V2406A Series

Compact, fanless, anti-vibration railway computers

> Intel Celeron/Core i7 processor suitable for diverse computing demands
> Dual independent DVI-I displays
> 2 gigabit Ethernet ports with M12 X-coded connectors
> 1 SATA connector and 2 CFast sockets for storage expansion
> M12 A-coded power connector
> Compliant with EN 50121-4
> Complies with a portion of EN 50155 specifications
> Ready-to-run Windows Embedded Standard 7 or Linux Debian 7
> -40 to 70°C wide temperature models available
> Supports SNMP-based system configuration, control, and monitoring (Windows Embedded Standard 7 only)

EN 50121

Microsoft® Windows® Embedded   RoHS   c UL us LISTED   CE   FC

Overview

The V2406A Series embedded computers are based on the Intel 3rd generation processor, and feature 4 RS-232/422/485 serial ports, dual LAN ports, audio in/out, 3 USB 2.0 hosts, 2 CFast sockets, and 1 SATA storage socket. The V2406A computers provide dual DVI-I outputs, and in addition are compliant with a portion of EN 50155 specifications, covering operating temperature, power input voltage, surge, ESD, and vibration, making the computers suitable for a variety of industrial applications.
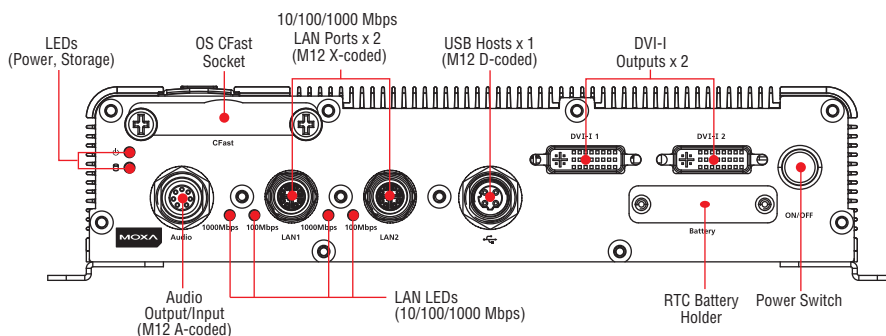
The dual megabit/gigabit Ethernet ports with M12 X-coded connectors offer a reliable solution for network redundancy, promising continuous operation for data communication and management. As an added convenience, the V2406A computers have 6 DIs and 2 DOs for connecting digital input/output devices, and the CFast feature provides the reliability needed for industrial applications that require data buffering and storage expansion.
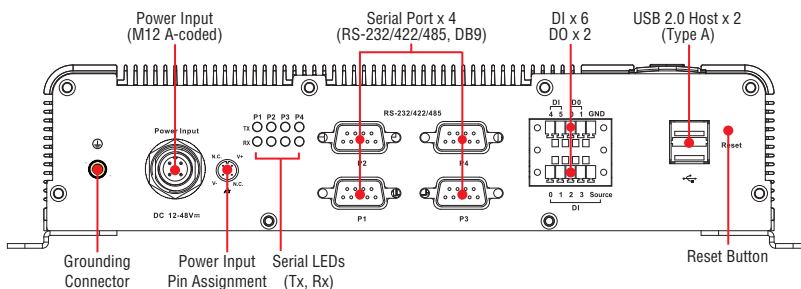
Pre-installed with Linux Debian 7 or Windows Embedded Standard 7, the V2406A Series provides programmers with a friendly environment for developing sophisticated, bug-free application software at a low cost. Wide temperature models of the V2406A Series that operate reliably in a -40 to 70°C operating temperature range are also available, offering an optimal solution for applications subjected to harsh environments.

Appearance

Front View

LEDs (Power, Storage)
OS CFast Socket
10/100/1000 Mbps LAN Ports x 2 (M12 X-coded)
USB Hosts x 1 (M12 D-coded)
DVI-I Outputs x 2
Audio Output/Input (M12 A-coded)
LAN LEDs (10/100/1000 Mbps)
RTC Battery Holder
Power Switch

Power Input
(M12 A-coded)

Serial Port x 4
(RS-232/422/485, DB9)

DI x 6
DO x 2

USB 2.0 Host x 2
(Type A)

Rear View

Grounding
Connector

Power Input
Pin Assignment

Serial LEDs
(Tx, Rx)

Reset Button

Hardware Specifications

Computer

CPU:
• Intel Celeron 1047UE processor (2M cache, 1.40 GHz) for the V2406A-C2 series
• Intel Core i7-3517UE processor (6M cache, 1.7 GHz) for the V2406A-C7 series
OS: Windows Embedded Standard 7 or Linux Debian 7
System Chipset: Mobile Intel® HM65 Express
System Memory: 1 DDR3-1600 SO-DIMM SDRAM slot, 8 GB max., 4 GB pre-installed
USB: USB 2.0 hosts x 3 (Type A connectors x 2, supporting system boot up, M12 connectors x 1)

Storage

HDD/SSD Support: 1 internal SATA-II bus for 2.5-inch HDD/SSD*
*Storage drive not included. To be purchased separately.
CFast Support: 1 slot for OS*, 1 slot for backup storage
*32-bit W7E requires at least an 8 GB CFast card
*64-bit W7E requires at least a 16 GB CFast card (optional)
*Linux Debian 7 requires at least an 8 GB CFast card (to be purchased separately)

Other Peripherals

Audio: Line-in, line-out interface (M12 A-coded)

Display

Graphics Controller: Intel® HD Graphics 4000 (integrated)
Connector Type: 2 DVI-I connectors
Display Interface:
DVI up to 1920x1200 resolution @ 60 Hz
VGA up to 1920x1200 resolution @ 60 Hz
VGA up to 2048x1536 resolution @ 75 Hz

Ethernet Interface

LAN: Auto-sensing 10/100/1000 Mbps ports (M12 X-coded) x 2
Isolation Protection: 1.5 kV

Serial Interface

Serial Standards: 4 RS-232/422/485 ports, software selectable (DB9 male)
ESD Protection: 4 kV for all signals
Isolation Protection: 1.5 kV

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 (non-standard baudrates supported; 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: 6
Input Voltage: 0 to 30 VDC at 25 Hz
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 (Source to DI)
Isolation: 3 kV optical isolation

Digital Output

Output Channels: 2, sink type
Output Current: Max. 200 mA per channel
On-State Voltage: 24 VDC nominal, open collector to 30 VDC
Connector Type: 10-pin screw-fastened Euroblock terminal (6 inputs, 2 outputs, DI Source, GND)
Isolation: 3 kV optical isolation

LEDs

System: Power, Storage
LAN: 2 per port (10/100/1000 Mbps)
Serial: 2 per port (Tx and Rx)

Switches and Buttons

Power Switch: on/off (front panel)
Reset Button: For warm reboot (front panel)

Physical Characteristics

Housing: Aluminum
Weight: 2 kg (4.44 lb)
Dimensions:
Without ears: 250 x 57 x 154 mm (9.84 x 2.23 x 6.06 in)
With ears: 275 x 63 x 154 mm (10.83 x 2.47 x 6.06 in)
Mounting: Wall, DIN rail (optional), VESA (optional)

Environmental Limits

Operating Temperature*:
Standard models: -25 to 55°C (-13 to 131°F)
Wide temp. models: -40 to 70°C (-40 to 158°F)
Storage Temperature*: -40 to 85°C (-40 to 185°F)
*without HDD installed
Ambient Relative Humidity: 5 to 95% (non-condensing)
Anti-Vibration: EN 50155 standard
Anti-Shock: EN 50155 standard
Conformal Coating: Available on request

Power Requirements

Input Voltage: 12 to 48 VDC (M12 A-coded)
Note: Compliant with EN 50155 at 24 VDC
Input Current:
• 3.3 A @ 12 VDC
• 0.82 A @ 48 VDC
Power Consumption: 40 W

Standards and Certifications

Safety: UL 60950-1, EN 60950-1
EMC: EN 55022/24
EMI: CISPR 22, FCC Part 15B Class A
EMS:
IEC 61000-4-2 ESD: Contact: 6 kV; Air: 8 kV
IEC 61000-4-3 RS: 80 MHz to 1 GHz: 20 V/m
IEC 61000-4-4 EFT: Power: 2 kV; Signal: 2 kV
IEC 61000-4-5 Surge: Power: 2 kV; Signal: 2 kV
IEC 61000-4-6 CS: 10 V
IEC 61000-4-8
Green Product: RoHS, CRoHS, WEEE
Rail Traffic: EN 50155*, EN 50121-3-2, EN 50121-4 , IEC 60571
*Complies with a portion of EN 50155 specifications. Please contact Moxa or a Moxa distributor for details.

Reliability

Automatic Reboot Trigger: Software-programmable watchdog timer configurable from 1 to 255 seconds

MTBF (mean time between failures)
Time:
V2406A-C2 Series: 373,248 hrs
V2406A-C7 Series: 332,173 hrs
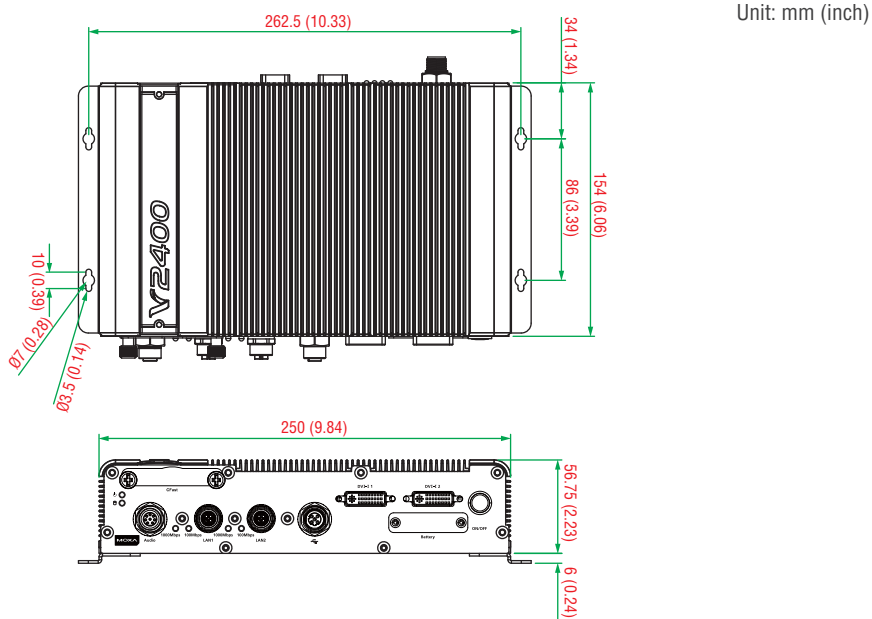**Standard:** Telcordia (Bellcore) Standard TR/SR

Warranty
Warranty Period: 3 years
Details: See www.moxa.com/warranty
Note: These hardware specifications describe the embedded computer unit itself, but not its official accessories. In particular, the wide temperature specification does not apply to accessories such as power adapters and cables.

Dimensions

Unit: mm (inch)

Software Specifications

Linux
OS: Linux Debian 7
Web Server (Apache): Allows you to create and manage web sites; supports PHP and XML
Terminal Server (SSH): Provides secure encrypted communications between two un-trusted hosts over an insecure network
File System: EXT 4
Internet Protocol Suite: TCP, UDP, IPv4, SNMPv1/v2c/v3, ICMP, ARP, HTTP, SSH 1.0/2.0, SSL, DHCP, NTP, NFS, Telnet, FTP, TFTP, PPP, PPPoE
Internet Security: OpenVPN, iptables firewall
Secure Shell for Remote Access: SSH allows remote logins to a secure encrypted console from any connected network
Dial-up Networking: PPP Daemon for Linux that allows Unix machines to connect to the Internet through dialup lines, using the Point-to-Point Protocol (PPP). Works with 'chat', 'dip', and 'dialu dip', and 'diald', among (many) others. Supports IP, TCP, UDP, and (for Linux) IPX (Novell).
File Server: Enables remote clients to access files and other resources over the network
Watchdog: A watchdog timer that triggers a system reset upon software freezes, for both specific applications and system-wide failures.

Application Development Software:
• Moxa API Library
• GNU C library
• Perl

Windows Embedded Standard 7
Core OS:
• 32/64-bit support
• Remote Client
• Remote Procedure Call
Applications and Services Development:
• .Net Framework 4.5
• Remote Desktop Protocol 7.1
• COM OLE Application Support
• COM+ Application Support
• MSMQ
Internet Services:
• Internet Explorer 8.0
• IIS 7.0
Diagnostics:
• Common Diagnostic Tools
• Problem Reports and Solutions
Fonts: Chinese (Trad. and Simp.), Japanese, Korean, Western, Middle Eastern, South East Asian, and South Asian Fonts

Graphics and Multimedia:
• MPEG DTV-DVD Audio Decoder (MPEG-2, AAC)
• MPEG Layer-3 Audio Codecs (MP3)
• MPEG4 Decoders
• Windows Media Video VC-1 (WMV) Codecs
• DirectX and Windows Device Experience
• Windows Media Player 12

Management:
• Group Policy Management
• Windows Management Instrument (WMI)
• Windows Update

Networking:
• Extensible Authentication Protocol (EAP)
• Internet Authentication Service
• Telnet Server
• Bluetooth
• Domain Services
• Network Access Protection
• Network and Sharing Center
• Quality of Service
• Remote Access Service (RAS)
• Telephony API Client
• Windows Firewall
• Wireless Networking

Security:
• Credential Roaming Service
• Credentials and Certificate Management
• Windows Authorization Manager (AZMAN)
• Windows Security Center
• Active Directory Rights Management
• Security Base
• Encrypted File System (EFS)

Embedded Features:
• Enhanced Write Filter (EWF)
• File-Based Write Filter (FBWF)
• Message Box Default Reply
• Registry Filter
• WSDAPI for .NET

File Systems and Data Store:
• Windows Data Access Components
• Windows Backup and Restore

Embedded Self-Health Diagnostic Software: SNMP-based remote scripting layer for monitoring, reporting, and control
SmartRecovery: BIOS level system recovery tool

Ordering Information

Type	CTO Models						Pre-Configured Models		
Model	V2406A-C2	V2406A-C2-T	V2406A-C2-CT-T	V2406A-C7	V2406A-C7-T	V2406A-C7-CT-T	V2406A-C2-W7E	V2406A-C2-T-W7E	V2406A-C7-T-W7E
Computer									
CPU	Intel Celeron 1047UE 1.4 GHz			Intel Core i7-3517UE 1.7 GHz			Intel Celeron 1047UE 1.4 GHz		Intel Core i7-3517UE 1.7 GHz
Operating System (CTO*)	Optional Note: Windows Embedded Standard 7 (32-bit/64-bit) or Linux Debian 7 (64-bit)						Windows Embedded Standard 7 (32-bit)		
Memory (CTO*)	4 GB pre-installed, can be upgradabled to 8 GB						4 GB pre-installed		
USB	USB 2.0 (Type A) x 2 USB 2.0 (M12 D-coded) x 1								
Power Input Voltage	12 to 48 VDC (M12 A-coded)								
Storage									
OS CFast Storage (CTO*)	Optional Note: 32-bit W7E requires at least an 8 GB CFast card, 64-bit W7E requires at least a 16 GB CFast card, and 64-bit Debian7 requires at least an 8 GB CFast card						8 GB CFast card pre-installed		
Backup CFast Storage (CTO*)	Optional								
SSD / HDD Storage (CTO*)	Optional Note: Anti-vibration storage kit (FK-75125-02) must be purchased separately to install an SSD/HDD								
Interface									
Display Interface	DVI-I x 2								
Audio Interface	Line in/out (M12 A-coded) x 1								
Ethernet Interface	10/100/1000 Mbps (M12 X-coded) x 2								
Serial Ports	RS-232/422/485 (DB9) x 4								
Digital Input Channels	6								
Digital Output Channels	2								
Environmental Limits									
Operating Temperature	T1: -25 to 55°C	TX: -40 to 70°C		T1: -25 to 55°C	TX: -40 to 70°C		T1: -25 to 55°C	TX: -40 to 70°C	
Conformal Coating	–		Yes	–		Yes	–		

*CTO = Configure To Order
Note:
Please refer to the Component Compatibility Guide (CCG) for the list of components that Moxa has validated to be compatible with this product. You can download the CCG from the Moxa product website.
For components with a Moxa P/N, you can order the components together with your product from Moxa and we will install the selected components in your product. Moxa guarantees the compatibility of the components installed in your CTO product.

Package Checklist
• V2406A embedded computer
• Wall-mounting kit
• Documentation and software CD or DVD
• Quick installation guide (printed)
• Warranty card

⫶ Optional Accessories (can be purchased separately)

Type	Model Name	Description
Ethernet		
Cable & Connector	CBL-M12XMM8PRJ45-BK-100-IP67	8-pin male X-coded M12-to-RJ45 Cat-5E UTP gigabit Ethernet cable, 1 meter, IP67-rated
Connector	M12X-8PMM-IP67	8-pin male X-coded circular threaded gigabit Ethernet connector, IP67-rated (for field installation)
Mounting Kits		
Isolated Wall-mounting Kit	V2400 Isolated Wall-mounting Kit	Wall-mounting kit with isolation protection, including two wall-mounting brackets and four screws
DIN-Rail Mounting Kit	DK-DC50131-01	DIN-rail mounting kit, including two DIN-rail brackets and eight screws
Power		
Cable	CBL-M12(FF5P)/Open-100 IP67	5-pin female A-coded M12 power cable, 1 meter, IP67-rated
Connector	M12A-5P-IP68	5-pin male circular threaded A-coded M12 power connector, IP68-rated (for field installation)
Adapter	PWR-24250-DT-S1	Power adapter for testing and system development in the office under ambient temperature conditions: Input: 100 to 240 VAC, 50 to 60 Hz, 1.5 A Output: 24 VDC, 2.5 A, 60 W
Power Cord	PWC-C7US-2B-183	Power cord with 2-pin connector, USA plug
Power Cord	PWC-C7EU-2B-183	Power cord with 2-pin connector, Euro plug
Power Cord	PWC-C7UK-2B-183	Power cord with 2-pin connector, British plug
Power Cord	PWC-C7AU-2B-183	Power cord with 2-pin connector, Australia plug
Power Cord	PWC-C7CN-2B-183	Power cord with 2-pin connector, China plug
Audio		
Connector	M12A-8PMM-IP67	8-pin male circular threaded A-coded M12 connector, IP67-rated (for field-installation)
USB		
Connector	M12A-5PMM-IP68	5-pin male circular threaded D-coded M12 USB connector, IP68-rated
Storage Kit		
Internal Storage Kit	FK-75125-02	Hard disk installation package (for HDD, SSD, EN 50155) (only available for the V2406A and V2426A series)
Battery		
Battery Kit	RTC Battery Kit	Lithium battery with built-in connector for easy replacement

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