UC-8540 Series
Quick Installation Guide

Edition 1.0, October 2018

MOXA®

P/N: 1802085400010

Overview

The UC-8540 Series computer is a programmable communication-centric gateway offering a rich variety of communication interfaces, such as Ethernet, serial, and wireless communication. This EN 50155-compliant computer is built for rail applications and comes with multiple wireless interfaces making it an ideal choice for building wireless communication infrastructure with 802.11a/b/g/n/ac and LTE data transmission.

Model Names and Package Checklist
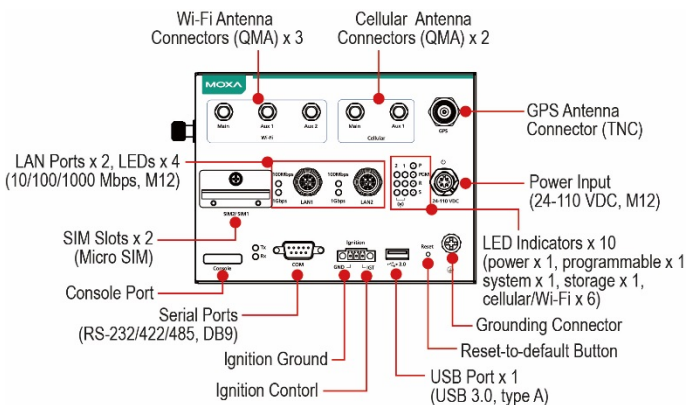
The UC-8540 Series includes the following models:

Available Models	Operating Temperature	Conformal Coating	Stand-alone GPS
UC-8540-LX	-25 to 55°C (-13 to 131°F)	–	–
UC-8540-T-LX	-40 to 70°C (-40 to 158°F)	–	–
UC-8540-T-CT-LX	-40 to 70°C (-40 to 158°F)	✓	–

Before you install the UC-8540 Series computer, ensure that the package contains the following items:
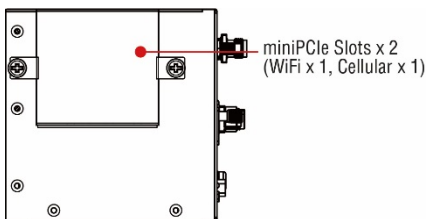
- UC-8540 Series computer
- Mounting kits
- CBL-4PINDB9F-100: 4-pin pin header to DB9 female console port cable, 100 cm
- Quick installation guide (printed)
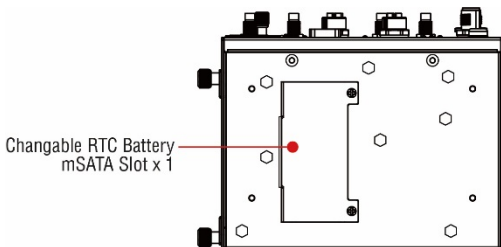- Warranty card

Appearance

Front View

- 2 -

Side View

miniPCIe Slots x 2
(WiFi x 1, Cellular x 1)

Bottom View

Changable RTC Battery
mSATA Slot x 1

LED Indicators

Refer to the following table for the LED indicator definitions.

LED Name	Status	Function
P	Green	Power is on
	Off	No power input
R	Green	System is ready
	Off	System is booting up, OS boot-up failure, or other system initialization error
Ethernet (located next to the Ethernet ports)	Green	Steady On: 100 Mbps Ethernet link Blinking: Data transmission is in progress
	Yellow	Steady On: 1000 Mbps Ethernet link Blinking: Data transmission is in progress
	Off	Data transmission speed at 10 Mbps or the data cable is not connected
Serial	Green	Tx: Data transmission is in progress
	Yellow	Rx: Receiving data
	Off	No operation on the serial ports
S	Green	Data is being accessed from either the eMMC or the mSATA module
	Off	No data is being accessed
PGM	Red	Programmable LED for user-defined function
Wireless ((•))	Green	The number of glowing LEDs indicate the wireless signal strength as follows: 3 Green: Excellent 2 Green: Good 1 Green: Poor
	Off	No wireless signal

Installing the Computer
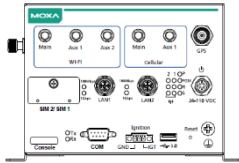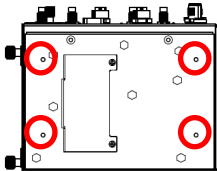
Wall or Desk Mounting

Use two screws per side to mount the UC-8540 computer on a wall or desk.

Wall Mounting
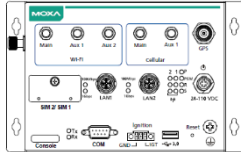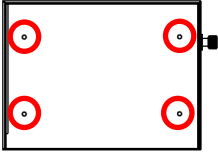
Fasten the screws at back side of UC-8540

Desk Mounting

Fasten the screws at bottom side of UC-8540

Wiring Requirements

Be sure to read and follow these common safety precautions before proceeding with the installation of any electronic device:

• Use separate paths to route wiring for power and devices. If power wiring and device wiring paths must cross, make sure the wires are perpendicular at the intersection point.

NOTE Do not run signal or communication wiring together with power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

• Use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring that shares similar electrical characteristics can be bundled together.
• Keep input wiring and output wiring separate.
• It is advisable to label the wiring to all devices in the system.

> ⚠️ **ATTENTION**
>
> **Safety First!**
> Be sure to disconnect the power cord before installing and/or wiring your UC-8540 computer.
>
> **Wiring Caution!**
> Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowable for each wire size. If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.
>
> **Temperature Caution!**
> Be careful when handling the unit. When the unit is plugged in, the internal components generate heat, and consequently the outer casing may feel hot to the touch.

Connecting the Power

Connect the 24 to 110 VDC power line with M12 A-coded connector to the UC-8540 computer. If the power is supplied properly, the "P" LED will glow a solid green after a 25 to 30-second delay. The power input location and pin definition are shown in the following figures:

Power Input
(24-110 VDC, M12)

PIN	Definition
1	V+
2	N.C.
3	V-
4	N.C.

Grounding the Unit

Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting the power.

Please note that this product is intended to be mounted on a well-grounded mounting surface, such as a metal panel. The grounding connected is provided and located on the front panel. Connect the grounding wire to an appropriate grounded metal surface.

Grounding Connector

Connecting to the Network

The pin assignments for the UC-8540 computer's Ethernet port are shown in the following figure. If you are using your own Ethernet cable, make sure that you match the pin assignment on the connector of the Ethernet cable to the pin assignment shown below:
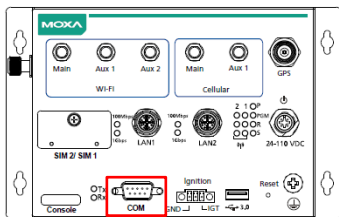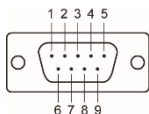
PIN	Definition
1	DA+
2	DA-
3	DB+
4	DB-
5	DD+
6	DD-
7	DC-
8	DC+
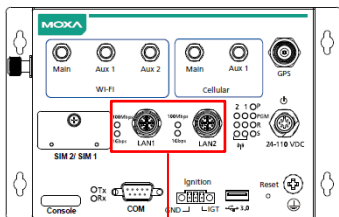
LAN Ports x 2, LEDs x 4
(10/100/1000 Mbps, M12)

Connecting a Serial Device

Use a serial cable to connect your serial device to the computer's serial port. Serial ports uses DB9 connector and can be configured for RS-232, RS-422, or RS-485 communication. The pin location and assignment are shown in the following diagrams:
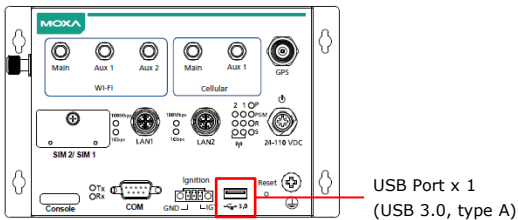
Serial Ports
(RS-232/422/485, DB9)

| Pin	RS-232	RS-422	RS-485 (4-wire)	RS-485 (2-wire)
1	DCD	TxDA(-)	TxDA(-)	–
2	RxD	TxDB(+)	TxDB(+)	–
3	TxD	RxDB(+)	RxDB(+)	DataB(+)
4	DTR	RxDA(-)	RxDA(-)	DataA(-)
5	GND	GND	GND	GND
6	DSR	–	–	–
7	RTS	–	–	–
8	CTS	–	–	–

Connecting a USB Device

The UC-8540 computer is provided with a USB 3.0 port on the front panel for connecting a USB device.
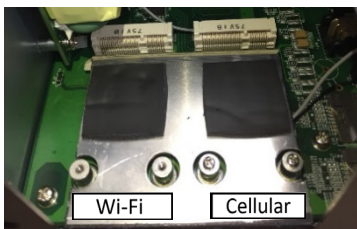

USB Port x 1
(USB 3.0, type A)

Connecting the Wi-Fi/Cellular Module and Antenna

The UC-8540 computer is provided with two sets of QMA antenna holes for installing antennas for the Wi-Fi and cellular modules. Unfasten the two screws on the side panel and lift up the panel to check the location of the Wi-Fi/cellular module sockets.
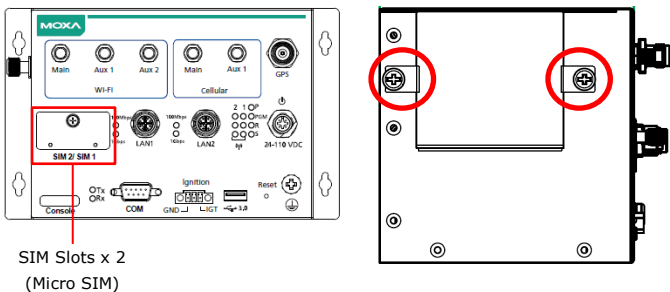
SIM Slots x 2
(Micro SIM)

Socket Name	Usage
Cellular	Cellular module
Wi-Fi	Wi-Fi module

You will need to install the SIM cards for the cellular modules in the designated SIM-card slots 1 and 2.

To install a wireless (Wi-Fi/cellular) module, do the following:

1. The thermal pads come attached to the wireless module. Remove the plastic protective film on the thermal pads.

2. Insert the wireless module in the designated socket and tighten the two screws on the module.

3. Attach the flat end of the antenna cable to the connector marked MAIN on the module. Follow the procedure described above to attach the AUX antenna cable.

   If your UC-8540 is not standalone GPS version, you can attach the GPS antenna cable to the connector marked GSP on the module.

   Refer to the following figure provided on the front panel to identify the antenna mounting holes for the wireless modules.

4. Connect the antennas to the connectors on the front panel. Refer to the following figure for the specific location of each antenna connector, including a connector for a GPS antenna.
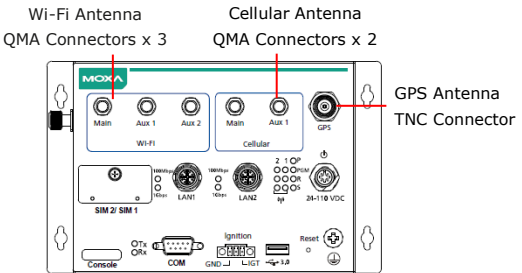
Use the procedure described above to install other Wi-Fi or cellular modules.

NOTE The Wi-Fi module installed in the socket requires three antennas. Make sure all three antennas are installed and secured properly before you use the module.

Installing SIM Cards

Cellular module supports 2 Micro SIM cards. To install Micro SIM cards for the cellular modules, do the following:

1. Open the case of the Micro SIM card socket.

2. Push down the Micro SIM-card into the socket by correct direction. Push again to remove inserted SIM-card.
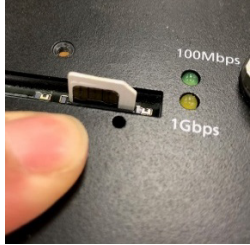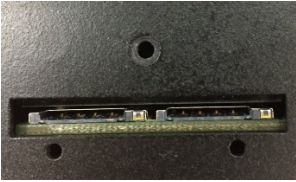

Installing the mSATA Module & Replacing RTC

Battery

The UC-8540 computer is provided with one storage socket for installing an mSATA module and a replaceable RTC battery. To install the mSATA module, do the following:

1. Unfasten the case of bottom side to locate mSATA socket.
2. Insert the mSATA module onto the socket and fasten the two screws on the module to secure the module.
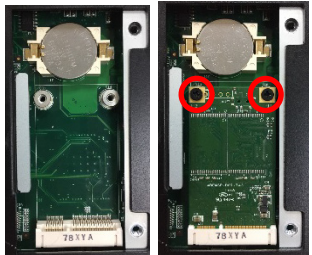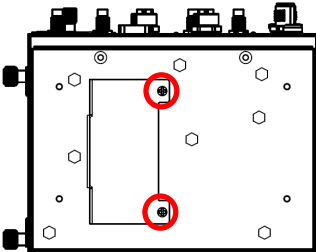
3. RTC battery (BR2032) is located at the side of mSATA socket.