

UC-8540 Series

Arm Cortex-A7 dual-core 1 GHz train-to-ground computer with 2 mini PCIe expansion slots for wireless modules



Features and Benefits

- Supports 1 WWAN connection with 2 SIM card slots
- Supports 1 WLAN (IEEE 802.11b/g/n/ac) connection
- Single-panel I/O design for reduced installation space and easier maintenance
- Front-side access panel for easy maintenance
- Isolated 24 to 110 VDC power input with power-ignition function suitable for vehicle applications
- EN 50155 Tx (-40 to 70°C) operating temperature for harsh environments
- Complies with all EN 50155 mandatory test items¹
- 5-year warranty

Certifications



EN 50121-4



EN 50155



Introduction

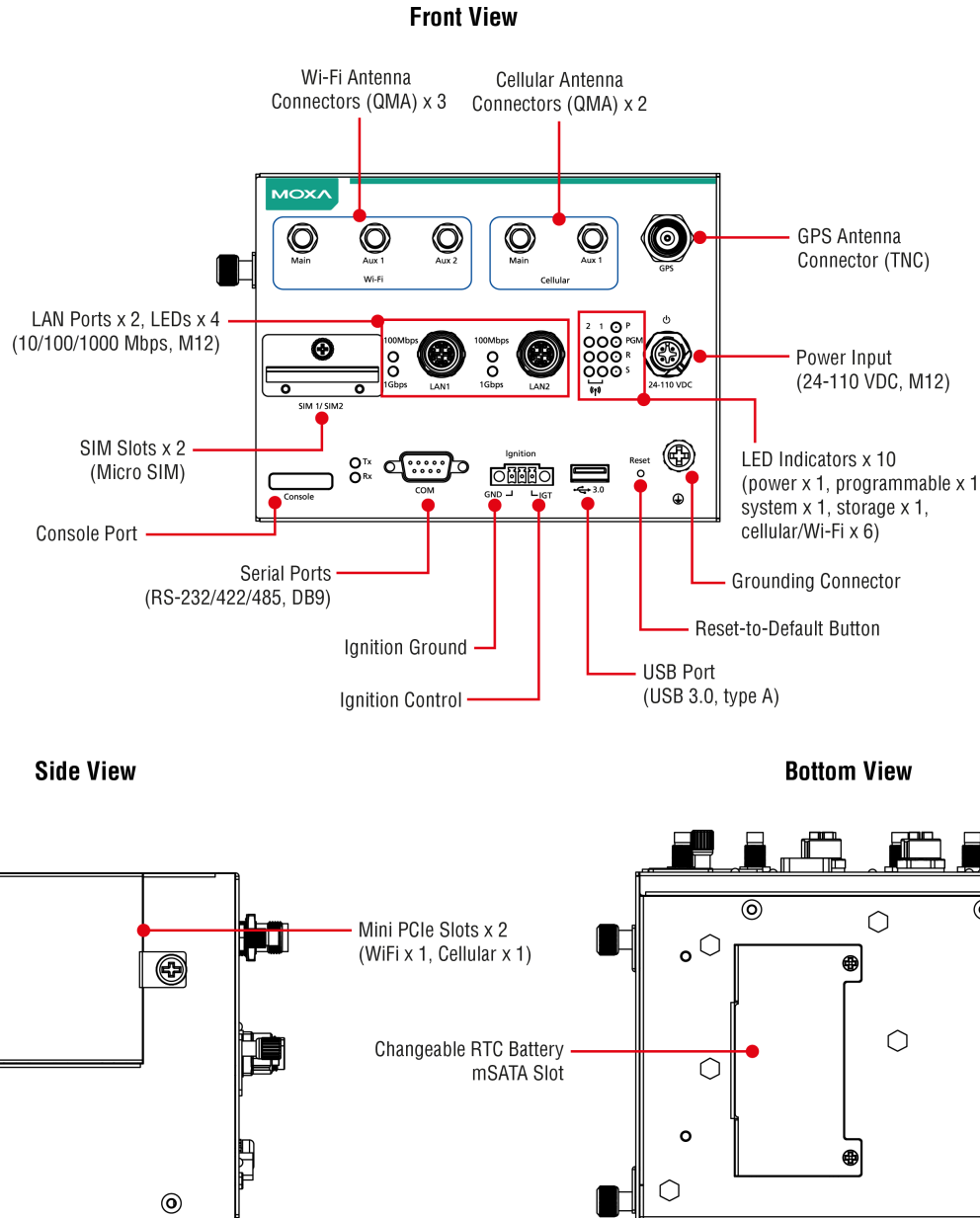
Moxa's UC-8540 is an innovative computing platform designed specifically for transportation applications. Its single-sided I/O design is ideal for vehicle applications, which typically do not have enough room for installing communication devices. Front-side access makes it easy to install or change SIM cards and wiring cables. Users can install or change wireless modules, mSATA cards, and the RTC battery from the top or the bottom for easy maintenance.

The UC-8540 has 1 miniPCIe slot with USB signal to support a 4G/LTE module, and 1 slot with PCIe/USB signal to support a Wi-Fi module. The 4G/LTE module has two SIM card slots, which can be used to enable redundant cellular network communications or geo-fencing SIM card selection by leveraging the built-in MIRF 2.0, a Moxa device remote-management platform with wireless management.

The UC-8540 can be used as a communication-centric computing platform in applications such as vehicle-to-ground communication gateway, TCMS T2G (train-to-ground) gateway, mobile condition monitoring unit, Ethernet Consist Network T2G gateway, and onboard wireless automated fare collection unit.²

The UC-8540 uses an open platform based on Debian 8 with Linux kernel 4.1, allowing solution providers to manage software packages via Debian's APT (advanced packaging tools), or develop software applications with Moxa's API Library and GNU C Library.

Appearance



Specifications

Computer

CPU	Armv7 Cortex-A7 dual-core 1 GHz
Storage Pre-installed	8 GB eMMC
Supported OS	Linux Debian 8 (Linux kernel v4.1)
System Memory Pre-installed	1 GB DDR3L
Storage Slot	mSATA slots x 1, internal mini-PCle socket

Computer Interface

Expansion Slots	mPCle slot x 2
Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (M12 X-coded) x 2
Cellular Antenna Connector	QMA x 2

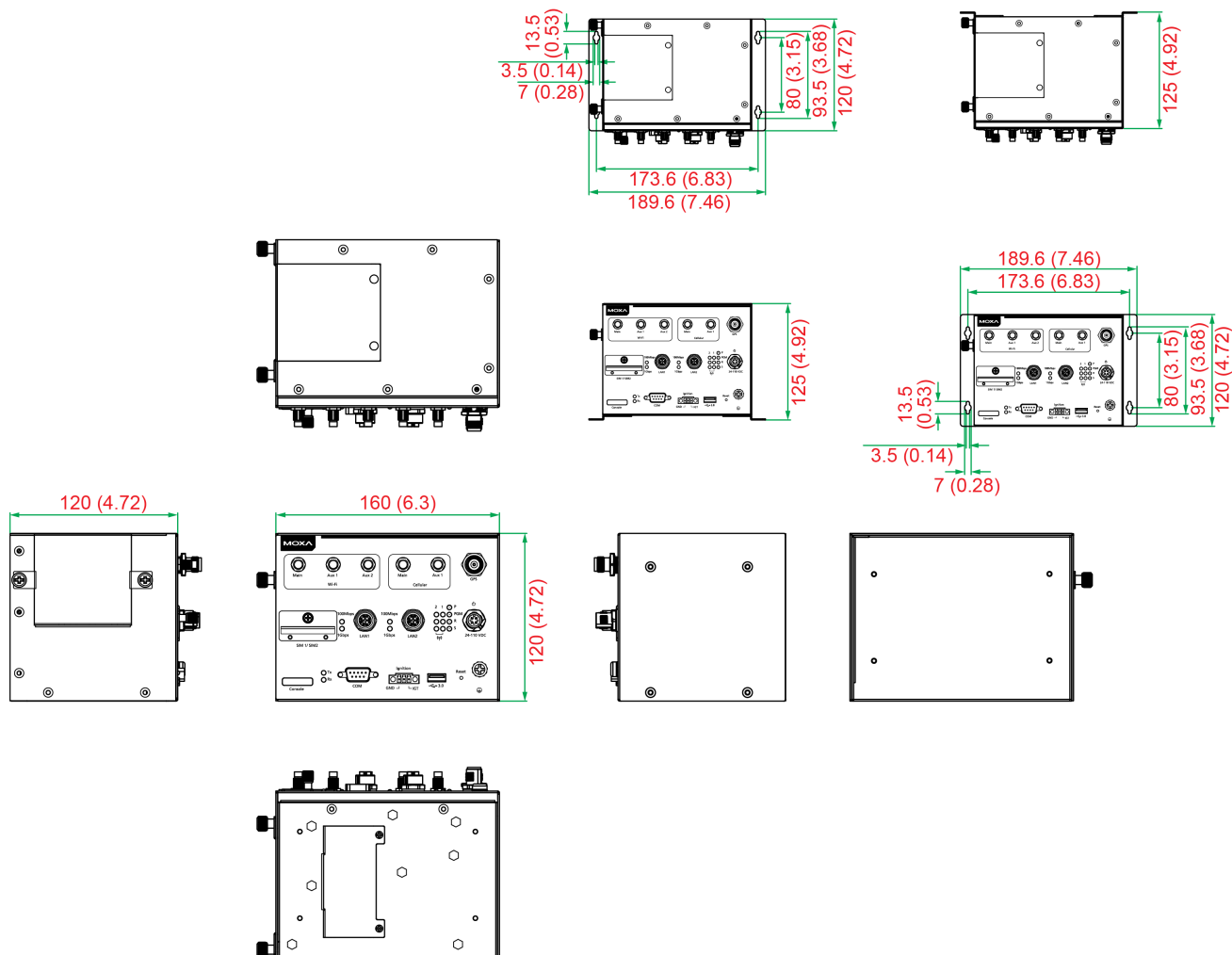
USB 3.0	USB 3.0 hosts x 1, type-A connectors
Wi-Fi Antenna Connector	QMA x 3
Serial Ports	RS-232/422/485 ports x 1, software selectable (DB9 male)
Number of SIMs	2
Console Port	RS-232 (TxD, RxD, GND), 4-pin header output (115200, n, 8, 1)
GPS Antenna Connector	TNC x 1
SIM Format	Micro
Input/Output Interface	
Buttons	Reset button
LED Indicators	
System	Power x 1 System Ready x 1 Programmable x 1
LAN	2 per port (10/100/1000 Mbps)
Serial	2 per port (Tx, Rx)
Wireless Signal Strength	Cellular/Wi-Fi x 6
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
GPS Interface	
Heading Accuracy	0.3 degrees
Industrial Protocols	NMEA 0183, version 4.0 (V2.3 or V4.1 configurable), UBX, RTCM
Receiver Types	72-channel u-blox M8 engine
Time Pulse	0.25 Hz to 10 MHz
Velocity Accuracy	0.05 ms
Power Parameters	
Input Current	1.66 A @ 24 VDC, 0.36 A @ 110 VDC
Input Voltage	24 to 110 VDC
Power Connector	M12 A-coded 4-pin male connector
Power Consumption	40 W (max.)
Physical Characteristics	
Protection	UC-8540-T-CT-LX: PCB conformal coating
Dimensions (with ears)	190 x 120 x 125 mm (7.46 x 4.72 x 4.92 in)
Dimensions (without ears)	160 x 120 x 120 mm (6.30 x 4.72 x 4.72 in)

Housing	Metal
Installation	Wall mounting
IP Rating	IP40
Weight	Product only: 1,600 g (3.53 lb)
Environmental Limits	
Ambient Relative Humidity	5 to 95% (non-condensing)
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)
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; Signal: 2 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF
Railway	EN 50121-4, EN 50155
Railway Fire Protection	EN 45545-2
Safety	EN 60950-1, UL 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
Warranty	
Warranty Period	5 years
Details	See www.moxa.com/warranty
Package Contents	
Device	1 x UC-8540 Series computer
Documentation	1 x quick installation guide 1 x warranty card
Cable	1 x 4-pin header to DB9 console cable

Dimensions

Unit: mm (inch)

Mounting Type



Ordering Information

Model Name	CPU	Antenna Connector Type	Operating Temp.	Conformal Coating
UC-8540-LX	Arm7 Cortex-A7 dual-core 1 GHz	QMA	-25 to 55°C	–
UC-8540-T-LX	Arm7 Cortex-A7 dual-core 1 GHz	QMA	-40 to 70°C	–
UC-8540-T-CT-LX	Arm7 Cortex-A7 dual-core 1 GHz	QMA	-40 to 70°C	✓

Accessories (sold separately)

Cables

CBL-M12FF4POPEN-300 IP67	M12-Open power cable, 4-pin A-coded female connector, IP67, 3 m
CBL-M12XMM8PRJ45-BK-100-IP67	M12-to-RJ45 Cat-5E UTP gigabit Ethernet cable, 8-pin X-coded male connector, IP67, 1 m
CBL-M12XMM8PRJ45-BK-200-IP67	M12-to-RJ45 Cat-5E UTP gigabit Ethernet cable, 8-pin X-coded male connector, IP67, 2 m
CBL-M12FF4POPEN-150 IP67	M12-Open power cable, 4-pin A-coded female connector, IP67, 1.5 m
CBL-F9DPF1x4-BK-100	Console cable with 4-pin connector, 1 m

Connectors

M12A-4PFF-IP67	M12 cable connector, female 4-pin, A-coded
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M12A-4PMM-IP67	M12 cable connector, male 4-pin, A-coded
M12X-8PMM-IP65	M12 cable connector, male 8-pin, X-coded

Cellular Wireless Modules

UC-8500-4GCat6-Q-NAMEU	LTE Cat. 6 module for North America and Europe, 2 QMA connectors with cable
UC-8500-4GCat6-Q-APAC	LTE Cat. 6 module for Asia Pacific, 2 QMA connectors with cable (operating temperature: -40 to 60°C)
UC-8500-4GCat4-Q-CN	LTE Cat. 4 module for China, 2 QMA connectors with cable

Wi-Fi Wireless Modules

UC-8500-WLAN33-Q-AC	Wi-Fi module, 3 QMA connectors with cable
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Power Cords

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