

# IA240/241 Series

**RISC-based industrial 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
- > PCMCIA slot for wireless expansion (802.11b/g, GPRS/UMTS/HSDPA)
- > SD socket for storage expansion
- > Ready-to-run Linux Kernel 2.6 platform
- > Unique patented Software Encryption Lock
- > Installation options: DIN-rail, wallmount (with accessory)
- > Robust, fanless design, IP30 protection mechanism
- > -40 to 75°C wide temperature models available



## Overview

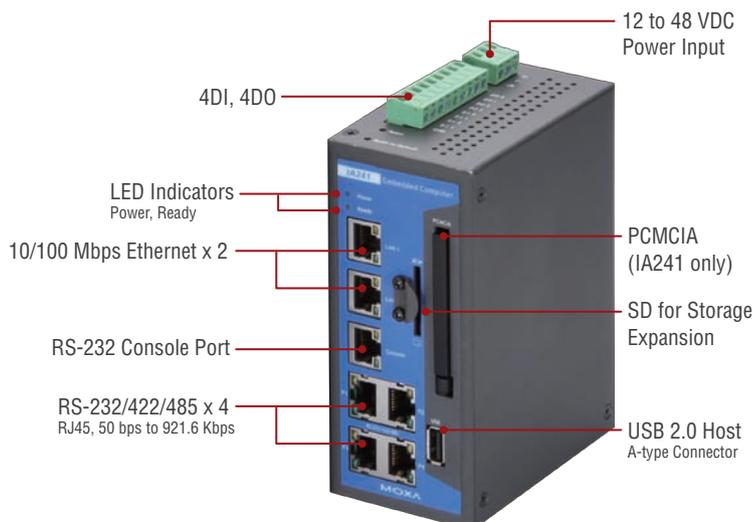
The IA240/241 embedded computers are designed for industrial automation applications. The computers feature 4 RS-232/422/485 serial ports, dual LANs, 4 digital input channels, 4 digital output channels, and a PCMCIA cardbus and SD socket in a compact, IP30 protected, industrial-strength rugged housing.

The IA240/241'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 IA240/241 a great choice as front-end embedded controllers for industrial applications.

Wide temperature models of the IA240/241 are also available. The IA240-T and IA241-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/IA241 provides a robust, reliable computing platform. Due to their RISC-based architecture, the IA240/IA241 computers will not generate a lot of heat, making them ideal for industrial automation environments.

## Appearance



## : Hardware Specifications

### Computer

**CPU:** MOXA ART ARM9 32-bit RISC CPU, 192 MHz

**OS (pre-installed):** Embedded Linux

**DRAM:** 64 MB onboard

**Flash:** 16 MB onboard

**PCMCIA:** Cardbus card and 16-bit PCMCIA 2.1, JEIDA 4.2 card (IA241 only)

**USB:** USB 2.0 host

### Storage

**Storage Expansion:** SD slot

### Ethernet Interface

**LAN:** 2 auto-sensing 10/100 Mbps ports (RJ45)

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

### Serial Interface

**Serial Standards:** 4 RS-232/422/485 ports, software-selectable (8-pin RJ45)

**ESD Protection:** 15 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 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:** 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:** 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:** Aluminum (1 mm)

**Weight:**

IA240: 430 g

IA241: 500 g

**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)

**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:** 1 g @ IEC-68-2-6, sine wave (resonance search), 5-500 Hz, 1 Oct/min, 1 cycle, 13 mins 17 sec per axis

### Power Requirements

**Input Voltage:** 12 to 48 VDC

**Power Consumption:** 7 W

- 300 mA @ 24 VDC

- 600 mA @ 12 VDC

### Regulatory Approvals

**EMC:** CE (EN55022 Class A, EN61000-3-2 Class A, EN61000-3-3, EN55024), FCC (Part 15 Subpart B, CISPR 22 Class A)

**Safety:** UL/cUL (UL60950-1, CSA C22.2 No. 60950-1-03), TÜV (EN60950-1)

### Reliability

**Alert Tools:** Built-in buzzer and RTC (real-time clock)

**Automatic Reboot Trigger:** Built-in WDT (watchdog timer)

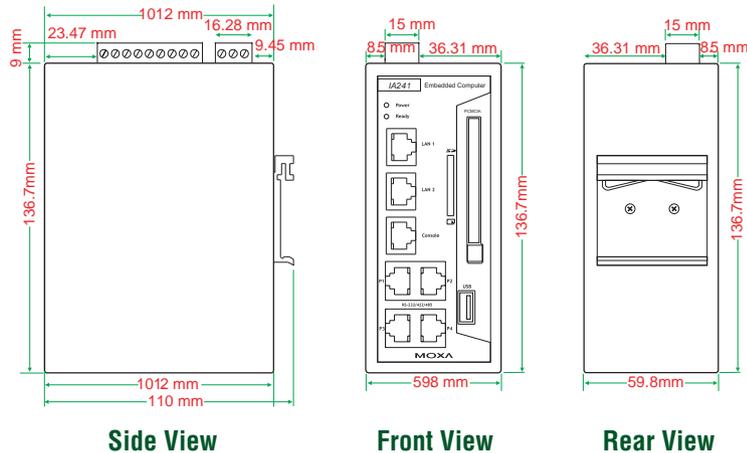
### Warranty

**Warranty Period:** 5 years

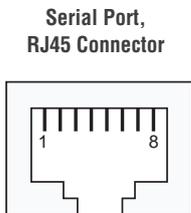
**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

**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.

## Dimensions

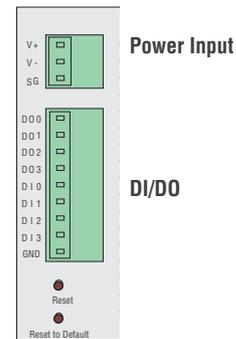


## Pin Assignment



PIN	RS-232	RS-422	RS-485
1	DSR	---	---
2	RTS	TxD+	---
3	GND	GND	GND
4	TxD	TxD-	---
5	RxD	RxD+	Data+
6	DCD	RxD-	Data-
7	CTS	---	---
8	DTR	---	---

## Terminal Block on Top



## : Software Specifications

### Linux

**Kernel Version:** 2.6.9

**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

**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 Software:**

- Moxa Linux API Library for device control

- Linux Tool Chain: Gcc, Glibc, GDB

**Software Encryption Lock:**

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

## : Ordering Information

### Available Models

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

**IA241-LX:** RISC-based industrial computer with 4 serial ports, 4 DI and 4 DO channels, dual LANs, PCMCIA, SD, Linux OS, -10 to 60°C operating temperature

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

**IA241-T-LX:** RISC-based industrial computer with 4 serial ports, 4 DI and 4 DO channels, dual LANs, PCMCIA, SD, Linux OS, -40 to 75°C operating temperature

### Package Checklist

- IA240 or IA241 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 adaptor (including terminal block to power jack converter) Document and Software CD
- Quick Installation Guide (printed)
- Warranty Card