energous

Battery Free Wirelessly Powered Sensor EVK

QUICK START GUIDE

Atmosic™

This guide will help you to setup and operate your EVK, demonstrating the capabilities of this battery free wirelessly powered sensor.

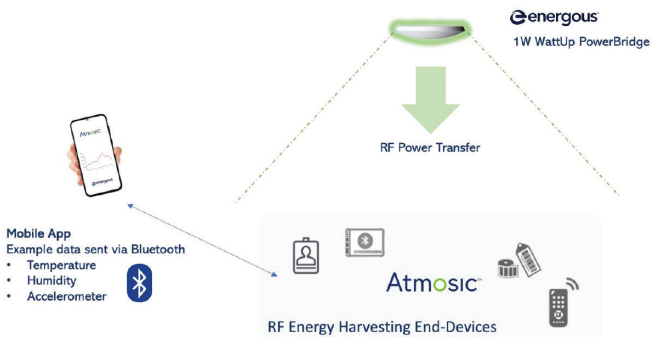


Figure 1: System Diagram

Box Contents

- 1W WattUp PowerBridge Transmitter (1)
- Battery-Free IoT Sensors (2)
- 5V/1A USB power adapter and USB-A to -C cable

Figure 2: EVK Box and Contents

1. Setup the Powerbridge

- Connect the USB cable to the PowerBridge Transmitter and the power supply.
- Mount the PowerBridge on a stand, a wall or a ceiling using keyhole screw mounts in a position pointing toward the sensors.

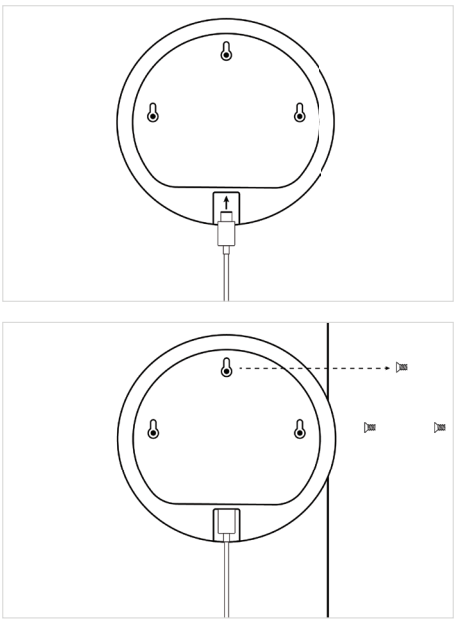


Figure 3: Mounting Diagram

Setup the Powerbridge Cont'd.

- Plug in the PowerBridge power supply.
- After power-on, the Blue LED flashes for 30s to indicate that the PowerBridge is running.
- The PowerBridge starts RF power transmission automatically, with the white LED indicating that the PowerBridge is now transmitting.

Figure 4: Wattup PowerBridge Front

2. Position the Sensors

- Position the sensors within ~1.5m of the PowerBridge.
- The battery free sensors are now receiving wireless power from the PowerBridge.
- Once the sensors receive sufficient power, they will begin taking sensor measurements (Temperature, Humidity, and 3D Accelerometer data), and sending via BLE advertisements.
- Maintain a minimum separation of at least 0.3m between the sensors and the PowerBridge.

3. Reading the Sensor Data

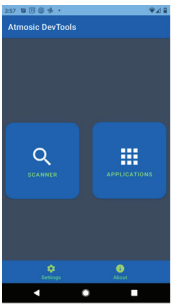
- Download the Atmosic DevTools App from the Android or Apple Store.

Figure 5: Apple Store QR code for Atmosic DevTools App

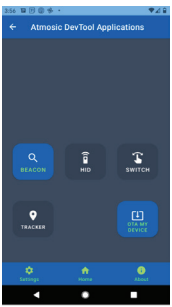
Figure 6: Google Play QR code for Atmosic DevTools App

4. Using the Atmosic DevTools App

Open the App, and tap the Applications button:

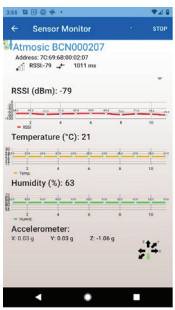


Tap the Beacon button to start scanning for beacons:



The sensor beacons will appear with the name "Atmosic BCN" followed by a serial number used to distinguish the beacons. Tap the Monitor button to start displaying the sensor data:

The sensor data displayed includes the Received Signal Strength from the sensor (RSSI), Temperature, Humidity, and accelerometer data:



5. Typical Sensor Range

- **Time to initial sensor data measurement:**
  The sensors store energy on an internal capacitor. Without energy from an RF source, the capacitors will discharge over the course of 8 to 10 minutes.
- Once discharged, it will take approximately 4 to 6 minutes at a distance of 1.5 meters to recharge the capacitor and enable sensor transmissions.
- **Sensor Placement:**
  The Sensor can be placed horizontally or vertically.

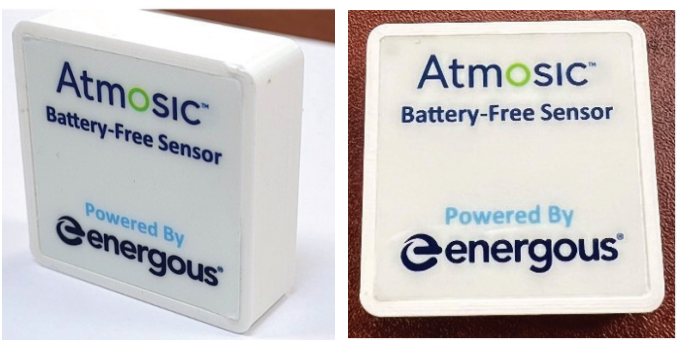


Figure 11: Sensors Receiver, Vertical and Horizontal

Typical Sensor Range Cont'd.

The Sensor will receive power in an area approximately +/- 30 degrees from boresight to the PowerBridge Transmitter. There will be some small amount of performance delta depending on the rotation of the Sensor relative to boresight from the PowerBridge Transmitter.

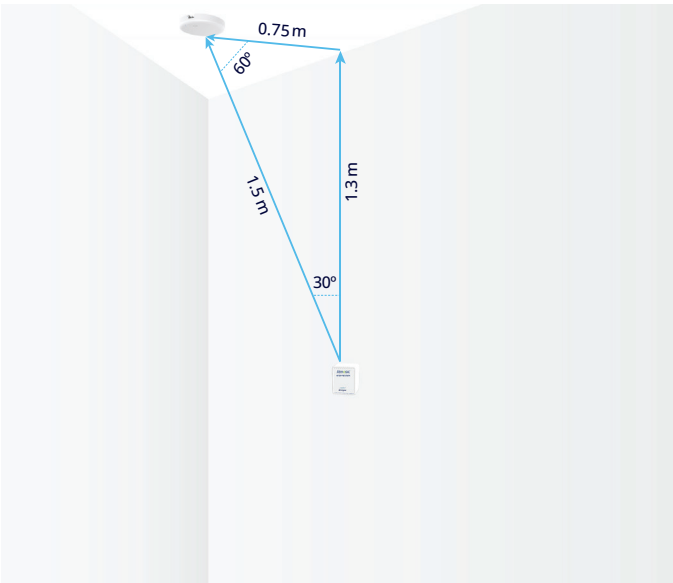


Figure 12: PowerBridge Transmitter and Atmosic Sensor Receivers

FCC Regulatory Information

FCC ID: 2ADNG-VN25 Model: VN25

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) This device may not cause harmful interference, and (2) This device must accept any interference received, including interference that may cause undesired operation.

Note: This equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Reorient or relocate the equipment being interfered with.
- Increase the separation between the charger and the equipment subject to interference.
- Connect the equipment into an outlet on a circuit different from that to which the charger is connected.
- Consult the dealer or an experienced radio/TV/electronics technician for help.

CAUTION: Changes or modifications to this unit not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

FCC Regulatory Information Cont'd.

VN25 RF wireless charger complies with FCC RF radiation exposure limits for an uncontrolled environment in accordance with FCC Rule Part 2.1093. The Wireless charger transmitter is designed to be installed on the ceiling or on a side wall and must be installed accordingly to ensure a minimum 20cm separation distance from persons.

IC: 23686-VN25, Model: VN25

This device complies with Industry Canada's licence-exempt RSSs. Operation is subject to the following two conditions:

(1) This device may not cause interference; and

(2) This device must accept any interference, including interference that may cause undesired operation of the device.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes :

(1) l'appareil ne doit pas produire de brouillage;

(2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

VN25 RF wireless charger complies with ISED radiation exposure limits. The Wireless charger transmitter is designed to be installed on the ceiling or on a side wall and must be installed accordingly to ensure a minimum 22cm separation distance from persons.

Le chargeur sans fil RF VN25 est conforme aux limites d'exposition aux rayonnements ISED. L'émetteur du chargeur sans fil est conçu pour être installé au plafond ou sur un mur latéral et doit être installé en conséquence pour assurer une distance de séparation minimale de 22 cm des personnes.

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