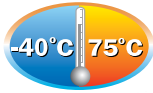


# IA240/241 Series

*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-ch digital input and 4-ch digital output (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, wall-mount (with accessory)
- > Robust, fanless design, IP30 protection mechanism
- > -40 to 75°C wide temperature models available



## Overview

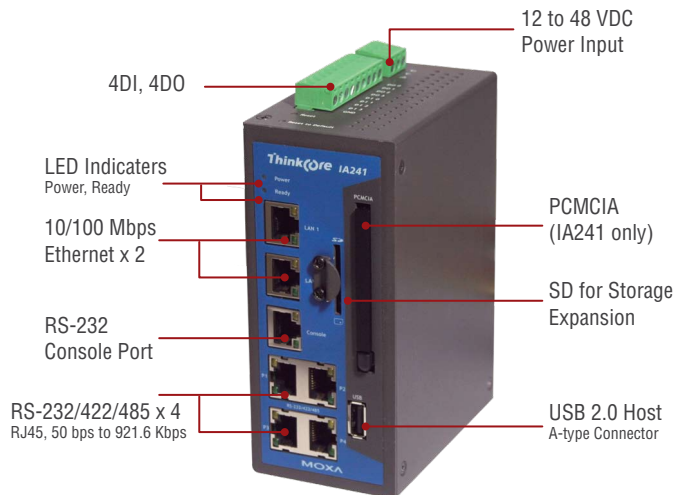
The IA240/241 embedded computers are designed for industrial automation applications. The computers feature 4 RS-232/422/485 serial ports, dual LANs, 4 digital input channels, 4 digital output channels, and a PCMCIA cardbus and SD socket in a compact, IP30 protected, industrial-strength rugged case.

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 an operating temperature range of -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 while being operated, making the computers 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 (128 MB for IA241 ODM)  
**Flash:** 16 MB onboard (32 MB for IA241 ODM)  
**PCMCIA:** Cardbus card and 16-bit PCMCIA 2.1/JEIDA 4.2 card (IA241 only)  
**Storage Expansion:** SD socket  
**USB:** USB 2.0 host  
**DI/DO:** DI x 4, DO x 4, TTL (3.3 V)

### LAN Interface

**Ethernet:** 10/100 Mbps x 2, RJ45 connectors  
**Magnetic Isolation Protection:** 1.5 KV built-in

### Serial Interface

**Number of Ports:** 4  
**Serial Standards:** RS-232/422/485, software-selectable  
**Connectors:** 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:** 0-0.8V  
**Logic 1:** 2.0-5.5V  
**Protection:** Over-current limit (-24 mA)

### Digital Output

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

### LEDs

**System:** Power x 1, Ready x 1  
**LAN:** 10M/Link x 2, 100M/Link x 2 (on connector)  
**Serial:** TxD x 4, RxD x 4 (on connector)

### 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)

### Power Requirements

**Input Voltage:** 12 to 48 VDC  
**Power Consumption:** 7 watts

### 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)  
**MTBF:** IA241: 97,157 hrs, IA240:134,670 hrs.

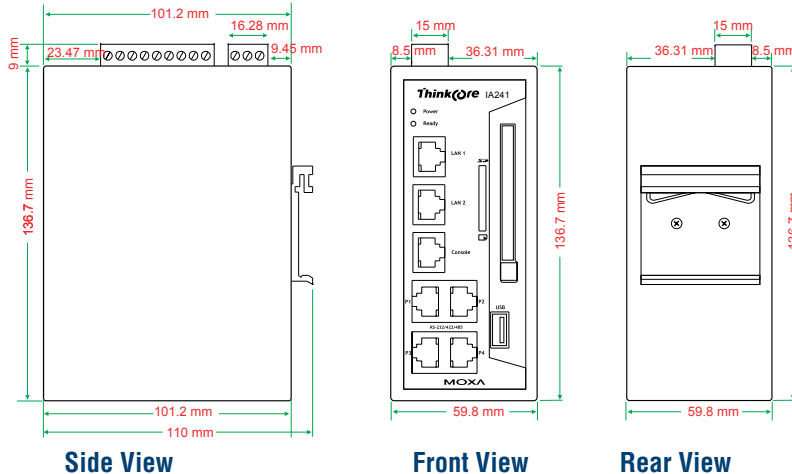
### Reliability

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

### Warranty

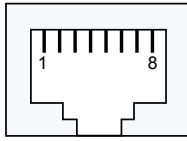
**Warranty Period:** 5 years  
**Details:** See [www.moxa.com/warranty](http://www.moxa.com/warranty)

### Dimensions



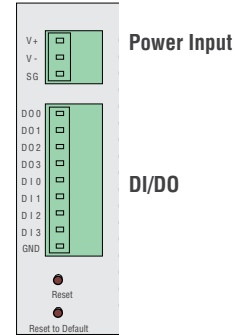
## Pin Assignment

Serial Port,  
RJ45 Connector



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, tinyloggin, telnet, ftp, scp

**Supporting Services and Daemons:**

**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 Environment:

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 (standard operating temperature: -10 to 60°C)

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

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

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

### Package Checklist

- IA240 or IA241 computer
- Wall mounting kit
- DIN-rail 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
- Document and Software CD
- Quick Installation Guide (printed)
- Warranty Card