WAC-1001 Series
Quick Installation Guide

Version 4.1, January 2021

Technical Support Contact Information
www.moxa.com/support

P/N: 1802010010014

Overview

The goal of zero-latency-roaming is to allow clients to seamlessly maintain their communications as they move from one access point to another. Moxa's next generation Turbo Roaming technology together with the WAC-1001 enables 50 ms roaming for enabled AWK-RTG series devices. This advanced roaming technology delivers high-speed, secure handoffs within the same subnet and enables clients to roam between APs in under 50 milliseconds while upholding stringent security in extremely demanding environments. The WAC-1001 is rated to operate at temperatures of 0 to 60°C for standard models and -40 to 75°C for extended temperature models, and is rugged enough for on-site installation in any harsh industrial environment.

Package Checklist

The WAC-1001 series wireless controller is shipped with the following items. If any of these items are missing or damaged, please contact your customer service representative.

- WAC-1001 series wireless controller
- 1 cable holder with 1 screw
- 2 protective caps
- Wall mount kit
- Quick installation guide (printed)
- Warranty card

Installation and Configuration

Before installing the WAC-1001, verify that all items in the Package Checklist are in the box.

Note that the WAC-1001 must be configured before use. Refer to the *WAC-1001 Series User's Manual* for more details.

The WAC-1001 has a default IP address of 192.168.127.253, which you must use when connecting to the device for the first time. When configuring the WAC-1001 for the first time, use the following default user name and password:

User name: **admin**
Password: **moxa**

NOTE Firmware Version 1.6 password: moxa
Firmware Versions 1.0 to 1.5 password: root

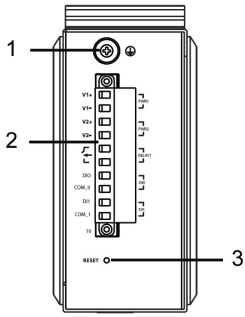
ATTENTION

For security reasons, we strongly recommend changing the default password. To do so, select **Maintenance → Password**, and then follow the on-screen instructions.

To make the changes effective, you must click **Save Configuration** to save the changes (**Restart** to apply the changes).

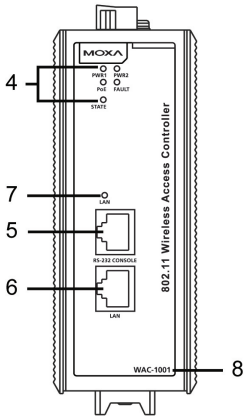
Panel Layout of the WAC-1001 Series

Top Panel View

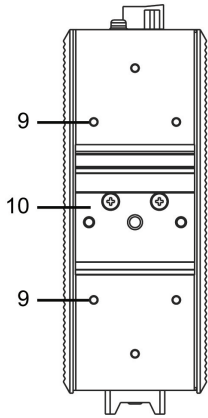


1. Grounding screw
2. Terminal block for PWR1, PWR2, relay, DI1, and DI2
3. Reset button
4. System LEDs: PWR1, PWR2, PoE, FAULT, and STATE LEDs
5. RS-232 console port
6. 10/100/1000BaseT(X) RJ45 Port
7. 10/100/1000M LED
8. Model name
9. Screw hole for wall mounting kit
10. DIN-Rail mounting kit

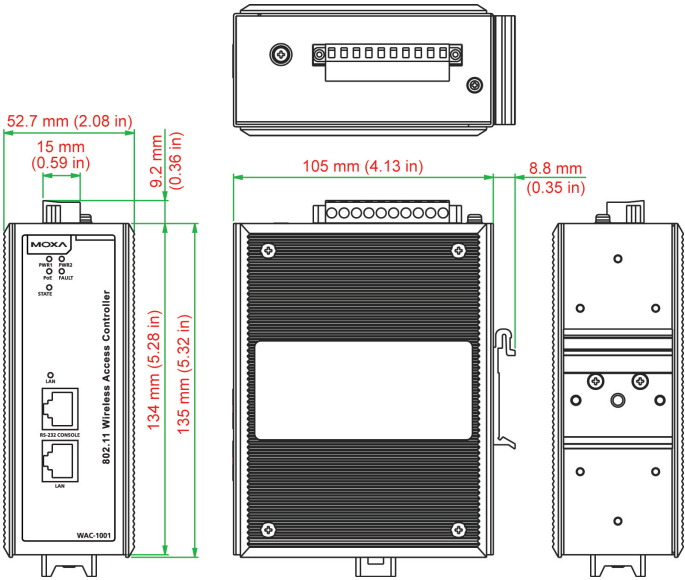
Front Panel View



Rear Panel View



Mounting Dimensions



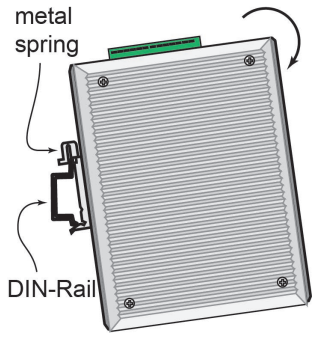
DIN-Rail Mounting

The aluminum DIN-Rail attachment plate should already be fixed to the back panel of the WAC-1001 when you take it out of the box.

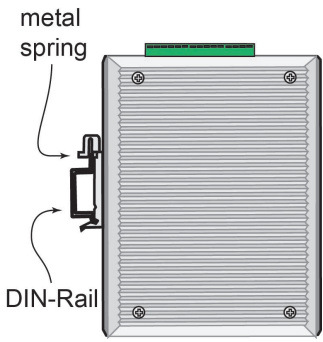
If you need to reattach the DIN-Rail attachment plate to the WAC-1001, make sure the stiff metal spring is situated towards the top as shown in the figures below.

How to Mount the WAC-1001

STEP 1:
Insert the top of the DIN-Rail into the slot just below the stiff metal spring.



STEP 2:
Push down to snap the unit into place.

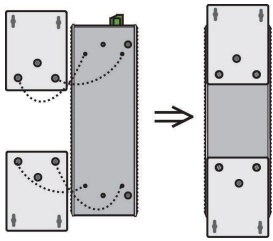


To remove the WAC-1001 from the DIN-Rail, simply reverse steps 1 and 2.

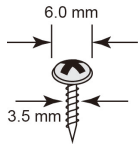
Wall Mounting

For added convenience, the WAC-1001 can be wall mounted as illustrated below.

STEP 1:
Remove the aluminum DIN-Rail attachment plate from the WAC-1001, and then attach the wall mount plates with M3 screws, as shown on the right.



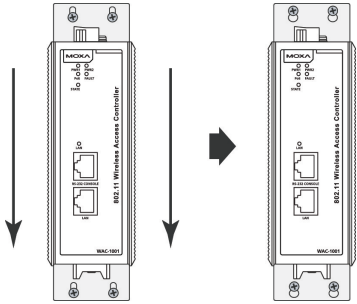
STEP 2:
Mounting the WAC-1001 to a wall requires 4 screws. Use the WAC-1001, with wall mount plates attached, as a guide to mark the correct locations for the 4 screws. The heads of the screws should be less than 6.0 mm in diameter, and the shafts should be less than 3.5 mm in diameter, as shown on the right.



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

NOTE Test the screw's head and shank size by inserting the screw into one of the keyhole-shaped apertures of the wall mounting plates before screwing it into the wall.

STEP 3:
After the screws are fixed into the wall, insert the four screw heads through the large opening of the keyhole-shaped apertures, and then slide the WAC-1001 downwards, as indicated on the right. Tighten the four screws for added stability.



Wiring Requirements

WARNING

Safety First!

Be sure the power cord is disconnected before installing and/or wiring your WAC-1001.

WARNING

Safety First!

Calculate the maximum possible current in each power wire and common wire. Observe all electrical codes dictating the maximum current allowed for each wire size.

If the current goes above the maximum rating, the wiring could overheat, causing serious damage to your equipment.

You should also pay attention to the following:

- 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. As a rule of thumb, 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.

ATTENTION

This product is intended to be supplied by a Listed Power Unit marked "Class 2" or "LPS" and rated O/P: 12 to 48 VDC

Grounding the WAC-1001

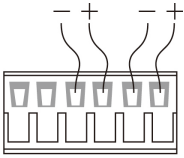
Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground wire from the ground screw to the grounding surface prior to connecting devices.

ATTENTION

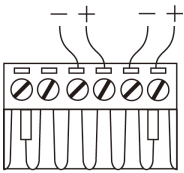
This product is to be mounted to a well-grounded mounting surface, such as a metal panel.

Wiring the Redundant Power Inputs

Two pairs of contacts of the 10-contact terminal block connector on the WAC-1001's top panel are used for the WAC-1001' two DC inputs. Top and front views of the terminal block connector are shown here.



Top View



Front View

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 WAC-1001's top panel.

ATTENTION

Before connecting the WAC-1001 to the DC power inputs, make sure the DC power source voltage is stable.

Wiring the Relay Contact

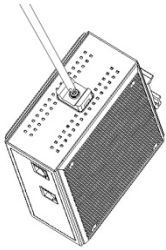
The WAC-1001 has one relay output, which consists of two contacts of the terminal block on the WAC-1001's top panel. Refer to the previous section for detailed instructions on how to connect the wires to the terminal block connector and how to attach the terminal block connector to the terminal block receptor. These relay contacts are used to indicate user-configured events. The two wires attached to the relay contacts form an open circuit when a user-configured event is triggered. If a user-configured event does not occur, the relay circuit will remain closed.

Wiring the Digital Inputs

The WAC-1001 has two sets of digital inputs—DI1 and DI2. Each DI consists of two contacts from the 10-pin terminal block connector. Refer to the "Wiring the Redundant Power Inputs" section for detailed instructions on how to connect the wires to the terminal block connector, and how to attach the terminal block connector to the terminal block receptor.

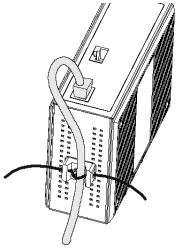
Cable Holder Installation (Optional)

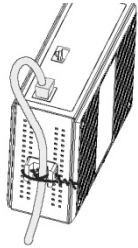
You may choose to attach the cable holder to the bottom of the WAC-1001. This helps to keep cabling neat and avoid accidents caused from cluttered cables.

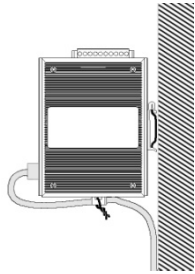


STEP 1:
Screw the cable holder onto the bottom of the WAC-1001.

STEP 2: After mounting the WAC-1001 and plugging in the LAN cable, fasten the cable along the device and wall.







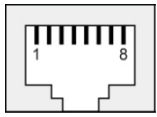
Pin Assignments

1000BaseT Ethernet Port Connection

1000BaseT data is transmitted on differential TRD+/- signal pairs over copper wires.

MDI/MDI-X Port Pinouts

Pin	Signal
1	TRD(0)+
2	TRD(0)-
3	TRD(1)+
4	TRD(2)+
5	TRD(2)-
6	TRD(1)-
7	TRD(3)+
8	TRD(3)-

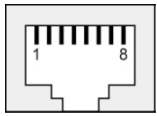


DB9 Male (RS-232) Port Pinouts

The WAC-1001 has one RS-232 (8-pin RJ45) console port located on its front panel. Use either an RJ45-to-DB9 or RJ45-to-DB25 cable to connect the WAC-1001's console port to your PC's COM port. You may then use a console terminal program to access the WAC-1001 for console configuration.

Console Pinouts for 10-pin or 8-pin RJ45

10-Pin	Description	8-Pin
1	–	
2	DSR	1
3	RTS	2
4	GND	3
5	TxD	4
6	RxD	5
7	DCD	6
8	CTS	7
9	DTR	8
10	–	



NOTE
1. The pin numbers for the male DB9 and DB25 connectors, and hole numbers for the female DB9 and DB25 connectors are labeled on the connector. However, the numbers are typically very small, so you may need to use a magnifying glass to see the numbers clearly.
2. The pin numbers for both the 8-pin and 10-pin RJ45 connectors (and ports) are typically not labeled on the connector (or port). Refer to the pinout diagram above to see how the RJ45's pins are numbered.

Front Panel LEDs

The WAC-1001's front panel has seven LED indicators, refer to the following table for details.

LED	Color	State	Description
Front Panel LED Indicators (System)			
PWR1	Green	On	Power is being supplied from power input 1.
		Off	Power is not being supplied from power input 1.
PWR2	Green	On	Power is being supplied from power input 2.
		Off	Power is not being supplied from power input 2.
PoE	Amber	On	Power is being supplied via PoE.
		Off	Power is not being supplied via PoE.
FAULT	Red	On	Booting; System Error; Relay is on.
		Blinking (slow)	IP address cannot be obtained from DHCP server (interval: 1 second).
		Blinking (fast)	IP address conflict (interval: 0.5 second).
		Off	Normal status.
STATE	Green /Red	Green	Software Ready
		Green (Blinking)	The WAC-1001 has been located by Search Utility. (interval: 1 second)
		Red	Booting error

LED	Color	State	Description
TP Port LED Indicators (Port Interface)			
1000M	Green	On	TP port's 1000 Mbps link is **active**
		Blinking	Data is being transmitted at 1000 Mbps
		Off	TP port's 1000 Mbps link is **inactive**.
10/100M	Amber	On	TP port's 10/100 Mbps link is **active**.
		Blinking	Data is being transmitted at 10/100 Mbps
		Off	TP port's 10/100 Mbps link is **inactive**.

Specifications

WLAN Interface	
Standards	IEEE 802.11i for Wireless Security IEEE 802.3u 10/100/1000BaseT(X) for Ethernet LAN IEEE 802.3af for Power-over-Ethernet
Security	WPA /WPA2 (IEEE 802.1X/ RADIUS, TKIP and AES)
Interface	
Connection	10-pin removable terminal block
Alarm Contact	1 relay output (1 A @ 24 VDC)
Digital Input	2 electrically-isolated inputs +3 to -30 V for state "0" (OFF) +13 to +30 V for state "1" (ON) Max. input current: 8 mA
Console	RS-232 (RJ45 type)
LAN Port	10/100/1000BaseT(X) auto negotiation speed
LED Indicators	PWR1, PWR2, PoE, FAULT, STATE
Power Requirements	
Input Voltage	12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet (IEEE 802.3af)
Connector	10-pin removable terminal block
Reverse Polarity Protection	Present
Physical Characteristics	
Housing	Aluminum, providing IP30 protection
Dimensions	53.6 x 135 x 105 mm (2.11 x 5.31 x 4.13 in)
Weight	700 g
Installation	DIN-Rail, wall mounting (with optional kit)
Environmental Limits	
Operating Temperature	Standard models: 0 to 60°C (32 to 140°F) Wide Temp. Models: -40 to 75°C (-40 to 167°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Regulatory Approvals*	
Safety	EN 60950-1, UL60950-1
EMC	FCC Part 15 Subpart B Class B, EN 55032/55024
*Please check Moxa's website for the most up-to-date certification status.	
WARRANTY	5 years See http://www.moxa.com/warranty

ATTENTION

The WAC-1001 is **NOT** a portable mobile device and should be located at least 20 cm away from the human body.
The WAC-1001 is **NOT** designed for use by the general public. A well-trained technician is required to safely deploy the WAC-1001 and establish a secure wireless network.