

# W406

**RISC-based wireless embedded computer with GSM/GPRS/EDGE, 4 DIs, 4 DOs, 2 serial ports, Ethernet, SD**



- > Cirrus Logic EP9302 32-bit ARM9 processor
- > On-board 32 MB RAM (maximum 64 MB)
- > Built-in 16 MB Flash (maximum 32 MB)
- > Built-in GSM/GPRS/EDGE cellular communication
- > GSM 850/900/1800/1900 MHz supported
- > GPRS/EDGE Class 12 supported
- > SMS tunnel mode provided
- > 4 DIs, 4 DOs
- > Two software selectable RS-232/422/485 serial ports
- > 50 bps to 921.6 Kbps, non-standard baudrates supported
- > 10/100M Ethernet for network redundancy
- > SD socket for storage expansion
- > WinCE 6.0 or Linux 2.6 platform
- > Din-Rail and Wall mount installation
- > Robust, fanless design
- > -40 to 70°C wide temperature models available



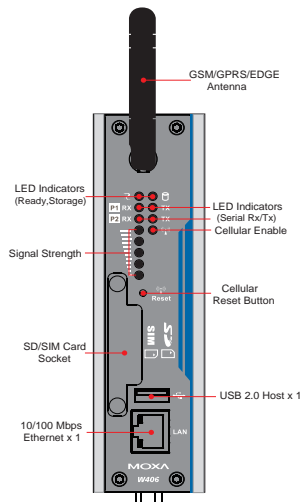
## Overview

The W406 is an embedded Linux or WinCE computer that features 2 software selectable RS-232/422/485 ports, 1 Ethernet port, and quad-band GSM/GPRS/EDGE 900/1800/850/1900 MHz for cellular communication. It also comes with an SD socket, USB host, and 4 digital input and 4 digital output channels, making it the ideal computer for a variety of industrial applications such as data acquisition, data

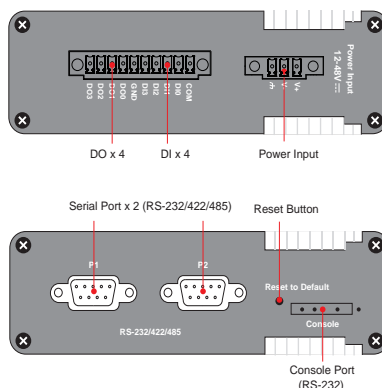
processing, protocol conversion, and remote device control and monitoring via wireless communication. The W406 comes pre-installed with either Linux or WinCE 6.0, and offers a reliable and powerful computing platform for industrial environments. Programmers will find that the W406 provides a convenient programming environment for producing bug-free industrial applications at a lower cost.

## Appearance

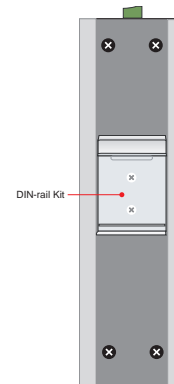
W406 Front View



W406 Top/Bottom View



W406 Rear View



## Hardware Specifications

### Computer

**CPU:** Cirrus Logic EP9302 ARM9 32-bit RISC CPU, 200 MHz

**OS (pre-installed):** WinCE 6.0/Embedded Linux with MMU support

**DRAM:** 32 MB

**Flash:** 16 MB

**USB:** USB 2.0 compliant hosts x 1, type A connector

### Storage

**Storage Expansion:** SD slot

### Ethernet Interface

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

**Magnetic Isolation Protection:** 1.5 KV built-in

### Cellular Interface

**Cellular Modes:** GSM, GPRS, EDGE

**Radio Frequency Bands:** 850/900/1800/1900 MHz

**GPRS Class:** 12

**EDGE Class:** 12

**Coding Schemes:** CS1 to CS4

### Serial Interface

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

**ESD Protection:** 15 KV ESD protection for all signals

**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

### Digital Input

**Input Channels:** 4, 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:** 10-pin screw terminal block (8 points, COM, GND)

**Isolation:** 3 KV optical isolation

### Digital Output

**Output Channels:** 4, sink type

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

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

**Connector Type:** 9-pin screw terminal block

**Isolation:** 3 KV optical isolation

### LEDs

**System:** Ready, Storage

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

**Cellular:** Cellular Enable, Signal Strength (5 LEDs)

**Serial:** TxD, RxD

### Switches and Buttons

**Reset Button:** Supports "Reset to Factory Default"

**Cellular Reset Button:** Supports cellular reset function

### Physical Characteristics

**Housing:** Aluminum (1 mm)

**Weight:** 1 kg

**Dimensions:** (without ears or antenna)

144 x 119 x 40 mm (5.7 x 4.7 x 1.6 in)

**Mounting:** DIN-rail, wall (requires optional wall mount kit)

**Antenna Length:** 85 mm

### Environmental Limits

**Operating Temperature:**

Standard Models: -10 to 60°C (14 to 140°F)

Wide Temp. Models: -40 to 70°C (-40 to 158°F)

**Operating Humidity:** 5 to 95% RH

**Storage Temperature:**

Standard Models: -20 to 80°C (-4 to 176°F)

Wide Temp. Models: -40 to 85°C (-40 to 185°F)

**Anti-Vibration:** 2 g @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis

**Anti-shock:**

• 6 g @ IEC-68-2-27, half sine wave, 11 ms (when attached to DIN-rail kit)

• 20 g @ IEC-68-2-27, half sine wave, 11 ms (when attached to optional wall mount kit)

### Power Requirements

**Input Voltage:** 12 to 48 VDC

**Power Consumption:**

With no load on USB ports: 7.2 W

• 300 mA @ 24 VDC

• 600 mA @ 12 VDC

With full load on USB ports: 14.4 W

• 600 mA @ 24 VDC

• 1200 mA @ 12 VDC

### Regulatory Approvals

**EMC:** FCC: Part 15, Part 24/24

**CE:** EN55022, EN55024

**R&TTE:** EN301 489-1, EN301 489-7, EN301 511

**Safety:** LVD: EN60950-1

**UL/cUL:** UL60950-1, CSA C22.2 No. 60950-1-03

**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)

### Warranty

**Warranty Period:** 5 years

**Details:** See [www.moxa.com/warranty](http://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.

## Software Specifications

### Linux

**Kernel Version:** 2.6.23

**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, pppd, openvpn, iptables

**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

**Device Drivers:**

UART, RTC, Buzzer, SD Card, USB (supports USB flash disk), DI/DO

**Software Encryption Lock:**

BINEncryptor: Encryption tool for binary files  
(based on patented Moxa technology)

### Windows Embedded CE 6.0

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

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

**Protocol Stack:** TCP, UDP, IPv4, SNMP, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, 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.

**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.

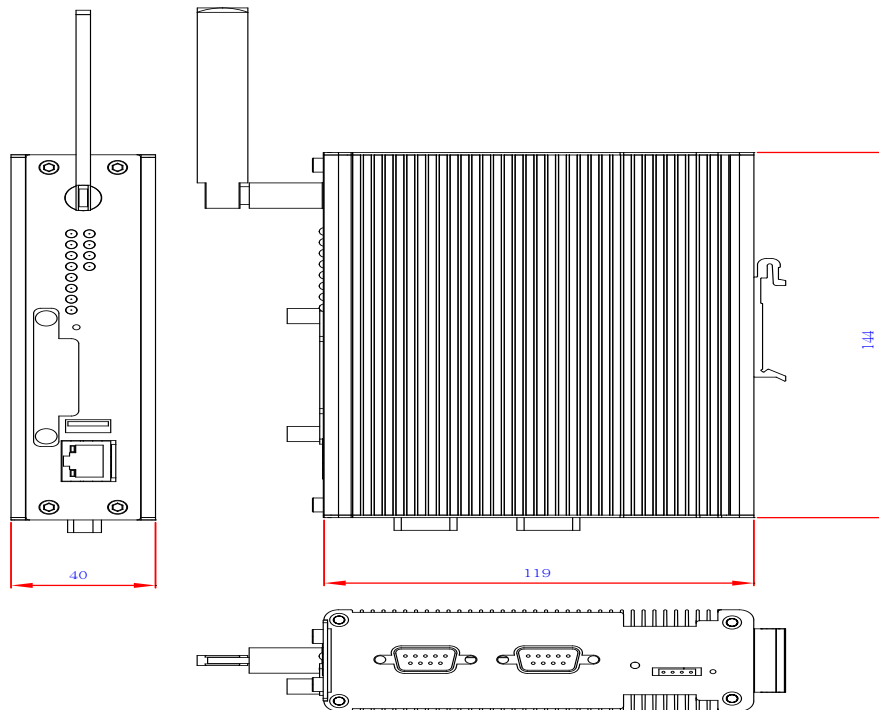
**Dial-up Networking Service:** RAS client API and PPP, supporting Extensible Authentication Protocol (EAP) and RAS scripting.

**Watchdog Server:** CPU hardware function for resetting the CPU in a user-specified time interval; activated by a Moxa library function

**Application Development Software:**

- Moxa WinCE 6.0 SDK
- C Libraries and Run-times
- Component Services (COM)
- Microsoft® .NET Compact Framework 2.0 with SP2
- XML, including XQL
- Winsock 2.2

## Dimensions



## : Ordering Information

### Available Models

**W406-LX:** RISC-based wireless embedded computer with GSM/GPRS/EDGE, 4 DI, 4 DO, 2 serial ports, Ethernet, SD, Linux 2.6 OS, -10 to 60°C operating temperature

**W406-CE:** RISC-based wireless embedded computer with GSM/GPRS/EDGE, 4 DI, 4 DO, 2 serial ports, Ethernet, SD, WinCE 6.0 OS, -10 to 60°C operating temperature

**W406-T-LX:** RISC-based wireless embedded computer with GSM/GPRS/EDGE, 4 DI, 4 DO, 2 serial ports, Ethernet, SD, Linux 2.6 OS, -40 to 70°C operating temperature

**W406-T-CE:** RISC-based wireless embedded computer with GSM/GPRS/EDGE, 4 DI, 4 DO, 2 serial ports, Ethernet, SD, WinCE 6.0 OS, -40 to 70°C operating temperature

### Package Checklist

- W406 computer
- Wall mounting kit (optional)
- 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)
- GSM/GPRS/EDGE Antenna
- Document and Software CD
- Quick Installation Guide (printed)
- Warranty Card