IA3341

RISC-based embedded computer with 2 serial ports, 4 DIs, 4 DOs, 2 AIs, 2 thermocouples, dual LANs, SD, Linux

> MOXA ART 32-bit ARM 9 industrial processor
> 64 MB RAM, 16 MB Flash onboard
> 2 software selectable RS-232/422/485 serial ports
> 50 bps to 921.6 Kbps serial speed (non-standard baudrates supported)
> 4 DIs and 4 DOs with 3 KV digital isolation protection
> 2 AIs and 2 thermocouple inputs; sensor types J, K, T, E, R, S, B, N
> Dual 10/100 Mbps Ethernet ports for network redundancy
> SD socket for storage expansion
> USB 2.0 host
> Supports Modbus TCP library to retrieve AI and thermocouple data
> Ready-to-run Linux Kernel 2.6 platform
> DIN-Rail and wall mount installation
> Robust, fanless design

Overview

The IA3341, which is designed for solar power and environmental monitoring applications, is based on the MOXA ART ARM9 industrial processor, and features 2 RS-232/422/485 serial ports, dual LANs, 4 digital input channels, and 4 digital output channels. In addition, the IA3341 computer has 2 analog input channels and 2 thermocouple channels, making it the ideal solution for a variety of industrial applications.

By supporting multiple interfaces, the IA3341 can connect to different types of devices, making it particularly well-suited for solar power applications. Meters, sensors, and other devices can all connect easily to the IA3341, and with its powerful computing platform, the IA3341 can be used as a front-end controller to perform industrial tasks, such
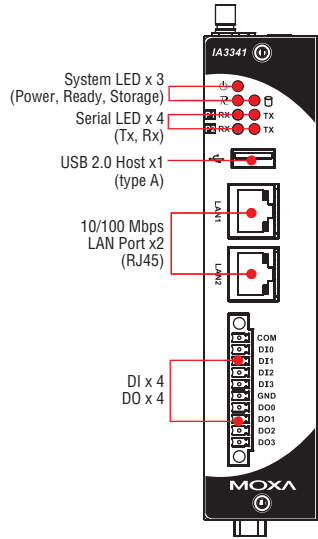
as data acquisition, data computing, protocol conversion, and data analysis.

The industrial-grade design of the IA3341 provides a robust, reliable computer that can fit any industrial environment, and the open source Linux platform gives programmers a convenient tool for developing sophisticated, bug-free application software at a lower cost.
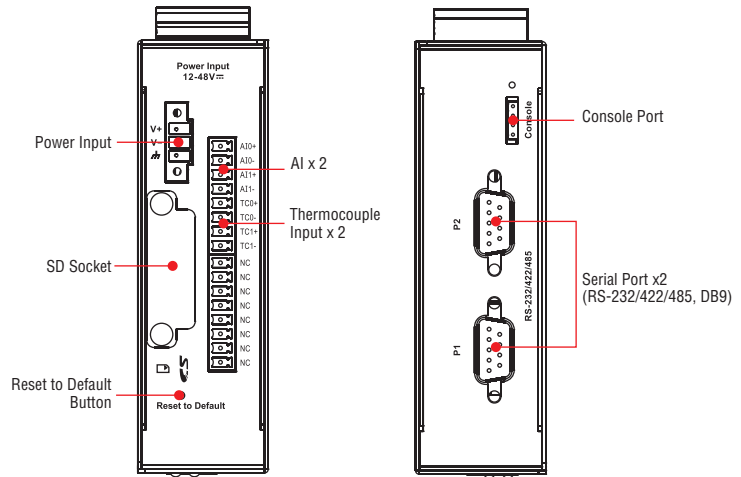
As an added plus, the IA3341 offers a Modbus TCP client library in C for Windows programmers. The library helps users to easily acquire AI and thermocouple data. This feature can efficiently accelerate remote device monitoring and data acquisition at a lower cost.

Appearance

Front View

System LED x 3
(Power, Ready, Storage)
Serial LED x 4
(Tx, Rx)
USB 2.0 Host x1
(type A)
10/100 Mbps
LAN Port x2
(RJ45)
DI x 4
DO x 4

Top and Bottom Views

Power Input
SD Socket
Reset to Default
Button
AI x 2
Thermocouple
Input x 2
Console Port
Serial Port x2
(RS-232/422/485, DB9)

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
USB: USB 2.0 host x 1 (type A connector)

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: 2 RS-232/422/485 ports, software-selectable (DB9 male)
ESD Protection: 4 KV for all signals
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: 4, 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: +2 V max.
• Logic level 1: +4 V to +30 V
Connector Type: 10-pin screw terminal block (4 points, COM, GND)
Isolation: 3 KV digital isolation

Digital Output
Output Channels: 4, sink type, keeps output status after hot system reset
Output Range: 5 to 30 VDC at open collector to 30 V
Max. Load: 30 mA
Power Dissipation: 300 mW
Connector Type: 10-pin screw terminal block (4 points, GND)
Isolation: 3 KV digital isolation

Analog Input
Input Channels: 2
Resolution: 16 bits
I/O Mode: Voltage/Current
Input Range: 0-10 V, 4-20 mA
Accuracy:
• ±0.1% FSR @ 25°C
• ±0.3% FSR @ 10°C and 60°C
Sampling Rate: 12 samples/sec
Input Impedance: 200K ohms

Thermocouple Input
Input Channels: 2
Sensor Types: J, K, T, E, R, S, B, N
Sampling Rate: 12 samples/sec
Resolution: 16 bits
Accuracy:
• ±0.1% FSR @ 25°C
• ±0.3% FSR @ 10°C and 60°C
Input Impedance: 1M ohms

LEDs
System: Power, Ready, Storage
LAN: 10M/Link x 2, 100M/Link x 2 (on connector)
Serial: TxD x 2, RxD x 2
Reset Button: Supports "Reset to Factory Default"

Physical Characteristics
Housing: SECC sheet metal (1 mm)
Weight: 585 g
Dimensions: 116 x 35 x 146 mm (2.95 x 1.38 x 3.71 in)
Mounting: DIN-Rail, wall

Environmental Limits
Operating Temperature: -10 to 60°C (14 to 140°F)
Storage Temperature: -20 to 80°C (-4 to 176°F)
Ambient Relative Humidity: 5 to 95% (non-condensing)
Anti-vibration: 2 g rms @ IEC 60068-2-34, random wave, 5-500 Hz, 1 hr per axis
Anti-shock: 20 g @ IEC 60068-2-27, half sine wave, 11 ms

Power Requirements
Input Voltage: 12 to 48 VDC (3-pin terminal block, V+, V-, SG)
Power Consumption:
5 W (with no load on the USB port)
• 106 mA @ 48 VDC
• 191 mA @ 24 VDC
• 351 mA @ 12 VDC

8.5 W (with load on the USB port)
• 176 mA @ 48 VDC
• 330 mA @ 24 VDC
• 661 mA @ 12 VDC

Standards and Certifications
Safety: UL 60950-1, EN 60950-1, CCC (GB4943, GB9254, GB17625.1)
EMC: EN 55022 Class A, EN 61000-3-2 Class A, EN 61000-3-3, EN 55024, FCC Part 15 Subpart B Class A
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): 333,363 hrs

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

Software Specifications

Linux
OS: Linux 2.6.9
File System: JFFS2 (for on-board flash)
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)
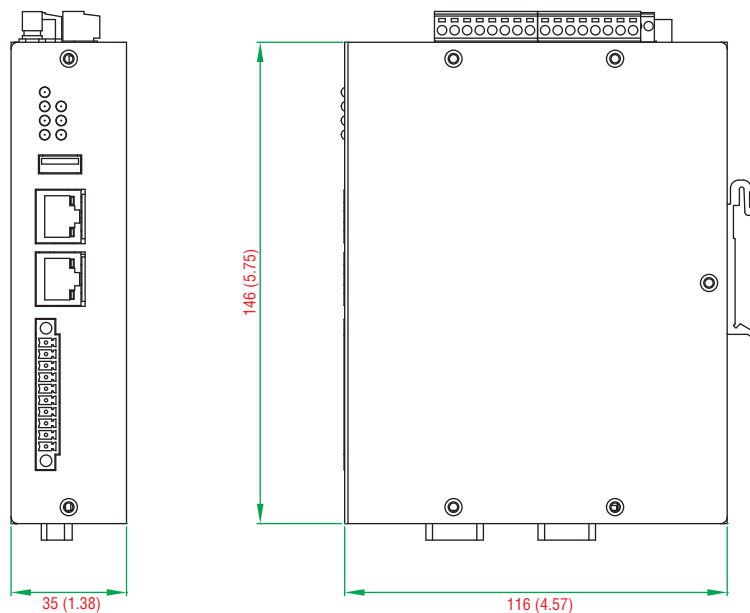• GNU C/C++ cross-compiler
• GNU C library
• GDB source-level debugging server
Software Protection: Encryption tool for user executable files (based on patented Moxa technology)

Dimensions

Unit: mm (inch)

35 (1.38)   146 (5.75)   116 (4.57)

: Ordering Information

Available Models
IA3341-LX: RISC-based embedded computer with 2 serial ports, 4 DIs, 4 DOs, 2 AIs, 2 thermocouples, dual LANs, SD, Linux

Package Checklist
- IA3341-LX embedded computer
- Wall mounting kit
- Ethernet cable: RJ45 to RJ45 cross-over cable, 100 cm
- CBL-4PINDB9F-100: 4-pin pin header to DB9 female console port cable, 100 cm
- Terminal block to power jack converter
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card