UC-8418 Series

RISC ready-to-run embedded computers with 8 serial ports, 3 LANs, DIO, 2 CAN ports, USB, CompactFlash

-40°C 75°C

> Intel XScale IXP435 533 MHz processor
> 256 MB DDR2 SDRAM and 16 MB Flash ROM onboard
> 32 MB NAND Flash for data storage
> 256 KB battery backup SRAM
> 8 RS-232/422/485 serial ports
> 2 CANbus ports
> 12 digital input and 12 digital output channels
> 3 10/100 Mbps Ethernet ports
> 2 USB 2.0 hosts for mass storage devices
> CompactFlash socket for storage expansion
> Supports IPv6 function (Linux model only)
> DIN-Rail or wall mount installation
> Robust, fanless design
> -40 to 75°C wide temperature model available
> Ready-to-run Embedded Linux or Windows CE 6.0

Overview

The UC-8418 Series embedded computers come with 8 RS-232/422/485 serial ports, 3 Ethernet ports, 2 CAN ports, 12 digital input channels, 12 digital output channels, a CompactFlash socket, and 2 USB 2.0 hosts.

The computers use the Intel XScale IXP435 533 MHz RISC CPU. This powerful computing engine supports several useful communication functions, but will not generate too much heat. The built-in 16 MB NOR Flash ROM and 256 MB SDRAM give you enough memory to run your application software directly on the UC-8418, and the 32 MB NAND Flash can be used to provide additional data storage. Moreover, the 256 KB SRAM offers a better data retention mechanism for avoiding data loss. The UC-8418 computers come with 8 RS-232/422/485 serial
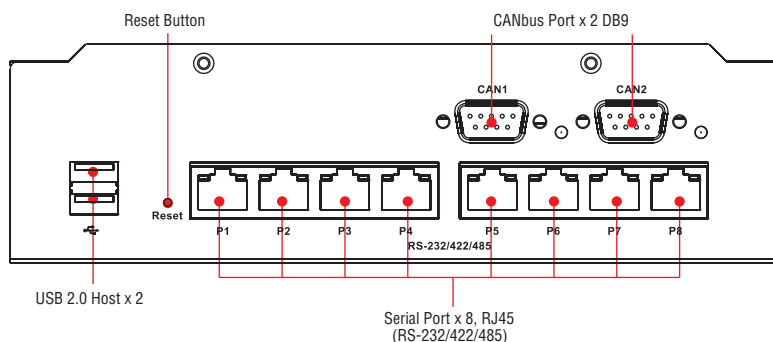
ports, digital I/O, and have 3 LAN ports and 2 CANbus ports, making them ideal as a communication platform for industrial applications that require network redundancy.

The UC-8418 Series comes with the Linux 2.6 or Windows CE 6.0 platform pre-installed to provide an open software operating system for software program development. Software written for a desktop PC can be easily ported to the UC-8418 Series platform by using a common compiler, without needing to modify the code. This makes the UC-8418 an optimal solution for use with industrial applications, but with minimal cost and effort.
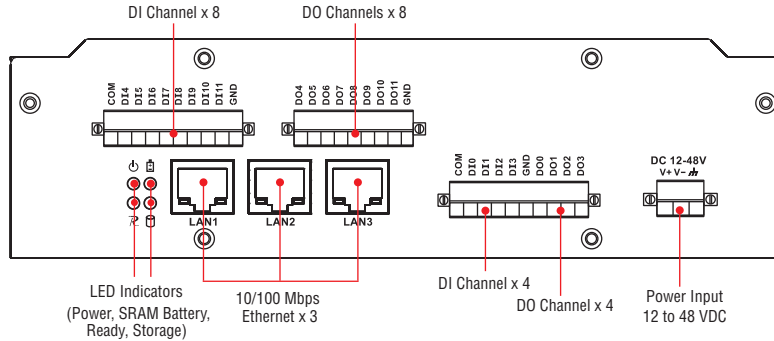
In addition to the standard model, a -40 to 75°C wide temperature model is also available for harsh industrial environments.

Appearance

Front View

Reset Button

CANbus Port x 2 DB9

USB 2.0 Host x 2

Serial Port x 8, RJ45 (RS-232/422/485)

Rear View

DI Channel x 8   DO Channels x 8

COM DI4 DI5 DI6 DI7 DI8 DI9 DI10 DI11 GND   DO4 DO5 DO6 DO7 DO8 DO9 DO10 DO11 GND

COM DI0 DI1 DI2 DI3 GND DO0 DO1 DO2 DO3   DC 12-48V V+ V-

LAN1 LAN2 LAN3

LED Indicators
(Power, SRAM Battery,
Ready, Storage)

10/100 Mbps
Ethernet x 3

DI Channel x 4
DO Channel x 4

Power Input
12 to 48 VDC

: Hardware Specifications

Computer
CPU: Intel XScale IXP435, 533 MHz
OS (pre-installed): Linux
DRAM: 256 MB DDR2 SDRAM onboard (512 MB max.)
SRAM: 256 KB, battery backup
Flash:
16 MB NOR Flash onboard to store OS (supports up to 32 MB)
32 MB NAND Flash onboard to store data
Expansion Bus: PCI/104 onboard
USB: USB 2.0 compliant hosts x 2, type A connector

Storage
Storage Expansion: CompactFlash socket

Ethernet Interface
LAN: 3 auto-sensing 10/100 Mbps ports (RJ45)
Magnetic Isolation Protection: 1.5 KV built-in

Serial Interface
Serial Standards: 8 RS-232/422/485 ports, software-selectable (8-pin RJ45)
Console Port: RS-232 (TxD, RxD, GND), 4-pin header output (115200, n, 8, 1)

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 (supports non-standard baudrates; 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: 12, 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: +3V max.
• Logic level 1: +10V to +30V (COM to DI)
Connector Type: 10-pin screw terminal block (4 points, COM, GND)
Isolation: 3 KV optical isolation

Digital Output
Output Channels: 12, sink type
Output Current: Max. 200 mA per channel
On-state Voltage: 24 VDC nominal, open collector to 30 V
Connector Type: 10-pin screw terminal block (4 points, GND)
Isolation: 3 KV optical isolation

CANbus Communication
Interface: Dual optically isolated CAN2.0A/2.0B compliant ports
CAN Controller: Phillips SJA1000T
Signals: CAN-H, CAN-L
Isolation: 2 KV digital isolation
Speed: 10 Kbps to 1 Mbps
Connector Type: DB9 male

LEDs
System: Power, Ready, Storage, Battery for SRAM
LAN: 10M/Link x 2, 100M/Link x 2 (on connector)
Serial: TxD x 8, RxD x 8
Reset Button: Supports "Reset to Factory Default"

Physical Characteristics
Housing: SECC sheet metal (1 mm)
Weight: 1 kg
Dimensions: 200 x 57 x 120 mm (7.87 x 2.24 x 4.72 in)
Mounting: DIN-Rail, wall

Environmental Limits
Operating Temperature:
Standard Models: -10 to 60°C (14 to 140°F)
Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature:
Standard Models: -20 to 75°C (-4 to 167°F)
Wide Temp. Models: -40 to 85°C (-40 to 185°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
Anti-vibration: 2 g rms @ IEC-68-2-34, random wave, 5-500 Hz, 1 hr per axis
Anti-shock: 20 g @ IEC-68-2-27, half sine wave, 11 ms

Power Requirements
Input Voltage: 12 to 48 VDC (3-pin terminal block)
Power Consumption: 15 W
• 310 mA @ 48 VDC
• 625 mA @ 24 VDC
• 1350 mA @ 12 VDC

Standards and Certifications
Safety: UL 60950-1, EN 60950-1, CCC (GB9254, GB17625.1)
EMC: EN 55022 Class B, EN 55024-4-2, EN 55024-4-3, EN 55024-4-4, FCC Part 15 Subpart B Class B

Reliability
Alert Tools: Built-in buzzer and RTC (real-time clock)
Automatic Reboot Trigger: Built-in WDT (watchdog timer)
MTBF (mean time between failures): 149,140 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.

MOXA®

: Software Specifications

Linux

OS: Linux 2.6.23

File System: JFFS2, NFS, Ext2, Ext3

Internet Protocol Suite: TCP, UDP, IPv4, IPv6, SNMPv1, ICMP, ARP, HTTP, CHAP, PAP, DHCP, NTP, NFS, SMTP, Telnet, FTP, TFTP, PPP, PPPoE

Internet Security: OpenVPN, iptables firewall

Web Server (Apache): Allows you to create and manage web sites; supports 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 that 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 hardware function to trigger system reset in a user specified time interval (Moxa API provided)

Application Development Software:

• 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

File System: FAT

Internet Protocol Suite: TCP, UDP, IPv4, IPv6, 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 3.5

• XML, including DOM, XQL, XPATH, XSLT, SAX, SAX2

• SOAP Toolkit Client

• Winsock 2.2

Dimensions

Unit: mm (inch)
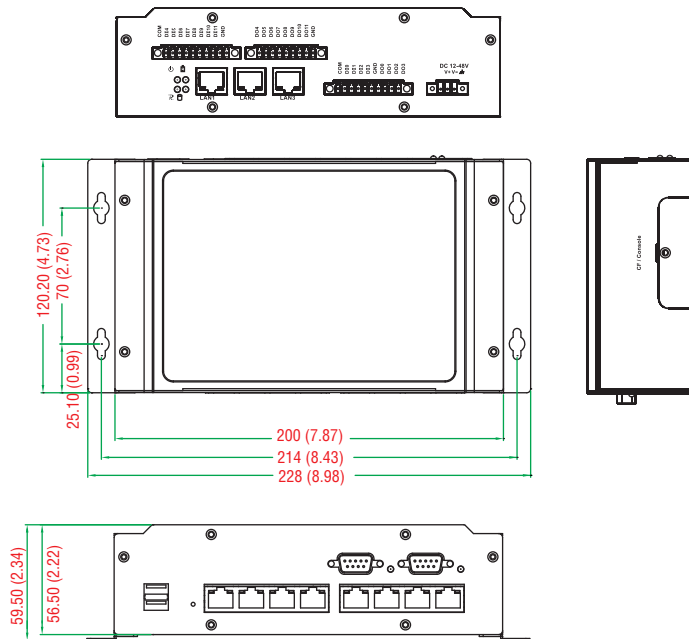
: Ordering Information

Available Models

UC-8418-LX: RISC-based industrial embedded computer with 8 serial ports, 12 DIs, 12 DOs, 3 LANs, 2 CAN ports, CompactFlash, USB, Linux OS, -10 to 60°C operating temperature

UC-8418-CE: RISC-based industrial embedded computer with 8 serial ports, 12 DIs, 12 DOs, 3 LANs, 2 CAN ports, CompactFlash, USB, Windows CE 6.0 OS, -10 to 60°C operating temperature

UC-8418-T-LX: RISC-based industrial embedded computer with 8 serial ports, 12 DIs, 12 DOs, 3 LANs, 2 CAN ports, CompactFlash, USB, Linux OS, -40 to 75°C operating temperature

UC-8418-T-CE: RISC-based industrial embedded computer with 8 serial ports, 12 DIs, 12 DOs, 3 LANs, 2 CAN ports, CompactFlash, USB, Windows CE 6.0 OS, -40 to 75°C operating temperature

Package Checklist

- UC-8418 embedded computer
- Wall mounting kit
- DIN-Rail 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 power jack converter)
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card