

AP329

Datasheet

恩创致力于将先进的信息技术带入工业控制与工业信息领域。



安通恩创信息技术（北京）有限公司

www.avcomm.cn

电子邮箱: sales@n-tron.com.cn

电话: (010) - 82859971

地址: 北京市海淀区马甸东路19号金澳国际公寓3105

一个用于总线/车辆的LTE/Wi-Fi PoE路由交换机中的蜂窝路由器和24V Boost PoE交换机

AP329 工业8 PoE+, 1G广域网和双无线电 用于公共汽车/车辆的LTE/Wi-Fi路由开关公共汽车/车辆

创新LTE路由交换机AP329结合了LTE/Wi-Fi路由器和8端口8~32VDC电源提高PoE+开关的功能，适用于智能总线应用。它也可以用于路边柜或其他工业应用高速Wi-Fi和多端口以太网端口到LTE路由。模块化设计，允许项目自定义开启/关闭POE端口、LTE/Wi-Fi。嵌入式MQTT和RESTful API支持公共云集成，如AWS或Azure。私有云平台ATMS还可以设置为通过云实时和安全访问跟踪位置和视频监控。



高速4G LTE和Wi-Fi网络

- LTE cat4, 2x2 MIMO, 下行150M, 上行50M
- LTE Cat.6与2CA, 2T2R MIMO提供300M下行和50M上行
- 4G/3G/2G全蜂窝网络兼容性
- 支持GPS定位服务
- 兼容IEEE 802.11ac, 向后兼容802.11a/b/g/n
- 可选择5G/2.4G Wi-Fi本地覆盖, 高达866Mbps带宽

多个以太网端口

- 支持8 ×快速以太网PoE+接口, 提供100M线速交换
- 支持1x千兆以太网WAN端口上行或NVR
- LAN交换机端口到LTE或WAN端口路由
- WAN到LTE冗余

坚固的设计用于路边监视, ITS应用

- 铁路EMC:符合EN50121-4
- IEC61000-6-2/IEC61000-6-4重型工业EMC
- 车辆:E-mark合规
- Radio RED for CE Marking
- 排放:FCC part 15 B A类
- 有效的散热设计, 便于操作-40 ~ 75摄氏度的环境

强大的 PoE 供电能力

- 8端口提供 IEEE 802.3af/at 标准的PoE, 最高30W/端口
- 12/24V至54VDC PoE升压
- 总端口高达120WPoE功率预算
- 完整的PoE管理, 包括每端口功率预算控制、PoE时程表和PoE状态监控

加强关键应用的网络安全

- 防火墙用于流量分类, 端口转发
- 支持NAT、DMZ对LAN进行保护
- 支持OpenVPN、IPsec、L2TP安全连接
- 支持HTTPs/SSH安全登录

云管理服务

- 支持亚马逊AWS和微软Azure云服务
- 支持自营ATMS云服务
- 交互式监控仪表板和地图显示状态、信号强度、位置等。

管理功能

- 多种配置路径, 包括WebGUI、CLI SNMP、AIAS (LAN Utility)、NMS (NMS)等。
- 支持AIAS实用程序, 远程配置软件实用程序
- 冗余:WAN到LTE冗余, 无线自动卸载
- 诊断工具包括Radio LED, Ping, TFTP, SNMP Trap, E-mail Alert和系统日志
- LTE看门狗, 自动重连蜂窝连接OPCuA通过请求

订货信息

型号	描述
AP329-LTE	工业无线IIoT安全路由网关, 1xGbE WAN+8xFE LAN, 1xUSB, 2xSIM, WLAN, LTE-E, GPS, FDD B1/3/5/7/8/20, TDD B38/40/41, 8-32VDC, -40°C~75°C, IP30
AP329-WLAN	工业无线IIoT安全路由网关, 1xGbE WAN+8xFE LAN, 1xUSB, WLAN 802.11ac/n, 8-32VDC, -40°C~75°C, IP30
AP329-WLAN-LTE	工业无线IIoT安全路由网关, 1xGbE WAN+8xFE LAN, 1xUSB, 2xSIM, 1xeSIM, WLAN 802.11ac/n, LTE-E, GPS, FDD B1/3/5/7/8/20, TDD B38/40/41, 8-32VDC, -40°C~75°C, IP30
AP329A-LTE	工业无线IIoT安全路由网关, 1xGbE WAN+8xFE LAN, 3xDI, 1xDO, 1xUSB, 2xSIM, WLAN, LTE-E, GPS, FDD B1/3/5/7/8/20, TDD B38/40/41, 8-32VDC, -40°C~75°C, IP30
AP329A-WLAN	工业无线IIoT安全路由网关, 1xGbE WAN+8xFE LAN, 3xDI, 1xDO, 1xUSB, WLAN 802.11ac/n, 8-32VDC, -40°C~75°C, IP30
AP329A-WLAN-LTE	工业无线IIoT安全路由网关, 1xGbE WAN+8xFE LAN, 3xDI, 1xDO, 1xUSB, 2xSIM, 1xeSIM, WLAN 802.11ac/n, LTE-E, GPS, FDD B1/3/5/7/8/20, TDD B38/40/41, 8-32VDC, -40°C~75°C, IP30
AP329-PoE-LTE	工业无线IIoT安全路由PoE网关, 1xGbE WAN+8xFE LAN, 1xUSB, 2xSIM, WLAN, LTE-E, GPS, FDD B1/3/5/7/8/20, TDD B38/40/41, 8-32VDC, -40°C~75°C, IP30
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AP329-PoE-WLAN-LTE	工业无线IIoT安全路由PoE网关, 1xGbE WAN+8xFE LAN, 1xUSB, 2xSIM, 1xeSIM, WLAN 802.11ac/n, LTE-E, GPS, FDD B1/3/5/7/8/20, TDD B38/40/41, 8-32VDC, -40°C~75°C, IP30
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详细规格

技术	
标准	3GPP Release 11 Long Term Evolution (LTE), fallback 3GPP Release 7,8,9 for HSPA/UMTS IEEE 802.11ac wireless local area network (WLAN), Backward support 802.11a/b/g/n Wireless LAN IEEE 802.3 10Base-TX Ethernet IEEE 802.3u 100Base-TX Fast Ethernet IEEE 802.3ab 1000Base-T Gigabit Ethernet Copper IEEE 802.3af/at Power-over-Ethernet IEEE 802.1Q for VLAN
接口	
以太网端口	LAN: 8 x 10/100Base-TX RJ45, Auto Negotiation, Auto MDI/MDI-X, IEEE 802.3af/at PoE/PoE+ WAN: 1 x 100/1000Base-T RJ45, Auto Negotiation, Auto MDI/MDI-X
系统 LED	1 x DO: Red On 1 x Power: Green On 1 x SYS: Ready: Green On, Firmware Updating: Green Blinking 1 x WAN: Link: Green On, Activity: Green Blinking 1 x 1000M: WAN port speed, 1000M: Green On, Not 1000M: Off AP329: 3 x Radio (Ra, Rb, Rc): Reserved AP329-WLAN: 3 x Radio (Ra, Rb, Rc): Radio status Ra: Reserved Rb: Reserved Rc: AP mode: Green On, Station mode connected: Green Blinking, Station mode/radio disable: Off AP329-2xWLAN: 3 x Radio (Ra, Rb, Rc): Radio status Ra: Reserved Rb: AP mode: Green On, Station mode connected: Green Blinking, Station mode/radio disable: Off Rc: AP mode: Green On, Station mode connected: Green Blinking, Station mode/radio disable: Off AP329-LTE: 3 x Radio (Ra, Rb, Rc): Radio status Ra: SIM detected: Green On, SIM not inserted: Off Rb: 4G connection: Green On, 2/3G connection: Green blinking, Disconnected: Off Rc: Reserved AP329-WLAN+LTE: 3 x Radio (Ra, Rb, Rc): Radio status Ra: SIM detected: Green On, SIM not inserted: Off Rb: 4G connection: Green On, 2/3G connection: Green blinking, Disconnected: Off Rc: AP mode: Green On, Station mode connected: Green Blinking, Station mode/radio disable: Off
以太网端口 LED	Link: Green On, Activity: Green Blinking, PoE power feeding: Amber on, PoE power not feeding: Off
USB	1 x USB for Configuration/Firmware Update
复位	系统复位(2~6秒)/默认设置复位(超过7秒)
SMA Connector	Up to 5x RP-SMA Female, check product interface for installation (Page2)
SIM Socket	AP329-LTE/AP329-WLAN+LTE: 2x Nano SIM tray with redundancy
电源输入, 数字输出	4针可拆卸端子座连接器2针电源输入 2引脚DO(继电器报警) DO:干继电器输出与0.5A/24V DC
可选的扩展板	RS232/422/485, 数字输入/数字输出, MicroSD卡用于现场应用
蜂窝特性 (LTE Cat. 4)	
标准	GSM/GPRS/EDGE 3GPP Release 6 UMTS/HSPA 3GPP Release 8 LTE 3GPP Release 11
数据速率	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-FDD Cat.4: DL: max. 150 Mbps, UL: max. 50 Mbps, 2x2 DL MIMO LTE-TDD Cat.4: DL: max. 130 Mbps, UL: max. 35 Mbps, 2x2 DL MIMO
Band 信息: 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)

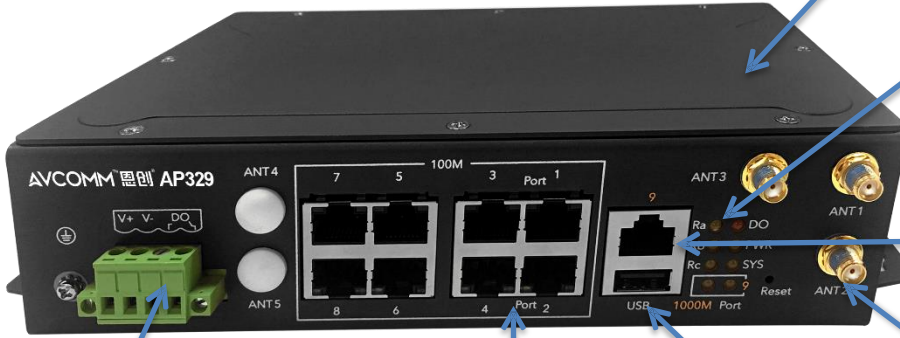
Band 信息: LTE-AU	LTE: FDD B1/B2/B3/B4/B5/B7/B8/B28 (2100/1900/1800/1700/850/2600/900/700MHz) LTE: TDD B40 (2300MHz) WCDMA: FDD B1/B2/B5/B8 (2100/1900/850/900MHz) GSM: B2/B3/B5/B8 (1900/1800/850/900MHz)							
Band I 信息: LTE-U	FDD LTE: B2/B4/B12 (1900/1700/700MHz) WCDMA: B2/B4/B5 (1900/1700/850MHz)							
Band 信息: 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							
Band 信息: LTE-V (Verizon认证)	FDD LTE: B4/B13 (1700/700MHz)							
蜂窝特性 (LTE Cat. 6)								
标准	UMTS/HSPA 3GPP Release 8 LTE 3GPP Release 12 (LTE Cat.6)							
数据速率	TD-SCDMA: DL Max 4.2Mbps, UL: Max 2.2Mbps HSPA: DL: Max. 42 Mbps, UL: Max. 5.76 Mbps WCDMA: DL: Max 384Kbps, UL: Max 384Kbps LTE-FDD: DL: Max. 300 Mbps, UL: Max. 50 Mbps, 2x2 DL MIMO LTE-TDD: DL: Max. 226 Mbps, UL: Max. 28 Mbps, 2x2 DL MIMO							
Band 信息: LTE-E	LTE-FDD: B1/B3/B5/B7/B8/B20/B28/B32 (2100/1800/850/2600/900/800/700/1500MHz) LTE-TDD: B38/B40/B41 (2600/2300/2500MHz) WCDMA: B1/B3/B5/B8 (2100/1800/850/900MHz)							
Band 信息: LTE-U	LTE-FDD: B2/B4/B5/B7/B12/B13/B17/B25/B26/B29/B30/B66 (1900/1700/700/2600/700/700/700/1900/850/700/2300/1700MHz) LTE-TDD: B41 (2500MHz) WCDMA: B2/B4/B5 (1900/1700/850MHz)							
Band 信息: LTE-AP	LTE-FDD: B1/B3/B5/B7/B8/B18/B19/B21/B26 (2100/1800/850/2600/900/850/850/1500/850MHz) LTE-TDD: B38/B39/B40/B41 (2600/1900/2300/2500MHz) WCDMA: B1/B5/B6/B8/B9/B19 (2100/850/UMTS only/900/1800/850MHz) TD-SCDMA: B39 (1900MHz)							
无线网络属性								
标准	IEEE 802.11ac/a/b/g/n (2T2R) 802.11ac: OFDM (BPSK, QPSK, 16-QAM, 64-QAM, 256-QAM)							
数据速率	802.11ac: MCS0 ~ 9, max. 866Mbps 802.11b: 11Mbps / 802.11a/g: 54Mbps / 802.11n: MCS0 ~ 15, max. 300Mbps							
频率	IISM Band, 2.412GHz ~ 2.472GHz, 5.180MHz ~ 5.825MHz(Band 1,4)							
MIMO	2T2R, 2xAntennas (Optional Accessory)							
RSSI	≤20db, compliant with CE request							
输出功率和接收灵敏度	Operating Frequency: 2.412~2.472GHz				Operating Frequency: 5.180G~5.825GHz Max. MIMO: 2T2R			
	Standard	Bandwidth	TX (dBm)	RX (dBm)	Standard	Bandwidth	TX (dBm)	RX
	802.11b	1Mbps	20	-95	802.11a	6Mbps	20	-94
		11Mbps	20	-90		54Mbps	15	-80
	802.11g	6Mbps	21	-94	802.11an/ac HT20	MCS0	19	-93
		54Mbps	18	-80		MCS8	13	-71
	802.11n HT20	MCS0	21	-93	802.11an/ac HT40	MCS0	18	-90
		MCS7	16	-76		MCS9	13	-66
	802.11n HT40	MCS0	20	-92	802.11an/ac HT80	MCS0	18	-88
		MCS7	16	-73		MCS9	13	-65

GPS 特性	
GNSS	GPS/GLONASS/BeiDou/Galileo
性能	Cold start: 18s, Warm start: 2.2s, Hot start: 1.8s
灵敏度	Cold start: -146dBm, Reacquisition: -157dBm, Tracking: -157dBm
精度	<1.5M
GNSS 频率	GPS/Galileo: 1575.42±1.023 MHz GLONASS: 1597.5~1605.8 MHz BeiDou: 1561.098±2.046 MHz
天线(可选配件- A-GPS-27-RSM-3M)	Frequency range: 1561~1615MHz Polarization: RHCP or linear VSWR: <2 (Typ.) Passive antenna gain: >0dBi
软件	
管理界面	CGI WebGUI, Command Line Interface (CLI), Telnet, SNMP
用户管理	Radius客户端, TACACS+, 本地数据库
时间管理	SNTP, Cellular Time
IoT	AWS Agent, Azure Agent, ThingsMaster Agent
网络管理	802.1Q VLAN, IPv4/IPv6, DDNS, SNMP v1/v2c/v3/Trap, MIB II, Entity MIB, MIBs, DHCP server/client, DHCP relay*, TFTP, System Log, ARP response over 802.2 LLC SNAP, Proxy ARP, DNS (client/proxy)
流量管理	NAT Routing, Traffic shaping, 1:1 NAT, NAPT(SNAT/DNAT)
路由	RIPv2*, Static Route
安全	Firewall, DMZ, Port Forwarding, HTTPs, SSH, First login password management
冗余协议	WAN/LTE Redundancy, VRRP
VPN	IPsec, OpenVPN, L2TP, GRE
蜂窝配置	Radio on/off, 4G LTE/3G HSPA Configuration, SIM Security, Connection Status, Cellular to Eth-WAN Redundancy, GPS positioning
无线局域网配置	WLAN Basic Settings: Radio on/off, 2.4G 11n/5G 11ac 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
电力需求	
输入电压	Model with PoE: 12/24VDC (8~32VDC with booster to 54V) min. 8V low-peak auxiliary voltage Model without PoE: 12/24VDC (8~32VDC)
反极性保护	Yes
输入电流	AR329P: 5.67A@24VDC, 10.76A@8VDC/60W\
电力消耗	最大4.8W@24VDC不含PD负载的全流量, 建议预留15%的容错
PoE	
供电模式	Alternative A
PoE 功率预算	系统: Max. 120W@70°C/12VDC, Max.60W@70°C/8VDC 每个端口: Max. 30W
PoE 标准	IEEE 802.3af/at
管理	PoE启用/禁用、系统/端口电源预算控制、PD状态检测、PoE时间表、PoE 状态
机械	
安装	壁挂式
外壳材料	钢与铝金属
尺寸	Model with PoE: 200x 55 x 126 (W x H x D) /不含装配夹 Model without PoE: 200x 51 x 126 (W x H x D) /不含装配夹
IP等级	IP30
重量	~1350g 不含包装

环境	
操作温度和湿度	-40°C~70°C, 5%~95% 无冷凝
储存温度	-40°C~85°C
MTBF	>2,000,000 小时
质保	5 年
许可	
安全	EN60950-1 Compliance
EMC	EN61000-6-2/EN61000-6-4
EMI	CISPR 22, FCC part 15B Class A
Radio	RED Compliance Safety: EN 62368-1 EN 50385/EN62311 MPE assessment EN 301 489-1/17/19/52, EN 55032/55024 EN 300 328/EN 301 893 EN 301 908-1 FCC Part 15B
Railway	EN50121-4 Compliance

功能接口

	AP329-LTE	AP329-WLAN	AP329-2xWLAN	AP329-WLAN+LTE
ANT 1	LTE-Main	Wi-Fi 1	Wi-Fi 1	LTE-Main
ANT 2	LTE-Aux	Wi-Fi 2	Wi-Fi 2	LTE-Aux
ANT 3	GPS	-	-	GPS
ANT 4	-	-	Wi-Fi 1	Wi-Fi 1
ANT 5	-	-	Wi-Fi 2	Wi-Fi 2



杰出的散热器
• 工业鳍形设计

系统 LED
• 1 x DO
• 1 x Power
• 1 x System Status
• 3 x Radio status
• 1 x Ethernet Port (Port 9)
• 1 x Speed (Port 9)

千兆以太网WAN
• 1-port 100/1000M RJ45

SMA天线插座
• Up to 5 SMA

集成电源连接器
• 1 x 4-pin 接线盒
• 2 pin升压电源输入
• 2 pin DO
• 方便安装

PoE 供电
• 8-port 10/100M PoE RJ45
• IEEE 802.3af/at

USB 扩展端口
• 配置/固件更新的USB
• 外部存储器

安装尺寸

