V2416A Series

Compact, fanless, vibration-proof computers for rolling stock applications

Features and Benefits

- Intel Celeron/Core i7 processor

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

- Dual independent DVI-I displays

- 2 Gigabit Ethernet ports with M12 X-coded connectors

- 2 CFast sockets for OS backup

- M12 A-coded power connector

- Compliant with EN 50121-4

- Complies with all EN 50155 mandatory test items[1]

- IEC 61373 certified for shock and vibration resistance

- Ready-to-run Debian 7, Windows Embedded Standard 7, and Windows 10 Embedded IoT Enterprise 2016 LTSB platforms

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

- Supports SNMP-based system configuration, control, and monitoring (Windows only)

Certifications
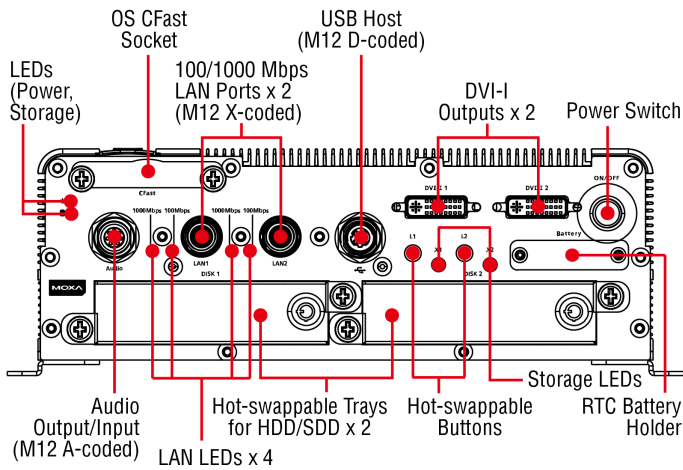
EN 50155   EN 50121-4   CE   FC

Introduction

The V2416A Series embedded computers are based on the Intel 3rd Gen processor and feature 4 RS-232/422/485 serial ports, dual LAN ports, and 3 USB 2.0 hosts. In addition, the V2416A computers provide dual DVI-I outputs and comply with the mandatory test items of the EN 50155 standard, making them suitable for a variety of industrial applications.

The CFast socket, SATA connectors, and USB sockets provide the V2416A computers with the reliability needed for industrial applications that require data buffering and storage expansion. Most importantly, the V2416A computers come with 2 hot-swappable storage trays for inserting additional storage media, such as hard disk or solid-state drives, and support hot swapping for convenient, fast, and easy storage replacement. Each storage tray has its own LED to indicate whether or not a storage module is plugged in. The V2416A Series computers come preinstalled with a choice of Linux Debian 7 or Windows Embedded Standard 7 to provide programmers with a familiar environment in which to develop sophisticated, bug-free application software at a low cost.
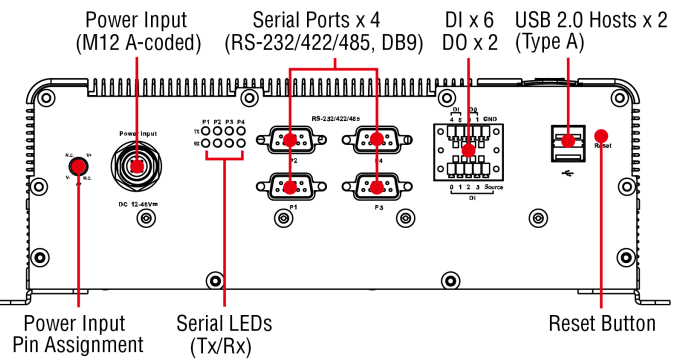
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1. This product is suitable for rolling stock railway applications, as defined by the EN 50155 standard. For a more detailed statement, click here: www.moxa.com/doc/specs/EN_50155_Compliance.pdf

Appearance

Front View

LEDs (Power, Storage)
OS CFast Socket
100/1000 Mbps LAN Ports x 2 (M12 X-coded)
USB Host (M12 D-coded)
DVI-I Outputs x 2
Power Switch

Audio Output/Input (M12 A-coded)
LAN LEDs x 4
Hot-swappable Trays for HDD/SDD x 2
Hot-swappable Buttons
Storage LEDs
RTC Battery Holder

Rear View

Power Input (M12 A-coded)
Serial Ports x 4 (RS-232/422/485, DB9)
DI x 6 DO x 2
USB 2.0 Hosts x 2 (Type A)

Power Input Pin Assignment
Serial LEDs (Tx/Rx)
Reset Button

Specifications

Computer

CPU	V2416A-C2 Series: Intel® Celeron® Processor 1047UE (2 M cache, 1.40 GHz) V2416A-C7 Series: Intel® Core™ i7-3517UE Processor (4 M cache, up to 2.80 GHz)
System Chipset	Mobile Intel® HM65 Express Chipset
Graphics Controller	Intel® HD Graphics 4000 (integrated)
System Memory Pre-installed	4 GB DDR3
System Memory Slot	SODIMM DDR3/DDR3L slot x 1
Supported OS	Linux Debian 7 Windows Embedded Standard 7 (WS7E) 32-bit Windows Embedded Standard 7 (WS7E) 64-bit
Storage Slot	CFast slot x 2

Computer Interface

Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (M12 X-coded) x 2
Serial Ports	RS-232/422/485 ports x 4, software selectable (DB9 male)
USB 2.0	USB 2.0 hosts x 1, M12 D-coded connector USB 2.0 hosts x 2, type-A connectors
Audio Input/Output	Line in x 1, Line out x 1, M12 D-coded
Digital Input	DIs x 6
Digital Output	DOs x 2
Video Input	DVI-I x 2, 29-pin DVI-D connectors (female)

Digital Inputs

Isolation	3k VDC
Connector	Screw-fastened Euroblock terminal
Dry Contact	On: short to GND Off: open
I/O Mode	DI

Sensor Type	Dry contact Wet Contact (NPN or PNP)
Wet Contact (DI to COM)	On: 10 to 30 VDC Off: 0 to 3 VDC

Digital Outputs

Connector	Screw-fastened Euroblock terminal
Current Rating	200 mA per channel
I/O Type	Sink
Voltage	24 to 40 VDC

LED Indicators

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

Serial Interface

Baudrate	50 bps to 921.6 kbps
Flow Control	RTS/CTS, XON/XOFF, ADDC® (automatic data direction control) for RS-485, RTS Toggle (RS-232 only)
Isolation	N/A
Parity	None, Even, Odd, Space, Mark
Data Bits	5, 6, 7, 8
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

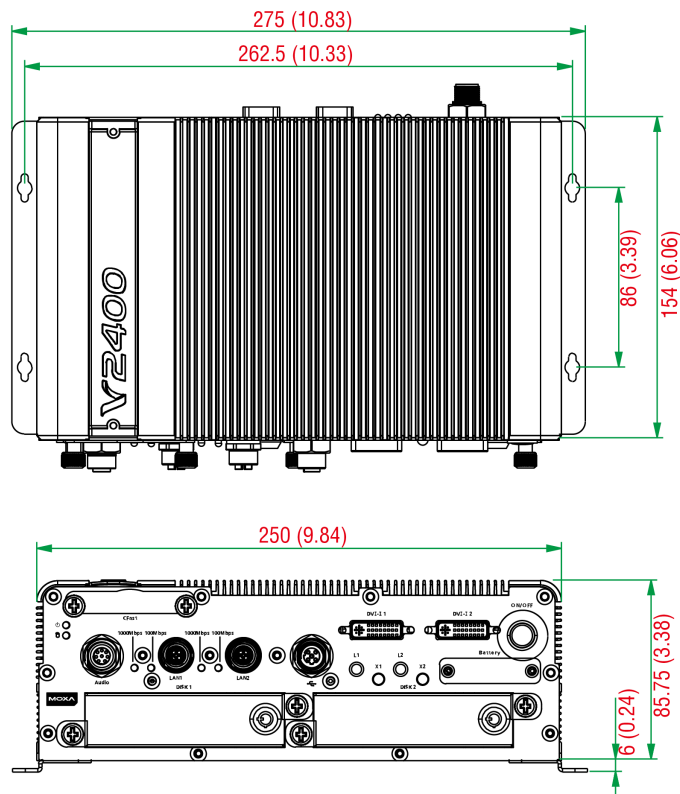|	
Input Voltage	12 to 48 VDC
Power Connector	M12 A-coded male connector
Power Consumption (Max.)	3.3 A @ 12 VDC 0.82 A @ 48 VDC
Power Consumption	40 W (max.)

Physical Characteristics

Housing	Aluminum
IP Rating	IP30
Dimensions (with ears)	250 x 86 x 154 mm (9.84 x 3.38 x 6.06 in)

Dimensions (without ears)	275 x 92 x 154 mm (10.83 x 3.62 x 6.06 in)
Weight	4,000 g (8.98 lb)
Installation	DIN-rail mounting (optional), Wall mounting (standard)
Protection	-CT models: PCB conformal coating

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 (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)

Standards and Certifications

EMC	EN 55032/24
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	EN 50121-4, IEC 60571
Railway Fire Protection	EN 45545-2
Safety	EN 60950-1, IEC 60950-1
Shock	IEC 60068-2-27, IEC 61373, EN 50155
Vibration	IEC 60068-2-64, IEC 61373, EN 50155

Declaration

Green Product	RoHS, CRoHS, WEEE

MTBF

Time	332,173 hrs
Standards	Telcordia (Bellcore), GB

Warranty

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

Package Contents

Device	1 x V2416A Series computer
Installation Kit	8 x screw, for storage installation 2 x storage key 1 x wall-mounting kit 8 x washer, for HDD/SSD
Documentation	1 x document and software CD 1 x quick installation guide 1 x warranty card

Dimensions

Unit: mm (inch)

Ordering Information

Model Name	CPU	Memory (Default)	OS CFast (CTO)	Backup CFast (CTO)	Hot-Swappable SSD/HDD Tray (CTO)	Operating Temp.	Conformal Coating
V2416A-C2	Celeron 1047UE	4 GB or optional	1 (Optional)	1 (Optional)	2 (Optional)	-25 to 55°C	–
V2416A-C2-T	Celeron 1047UE	4 GB or optional	1 (Optional)	1 (Optional)	2 (Optional)	-40 to 70°C	–
V2416A-C2-CT-T	Celeron 1047UE	4 GB or optional	1 (Optional)	1 (Optional)	2 (Optional)	-40 to 70°C	✓
V2416A-C7	i7-3517UE	4 GB or optional	1 (Optional)	1 (Optional)	2 (Optional)	-25 to 55°C	–
V2416A-C7-T	i7-3517UE	4 GB or optional	1 (Optional)	1 (Optional)	2 (Optional)	-40 to 70°C	–
V2416A-C7-CT-T	i7-3517UE	4 GB or optional	1 (Optional)	1 (Optional)	2 (Optional)	-40 to 70°C	✓
V2416A-C2-W7E	Celeron 1047UE	4 GB	8 GB	1 (Optional)	2 (Optional)	-25 to 55°C	–
V2416A-C2-T-W7E	Celeron 1047UE	4 GB	8 GB	1 (Optional)	2 (Optional)	-40 to 70°C	–
V2416A-C7-T-W7E	Core i7-3517UE	4 GB	8 GB	1 (Optional)	2 (Optional)	-40 to 70°C	–

Accessories (sold separately)

Battery Kits

RTC Battery Kit	Lithium battery with built-in connector

Cables

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

Connectors

M12A-5PMM-IP68	5-pin male circular threaded D-coded M12 USB connector, IP68
M12X-8PMM-IP67	8-pin male X-coded circular threaded gigabit Ethernet connector, IP67
M12A-5P-IP68	A-coded screw-in sensor connector, female, IP68, 4.05 cm
M12A-8PMM-IP67	8-pin male circular threaded A-codes M12 connector,IP67-rated(for field-installation)

Power Adapters

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

Power Cords

PWC-C7AU-2B-183	Power cord with Australian (AU) plug, 2.5A/250V, 1.83 m
PWC-C7CN-2B-183	Power cord with two-prong China (CN) plug, 1.83 m
PWC-C7EU-2B-183	Power cord with Continental Europe (EU) plug, 2.5A/250V, 1.83 m
PWC-C7UK-2B-183	Power cord with United Kingdom (UK) plug, 2.5A/250V, 1.83 m
PWC-C7US-2B-183	Power cord with United States (US) plug, 10A/125V, 1.83 m

Antennas

ANT-WDB-ANF-0407	2.4/5 GHz, omni-directional antenna, 4/7 dBi, N-type (male)

Wall-Mounting Kits

V2400 Isolated Wall Mount Kit	Wall-mounting kit with isolation protection, 2 wall-mounting brackets, 4 screws

Din Rail Mounting kit

DK-DC50131	DIN-rail mounting kit, 6 screws

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