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 supports 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

<table>
<thead>
<tr>
<th>Feature</th>
<th>Specification</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dimensions (mm)</td>
<td>173, 161, 100</td>
</tr>
<tr>
<td>Dimensions (in)</td>
<td>6.81, 6.34, 3.93</td>
</tr>
<tr>
<td>Internal SD Slot</td>
<td>For storage expansion</td>
</tr>
<tr>
<td>Serial Port 1 to 4</td>
<td>RS-232/422/485</td>
</tr>
<tr>
<td>Ethernet Port</td>
<td>10/100 BaseTX</td>
</tr>
<tr>
<td>Power Supply</td>
<td>12 to 48 VDC</td>
</tr>
<tr>
<td>Wireless LAN antenna</td>
<td></td>
</tr>
<tr>
<td>USB 2.0 Host</td>
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</tr>
<tr>
<td>Relay Output</td>
<td>12-48V</td>
</tr>
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**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
  - 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

### LAN Interface
- **Ethernet:** Auto-sensing 10/100 Mbps, RJ45 connector
- **Magnetic Isolation Protection:** 15 KV built-in

### WLAN Interface
- **Standard Compliance:** 802.11a/b/g
- **Radio Frequency Type:** DSSS, CCK, OFDM
- **Radio Frequency Band:**
  - 802.11a: 5.15-5.25 GHz, 5.25-5.35 GHz, 5.725-5.825 GHz
  - 802.11b/g: 2.412-2.472 GHz
- **Media Access Protocol:** CSMA/CA (Carrier Sense Multiple Access with Collision Avoidance)
- **Tx Power (typical):**
  - 5.15-5.35 GHz: 14 dBm @ 6 Mbps, 15 dBm @ 54 Mbps
  - 5.725-5.825 GHz: 14 dBm @ 6 Mbps, 15 dBm @ 54 Mbps
- **Rx Sensitivity (typical):**
  - 5.15-5.35 GHz: 6 Mbps @ -98 dBm, 54 Mbps @ -67 dBm
  - 5.725-5.825 GHz: 6 Mbps @ -98 dBm, 54 Mbps @ -67 dBm
- **Transmission Rate:** 54 Mbps (max) with auto fallback (54, 48, 36, 24, 18, 12, 11, 9, 6, 5.5, 2, 1 Mbps)
- **Transmission Distance:** Up to 100 meters (@ 11 Mbps in open areas)
- **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), Infrastructure

### Serial Interface
- **Serial Standards:** RS-232/422/485 (software-selectable)
- **Number of Ports:** 4
- **Connector:** DB9 male
- **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:** Data+, Data-, 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 (without ears or antenna):** 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)
- **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

### 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)

### Regulatory Approvals
- **EMC:** CE (ETSI EN 301 489-1/-17, ETSI EN 301 893, ETSI EN 300 328, EN50392), FCC Part 15C & Part 15E
- **Safety:** UL/cUL (UL60950-1), TÜV (EN60950-1)
- **Directives:** RoHS, CRoHS, WEEE
- **MTBF:** 284,702 hrs

### 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>RS-232</th>
<th>RS-422/485-4w</th>
<th>RS-485-2w</th>
</tr>
</thead>
<tbody>
<tr>
<td>1</td>
<td>DCD</td>
<td>TxD-(A)</td>
<td>–</td>
</tr>
<tr>
<td>2</td>
<td>RxD</td>
<td>TxD+(B)</td>
<td>–</td>
</tr>
<tr>
<td>3</td>
<td>TxD</td>
<td>RxD+(B)</td>
<td>Data+(B)</td>
</tr>
<tr>
<td>4</td>
<td>DTR</td>
<td>RxD-(A)</td>
<td>Data-(A)</td>
</tr>
<tr>
<td>5</td>
<td>GND</td>
<td>GND</td>
<td>GND</td>
</tr>
<tr>
<td>6</td>
<td>DSR</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>7</td>
<td>RTS</td>
<td>–</td>
<td>–</td>
</tr>
<tr>
<td>8</td>
<td>CTS</td>
<td>–</td>
<td>–</td>
</tr>
</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