

# AWK-1137C

## Quick Installation Guide

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Moxa AirWorks

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## Overview

The AWK-1137C industrial Wi-Fi client meets the growing need for faster data transmission speeds and wider coverage by supporting IEEE 802.11n technology with a net data rate of up to 300 Mbps. The AWK-1137C combines two adjacent 20 MHz channels into a single 40 MHz channel to deliver a potent combination of greater reliability and more bandwidth. The AWK-1137C can operate on either the 2.4 GHz or the 5 GHz band and is backward compatible with existing 802.11a/b/g deployments.

## Hardware Setup

This section covers the hardware setup for the AWK-1137C.

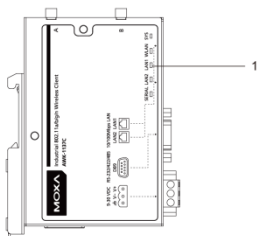
### Package Checklist

Before installing the AWK-1137C, verify that the package contains the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

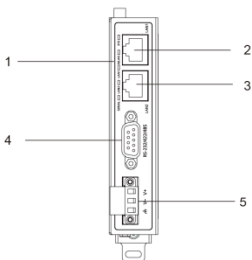
- 1 AWK-1137C wireless client
- 2 2.4/5 GHz omni-directional antennas: ANT-WDB-ARM-0202
- DIN-rail kit
- Quick installation guide (printed)
- Warranty card

## Panel Layout of the AWK-1137C

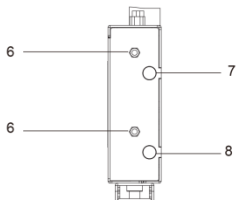
Front Panel



Side Panel

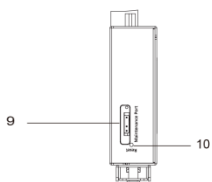


Top Panel



1. System LEDs: SYS, WLAN, LAN1, LAN2, and SERIAL
2. LAN1: 10/100 BaseT(X) RJ45 port
3. LAN2: 10/100 BaseT(X) RJ45 port
4. RS-232/422/485 DB9 serial port
5. 3-pin terminal block (ground/-/+)
6. M3 screw holes for antenna bracket
7. Antenna B RP-SMA
8. Antenna A RP-SMA

Bottom Panel

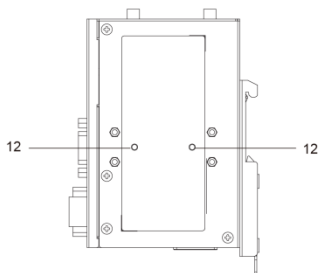


- 9. 3-pin maintenance port for engineers
- 10. Reset button
- 11. Screw holes for DIN-rail mounting kit
- 12. Screw holes for wall-mounting kit

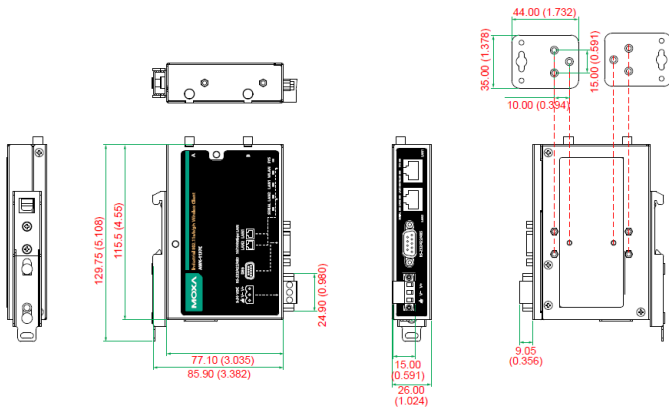
Rear Panel



Back Panel



## Mounting Dimensions



Unit = mm (inch)

## DIN-Rail Mounting

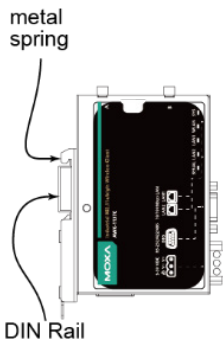
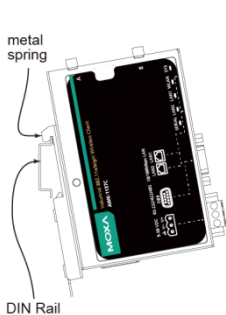
When shipped, the metal DIN-rail mounting kit is fixed to the back panel of the AWK-1137C. Mount the AWK-1137C on the corrosion-free mounting rail that adheres to the EN 60715 standard.

### STEP 1:

Insert the upper lip of the DIN-rail kit into the mounting rail.

### STEP 2:

Press the AWK-1137C towards the mounting rail until it snaps into place.



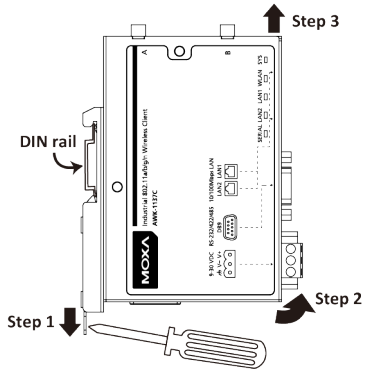
To remove the AWK-1137C from the DIN rail, do the following:

**STEP 1:**

Pull down the latch on the DIN-rail kit with a screwdriver.

**STEP 2 & 3:**

Slightly pull the AWK-1137C forward and lift it up to remove it from the mounting rail.

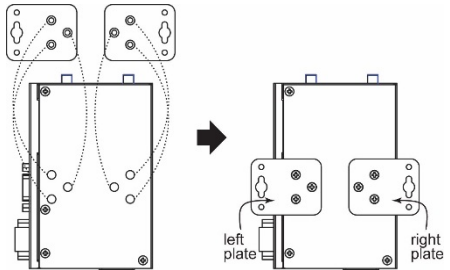


**Wall Mounting (Optional)**

For some applications, it may be more convenient to mount the AWK-1137C to a wall, as illustrated below:

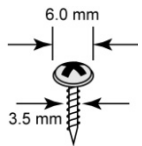
**STEP 1:**

Remove the aluminum DIN-rail attachment plate from the AWK-1137C, and then attach the wall-mounting plates with M3 screws, as shown in the adjacent diagrams.



**STEP 2:**

Mounting the AWK-1137C to a wall requires two screws. Use the AWK-1137C device, with wall-mounting plates attached, as a guide to mark the correct locations of the two screws. The heads of the screws should be less than 6.0 mm in diameter, and the shafts should be less than 3.5 mm in diameter, as shown in the figure on the right.

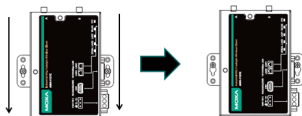


Do not drive the screws in all the way—leave a space of about 2 mm to allow room for sliding the wall-mounting panel between the wall and the screws.

**NOTE** Test the screw head and shank size by inserting the screws into one of the keyhole-shaped apertures of the wall-mounting plates before they are fixed to the wall.

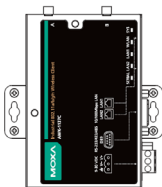
### STEP 3a:

Once the screws are fixed into the wall, insert the two screw heads through the large opening of the keyhole-shaped apertures, and then slide the AWK-1137C downwards, as indicated to the right. Tighten the two screws for added stability.



### STEP 3b:

Alternatively, insert four screws directly through the AWK-1137C into the wall.



## WARNING

- This equipment is intended to be used in a Restricted Access Location, such as a dedicated computer room where only authorized service personnel or users can gain access. Such personnel must be instructed about the fact that the metal chassis of the equipment is extremely hot and may cause burns.
- Service personnel or users have to pay special attention and take special precautions before handling this equipment.
- Only authorized, well-trained professionals should be allowed to access the Restricted Access Location. Access should be controlled by the authority responsible for the location with a lock and key or a security identity system.
- **External metal parts are hot!!** Pay special attention or use special protection before handling this equipment.

## Wiring Requirements



## WARNING

### Safety First!

Be sure to disconnect the power cord before installing and/or wiring your Moxa AWK-1137C.

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes that dictate the maximum current allowed for each wire size. If the current goes above the maximum ratings, the wiring could overheat, causing serious damage to your equipment.

You should also pay attention to the following items:

- 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 communications wiring and power wiring in the same wire conduit. To avoid interference, wires with different signal characteristics should be routed separately.

- You can use the type of signal transmitted through a wire to determine which wires should be kept separate. The rule of thumb is that wiring with similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- It is strongly advised that you label wiring to all devices in the system when necessary.



### **ATTENTION**

This product is intended to be supplied by a UL-listed power adapter suitable for use at a Thermomechanical Analysis (TMA) of 75 degree Celsius, which output meets SELV circuit and LPS standards; output rated 9 to 30 VDC, 1.3A min. or 24 VDC, 0.49A min.



### **ATTENTION**

Make sure the external power adapter (includes power cords and plug assemblies) provided with the unit is certified and suitable for use in your country.

## **Grounding the Moxa AWK-1137C**

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 devices.



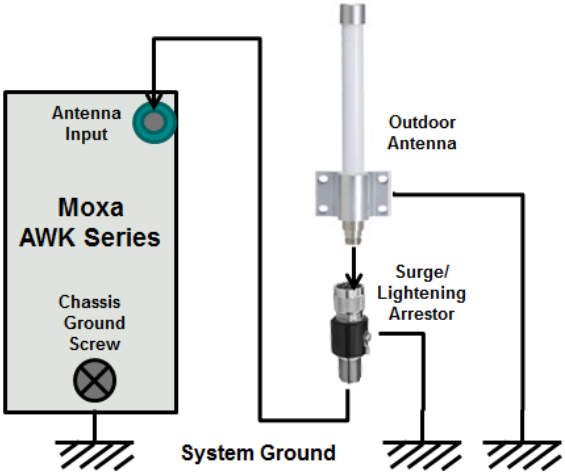
### **ATTENTION**

This product is intended to be mounted to a well-grounded mounting surface, such as a metal panel. There must be no electrical potential difference between any two grounding points; otherwise, there is a risk that the device could be destroyed.



## **Installing Cable Extended Antennas for Outdoor Applications**

If the antenna or the AWK device is installed outdoors or in an open-air setting, proper lightning protection is required to prevent direct lightning strikes on the AWK device. In order to prevent coupling currents from nearby lightning strikes, a lightning arrester should be installed as part of your antenna system. Ground the device, antenna, as well as the arrester properly to provide maximum outdoor protection for the device.



### ***Arrester Accessories***

- **SA-NMNF-01:** Surge arrester, N-type (male) to N-type (female)
- **SA-NFNF-01:** Surge arrester, N-type (female) to N-type (female)

### **Wiring the Power Input**

The 3-contact terminal block connector on the AWK-1137C's side panel is used for the AWK-1137C's DC input. The top and front views of the terminal block connector are shown below:

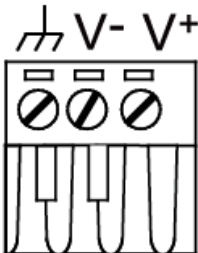


#### **STEP 1:**

Insert the negative/positive DC wires into the V-/V+ terminals.

#### **STEP 2:**

To keep the DC wires from pulling loose, use a small flat-blade screwdriver to tighten the wire-clamp screws on the front of the terminal block connector.



#### **STEP 3:**

Insert the plastic terminal block connector prongs into the terminal block receptor, which is located on the AWK-1137C's side panel.

**NOTE** Input Terminal Block (CN1) is suitable for wire size range of 12-28 AWG (3.31-0.0804 mm<sup>2</sup>) and a torque value of 4.5 lb-in (0.51 Nm)



## ATTENTION

If the AWK-1137C is connected to a motor or other similar type of equipment, be sure to use power isolation protection. Before connecting the AWK-1137C to the DC power inputs, make sure the DC power source voltage is stable.

## Using the Reset Button

The **Reset** button is used to load the factory default settings. Use a pointed object to hold the **Reset** button down for five seconds to load the factory defaults.

### Activating AeroMag Function

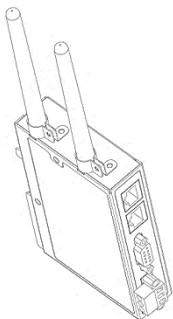
Push the **Reset** Button five times to activate AeroMag. To deactivate it again, push the **Reset** Button three times.

## Installing the Antenna-Locking Clamp

Use the antenna-locking clamp to secure the antennas to the AWK-1137C for added stability when you install the device in a high-vibration environment.

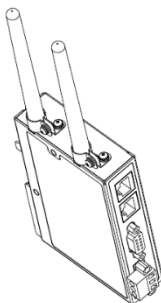
### **STEP 1:**

Slide the locking clamps through the antenna ports.



### **STEP 2:**

Use screws to fix the clamps to the side panel of the AWK-1137C as shown below:



## Communication Connections

### 10/100BaseT(X) Ethernet Port Connection

The 10/100BaseT(X) ports located on the AWK-1137C's front panel are used to connect to Ethernet-enabled devices.

The pinouts for both the MDI (NIC-type) and MDI-X (HUB/switch-type) ports as shown below:

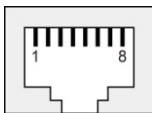
#### MDI Port Pinouts

| Pin | Signal |
|-----|--------|
| 1   | Tx+    |
| 2   | Tx-    |
| 3   | Rx+    |
| 6   | Rx-    |

#### MDI-X Port Pinouts

| Pin | Signal |
|-----|--------|
| 1   | Rx+    |
| 2   | Rx-    |
| 3   | Tx+    |
| 6   | Tx-    |

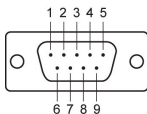
#### 8-pin RJ45



## RS-232/422/485 Serial Port

The AWK-1137C has 1 RS-232/422/485 serial port with DB9 connector for serial-to-WLAN connectivity. The pin assignments for the serial ports are shown below:

| Pin | RS-232 | RS-422/485 (4W) | RS-485 (2W) |
|-----|--------|-----------------|-------------|
| 1   | DCD    | TxD-(A)         | -           |
| 2   | RxD    | TxD+(B)         | -           |
| 3   | TxD    | RxD+(B)         | Data+(B)    |
| 4   | DTR    | RxD-(A)         | Data-(A)    |
| 5   | GND    | GND             | GND         |
| 6   | DSR    | -               | -           |
| 7   | RTS    | -               | -           |
| 8   | CTS    | -               | -           |
| 9   | -      | -               | -           |



## LED Indicators

The front and side panel of the Moxa AWK-1137C contains several LED indicators. The function of each LED is described in the table below:

| LED         | Color | State                                 | Description  |
|-------------|-------|---------------------------------------|--|
| <b>SYS</b>  | Green | On                                    | System start up complete and the system is in operation  |
|             |       | Blinking + Beeps (Interval: 1 second) | Device has been located by the Wireless Search Utility   |
|             | Red   | On                                    | System is booting or a system booting error has occurred |
|             |       | Blinking (Interval: 0.5 second)       | IP address conflict                                      |
| <b>WLAN</b> | Green | On (RSSI > 35)                        | WLAN interface has connected                             |
|             |       | Blinking                              | Data communication via WLAN                              |
|             | Amber | On (RSSI < 35)                        | WLAN interface has connected                             |
|             |       | Blinking                              | Data communication via WLAN                              |

| LED    | Color | State    | Description                            |
|--------|-------|----------|--|
| LAN1   | Green | On       | Ethernet LAN 1 interface has connected |
|        |       | Blinking | Data communication via Ethernet LAN 1  |
| LAN2   | Green | On       | Ethernet LAN 2 interface has connected |
|        |       | Blinking | Data communication via Ethernet LAN 2  |
| Serial | Amber | Blinking | Data Transmission via serial data port |

## Specifications

|                              |   |
|------------------------------|---|
| <b>Power Input</b>           | 9 to 30 VDC   |
| <b>Power Consumption</b>     | 11.7 W  |
| <b>Operating Temperature</b> | Standard Models: 0 to 60°C (32 to 140°F)<br>Wide Temp. Models: -40 to 75°C (-40 to 167°F) |
| <b>Storage Temperature</b>   | -40 to 85°C (-40 to 185°F)  |



### ATTENTION

- The AWK-1137C is **NOT** a portable mobile device and should be located at least 20 cm away from the human body.
- The AWK-1137C is **NOT** designed for the general public. A well-trained technician is required to deploy AWK-1137Cs and safely establish a wireless network.



### ATTENTION

Use the antennas correctly: The 2.4 GHz antennas are needed when the AWK-1137C operates in IEEE 802.11b/g/n. The 5 GHz antennas are needed for operation in IEEE802.11a/n. Make sure that the antennas are installed in a safe area, which is covered by a lightning protection or surge arrest system.



### ATTENTION

This device complies with part 15 of the FCC Rules. The operation of this device is subject to the following conditions:

1. This device must not cause harmful interference.
2. This device must accept any interference received, including interference that may cause undesired operations.



## **ATTENTION**

Do not locate the antenna near overhead power lines or other electric light or power circuits, or where it can come into contact with such circuits. When installing the antenna, take extreme care not to come into contact with such circuits, because they may cause serious injury or death. For proper installation and grounding of the antenna, refer to national and local codes (for example, U.S.: NFPA 70; National Electrical Code (NEC) Article 810; Canada: Canadian Electrical Code, Section 54).



## **WARNING**

Este equipamento não tem direito à proteção contra interferência prejudicial e não pode causar interferência em sistemas devidamente autorizados.

This equipment has no right to protection against harmful interference and cannot cause interference in duly authorized systems.

**NOTE** For installation flexibility, you may select either antenna A or antenna B on the top panel. Make sure the antenna connection matches the antennas configured in the AWK-1137C web interface.

To protect the connectors and RF module, all radio ports should be terminated by either an antenna or a terminator. We strongly recommend using resistive terminators for terminating the unused antenna ports.

## **Federal Communications Commission**

### **Interference Statement**

This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation.

If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/ TV technician for help.



## **ATTENTION**

Any changes or modifications not expressly approved in the guaranty for this device could void the user's authority to operate the equipment.



## **WARNING**

### **RF exposure:**

This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and transmitter operating conditions for satisfying RF exposure compliance.

This radio transmitter FCCID: SLE-1137C has been approved by FCC to operate with the antenna types listed below with the maximum permissible gain and required antenna impedance for each antenna type indicated. Antenna types not included in this list, having a gain greater than the maximum gain indicated for that type, are strictly prohibited for use with this device.

## Software Setup

This section covers the software setup for AWK models in general.

### How to Access the AWK

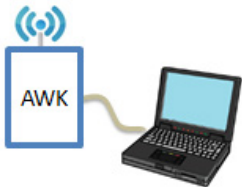
Before installing the AWK device (AWK), make sure that all items in the package checklist are provided in the product box. You will also need access to a notebook computer or PC equipped with an Ethernet port.

- **Step 1: Select a suitable power source and plug in the AWK.**

The AWK can be powered by DC power ranging from **9 VDC to 30 VDC**.

- **Step 2: Connect the AWK to the notebook or PC via the AWK's LAN port.**

The LED indicator on the AWK's LAN port will light up when a connection is established.



**NOTE** If you are using an Ethernet-to-USB adapter, follow the instructions in the user's manual provided with the adapter.

- **Step 3: Set up the computer's IP address**

Choose an IP address for the computer that is on the same subnet as the AWK. Since the AWK's default IP address is **192.168.127.253**, and the subnet mask is **255.255.255.0**, set the IP address to **192.168.127.xxx**, where xxx is a value between 1 and 252.

- **Step 4: Access the homepage of the AWK.**

Open your computer's web browser and type **http://192.168.127.253** in the address field to access the AWK's homepage. Log in using the following default username and password:

Default Username: **admin**

Default Password: **moxa**

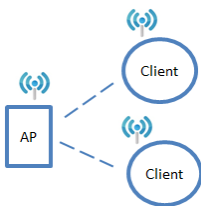
Click the **Login** button to access the homepage of the AWK device.

### First-Time Quick Configuration

After successfully accessing the AWK, refer to the appropriate subsection below to quickly set up a wireless network.

**NOTE** Ensure that there are no IP address conflicts when you configure more than one AWK on the same subnet.

## Point-to-Multipoint Scenario (Client Mode)



### Configuring the AWK as a Client

- **Step 1: Set the operation mode of the AWK to Client mode.**

Go to **Wireless LAN Setup** → **Operation Mode**, select **Client** and click **Submit** to apply the change.

**NOTE** The default operation mode for the AWK is **Client**.

#### Operation Mode

##### Wireless

Enable  Disable

##### Operation mode

Client

Submit

- **Step 2: Link to an existing SSID.**

Go to **Wireless LAN Setup** → **WLAN** → **Basic WLAN Setup** and click **Site Survey** to select an existing SSID, or directly enter an existing SSID in the text field.

| Basic WLAN Setup |             |
|------------------|-------------|
| Operation mode   | Client      |
| RF type          | B/G/N Mixed |
| Channel width    | 20 MHz      |
| SSID             | MOXA        |
|                  | Site Survey |
| Submit           |             |

The default **SSID** is **MOXA**.

- **Step 3: Set the RF type and Channel settings for the AWK.**

On the **Wireless LAN Setup** → **WLAN** → **Basic WLAN Setup** page, edit the RF type and Channel settings.

| Basic WLAN Setup |             |
|------------------|-------------|
| Operation mode   | Client      |
| RF type          | B/G/N Mixed |
| Channel width    | 20 MHz      |
| SSID             | MOXA        |
|                  | Site Survey |
| Submit           |             |

Click **Submit** to apply the changes, and restart the AWK in client mode to complete the configuration process.



## Point-to-Point Scenario (Slave mode)



### **Configuring the AWK as a Slave**

- **Step 1: Set the operation mode of the AWK to Slave mode.**

Go to **Wireless LAN Setup** → **Operation Mode**, set the operation mode to **Slave**, and then click **Submit** to apply the change.

#### Operation Mode

##### Wireless

Enable  Disable

##### Operation mode

- Client
- Client-Router
- Slave**
- Sniffer

Submit

- **Step 2: Link to an existing SSID.**

Go to **Wireless LAN Setup** → **WLAN** → **Basic WLAN Setup** and click **Site Survey** to select an existing SSID, or directly enter an existing SSID in the text field.

- **Step 3: Set the RF type for the AWK.**

On the **Wireless LAN Setup** → **WLAN** → **Basic WLAN Setup** page edit the RF type setting.

Click **Submit** to apply the changes, and restart the AWK in slave mode to complete the configuration process