V2406C Series

Intel® 7th Gen Core™ CPU railway computer with power isolation, 2 mini PCIe expansion slots for wireless, and 2 hot-swappable HDD/SSD slots

Features and Benefits

- Intel® Celeron®/Intel® Core™ i3/i5/i7 high performance network video recorder for rolling stock applications

- Two hot-swappable 2.5-inch HDD or SSD storage expansion trays

- 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 items[1]

- Compliant with EN 50121-4

- IEC 61373 certified for shock and vibration resistance

- -40 to 70°C wide-temperature models available

Certifications

EN 50121-4 CE EN 50155 FC

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.
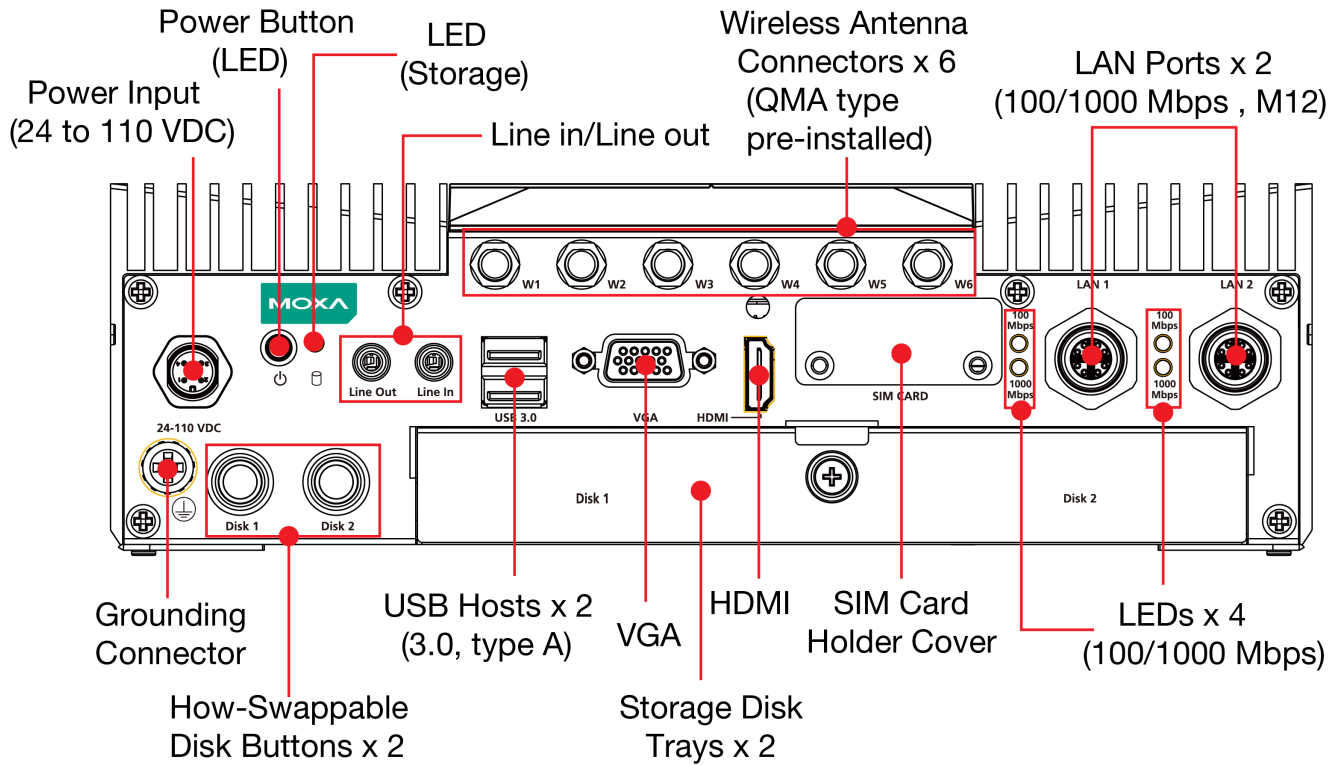
For connecting with onboard and wayside systems and devices, V2406C computers are equipped with a rich set of interfaces including 2 Gigabit Ethernet ports, 4 RS-232/422/485 serial ports, 6 DIs, 2 DOs, and 4 USB 3.0 ports. In addition, the V2406C computers provide 1 VGA video output and 1 HDMI output 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.
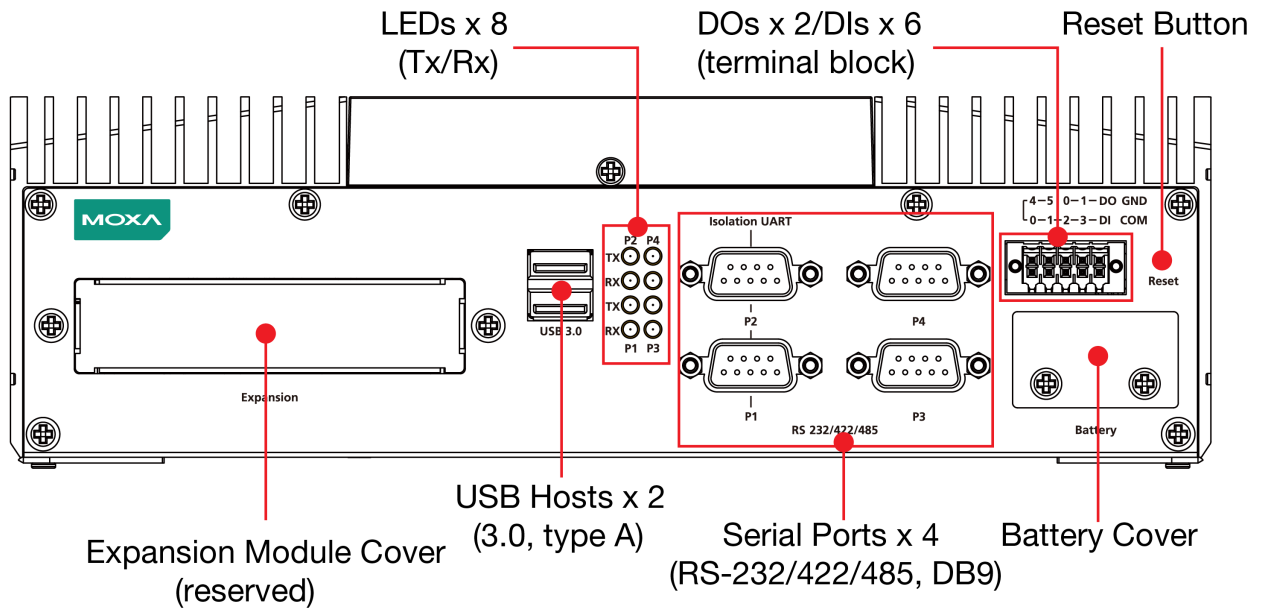
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1.   This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: www.moxa.com/doc/specs/EN_50155_Compliance.pdf

Appearance

Front View

Power Button (LED)

LED (Storage)

Power Input (24 to 110 VDC)

Line in/Line out

Wireless Antenna Connectors x 6 (QMA type pre-installed)

LAN Ports x 2 (100/1000 Mbps , M12)

Grounding Connector

USB Hosts x 2 (3.0, type A)

VGA

HDMI

SIM Card Holder Cover

LEDs x 4 (100/1000 Mbps)

How-Swappable Disk Buttons x 2

Storage Disk Trays x 2

Rear View

LEDs x 8 (Tx/Rx)

DOs x 2/DIs x 6 (terminal block)

Reset Button

Expansion Module Cover (reserved)

USB Hosts x 2 (3.0, type A)

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

Battery Cover

Specifications

Computer

CPU	V2406C-KL1-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: Intel® Core™ i7-7600U processor (4M Cache, 2.8 GHz)
Storage Slot	2.5-inch HDD/SSD slots x 2 mSATA slots x 1, internal mini-PCIe socket

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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	Intel® HD Graphics 620

Computer Interface

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)

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 "1": 10 to 30 VDC Logic "0": 0 0 to 3 VDC

Digital Outputs

Connector	Screw-fastened Euroblock terminal 10-pin terminal block
Current Rating	200 mA per channel
I/O Type	Sink
Voltage	24 to 30 VDC
Isolation	3kVDC

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

Baudrate	50 bps to 921.6 kbps
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

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

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

Physical Characteristics

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 V2406C 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

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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	394,260 hrs
Standards	Telcordia (Bellcore), GB

Warranty

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

Package Contents

Device	1 x V2406C Series computer
Documentation	1 x quick installation guide 1 x warranty card
Installation Kit	2 x SSD/HDD trays 1 x clamp for HDMI cable 1 x wall-mounting kit

Dimensions

Unit: mm (inch)
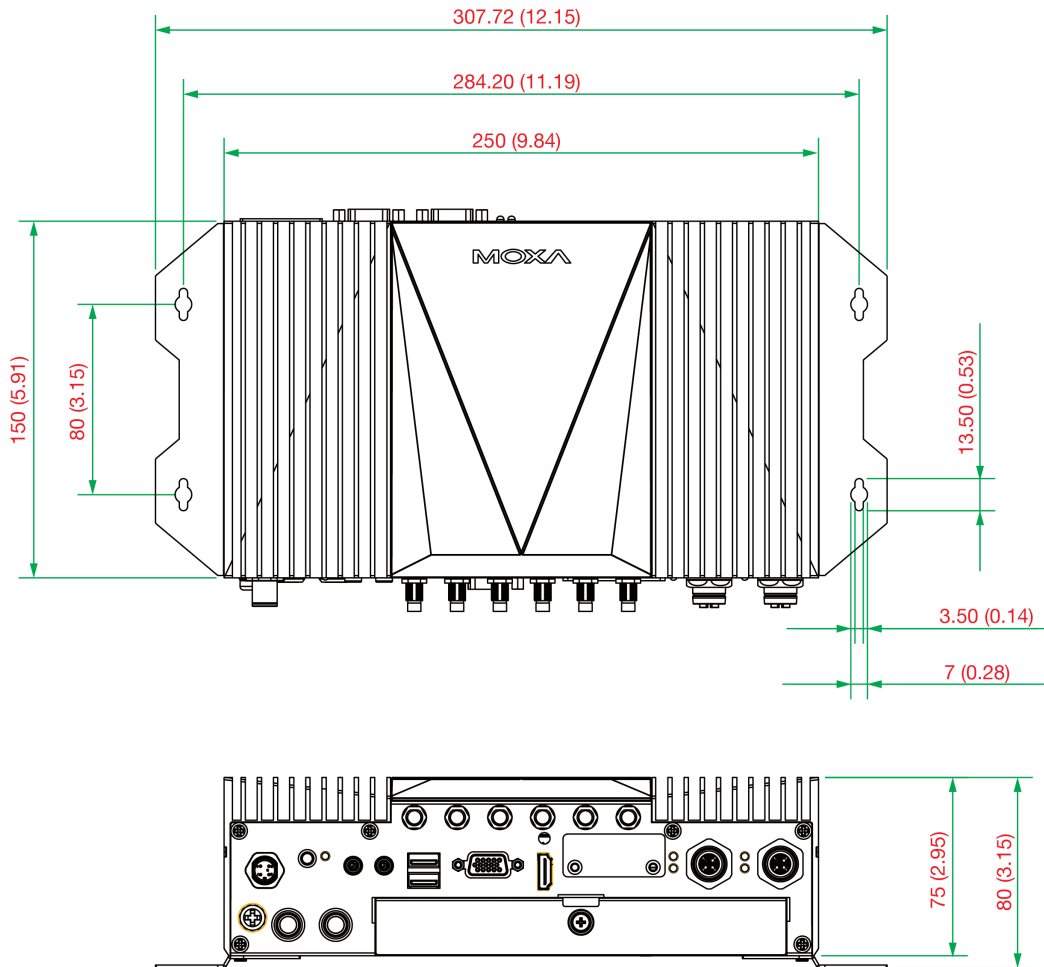
Ordering Information

Model Name	CPU	Memory (built-in)	Optional OS Storage (mSATA)	Optional SSD/HDD (Hot Swap)	USB Ports	Power Input	Operating Temp.	Conformal Coating
V2406C-KL1-T	Intel® Celeron® 3965U	8 GB	1	2	4 x USB 3.0 (type A)	24 to 110 VDC (M12 A-coded)	-40 to 70°C	–
V2406C-KL3-T	Intel® Core™ i3-7100U	8 GB	1	2	4 x USB 3.0 (type A)	24 to 110 VDC (M12 A-coded)	-40 to 70°C	–
V2406C-KL5-T	Intel® Core™ i5-7300U	8 GB	1	2	4 x USB 3.0 (type A)	24 to 110 VDC (M12 A-coded)	-40 to 70°C	–
V2406C-KL7-T	Intel® Core™ i7-7600U	8 GB	1	2	4 x USB 3.0 (type A)	24 to 110 VDC (M12 A-coded)	-40 to 70°C	–
V2406C-KL1-T-CT	Intel® Celeron® 3965U	8 GB	1	2	4 x USB 3.0 (type A)	24 to 110 VDC (M12 A-coded)	-40 to 70°C	✓
V2406C-KL7-T-CT	Intel® Core™ i7-7600U	8 GB	1	2	4 x USB 3.0 (type A)	24 to 110 VDC (M12 A-coded)	-40 to 70°C	✓

Accessories (sold separately)

Power Cords

PWC-C7US-2B-183	Power cord with United States (US) plug, 10A/125V, 1.83 m
PWC-C7EU-2B-183	Power cord with Continental Europe (EU) plug, 2.5A/250V, 1.83 m
PWC-C7CN-2B-183	Power cord with two-prong China (CN) plug, 1.83 m

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PWC-C7UK-2B-183	Power cord with United Kingdom (UK) plug, 2.5A/250V, 1.83 m
PWC-C7AU-2B-183	Power cord with Australian (AU) plug, 2.5A/250V, 1.83 m

Battery Kits

RTC Battery Kit	Lithium battery with built-in connector

Cables

CBL-M12(FF5P)/Open-100 IP67	A-coded M12-to-5-pin power cable, IP67-rated 5-pin female M12 connector, 1 m
CBL-M12XMM8PRJ45-BK-100-IP67	M12-to-RJ45 Cat-5E UTP gigabit Ethernet cable, 8-pin X-coded male connector, IP67, 1 m

Power Adapters

PWR-24270-DT-S1	Power adapter, input voltage 90 to 264 VAC, output voltage 24 V with 2.5 A DC load

Connectors

M12X-8PMM-IP67	8-pin male X-coded circular threaded gigabit Ethernet connector, IP67

Wi-Fi Wireless Modules

V2400-WLAN22-AC	jjPlus JWX6058 Wi-Fi mini card with 4 black screws
V2400-LTECat4-NA	Sierra WP7610 LTE Cat. 4 mini card with 2 black screws for North America
V2400-LTECat4-EMEA	Sierra WP7607 LTE Cat. 4 mini card with 2 black screws for the EMEA region
V2406C TPM2.0 Module	SLB9665XT2.0 TPM 2.0 module

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