

V2403 Series

Fanless, rugged, ready-to-go x86 Industrial IoT embedded computer



- > Intel Core-i series processor with three performance options
- > -40 to 70°C (system+LTE) operating temperature
- > Dual CFast sockets for storing OS and OS backup
- > Triple mini-PCIe sockets for storage and wireless modules; supports mSATA, Wi-Fi, 3G, LTE, GPS, and Bluetooth
- > Variety of interfaces: 4 serial ports, 2 Ethernet LAN ports, 4 DIs, 4 DOs, USB, HDMI, wireless
- > EN 61000-6-2 and EN 61000-6-4 certification; meets EMC standard for heavy industry
- > Up to 5 Grms anti-vibration and 100 G anti-shock
- > Ready-to-run Debian 8 and Windows Embedded Standard 7 platforms
- > Moxa Proactive Monitoring utility for system hardware health monitoring
- > Moxa Smart Recovery utility to recover system from boot failure (W7E only)



Overview

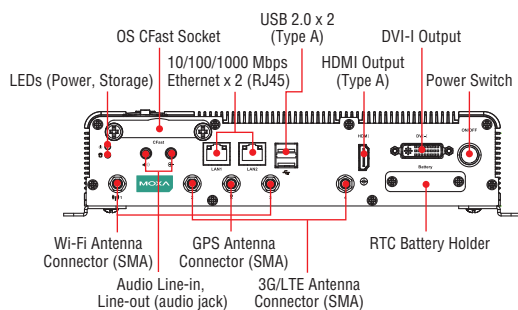
The Moxa V2403 series fanless x86 embedded computer is based on the Intel® 3rd gen Core-i™ series processor, features the most reliable I/O design to maximize connectivity, and supports dual wireless modules, making it suitable for a diverse range of communication applications. The computer's thermal design ensures reliable system operation in temperatures ranging from -40 to 70°C (with a special purpose Moxa wireless module installed). The V2403 series supports "Moxa Proactive Monitoring" for device I/O status monitoring and alerts, system temperature monitoring and alerts, and system power management. Monitoring system status closely makes it easier to recover from errors and provides the most reliable platform for your applications.

Applications:

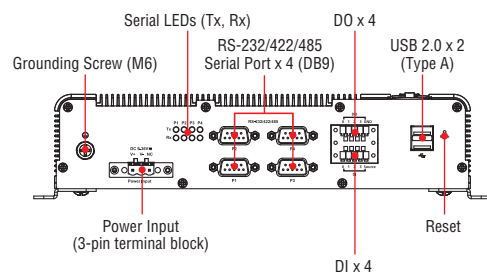
- Remote Terminal Unit (RTU)
- Data acquisition
- M2M communication (smart gateway)
- Digital signage
- Factory automation
- In-vehicle monitor/data logger (transportation)
- Programmable router
- Energy usage optimization
- Predictive maintenance
- Asset management

Appearance

Front View



Rear View



Hardware Specifications

Computer

CPU:

V2403-C2 Series: Intel® Celeron 1047UE (Dual Core, 2M Cache, 1.40 GHz)

V2403-C3 Series: Intel® Core i3-3217UE (Dual Core, 3M Cache, 1.60 GHz)

V2403-C7 Series: Intel® Core i7-3517UE (Dual Core, 4M Cache, 1.70 GHz)

OS: Windows Embedded Standard 7 64-bit or Linux Debian 8 64-bit

System Memory: 1 DDR3-1600 SDRAM slot, 8 GB max.

USB: USB 2.0 hosts x 4, type A connectors, supporting system boot up

Storage

CFast: 1 removable CFast socket for OS storage, 1 internal CFast socket for OS backup

mSATA: 1 internal mini-PCIe socket for storage expansion

SSD/HDD: 1 internal SATA-II connector for 2.5" SSD/HDD

Audio

Input: Line-in interface (audio jack)

Output: Line-out interface (audio jack)

Wireless Peripherals

Expansion Slot: 2 Mini-PCIe sockets

- 1 USB signal, for Sierra Wireless 3G/LTE module
- 1 USB + PCIe signal

USIM: 2 USIM slots

Display

Graphics Controller: Intel® HD (integrated)

Connector Type: 1 HDMI connector (type A), 1 DVI-I connector, 1 VGA connector (CV required)

Display Interface: HDMI supports HDMI 1.4b, 1920 x 1200 resolution @ 60 Hz

- 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 (RJ45) x 2

Isolation Protection: 1.5 kV

Wireless SMA Interface

Wi-Fi: 2 SMA connectors

3G/LTE: 2 SMA connectors

GPS: 1 SMA connector

Serial Interface

Serial Standards: RS-232/422/485 software selectable ports (DB9 male) x 4

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

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: DI x 4, source type

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 1: +3 V max

Logic level 0: +10 V to +30 V (Source to DI)

Connector Type: 10-pin screw-fastened Euroblock terminal

Isolation: 3 kV optical isolation

Digital Output

Output Channels: DO x 4, 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

Isolation: 3 kV optical isolation

LEDs

System: Power

Storage: CFast/SSD/HDD/mSATA

LAN: 2 LEDs per port (10/100/1000 Mbps)

Serial: 2 LEDs per port (Tx and Rx)

Switches and Buttons

Power Switch: on/off

Reset Button: System reset

Physical Characteristics

Housing: Aluminum

Weight:

"-W" Models: 2.247 kg (4.99 lb)

non "-W" Models: 2.168 kg (4.82 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: DIN rail, wall

Environmental Limits

Operating Temperature:

Standard models: -40 to 70°C (-40 to 158°F), with Moxa recommended wireless modules (3G/LTE + Wi-Fi) installed

Storage Temperature: -40 to 85°C (-40 to 185°F)

Ambient Relative Humidity: 5 to 95% (non-condensing)

Anti-Vibration: IEC 60068-2-64: 5 Grms, 5 Hz to 500 Hz, 1 hr/axis w/ mSATA, CFast, SSD

Anti-Shock: IEC 60068-2-27: 50 g/11ms ±X, ±Y, ±Z, 3 shocks each axis w/ mSATA, CFast, SSD

Power Requirements

Input Voltage: 9 to 36 VDC (3-pin terminal block for V+, V-, SG)

Input Current:

• 3.51 A @ 9 VDC

• 1.39 A @ 24 VDC

• 0.93 A @ 36 VDC

Power Consumption: 34 W

Standards and Certifications

Safety: UL 60950-1, CSA C22.2 No. 60950-1-03 (60950-1-07), EN 60950-1, CCC, UL 508

EMC: EN 55022/24, EN 61000-6-2/6-4

EMI: CISPR 22, FCC Part 15B Class A

EMS: IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV

IEC 61000-4-3 RS: 80 MHz to 1 GHz 10 V/m

IEC 61000-4-4 EFT: Power 2 kV; Signal 1 kV

IEC 61000-4-5 Surge: Power 2 kV; Signal: 1 kV

IEC 61000-4-6 CS: Signal: 1 kV

IEC 61000-4-8

Green Product: RoHS, CRoHS, WEEE

Reliability

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

MTBF (mean time between failures)

Time:

V2403-C2-W-T/V2403-C3-W-T /V2403-C7-W-T: 335,810 hrs

V2403-C2-T/V2403-C3-T/V2403-C7-T: 358,958 hrs

V2403-C2-T-W7E/V2403-C2-T-LX: 329,398 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.

Software Specifications

Linux

OS: Linux Debian 8

Web Server (Apache): Allows you to create and manage web sites; supports PHP and XML

Terminal Server (SSH): Provides secure encrypted communications between two unsecure hosts over an unsecure network

Kernel Version: GNU/Linux 3.16

System Shell: DASH (default), BASH

Text Editor: vim

File System: ext4

Internet Protocol Suite: TCP, UDP, IPv4, SNMPv2, ICMP, ARP, HTTP, ICMP, ARP, DHCP, NTP, NFS, SSH, SFTP, RSYNC, SSL

Internet Security Suite: OpenVPN, IPTables Firewall

Cellular Networking: QMI (Qualcomm MSM Interface): Glib-based library for talking to WWAN modems and devices that speak the Qualcomm MSM Interface (QMI) protocol.

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

Embedded Self-Health Maintenance Software: Moxa Proactive Monitoring

Security Update of Existing Software Packages: All software packages installed on the V2403 can be automatically updated using Debian Linux's Advanced Packaging Tool (APT) server or Moxa's server.

Windows Embedded Standard 7

Core OS:

- 64-bit support
- Remote Client
- Remote Procedure Call

Applications and Services Development:

- 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: Western, Middle Eastern, South East Asian, and South Asian

Graphics and Multimedia:

- MPEG Layer-3 Audio Codecs (MP3)
- MPEG4 Decoders
- DirectX and Windows Device Experience

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)
- Registry Filter
- WSDAPI for .NET

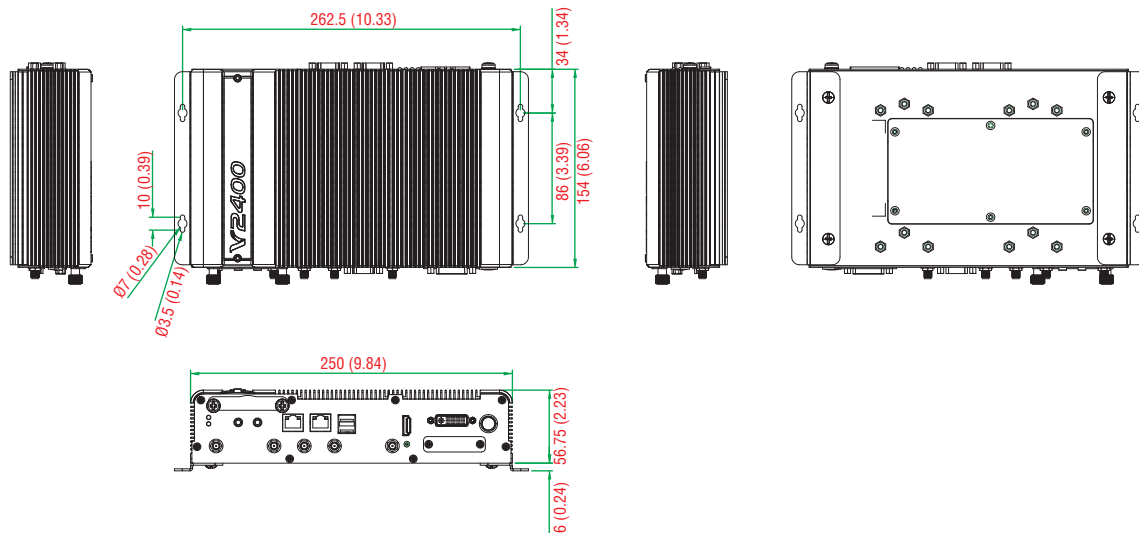
File Systems and Data Store:

- Windows Data Access Components
- Windows Backup and Restore

Maintenance: Moxa Proactive Monitoring and Moxa Smart Recovery

Dimensions

Unit: mm (inch)



Ordering Information

Pre-Configured Models

Model Name	CPU	RAM	OS CFast	OS	Backup CFast	Internal SSD/HDD Bracket	Storage	mSATA	HDMI	DVI-I	LAN	Serial	DI/O	USB 2.0	Expansion Socket	Wireless Connector	LTE Heat Sink	Operating Temp.	LTE Operating Temp.
V2403-C2-T-LX	1047UE	4 GB	8 GB	Debian 8	–	–	–	–	1	1	2	4	4/4	4	–	–	–	-40 to 70°C	–
V2403-C2-T-W7E	1047UE	4 GB	8 GB	W7E	–	–	–	–	1	1	2	4	4/4	4	–	–	–	-40 to 70°C	–

CTO Models, Default (optional)

Model Name	Must select for system to work				Backup CFast*	Internal SSD/HDD		mSATA*	HDMI	DVI-I	LAN	Serial	DI/O	USB 2.0	Expansion Socket	Wireless Connector	LTE Heat Sink	Operating Temp.	LTE Operating Temp.
	CPU	RAM*	OS CFast*	OS*		Bracket*	Storage*												
V2403-C2-T	1047UE					N/A (Enable)	N/A (0.5, 1, 2 TB)	–	1	1	2	4	4/4	4	–	–	–	-40 to 70°C	–
V2403-C3-T	3217UE							–	1	1	2	4	4/4	4	–	–	–	-40 to 70°C	–
V2403-C7-T	3517UE	4 GB	N/A (8, 16, 32 GB)	N/A (Debian 8 & W7E)	N/A (8, 16, 32 GB)	–	–	–	1	1	2	4	4/4	4	–	–	–	-40 to 70°C	–
V2403-C2-W-T	1047UE	(2, 8 GB)				–	–	N/A (8, 16, 32, 64 GB)	1	1	2	4	4/4	4	2	5	1	-40 to 70°C	-40 to 70°C
V2403-C3-W-T	3217UE					–	–		1	1	2	4	4/4	4	2	5	1	-40 to 70°C	-40 to 70°C
V2403-C7-W-T	3517UE					–	–		1	1	2	4	4/4	4	2	5	1	-40 to 70°C	-40 to 70°C

*CTO = Configured To Order

Note:

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 CTO products.

Package Checklist

- V2403 embedded computer
- Terminal block to power jack converter
- 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
Power			
	Adapter	PWR-24250-DT-S1	Power adapter, input voltage of 90 to 264 VAC, output voltage of 24 V at a 2.5A DC load
	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
Mounting Kits			
	Isolated Wall-Mounting Kit	V2400 Isolated Wall-Mounting Kit	Wall-mounting kits with isolation protection x 2, screws x 4
	DIN-Rail Mounting Kit	DK-DC50131-01	DIN-rail mounting kits x 2, screws x 8
Storage Kit			
	Internal Storage Kit	FK-75125-02	Storage brackets x 1, large silver screws for storage x 4, soft washers for damping x 4, small silver bronze screws x 4 for bracket, SATA power cables x 1, SATA cables x 1, golden spacers x 4 (only for the V2406 and V2426)
Battery			
	Battery Kit	RTC Battery Kit	Lithium battery with built-in connector for easy replacement

Wireless Accessory Packages

Note: The following packages can be purchased separately without the computer

Type		Model Name	Description
Wi-Fi			
	Mini-PCIe Card	V2403 Wi-Fi mini Card	SprakLAN WPEA-252NI Wi-Fi mini cards x 1, black screws x 4
	External Antenna	ANT-WDB-ARM-02	Wi-Fi external antenna with SMA connectors x 1
3G			
	Mini-PCIe Card	V2403 3G mini card	Sierra Wireless MC9090 3G mini cards x 1, heat sinks x 1, black screws x 4, silver screws x 1
	External Antenna	ANT-WCDMA-ASM-1.5	3G external antenna with SMA connectors x 1
LTE			
	Mini-PCIe Card	V2403 LTE-US mini card	Sierra Wireless MC7354 LTE mini cards x 1, heat sinks x 1, black screws x 4, silver screws x 1
	Mini-PCIe Card	V2403 LTE-EU mini card	Sierra Wireless MC7304 LTE mini cards x 1, heat sinks x 1, black screws x 4, silver screws x 1
	LTE-US External Antenna	ANT-LTEUS-ASM-01	LTE-US external antenna with SMA connectors x 1
	LTE-EU External Antenna	ANT-LTE-ASM-02	LTE-EU external antenna with SMA connectors x 1
GPS			
	GPS External Antenna	ANT-GPS-OSM-05-3M	26 dBi, 1572 MHz, L1 band SMA antennas x 1, for MC7354 and MC7304 only