W341

RISC-based embedded Linux computer with WLAN, LAN, 4 serial ports, SD, USB, Relay Output

> MOXA ART ARM9 32-bit 192 MHz processor running Linux 2.6
> 64 MB RAM, and 16 MB flash disk on board
> 802.11a/b/g WLAN with repeater function
> WEP, WPA, and WPA2 encryption
> 10/100 Mbps Ethernet for network redundancy
> Relay output for external alarm connection
> SD socket for storage expansion
> DIN-rail or wall-mount installation
> Designed to withstand 5 g’s of continuous vibration and 50-g shocks
> Robust, fan-less design

Overview

The 341 is an embedded Linux computer that features 4 software selectable RS-232/422/485 ports, and support the IEEE 802.1a/b/g standards for WLAN connections. In addition, the computers have 1 Ethernet port, and some models come with USB 2.0 hosts and an SD socket for storage expansion. The W341’s Linux OS runs on the MOXA ART 32-bit ARM9 processor, and provides a powerful and reliable platform for harsh, industrial environments. You will find these computers ideal for a variety of machine-to-machine applications, including data acquisition, protocol conversion, and remote device control and monitoring.

Appearance

Dimensions

Serial Port 1 to 4
(RS-232/422/485)

USB 2.0 Host x 2

Wireless LAN antena

Internal SD Slot for
Storage Expansion
(remove cover to access)

Ethernet
(RJ-45, 10/100 Base-TX)

12 to 48 VDC

Serial console port
**Hardware Specifications**

**Computer**
- **CPU:** MOXA ART ARM9 32-bit 192 MHz
- **OS (pre-installed):** Embedded Linux with MMU support
- **DRAM:** 64 MB
- **Flash:** 16 MB

**Storage**
- **Expansion:** SD socket

**Other Peripherals**
- **USB:** USB 2.0 compliant hosts x 2, type A connector, supports system boot up
- **Relay Output (W341 only):** Form C, SPDT x 1
- **Normal Switching Capacity:** 2A @30 VDC

**Wireless Interface**
- **Powering:** Switched Power: 60 W max.
- **Voltage:** 220 VDC max.
- **Current:** 2 A max.
- **Operating Time:** 4 ms @ 20°C
- **Contact Resistance:** 100 milli-ohm max.

**LAN Interface**
- **Ethernet:** Auto-sensing 10/100 Mbps, RJ45 connector
- **Radio Frequency Band:** 2.4-2.484 GHz

**Radio Frequency Type:**
- **Standard Compliance:** Auto-sensing 10/100 Mbps
- **Radio Frequency Band:** 802.11a: 5.15-5.25 GHz, 5.25-5.35 GHz, 5.725-5.825 GHz
- **Radio Frequency Type:** 802.11b: 11 Mbps @ 54 Mbps (max)
- **Radio Frequency Type:** 802.11g: 6 Mbps @ 64 Mbps, 12 Mbps @ 9 Mbps, 24 Mbps @ 3 Mbps

**Transmitter Power:**
- **Radio Frequency Band:** 802.11a: 5.15-5.25 GHz: 14 dBm @ 6 Mbps, 14 dBm @ 54 Mbps
- **Radio Frequency Band:** 802.11b: 11 Mbps @ 54 Mbps (max)
- **Radio Frequency Band:** 802.11g: 6 Mbps @ 64 Mbps, 12 Mbps @ 9 Mbps, 24 Mbps @ 3 Mbps
- **Radio Frequency Band:** 802.11n: 11 Mbps @ 54 Mbps (max)

**Transmission Rate:**
- **Baudrate:** 50 bps to 921,600 bps (RS-232/422/485 ports can select non-standard baudrates in this range)

**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 (RS-232/422/485 ports can select non-standard baudrates in this range)

**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:** OS Ready, SD Card Detection
- **LAN:** 10M/Link, 100M/Link (on connector)
- **WLAN:** Enable, Signal Strength
- **Serial:** TxD, RxD

**Switches and Buttons**
- **Buttons:** Reset button for resetting to factory defaults

**Physical Characteristics**
- **Housing:** Aluminum (1 mm)
- **Weight:** 390 g
- **Dimensions:** 150 x 100 x 38 mm (5.91 x 3.94 x 1.50 in)

**Power Requirements**
- **Input Voltage:** 12 to 48 VDC
- **Power Consumption:** 600 mA @ 12 VDC (no USB load), 1200 mA @ 12 VDC (with load on 2 USB ports)

**Environmental Limits**
- **Operating Temperature:** -10 to 60°C (14 to 140°F)
- **Operating Humidity:** 5 to 95% RH
- **Storage Temperature:** -20 to 80°C (~4 to 176°F)
- **Anti-Vibration:** 5 g’s @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis
- **Anti-Shock:** 50 g’s @ IEC-68-2-6, half-sine wave, 30 ms

**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

**Warranty**
- **Warranty Period:** 5 years
- **Details:** See www.moxa.com/warranty
Software Specifications

Linux
Kernel Version: 2.6.9
Boot Loader: Redboot
Protocol Stack: TCP, UDP, IPv4, SNMP V1, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSH 1.0/2.0, SSL, DHCP, NTP, NFS, SMTP, Telnet, FTP, PPP, PPPoE
File System: JFFS2 (on-board flash)
System Utilities: bash, busybox, tinylogin, telnet, ftp, scp
Supporting Services and Daemons:
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
pppd: dial in/out over serial port daemon & PPPoE
snmpd: snmpd agent daemon
inetd: TCP server manager program
Application Development Environment:
MOXA Linux API Library
Linux Tool Chain: Gcc, Glibc, GDB
BINEncryptor: Encryption tool for binary files; based on Moxa Intellectual Protection Technology (Patented)
Device Drivers:
UART, RTC, Buzzer, SD Card, USB (supports USB flash disk), Watchdog Timer, DO

H/W Block Diagram

Pin Assignment

<table>
<thead>
<tr>
<th>PIN</th>
<th>Male DB9</th>
<th>Serial Port 1</th>
<th>Serial Port 2</th>
<th>Serial Port 3</th>
<th>Serial Port 4</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DCD</td>
<td>TxD-(A)</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>2</td>
<td>RxO</td>
<td>TxD+(B)</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>3</td>
<td>TxO</td>
<td>RxO+(B)</td>
<td>Data+(B)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>4</td>
<td>DTR</td>
<td>RxO-(A)</td>
<td>Data-(A)</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>GND</td>
<td>GND</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>6</td>
<td>DSR</td>
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<tr>
<td>7</td>
<td>RTS</td>
<td>–</td>
<td>–</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>8</td>
<td>CTS</td>
<td>–</td>
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</tbody>
</table>

Ordering Information

Available Models
W341-LX: RISC-based wireless Linux computer with WLAN, 4 serial ports, LAN, SD, USB, and relay output

Package Checklist
- 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
- Universal power adaptor (including terminal block to power jack converter)
- WLAN Antenna
- Document and Software CD
- Quick Installation Guide (printed)
- Warranty Card