

AIG-301 系列

配備 Arm® Cortex™-A7 雙核心 1 GHz 處理器並支援 Azure IoT Edge 的 2 埠 Modbus 至 Azure 進階 IIoT 閘道



特色與優點

- 支援通用 MQTT 用戶端
- 支援與 Azure/AWS 雲端的內建裝置 SDK 進行 MQTT 連線
- 支援 Modbus RTU/ASCII/TCP 主站、從站
- 支援 Modbus TCP 伺服器
- 支援 Azure IoT Edge
- 支援 Store-and-Forward 與資料記錄 (Datalogger) 機制進行資料緩衝
- 支援使用 ThingsPro Proxy 公用程式輕鬆進行裝置配置
- 提供強大的 OTA 功能，可防止軟體升級期間發生系統故障
- 配備安全開機功能，可防止惡意軟體注入攻擊
- -40°C 至 70°C 操作溫度範圍
- 提供 LTE Cat.4 US、EU 和 APAC 型號

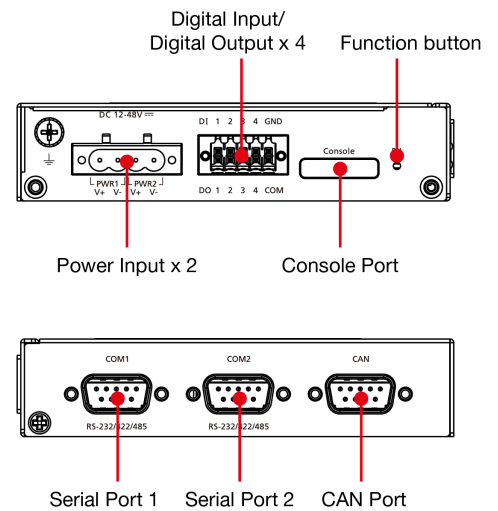
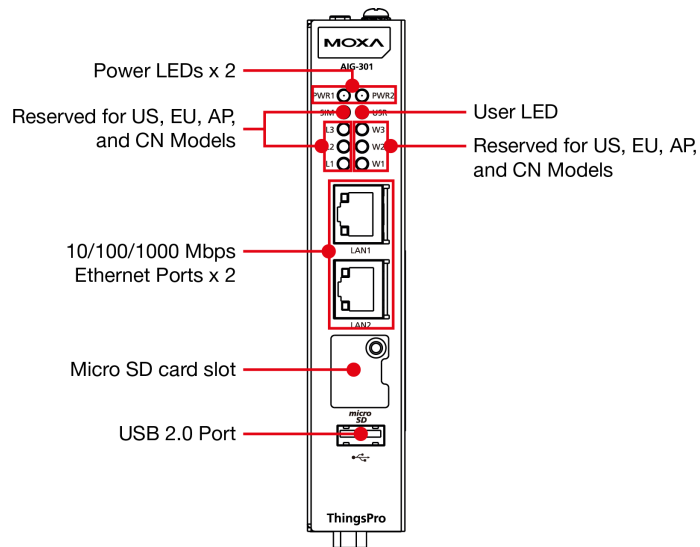
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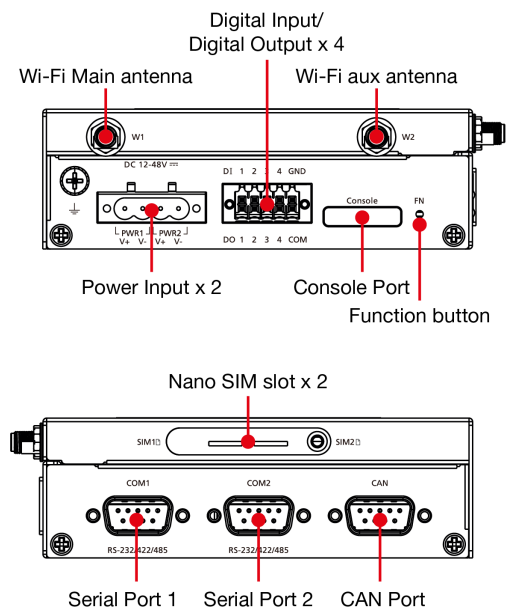
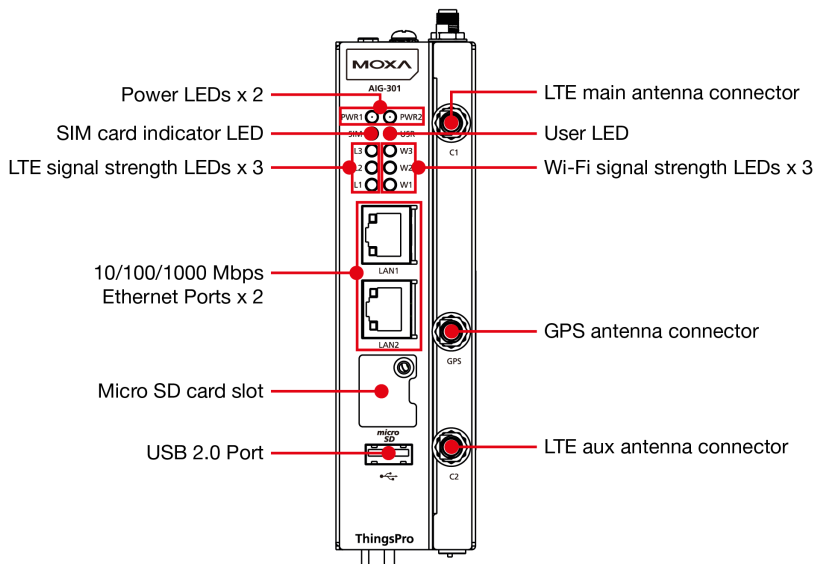
簡介

AIG-301 系列進階 IIoT 閘道專為工業物聯網應用所設計，特別適用於嚴苛操作環境中的分散式和無人值守站點。這些閘道支援 Modbus RTU/TCP 主站/用戶端通訊協定，可幫助您輕鬆地從 Modbus 裝置收集資料。此外，裝置預先載入並與 AIG-301 無縫整合 Azure IoT Edge 軟體，搭配 Azure 雲端解決方案，可提供簡單、可靠且安全的「感測器到雲端」(sensor-to-cloud) 連線，用於資料採集和裝置管理。藉助 ThingsPro Proxy 公用程式的使用，裝置配置過程比以往更容易。多虧了強大的 OTA 功能，您永遠不必擔心軟體升級期間發生系統故障。啟用安全開機功能後，您可以防止惡意軟體注入攻擊，尤其是在開機過程中。

AIG-301-T-AZU-LX



AIG-301 US、EU、AP 與 CN 型號



規格

Computer

CPU	Arm7 Cortex-A7 dual-core 1 GHz
DRAM	2 GB DDR3L
Storage Pre-installed	16 GB eMMC
Pre-installed OS	Moxa Industrial Linux (Debian 9, Kernel 4.4)
No. of Tags Supported	2048

Computer Interface

Ethernet Ports	Auto-sensing 10/100/1000 Mbps ports (RJ45 connector) x 2
Serial Ports	RS-232/422/485 ports x 2 (software-selectable, DB9 male connector)

CAN Ports	CAN 2.0 A/B x 1 (DB9 male)
Digital Input	DIs x 4
Digital Output	DOs x 4
USB 2.0	USB 2.0 hosts x 1, type-A connectors
Wi-Fi Antenna Connector	RP-SMA x 2 (excluding AIG-301-AZU-LX/T-AZU-LX models)
Cellular Antenna Connector	SMA x 2 (excluding AIG-301-AZU-LX/T-AZU-LX models)
GPS Antenna Connector	SMA x 1 (excluding AIG-301-AZU-LX/T-AZU-LX models)
Expansion Slots	AIG-301-CN-AZU-LX/T-CN-AZU-LX: mPCIe slot x 2 All other models: mPCIe slot x 1
SIM Format	Nano (excluding AIG-301-AZU-LX/T-AZU-LX models)
Number of SIMs	2
Buttons	Reset button Reset to factory default
TPM	TPM v2.0

Ethernet Interface

10/100/1000BaseT(X) Ports (RJ45 connector)	2
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 Azure IoT Edge Sparkplug B Client OPC UA Server FTP/SFTP
Configuration Options	Web Console (HTTPS) RESTful APIs ThingsPro Proxy Utility AIG QuickON (available for firmware version > v1.8.0)
Time Management	NTP Client GPS

Serial Interface

No. of Ports	2
Connector	DB9 male
Baudrate	300 bps to 921.6 kbps
Data Bits	7, 8
Stop Bits	1, 2
Parity	None, Even, Odd, Space, Mark

Flow Control	RTS/CTS, XON/XOFF
Console Port	1 x 4-pin header
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
Serial Software Features	
Industrial Protocols	Modbus RTU/ASCII Master
CAN Interface	
No. of Ports	1
Connector	DB9 male
Baudrate	10 to 1000 kbps
Industrial Protocols	CAN 2.0A CAN 2.0B
Signals	CAN_H, CAN_L, CAN_GND, CAN_SHLD, CAN_V+, GND
Isolation	2 kV (built-in)
Digital Inputs	
Connector	Spring-type Euroblock terminal
Sensor Type	Wet contact (NPN) Dry contact
Dry Contact	Off: open On: short to GND
Wet Contact (DI to COM)	On: 10 to 30 VDC Off: 0 to 3 VDC
Isolation	3K VDC
Digital Outputs	
Connector	Spring-type Euroblock terminal
Current Rating	200 mA per channel
I/O Type	Sink
Voltage	24 VDC nominal, open collector to 30 VDC
Cellular Interface	
Cellular Standards	LTE Cat. 4
Band Options (US)	4G: 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) 3G: Band 2 (1900 MHz) / Band 4 (1700 MHz) / Band 5 (850 MHz) Carrier Approval: Verizon, AT&T

Band Options (EU)	4G: Band 1 (2100 MHz) / Band 3 (1800 MHz) / Band 7 (2600 MHz) / Band 8 (900 MHz) / Band 20 (800 MHz) / Band 28A (700 MHz) 3G: Band 1 (2100 MHz) / Band 3 (1800 MHz) / Band 8 (900 MHz)
Band Option (APAC)	4G: Band 1 (2100 MHz) / Band 3 (1800 MHz) / Band 5 (850 MHz) / Band 8 (900 MHz) / Band 9 (1800 MHz) / Band 18 (850 MHz) / Band 19 (850 MHz) / Band 26 (850 MHz) / Band 28 (700 MHz) 3G: Band 1 (2100 MHz) / Band 5 (850 MHz) / Band 6 (850 MHz) / Band 8 (900 MHz) / Band 19 (850 MHz)

GPS Interface

Receiver Types	GPS/GLONASS/BeiDou/Galileo/QZSS
Accuracy	Position: 2.0 m @CEP50
Time to First Fix (TTFF)	Hot start: 1.1 s Warm start: 22.1 s Cold start: 29.9 s
Sensitivity	Acquisition: -147 dBm Cold starts: -145 dBm Tracking: -160 dBm
Update Rate	1 Hz

Azure IoT Edge

Versions Supported	v1.4.40
Authentication Methods	Manual / Connection String DPS / Symmetric Encryption DPS / X.509 Certificate DPS / TPM
Azure Direct Methods	Reboot Software Upgrade Remote API Invocation
Azure Module Twin	Device Configuration
Moxa Functions	Custom Payload Message Group

Sparkplug B Client

Versions Supported	v2.2
Node Commands (NCMD)	Next Broker Reboot Rebirth
Moxa Functions	Store and Forward Custom Payload

OPC UA Server

No. of Client Connections	4
Security	Sign and encrypt with policies Basic128Rsa15, Basic256, and Basic256Sha256
User Authentication and Authorization	Username/password
Supported Profiles	OPC UA v1.02
No. of Supported Tags	1000

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

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

Modbus RTU/ASCII

Mode	Client (Master)
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Commands	256 per port
Max. No of Connected Devices	62

Modbus TCP

Mode	Client (Master), Server (Slave)
Functions Supported	1, 2, 3, 4, 5, 6, 15, 16, 23
Max. No. of Server Connections	64

Max. No. of Client Connections	4
Max. No. of Commands	2048
LED Indicators	
System	Power x 2 User x 1 SIM card indicator x 1
LAN	2 per port (10/100/1000 Mbps)
Wireless Signal Strength	Cellular/Wi-Fi x 6
Power Parameters	
No. of Power Inputs	Redundant dual inputs
Input Voltage	12 to 48 VDC
Input Current	AIG-301-AZU-LX/T-AZU-LX: 0.4 A @ 12 VDC AIG-301-CN-AZU-LX/T-CN-AZU-LX: 0.5 A @ 12 VDC All other models: 0.7 A @ 12 VDC
Power Consumption	AIG-301-AZU-LX/T-AZU-LX: 4.8 W AIG-301-CN-AZU-LX/T-CN-AZU-LX: 6.0 W All other models: 8.4 W
Power Connector	4-pin terminal block
Reliability	
Automatic Reboot Trigger	External WDT (watchdog timer)
Physical Characteristics	
Housing	Metal SECC
IP Rating	IP30
Installation	DIN-rail mounting Wall mounting (with optional kit)
Dimensions	AIG-301-AZU-LX/T-AZU-LX: 141.5 x 120 x 27 mm (5.7 x 4.72 x 1.06 in) All other models: 141.5 x 120 x 39 mm (5.7 x 4.72 x 1.54 in)
Weight	AIG-301-AZU-LX/T-AZU-LX: 560 g (1.23 lb) AIG-301-CN-AZU-LX/T-CN-AZU-LX: 745 g (1.64 lb) All other models: 750 g (1.65 lb)
Environmental Limits	
Operating Temperature	Standard temp. models: AIG-301-US-AZU-LX, AIG-301-EU-AZU-LX, AIG-301-APAZULX, AIG-301-CN-AZU-LX: -20 to 70°C (-4 to 158°F) AIG-301-AZU-LX: -20 to 85°C (-4 to 185°F) Wide Temp. Models: AIG-301-T-US-AZU-LX, AIG-301-T-EU-AZU-LX, AIG-301-T-APAZU-LX, AIG-301-T-CN-AZU-LX: -40 to 70°C (-40 to 158°F) AIG-301-T-AZU-LX: -40 to 85°C (-40 to 185°F)
Storage Temperature (package included)	-40 to 85°C (-40 to 185°F)
Ambient Relative Humidity	5 to 95% (non-condensing)
Shock	IEC 60068-2-27
Vibration	2 Grms @ IEC 60068-2-64, random wave, 5 to 500 Hz, 1 hr per axis (without USB devices attached)

Standards and Certifications

EMC	EN 55032/35 EN 61000-6-2/-6-4
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	UL 62368-1 EN 62368-1
Radio	TELEC RCM AP-AZU models (except AIG-301-AP-AZU HW Rev. 2.0.1 and higher): NCC KC
Carrier Approvals	AT&T Verizon PTCRB
RED	EN 301 489-1/17/19/52 EN 301 908-1 EN 303 413 EN 62311
Hazardous Locations	Class I Division 2, ATEX
Green Product	RoHS, CRoHS, WEEE

MTBF

Time	AIG-301-AZU-LX/T-AZU-LX: 794,092 hrs AIG-301-US-AZU-LX/T-US-AZU-LX, AIG-301-EU-AZU-LX/T-EU-AZU-LX, AIG-301-AP-AZU-LX/T-AP-AZU-LX: 683,818 hrs
Standards	Telcordia (Bellcore) Standard TR/SR

Warranty

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

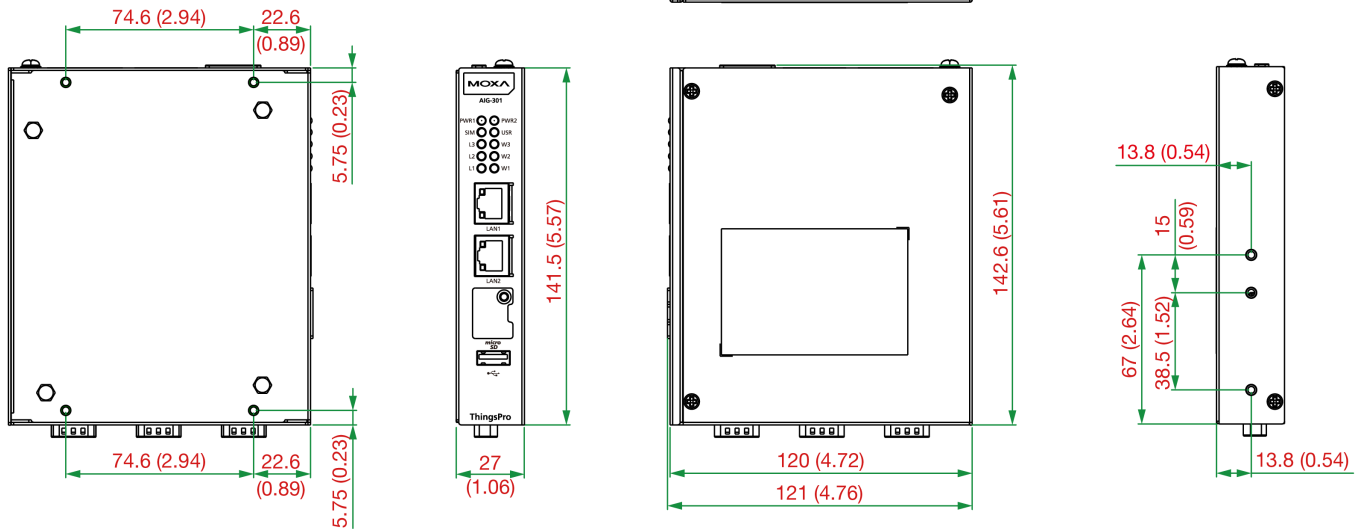
Package Contents

Device	1 x AIG-301 Series
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

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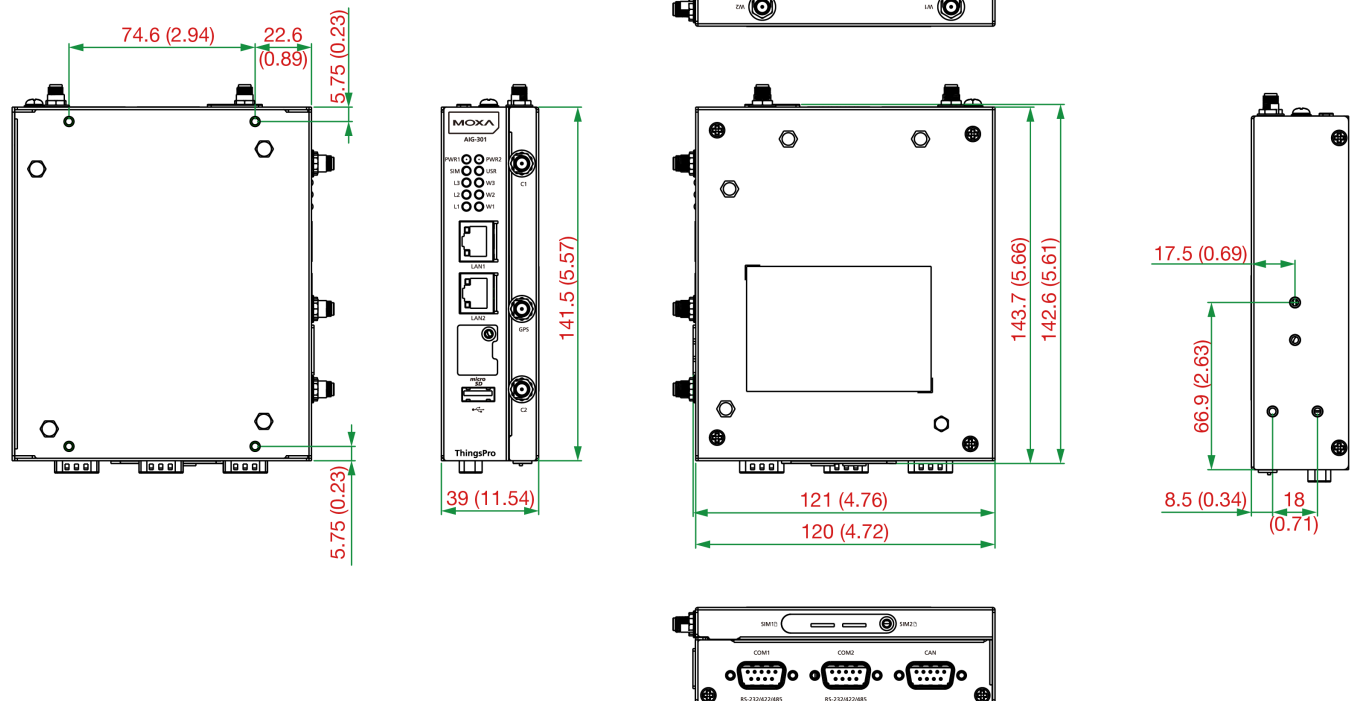
AIG-301-T-AZU-LX

單位：公釐（英吋）



AIG-301 US、EU、AP 與 CN 型號

單位：公釐（英吋）



訂購資訊

Model Name	mPCIe Slot 1 for LTE Module	mPCIe Slot 2 for Wi-Fi Module	Operating Temperature
AIG-301-AZU-LX	–	–	-20 to 85°C
AIG-301-T-AZU-LX	–	–	-40 to 85°C
AIG-301-CN-AZU-LX	Reserved	Reserved	-20 to 70°C
AIG-301-T-CN-AZU-LX	Reserved	Reserved	-40 to 70°C
AIG-301-US-AZU-LX	US region LTE module preinstalled	Reserved	-20 to 70°C
AIG-301-T-US-AZU-LX	US region LTE module preinstalled	Reserved	-40 to 70°C
AIG-301-EU-AZU-LX	Europe region LTE module preinstalled	Reserved	-20 to 70°C
AIG-301-T-EU-AZU-LX	Europe region LTE module preinstalled	Reserved	-40 to 70°C
AIG-301-AP-AZU-LX	APAC region LTE module preinstalled	Reserved	-20 to 70°C
AIG-301-T-AP-AZU-LX	APAC region LTE module preinstalled	Reserved	-40 to 70°C

配件 (選購)

Power Wiring

CBL-PJTB-10	Non-locking barrel plug to bare-wire cable
Mini DB9F-to-TB	DB9 female to terminal block connector

Cables

CBL-F9DPF1x4-BK-100	Console cable with 4-pin connector, 1 m
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Wi-Fi Wireless Modules

UC-8200-WLAN22-AC	Wireless package for UC-8200 V2.0 or later with Wi-Fi module, 2 screws, 2 spacers, 1 heat sink, 1 pad
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Antennas

ANT-5G-OSM-04	4 dBi LTE/5G NR dipole antenna with SMA (male) connector
ANT-LTEUS-ASM-01	GSM/GPRS/EDGE/UMTS/HSPA/LTE, 1 dBi, omnidirectional rubber-duck antenna
ANT-LTE-ASM-05 BK	704-960/1710-2620 MHz, LTE stick antenna, 5 dBi
ANT-LTE-OSM-03-3m BK	700-2700 MHz, multiband antenna, specifically designed for 2G, 3G, and 4G applications, 3 m cable
ANT-LTE-OSM-06-3m BK MIMO	Multiband antenna with screw-fastened mounting option for 700-2700/2400-2500/5150-5850 MHz frequencies
ANT-WDB-ARM-0202	2 dBi at 2.4 GHz or 2 dBi at 5 GHz, RP-SMA (male), dual-band, omnidirectional antenna
ANT-GPS-CSM-04-3m BK	20 dBi at 1575 to 1605 MHz, SMA (male), right-hand circular polarization (RHCP), active GPS antenna, 3-meter cable

DIN-Rail Mounting Kits

UC-8210 DIN-rail Mounting Kit	DIN-rail mounting kit for UC-8210 with 4 M3 screws
UC-8220 DIN-rail Mounting Kit	DIN-rail mounting kit for UC-8220 with 4 M3 screws

Wall-Mounting Kits

UC-8200 Wall-mounting Kit	Wall-mounting kit for UC-8200 with 4 M3 screws
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