

W321/341 Series

RISC platform embedded Linux computers with WLAN, LAN, and 2 or 4 serial ports



W321

W341

- > MOXA ART ARM9 32-bit 192 MHz processor running Linux 2.6.38 kernel
- > 32 or 64 MB RAM, and 16 MB flash disk on board
- > 802.11b/g/n WLAN with repeater function
- > WEP, WPA, and WPA2 encryption
- > 10/100 Mbps Ethernet for network redundancy
- > Relay output for external alarm connection (W341 only)
- > 4 DIs, 4 DOs (W321 only)
- > SD socket for storage expansion
- > Mountable on walls or DIN rails
- > Designed to withstand continuous 5 g vibration and 50 g shocks
- > Robust, fanless design



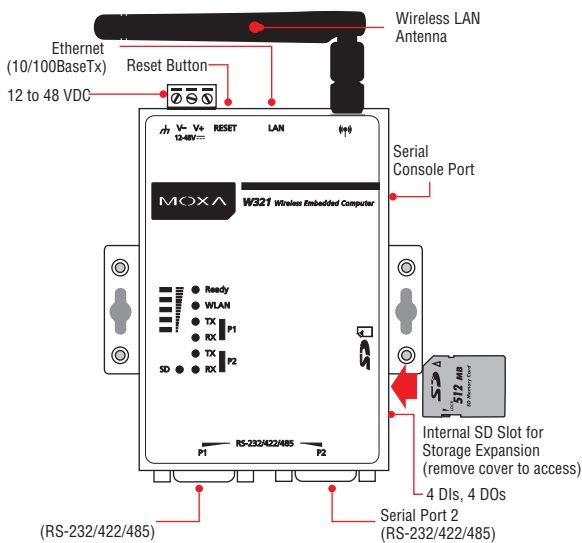
Overview

The W321/341 series of embedded Linux computers come in two models with either 2 or 4 software selectable RS-232/422/485 ports. These compact RISC platform computers feature Wi-Fi and an RJ45 Ethernet port. USB 2.0 hosts and SD sockets (for storage expansion) are available on some models. The W321/341 series' Linux OS runs

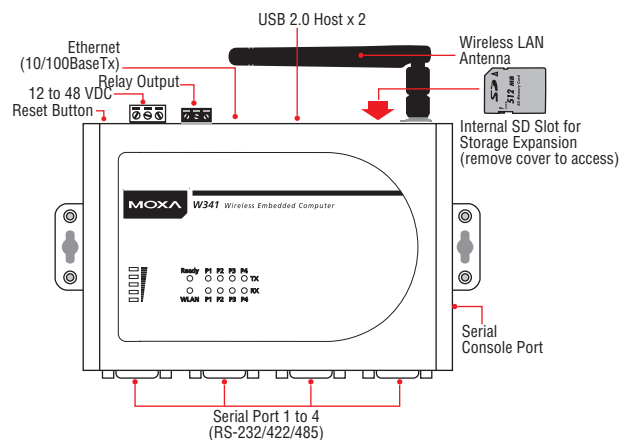
on Moxa's own ART 32-bit ARM9 processor, providing a powerful and reliable platform for harsh industrial environments. You will find these compact computers ideal for a variety of machine-to-machine applications, including data acquisition, protocol conversion, and remote device control and monitoring.

Appearance

W321



W341



Hardware Specifications

Computer

CPU: MOXA ART ARM9 32-bit 192 MHz

OS (pre-installed): Embedded Linux with MMU support

DRAM:

W321: 32 MB

W341: 64 MB

Flash: 16 MB

USB: (W341 only) USB 2.0 compliant hosts x 2, type A connector

Digital Input/Output: (W321 only)

Input Channel: 4, sink type

Input Voltage: -0.5 to 3.3 VDC

Digital Input Levels:

- Logic level 0: + 0.8 V max.
- Logic level 1: + 2 V min.

Connector Type: 2 x 5 pin header

Output Channel: 4, source type

Output Current: 50 mA

Digital Output Levels:

- Logic level 0: + 0 V
- Logic level 1: +3.3 V

Connector Type: 2 x 5 pin header

Relay Output: (W341 only)

- Form C, SPDT x 1
- Normal Switching Capacity: 2 A @ 30 VDC
- Switching Power: 60 W max.
- Switching Voltage: 220 VDC max.
- Switching Current: 2 A max.
- Operating Time: 4 ms @ 20°C
- Initial Contact Resistance: 100 milli-ohm max.

Storage

Storage Expansion: SD slot

Ethernet Interface

LAN: 1 auto-sensing 10/100 Mbps port (RJ45)

WLAN Interface

Standard Compliance: 802.11b/g/n

Radio Frequency Type: DSSS, CCK, OFDM

Media Access Protocol: CSMA/CA (Carrier Sense Multiple Access with Collision Avoidance)

Broadcast Frequency: 802.11 b/g/n ISM Band: 2.412~2.4835GHz

Modulation:

- 802.11b: DSSS (DBPSK, DQPSK, CCK)
- 802.11g: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)
- 802.11n: OFDM (BPSK, QPSK, 16-QAM, 64-QAM)

Transmission Rate:

- 802.11b: 11Mbps
- 802.11g: 54Mbps
- 802.11n HT20: 6.5Mbps to 65Mbps,
- 802.11n HT40: 13.5Mbps to 135Mbps

Output Power (1TX):

- 802.11b: 17dBm ± 2dBm@11Mbps
- 802.11g: 14dBm ± 2dBm@54Mbps
- 802.11n HT20: 14dBm ± 2dBm@MCS7
- 802.11n HT40: 13dBm ± 2dBm@MCS7

Rx Sensitivity (typical):

- 802.11b: -88dBm ± 2dBm@11Mbps
- 802.11g: -71Bm ± 2dBm@54Mbps
- 802.11n HT20: -69dBm ± 2dBm@MCS7
- 802.11n HT40: -66dBm ± 2dBm@MCS7

Antenna Connector: Reverse SMA

Antenna: External 2 dbi dipole antenna

Wireless Security: WEP: 64-bit/128-bit, WPA, WPA2 data encryption

WLAN Modes: Ad-hoc (802.11b/g/n), Infrastructure

Serial Interface

Serial Standards: 2 or 4 RS-232/422/485 ports, software-selectable (DB9 male)

Console Port: RS-232 interface (TxD, RxD, GND), with 4-pin pin header output

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

LEDs

System: Ready, SD

LAN: 10M/Link, 100M/Link (on connector)

WLAN: Enable, Signal Strength

Serial: TxD, RxD

Switches and Buttons

Reset Button: Supports "Reset to Factory Default"

Physical Characteristics

Housing: Aluminum (1 mm)

Weight:

W321: 185 g

W341: 390 g

Dimensions: (without ears or antenna)

W321: 77 x 111 x 26 mm (3.03 x 4.37 x 1.02 in)

W341: 150 x 100 x 38 mm (5.91 x 3.94 x 1.50 in)

Mounting: DIN rail (requires optional DK-35A DIN rail kit), wall

Environmental Limits

Operating Temperature: -10 to 60°C (14 to 140°F)

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

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

Anti-vibration: 5 g's @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis (without any USB devices attached)

Anti-shock: 50 g's @ IEC-68-2-6, half-sine wave, 30 ms

Power Requirements

Input Voltage:

12 to 48 VDC

Power Consumption:

W321: 5.2 W

- 216 mA @ 24 VDC

- 433 mA @ 12 VDC

W341:

With no load on USB ports: 5.2 W

- 216 mA @ 24 VDC

- 433 mA @ 12 VDC

With full load on USB ports: 11 W

- 458 mA @ 24 VDC

- 916 mA @ 12 VDC

Standards and Certifications

Safety: UL 60950-1, EN 60950-1

EMC: EN 55022 Class A, EN 61000-3-2, EN 61000-3-3, EN 55024

Radio: EN 301 489-1/17, EN 301 893, EN 300 328, EN 50392, FCC Part 15, Subpart C/E

Green Product: RoHS, CRoHS, WEEE

Reliability

Alert Tools: Built-in buzzer and RTC (real-time clock) with battery backup

Automatic Reboot Trigger: Built-in WDT (watchdog timer) supporting 1-255 level time interval system reset, software programmable

MTBF (mean time between failures):

W321: 367,253 hrs
W341: 284,702 hrs

Warranty

Warranty Period: 5 years
Details: See www.moxa.com/warranty

Software Specifications

Linux

OS: Linux 2.6.38
File System: JFFS2 (for on-board flash)
Internet Protocol Suite: TCP, UDP, IPv4, SNMPv1, ICMP, ARP, HTTP, CHAP, PAP, SSH 1.0/2.0, SSL, DHCP, NTP, NFS, Telnet, FTP, TFTP, PPP, PPPoE
Internet Security: OpenVPN, iptables firewall
Terminal Server (SSH): Provides secure encrypted communications between two un-trusted hosts over an insecure network.
Dial-up Networking: PPP Daemon for Linux 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).

Watchdog: Features a software function to trigger system reset in a user specified time interval. (MOXA API provided)

Application Development:

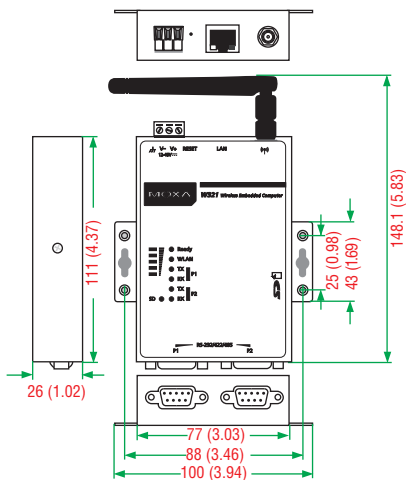
- Moxa API Library (Watchdog timer, Moxa serial I/O control, Moxa DI/DO API)
- GNU C/C++ Cross-Compiler
- GNU C library
- GDB source-level debugging server

Software Protection: Encryption tool for user executable files (based on patented Moxa technology)

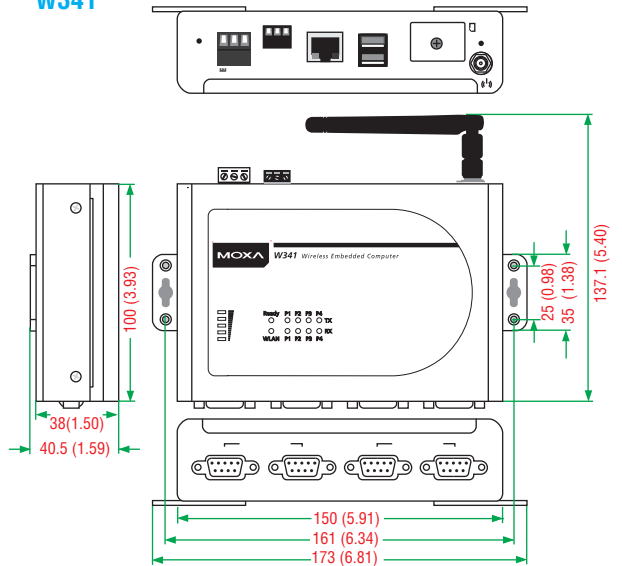
| Model Name | Serial Ports | LAN Port | WLAN | Cellular | Digital Relays | Storage | | OS |
|------------|----------------|-------------|-------------|--------------------|----------------|---------|-----|-------|
| | RS-232/422/485 | 10/100 Mbps | 802.11b/g/n | GSM/GPRS Quad Band | | SD | USB | |
| W321 | 2 | 1 | ✓ | – | 4 in / 4 out | ✓ | – | Linux |
| W341 | 4 | 1 | ✓ | – | 1 | ✓ | 2 | Linux |

Dimensions

W321



W341



Unit: mm (inch)

Ordering Information

Available Models

W321-LX: Wireless RISC platform embedded computer with WLAN, 2 serial ports, 4 DIs, 4 DOs, LAN, and SD

W341-LX: Wireless RISC platform embedded computer with WLAN, 4 serial ports, LAN, SD, USB, and relay output

Optional Accessories (can be purchased separately)

DK-35A: Mounting kit for 35 mm DIN rail

Package Checklist

- 1 W321 or W341 computer
- Wall mounting kit
- Ethernet cable: RJ45 to RJ45 cross-over cable, 100 cm
- CBL-4PINDB9F-100: 4-pin pin header to DB9 female console port cable, 100 cm
- WLAN Antenna
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card