

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

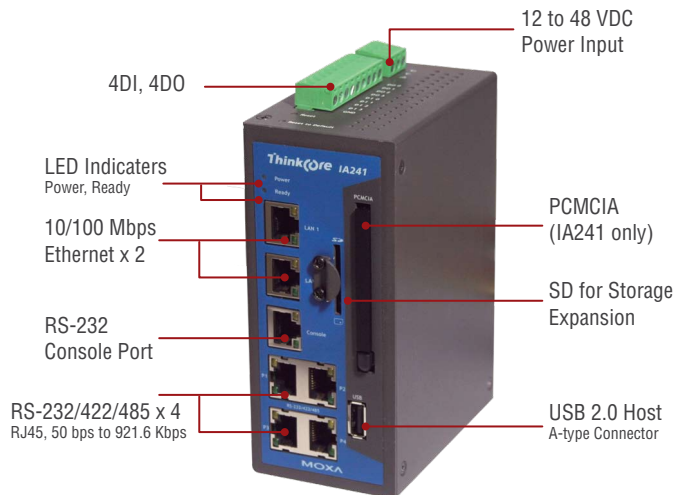
The IA240/241 embedded computers are designed for industrial automation applications. The computers feature 4 RS-232/422/485 serial ports, dual LANs, 4 digital input channels, 4 digital output channels, and a PCMCIA cardbus and SD socket in a compact, IP30 protected, industrial-strength rugged case.

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.

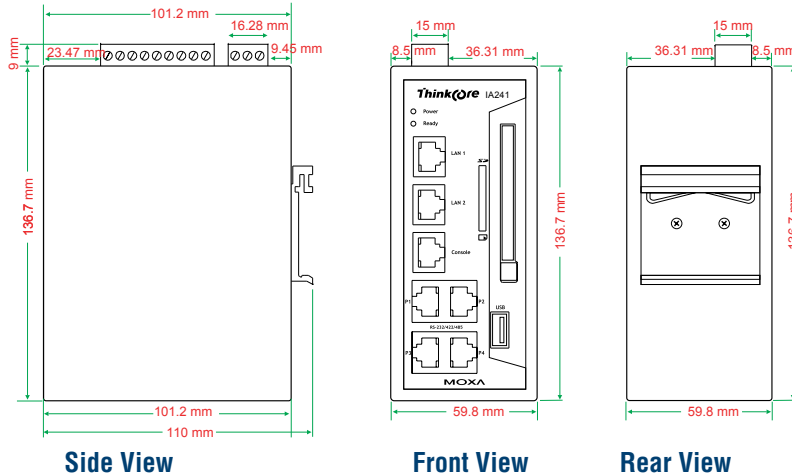
Reliability

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

Warranty

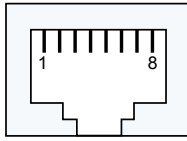
Warranty Period: 5 years
Details: See www.moxa.com/warranty

Dimensions



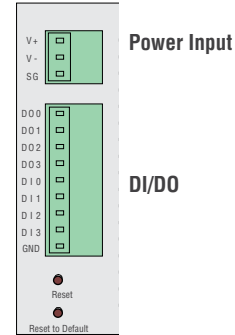
Pin Assignment

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