IA240 Series

RISC-embedded computers with 4 serial ports, 4 DI and 4 DO channels, dual LANs, PCMCIA, SD

> MOXA ART 32-bit ARM9 industrial processor
> 64 MB RAM, 16 MB flash onboard
> 4 RS-232/422/485 serial ports
> 4 digital input and 4 digital output channels (TTL signal)
> Dual 10/100 Mbps Ethernet for network redundancy
> SD socket for storage expansion
> Ready-to-run Linux Kernel 2.6 platform
> Unique patented Software Encryption Lock
> Installation options: DIN-rail, wall-mount (with accessory)
> Robust, fanless design, IP30 protection mechanism
> -40 to 75°C wide-temperature models available

Overview

The IA240 embedded computers are designed for industrial automation applications. The computers feature 4 RS-232/422/485 serial ports, dual LANs, 4 digital input channels, 4 digital output channels, and a PCMCIA cardbus and SD socket in a compact, IP30-protected, industrial-strength rugged housing.
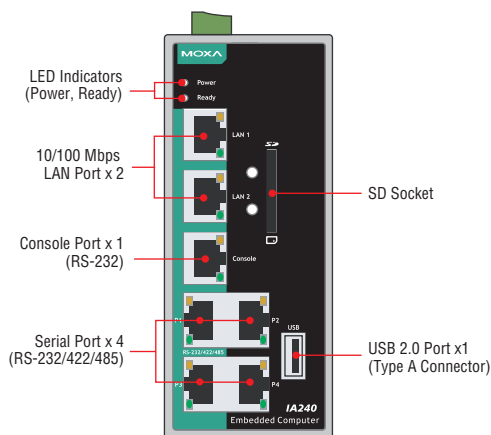
The IA240's vertical DIN-rail form factor makes it easy to install the computers in a small cabinet. This space-saving solution also facilitates easy wiring, making the IA240 a great choice as front-end embedded controllers for industrial applications.

Wide-temperature models of the IA240 are also available. The IA240-T can operate reliably in a temperature range from -40 to 75°C, making them appropriate for harsh industrial automation environments.
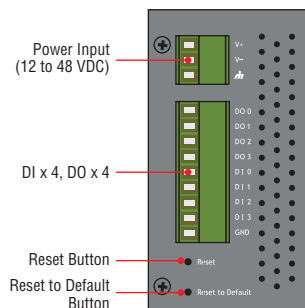
The industrial design of the IA240 provides a robust, reliable computing platform. Due to their RISC-based architecture, the IA240 computers will not generate a lot of heat, making them ideal for industrial automation environments.

Appearance

Front View

LED Indicators (Power, Ready)

10/100 Mbps LAN Port x 2

Console Port x 1 (RS-232)

Serial Port x 4 (RS-232/422/485)

SD Socket

USB 2.0 Port x1 (Type A Connector)

Top View

Power Input (12 to 48 VDC)

DI x 4, DO x 4

Reset Button

Reset to Default Button

⋮ Hardware Specifications

Computer
CPU: MOXA ART ARM9 32-bit RISC CPU, 192 MHz
USB: USB 2.0 hosts x 1, type A connector
DRAM: DDR2 SDRAM, 64 MB
Flash: NOR Flash, 16 MB
OS (pre-installed): Embedded Linux

Storage
Storage Expansion: SD slot

Ethernet Interface
LAN: Auto-sensing 10/100 Mbps ports (RJ45) x 2
Magnetic Isolation Protection: 1.5 kV, built-in

Serial Interface
Serial Standards: RS-232/422/485 ports, software-selectable (8-pin RJ45) x 4
ESD Protection: 4 kV for all signals
Console Port: RS-232, RJ45 connector, supports PPP

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 nonstandard 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: DI x 4
Input Voltage:
Logic 0: 0-0.8 V
Logic 1: 2.0-5.5 V
Over-current Limit: -24 mA

Digital Output
Output Channels: DO x 4
Output Current: 24 mA
Output Voltage:
Logic 0: 0-0.55 V
Logic 1: 2.5-3.3 V

LEDs
System: Power, Ready, Storage
LAN: 10M/Link x 2, 100M/Link x 2 (on connector)
Serial: TxD x 4, RxD x 4 (on connector)

Switches and Buttons
Reset Button: Supports "Reset to Factory Default"

Physical Characteristics
Housing: SECC sheet metal (1 mm)
Weight:
430 g (0.96 lb)
Dimensions: 60 x 137 x 100 mm (2.36 x 5.39 x 3.94 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 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: 1 Grms @ IEC-68-2-6, sine wave (resonance search), 5-500 Hz, 1 Oct/min, 1 cycle, 13 min 17 sec per axis

Power Requirements
Input Voltage: 12 to 48 VDC
Input Current:
• 300 mA @ 24 VDC
• 600 mA @ 12 VDC
Power Consumption: 7 W

Standards and Certifications
Safety: UL 60950-1, CSA C22.2 No. 60950-1-03, EN 60950-1
EMC: EN 55022 Class A, EN 61000-3-2 Class A, EN 61000-3-3, EN 55024, FCC Part 15 Subpart B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 3 V/m
IEC 61000-4-4 EFT: Power: 1 kV; Signal: 0.5 kV
IEC 61000-4-5 Surge: Power: 1 kV
IEC 61000-4-6 CS: Signal: 10 V/m
IEC 61000-4-8 1 A/m
IEC 61000-4-11
Green Product: RoHS, CRoHS, WEEE

Reliability
Alert Tools: Built-in buzzer and RTC (real-time clock)
Automatic Reboot Trigger: Built-in WDT (watchdog timer)

MTBF (mean time between failures)
Time: 425,321 hrs
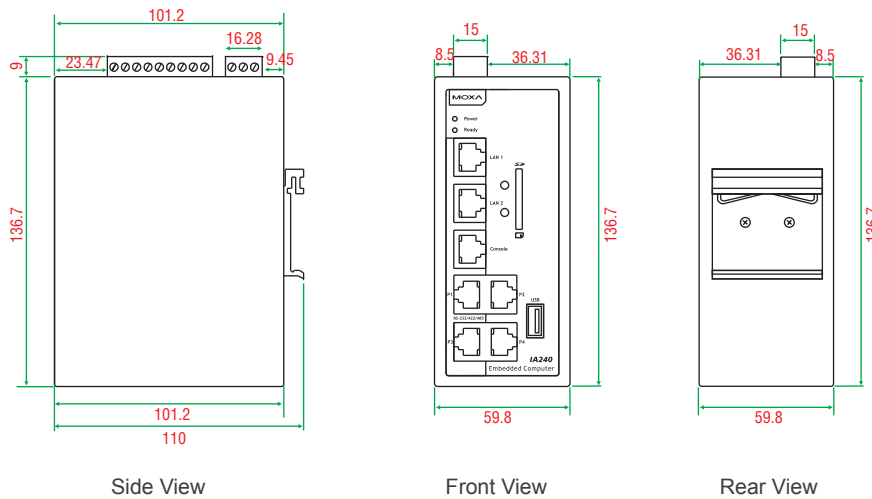**Standard:** Telcordia (Bellcore) Standard

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 adapter and cables.

Dimensions

Unit: mm (inch)

101.2
16.28
9.45
23.47
9
136.7
101.2
110

Side View

15
8.5
36.31
136.7
59.8

Front View

36.31
15
8.5
136.7
59.8

Rear View

Software Specifications

Linux

OS: Linux 2.6.9
Web Server (Apache): Allows you to create and manage web sites
Terminal Server (SSH): Provides secure encrypted communications between two untrusted hosts over an unsecure network
File System: JFFS2
Internet Protocol Suite: TCP, UDP, IPv4, SNMPv1, ICMP, ARP, HTTP, CHAP, PAP, DHCP, NTP, NFS, SMTP, Telnet, FTP, TFTP, PPP, PPPoE
Internet Security: OpenVPN, IPTables Firewall
Dial-up Networking: PPP Daemon (pppd) for Linux that uses the PPP protocol and allows Unix machines to connect to the Internet as PPP servers or clients, through dialup. The PPP Daemon works with chat, dip, and diald programs among others, and supports the IP, TCP, UDP,

and IPX for Linux (Novell) protocols.
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)

Ordering Information

Available Models

IA240-LX: RISC-based industrial computer with 4 serial ports, 4 DIs and 4 DO channels, dual LANs, SD, Linux OS, -10 to 60°C operating temperature
IA240-T-LX: RISC-based industrial computer with 4 serial ports, 4 DIs and 4 DO channels, dual LANs, SD, Linux OS, -40 to 75°C operating temperature

Package Checklist

• IA240 embedded computer
• Wall-mounting kit
• Ethernet cable: RJ45-to-RJ45 cross-over cable, 100 cm
• CBL-RJ45F9-150: 8-pin RJ45-to-DB9 female console port cable, 150 cm
• CBL-RJ45M9-150: 8-pin RJ45-to-DB9 male serial port cable, 150 cm
• Universal power adapter (including terminal block to power jack converter)
• Documentation and software CD
• Quick installation guide (printed)
• Warranty card