AWK-6222
Quick Installation Guide

Moxa AirWorks

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Notes for the Reader

WARNING

Indicates that death or personal injury may occur if proper precautions are not taken.

ATTENTION

Indicates that possible damage to this product or your property may result if proper precautions are not taken.

NOTE Highlights important information related to this product.

Package Checklist

Moxa's AWK-6222 is shipped with the following items. If any of these items is missing or damaged, please contact your customer service representative for assistance.

- 1 AWK-6222
- 2 dual-band omni-directional antennas (5/2 dBi, N-type (male), 2.4/5 GHz)
- Wall-mounting kit (includes 2 supports)
- Field-installable power plug
- Field-installable RJ45 plug
- 2 metal caps to cover RJ45 connectors
- Metal cap to cover M12-female DI/O connector
- 2 metal caps to cover N-type connectors
- Transparent plastic sticks for field-installable plugs
- Documentation and software CD
- Quick installation guide (printed)
- Warranty card

NOTE The items above come with the standard version AWK-6222 The package contents may vary for customized versions.

Installation

Before installing the AWK-6222, make sure that all items in the package checklist are in the box. In addition, you will need access to a notebook computer or PC equipped with an Ethernet port. The AWK-6222 has a default IP address, user name and password that you must use when resetting or connecting to your AWK-6222 device.

Default IP address: **192.168.127.253**
User name: **admin**
Password: **root**

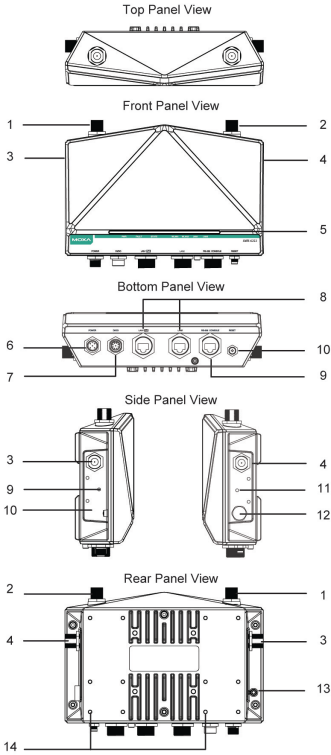
Please read "**Chapter 2: Getting Started**" in the *AWK-6222 User's Manual* for more details about installation and configuration.

ATTENTION

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

NOTE To make the change effective, you must save the change and then click **Restart → Save and Restart** button to apply all changes.

Panel Layout of the AWK-6222



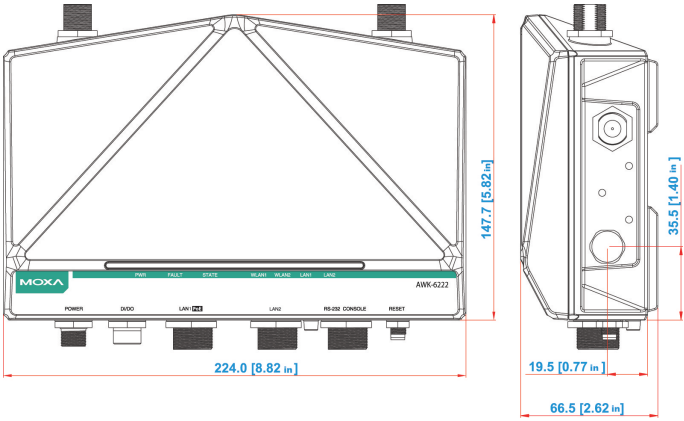
1. MAIN 1 antenna port.
2. MAIN 2 antenna port.
3. AUX 1 antenna port.
4. AUX 2 antenna port.
5. LEDs for PWR, FAULT, STATE, WLAN1, WLAN2, LAN1, and LAN2.
6. M12 A-coding connector for PWR1 and PWR2.
7. M12 8-pin connector for DI/DO
8. 10/100BaseT(X) RJ45 Port：LAN1 and LAN2
9. RS-232 console port.
10. Reset button
11. Screw holes for wall mounting
12. Waterproof vent
13. Grounding screw
14. Screw holes for DIN-rail mounting

ATTENTION

Please DO NOT open or remove vent **12**. Removing the seal will void the warranty.

All exposed connectors, including **1 - 4, 6 - 9**, should be tightly covered by suitable caps when they are not in use.

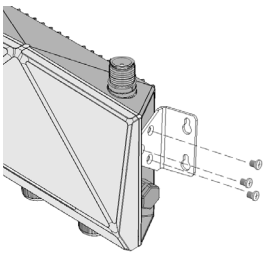
Dimensions (unit = mm)



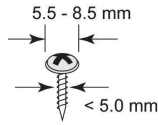
Wall Mounting

In most applications, wall mount provides an easier installation. You will find it quite easy to mount AWK-6222 on the wall, as illustrated below.

STEP 1:
Attach the wall-mounting kit with **M4** screws, as shown in the diagram below:



STEP 2:
Mounting the AWK-6222 on the wall requires 4 screws. Use the AWK-6222 device, with wall-mounting kit attached, as a guide to mark the correct locations of the 4 screws. The heads of the screws should be between **5.5 mm** and **8.5 mm** in diameter, and the shafts should not be more than 5.0 mm in diameter, as shown in the figure.

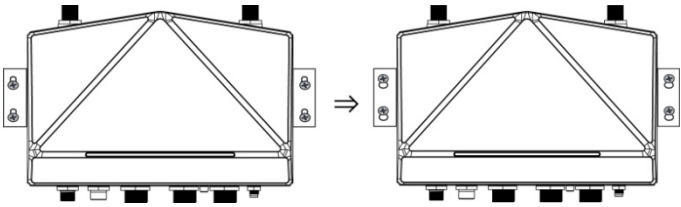


Do not drive the screws in all the way into the wall—leave a space of about 2 mm to allow room to slide the wall-mounting kit between the wall and the screws.

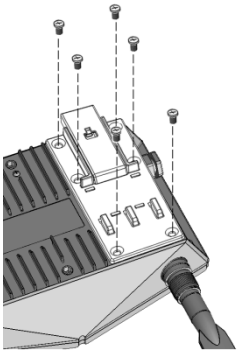
ATTENTION

Test the screw head and shank size by inserting the screws into one of the keyhole shaped apertures of the wall-mounting plates before attaching the plate to the wall.

STEP 3:
Once 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 AWK-6222 downwards, as indicated to the right. Tighten the four screws for added stability.



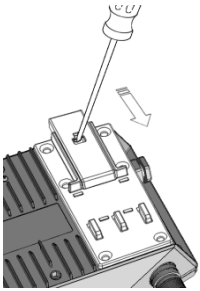
DIN-Rail Mounting (Optional)



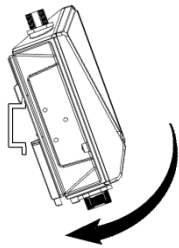
The **DK-DC50131** die-cast metal kit can be bought separately, and enable easy and robust installation for the AWK-6222. A pair of DK-DC50131s is needed for DIN-rail mounting. To install the DIN-rail mounting kits, tightly attach the two DIN-rail mounting kits on the rear panel of AWK-6222 with 12 screws (6 screws for each kit).

To Install

STEP 1:
Use the recessed button on the spring-loaded bracket to lock it into position.

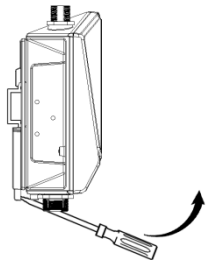


STEP 2:
Insert the top of the DIN rail into the slot just below the upper hook of the DIN-rail mounting kit. Push the AWK-6222 toward the DIN rail until the DIN-rail attachment bracket snaps into place.

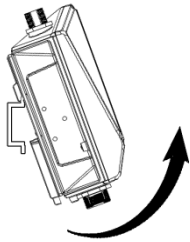


To Release

STEP 1:
Pull out the two spring-loaded brackets from the bottom until they are fixed in the "release" position.



STEP 2:
Pull the AWK-6222 out and upward.



Wiring Requirements

WARNING

Safety First!

Be sure to disconnect the power cord before installing and/or wiring your Moxa AWK-6222.
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.

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 for easy identification.

Grounding Moxa AWK-6222

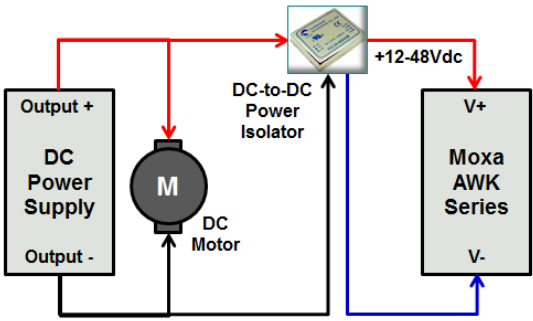
Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI). Run the ground connection from the ground screw to the grounding surface prior to connecting devices.

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.

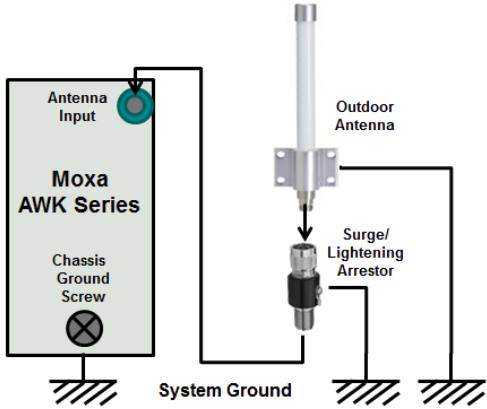
Installations with Unstable Power Inputs

There are cases where the device has to be wired to the same power source as other equipment. In such cases if equipment such as motors that are connected in the circuit draw a large amount of current during operation, the transient voltage drop could potentially cause the AWK to become unstable. Installing a DC/DC power isolator between the two equipment is recommended to isolate the transient effect in and to ensure a stable power input for the AWK.



Installations with 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.

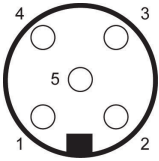


Arrester Accessories

- **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 Redundant Power Inputs

The AWK-6222 must be connected to a power-over-Ethernet (PoE) IEEE 802.3af compliant power source or an IEC60950 compliant limited power source. When AWK-6222 is powered via DC power, the M12 A-coding connector on the bottom panel is used for the AWK-6222's two redundant inputs. The pin assignment is shown below:



Pin	Power Input
1	V1+
2	V2+
3	V1-
4	V2-
5	GND

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, 1.066 to 0.312 A

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

Before connecting the AWK-6222 to the DC power inputs, make sure the DC power source voltage is stable.

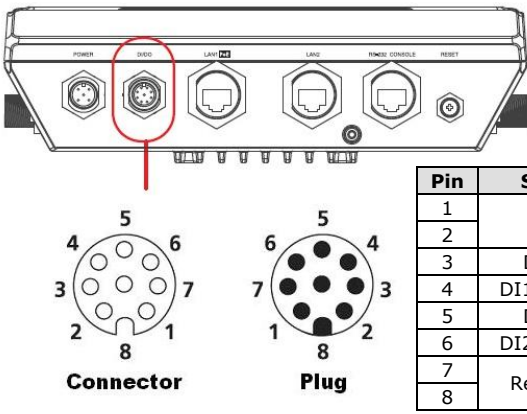
Wiring the Digital Inputs and Relay Contact

(Digital Output)

The AWK-6222 has two sets of digital input—DI1 and DI2. Each DI comprises two contacts of the 8-pin M12 connector on the AWK-6222's bottom panel. These two digital inputs can be connected to digital-output-enabled sensors for on-site status monitoring.

The AWK-6222 also has one relay output, which consists of the two contacts. These relay contacts are used to detect 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 be closed.

A field-installable plug, **M12A-8PMM-IP68**, is recommended for connecting the AWK-6222's DIs and relay.



Pin	Signal
1	Relay
2	
3	DI1 I1
4	DI1 COM_1
5	DI2 I2
6	DI2 COM_2
7	Reserved
8	

Communication Connections

10/100BaseT(X) Ethernet Port Connection

The 10/100BaseT(X) ports located on the AWK-6222's bottom panel are used to connect to Ethernet-enabled devices.

The pinouts for both MDI (NIC-type) ports and MDI-X (HUB/Switch-type) ports are shown below.

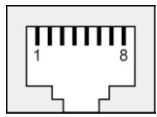
MDI Port Pinouts

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

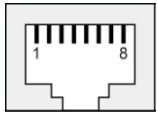


RS-232 Connection

The AWK-6222 has one RS-232 (8-pin RJ45) console port located on the bottom panel. Use either an RJ45-to-DB9 or RJ45-to-DB25 cable to connect the Moxa AWK-6222's console port to your PC's COM port. You may then use a console terminal program to access the AWK-6222 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	–	–



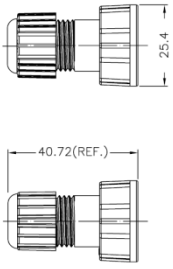
NOTE
1. The pin numbers for male DB9 and DB25 male connectors, and hole numbers for DB9 and DB25 female connectors, are labeled on the connector strip. However, the numbers are typically quite small, so you may need to use a magnifying glass to see the numbers clearly.
2. The pin numbers for both 8-pin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

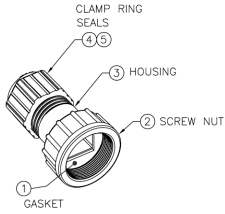
ATTENTION

To ensure the IP68-rated connectivity, you must use a waterproof housing during any communication activities. An IP68-rated field installable plug, which is attached in AWK-6222's accessory pack, may be needed in this case. The installation instructions are shown below:

Waterproof RJ45 Plug (Optional)

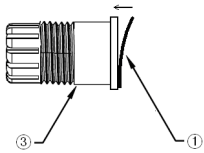
Dimensions (unit: mm)



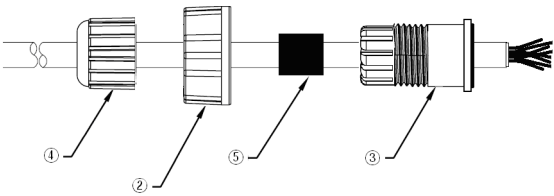


Installation

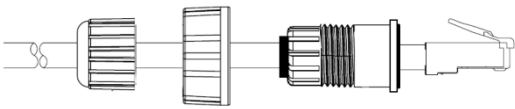
STEP 1:
Attach the gasket ① to the housing ③



STEP 2:
Insert the cable (ex. CAT5e) through the clamp ring ④, screw nut ②, seal ⑤ and housing ③, as follows:

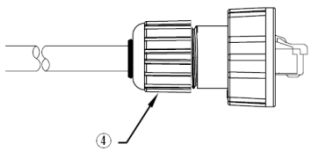


STEP 3:
Crimp the modular RJ plug to the cable. Note that the use of a snagless cover shield or a strain-relief boot is not recommended here. Then, assemble the seals and the housing (③ and ⑤).



STEP 4:
Tightly screw the clamp ring ④ to the housing and check to make sure that the plug is securely fastened.

(NOTE: For a tighter connection, you can connect the RJ-45 plug to the AWK-6222 before **STEP 4**.)



LED Indicators

The front panel of the Moxa AWK-6222 contains several LED indicators. The function of each LED is described in the table below:

LED	Color	State	Description
PWR	Green	On	Power is being supplied (from power input 1 or 2, or PoE)
		Off	Power is **not** being supplied.
FAULT	Red	On	The relay output is triggered by the event.
		Blinking (slow at 1-second intervals)	Cannot get an IP address from the DHCP server.
		Blinking (fast at 0.5-second intervals)	IP address conflict.
		Off	No error condition exists.
STATE	Green/ Red	Green	System startup is complete and the system is in operation.
		Green Blinking (at 1-second intervals)	The device has been located by the Wireless Search Utility.
		Red	System is booting up.
WLAN 1	Green/ Amber	Green On	WLAN is functioning in **client/slave** mode.
		Green Blinking	WLAN's is transmitting data in **client/slave** mode.
		Amber On	WLAN is functioning in **AP/bridge/master** mode.
		Amber Blinking	WLAN's is transmitting data in **AP/bridge/master** mode.
		Off	WLAN is not in use or not working properly.
WLAN 2	Green/ Amber	Green On	WLAN is functioning in **client/slave** mode.
		Green Blinking	WLAN's is transmitting data in **client/slave** mode.
		Amber On	WLAN is functioning in **AP/bridge/master** mode.
		Amber Blinking	WLAN's is transmitting data in **AP/bridge/master** mode.
		Off	WLAN is not in use or not working properly.
LAN 1	Yellow/ Green	Yellow On	LAN port's 10 Mbps link is active.
		Yellow Blinking	Data is being transmitted at 10 Mbps.
		Yellow Off	LAN port's 10 Mbps link is inactive.
		Green On	LAN port's 100 Mbps link is active.
		Green Blinking	Data is being transmitted at 100 Mbps.
		Green Off	LAN port's 100 Mbps link is inactive.

LAN 2	Yellow/ Green	Yellow On	LAN port's 10 Mbps link is active.
		Yellow Blinking	Data is being transmitted at 10 Mbps.
		Yellow Off	LAN port's 10 Mbps link is inactive.
		Green On	LAN port's 100 Mbps link is active.
		Green Blinking	Data is being transmitted at 100 Mbps.
		Green Off	LAN port's 100 Mbps link is inactive.

Specifications

WLAN	
Standards	IEEE 802.11a/b/g for Wireless LAN IEEE 802.11i for Wireless Security IEEE 802.3 for 10BaseT(X) IEEE 802.3u for 100BaseT(X) IEEE 802.3af for Power-over-Ethernet IEEE 802.1D for Spanning Tree Protocol(STP) IEEE 802.1w for Rapid STP IEEE 802.1Q for VLAN
Spread Spectrum and Modulation (Typical)	• DSSS with DBPSK, DQPSK, CCK • OFDM with BPSK, QPSK, 16QAM, 64QAM • 802.11b: CCK @ 11/5.5 Mbps, DQPSK @ 2 Mbps, DBPSK @ 11 Mbps • 802.11a/g: 64QAM @ 54/48 Mbps, 16QAM @ 36/24 Mbps, QPSK @ 18/12 Mbps, BPSK @ 9/6 Mbps
Operating Channels (central frequency)	US: 2.412 to 2.462 GHz (11 channels) 5.18 to 5.24 GHz (4 channels) EU: 2.412 to 2.472 GHz (13 channels) 5.18 to 5.24 GHz (4 channels) JP: 2.412 to 2.472 GHz (13 channels, OFDM) 2.412 to 2.484 GHz (14 channels, DSSS) 5.18 to 5.24 GHz (4 channels for W52)
Security	• SSID broadcast enable/disable • Firewall for MAC/IP/Protocol/Port-based filtering • 64-bit and 128-bit WEP encryption, WPA /WPA2 Personal and Enterprise (IEEE 802.1X/ RADIUS, TKIP, and AES)
Protocol Support	General Protocols: Proxy ARP, DNS, HTTP, HTTPS, IP, ICMP, SNTP, TCP, UDP, RADIUS, SNMP, PPPoE, DHCP AP-only Protocols: ARP, BOOTP, DHCP, STP/RSTP (IEEE 802.1D/w)
Transmission Rates	802.11b: 1, 2, 5.5, 11 Mbps 802.11a/g: 6, 9, 12, 18, 24, 36, 48, 54 Mbps
Tx Transmit Power	802.11b: Typ. 23±1.5 dBm @ 1 to 11 Mbps 802.11g: Typ. 20±1.5 dBm @ 6 to 24 Mbps,

	Typ. 19±1.5 dBm @ 36 Mbps, Typ. 18±1.5 dBm @ 48 Mbps, Typ. 17±1.5 dBm @ 54 Mbps, 802.11a: Typ. 18±1.5 dBm @ 6 to 24 Mbps, Typ. 16±1.5 dBm @ 36 to 48 Mbps, Typ. 15±1.5 dBm @ 54 Mbps
Rx Sensitivity	802.11b: -97 dBm @ 1 Mbps, -94 dBm @ 2 Mbps, -92 dBm @ 5.5 Mbps, -90 dBm @ 11 Mbps 802.11g: -93 dBm @ 6 Mbps, -91 dBm @ 9 Mbps, -90 dBm @ 12 Mbps, -88 dBm @ 18 Mbps, -84 dBm @ 24 Mbps, -80 dBm @ 36 Mbps, -76 dBm @ 48 Mbps, -74 dBm @ 54 Mbps 802.11a: -90 dBm @ 6 Mbps, -89 dBm @ 9 Mbps, -89 dBm @ 12 Mbps, -85 dBm @ 18 Mbps, -83 dBm @ 24 Mbps, -79 dBm @ 36 Mbps, -75 dBm @ 48 Mbps, -74 dBm @ 54 Mbps
Interface	
Default Antennas	2 dual-band omni-directional antennas, 5 dBi at 2.4 GHz, 2 dBi at 5 GHz, N-type (male)
Connector for External Antennas	N-type (female)
RH45 Ports	2, 10/100BaseT(X), auto negotiation speed, F/H duplex mode and auto MDI/MDI-X connection
Console Port	RS-232 (Waterproof RJ45-type)
Reset	Present
LED Indicators	PWR, FAULT, STATE, WLAN1, WLAN2, LAN1, LAN2
Alarm Contact (digital output, M12 female connector)	1 relay output with current carrying capacity of 1 A @ 24 VDC
Digital Input (M12 female connector)	2 electrically-isolated inputs • +13 to +30 V for state "1" • +3 to -30 V for state "0" • Max. input current: 8 mA
Power Requirements	
Input Voltage	12 to 48 VDC, redundant dual DC power inputs or 48 VDC Power-over-Ethernet (IEEE 802.3af compliant)
Connector	M12 male connector with A-coding
Power Consumption	12 to 48 VDC, 1.066 to 0.312 A
Reverse Polarity Protection	Present
Physical Characteristics	
Housing	IP68 protection
Dimensions	224 x 148 x 67 mm (8.82 x 5.82 x 2.62 in)
Weight	1.8 kg
Installation	Wall mounting (standard), DIN-rail mounting (optional), pole mounting (optional)

Environmental	
Operating Temperature	-40 to 75°C (-40 to 167°F)
Storage Temperature	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 100% (non-condensing)
Standards and Certifications	
Safety	UL 60950-1, EN 60950-1
EMC	EN301 489-1/-17, FCC Part 15 Subpart B, EN 55022/55024
Radio	EN 300 328, EN 301 893, TELEC, FCC ID SLE-WAPA003
Note: Please check Moxa's website for the most up-to-date certification status.	
Reliability	
MTBF (mean time between failures)	284,072 hrs
WARRANTY	
Warranty Period	5 years
Details	See http://www.moxa.com/warranty

ATTENTION

The AWK-6222 is **NOT** a portable mobile device and should be located 20 cm away from the human body.

The AWK-6222 is **NOT** designed for the general public. A well-trained technician is required to deploy the AWK-6222 units and safely establish a wireless network.

ATTENTION

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:
1. This device may not cause harmful interference, and
2. This device must accept any interference received, including interference that may cause undesired operation.

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 instruction on proper installation and grounding of the antenna, refer to national and local codes (for example, U.S.: NFPA 70; National Electrical Code, Article 810; Canada: Canadian Electrical Code, Section 54).