

V2403C Series

Fanless rugged ready-to-go x86 Industrial IoT embedded computers



Features and Benefits

- Intel® Celeron®/Intel® Core™ i3/i5/i7 high performance network video recorder for rolling stock applications
- Multiple interfaces: Dual display (HDMI, DP), 4 serial ports, 4 GbE ports, 4 DIs, 4 DOs, 4 USB, and 2 Mini PCIe slots for wireless
- Power management with Ignition on/off delay (external rotate switch)
- E1 Mark, ISO 7637-2, and MIL-STD-810G compliant
- Compliant with EN 50121-4

Certifications



Introduction

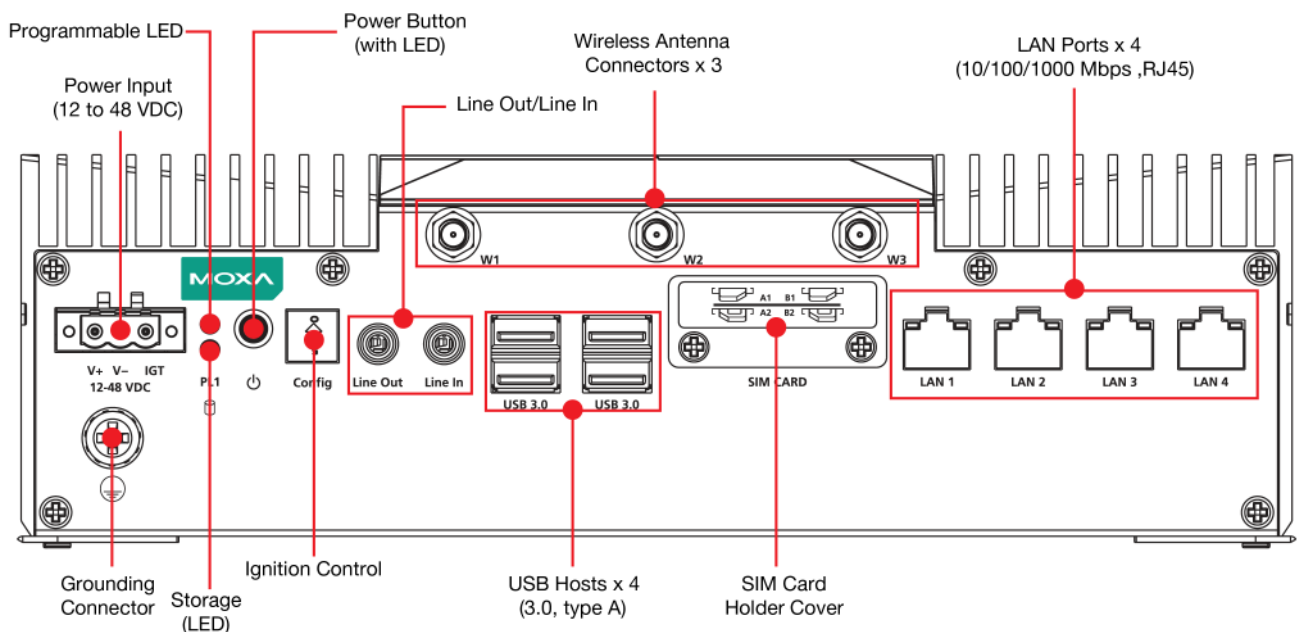
The V2403C Series embedded computers are built around an Intel® Core™ i7/i5/i3 or Intel® Celeron® high-performance processor and come with up to 32 GB RAM, one mSATA slot, and two HDD/SSD for storage expansion. The computers are compliant with EN 50121-4, E1 mark, and ISO-7637-2 standards making them ideal for rail-wayside and in-vehicle applications.

V2403C computers are equipped with a rich set of interfaces including 4 gigabit Ethernet ports, 4 RS-232/422/485 serial ports, 4 DIs, 4 DOs, and 4 USB 3.0 ports. In addition, they are also provided with 1 DisplayPort output and 1 HDMI output with 4K resolution.

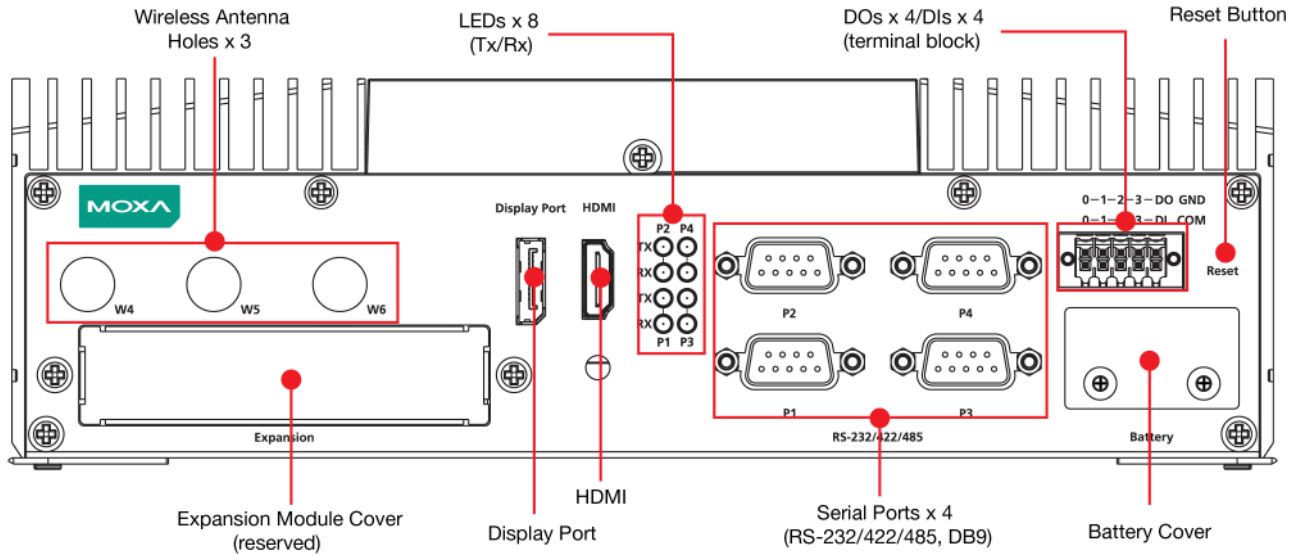
Reliable connections and good power management are key to in-vehicle applications. The computers are provided with 2 mPCIe wireless expansion slots and 4 SIM-card slots to establish redundant LTE/Wi-Fi connectivity. In terms of power management, startup and shutdown delay mechanisms help in avoiding system malfunction and damage.

Appearance

Front View



Rear View



Specifications

Computer

| | |
|---------------------|--|
| CPU | V2403C-KL1-T: Intel® Celeron® 3965U processor (2M Cache, 2.2 GHz) V2403C-KL3-T: Intel® Core™ i3-7100U processor (3M Cache, 2.4 GHz) V2403C-KL5-T: Intel® Core™ i5-7300U processor (3M Cache, 2.6 GHz) V2403C-KL7-T: Intel® Core™ i7-7600U processor (4M Cache, 2.8 GHz) |
| Storage Slot | 2.5-inch HDD/SSD slots x 2 mSATA slots x 1 |
| Supported OS | Linux Debian 9 Windows 10 Embedded IoT Ent 2019 LTSC 64-bit |
| System Memory Slot | SODIMM DDR4 slot x 2 |
| DRAM | 32 GB max |
| Graphics Controller | Celeron Model: Intel HD Graphics 610 i3/i5/i7 Models: Intel HD Graphics 620 |

Computer Interface

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|----------------------------|---|
| Ethernet Ports | Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 4 |
| Serial Ports | RS-232/422/485 ports x 4, software selectable (DB9 male) |
| Digital Output | DOs x 4 |
| Digital Input | DIs x 4 |
| USB 3.0 | USB 3.0 hosts x 4, type-A connectors |
| Audio Input/Output | Line in x 1, Line out x 1, 3.5 mm phone jack |
| Video Output | HDMI x 1, HDMI connector (standard) DP x 1, DisplayPort connector (standard) |
| Wi-Fi Antenna Connector | RP-SMA x 3 |
| Cellular Antenna Connector | SMA x 2 (optional) |

| | |
|-----------------------|---------------------|
| GPS Antenna Connector | SMA x 1, (optional) |
| Expansion Slots | mPCIe slot x 2 |
| SIM Format | Micro |
| Number of SIMs | 4 |

Digital Inputs

| | |
|-------------------------|--|
| Connector | Screw-fastened Euroblock terminal |
| I/O Mode | DI |
| Isolation | 3k VDC |
| Sensor Type | Wet contact (NPN or PNP) Dry contact |
| Dry Contact | Logic 0: Short to GND Logic 1: Open |
| Wet Contact (DI to COM) | Logic 0: 0 to 3 VDC Logic 1: 10 to 30 VDC |

Digital Outputs

| | |
|----------------|-----------------------------------|
| Connector | Screw-fastened Euroblock terminal |
| Current Rating | 200 mA per channel |
| I/O Type | Sink |
| Voltage | 0 to 30 VDC |
| Isolation | 3k VDC |

LED Indicators

| | |
|--------|-------------------------------|
| System | Power x 1 Storage x 1 |
| LAN | 2 per port (10/100/1000 Mbps) |
| Serial | 2 per port (Tx, Rx) |

Serial Interface

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|--------------|--|
| Baudrate | 50 bps to 115.2 kbps |
| Connector | DB9 male |
| ESD | Contact: 6 kV; Air: 8 kV (level 3) |
| Isolation | 2 kV |
| Data Bits | 5, 6, 7, 8 |
| Flow Control | RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485, RTS Toggle (RS-232 only) |
| Parity | None, Even, Odd, Space, Mark |
| Stop Bits | 1, 1.5, 2 |

Serial Signals

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|-----------|--|
| RS-232 | TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND |
| RS-422 | Tx+, Tx-, Rx+, Rx-, GND |
| RS-485-2w | Data+, Data-, GND |
| RS-485-4w | Tx+, Tx-, Rx+, Rx-, GND |

Power Parameters

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|--------------------------|----------------|
| Input Voltage | 12 to 48 VDC |
| Power Connector | Terminal block |
| Power Consumption (Max.) | 70 W (max.) |

Physical Characteristics

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|---------------------------|---|
| Housing | Aluminum |
| IP Rating | IP20 |
| Dimensions (without ears) | 250 x 75 x 150 mm (9.84 x 2.95 x 5.91 in) |
| Weight | 2,500 g (5.51 lb) |
| Installation | Wall mounting (standard) |

Environmental Limits

| | |
|--|----------------------------|
| Operating Temperature | -40 to 70°C (-40 to 158°F) |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F) |
| Ambient Relative Humidity | 5 to 95% (non-condensing) |

Standards and Certifications

| | |
|-----------|--|
| EMI | CISPR 32, 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 IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF |
| EMC | EN 55032/35 |
| Safety | EN 62368-1, IEC 62368-1, UL 62368-1 |
| Railway | EN 50121-4 |
| Shock | IEC 60068-2-27, IEC 61373, MIL-STD-810G |
| Vibration | IEC 60068-2-64, IEC 61373, MIL-STD-810G |

Declaration

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|---------------|-------------------|
| Green Product | RoHS, CRoHS, WEEE |
|---------------|-------------------|

MTBF

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|-----------|--------------------------|
| Time | 464,506 hrs |
| Standards | Telcordia (Bellcore), GB |

Warranty

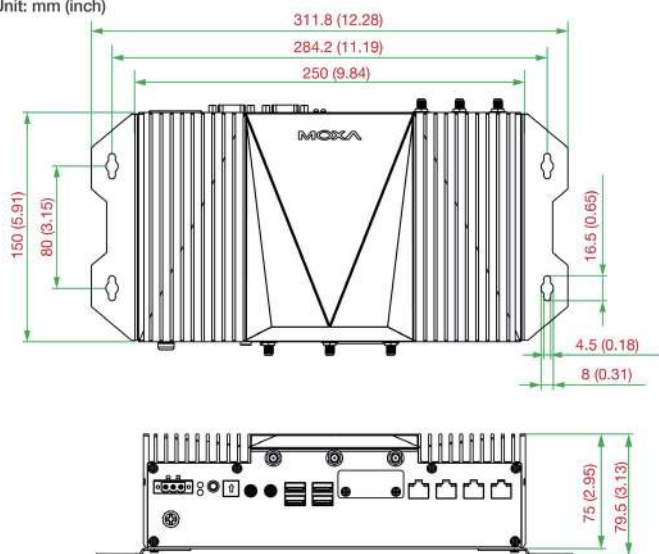
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|-----------------|--|
| Warranty Period | 3 years |
| Details | See www.moxa.com/warranty |

Package Contents

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|------------------|--|
| Device | 1 x V2403C Series computer |
| Installation Kit | 2 x SSD/HDD trays 1 x clamp for HDMI cable 1 x wall-mounting kit |
| Documentation | 1 x quick installation guide 1 x warranty card |

Dimensions

Unit: mm (inch)



Ordering Information

| Model Name | CPU | Memory (built-in) | Optional OS Storage (mSATA) | Optional SSD/HDD | USB Ports | Power Input | Operating Temp. | Conformal Coating |
|--------------|-----------------------|-------------------|-----------------------------|------------------|----------------------|-------------------------------|-----------------|-------------------|
| V2403C-KL1-T | Intel® Celeron® 3965U | - | 1 | 2 | 4 x USB 3.0 (type A) | 12 to 48 VDC (Terminal Block) | -40 to 70°C | - |
| V2403C-KL3-T | Intel® Core™ i3-7100U | - | 1 | 2 | 4 x USB 3.0 (type A) | 12 to 48 VDC (Terminal Block) | -40 to 70°C | - |
| V2403C-KL5-T | Intel® Core™ i5-7300U | - | 1 | 2 | 4 x USB 3.0 (type A) | 12 to 48 VDC (Terminal Block) | -40 to 70°C | - |
| V2403C-KL7-T | Intel® Core™ i7-7600U | - | 1 | 2 | 4 x USB 3.0 (type A) | 12 to 48 VDC (Terminal Block) | -40 to 70°C | - |

Accessories (sold separately)

Cables

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| CBL-M12(FF5P)/OPEN-100 IP67 | A-coded M12-to-5-pin power cable, IP67-rated 5-pin female M12 connector, 1 m |
|-----------------------------|--|

Wi-Fi Wireless Modules

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| V2400-WLAN22-AC | SparkLAN WPEQ-261ACNI (BT) Wi-Fi mini card, 4 black screws |
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|----------------------|--|
| V2406C TPM2.0 Module | SLB9665XT2.0 TPM 2.0 module |
| V2400 Cover-DB9 | Dual DB9 expansion cover, 4 male hex standoff spacer pillars |

Cellular Wireless Modules

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|-------------------|--|
| V2403C-LTECat4-AP | Telit LE910C4 LTE Cat. 4 mini card for the Asia-Pacific region, 3 SMA antenna cables |
| V2403C-LTECat4-EU | Telit LE910C4 LTE Cat. 4 mini card for Europe, 3 SMA antenna cables |
| V2403C-LTECat4-NF | Telit LE910C4 LTE Cat. 4 mini card for North America, 3 SMA antenna cables |

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