

AIG-100 Series

2-port Modbus RTU/ASCII/TCP to MQTT/Azure/AWS cloud-ready gateways



Features and Benefits

- Supports generic MQTT client
- Supports MQTT connection with built-in device SDKs for Azure/AWS cloud
- Supports Modbus RTU/ASCII/TCP master/client
- Supports Modbus TCP server
- Built-in network traffic monitoring and diagnostic tool for easy troubleshooting
- Supports data buffering using store and forward and datalogger
- Seamless integration with Moxa ioLogik /UPort devices to easily extend I/O and serial interfaces
- Built-in data processing function to eliminate programming efforts
- -40 to 70°C operating temperature range
- LTE Cat.1 US, EU, and APAC models available

Certifications



Introduction

The AIG-100 Series gateways are entry-level IIoT gateways that connect Modbus RTU/ASCII/TCP devices to cloud platforms and applications such as Azure, AWS, and MQTT. The AIG-100 as a Modbus master can integrate existing Modbus devices with cloud platforms, effortlessly collecting and transmitting data to the Azure and AWS clouds. Moreover, the gateways also support the Modbus TCP slave mode, enabling simultaneous transmission of data to a cloud platform and local SCADA system.

Effortless Extension of I/O and Serial Interfaces

As the number of field sites increases, additional I/O or serial interfaces are required to connect devices, such as sensors, meters, and inverters, for collecting and processing the large amount of data that is generated. A typical approach is to install remote I/O and device servers to extend the interfaces, but the configuration settings required can be a nightmare for most users. To provide an extremely simple configuration process for interface extension, AIG-100 gateways have better integration and come with an intuitive wizard that can configure Moxa ioLogiks and UPorts with just a few clicks.

Built-in Ready-to-use Data Preprocessing Functions, No Coding Required

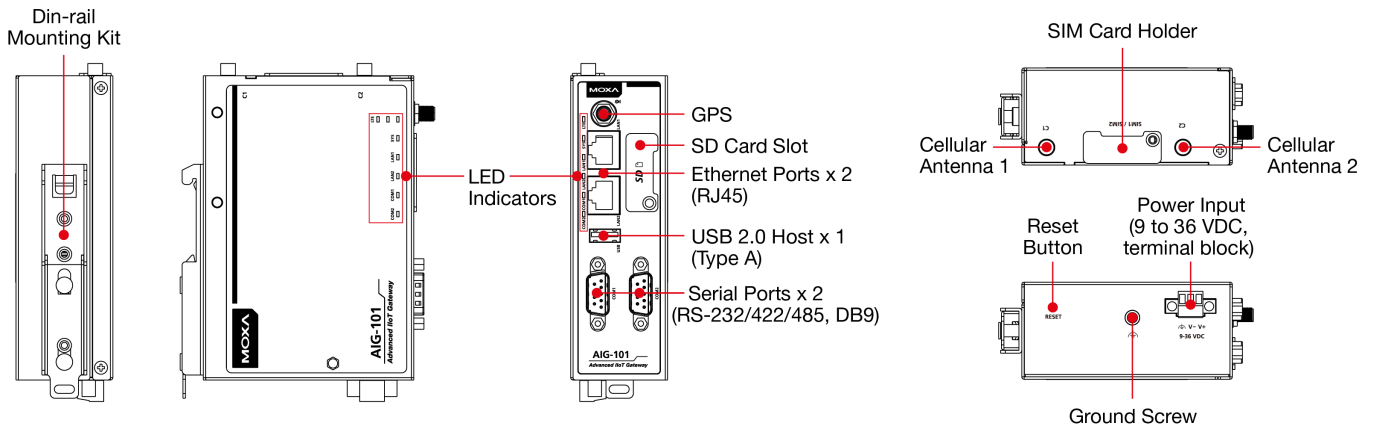
Energy Management Systems mainly collect energy data such as average power generation and energy efficiency. This data is then used to display on-site conditions, observe the energy trend, and optimize energy usage. Most edge systems require additional programming to process the data required by energy management system. The AIG-100 can preprocess the edge data and directly send meaningful data to the energy management systems. The intuitive UI enables easy configuration of the IIoT gateway settings to collect and process data.

Secure Remote Access Reduces Maintenance Costs

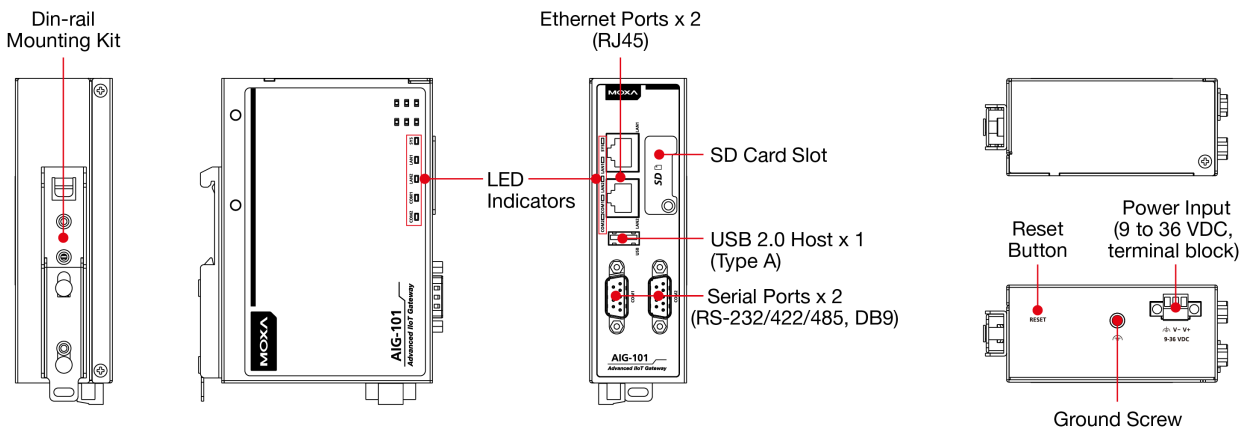
The AIG-100 comes with powerful troubleshooting tools to diagnose issues with protocol statuses and capture and analyze traffic packets, enabling engineers to remotely identify the root cause of issues and quickly bring the operation back to normal. The tools also provide secure remote access to the AIG-100 to enable the maintenance engineers to directly access it, saving a lot of time and effort and reducing system downtime in energy management systems.

Appearance

AIG-101-T-AP/EU/US



AIG-101-T



Specifications

Ethernet Interface

| | |
|---------------------------------------|------------------------------|
| 10/100BaseT(X) Ports (RJ45 connector) | 2, Auto MDI/MDI-X connection |
| Magnetic Isolation Protection | 1.5 kV (built-in) |

Ethernet Software Features

| | |
|-----------------------|---|
| Industrial Protocols | Modbus TCP Client (Master) / Server (Slave) Generic MQTT Azure IoT Device AWS IoT Core |
| Configuration Options | Web Console (HTTP/HTTPS) |
| Time Management | NTP Client GPS |

Serial Interface

| | |
|------------------|-----------------------|
| No. of Ports | 2 |
| Connector | DB9 male |
| Serial Standards | RS-232/422/485 |
| Baudrate | 300 bps to 921.6 kbps |

| | |
|--------------|------------------------------|
| Data Bits | 7, 8 |
| Parity | None, Even, Odd, Space, Mark |
| Stop Bits | 1, 2 |
| Flow Control | RTS/CTS |

Serial Signals

| | |
|-----------|--|
| RS-232 | TxD, RxD, RTS, CTS, DTR, DSR, DCD, GND |
| RS-422 | Tx+, Tx-, Rx+, Rx-, GND |
| RS-485-2w | Data+, Data-, GND |
| RS-485-4w | Tx+, Tx-, Rx+, Rx-, GND |

Cellular Interface

| | |
|-----------------------------|---|
| Cellular Standards | LTE Cat. 1 |
| Cellular Antenna Connectors | SMA x 2 |
| SIM Format | Nano SIM |
| No. of SIMs | 2 |
| GPS Antenna Connectors | SMA x 1 |
| Band Options | <p>US Model: LTE Bands: Band 2 (1900 MHz) / Band 4 (1700 MHz) / Band 5 (850 MHz) / Band 12 (700 MHz) / Band 13 (700 MHz) / Band 14 (700 MHz) / Band 66 (1700 MHz) / Band 71 (600 MHz) UMTS Bands: 2 (1900 MHz) / Band 4 (1700 MHz) / Band 5 (850 MHz) Carrier Approval: Verizon, AT&T</p> <p>EU Model: LTE Bands: Band 1 (2100 MHz) / Band 3 (1800 MHz) / Band 7 (2600 MHz) / Band 8 (900 MHz) / Band 20 (800 MHz) / Band 28 (700 MHz) UMTS Bands: Band 1 (2100 MHz) / Band 3 (1800 MHz) / Band 8 (900 MHz)</p> <p>AP Model: LTE Bands: Band 1 (2100 MHz) / Band 3 (1800 MHz) / Band 5 (850 MHz) / Band 8 (900 MHz) / Band 28 (700 MHz) UMTS Bands: Band 1 (2100 MHz) / Band 5 (850 MHz) / Band 8 (900 MHz)</p> |

Serial Software Features

| | |
|----------------------|-------------------------|
| Industrial Protocols | Modbus RTU/ASCII Master |
|----------------------|-------------------------|

Modbus RTU/ASCII

| | |
|----------------------|------------------------------|
| Mode | Master |
| Functions Supported | 1, 2, 3, 4, 5, 6, 15, 16, 23 |
| Max. No. of Commands | 256 per port |

Modbus TCP

| | |
|--------------------------------|-----------------------------------|
| Mode | Server (Slave) Client (Master) |
| Functions Supported | 1, 2, 3, 4, 5, 6, 15, 16, 23 |
| Max. No. of Client Connections | 4 |

| | |
|--------------------------------|---|
| Max. No. of Server Connections | 64 |
| Max. No. of Commands | 1500 |
| Generic MQTT Client | |
| Versions Supported | v3.1.1 v3.1 |
| QoS Levels | 0, 1, 2 |
| Authentication Methods | Username and password |
| Secure Transmission | TLS 1.0 TLS 1.1 TLS 1.2 |
| Native Capabilities | Keep Alive Retain Message Clean Session Will and Testament |
| Moxa Functions | Store and Forward Custom Payload Remote API Invocation |
| Azure IoT Device | |
| Connection Protocols Supported | MQTT MQTT over WebSockets AMQP AMQP over WebSockets |
| Authentication Methods | Symmetric Key X.509 Certificate |
| Azure Direct Methods | Reboot Software Upgrade Remote API Invocation |
| Moxa Functions | Store and Forward Custom Payload |
| AWS IoT Core | |
| QoS Levels | 0,1 |
| Authentication Methods | X.509 Certificate Private Key Trusted Root CA |
| Native Capabilities | Keep Alive |
| Moxa Functions | Store and Forward Custom Payload |
| Commands Invokable Via Jobs | Reboot Software Upgrade Remote API Invocation |
| Memory | |
| microSD Slot | Up to 32 GB (SD 2.0 compatible) Max. No. of Tags Supported: 1500 |
| Power Parameters | |
| Input Voltage | 9 to 36 VDC |
| Power Connector | Screw-fastened Euroblock terminal |

Physical Characteristics

| | |
|--------------|---|
| Dimensions | 128.5 x 89.1 x 41 mm (5.06 x 3.51 x 1.61 in) |
| Housing | Metal |
| Installation | DIN-rail mounting Wall mounting (with optional kit) |
| Weight | AIG-101-T: 492 g (1.08 lb) AIG-101-T-AP/EU/US: 512 g (1.13 lb) |

Environmental Limits

| | |
|--|----------------------------|
| Ambient Relative Humidity | 5 to 95% (non-condensing) |
| Operating Temperature | -40 to 70°C (-40 to 158°F) |
| Storage Temperature (package included) | -40 to 85°C (-40 to 185°F) |

Standards and Certifications

| | |
|--------------------|--|
| EMC | EN 55032/35 |
| EMI | CISPR 32, FCC Part 15B Class A |
| EMS | IEC 61000-4-2 ESD: Contact: 4 kV; Air: 8 kV IEC 61000-4-3 RS: 80 MHz to 1 GHz: 10 V/m IEC 61000-4-4 EFT: Power: 2 kV; Signal: 1 kV IEC 61000-4-5 Surge: Power: 1 kV; Signal: 1 kV IEC 61000-4-6 CS: 10 V IEC 61000-4-8 PFMF |
| Safety | IEC 62368-1 UL 62368-1 EN 62368-1 |
| Shock | IEC 60068-2-27 |
| Vibration | IEC 60068-2-64 5 Grms @ 5 to 500 Hz, random wave, 1 hr per axis (without USB devices attached) |
| Cellular Standards | EN 303 413 (GPS) EN 301 908-1 (WCDMA/LTE) EN 301 908-2/-13 (WCDMA/LTE) EN 301 489-1/-19 EN 301 489-1/-52 EN 62311 |
| Radio Frequency | FCC PTCRB RCM |
| Carrier Approvals | Verizon AT&T Note: Approval pending from AT&T. |
| Green Product | RoHS, CRoHS, WEEE |

MTBF

| | |
|-----------|-----------------|
| Time | 566,458 hrs |
| Standards | Telcordia SR332 |

Warranty

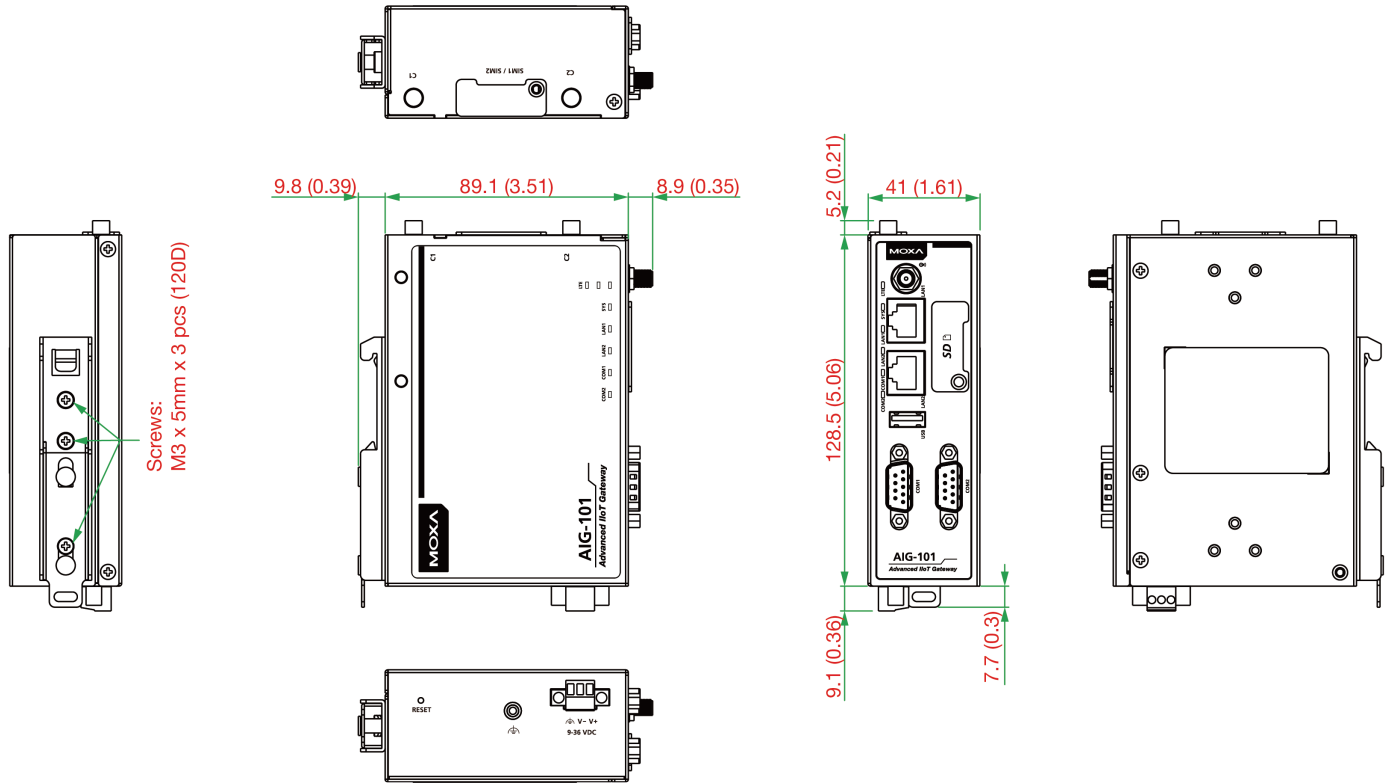
| | |
|-----------------|--|
| Warranty Period | 5 years |
| Details | See www.moxa.com/warranty |

Package Contents

| | |
|------------------|---|
| Device | 1 x AIG-100 Series gateway |
| Cable | 1 x terminal block to power jack converter |
| Installation Kit | 1 x DIN-rail kit |
| Documentation | 1 x quick installation guide 1 x warranty card |

Dimensions

Unit: mm (inch)



Ordering Information

| Model Name | LTE | Band |
|--------------|--------|------|
| AIG-101-T | - | - |
| AIG-101-T-AP | Cat. 1 | AP |
| AIG-101-T-EU | Cat. 1 | EU |
| AIG-101-T-US | Cat. 1 | US |

Accessories (sold separately)

Power Adapters

| | |
|---------------------|--|
| PWR-12150-AU-SA-T | Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, AU plug, -40 to 75°C operating temperature |
| PWR-12150-CN-SA-T | Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, CN plug, -40 to 75°C operating temperature |
| PWR-12150-EU-SA-T | Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, EU plug, -40 to 75°C operating temperature |
| PWR-12150-UK-SA-T | Locking barrel plug, 12 VDC, 1.5 A, 100 to 240 VAC, UK plug, -40 to 75°C operating temperature |
| PWR-12150-USJP-SA-T | Locking barrel plug, 12 VDC 1.5 A, 100 to 240 VAC, US/JP plug, -40 to 75°C operating temperature |

Antennas

| | |
|------------------|---|
| ANT-LTE-ASM-02 | GPRS/EDGE/UMTS/HSPA/LTE, 2 dBi, omnidirectional rubber-duck antenna |
| ANT-LTEUS-ASM-01 | GSM/GPRS/EDGE/UMTS/HSPA/LTE, 1 dBi, omnidirectional rubber-duck antenna |

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