AP422-SCB
Datasheet

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

Embedded Smart City Box
- PoE Ultra, LTE/WiFi, Fiber, Cloud
- IIoT Serial, IO, Lora, Audio
- Solar Boost /Battery

AP422-SCB

The AP422-SCB are fully integrated communication systems within an IP67 for Smart City and Industrial Internet of Thing (IIoT) applications. The Gigabit 802.3bt ultra PoE /802.3at PoE plus ports, Fiber SFP, Serial, Voice, DI, DO are protected by weatherproof cable gland connectors. It is greatly flexible with different power input/output, internal USB, SD , Ethernet and mCPIe socket for wireless expansion. Comparing with traditional cabinets, the AP422-SCB save a lot of time and cost for system integration. The embedded MQTT and RESTful API enables public cloud integration such as AWS or Azure. The private cloud platform ATMS can also be deployed for instant and secured access to for surveillance and IIOT management. With the versatile AC/DC/Solar power sources, you can easily install the box on roadside power tower, streetlight or wall mount on the wall/roof in the field.

-40~70°C

IP67

60W Ultra PoE
- 2 Giga Ultra PoE 802.3bt Ports with 60W/per port
- 2 Giga PoE+ 802.3at Ports with 30W/per port
- 1 Internal PoE+ 802.3at WAN port for VPN, NAT, Routing Expansion
- PoE Enable/Disable, Budget Control, Port Control, Port, Priority, PD Alive Check and port status
- Max. 240W power budget for PoE & DC Output

Weatherproof IP67 Enclosure and cable gland connectors
- Four Giga PoE ports
- Two 100/1000M Fiber SFP slots

AP422-SCB only
- One RS232/422/485 RJ-45 port
- One Audio RJ12 port
- Two Digital Inputs
- Two Relay Outputs

Waterproof M12 connector
- Two DC24V outputs
- One AC100~240V Input

Internal One RS232/422/485 DB9 port
Internal One USB, and One SD socket for Storage

Optional Wireless Expansion
- Support mPCIe & SIM socket for wireless expansion
- SCB LTE Module and Antenna Kit
  - LTE Cat.4 Cellular Module
  - LTE+GPS Antenna on the top of the box
  - 150 UL, 50M DL, FDD/TDD-LTE
- SCB Industrial WLAN Module
  - N-Type Antenna Socket on the top of the box
  - 5G/2.4G 802.11ac/n WiFi 2T2R

Management Features
- Various configuration paths, including WebGUI, CLI SNMP, LAN Utility (AIAS), and NMS (ANMS)
- Support AIAS Utility, Remote configuration software utility
- Redundancy: WAN to LTE redundancy
- Diagnostic tool includes Radio LED, Ping, TFTP, SNMP Trap, E-mail Alert and System Log
- LTE watchdog, auto-reconnect cellular connection

ITU-T G.8032 v1/v2 ERPS Ring Redundancy
- An ITU standard Ring redundancy Protocol
- Provide sub-50ms protection and recovery switching for Ethernet traffic
- Interoperate with 3rd party industrial switch and still remain fast recovery time STP/RSTP
- Efficient network interconnection and topology with ERPS Chain, multiple chains

Enhanced Cyber Security for Critical Application
- Firewall for traffic classification, port forwarding
- Support NAT, DMZ for LAN protection
- Support OpenVPN, IPsec for secure connection
- Support HTTPs/SSH secure login

Cloud Management over ATMS
- Support Amazon AWS & Microsoft Azure cloud service
- Support proprietary ATMS cloud service
- Support Modbus Tag to collect data from Modbus devices
- Interactive monitoring dashboard and map shows the status, signal strength, and location
- Supports Over-the-air batch device registration, configuration and firmware update
- Set alerts on critical events to prevent downtime (i.e signal strength is too low or temperature is too high)

Secure IoT Modbus Tags

Tag-based data acquisition with MQTT support	
MQTT client acting as publisher and subscriber	
The latest TLS encryption and X.509 authentication	
Selectable serial port and data type. Sensor alive check and display sensor value.	

GPS/BDS/GLONASS/Galileo

Latitude	
Longitude	
Attitude	
Speed	

// Tag Name

// Slave Address

// Data Address, Register Address

VoIP Voice Broadcast

RTSP voice streaming Server/Client for VoIP broadcast
1 to N VoIP broadcasting
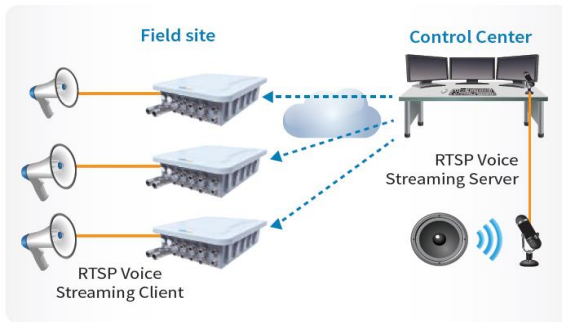
Secured Multi-sites Management

N to N VPN
Latest TLS encryption and X.509 authentication
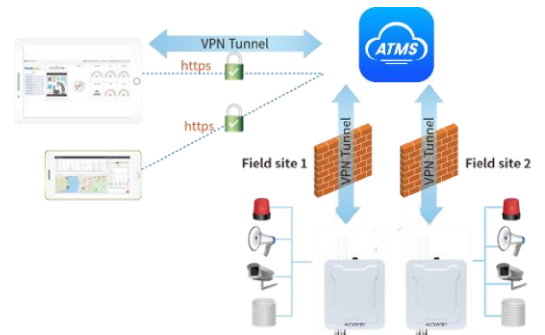
Device Management Over-the-Air

Interactive monitoring dashboard and map to show the status, signal strength, and location of devices deployed
Over-the-air batch device registration, configuration and firmware update

Tel: 713-933-4534   Web: www.avcomm.us   Email: info@avcomm.us

IP67 Waterproof Enclosure and abundant interfaces for Smart City Application

Four Gigabit PoE ports
- *Two 802.3bt PoE Ultra with max. 60W power*
- *Two 802.3at PoE Plus with max. 30W power*
Two Gigabit SFP LAN Ports for Long Distance Installation

One Internal Gigabit PoE WAN port
- *NAT, Firewall and Secure Connectivity features*

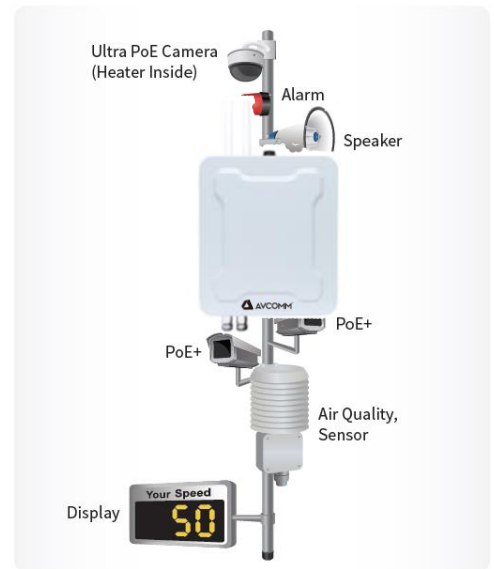**IIoT Expansion Interfaces**
-External: One RS232/422/485, Two DI, Two DO, Audio
-Internal: One RS232/422/485, One USB, One SD

AC Input & DC Output
-100~240V AC Input
-24V/1.25A DC Output

IP67 Outdoor Enclosure
Two mPCIe, dual SIM for Wireless expansion

ERPS v2 Ring with Two Gigabit Fiber ports

Two Gigabit SFP Ports
-Each supports 100M or 1000M SFP
-Wire-speed Switching, no traffic loss

Ring Redundancy
-802.1D-2004 Rapid Spanning Tree Protocol
-ITU G.8032 Ethernet Ring Protection Switch version 2, <50ms recovery time, flexible Ring architectures

L2 Managements
-VLAN, QoS, IGMP Snooping
-LLDP, SNMP, Rate Control
-Port/MAC/IP Security
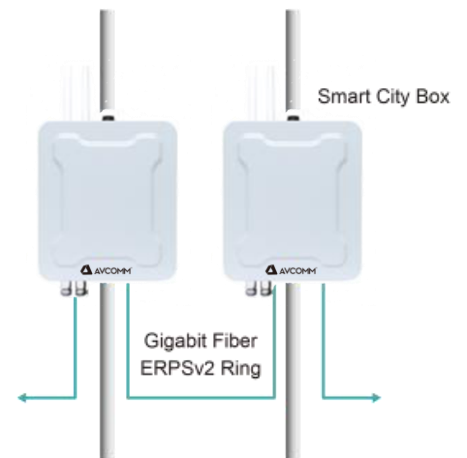
AP422-SCB Basic Solar Kit

Basic Solar Kit
▪*Typ. 48V/2.5AH Battery*
▪*54V Battery charger board*
▪*Reserved 2xM20 hole for PV input*

Test and Assembly prior to shipment

MC4 Connector for PV+/PV- Input

Other optional Solar Power Band by Request
▪*High Power Solar Panel or Panel farm*
▪*Pole mount external Battery*
▪*Other optional Battery*

Ready To Use Cloud Solution
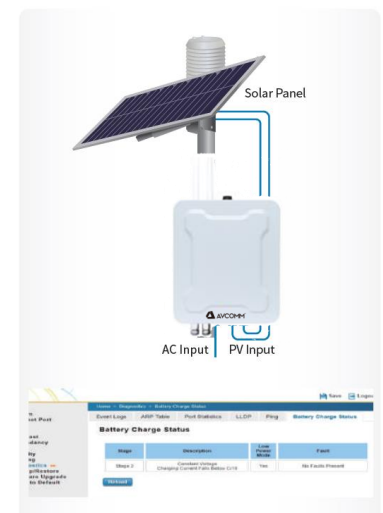
Smart Energy Solution
-Monitor meter voltage, frequency, power, current, energy consumption, etc.

Industrial 4.0 Solution
Monitor machine downtime, speed, utilization rate, yield rate, productivity, etc.

Smart Farming Solution
Monitor silos weights, silos temperature, silos humidity, etc

Smart Bus Tracking Solution
Monitor bus route, speed, passenger count, fuel etc.

Smart Environment Solution
Monitor PM1/2.5/10, CO2, temperature, humidity, radiation, wind speed, etc.

Smart Metering Solution
Monitor district energy consumed, water consumed, etc.

🛒 Ordering Information

Model Name	Description
AP422-SCB	Industrial Wireless IIoT Smart City Box, IP67, 4GT PoE + 2GF, 1GT WAN, IIoT interfaces, DC or AC Input (IIoT Interfaces: External 1xCOM,2xDI,2xDO,Voince; Internal 1GT WAN, 1xCOM, 1xUSB, 1xSD)

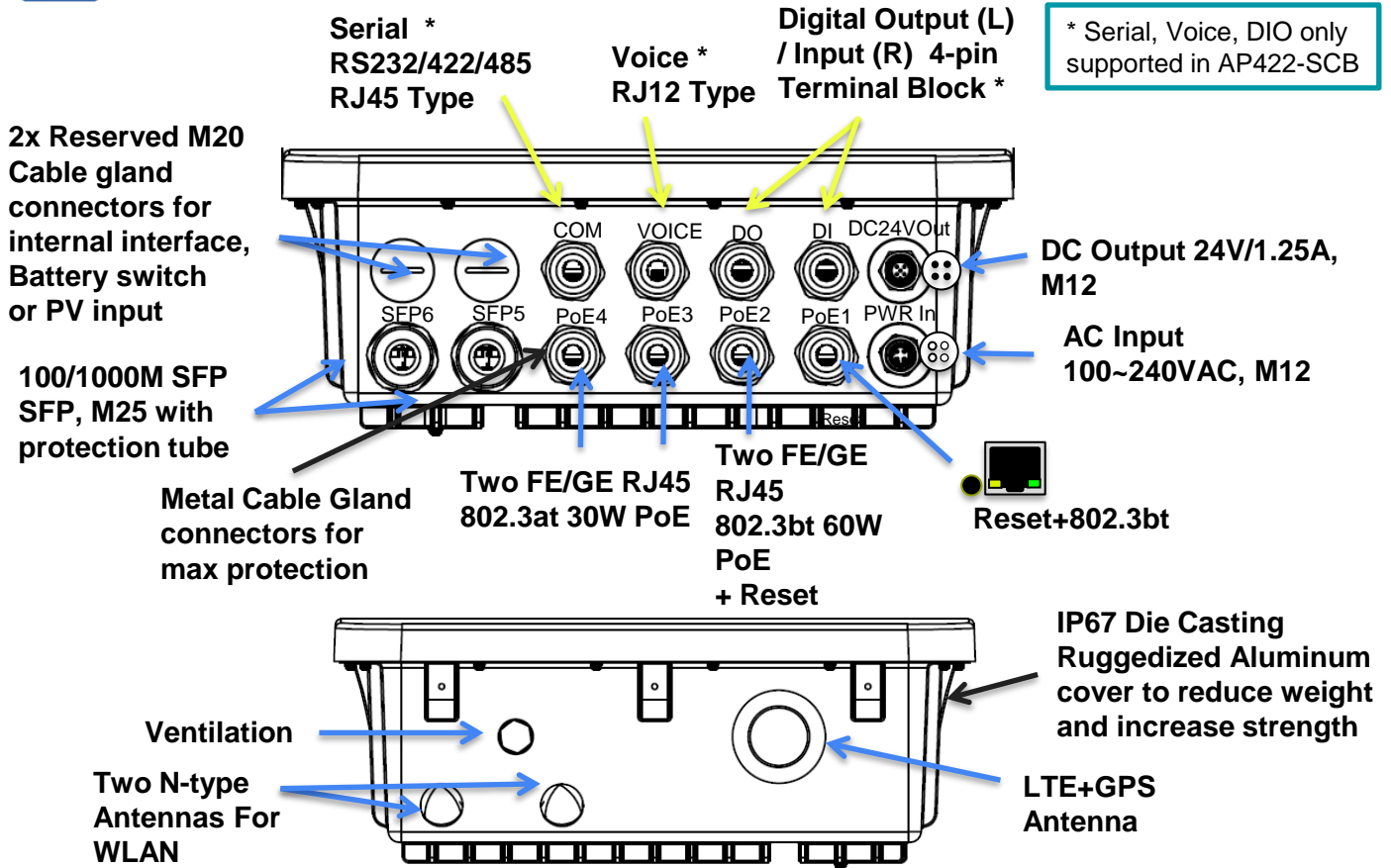| Technology	
Standard	IEEE 802.3 10Base-TX Ethernet
	IEEE 802.3u 100Base-TX Fast Ethernet
	IEEE 802.3ab 1000Base-T Gigabit Ethernet copper
	IEEE 802.3z Gigabit Ethernet Fiber
	IEEE 802.3af/at/bt Power-over-Ethernet
	IEEE 802.1Q for VLAN
	IEEE 802.1p Class of Service
	IEEE 802.1D-2004 Rapid Spanning Tree Protocol
	ITU-T G.8032 Version 2.0 Ethernet Ring Protection Switching (ERPSv2)
	3GPP GSM/GPRS/EDGE/UMTS/HSPA/LTE (By Request)

Interface	
AP412-SCB	

Ethernet Port	4 x 10/100/1000Base-T RJ45, M20 Cable Gland
	  - 2 x PoE 802.3af/at,
	  - 2 x PoE 802.3bt
	2 x 100/1000Base-X SFP, M25 Cable Gland
	1 x 10/100/1000Base-T RJ45, 802.3at/af PoE, Inside the box for Internal installation

Ethernet Port LED	TX Port: Link (Green On), Activity (Green Blinking)
Reset	System Reset(2~6 Seconds) / Default Settings Reset(over 7 Seconds) (Mechanical: Together with Port 1)
mPCIe Socket	2 x mPCIe sockets - 1 x mPCIe bus, available for 802.11ac/n/g/a/b WLAN expansion - 1 x USB bus, available for Cellular expansion
SIM Socket	2 x NANO SIM sockets inside, only available for SCB LTE module
Antenna Socket	1 x LTE+GPS Antenna socket for SCB LTE module 2 x N-Type female Sockets for SCB WLAN module
Power Input	Power Input, 4-pin M12 power connector AC Model: 100~240V AC
DC Output	Dual Power Outputs, 4-pin M12 power connector max. 24VDC/1.25A output
Beeper	Continuous Di/Da Short Beep: Power On & System Boot Continuous Beep over 1 minute: System Boot FAILURE
AP422-SCB	(Basic AP412-SCB interface)
Serial	2 x Software selectable RS232/422/485 interfaces (RS232 9-pin Full modem) Serial 1: RJ-45 Connector, M20 Cable Gland for external installation Serial 2: 9-pin DB9 within the box for internal installation LED: TX/RX transmission (Green Blinking) 15 KV ESD protection for all signals
Digital Input	2 x Digital Inputs- 4-pin Terminal block, M20 Cable Gland Low: 0~10V, High: 11~30V
Digital Output	2 x Dry Relay Outputs, 0.5A/24VDC, 4-pin Terminal Block, M20 Cable Gland
VOICE	RJ-12 Connector, Mono Amplifier for Speaker Out, M20 Cable Gland Pair 1(2,5): Microphone Pair 2(3,4): Speaker
USB	1 x USB A-Type socket
SD	1 x micro SD socket (Suggest Industrial Grade SD card)

Basic Solar Kit	
Battery Charge Board	Battery Charge Controller Board for AC/Solar power input and battery charge
Internal Battery	Typ. 48V/2.5AH (max. 54.6V) Internal Battery Battery ON/OFF switch to Enable Battery
PV Input Connector	1-pair MC4 Type PV Input connector for PV Input by the reserved holes in the bottom
Power Requirement	
Power Connector	1 x 4 Pin IP66/67 M12 power connector
Power Input Voltage	AC Model: 100~240VAC System Mainboard: 2 x 54VDC inputs
Reverse Polarity Protect	Yes
DC Output	1x 4 Pin IP67 M12 power connector 24VDC, 1.25A max. (DC 1+, DC 1-, DC 2+, DC 2-)
Power Consumption	Max. 250W full traffic with PD loading (Example: 150W for PD Loading, 30W for DC output, 10W for system mainboard.)
PoE	
Power forwarding mode	802.3at Alternative A; 802.3bt draft: 4 pairs
PoE Power Budget	System: Up to 210W, Max. 150W@75°C Port 1/2: 4-pair IEEE 802.3bt Draft 2.0 Type 3, Max. 60W Port 3/4, WAN: IEEE 802.3at, Max. 30W
PoE Standard	IEEE 802.3af/at, IEEE 802.3bt Draft 2.0 Type 3
Management	System/Port Power Budget Control, PoE Scheduling, Priority, PD Alive Check, PoE Status
Software	
Management Interface	CGI WebGUI, Command Line Interface (CLI), SNMP
User Management	Radius client*, TACACS+*, local database
Time Management	NTPv3, SNTP, Cellular Time
Network Management	IPv4, DDNS, SNMP v1/v2c/v3/Trap, LLDP, DHCP Server/Client/Relay, TFTP, System Log, ARP response over 802.2 LLC SNAP, Proxy ARP, DNS (client/proxy), Ping, Traceroute AP422-SCB: DI, DO, Serial, USB for Firmware upgrade, Configuration backup & restore SCB Wireless Expansion: WLAN AP/CPE mode, ERPS failure to LTE redundant(P2)
Traffic Management	802.1Q VLAN, QoS, IGMP Snooping, Rate control, up to 10K Jumbo Frame NAT Routing, Static Router, Traffic shaping
Security	Port Security, HTTPs, SSH Firewall (Inbound/outbound), DMZ, Port Forwarding
VPN	IPsec, OpenVPN (server/client), L2TP*
Redundancy Protocol	STP/RSTP, ITU-T G.8032 ERPSv2, VRRP
IIoT Industrial Protocol	Modbus TCP, MQTT, RESTful API
Private Cloud	ATMS, ATMS over-the-air Remote Management
Public Cloud	AWS, Azure Agent
Utility	AIAS, ANMS Network Management System

Mechanical	
Installation	Wall-mount, Pole-mount
Enclosure Material	Aluminum
Vent	Protective Ventilation for Air and Moisture Breathing
GND	Grounding Nut with Washer
Dimension	346 x 406 x 142mm (W x H x D) / without wall-mount poles
Ingress Protection	IP67
Weight	AP412-SCB-AC: 6.84kg, AP422-SCB-AC+Battery: 8.01kg, AP422-SCB-AC+BASICSOLAR: 8.16kg without package. AP422-SCB-AC: 10.40kg, AP422-SCB-AC+Battery: 11.65kg, AP422-SCB-AC+BASICSOLAR: 11.78kg with Mounting & Package

Environmental	
Operating Temperature & Humidity	-40°C~75°C, 5%~95% Non-Condensing -10°C~55°C with Battery/Charger, 5%~95% Non-Condensing
Storage Temperature	-40°C~85°C
MTBF	>200,000 hours
Warranty	5 years (Battery 1 year)

Approval	
CE/FCC	CE(EN501214 Level) / FCC Part 15B
Railway Roadside EMC	EN50121-4
Traffic Control	NEMA-TS2 Compliance

Function interface

**Serial *
RS232/422/485
RJ45 Type**

**Voice *
RJ12 Type**

**Digital Output (L)
/ Input (R) 4-pin
Terminal Block ***

* Serial, Voice, DIO only
supported in AP422-SCB

**2x Reserved M20
Cable gland
connectors for
internal interface,
Battery switch
or PV input**

COM   VOICE   DO   DI   DC24VOut

**DC Output 24V/1.25A,
M12**

SFP6   SFP5   PoE4   PoE3   PoE2   PoE1   PWR In

**AC Input
100~240VAC, M12**

**100/1000M SFP
SFP, M25 with
protection tube**

**Metal Cable Gland
connectors for
max protection**

**Two FE/GE RJ45
802.3at 30W PoE**

**Two FE/GE
RJ45
802.3bt 60W
PoE
+ Reset**

Reset

Reset+802.3bt

Ventilation

**IP67 Die Casting
Ruggedized Aluminum
cover to reduce weight
and increase strength**

**Two N-type
Antennas For
WLAN**

**LTE+GPS
Antenna**

Installation dimensions

Unit: inch ±0.040
[mm] ±1.00