> Dual Independent Displays (CRT + LVDS)
> 2 Gigabit Ethernet ports
> 4 USB 2.0 ports for high speed peripherals
> 3 DIs and 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

Microsoft® Windows® Embedded   CCC   RoHS   CE   FC   c UL us LISTED

: Overview

The V2101 embedded computers are based on the Intel Atom 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
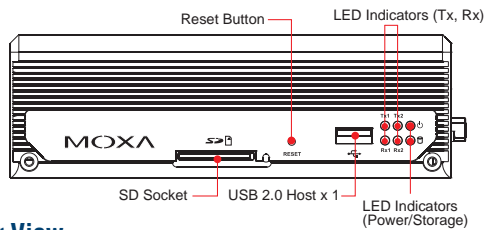
for connecting digital input/output devices. In addition, the SD and USB sockets provide the V2101 computers with the reliability needed for industrial applications that require data buffering and storage expansion.

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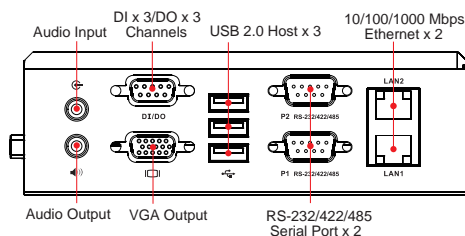
All V2101 models support a wide operating temperature range of -40 to 85°C for harsh industrial environments.
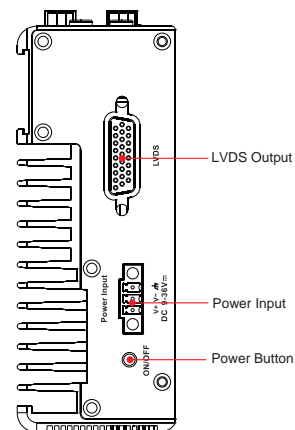
: Appearance

Front View

Reset Button
LED Indicators (Tx, Rx)
SD Socket
USB 2.0 Host x 1
LED Indicators (Power/Storage)

Rear View

Audio Input
DI x 3/DO x 3 Channels
USB 2.0 Host x 3
10/100/1000 Mbps Ethernet x 2
Audio Output
VGA Output
RS-232/422/485 Serial Port x 2

Side View

LVDS Output
Power Input
Power Button

⦂ 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: 4 Mbit Flash BIOS, PLCC type, ACPI function supported

FSB: 400/533 MHz

System Memory: 1 x 200-pin DDR2 SODIMM socket support DDR2 400/533 up to 2GB max, 1 GB built-in

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/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 CRT (1280 x 1024 @ 85 Hz)

CRT Interface: CRT Interface for VGA output (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, ADDC® (automatic data direction control) for RS-485

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)

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 126 mm (5.91 x 19.30 x 4.96 in)
With ears: 178 x 52 x 125 mm (7.01 x 2.05 x 49.21 in)

Mounting: DIN-Rail, wall, VESA

Environmental Limits

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

Operating Humidity: 5 to 95% RH

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

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 connecting LVDS panel)
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

Regulatory Approvals

EMC: CE (EN 55022 Class A, EN 61000-3-2 Class D, EN 61000-3-3, EN 55024), FCC (Part 15 Subpart B, CISPR 22 Class A, ANSI C63.4)

Safety: UL/cUL (UL 60950-1, CSA C22.2 No. 60950-1-07), LVD (EN 60950-1), 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

Note: The Hardware Specifications apply to the embedded computer unit itself, but not to accessories. In particular, the wide temperature specification does not apply to accessories such as the power adaptor and cables.

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⦂ Software Specifications

Linux

Distribution: Debian Lenny 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, openbsd-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

tftp/tftpd: 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: NU 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: Pratical Extraction and Report Language

Vim: Vi IMproved (enhanced vi editor)

Windows Embedded CE 6.0

Version: Windows Embedded CE 6.0 R2.

System Utilities: Windows command shell, telnet, ftp, web-based administration manager

File System: FAT (on-board flash)

Protocol Stack: TCP, UDP, IPv4, SNMP V2, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP

Telnet Server: Allows remote administration through a standard telnet client.

FTP Server: Used for transferring files to and from remote computer systems over a network.

File Server: Enables clients to access files and other resources over the network (Microsoft® Wincows® CE).

Web Server (httpd): Includes ASP, ISAPI Secure Socket Layer support, SSL 2, SSL 3, and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions.

Dial-up Networking Service: RAS client API and PPP, supporting Extensible Authentication Protocol (EAP) and RAS scripting.

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

Application Development Software:
• Moxa WinCE 6.0 SDK
• 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

Windows XP Embedded

Version: Windows Embedded Standard 2009

System Utilities: Windows command shell, Telnet, ftp, web-based administration manager, Wireless Zero Configuration

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 inetcpl.cpl)

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

Wi-Fi protected access 2: Enhances the Windows XP wireless client software with support for the new Wi-Fi Alliance certification for wireless security

Silverlight 1.1: 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.
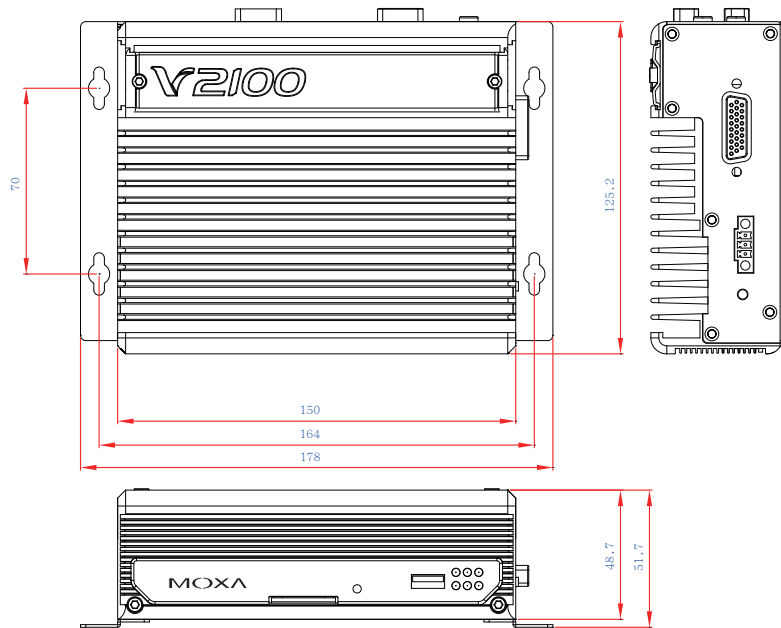
Watchdog: A hardware function to reset CPU in a user specified time interval (triggered by calling a MOXA library function).

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

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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 (CLR and the .NET Framework class library)
- COM APIs
- 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

Dimensions (unit = mm)

:: 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

Package Checklist
- V2101 Embedded Computer
- Terminal Block to Power Jack Converter
- DIN-Rail Mounting Kit
- Wall Mounting Kit
- Quick Installation Guide
- Document & Software CD or DVD
- Warranty Card