



AP322

Datasheet

Aiming to create better and safer working environments and life experiences through the products we deliver.



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United States

Compact LTE/NB-IoT Wi-Fi Router for IIoT Applications

AP322

Industrial Compact LTE/NB-IoT Wi-Fi Serial Router

AP322 is a smart solution for smart city and IIoT applications as a LTE/NB-IoT Wi-Fi dual radio field router, or simply a single high speed Wi-Fi AP. The router supports LTE/NB-IoT to Wi-Fi redundancy and auto offload to guarantee high speed. RS232/422/485 port is able to connect to local serial devices over cellular and Ethernet network. To safeguard cyber security, security features such as Firewall, OpenVPN, GRE tunnel are supported. The embedded MQTT and RESTful API enables public cloud integration such as AWS or Azure. The private cloud platform ATMS and ATMS OTA can also be setup for instant and secured access to receive data or remote manage devices.



Dual Radio 4G/LTE/NB-IoT + Wi-Fi Wireless Network

- LTE Cat.4, 2T2R MIMO provides 150M downlink and 50M uplink
- 4G/3G/2G full cellular network compatibility
- LTE-E:
FDD B1/3/5/7/8/20
(2100/1800/850/2600/900/800MHz)
- LTE-CN:
TDD:B38/39/40/41 (2600/1900/2300/2500MHz)
- IEEE 802.11b/g/n for 2.4G 2T2R MIMO delivers up to 300Mbps throughput
- Support NB-IoT + M1
- LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28
- LTE TDD: B39 (For Cat M1 Only)

Enhanced Cyber Security & Redundancy

- Support Firewall for inbound/outbound traffic
- OpenVPN (server/client) for secure remote connection
- Support L2TP with PPP, PAP, CHAP(LCP, IPCP)
- Support GRE tunnel
- HTTPs/SSH secure login
- Support TACACS+ multi-user authentication for privileged user management

Serial Communication & High Throughput Data Switching

- RS232/422/485 full functions for serial over LTE/Wi-Fi/Ethernet data switching
- 2-port Ethernet supports routing and bridging mode

Management Features

- Various configuration paths, including Web GUI, Telnet, LAN Utility (AIAS), and NMS (ANMS)
- Supports Ring WAN redundancy
- Supports Ring WLAN auto offload
- 1:1 NAT, port forwarding and NAPT for local traffic protection
- Support static routing
- NTP v3 time management
- Built-in Cloud AWS Agent, Azure Agent, ATMS Agent

Rugged Design for Wayside Surveillance, ITS Application

- Effective heat dissipation design for operating in -40~70°C environments
- CE Marking
- IEC61000-6-2/IEC61000-6-4 heavy industrial EMC compliance

Ordering Information

Model Name	Description
AP322-LTE	Industrial Wireless IIoT Secure Routing Gateway, 1GE WAN+1GE LAN, 2xCOM, 1xUSB, 1xSD, 1xSIM, LTE Cat.4, 12~48VDC, -40°C~75°C, IP30
AP322-LTE-D	Industrial Wireless IIoT Secure Routing Gateway, 1GE WAN+1GE LAN, 2xCOM, 1xUSB, 2xSIM, GPS, LTE Cat.4, 12~48VDC, -40°C~75°C, IP30
AP322-WLAN	Industrial Wireless IIoT Secure Routing Gateway, 1GE WAN+1GE LAN, 2xCOM, 1xUSB, 1xSD, Wi-Fi 2.4G 11n/5G 11ac, 12~48VDC, -40°C~75°C, IP30
AP322R-WLAN-LTE	Industrial Wireless IIoT Secure Routing Gateway, 1GE WAN+1GE LAN, 2xCOM, 1xUSB, 1xSD, LTE, Wi-Fi 2.4G 11n/5G 11ac, 12~48VDC, -40°C~75°C, IP30
AP322A-WLAN-LTE	Industrial Wireless IIoT Secure Routing Gateway, 1GE WAN+1GE LAN, 2xCOM, 2xDI, 1xDO, 1xUSB, 1xSD, LTE, Wi-Fi 2.4G 11n/5G 11ac, 12~48VDC, -40°C~75°C, IP30
AP322A-EC	Industrial Secure Cellular Router, 1GE WAN+1GE LAN, 2xCOM, 1xUSB, 1xSD, Wi-Fi 2.4G 11n/5G 11ac, 12~48VDC, -40°C~75°C, IP30
AP322A-EC-WLAN	Industrial Secure Cellular Router, 2GbE+2COM, USB, SD, 802.11ac/n WLAN
AP322A-EC-LTE	Industrial Secure Cellular Router, 2GbE+2COM, USB, SD, LTE-E, 1SIM, FDD B1/3/5/7/8/20, TDD B38/40/41, 12~48VDC, -40°C~75°C, IP30
AP322A-WLAN-LTE-EC	Industrial Secure Cellular Router, 2GbE+2COM, USB, SD, 802.11ac/n WLAN, LTE-E, GPS, 2SIM, FDD B1/3/5/7/8/20, TDD B38/40/41, 12~48VDC, -40°C~75°C, IP30

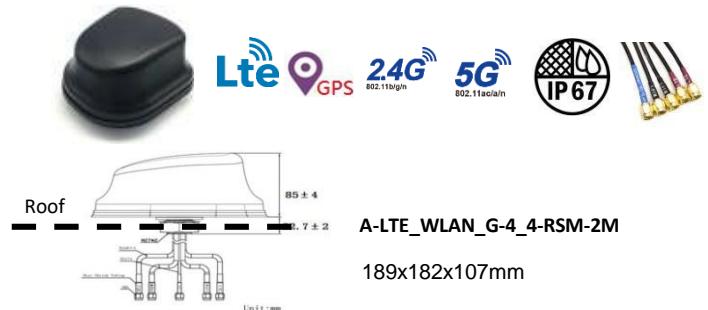
Ordering Information

Ordering Information	
A-LTE_WLAN_G-4_4-RSM-2M	Combo IP67 Antenna, LTE WW 4dBi, Wi-Fi 2.4/5GHz dual band Omni-directional 4/4dBi, GPS 1561- 1670MHz 28dBi, RP-SMA male, 2M
A-LTE_WLAN_G-3_2-RSM-2M	Combo IP67 Antenna, LTE WW 3dBi, Wi-Fi 2.4/5GHz dual band Omni-directional 2/2dBi, GPS 1575- 1610MHz 28dBi, RP-SMA male, 2M
A-LTE-3-NM	LTE Antenna, LTE WW 3dBi, N-type male
A-WLAN-6-NM	Wi-Fi Antenna, Wi-Fi 2.4/5GHz dual band Omni-directional 4/6dBi, N-type male
A-GPS-27-RSM-3M	GPS Antenna, GPS 1575MHz 27dBi, RP-SMA male, 3M
C-RF-R-RSF_RSM-1M	RF cable, RP-SMA female to RP-SMA male, 1M
C-RF-C2-NF_RSM-2M	RF cable, N-type female to RP-SMA male, CFD200, 2M

Outdoor Vehicle Combo Antenna

A-LTE_WLAN_G-4_4-RSM-2M

- 5 RF cables, LTE MIMO, Wi-Fi MIMO, GPS/GLONASS/GALILEO/BEIDOU
- 4dBi gain for LTE and 4dBi gain for 2.4G/5G WIFI RF
- High WLAN gain is perfect for train to ground vehicle application
- 5 x 2-meter cables in RP SMA male connector
- Outdoor high gain, IP67 waterproof and -40°~85°C wide temperature design
- 189x182x107mm



A-LTE_WLAN_G-3_2-RSM-2M

- RF cables, LTE MIMO, Wi-Fi MIMO, GPS&GLONASS
- 3dBi gain for LTE and 2dBi gain for 2.4G/5G WIFI
- Suitable for in-vehicle, roadside box and short-range coverage WLAN to LTE communication environment
- 5 x 2-meter cables in RP SMA male connector
- Outdoor IP67 waterproof and -40°~85°C wide temperature
- 110x110x80mm slim size





	Model	Type	Frequency (MHz)	Gain (dBi)	Connector	Dimension (mm)	Cable (M)	Operating Temp.	Application
	A-LTE_WLAN_G-4_4-RSM-2M	Omni	LTE: 698~960/1710~2690/2900~3600 WLAN: 2400~2483.5/4900~5825 GNSS: 1561.1~1610 (GPS/GLONASS/GALILEO/BEIDOU)	4 4 28	5x RP SMA Male	189x182x107	2	-40°C~85°C	Outdoor
	A-LTE_WLAN_G-3_2-RSM-2M	Omni	LTE: 698~960/1710~2690 WLAN: 2400~2483.5/4900~5825 GNSS: 1575.42~1610 (GPS/GLONASS)	3 2 28	5x RP SMA Male	110x110x80	2	-40°C~85°C	Outdoor

LTE Antenna


	Model	Type	Frequency (MHz)	Gain (dBi)	Connector	Dimension (mm)	Cable (M)	Operating Temp.	Application
	A-LTE-2-RSM	Omni	704~960/1710~2690	2	RP SMA Male	161xΦ13	-	-20°C~ 65°C	Indoor
	A-LTE-3-NM (require RF cable)	Omni	704~960 1710~2700	2 3	N-Type Male	187xΦ20	-	-20°C~ 65°C	Outdoor

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Wi-Fi Antenna

	Model	Type	Frequency (MHz)	Gain (dBi)	Connector	Dimension (mm)	Cable (M)	Operating Temp.	Application
	A-WLAN-3-RSM	Omni	2400~2500 4900~5900	2.5 3	RP SMA Male	196xØ13	-	-40° C~ 65° C	Indoor
	A-WLAN-6-NM <i>(require RF cable)</i>	Omni	2400~2500 5150~5850	4 6	N-Type Male	187xØ20	-	-20° C~ 65° C	Outdoor

GPS Antenna (optional)

	Model	Type	Frequency (MHz)	Gain (dBi)	Connector	Dimension (mm)	Cable (M)	Operating Temp.	Application
	A-GPS-27-RSM-3M	Omni	1575.42	27	RP SMA Male	36x36x13.9	3	-20° C~ 65° C	Indoor

Technology																																					
Standard	3GPP Release 11 Long Term Evolution, fallback 3GPP Release 7,8,9 for HSPA/UMTS																																				
	3GPP Release 13 NarrowBand IoT																																				
	IEEE 802.11b/g/n for Wireless LAN																																				
	IEEE 802.11i for Wireless Security																																				
	IEEE 802.3 10Base-T Ethernet																																				
	IEEE 802.3u 100Base-TX Fast Ethernet																																				
Interface																																					
Ethernet Port	2 x 10/100Base-TX RJ45, Auto Negotiation, Auto MDI/MDI-X Router Mode: 1 WAN + 1 LAN, Bridge Mode: 2 LAN																																				
System LED	1 x Power: Green ON 1 x SYS: Ready: Green On, Firmware Updating: Green Blinking 1 x Ra: 4G connection: Green On, 2/3G connection: Green Blinking, disconnected: Off 1 x Rb: AP mode: Green On, Station mode connected: Green Blinking, Station mode/radio disable: Off 1 x Serial Port: Activity: Green Blinking																																				
Reset	System Reset(2~6 Seconds) / Default Settings Reset(over 7 Seconds)																																				
SMA Socket	Up to 4 x RP-SMA Female ANT1/3 for Wi-Fi, ANT2/4 for LTE (Main/Div/GPS)																																				
SIM Socket	1x Nano SIM																																				
MicroSD	1x for field diagnostic data logging																																				
Serial	<p>1x RS232/422/485, DB9 Female</p> <table border="0" style="width: 100%; border-collapse: collapse;"> <tr> <td style="width: 40%;"></td> <td style="width: 15%; text-align: center;">DCD</td> <td style="width: 15%; text-align: center;">TX-</td> <td style="width: 30%; text-align: center;">Data-</td> </tr> <tr> <td style="text-align: center;">DB9 Female</td> <td style="text-align: center;">TXD</td> <td style="text-align: center;">RX+</td> <td style="text-align: center;">-</td> </tr> <tr> <td></td> <td style="text-align: center;">RXD</td> <td style="text-align: center;">TX+</td> <td style="text-align: center;">Data+</td> </tr> <tr> <td style="text-align: center;">5 4 3 2 1</td> <td style="text-align: center;">DSR</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td style="text-align: center;">9 8 7 6</td> <td style="text-align: center;">GND</td> <td style="text-align: center;">GND</td> <td style="text-align: center;">GND</td> </tr> <tr> <td></td> <td style="text-align: center;">DTR</td> <td style="text-align: center;">RX-</td> <td style="text-align: center;">-</td> </tr> <tr> <td></td> <td style="text-align: center;">CTS</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td></td> <td style="text-align: center;">RTS</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> <tr> <td></td> <td style="text-align: center;">RI</td> <td style="text-align: center;">-</td> <td style="text-align: center;">-</td> </tr> </table>		DCD	TX-	Data-	DB9 Female	TXD	RX+	-		RXD	TX+	Data+	5 4 3 2 1	DSR	-	-	9 8 7 6	GND	GND	GND		DTR	RX-	-		CTS	-	-		RTS	-	-		RI	-	-
	DCD	TX-	Data-																																		
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	DTR	RX-	-																																		
	CTS	-	-																																		
	RTS	-	-																																		
	RI	-	-																																		
Power Input, Digital Output	6-Pin Removable Terminal Block Connector, 2Pin for Power (V+,V-) 2 Pins for DI with isolation High:DC 2~30V Low: DC 0~1V 2 Pins for 1x DO: 0.1A/30V with isolation																																				
Cellular Properties (LTE Cat. 4)																																					
Standard	GSM/GPRS/EDGE 3GPP Release 6 UMTS/HSPA 3GPP Release 8 LTE 3GPP Release 11																																				
Data Rate	LTE Cat.4: GPRS: DL: Max. 85.6 kbps, UL: Max. 85.6 kbps EDGE: DL: Max. 236.8 kbps, UL: Max. 236.8 kbps HSPA: DL: Max. 42 Mbps, UL: Max. 5.76 Mbps LTE-TDD: DL: Max. 150 Mbps, UL: Max. 50 Mbps, 2x2 DL MIMO																																				
Band Information: LTE-E	LTE: FDD B1/B3/B5/B7/B8/B20 (2100/1800/850/2600/900/800MHz) LTE: TDD B38/B40/B41 (2600/2300/2500MHz) WCDMA: FDD B1/B5/B8 (2100/850/900MHz) GSM: B3/B8 (1800/900MHz)																																				
Band Information: LTE-AU	LTE: FDD B1/B2/B3/B4/B5/B7/B8/B28 (2100/1900/1800/1700/850/2600/900/700MHz) LTE: TDD B40 (2300MHz) WCDMA: FDD B1/B2/B5/B8 (2100/1900/850/900MHz) GSM: B2/B3/B5/B8 (1900/1800/850/900MHz)																																				
Band Information: LTE-U	LTE: FDD B2/B4/B12 (1900/1700/700MHz) WCDMA: B2/B4/B5 (1900/1700/850MHz)																																				
Band Information: LTE-CN	LTE FDD: B1/B3/B5/B8 (2100/1800/850/900MHz) LTE TDD: B38/B39/B40/B41 (2600/1900/2300/2500MHz) TD-SCDMA: B34/B39 (2000/1900MHz) WCDMA: B1/B8 (2100/900MHz) CDMA: BC0 GSM: 900/1800MHz																																				

Cellular Properties	
NB IoT+M1	
Standard	EGPRS 3GPP Release 6 LTE 3GPP Release 13
Data Rate	Cat M1: Max. 375Kbps (DL), Max. 375Kbps (UL) Cat NB1: Max. 32Kbps (DL), Max. 70Kbps (UL) EDGE: Max. 296Kbps (DL), Max. 236.8Kbps (UL) GPRS: Max. 107Kbps (DL), Max. 85.6Kbps (UL)
Band Information	Cat M1/Cat NB1: LTE FDD: B1/B2/B3/B4/B5/B8/B12/B13/B18/B19/B20/B26/B28 LTE TDD: B39 (For Cat M1 Only) EGPRS: 850/900/1800/1900MHz
Wi-Fi Properties	
Standard	IEEE 802.11b/g/n, Up to 2T2R MIMO
Data Rate	802.11b: 11Mbps / 802.11g: 54Mbps / 802.11n: MCS0 ~ 15, max. 300Mbps Check detail TX/RX information in User Manual
Frequency	ISM Band, 2.412GHz ~ 2.462GHz (CH1~11), programmable by regional regulation
RSSI	≤20db, compliant with CE request
Power Requirement	
Input Voltage	24V (9~30VDC)
Reverse Polarity Protect	Yes
Input Current	AP222-WLAN+LTE: 0.18A@24V
Power Consumption	AP222-WLAN+LTE: Max 4.32W@24VDC full traffic, suggest to reserve 15% tolerance
Software	
Management Interface	CGI WebGUI, Command Line Interface (CLI), Telnet, SNMP
User Management	Radius client, TACACS+, local database
Serial communication	TCP Server/TCP Client/UDP mode, MODBUS RTU mode, TCP Alive check, Force TX Delimiter/Timeout/interval/length, Long Distance Termination
Time Management	NTPv3, SNTP, Cellular Time
IoT	AWS Agent, Azure Agent, ATMS Agent
Network Management	IPv4, SNMP v1/v2c/v3/Trap, MIB II, Entity MIB, DHCP server/client, DHCP relay, TFTP, ARP response over 802.2 LLC SNAP, Proxy ARP, DNS (client/proxy), private MIB
Traffic Management	1:1 NAT, NAPT(SNAT/DNAT), Port Forwarding
Routing	Static Route
Security	Firewall, DMZ, HTTPs, SSH, IEEE 802.1X/RADIUS
VPN	OpenVPN (server/client), L2TP, GRE
Cellular Configuration	Radio on/off, 2G, 3G and 4G modes configurable, SIM Security, Connection Status, Cellular to Eth-WAN Redundancy
WLAN Configuration	WLAN Basic Settings: Radio on/off, AP/client mode, 2.4G 11n Band and Frequency selection, SSID/Multi-SSID configuration, SSID broadcast, Cellular to WLAN Auto Offload and advanced WLAN settings, 802.1X
Utility	AIAS, ANMS, Ping, Traceroute
Wi-Fi Max. Client	Up to 20
Mechanical	
Installation	Wall Mount/DIN Rail (DIN bracket not included)
Enclosure Material	Steel Metal
Dimension	86 mm x 105 mm x 29mm(W x D x H) / without mounting Clip
Ingress Protection	IP30
Weight	Around 350g without package/antenna

Environmental	
Operating Temperature & Humidity	-40°C~70°C , 5%~95% Non- Condensing
Storage Temperature	-40°C~85°C
MTBF	>2,000,000 hours
Warranty	5 years
Approval	
Safety	EN60950-1 Compliance
EMC	EN61000-6-2/EN61000-6-4 compliance
EMI	CISPR 22, FCC part 15B Class A
EMS	EN61000-4-2 ESD, EN61000-4-3 RS, EN61000-4-4 EFT, EN61000-4-5, EN61000-4-6 CS, EN61000-4-8 Magnetic Field
Radio	RED Compliance Safety: EN 62368-1 EN 50385/EN62311 MPE assessment EN 301 489-1/17/19, EN 55032/55024 EN 300 328 EN 301 908-1 FCC Part 15B

Function interface

	AP322-LTE	AP322R-WLAN+LTE
Ant 1	LTE-Main	Wi-Fi 1
Ant 2	LTE- Diversity/ GPS (by model)	Wi-Fi 2
Ant 3	-	LTE-Main
Ant 4	-	GPS (by model)
Ant 5	-	LTE-Diversity

System LED

- 1 x Power
- 1 x System Status
- 1 x DO
- 2 x Ethernet Port
- 1 or 2 x Serial Port (By Model)
- 6 x Radio LED (Ra~Rf)

Integrated Power Connector

- 1 x 6-pin terminal block
- 4 pin for redundant power
- 2 pin DO

SIM Card

- AP322-LTE
1x SIM + 1x MicroSD or 2 x SIM
- AP322R-WLAN+LTE
2x SIM or
2x SIM + 1x MicroSD

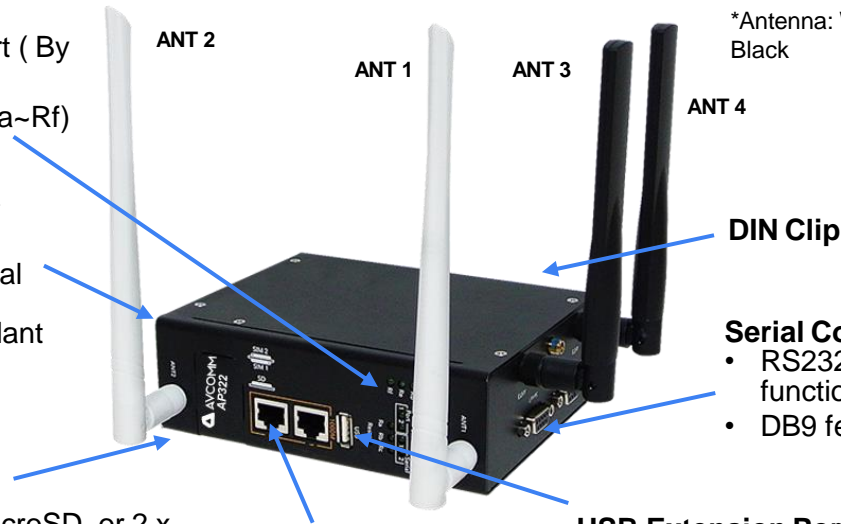
Gigabit Ethernet

- 2-port 10/100/1000M RJ45
- 1WAN +1 LAN

USB Extension Port

- USB for Configuration/
Firmware update
- External Storage

*Antenna: Wi-Fi in White; LTE in Black



Installation dimensions

Unit: $\frac{\text{inch} \pm 0.040}{[\text{mm}] \pm 1.00}$

