W406 Series

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
> 32 MB RAM on-board (maximum 64 MB)
> 16 MB Flash built in (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 or wall mount installation
> Robust, fanless design
> Wide temperature models available by request

Microsoft® Windows® Embedded · RoHS · c(UL)us LISTED · CE · FC

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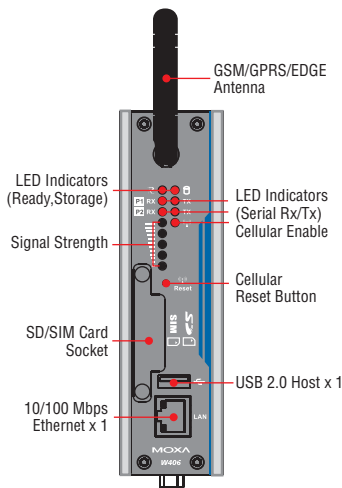**Wireless Computers** > W406 Series

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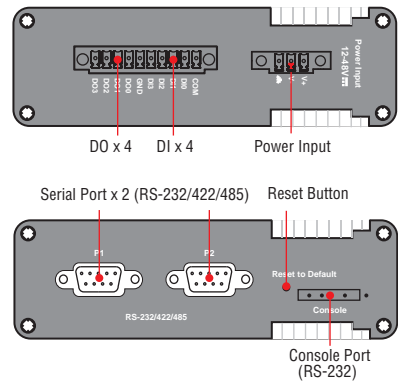
processing, protocol conversion, and remote device control and monitoring via wireless communication. The W406 comes pre-installed with either Linux or WinCE 6.0, and offers a reliable and powerful computing platform for industrial environments. Programmers will find that the W406 provides a convenient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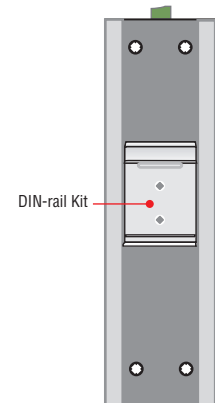
Appearance

W406 Front View

GSM/GPRS/EDGE Antenna
LED Indicators (Ready, Storage)
LED Indicators (Serial Rx/Tx)
Cellular Enable
Signal Strength
Cellular Reset Button
SD/SIM Card Socket
USB 2.0 Host x 1
10/100 Mbps Ethernet x 1

W406 Top/Bottom View

DO x 4   DI x 4   Power Input

Serial Port x 2 (RS-232/422/485)   Reset Button

P1   P2   Reset to Default

RS-232/422/485   Console

Console Port (RS-232)

W406 Rear View

DIN-rail Kit

⠿ 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 (64 MB max.)
Flash: 16 MB (16 MB max.)
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
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: 6-pin screw terminal block (4 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: 5-pin screw terminal block (4 points, GND)
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 (5.67 x 4.69 x 1.57 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: Available by request
Storage Temperature:
Standard Models: -20 to 80°C (-4 to 176°F)
Wide Temp. Models: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
Anti-vibration: 2 g's @ IEC-68-2-6, sine wave, 5-500 Hz, 1 Oct./min, 1 hr/axis
Anti-shock:
• 6 g's @ IEC-68-2-27, half sine wave, 11 ms (when attached to DIN-Rail kit)
• 20 g's @ 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

Standards and Certifications
Safety: EN 60950-1, CSA C22.2 No. 60950-1-03
EMC: EN 55022 Class B, EN 61000-3-2 Class A, EN 61000-3-3, EN 55024, FCC Part 15 Subpart B Class B
Radio: EN 301 489-1, EN 301 489-7, EN 301 511
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)
MTBF (mean time between failures): 170,162 hrs

Warranty
Warranty Period: 5 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.

: Software Specifications

Linux

OS: Linux 2.6.23

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

Web Server (Apache): Allows you to create and manage Web sites, supporting PHP and XML

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)

Windows Embedded CE 6.0

OS: Windows Embedded CE 6.0 R2

File System: FAT (for on-board flash)

Internet Protocol Suite: TCP, UDP, IPv4, SNMPv2, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP

Web Server (WinCE IIS): Supports ASP, ISAPI Secure Socket Layer (SSL 2/3) and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions

Dial-up Networking: Supports RAS client API and PPP, Extensible Authentication Protocol (EAP), and RAS scripting
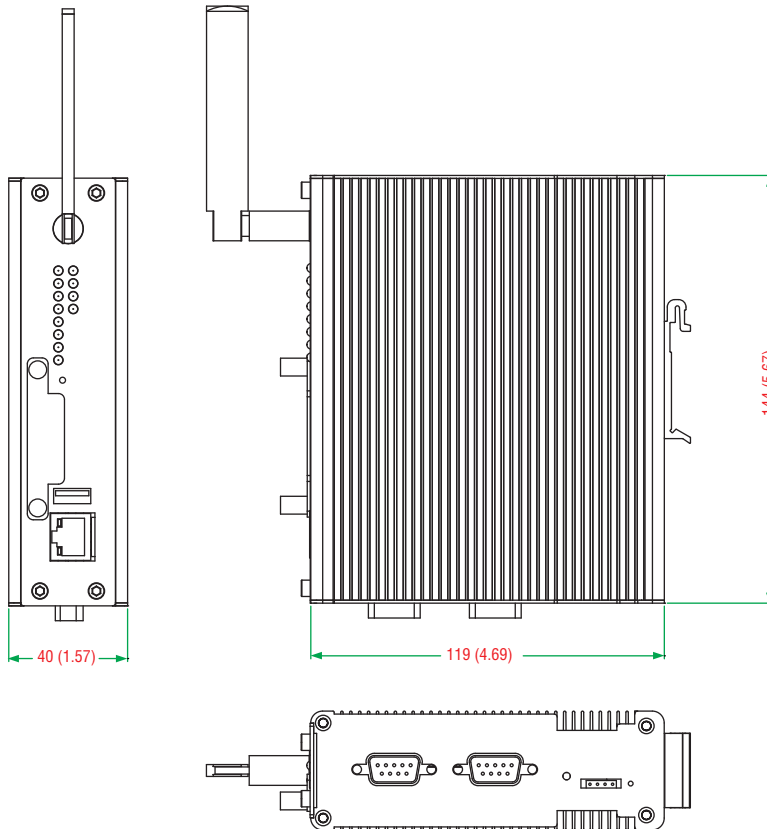
Watchdog: Features a hardware function to trigger system reset in a user specified time interval. (Moxa API provided)

Application Development Software:

• Moxa WinCE 6.0 SDK

• Moxa API Library

• C Libraries and Run-times

• Component Services (COM and DCOM)

• Microsoft® .NET Compact Framework 2.0 with SP2

• Winsock 2.2

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Dimensions

Unit: mm (inch)

144 (5.67)

40 (1.57)

119 (4.69)

: Ordering Information

Available Models
W406-LX: RISC-based wireless embedded computer with GSM/GPRS/EDGE, 4 DIs, 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 DIs, 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 DIs, 4 DO, 2 serial ports, Ethernet, SD, Linux 2.6 OS (contact Moxa for details about this wide temp. computer)
W406-T-CE: RISC-based wireless embedded computer with GSM/GPRS/EDGE, 4 DIs, 4 DO, 2 serial ports, Ethernet, SD, WinCE 6.0 OS (contact Moxa for details about this wide temp. computer)

Optional Accessories (can be purchased separately)
PPWR-24250-DT-S1: Power adaptor
PWC-C7US-2B-183: Power cord with 2-pin connector, USA plug
PWC-C7EU-2B-183: Power cord with 2-pin connector, Euro plug
PWC-C7UK-2B-183: Power cord with 2-pin connector, British plug
PWC-C7AU-2B-183: Power cord with 2-pin connector, Australia plug
PWC-C7CN-2B-183: Power cord with 2-pin connector, China plug

Package Checklist
- W406 embedded 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
- GSM/GPRS/EDGE Antenna
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

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