

AIG-302 系列

配備 Arm® Cortex™-A7 雙核心 1 GHz 處理器及 Azure IoT Edge 軟體的進階 IIoT 閘道器，操作溫度範圍為 -40 至 70°C



特色與優點

- 支援通用 MQTT 用戶端，透過內建專為 Azure 雲端整合而設計的 SDK 來完成 MQTT 連線
- 支援 Modbus RTU/ASCII/TCP 用戶端
- 支援 Modbus TCP 伺服器
- 支援 Azure IoT Edge
- 內建網路流量監控與診斷工具，便於進行故障排除
- 提供強大的 OTA 功能，防止軟體升級過程中出現系統故障
- 配備安全啟動功能，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 美國版、歐盟版和亞太版

認證



簡介

AIG-302 系列進階 IIoT 閘道器將 Modbus RTU/ASCII/TCP 裝置連接到 Azure 和 MQTT 平台等雲端。這款閘道器支援 Modbus TCP 伺服器模式，可以將資料同時傳輸到雲端平台和本機 SCADA 系統。

以 Azure IoT Edge 提升邊緣運算能力

AIG-302 支援 Azure IoT Edge，實現了諸多優勢，包括邊緣運算能力、更低的頻寬成本、更高的靈活性和可擴充性、與 Azure 服務無縫整合以及易於管理和更新。具體來說，AIG-302 可以在本機處理資料，不僅回應快、延遲低，還能有效地減少網路頻寬佔用，進而降低成本。此外，AIG-302 支援 Azure IoT Edge 的模組化設計還能提升系統的靈活性和可擴充性。同時，其與 Azure 雲端服務的無縫整合使您可以輕鬆地將雲端功能擴充到邊緣裝置。

內建即用型資料預處理功能，無需編碼

能源管理系統主要收集平均發電量、能源效率等能源資料。然後將這些資料用於顯示現場情況、觀察能源趨勢並優化能源的使用。大多數能源管理系統都需要有意義的資料，因此現場閘道器需要提前預處理邊緣收集的資料。對於某些應用，甚至還要求在預處理所收集資料後在短時間內執行操作。AIG-302 系列內建直觀式 UI，助力輕鬆處理資料。

安全的遠端存取降低了維護成本

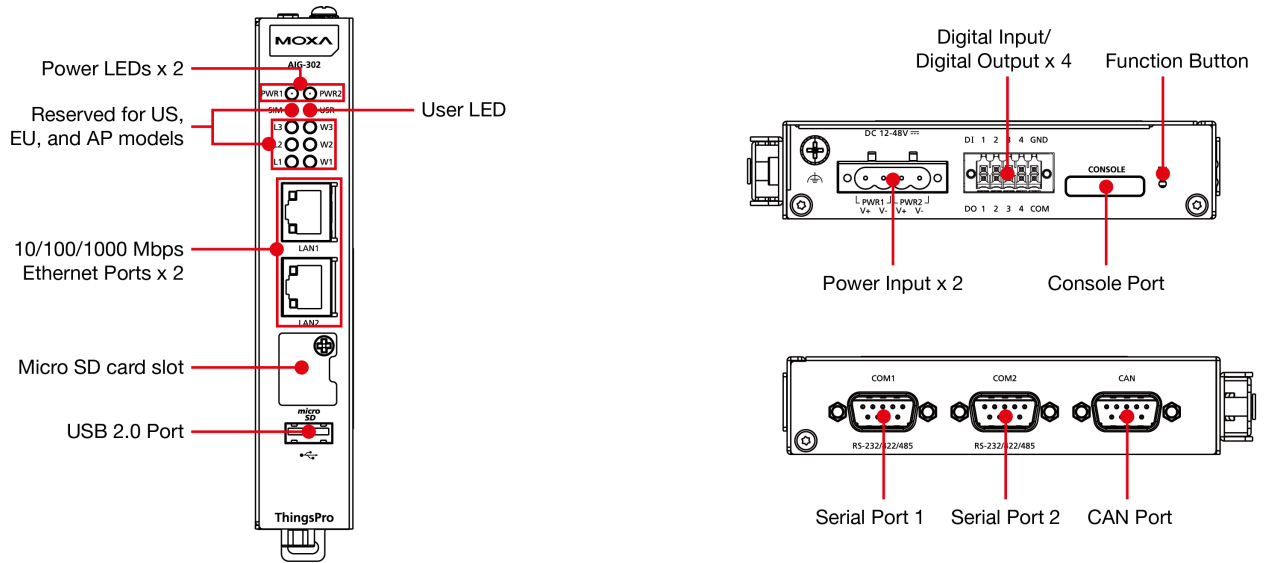
AIG-302 配備強大的故障排除工具，可診斷通訊協定狀態問題並擷取和分析流量封包，使工程師能夠在遠端確定問題的根本原因並快速恢復正常運作。此外，AIG-302 系列還提供安全的遠端存取，使維護工程師節省大量時間和精力，並減少能源管理系統的停機時間。

針對安全問題偵測而最佳化的安全儀表板

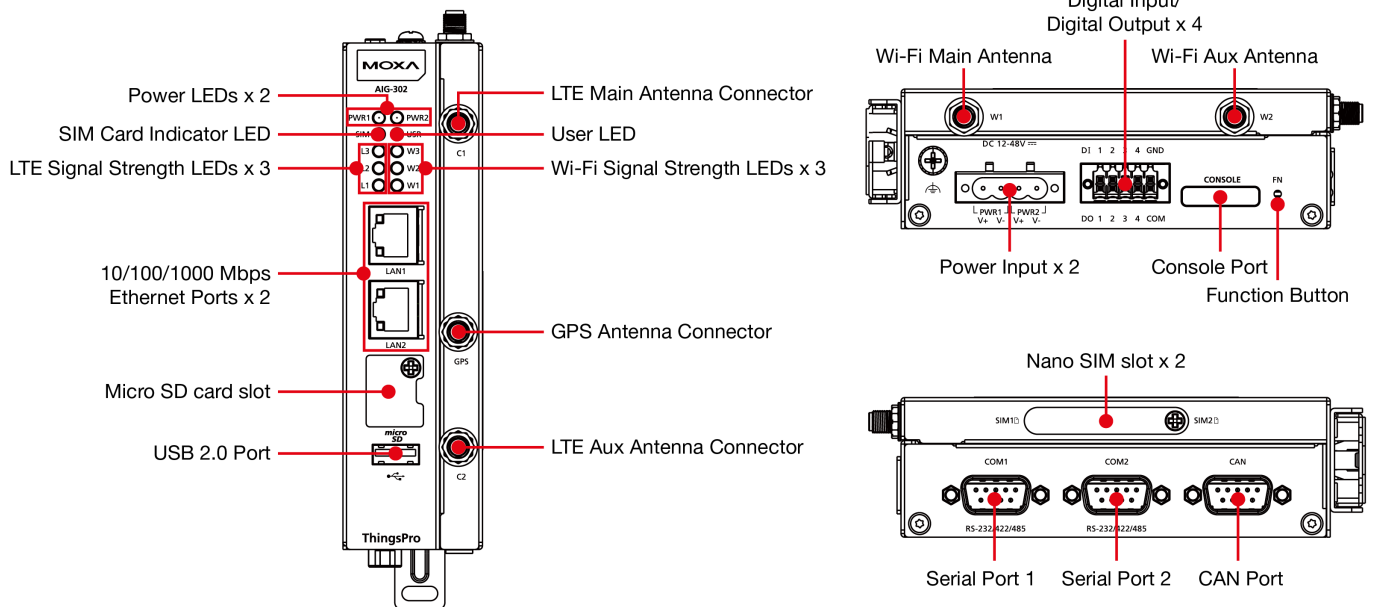
安全儀表板利用裝置掃描從多個角度識別潛在的網路安全威脅，例如在帳戶設定管理、應用程式連網、應用程式資源使用情況監測、產品憑證部署、服務設定修改以及系統狀態檢查期間。偵測到威脅後，會推薦相應的緩解計畫來解決問題。

外觀

AIG-301-T-AZU-LX



AIG-301 美國版、歐盟版、亞太版和中國版



規格

Computer

CPU	Armv7 Cortex-A7 dual-core 1 GHz
DRAM	2 GB DDR3L
Storage Pre-installed	32 GB eMMC
Pre-installed OS	Moxa Industrial Linux (Debian 11, kernel 5.10.x)
No. of Tags Supported	3000

Computer Interface

TPM	TPM v2.0
USB 2.0	USB 2.0 hosts x 1, type-A connectors

Wi-Fi Antenna Connector	RP-SMA x 2 (excluding AIG-302-T-AZU-LX)
Cellular Antenna Connector	SMA x 2 (excluding AIG-302-T-AZU-LX)
GPS Antenna Connector	SMA x 1 (excluding AIG-302-T-AZU-LX)
Expansion Slots	mPCIe slots x 1 (excluding AIG-302-T-AZU-LX)
Buttons	Reset button Reset to factory default
Digital Input	DIs x 4
Digital Output	DOs x 4
Number of SIMs	2
SIM Format	Nano (excluding AIG-302-T-AZU-LX)

Ethernet Interface

Magnetic Isolation Protection	1.5 kV (built-in)
10/100/1000BaseT(X) Ports (RJ45 connector)	2

Ethernet Software Features

Industrial Protocols	Modbus TCP Client/Server Generic MQTT Azure IoT Device Azure IoT Edge
Configuration Options	Web Console (HTTP/HTTPS) AIG QuickON
Time Management	NTP Server/Client GPS
Security	OpenVPN Client, SSH HTTPS/SSL TLS Firewall

Serial Interface

Console Port	1 x 4-pin header
No. of Ports	2
Connector	DB9 male
Baudrate	300 bps to 921.6 kbps
Data Bits	7, 8
Flow Control	ADDC (automatic data direction control) for RS-485, RTS/CTS, XON/XOFF
Parity	None, Even, Odd, Space, Mark
Stop Bits	1, 2

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
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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)	LTE Band 2 (1900 MHz) / LTE Band 4 (1700 MHz) / LTE Band 5 (850 MHz) / LTE Band 12 (700 MHz) / LTE Band 13 (700 MHz) / LTE Band 14 (700 MHz) / LTE Band 66 (1700 MHz) / LTE Band 71 (600 MHz) UMTS/HSPA 850 MHz / 1900 MHz Carrier Approval: Verizon, AT&T
Band Options (EU)	LTE Band 1 (2100 MHz) / LTE Band 3 (1800 MHz) / LTE Band 7 (2600 MHz) / LTE Band 8 (900 MHz) / LTE Band 20 (800 MHz) UMTS/HSPA 900 MHz / 1800 MHz / 2100 MHz
Band Option (APAC)	LTE Band 1 (2100 MHz) / LTE Band 3 (1800 MHz) / LTE Band 5 (850 MHz) / LTE Band 8 (900 MHz) / LTE Band 28 (700 MHz) UMTS/HSPA 850 MHz / 900 MHz / 2100 MHz

GPS Interface

Receiver Types	GPS/GLONASS/BeiDou/Galileo/QZSS
Accuracy	2.0 m
Acquisition	-147 dBm
Sensitivity	Cold starts: -145 dBm Tracking: -160 dBm

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

Azure IoT Edge

Versions Supported	v1.4.20
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

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
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/Server
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	3000

Power Parameters

No. of Power Inputs	Redundant dual inputs
Input Voltage	12 to 48 VDC
Power Connector	4-pin terminal block
Power Consumption	12 W
Input Current	1 A @ 12 VDC

Reliability

Automatic Reboot Trigger	External WDT (watchdog timer)
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Physical Characteristics

Housing	Metal SECC
Installation	DIN-rail mounting Wall mounting (with optional kit)
IP Rating	IP30
Weight	AIG-302-T-AZU-LX: 560 g (1.23 lb) All other models: 750 g (1.65 lb)
Dimensions	AIG-302-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)

Environmental Limits

Operating Temperature	AIG-302-T-AZU-LX: -40 to 85°C (-40 to 185°F) All other models: -40 to 70°C (-40 to 158°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	NCC KC RCM
Carrier Approvals	AT&T Verizon ¹ PTCRB
RED	EN 301 489-1/19/52 EN 301 908-1 EN 303 413 EN 62311
Green Product	RoHS, CRoHS, WEEE
Hazardous Locations	Class I Division 2, ATEX

1. 正在辦理認證。

MTBF

Time	AIG-302-T-AZU-LX: 1,772,745 All other models: 1,403,998
Standards	Telcordia (Bellcore) Standard TR/SR

Warranty

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

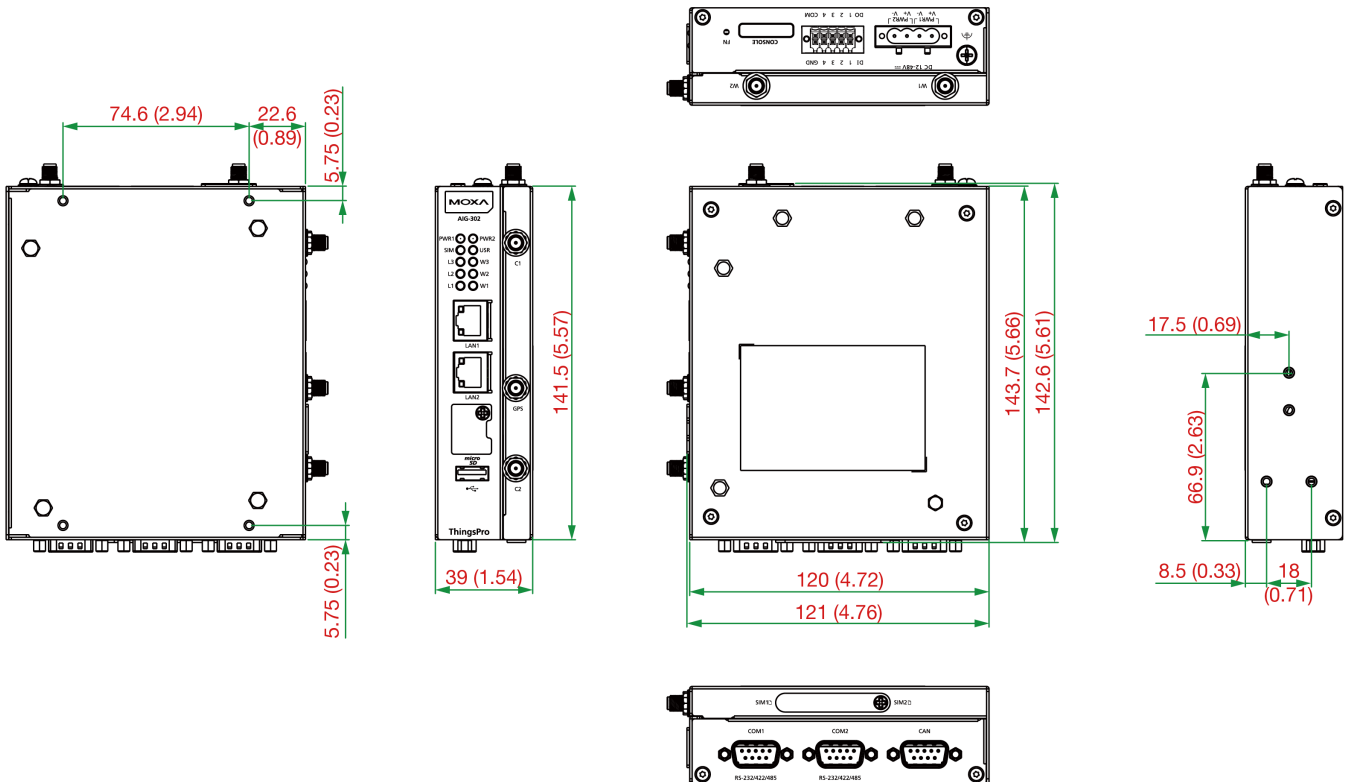
Package Contents

Device	1 x AIG-302 Series advanced IIoT 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

尺寸

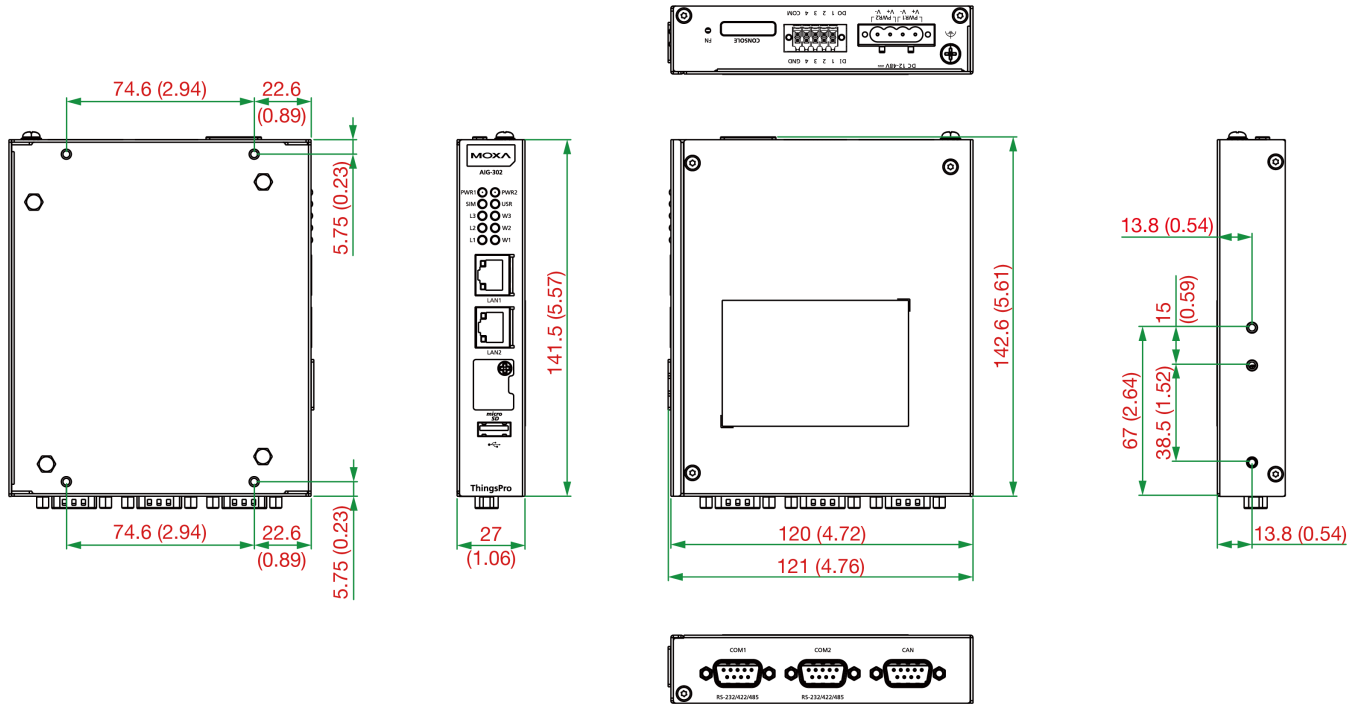
AIG-302 美國版、歐盟版和亞太版

單位：公釐（英吋）



AIG-302-T-AZU-LX

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-302-T-AZU-LX	-	-	-40 to 85°C
AIG-302-T-US-AZU-LX	US region LTE module preinstalled	Reserved	-40 to 70°C
AIG-302-T-EU-AZU-LX	Europe region LTE module preinstalled	Reserved	-40 to 70°C
AIG-302-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-LTEUS-ASM-01	GSM/GPRS/EDGE/UMTS/HSPA/LTE, 1 dBi, omnidirectional rubber-duck antenna
ANT-LTE-ASM-04 BK	704 to 960/1710 to 2620 MHz, LTE omnidirectional stick antenna, 4.5 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-ASM-05 BK	704-960/1710-2620 MHz, LTE stick antenna, 5 dBi
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-OSM-03-3m BK	3 dBi at 1575.42 MHz, SMA (male), omnidirectional magnetic-base passive GPS antenna, 3 m cable
ANT-GPS-OSM-05-3M	26 dBi at 1575.42 MHz, SMA (male), omnidirectional active GPS antenna, 3 m cable

Wall-Mounting Kits

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