

# UC-8416/8418 Series

*Arm-based wireless-enabled wall-mount industrial computers with 16 serial ports, 3 LANs, up to 2 CAN ports, and up to 12 DI/DO*



## Features and Benefits

- Intel XScale IXP435 533 MHz processor
- 8 RS-232/422/485 serial ports
- 2 CAN ports (UC-8418)
- 8 unmanaged-switch ports (UC-8416)
- 12 digital input and 12 digital output channels (UC-8418)
- 3 10/100 Mbps Ethernet ports
- 2 USB 2.0 hosts for mass storage devices
- Supports IPv6 function (Linux model only)
- DIN-rail or wall-mounting installation
- Robust, fanless design
- -40 to 75°C wide-temperature model available
- Ready-to-run Embedded Linux or Windows CE 6.0

## Certifications



## Introduction

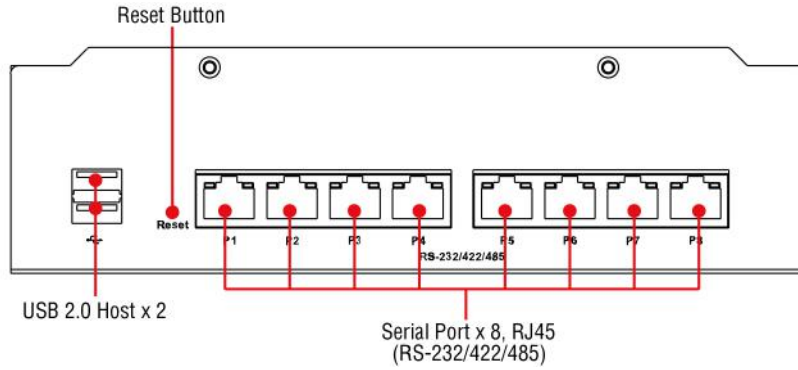
The UC-8416/8418 Series embedded computers come with 8 RS-232/422/485 serial ports, 3 Ethernet ports, 2 CAN ports, 8 Ethernet ports, 12 digital input channels, 12 digital output channels, a CompactFlash socket, and 2 USB 2.0 hosts.

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. These computers come with various communication interfaces, such as serial ports, Ethernet ports, CAN ports, and digital input/output channels, making them ideal as a communication platform for industrial applications that require network and device communications.

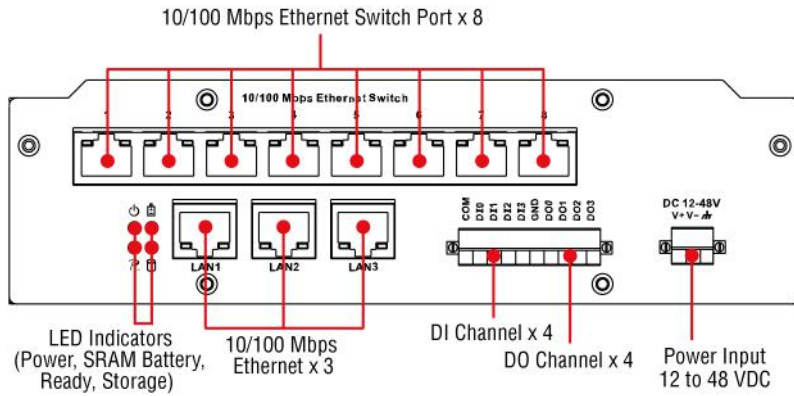
The UC-8416/8418 Series comes with the Linux 2.6 or Windows CE 6.0 platform preinstalled to provide an open software operating system for software program development. Software written for a desktop PC can be easily ported to the UC-8416/8418 Series platform by using a common compiler, without needing to modify the code, making these computers an optimal solution for use with industrial applications, but with minimal cost and effort. In addition to the standard models of the UC-8416/8418 Series, -40 to 75°C wide-temperature models are also available for harsh industrial environments.

# Appearance

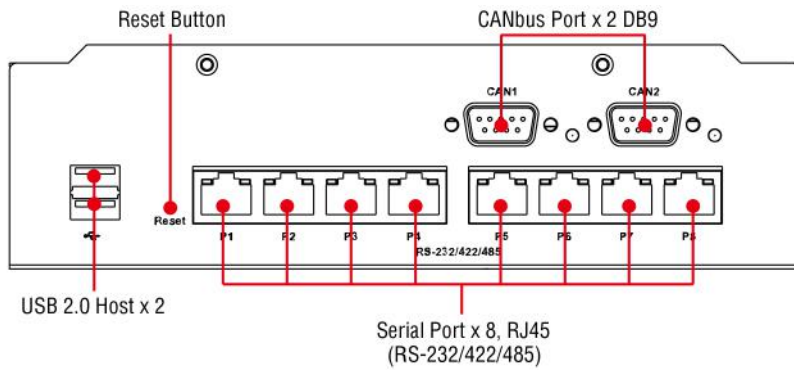
## Front View (UC-8416)



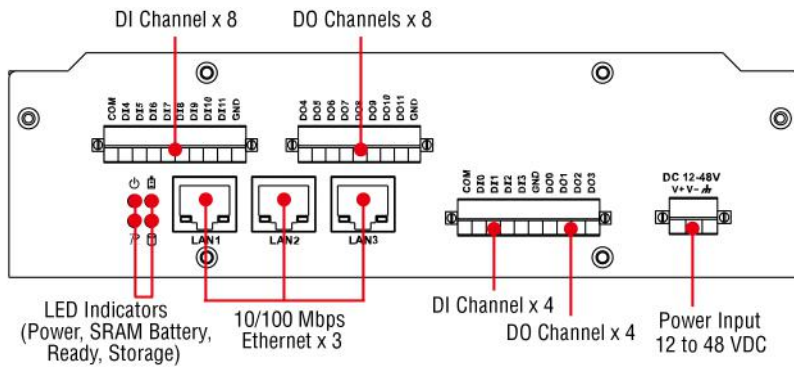
## Rear View (UC-8416)



## Front View (UC-8418)



## Rear View (UC-8418)



## Specifications

### Computer

|                 |   |
|-----------------|---|
| CPU             | Intel XScale IXP435 533 MHz processor                         |
| Supported OS    | LX models: Linux 2.6.23<br>CE models: Windows Embedded CE 6.0 |
| Storage Slot    | CF slots x 1  |
| Expansion Slots | PCI/104 slots x 1   |

### Computer Interface

|                |   |
|----------------|---|
| Ethernet Ports | All models: Auto-sensing 10/100 Mbps ports (RJ45 connector) x 3<br>UC-8416 Series: 10/100 Mbps unmanaged ports (RJ45 connector) x 8 |
| Serial Ports   | RS-232/422/485 ports x 8, software-selectable (RJ45)  |
| USB 3.0        | USB 2.0 hosts x 2, type-A connectors  |
| Digital Input  | UC-8416 Series: DIs x 4<br>UC-8418 Series: DIs x 12   |
| Digital Output | UC-8416 Series: DOs x 4<br>UC-8418 Series: DOs x 12   |
| Console Port   | 1 x 4-pin header to DB9 console port  |

### Memory

|       |                                     |
|-------|-------------------------------------|
| Flash | 16 MB NOR Flash<br>32 MB NAND Flash |
| SRAM  | 256 KB                              |
| DRAM  | 256 MB                              |

### Input/Output Interface

|         |              |
|---------|--------------|
| Buttons | Reset button |
|---------|--------------|

### Digital Inputs

|                              |                                     |
|------------------------------|-------------------------------------|
| Channel-to-Channel Isolation | 3k VDC                              |
| Connector                    | Screw-fastened Euroblock terminal   |
| Dry Contact                  | On: short to GND<br>Off: open       |
| I/O Mode                     | DI                                  |
| Sensor Type                  | Wet Contact (NPN or PNP)            |
| Wet Contact (DI to COM)      | On: 10 to 30 VDC<br>Off: 0 to 3 VDC |
| Connector                    | Screw-fastened Euroblock terminal   |

### Digital Outputs

|                |                                   |
|----------------|-----------------------------------|
| Connector      | Screw-fastened Euroblock terminal |
| Current Rating | 200 mA per channel                |
| I/O Type       | Sink                              |
| Voltage        | 12 to 48 VDC                      |

## Ethernet Interface

|                               |                        |
|-------------------------------|------------------------|
| Magnetic Isolation Protection | N/A, 1.5 kV (built-in) |
|-------------------------------|------------------------|

## LED Indicators

|        |  |
|--------|--|
| System | Power x 1<br>System Ready x 1<br>Storage x 1<br>SRAM battery x 1 |
| LAN    | 2 per port (10/100 Mbps)   |
| Serial | 2 per port (Tx, Rx)  |

## Serial Interface

|              |   |
|--------------|---|
| Baudrate     | 50 bps to 921.6 kbps  |
| Connector    | 8-pin RJ45  |
| Data Bits    | 5, 6, 7, 8  |
| Flow Control | ADDC® (automatic data direction control) for RS-485, XON/XOFF |
| Isolation    | N/A   |
| Parity       | None, Even, Odd, Space, Mark                                  |
| Stop Bits    | 1, 1.5, 2   |

## Serial Signals

|           |  |
|-----------|--|
| RS-232    | TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND |
| RS-422    | Tx+, Tx-, Rx+, Rx-, GND                |
| RS-485-2w | Data+, Data-, GND                      |
| RS-485-4w | Tx+, Tx-, Rx+, Rx-, GND                |

## CAN Interface

|              |                              |
|--------------|------------------------------|
| Baudrate     | 50 bps to 921.6 kbps         |
| Connector    | DB9 male                     |
| Isolation    | 2 kV (built-in)              |
| No. of Ports | 2                            |
| Signals      | CAN_L, CAN_H, CAN Signal GND |
| Protocols    | CAN 2.0A, CAN 2.0B           |

## Power Parameters

|                   |  |
|-------------------|--|
| Input Current     | 310 mA @ 48 VDC<br>625 mA @ 24 VDC<br>1350 mA @ 12 VDC |
| Input Voltage     | 12 to 48 VDC   |
| Power Connector   | Terminal block (for DC models)                         |
| Power Consumption | 15 W (max.)  |

## Physical Characteristics

|              |   |
|--------------|---|
| Housing      | Metal                                     |
| Dimensions   | 200 x 57 x 120 mm (7.87 x 2.24 x 4.72 in) |
| Weight       | Product only: 1,000 g (2.22 lb)           |
| Installation | Wall mounting, DIN-rail mounting          |

## Environmental Limits

|  |   |
|--|---|
| Operating Temperature                  | Standard Models: -10 to 60°C (14 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F) |
| Storage Temperature (package included) | Standard Models: -20 to 75°C (-4 to 167°F)<br>Wide Temp. Models: -40 to 85°C (-40 to 185°F) |
| Ambient Relative Humidity              | 5 to 95% (non-condensing)   |

## Standards and Certifications

|           |                                |
|-----------|--------------------------------|
| EMC       | EN 55032/24                    |
| EMI       | CISPR 32, FCC Part 15B Class B |
| Safety    | EN 60950-1, UL 60950-1         |
| Shock     | IEC 60068-2-27                 |
| Vibration | IEC 60068-2-34                 |

## Declaration

|               |                   |
|---------------|-------------------|
| Green Product | RoHS, CRoHS, WEEE |
|---------------|-------------------|

## Warranty

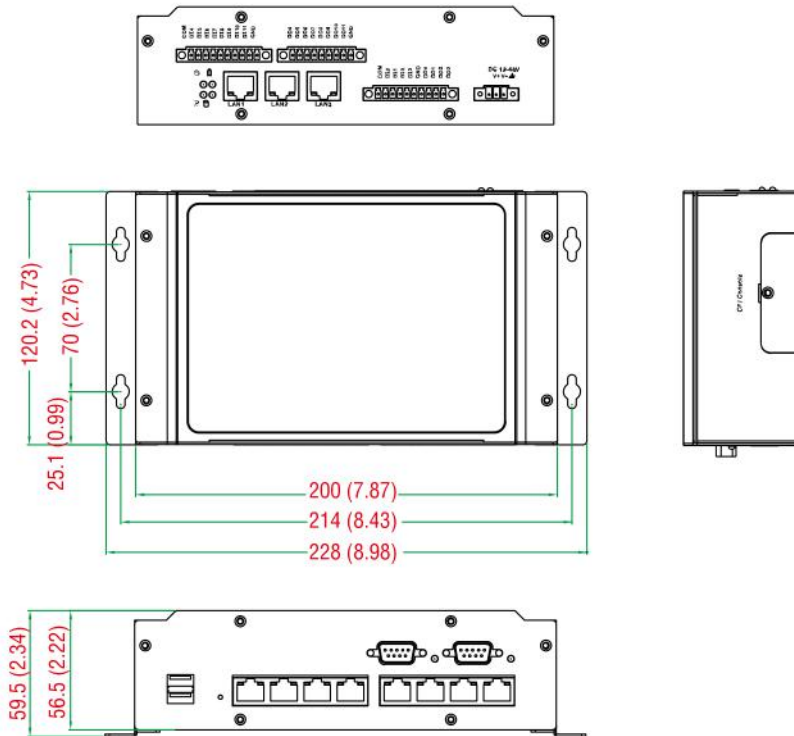
|                 |  |
|-----------------|--|
| Warranty Period | 5 years  |
| Details         | See <a href="http://www.moxa.com/warranty">www.moxa.com/warranty</a> |

## Package Contents

|                  |  |
|------------------|--|
| Device           | 1 x UC-8416/8418 Series computer   |
| Installation Kit | 1 x DIN-rail kit<br>1 x wall-mounting kit  |
| Cable            | 1 x 4-pin header to DB9 console port<br>1 x DB9 male to RJ45 8-pin<br>1 x terminal block to power jack converter |
| Power Supply     | 1 x power adapter, universal   |
| Documentation    | 1 x quick installation guide<br>1 x document and software CD<br>1 x warranty card                                |

## Dimensions

Unit: mm (inch)



## Ordering Information

| Model Name   | CPU                           | OS           | DRAM   | SRAM   | NOR Flash    | NAND Flash | PCI/104 Slots | CF Slot | USB | Ethernet Ports | Switch Ports | CAN Ports | Serial Ports | DIO Ports        | Operating Temp. |
|--------------|-------------------------------|--------------|--------|--------|--------------|------------|---------------|---------|-----|----------------|--------------|-----------|--------------|------------------|-----------------|
| UC-8416-LX   | Intel Xscale IX-P435, 533 MHz | Linux 2.6.23 | 256 MB | 256 KB | 16 MB for OS | 32 MB      | 1             | 1       | 2   | 3              | 8            | 0         | 8            | 4 x DI, 4 x DO   | -10 to 60°C     |
| UC-8416-CE   | Intel Xscale IX-P435, 533 MHz | WinCE 6.0    | 256 MB | 256 KB | 16 MB for OS | 32 MB      | 1             | 1       | 2   | 3              | 8            | 0         | 8            | 4 x DI, 4 x DO   | -10 to 60°C     |
| UC-8416-T-LX | Intel Xscale IX-P435, 533 MHz | Linux 2.6.23 | 256 MB | 256 KB | 16 MB for OS | 32 MB      | 1             | 1       | 2   | 3              | 8            | 0         | 8            | 4 x DI, 4 x DO   | -40 to 75°C     |
| UC-8416-T-CE | Intel Xscale IX-P435, 533 MHz | WinCE 6.0    | 256 MB | 256 KB | 16 MB for OS | 32 MB      | 1             | 1       | 2   | 3              | 8            | 0         | 8            | 4 x DI, 4 x DO   | -40 to 75°C     |
| UC-8418-LX   | Intel Xscale IX-P435, 533 MHz | Linux 2.6.23 | 256 MB | 256 KB | 16 MB for OS | 32 MB      | 1             | 1       | 2   | 3              | 0            | 2         | 8            | 12 x DI, 12 x DO | -10 to 60°C     |
| UC-8418-CE   | Intel Xscale IX-P435,         | WinCE 6.0    | 256 MB | 256 KB | 16 MB for OS | 32 MB      | 1             | 1       | 2   | 3              | 0            | 2         | 8            | 12 x DI, 12 x DO | -10 to 60°C     |

| Model Name   | CPU                           | OS           | DRAM   | SRAM   | NOR Flash    | NAND Flash | PCI/104 Slots | CF Slot | USB | Ethernet Ports | Switch Ports | CAN Ports | Serial Ports | DIO Ports        | Operating Temp. |
|--------------|-------------------------------|--------------|--------|--------|--------------|------------|---------------|---------|-----|----------------|--------------|-----------|--------------|------------------|-----------------|
|              | 533 MHz                       |              |        |        |              |            |               |         |     |                |              |           |              |                  |                 |
| UC-8418-T-LX | Intel Xscale IX-P435, 533 MHz | Linux 2.6.23 | 256 MB | 256 KB | 16 MB for OS | 32 MB      | 1             | 1       | 2   | 3              | 0            | 2         | 8            | 12 x DI, 12 x DO | -40 to 75°C     |
| UC-8418-T-CE | Intel Xscale IX-P435, 533 MHz | WinCE 6.0    | 256 MB | 256 KB | 16 MB for OS | 32 MB      | 1             | 1       | 2   | 3              | 0            | 2         | 8            | 12 x DI, 12 x DO | -40 to 75°C     |

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