PRODUCT OVERVIEW

arbn well is an environmental quality measurement and analysis system based on high-quality, low-cost sensing. It comprises a dense network of sensors measuring a variety of parameters affecting human health and comfort. This continuous and ubiquitous sensing is supplemented by occupant feedback (collected using the arbn well app), to create a uniquely rich and detailed picture of environmental conditions inside buildings and the satisfaction of occupants. Based on the needs of a client, three devices are available: Comfort, AQ, and AQ+. All three of these devices communicate data to a gateway or WiFi-configured AQ+ device.

For more information, go to www.arbnwell.com or write to us as info@arbnco.com.
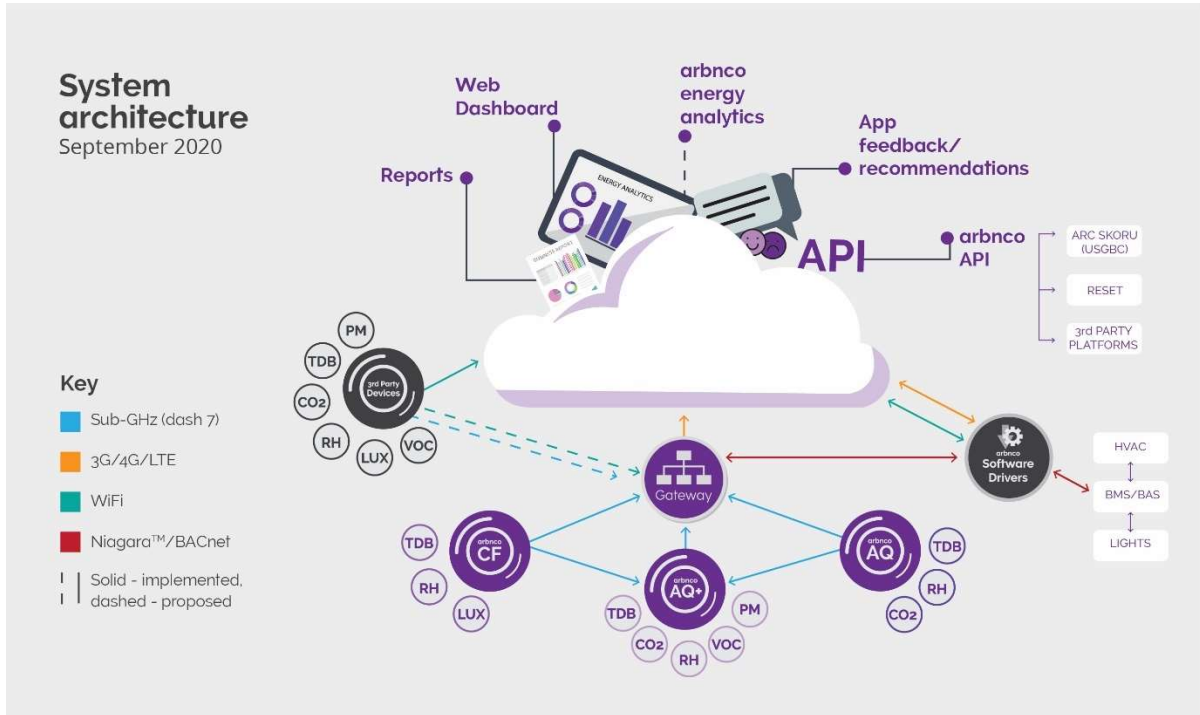
APPLICATIONS

The arbn well system can be used in several applications including:

- Commercial (offices, conference rooms)
- Education (classrooms, auditoria, offices)
- Government (offices, conference rooms)
- Healthcare (wards, offices, common areas)
- Residential (bedrooms, living spaces)
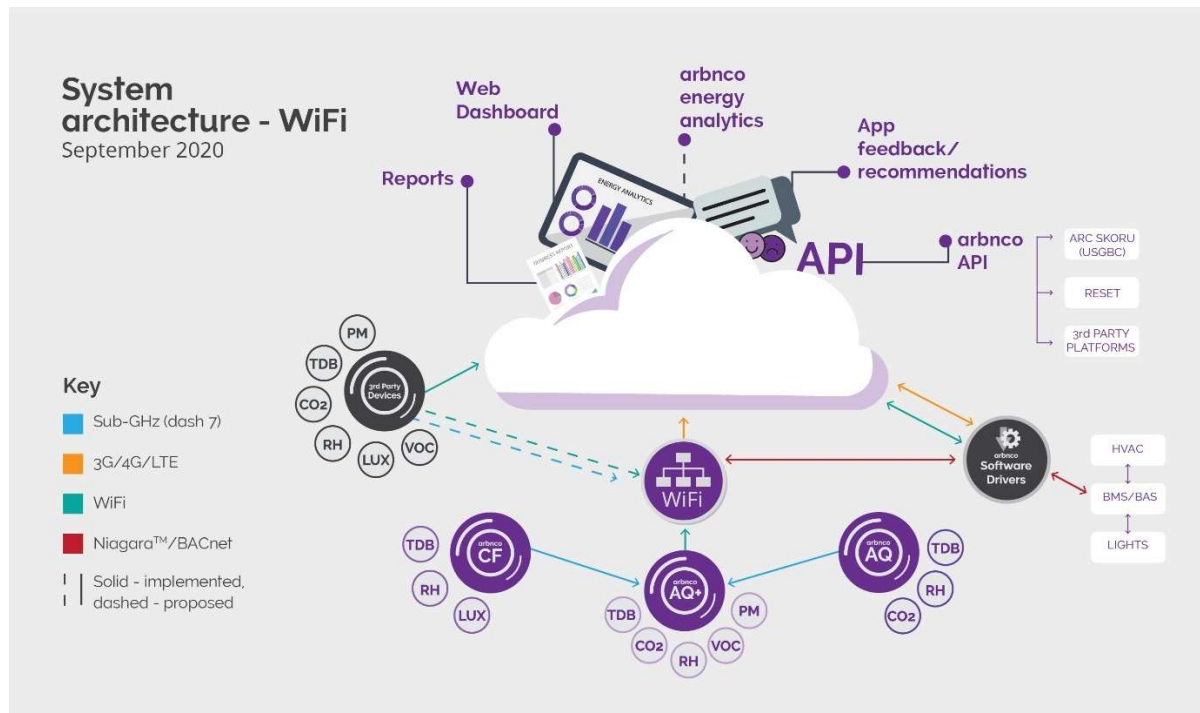- Urban farming (non-condensing applications)

THE SYSTEM

The arbn well devices connect wirelessly to the gateway over a private network, using the license-free wireless bands used by DASH7 networks. The sensor data is then transmitted over 3G/4G mobile connections from the gateway, or optionally over WiFi through an AQ+ device, to the arbnco servers, from where it is analyzed and displayed on the arbn well dashboard and app, and can be accessed via APIs.

arbn well

NETWORK ARCHITECTURE: GATEWAY INSTALLATIONS

NETWORK ARCHITECTURE: WIFI INSTALLATIONS

INTERNAL SENSOR CAPABILITIES

The individual internal sensors used in arbn well devices have the following reported capabilities:

INTERNAL SENSOR	RANGE	REPORTED ERROR	REPORTED RESOLUTION
Temperature	-40 – 125 °C	0.2 °C	0.01 °C
Relative humidity	0 – 100 %	2 %	0.01 %
Light[1]	0 – 26000 lx	1 lx	N/A
CO_2	0 – 5000 ppm	50 ppm, at 0 – 50 °C	N/A
PM	1 – 999 µg/m^3	10 µg /m^3, at less than 100 µg /m^3	0.3 µg /m^3, at -10 – 60 °C
		10 %, at more than 100 µg /m^3	
TVOC	0 – 32768 ppb	N/A	1 ppb

DEVICE ERROR TOLERANCES

The following are the device error tolerances for the individual parameters:
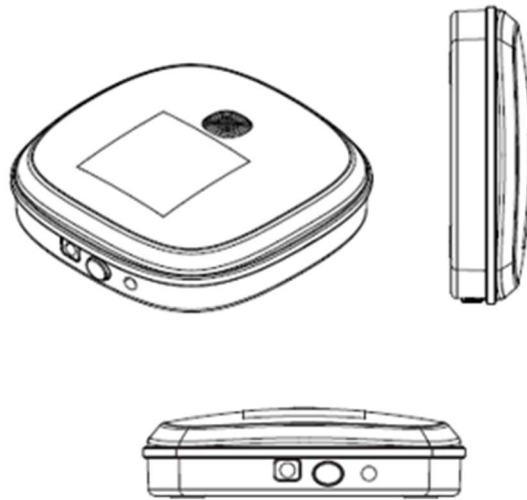
DEVICE PARAMETER	MIN. ERROR	MAX. ERROR
Temperature	0.75 °C	0.75 °C
Relative humidity	5 %	5 %
CO_2	75 ppm	10% of value
PM	5 µg /m^3	25% of value
TVOC	40 ppb	25% of value

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[1] We provide illuminance in lux as standard. RGB and IR are available in W/m2 on request.
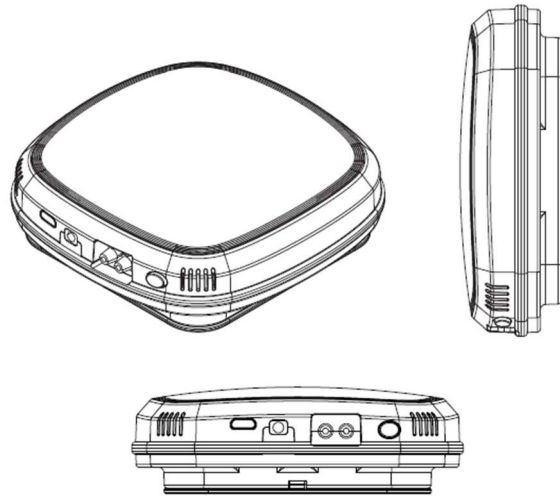
ATTACHMENTS

The specification sheets for the following arbn well system devices can be found attached below:
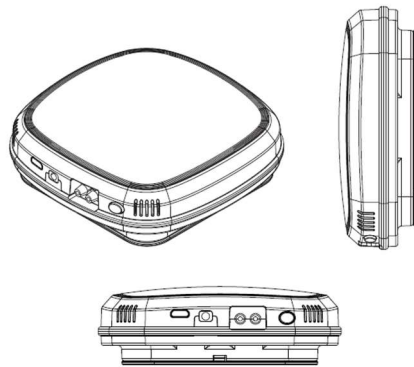
- arbn well Comfort Device
- arbn well AQ Device
- arbn well AQ+ Device
- arbn well Gateway

Comfort Device

GENERAL	
MOUNTING	Command Brand® Damage-Free Hanging Strips; 2 strips per sensor
DIMENSIONS	76x76x21mm
WEIGHT	67g
OPERATING/STORAGE TEMPERATURE	-10-70 °C
OPERATING/STORAGE HUMIDITY	0-95 % (RH), non-condensing
SENSOR/DEVICE LIFETIME	Approx. 5 years. Deployment in high contamination environments will significantly shorten the lifespan of the humidity and CO2 sensors, and potentially the circuits.
WARRANTY	Standard warranty of 1 year for factory defects
CERTIFICATIONS	CE, FCC
SENSORS	
TEMPERATURE and RELATIVE HUMIDITY	Sensirion SHT30-DIS-B
LIGHT	Avago APDS-9250
ELECTRICAL	
POWER SOURCE	ER26500 battery; approx. 3-year lifespan.
VOLTAGE	3.6V
BATTERY CAPACITY	30.6Wh
COMMUNICATIONS	
Sub-GHz (DASH7)	Supported channels: US902-928, EU863-870, AS923, AU915-928, KR920-923, CN470-780

arbn well

GENERAL

MOUNTING	Command Brand® Damage-Free Hanging Strips; 2 strips per sensor
DIMENSIONS	112x112x35mm
WEIGHT	205g
OPERATING/STORAGE TEMPERATURE	-10-70 °C
OPERATING/STORAGE HUMIDITY	0-95 % (RH), non-condensing
SENSOR/DEVICE LIFETIME	Approx. 5 years. Deployment in high contamination environments will significantly shorten the lifespan of the humidity and CO2 sensors, and potentially the circuits.
WARRANTY	Standard warranty of 1 year for factory defects
CERTIFICATIONS	CE, FCC

SENSORS

TEMPERATURE and RELATIVE HUMIDITY	Sensirion SHT30-DIS-B
CO$_2$	GSS CozIR-IP (NDIR-type)

ELECTRICAL

POWER SOURCE	ER26500 battery; approx. 3-year lifespan.
VOLTAGE	3.6V
BATTERY CAPACITY	30.6Wh

COMMUNICATIONS

Sub-GHz (DASH7)	Supported channels: US902-928, EU863-870, AS923, AU915-928, KR920-923, CN470-780

GENERAL

MOUNTING	Command Brand® Damage-Free Hanging Strips; 2 strips per sensor
DIMENSIONS	112x112x35mm
WEIGHT	200g
OPERATING/STORAGE TEMPERATURE	-10-70 °C
OPERATING/STORAGE HUMIDITY	0-95 % (RH), non-condensing
SENSOR/DEVICE LIFETIME	Approx. 5 years. Deployment in high contamination environments will significantly shorten the lifespan of the humidity and CO2 sensors, and potentially the circuits.
WARRANTY	Standard warranty of 1 year for factory defects
CERTIFICATIONS	CE, FCC

SENSORS

TEMPERATURE and RELATIVE HUMIDITY	Sensirion SHT30-DIS-B
CO₂	GSS CozIR-IP (NDIR-type)
PM	Plantower PMSA003
TVOC	AMS CCS811

ELECTRICAL

POWER SOURCE	Micro USB B cable
ADAPTOR INPUT	AC 100-240V, 50/60Hz 0.4A
ADAPTOR OUTPUT	DC 5V, 750mA
POWER ADAPTOR CERTIFICATIONS	CE, FCC, UL

COMMUNICATIONS

Sub-GHz (DASH7)	Supported channels: US902-928, EU863-870, AS923, AU915-928, KR920-923, CN470-780
WiFi	Requires 2.4GHz network

GENERAL	
MOUNTING	Command Brand® Damage-Free Hanging Strips; 5 strips per gateway
DIMENSIONS	145x95x40mm
WEIGHT	715g
OPERATING/STORAGE TEMPERATURE	-40-75 °C
WARRANTY	Standard warranty of 1 year for factory defects
CERTIFICATIONS	CE, FCC
ELECTRICAL	
POWER SOURCE	PoE+ 48 Input, IEEE 802.3 af/at
VOLTAGE RANGE	42.5–57V
POWER RANGE	25.5–34.2W
COMMUNICATIONS	
Sub-GHz (DASH7)	Supported channels: US902-928, EU863-870, AS923, AU915-928, KR920-923, CN470-780
Other communication capabilities	Ethernet