

V2406C Series

Intel® 7th/8th Gen Core™/Celeron® railway computers with 2 hot-swappable HDD/SSD slots, 2 Mini PCIe expansion slots for wireless, 24 to 110 VDC power input with isolation, -40 to 70°C operating temperature



Features and Benefits

- Intel® Celeron®/Intel® Core™ i3/i5/i7 high performance network video recorder for rolling stock applications
- DDR4 memory slot; up to 32 GB capacity
- Supports dual independent displays (VGA and HDMI with 4K resolution)
- 2 Gigabit Ethernet ports with M12 X-coded connectors
- M12 A-coded power connector
- Complies with all EN 50155 mandatory test items¹
- Compliant with EN 50121-4
- IEC 61373 certified for shock and vibration resistance
- -40 to 70°C wide-temperature models available

Certifications



Introduction

The V2406C 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 hot-swappable HDD/SSD for storage expansion. The computers are compliant with EN 50155:2017 and EN 50121-4 standards covering operating temperature, power input voltage, surge, ESD, and vibration, making them suitable for railway onboard and wayside applications.

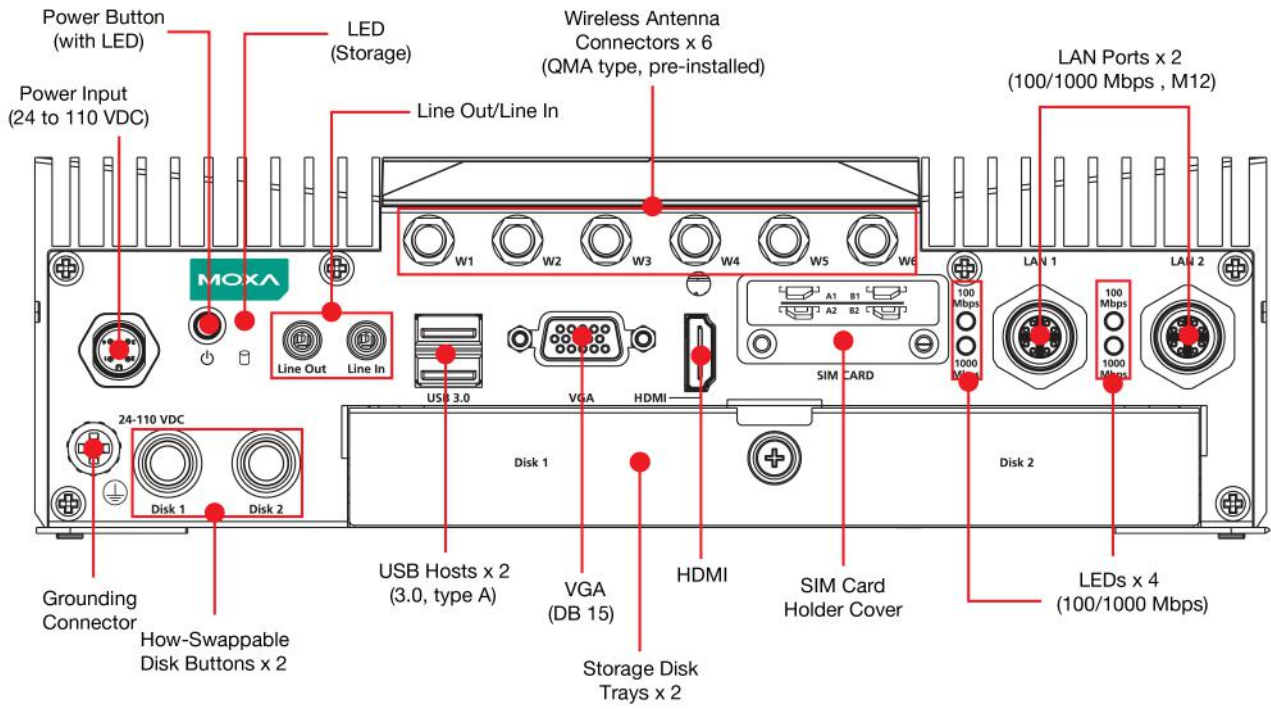
For connecting with onboard and wayside systems and devices, V2406C computers are equipped with a rich set of interfaces including 2 Gigabit Ethernet ports, 4 RS-232/422/485 serial ports, 6 DIs, 2 DOs, and 4 USB 3.0 ports. In addition, the V2406C computers provide 1 VGA video output and 1 HDMI output with 4K resolution support.

For reliable connectivity in train-to-ground (T2G) applications, the computers are provided with 2 mPCIe wireless expansion slots and 4 SIM-card slots. These help establish redundant LTE/Wi-Fi connectivity, ensuring solid bidirectional communications between a fast-moving train and the wayside applications. In addition, the preinstalled QMA cable for wireless modules can help reduce assembly efforts and ensure low RF leakage.

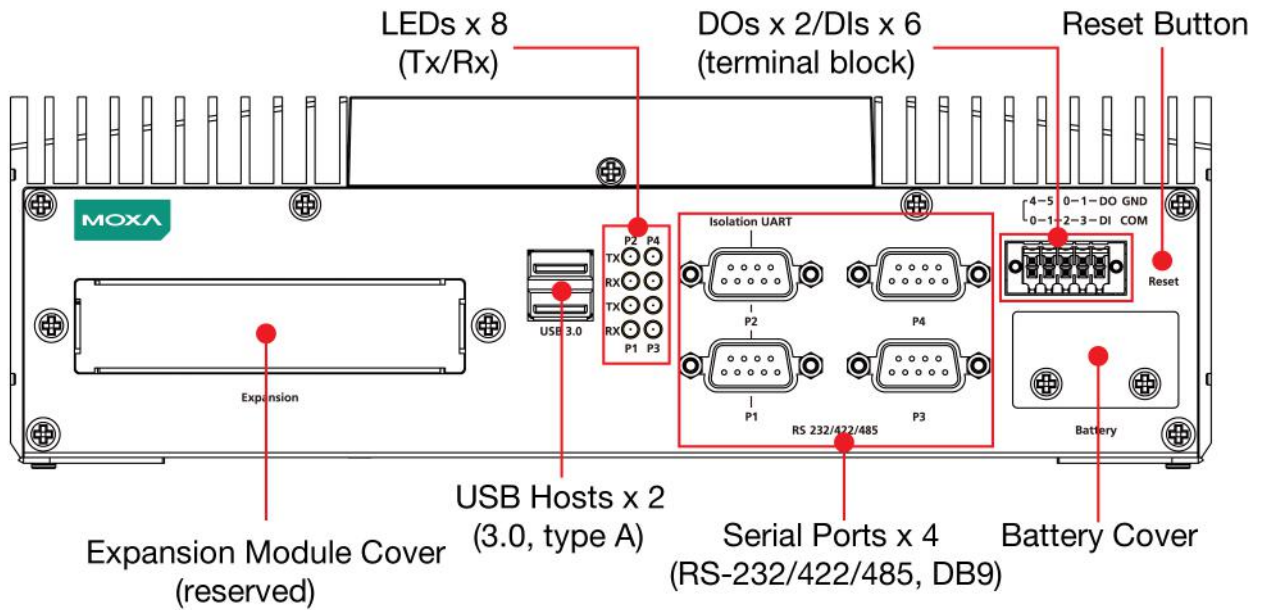
1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: www.moxa.com/doc/specs/EN_50155_Compliance.pdf

Appearance

Front View



Rear View



Specifications

Computer

| | |
|---------------------|---|
| CPU | V2406C-KL1-T/KL1-CT-T: Intel® Celeron® 3965U processor (2M cache, 2.2 GHz) V2406C-KL3-T: Intel® Core™ i3-7100U processor (3M cache, 2.4 GHz) V2406C-KL5-T: Intel® Core™ i5-7300U processor (3M cache, 2.6 GHz) V2406C-KL7-T/ KL7-CT-T: Intel® Core™ i7-7600U processor (4M cache, 2.8 GHz) V2406C-WL1-T/ WL1-CT-T: Intel® Celeron® 4305UE processor (2M cache, 2 GHz) V2406C-WL3-T: Intel® Core™ i3-8145UE processor (4M cache, 2.2 GHz) V2406C-WL5-T: Intel® Core™ i5-8365UE processor (6M cache, 1.6 GHz) V2406C-WL7-T/ WL7-CT-T: Intel® Core™ i7-8665UE processor (8M cache, 1.7 GHz) |
| Storage Slot | 2.5-inch HDD/SSD slots x 2 mSATA slots x 1 |
| Supported OS | Order via the Moxa Computer Configuration System (CCS): Windows 10 Embedded IoT Ent 2019 LTSC 64-bit Windows 10 Embedded IoT Ent 2021 LTSC 64-bit WL Models: Moxa Industrial Linux 2.x (Debian 10, kernel 4.19) KL Models: Debian 9 (kernel 4.9) Download Drivers From Website: Linux Debian 11/Ubuntu 20.04/CentOS 7.9 drivers |
| System Memory Slot | SODIMM DDR4 slot x 2 |
| DRAM | 32 GB max |
| Graphics Controller | Intel® Celeron® Models: Intel® HD Graphics 610 Intel® Core™ i3/i5/i7 Models: Intel® HD Graphics 620 |

Computer Interface

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|--------------------|---|
| Ethernet Ports | Auto-sensing 10/100/1000 Mbps ports (M12 X-coded) x 2 |
| Digital Output | DOs x 2 |
| Serial Ports | RS-232/422/485 ports x 4, software selectable (DB9 male) |
| Digital Input | DIs x 6 |
| 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 | VGA x 1, 15-pin D-sub connector (female) HDMI x 1, HDMI connector (type A) |
| Expansion Slots | mPCIe slots x 2 |

Digital Inputs

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

Digital Outputs

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|----------------|--|
| Connector | Screw-fastened Euroblock terminal 10-pin terminal block |
| Current Rating | 200 mA per channel |
| I/O Type | Sink |
| Voltage | 0 to 30 VDC |
| Isolation | 3k VDC |

LED Indicators

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|--------|-------------------------------|
| 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 | 24 to 110 VDC |
| Power Connector | M12 A-coded male connector |
| Power Consumption (Max.) | 70 W (max.) |

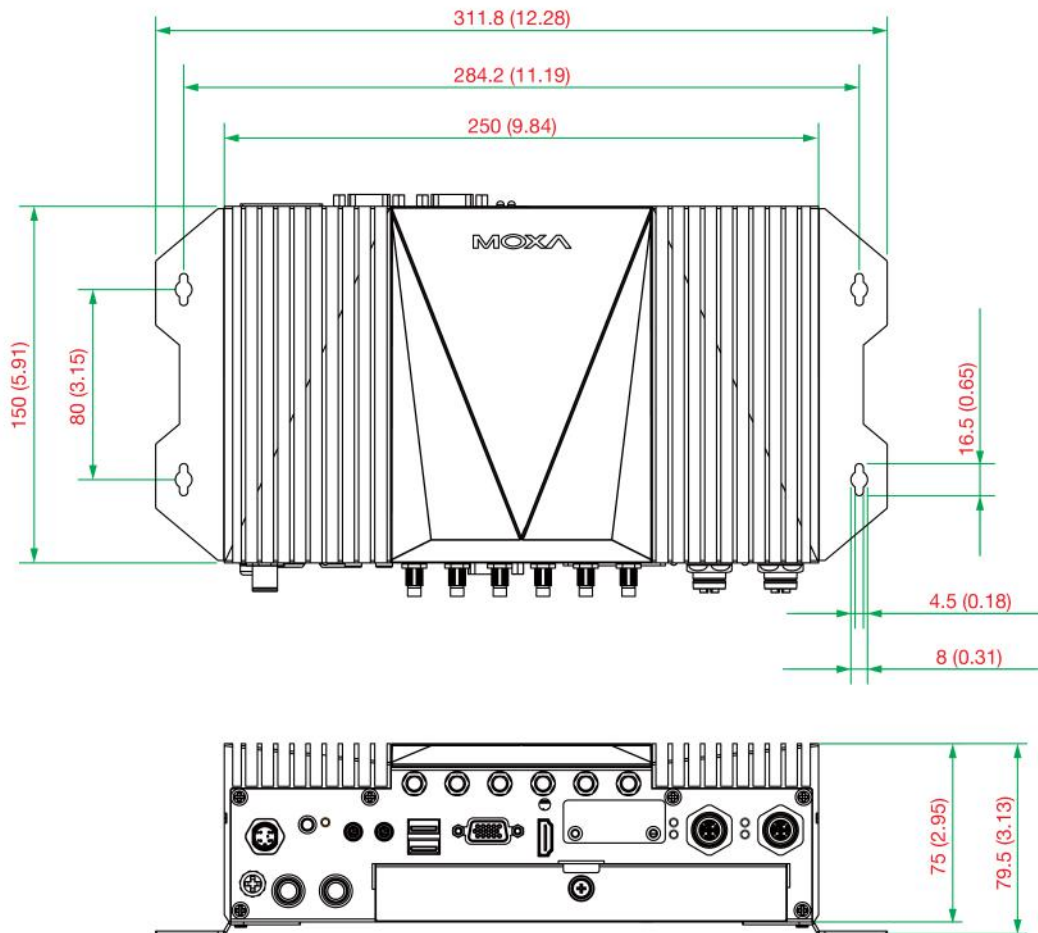
Physical Characteristics

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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 | 2,700 g (5.95 lb) |

| | |
|--|--|
| Installation | Wall mounting (standard) |
| Protection | PCB conformal coating Available on request |
| 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 |
| Railway Fire Protection | EN 45545-2 |
| EMC | EN 55032/35 |
| Safety | EN 62368-1 IEC 62368-1 UL 62368-1 |
| Railway | EN 50121-4 EN 50121-3-2 EN 50155:2017 |
| Shock | IEC 60068-2-27, IEC 61373 |
| Vibration | IEC 60068-2-64, IEC 61373 |
| Declaration | |
| Green Product | RoHS, CRoHS, WEEE |
| MTBF | |
| Time | KL Models: 382,506 hrs WL Models: 369,408 hrs |
| Standards | Telcordia (Bellcore), GB |
| Warranty | |
| Warranty Period | 3 years |
| Details | See www.moxa.com/warranty |
| Package Contents | |
| Device | 1 x V2406C 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 | OS Storage (mSATA) | SSD/HDD (Hot Swap) | USB | Power Input | Operating Temp. | Conformal Coating |
|-----------------|---------------|--|---------------------------|-------------------------|-----------------------|-----------------------------|-----------------|-------------------|
| V2406C-KL1-T | Celeron 3965U | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -40 to 70°C | - |
| V2406C-KL3-T | i3-7100U | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -40 to 70°C | - |
| V2406C-KL5-T | i5-7300U | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -40 to 70°C | - |
| V2406C-KL7-T | i7-7600U | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -40 to 70°C | - |
| V2406C-KL1-CT-T | Celeron 3965U | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -40 to 70°C | ✓ |
| V2406C-KL7-CT-T | i7-7600U | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -40 to 70°C | ✓ |

| Model Name | CPU | Memory | OS Storage (mSATA) | SSD/HDD (Hot Swap) | USB | Power Input | Operating Temp. | Conformal Coating |
|-----------------|----------------|--|---------------------------|-------------------------|-----------------------|-----------------------------|-----------------|-------------------|
| V2406C-WL1-T | Celeron 4305UE | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -40 to 70°C | - |
| V2406C-WL3-T | i3-8145UE | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -40 to 70°C | - |
| V2406C-WL5-T | i5-8365UE | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -40 to 70°C | - |
| V2406C-WL7-T | i7-8665UE | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -40 to 70°C | - |
| V2406C-WL1-CT-T | Celeron 4305UE | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -40 to 70°C | ✓ |
| V2406C-WL7-CT-T | i7-8665UE | 2, DDR4, 2133 MHz (optional); 32 GB max. | 1 (optional); 512 GB max. | 2 (optional); 1 TB max. | 4 x USB 3.0 (-type A) | 24 to 110 VDC (M12 A-coded) | -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 |
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Mounting Kits

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| V2406C Wall mount kit | Single-bracket wall-mounting kit for the V2406C Series with 8 M3 x 6 mm screws |
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Wi-Fi Wireless Modules

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|-------------------------|--|
| V2400 Cover-DB9 | Dual DB9 expansion cover, 4 male hex standoff spacer pillars |
| V2400-WLAN22-AC | SparkLAN WPEQ-261ACNI (BT) Wi-Fi mini card, 4 black screws |
| V2406C TPM2.0 CT Module | SLB9665XT2.0 TPM 2.0 module with conformal coating |
| V2406C TPM2.0 Module | SLB9665XT2.0 TPM 2.0 module without conformal coating |

Cellular Wireless Modules

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|-------------------|--|
| V2406C-LTECat4-AP | Telit LE910C4 LTE Cat. 4 mini card for the Asia-Pacific region |
| V2406C-LTECat4-EU | Telit LE910C4 LTE Cat. 4 mini card for European region |
| V2406C-LTECat4-NF | Telit LE910C4 LTE Cat. 4 mini card for the North American region |

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