IA261-I/262-I Series

RISC-embedded computers with 2 or 4 digitally isolated serial ports, dual LANs, VGA, CAN, DIO, CompactFlash, USB

-40°C 75°C

> **Cirrus Logic EP9315 ARM9 CPU, 200 MHz**
> **128 MB RAM on-board, 32 MB flash disk**
> **VGA interface for field site monitoring**
> **2 KV digitally isolated RS-232/422/485 serial ports**
> **Dual 10/100 Mbps Ethernet for network redundancy**
> **8+8 DI/DO with 3 KV optical isolation protection**
> **12 to 48 VDC redundant power input design**
> **Supports CompactFlash and USB 2.0 hosts**
> **Ready-to-run Linux or WinCE 6.0 platform**
> **-40 to 75°C wide temperature models available**

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: Overview

The IA261-I/262-I embedded computers come with 2 (IA262-I) or 4 (IA261) RS-232/422/485 serial ports, dual CANbus ports (IA262-I only), dual Ethernet ports, 8 digital input channels, 8 digital output channels, VGA output, 2 USB hosts, and a CompactFlash socket. The computers are housed in a compact, IP40 protected, industrial-strength aluminum case.
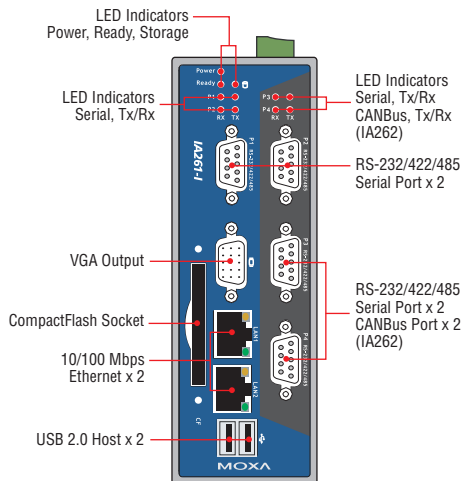
The IA261-I/262-I computers use the Cirrus Logic EP9315 ARM9, 32-bit, 200 MHz RISC CPU. This powerful computing engine supports several useful communication functions, but will not generate too much heat. The built-in 32 MB NOR Flash ROM and 128 MB SDRAM provide enough memory to run your application software directly on the IA261-I/262-I.

With its built-in VGA output interface, the IA261-I/262-I are suitable for use with SCADA systems in industrial applications, such as manufacturing automation, production line process monitoring, and mining automation, that require VGA and HMI features.
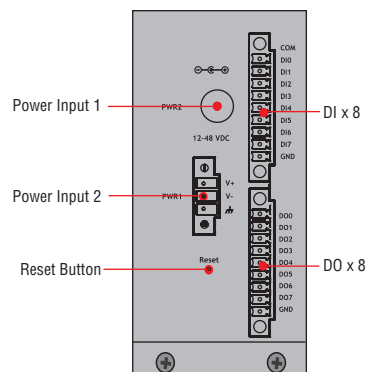
The IA261-I/262-I computers support RS-232/422/485, CANbus, digital I/O, come with 2 KV isolation protection, and have dual LAN ports, making them ideal as communication platforms for industrial applications that require network redundancy. In addition to the standard models, wide temperature (-40 to 75°C) models are available for use in harsh industrial automation environments.

: Appearance

Front View

LED Indicators
Power, Ready, Storage

LED Indicators
Serial, Tx/Rx

LED Indicators
Serial, Tx/Rx
CANBus, Tx/Rx
(IA262)

RS-232/422/485
Serial Port x 2

VGA Output

CompactFlash Socket

RS-232/422/485
Serial Port x 2
CANBus Port x 2
(IA262)

10/100 Mbps
Ethernet x 2

USB 2.0 Host x 2

Top View

Power Input 1

Power Input 2

Reset Button

DI x 8

DO x 8

⁞ Hardware Specifications

Computer
CPU: Cirrus EP9315 ARM9 CPU, 200 MHz
USB: USB hosts x 2, compliant with USB 2.0 (OHCI) type A connectors
DRAM: 128 MB onboard
Flash: 32 MB onboard
OS (pre-installed): Windows CE 6.0 or Linux

Storage
Storage Expansion: CompactFlash slot

Display
Graphics Controller: EP9315 internal graphics accelerator engine with TTL graphical signal support
Display Memory: Dynamic video memory (shares system memory)
Display Interface: CRT interface for VGA output, DB15 female connector
Resolution: 1024 x 768, 8 bits

Ethernet Interface
LAN: 2 auto-sensing 10/100 Mbps ports (RJ45)
Magnetic Isolation Protection: 1.5 KV built-in

Serial Interface
Serial Standards: 2 or 4 RS-232/422/485 ports, software-selectable (DB9 male)
ESD Protection: 4 KV for all signals
Isolation: 2 KV digital isolation
Console Port: RS-232 (TxD, RxD, GND), 4-pin header output (115200, n, 8, 1)

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: 8, source type
Input Voltage: 0 to 30 VDC
Digital Input Levels for Dry Contacts:
• Logic level 0: Close to GND
• Logic level 1: Open
Digital Input Levels for Wet Contacts:
• Logic level 0: +3 V max.
• Logic level 1: +10 V to +30 V (COM to DI)
Connector Type: 10-pin screw terminal block (8 points, COM, GND)
Isolation: 3 KV optical isolation

Digital Output
Output Channels: 8, sink type
Output Current: Max. 200 mA per channel
On-state Voltage: 24 VDC nominal, open collector to 30 V
Connector Type: 9-pin screw terminal block (8 points, GND)
Isolation: 3 KV optical isolation

CANbus Communication (IA262 only)
Interface: Dual optically isolated CAN2.0A/2.0B compliant ports
CAN Controller: Phillips SJA1000T
Signals: CAN-H, CAN-L
Isolation: 2 KV digital isolation
Speed: 10 Kbps to 1 Mbps
Connector Type: DB9 male

LEDs
System: Power, Ready, Storage
LAN: 10M/Link x 2, 100M/Link x 2 (on connector)
Serial: TxD x 4, RxD x 4
IA261-I: P1 to P4 for serial ports
IA262-I: P1 to P2 for serial ports, P3 to P4 for CAN ports

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

Physical Characteristics
Housing: Aluminum, industrial vertical form factor
Weight: 950 g
Dimensions: 60 x 115 x 152 mm (2.36 x 4.53 x 5.98 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: 5 g rms @ IEC-68-2-34, random wave, 5-500 Hz, 1 hr per axis
Anti-Shock: 50 g @ IEC-68-2-27, half sine wave, 11 ms

Power Requirements
Input Voltage: Redundant power input design
PWR1: 12 to 48 VDC (3-pin terminal block)
PWR2: 12 to 48 VDC (power jack with thread)
Power Consumption:
With no load on USB ports: 5.8 W
• 240 mA @ 24 VDC
• 480 mA @ 12 VDC
With full load on USB ports: 11 W
• 450 mA @ 24 VDC
• 900 mA @ 12 VDC

Standards and Certifications
Safety: UL 60950-1, CSA C22.2 No. 60950-1-03, EN 60950-1
EMC: EN 61000-6-4, EN 61000-3-2 Class D, EN 61000-3-3, EN 61000-6-2, FCC Part 15 Subpart B Class A
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):
IA261-I: 118,752 hrs
IA261-I: 131,832 hrs

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 adaptor and cables.

: Software Specifications

Linux

OS: Linux 2.6.23
File System: JFFS2, NFS, Ext2, Ext3
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
Web Server (Apache): Allows you to create and manage web sites
Terminal Server (SSH): Provides secure encrypted communications between two un-trusted hosts over an insecure network
Dial-up Networking: PPP Daemon for Linux that allows Unix machines to connect to the Internet through dialup lines, using the PPP protocol, as a PPP server or client. Works with 'chat', 'dip', and 'diald', among (many) others. Supports IP, TCP, UDP, and (for Linux) IPX (Novell).
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)

Windows Embedded CE 6.0

OS: Windows Embedded CE 6.0
File System: FAT (for on-board flash)
Internet Protocol Suite: TCP, UDP, IPv4, SNMPv2, ICMP, IGMP, ARP, HTTP, CHAP, PAP, SSL, DHCP, SNTP, SMTP, Telnet, FTP, PPP
Web Server (WinCE IIS): Supports ASP, ISAPI Secure Socket Layer (SSL 2/3) and Transport Layer Security (TLS/SSL 3.1) public key-based protocols, and Web Administration ISAPI Extensions
Dial-up Networking: Supports RAS client API and PPP, Extensible Authentication Protocol (EAP), and RAS scripting
File Server: Enables remote clients to access files and other resources over the network
**Watchdog:** Features a hardware function to trigger system reset in a user specified time interval. (Moxa API provided)

Application Development Software:
• Moxa WinCE 6.0 SDK
• Moxa API Library
• C Libraries and Run-times
• Component Services (COM and DCOM)
• Microsoft® .NET Compact Framework 2.0
• XML, including DOM, XQL, XPATH, XSLT, SAX, SAX2
• SOAP Toolkit Client
• Winsock 2.2

Dimensions

Unit: mm (inch)

60.15 (2.37)
152 (5.98)
115 (4.53)
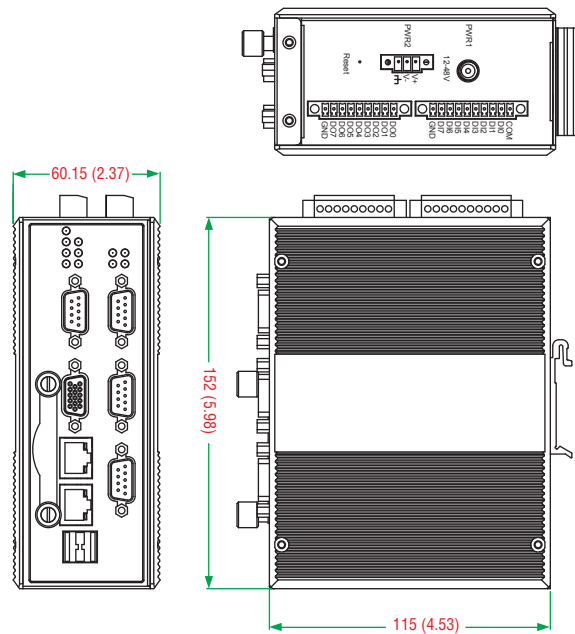
: Ordering Information

Available Models

IA261-I-LX: RISC-based embedded computer with 4 serial ports, DIO, dual LANs, VGA, CompactFlash, USB, Linux OS, -10 to 60°C operating temperature
IA261-I-CE: RISC-based embedded computer with 4 serial ports, DIO, dual LANs, VGA, CompactFlash, USB, Win CE 6.0 OS, -10 to 60°C operating temperature
IA262-I-LX: RISC-based embedded computer with 2 serial ports, DIO, dual LANs, VGA, CANbus, CompactFlash, USB, Linux OS, -10 to 60°C operating temperature
IA262-I-CE: RISC-based embedded computer with 2 serial ports, DIO, dual LANs, VGA, CANbus, CompactFlash, USB, Win CE 6.0 OS, -10 to 60°C operating temperature
IA261-I-T-LX: RISC-based embedded computer with 4 serial ports, DIO, dual LANs, VGA, CompactFlash, USB, Linux OS, -40 to 75°C operating temperature
IA261-I-T-CE: RISC-based embedded computer with 4 serial ports, DIO, dual LANs, VGA, CompactFlash, USB, Win CE 6.0 OS, -40 to 75°C operating temperature
IA262-I-T-LX: RISC-based embedded computer with 2 serial ports, DIO, dual LANs, VGA, CANbus, CompactFlash, USB, Linux OS, -40 to 75°C operating temperature
IA262-I-T-CE: RISC-based embedded computer with 2 serial ports, DIO, dual LANs, VGA, CANbus, CompactFlash, USB, Win CE 6.0 OS, -40 to 75°C operating temperature

Package Checklist

• IA261-I or IA262-I embeddedcomputer
• 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
• Documentation and software CD
• Quick installation guide (printed)
• Warranty card