MOXA AIG-300 Series Advanced IIoT Gateway Installation Guide

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Contents

Package Checklist

Before installing the device, verify that the package contains the following items:

- AIG-300 Series advanced IIoT gateway
- Power jack
- DIN-rail mounting kit
- Quick installation guide (printed)
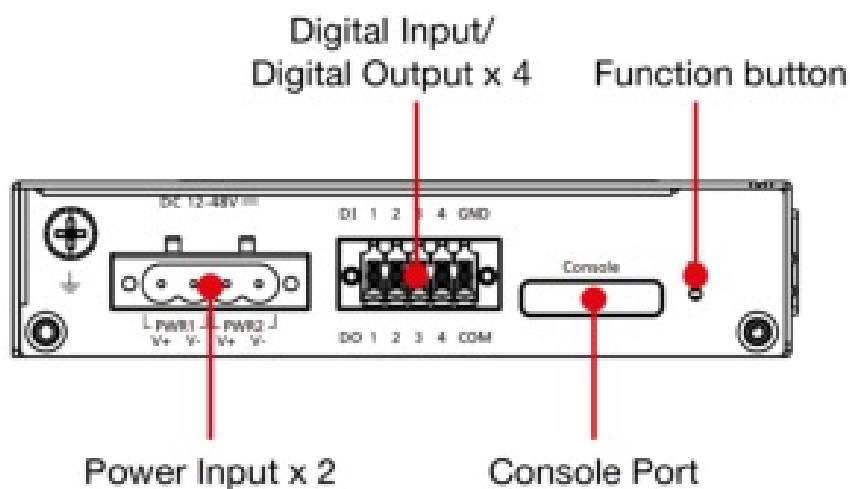- Warranty card

⚠️ **IMPORTANT!**

The console cable is not included in the package; you need to purchase it separately. Notify your sales representative if any of the above items are missing or damaged.
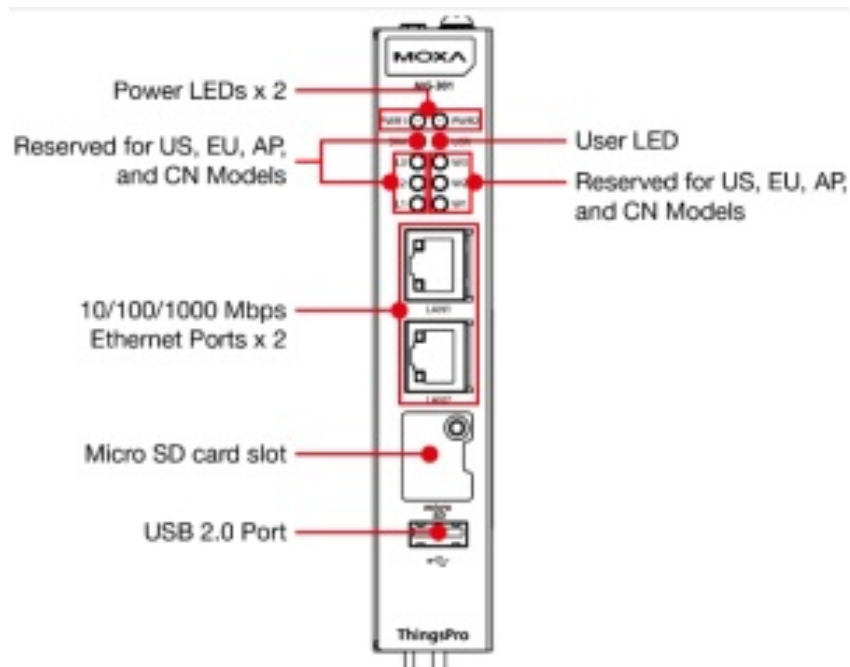
Panel Views

The following figures show the panel layouts of the AIG-300 Series:

AIG-301-T-AZU-LX

Top Panel

Digital Input/
Digital Output x 4   Function button

DC 12-48V

DI 1 2 3 4 GND

Console

PWR1   PWR2
V+ V- V+ V-

DO 1 2 3 4 COM

Power Input x 2   Console Port

Front Panel

MOXA
AIG-301

Power LEDs x 2

Reserved for US, EU, AP,
and CN Models

User LED

Reserved for US, EU, AP,
and CN Models

10/100/1000 Mbps
Ethernet Ports x 2

Micro SD card slot

USB 2.0 Port

ThingsPro

Bottom Panel

COM1   COM2   CAN

RS-232/422/485   RS-232/422/485

Serial Port 1   Serial Port 2   CAN Port
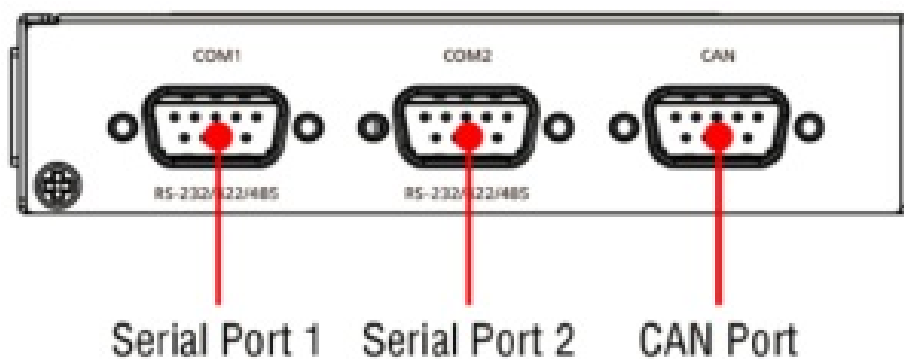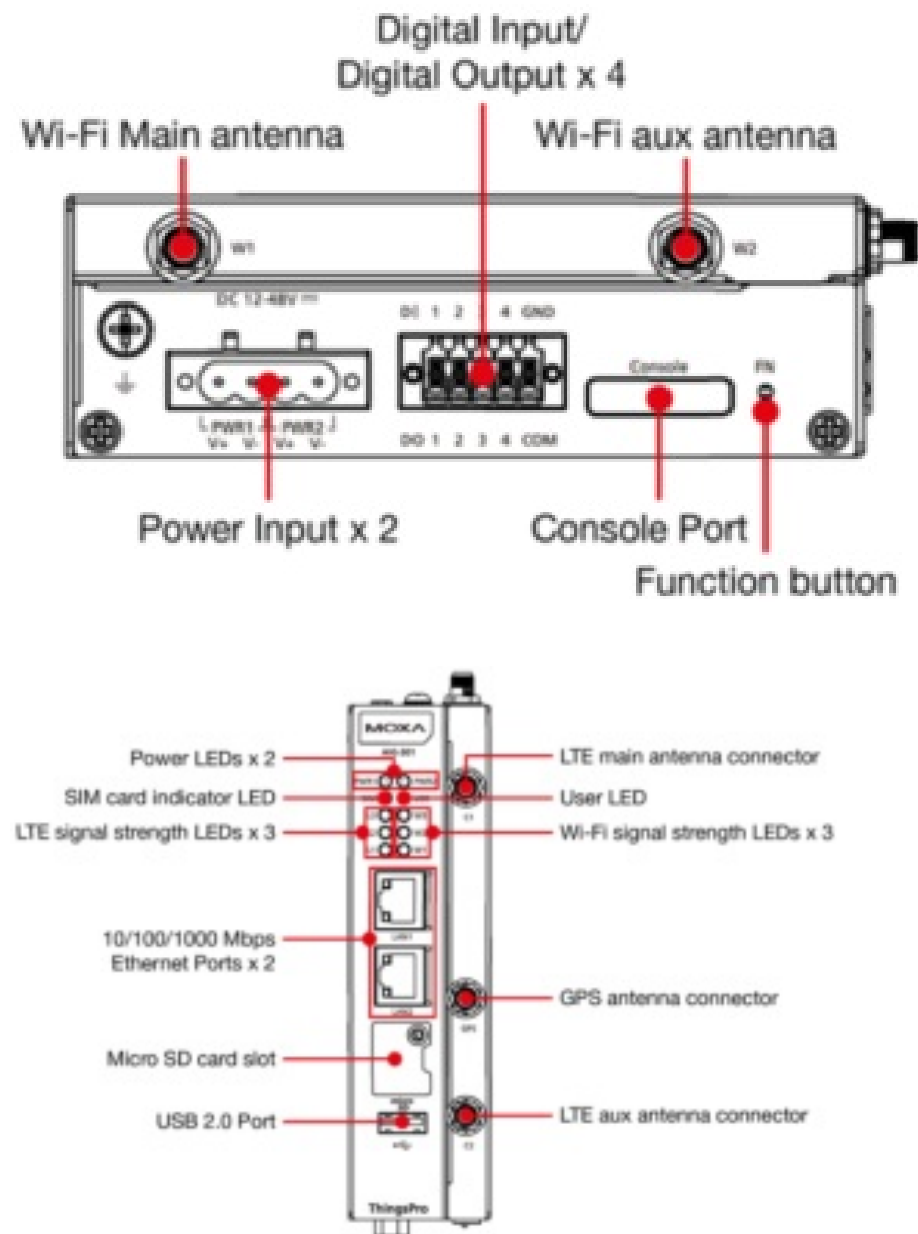
AIG-301 US, EU, AP, and CN Models

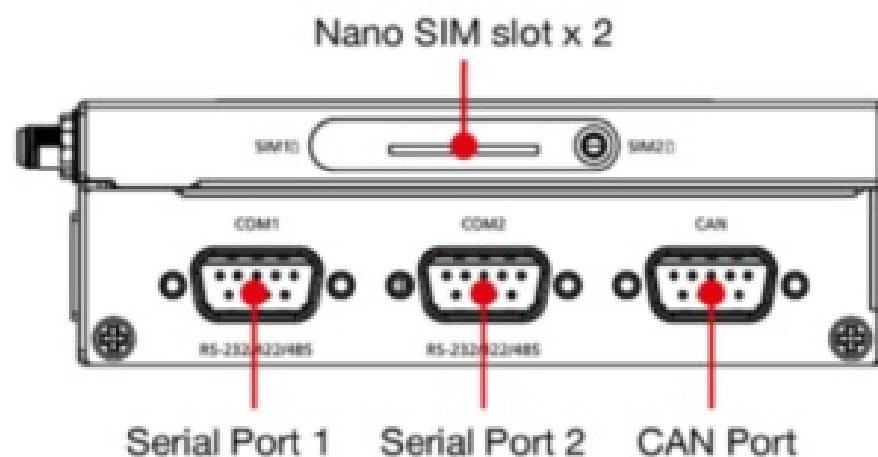**NOTE**

The CN model does not come preinstalled with the LTE module. Contact Moxa's distributor in China for more information.

Top Panel

Digital Input/
Digital Output x 4

Wi-Fi Main antenna

Wi-Fi aux antenna

Power Input x 2

Console Port

Function button

Power LEDs x 2

SIM card indicator LED

LTE signal strength LEDs x 3

10/100/1000 Mbps
Ethernet Ports x 2

Micro SD card slot

USB 2.0 Port

LTE main antenna connector

User LED

Wi-Fi signal strength LEDs x 3

GPS antenna connector

LTE aux antenna connector

Bottom Panel View

Nano SIM slot x 2

Serial Port 1   Serial Port 2   CAN Port

LED Indicators

| LED Name	Status	Function	
PWR1/PWR2	Green	Power is on	
	Off	No power is supplied	
SIM	Green	SIM2 in use	
	Yellow	SIM1 in use	
USR	Green/Yellow	Green: System is operating normally Yellow: System is initializing and running the initial boot-up process	
L1/L2/L3	Yellow	Cellular signal strength	
		L1+L2+L3: Strong L2+L3: Normal L3:Weak	
W1/W2/W3	Yellow	WLAN signal strength	
		W1+W2+W3: Strong W2+W3: Normal W3: Weak	
LAN1/LAN2 (RJ45 connector)	Green	Steady on	1000 Mbps Ethernet link
		Blinking	Data is being transmitted
	Yellow	Steady on	100 Mbps Ethernet link
		Blinking	Data is being transmitted
	Off	No Ethernet connection or 10 Mbps Ethernet link	

Mounting Instructions

DIN-rail Mounting

The aluminum DIN-rail attachment plate is already attached to the product's casing. To mount the device on to a DIN rail, make sure that the stiff metal spring is facing upwards and follow these steps.
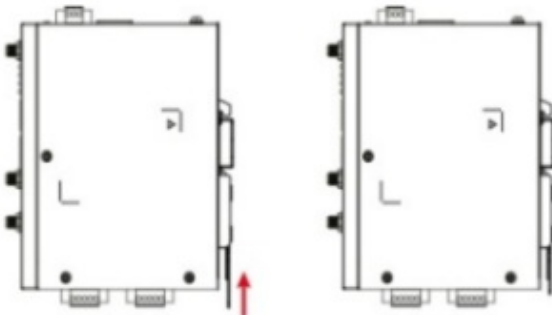
1. Pull down the bottom slider of the DIN-rail bracket located at the back of the unit
2. Insert the top of the DIN rail into the slot just below the upper hook of the DIN-rail bracket.
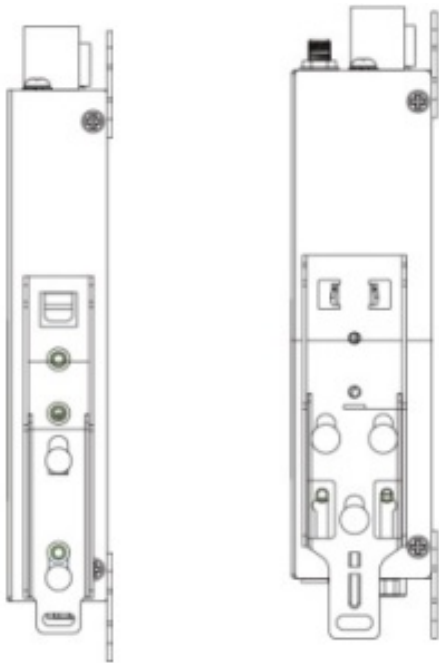
3. Latch the unit firmly on to the DIN rail as shown in the illustrations below.
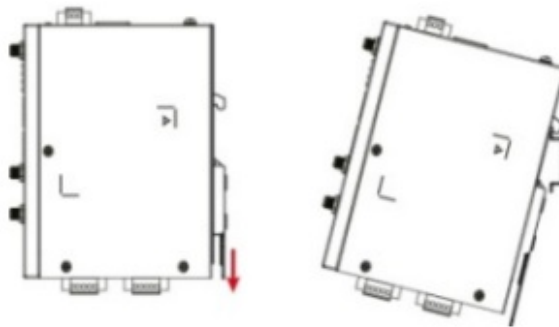
4. Push the slider back into place.

Wall Mounting (optional)

The device can be mounted on to a wall using a wall-mounting kit. The optional wall-mounting kit should be purchased separately. Follow these steps to mount the device on to a wall:

1. Use four screws to fasten the wall-mounting brackets on the left panel of the device.
2. Use another four screws to mount the device on to a wall or in a cabinet.
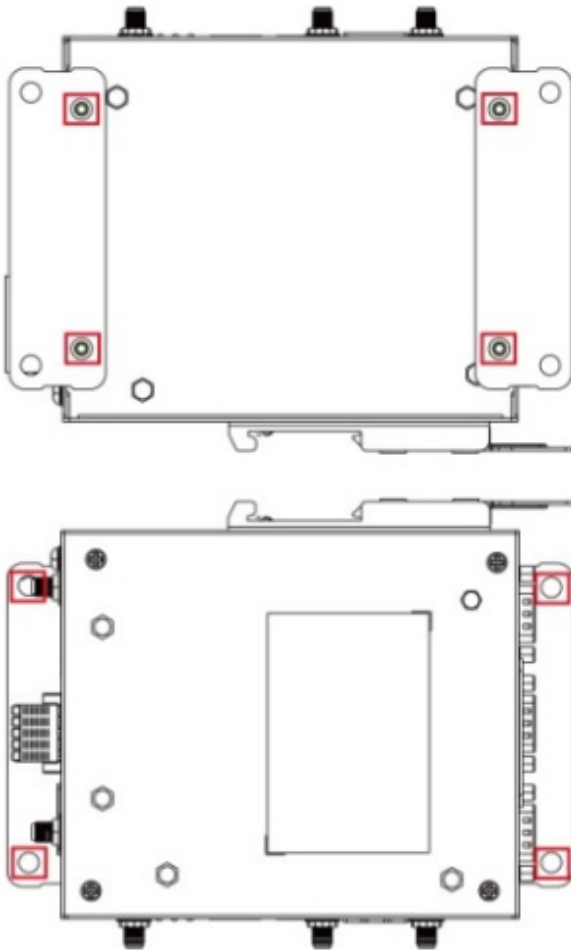
⚠️ **IMPORTANT**

The diameter of the screw heads should be greater than 7 mm and less than 14 mm; the diameter of the shafts should be less than 3 mm. The length of the screws should be greater than 6 mm.

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 attaching the plate to the wall.
- Do not drive 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.

Wiring Requirements

- 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
- 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 that shares similar electrical characteristics can be bundled together.
- Keep input wiring and output wiring separate.
- When necessary, it is strongly advised that you label wiring to all devices in the system.

NOTE

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

Grounding Requirements

There is a grounding connector located on the top panel of the device. Connect it to an appropriate grounded metal surface. Grounding and wire routing help limit the effects of noise due to electromagnetic interference (EMI).

Connecting the Power Supply

Connect the power jack (in the package) to the DC terminal block (located on the top panel), and then connect the power adapter. It takes about 3 minutes for the system to boot up. Once the system is ready, the Power LED will light up. Both models support dual power inputs for redundancy.
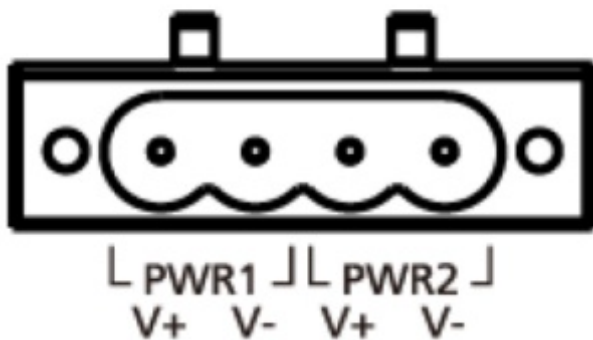
Use wires with 12 to 26 AWG wire size to connect to V+, V-, and GND.
The wire size of the power input and the earthing conductor should be the same. Remove 8 to 9 mm of the DC wires' protective cover and use a torque of 4.5lb-in/0.51Nm to connect the wire. The max. wire temperature should not exceed 100°C. The terminal blocks do not accommodate more than one conductor wire per clamping point.

⚠️**WARNING**

EXPLOSION HAZARD!

Do not disconnect equipment unless the power has been removed or the area is known to be non-hazardous.

⚠️**WARNING**

- This product is intended to be supplied by a UL Listed power adapter or DC power source whose output meets SELV/LPS. The power source must be rated 12 to 48 VDC, minimum 1 A, and minimum TMA = 85°C.
- The power adapter should be connected to a socket outlet with an earthing connection.

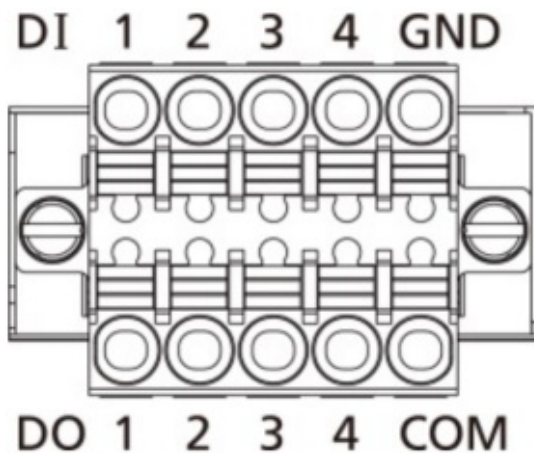If you need further information or assistance, contact a Moxa representative.

Wiring the I/Os

There are four digital inputs and four digital outputs on the top panel. Refer to the figure on the left for detailed pin definitions.

Use wires with 16 to 28 AWG wire size to connect to DI, DO, and GND.

The exposed conductor wire length should be 7-8 mm and the max. wire temperature should not exceed 100°C. The terminal blocks do not accommodate more than one conductor wire per clamping point.

DI 1 2 3 4 GND

DO 1 2 3 4 COM

DI Dry Contact

DI

GND

DO Channel (Sink Type)

DO

Load

DC Power Source

GND
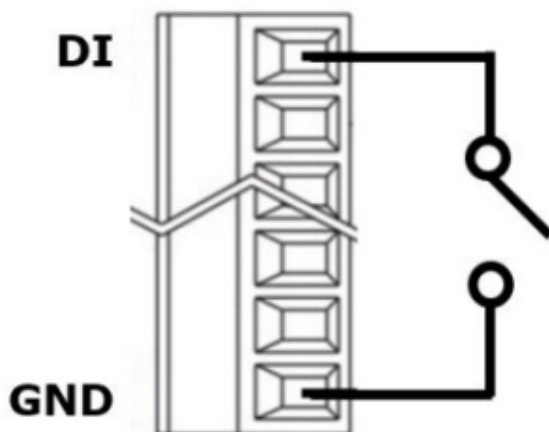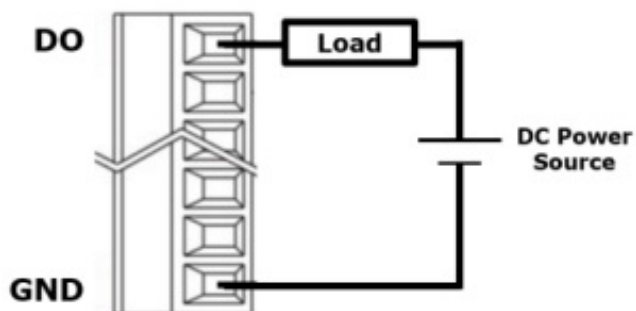
Communication Connections

Connecting to the Network

The two 10/100/1000 Mbps Ethernet ports (LAN 1 and LAN 2) use RJ45 connectors. Refer to the figure to the
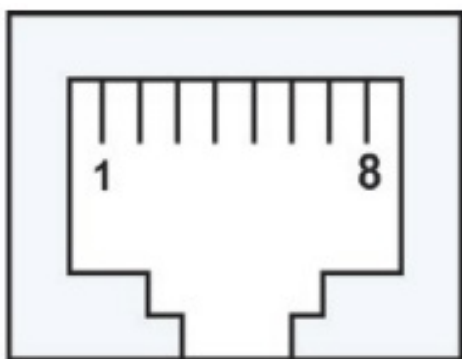
Pin	10/100 Mbps	1000 Mbps
1	Tx+	TRD(0)+
2	Tx-	TRD(0)-
3	Rx+	TRD(1)+
4	–	TRD(2)+
5	–	TRD(2)-
6	Rx-	TRD(1)-
7	–	TRD(3)+
8	–	TRD(3)-

Connecting to Serial Ports

The two serial ports (P1 and P2) use DB9 interface. Each port can be configured by software for RS-232, RS-422, or RS-485. The pin assignments for the ports are shown in the following table:
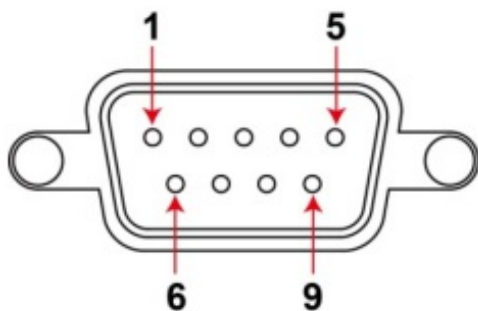
Pin	RS-232	RS-422/ RS-485 4w	RS-485 2w
1	–	TxD-(A)	–
2	RxD	TxD+(B)	–
3	TxD	RxD+(B)	Data+(B)
4	DTR	RxD-(A)	Data-(A)
5	GND	GND	GND
6	DSR	–	–
7	RTS	–	–
8	CTS	–	–

Inserting the microSD Card

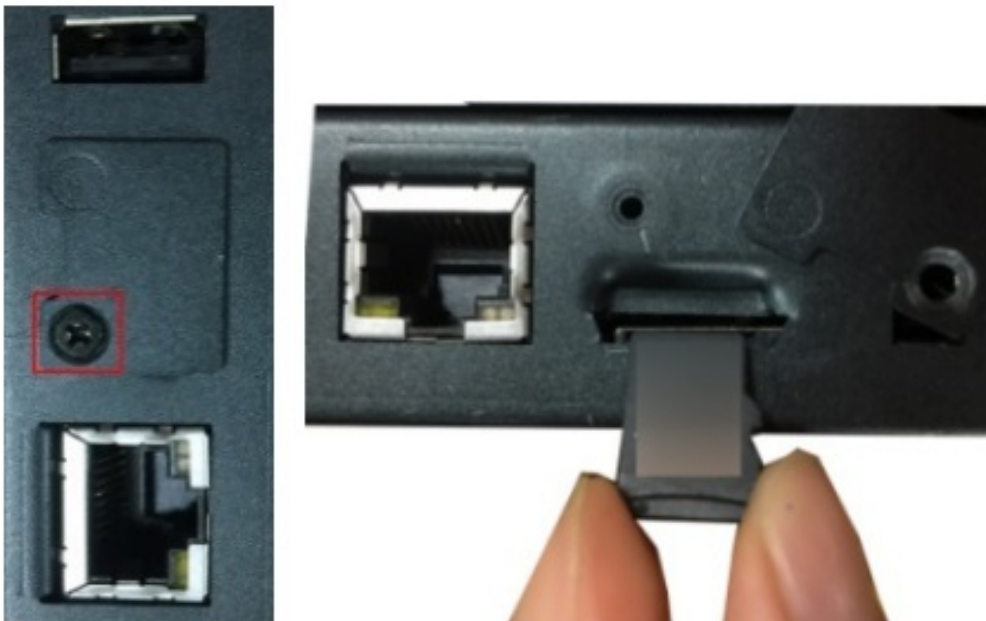The device comes with a micro-SD slot for storage expansion. The microSD slot is located at the lower part on the front panel. To install the card, remove the screw and the protection cover to access the slot and insert the microSD card into the slot.

You will hear a click when the card is in place. To remove the card, push the card in before releasing it.

Connecting to the Console Port

The console port is an RS-232 port located on the top panel, and can be connected to a 4-pin pin header cable. You can use this port for debugging or firmware upgrade.

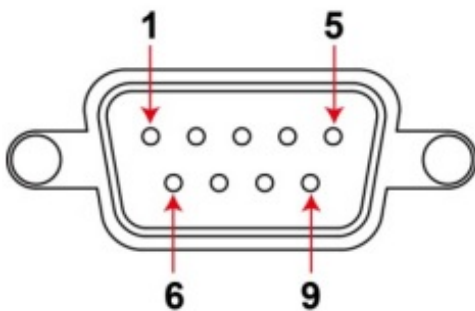| Pin	Signal
1	TxD
2	RxD
3	NC
4	GND

Connecting a USB Device

The device comes with a USB port located on the lower part of the front panel, allowing users to connect to a device with an USB interface. The USB port uses a type-A connector.

Connecting a CAN Device

A CAN port with a DB9 interface is located on the bottom panel. Refer to the figure below for detailed pin definitions.

Pin	Definition
1	–
2	CAN_L
3	CAN_GND
4	–
5	(CAN_SHLD)
6	(GND)
7	CAN_H
8	–
9	(CAN_V+)

Inserting a SIM Card

The device comes with two SIM card slots to install up to two SIM cards for cellular communication.

1. Remove the screw on the SIM card holder cover located on the bottom panel of the device.

2. Insert the SIM card into the socket. Make sure you insert it in the right direction. To remove the SIM card, press the SIM card in to release and then pull out the SIM card.

Connecting the Antennas

There are two cellular antenna connectors (C1 and C2) on the front panel of the device. In addition, a GPS connector is provided for the GPS module. All three are SMA type connectors. Connect the antennas to these connectors as indicated.

The device also comes with two Wi-Fi antenna connectors (W1 and W2) on the top panel of the device. Connect the antennas on the connectors as shown below. Both W1 and W2 connectors are of RP-SMA type.

NOTE

The optional Wi-Fi wireless module is not included in the product package and must be purchased separately. Refer to the AIG-300 Series hardware manual, which can be downloaded from The optional Wi-Fi wireless module is not included in the product package and must be purchased separately. Refer to the AIG-300 Series hardware manual, which can be downloaded from **https://www.moxa.com**, to install the Wi-Fi module for the

device., to install the Wi-Fi module for the device.

Connecting the Device to a PC

You can use a PC to access the AIG-300 Series by one of the following methods:

1. Access the web console of ThingsPro Edge via LAN 2 by https://192.168.4.127:8443/

   Default Username : admin

   Password: admin@123.
2. Using SSH over the network.

   Refer to the following IP addresses and login information:

	Default IP Address	Netmask
LAN 1	DHCP	
LAN 2	192.168.4.127	255.255.255.0

Login: moxa

Password: moxa

NOTE

For security reasons the SSH port is disabled by default. You can enable it via the ThingsPro Edge web console.

Troubleshooting

Reboot

To reboot the device, press the **Function (FN)** button for 1 second.

Reset to Default

Press and hold the **Function (FN)** button between 7 to 9 seconds to reset the device to the factory default settings. When the reset button is held down, the **USR** LED will blink once every second and become steady after 7 to 9 seconds. Release the button within this period to load the factory default settings.

Real-time Clock

The real-time clock is powered by a lithium battery. We strongly recommend that you do not replace the lithium battery without the help of a Moxa support engineer. If you need to change the battery, contact the Moxa RMA service team.

⚠️**ATTENTION**

There is a risk of explosion if the battery is replaced with an incorrect type of battery.

⚠️**ATTENTION**

- These devices are open-type devices that are to be installed in an enclosure with tool removable cover or door, suitable for the environment.
- This equipment is suitable for use in Class I, Division 2, Groups A, B, C, and D or non-hazardous locations only.
- ANTENNAS INTENDED FOR USE IN CLASS I, DIVISION 2 HAZARDOUS LOCATIONS MUST BE INSTALLED WITHIN THE END-USE ENCLOSURE. FOR REMOTE MOUNTING IN AN UNCLASSIFIED LOCATION, ROUTING AND INSTALLATION OF THE ANTENNAS SHALL BE IN ACCORDANCE WITH NATIONAL ELECTRICAL CODE REQUIREMENTS (NEC/CEC) Sec. 501.10 (b).
- The "USB, RS-232/422/485 serial ports, CAN, LAN1, LAN2, and Console ports, and the Reset button" may only be accessed at non-hazardous locations for equipment set-up, installation, and maintenance. These ports and their associated interconnecting cables must remain inaccessible within hazardous locations.

Product Specifications

Input Current	0.4 A @ 12 VDC (AIG-301-AZU-LX/T-AZU-LX)
	0.5 A @ 12 VDC (AIG-301-CN-AZU-LX/T-CN- AZU-LX)
	0.7 A @ 12 VDC (AIG-301-US-AZU-LX/T-US- AZU-LX, AIG-301-EU-AZU-LX/T-EU-AZULX,
	AIG-301-AP-AZU-LX/T-AP-AZU-LX)
Input Voltage	12 to 48 VDC
Power Consumption	4.8 W (AIG-301-AZU-LX/T-AZU-LX)
	6.0 W (AIG-301-CN-AZU-LX/T-CN-AZU-LX)
	8.4 W (AIG-301-US-AZU-LX/T-US-AZU-LX, AIG-301-EU-AZU-LX/T-EU-A ZU-LX, AIG-301- AP-AZU-LX/T-AP-AZU-LX)
Operating Temperature	Standard Temp. Models:
	-20 to 70°C (-4 to 158°F) (AIG-301-US-AZU- LX, AIG-301-EU-AZU-LX, AI G-301-AP-AZULX, AIG-301-CN-AZU-LX)
	-20 to 85°C (-4 to 185°F) (AIG-301-AZU-LX)
	Wide Temp. Models:
	-40 to 70°C (-40 to 158°F) (AIG-301-T-US- AZU-LX, AIG-301-T-EU-AZU-L X, AIG- 301-TAP- AZU-LX, AIG-301-T-CN-AZU-LX)
	–40 to 85°C (-40 to 185°F) (AIG-301-T-AZU-LX)

Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)

The latest specifications for Moxa's products can be found at
The latest specifications for Moxa's products can be found at
https://www.moxa.com.

ATEX and C1D2 Specifications

Model	UC-8210-T-LX, UC-8210-T-LX-S, UC-8220-T-LX
	UC-8210-LX, UC-8210-LX-S, UC-8220-LX
Rating	Input: 12 to 48 VDC; 1.0 to 0.25 A
ATEX Information	CE ⟨Ex⟩ II 3 G Certificate Number: DEMKO 19 ATEX 2302X Certification String: Ex e c IIC T4 Gc Ambient Range: -40°C ≦ Tamb ≦ 85°C (UC-8210-T-LX, and UC-8210-T-LX-S models) -40°C ≦ Tamb ≦ 70°C (UC-8220-T-LX model) -20°C ≦ Tamb ≦ 85°C (UC-8210-LX and UC- 8210-LX-S models) -20°C ≦ Tamb ≦ 70°C (UC-8220-LX model) Rated Cable Temp ≧ 100°C
C1D2 Information	Temperature Code (T-code): T4
Manufacturer's Address	No. 1111, Heping Rd., Bade Dist., Taoyuan City 334004, Taiwan
Hazardous Location Certification	EN IEC 60079-0:2018 EN IEC 60079-7:2015+A1:2018

Special Conditions of Use

- The equipment shall only be used in an area of at least pollution degree 2, as defined in EN 60664-1.
- The equipment shall be installed in an enclosure that provides a minimum ingress protection of IP 54 in accordance with EN 60079- 0 and is accessible only by the use of a tool.

Documents / Resources

AIG-300 Series
Quick Installation Guide

Advanced IIoT Gateways with Armv8 Cortex™-A7 dual-core 1
GHz processor, 1 CAN port, 4 DOs, 4 DIs, ThingsPro Edge
software, -30 to 70°C operating temperature

Version 1.2, December 2021

Technical Support Contact Information
www.moxa.com/support

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AIG-300 Series, Advanced IIoT Gateway