BLUEPYC

Unconventional.
Smart. Wireless.

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![BLUEPYC logo] **BLUEPYC** Unconventional. Smart. Wireless.

WHO we are

BluEpyc is the Business Unit of Softwork Group – Value Added Technology Provider, focused on **wireless technologies, above all Bluetooth Low Energy (BLE)**, a wireless technology based on a standard and developed to meet the IoT interoperability need; its main features are the wireless communication range up to 100 meter or more and the low energy consumption between the connected devices due to the small quantity of data to send.

BluEpyc guarantees advanced wireless solutions, producing its own family of customized devices designed by the R&D Dept. and developed by an experienced project managers team and a network of certified resellers.

Our technologies

The BluEpyc family of BLE devices is composed by Gateways, EchoBeacons and Beacons available in different housing: each device has specific technical features and ideal performances for different scenarios.

- ✳ **BluEpyc BLE Cloud Gateway Reader** is an elegant and small size device, with web server on board, CPU & I/O; with a reading range up to 100 meters, it's able to receive and manage data coming from Beacons or EchoBeacon via Ethernet, Wi-Fi or GPRS;

- ✳ **BluEpyc BLE EchoBeacon** is a BLE signal repeater, allowing to build BLE systems for wide indoor area, where detailed data capture, easy installation and low cost are required: it receives Beacon's data and forward them to the Gateway within a distance up to 100 mt.

- ✳ **BluEpyc BLE Tag Beacon**: a wide Beacon range, even custom designed (upon request) by the R&D Dept., based on the specific requirements and needs of the project: to be fixed on items and wearable.

Our way of thinking

We believe innovation creates value not only thanks to a smart technology, but also using an original way of thinking: *unconventional* means not accept the first solution, it means avoid shortcuts and be brave in looking always for new paths.

How is our "unconventional way of thinking" related to BLE technology?
The standard BLE architecture is typically composed by fixed Beacons and mobile devices (e.g. smart phone), which receive data from Beacons and managed by an App.
Our **unconventional** vision is based on a reverse concept approach, in order to **create in an easy and competitive way an active RFID system suitable for automatic identification and localization of persons and objects.**

With respect to the traditional concept, our unconventional BLE architecture works in an opposite logic, where moving person or object are equipped with tag/Beacon and the fixed readers/Gateways are installed in the monitoring area, detecting data from different tags.

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Our Engineering Services

In addition to this dynamic technology and through our services, we are able and willing to help you in the development of YOUR new and advanced device.

Which main steps do we follow to realize your product, satisfying your requirements, optimizing the Time to Market and reducing the production costs?

* ❋ **Technical and Functional Consultancy: Product Specifications Analysis** ->
  we gather all the information, analyze and study the needs of your project, followed by a feasibility study

* ❋ **PCB Design – prototypes and final pcb realization** ->
  datasheets analysis, certified components selection and electrical schematic design are the main activities in this phase; according to your needs, we can realize some fast prototypes to put under test.

* ❋ **Firmware Development** ->
  sometimes the same PCB with different firmware can execute different tasks and so be used for different purposes/application: in BluEpyc we develop, debug and test your custom firmware, taking into account your specification

* ❋ **Product release** ->
  once both hardware and firmware of your product have been developed, tested and produced, we deliver you a complete and ready-to-use solution!

Scenarios

* ❋ Access control (vehicle & person)
* ❋ Home Automation & Building Management (hospitality, industrial etc.)
* ❋ Process Automation & Monitoring. Maintenance
* ❋ Safety (e.g. in hospital, construction site)
* ❋ Asset & Facility Management: traceability, positioning, monitoring, sensor (asset & people)
* ❋ Smart City: transportation, ticketing, waste management, citizen service, car-parking
* ❋ Tourism and Leisure: museum, exhibition, village & resort, amusement park etc

BluEpyc BLE Gateway Family

Bluetooth Low Energy Cloud Gateway Reader with CPU & I/O

Highlight

❖ Elegant, small size, easy installation, low cost & intelligent Bluetooth Gateway Smart Cloud.

❖ Read/Write standard Beacon Tag, Apple iBeacon & Tag. On Board Web Server.

❖ Host Interfaces: Ethernet / Wi-Fi. RTC. CPU & I/O

❖ IoT & Active RFID application. Real Time Location System & Indoor Positioning System.

❖ Inventory, track & trace for people, animals & goods, etc...

❖ Some **application scenarios**: vehicle & people access control (also stand alone), home & building management , safety (hospital, construction site, etc…), process automation, asset & facility management, smart city (parking, leisure & tourism, etc…)

General Features

- ❈ **Bluetooth 5.1 Low Energy** with integrated antenna.

- ❈ Reading Range: up to 200 meters (depending on environment, configuration and beacon feature). Anti-collision Beacons reading

- ❈ Data Rate: up to **2 Mbit/s**. Security 128-bit AES. Transmit power: +3 dBm. RX sensitivity: -85dBm to -91dBm. Anticollision Beacons reading.

- ❈ Operation Frequency: 2,4 GHz. IEEE Standard: 802.15.1

- ❈ CPU Feature - Low Power 16 Bit 16Mips microcontroller.

- ❈ Host Interfaces: Ethernet RJ45 (10/100).

- ❈ Real Time Clock/Calendar.

- ❈ Web Cloud Device: Web Server for configuration via Internet browser.

- ❈ Firmware Feature: on board BLE management protocol, anti-collision, read BLE Advertising & RSSI, Lan/Internet notification mode (TCP) or HTTP Post read/write BLE parameter, filtering on RSSI Level, filtering on beacons mask. Dataset: Beacon Advertising, Time, RSSI & I/O status. Trigger wake-up (2 inputs), Tag on presence output. Possibility of custom applications (on request)

Scenario & connectivity IoT/Cloud

Technical Data

Available Models

BLE Smart Gateway R5 Indoor Wall Mount

BE-BLEG-WE5

Indoor Wall Mount Case – ABS (UL 94 HB).

Dimension: ø 110 x 38 mm. + spacer.

Protection Class IP40

Weight: About 150 g. Colour: off-white (RAL 9002).

I/O: 2 x digital input, 2 x digital output, 1 x Output Relè max. 24 V DC / 1 A, 1 x Led bicolour.

BLE Smart Gateway R5 Industrial Rugged

BE-BLEG-RE5

Outdoor Rugged ABS Case.

Dimension: 200 x 110 x 60 mm.

Protection Class IP66

Weight: About 150 g. Colour: off-white (RAL 9002).

I/O: 2 x digital input, 2 x digital output, 1 x Output Relè max. 24 V DC / 1 A, 1 x Led bicolour.

BluEpyc BLE Smart Gateway R5 Industrial Wall Mount

BE-BLEG-WM-E

Outdoor Case - Radom Plastic (UV rating).

Wall, Ceiling & Pole Mount. Aluminium Mounting kit included.

Dimensions: 185 x 185 x 56 mm.

Protection class IP67.

I/O: 2 x digital input, 2 x digital output, 1 x Output Relè max. 24 V DC / 1 A, 1 x Led bicolour.

Common Features

Bluetooth LE	Bluetooth 5.1 Low Energy with integrated antenna. Frequency 2,4 GHz. IEEE Standard: 802.15.1.
Data Rate & RF Power	Up to 2 Mbit/s. Security 128-bit AES. Up to 40 Bluetooth extended channels (BLE 5.1) Transmit power: up to +8 dBm. RX sensitivity: -85dBm to -91dBm.
Reading Features	Anti-collision Beacons reading. Read Performance: about 80 tags per second Read Range: up to 200 meters (depending on environment, configuration, Bluetooth antenna and beacon feature).
Communication [*]	Ethernet RJ45 (10/100).
CPU	Low Power 16 bits controller, 16 MIPS. 256K Flash, 96K Ram, 16Mbit Flash, 64Kbit EEPROM. Real Time Clock/Calendar with battery (*).
Power supply [*]	12-24 VDC (+/- 5 %) external power supply (not included). Consumption: Typical 400 mA - Max 2 Amp
Temperature range	Operation: -20° C up to 65° C - Storage: -20° C up to 85° C
Standard Firmware & Reader modes	On board BLE management protocol, anti-collision, read BLE Advertising & RSSI, Lan/Internet notification mode (TCP) or HTML Post, read/write BLE parameter, filtering on RSSI level, filtering beacons mask. Dataset: Beacon Advertising, Time, RSSI & I/O status. Trigger wake-up (2 inputs), Tag on presence (3 Outputs). Possibility of custom applications (on request)
Configuration mode	Low-level commands (SDK), Client Application with BluEpyc Start or via On Board Web Server (Internet Browser).

(*) Depending on model

BluEpyc BLE EchoBeacon Family
Bluetooth® Low Energy Beacon Repeater

How it works

- ❄ Tag Beacons linked to person/item transmit the data with limited power & energy consumption.
- ❄ **EchoBeacon** receives Beacon's data (monitoring area based on Beacons power transmission).
- ❄ **EchoBeacons** re-transmit the collected Beacon's data to the BLE Gateway - up to 200 mt.

Highlight

- ❄ **Unplug connection.** USB power supply (*). Desktop, ceiling & wall mount easy installation (*).
- ❄ **Responsive**: customizable firmware, memory for associated beacons, **beacon ID white & black list**, adjustable parameters, …
- ❄ **Interactive:** integrated relè & led, integrated digital inputs, UART interface (*)
- ❄ **Low cost device** to implement zone localization & track position of people & objects wearing Beacons.
- ❄ **IoT & Active RFID application**. Real Time Location System (zone method).
- ❄ Some **application scenarios**: vehicle & people access control (also stand alone), home & building management, safety (hospital, construction site, etc…), process automation, asset & facility management, smart city (parking, leisure & tourism, etc…)
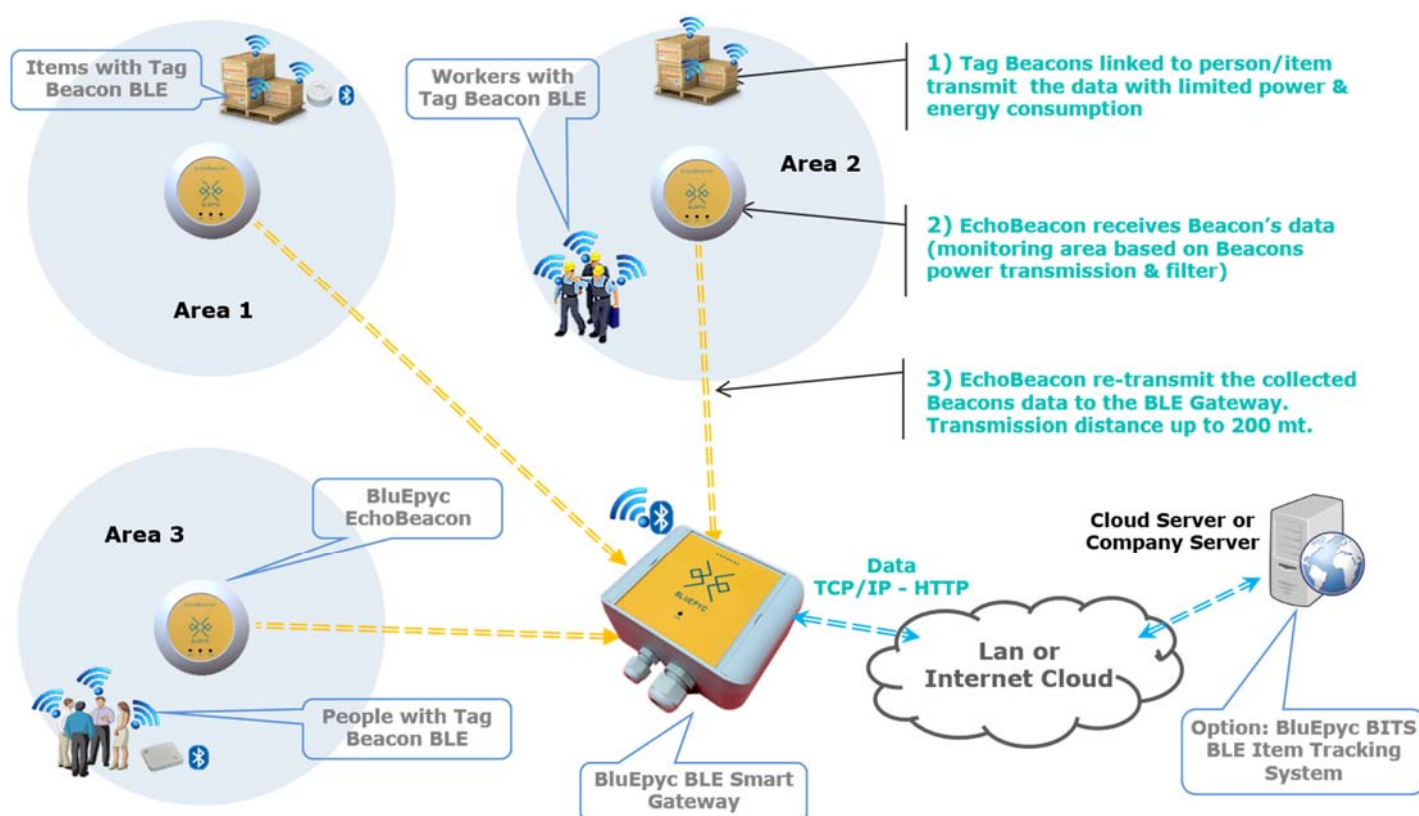
(*) Depending on model

General Features

❉ **Bluetooth 5.1 Low Energy** with integrated antenna.

❉ Reading range: depends on the beacon's transmission power and on RSSI filtering.

❉ Data Rate: up to **2 Mbit/s** [*]. Security 128-bit AES. Transmit power: +3 dBm. RX sensitivity: -85dBm to -91dBm. Anticollision Beacons reading.

❉ Operation Frequency: 2,4 GHz. IEEE Standard: 802.15.1

❉ Input: 3 x Digital Input. Output: 2 x output relè, 3 x Leds. [*]

❉ **Standard Firmware Feature**: EchoBeacon ID (2 byte), on-board beacon ID white list, anti-collision beacons reading (number depends on environment and configuration), read Beacons Advertising & RSSI, BLE notification, filtering on beacons mask, white list & RSSI Level, output relé on beacon presence (according to setup). Custom applications on request

❉ **Kalman filter** option for a more precise estimate of the distance of the Beacon.

❉ **On Board Beacon ID white & black list** (up to 180 Beacon UID) for conditional parametric action (adv transmission & output activation), useful for **stand-alone application** (e.g. access control, alarms, hospital safety, etc…).

❉ **Adjustable parameters** through BLE service & mobile APP (included): EchoBeacon ID, Reading Time, Transmission Time, Watch Dog Time, filtering parameter (adv mask & RSSI), Transmission Power (16 step), output relé [*].

(*) Depending on model

EchoBeacon Data Flow

1) Tag Beacons linked to person/item transmit the data with limited power & energy consumption

2) EchoBeacon receives Beacon's data (monitoring area based on Beacons power transmission & filter)

3) EchoBeacon re-transmit the collected Beacons data to the BLE Gateway. Transmission distance up to 200 mt.

Technical Data

Low cost & unplug device to implement micro localization & change of position of people & objects equipped with Bluetooth Low Energy Beacons.

Responsive to specific application needs: customizable firmware, memory for associated beacons, adjustable parameters, stand-alone applications, white list on board, …

BE-EBS-U
BLE EchoBeacon Repeater R3 USB.

Bluetooth 4.2. Data Rate 1 Mbit/s.

Easy USB dongle installation.

Possibility to install the gateway firmware (on request)

Case ABS. Protection class IP 30. Led bicolour

Dimensions: 58 x 25 x 9 mm. Colour: off-white & grey.

Power supply 5 VDC via USB (plug supply or PC).

BE-EB5-D
BLE EchoBeacon Repeater R5 Desktop μ-USB

Bluetooth 5.1. Data Rate up to 2 Mbit/s.

Possibility to install the gateway firmware (on request)

Desktop Indoor Case ABS (UL 94 HB). Protection class IP 30.

Dimensions: 93 x 62 x 27 mm. Colour: Gray with Dark Gray Rubber Sides.

Power supply 5 VDC via micro-USB (cable not included).

BE-EB5-WM
BLE EchoBeacon Repeater Plus R5 Wall Mount with I/O

Bluetooth 5.1. Data Rate up to 2 Mbit/s.

Indoor Case Wall & Ceiling Mount

ABS (UL 94 HB). Protection class IP 40.

Dimensions: ø 110 x 56 mm. + spacer

Weight: About 200 g. Colour: off-white (RAL 9002).

3 x Digital Input. Output: 2 x output relè, 3 x Leds. Internal UART interface

Power Supply 12-24 Volt DC (not included).

BE-EB5-IND
BLE EchoBeacon Repeater Plus R5 Industrial IP 66 with I/O

Bluetooth 5.1. Data Rate up to 2 Mbit/s.

Outdoor Case Wall & Ceiling Mount

ABS (UL 94 HB). Protection class IP 66.

Dimensions: 140 x 110 x 60 mm.

Weight: About 200 g. Colour: off-white (RAL 9002).

3 x Digital Input. Output: 2 x output relè, 3 x Leds. Internal UART interface

Power Supply 12-24 Volt DC (not included).

BLE Beacon Family
Bluetooth® Low Energy Beacons

How it works

❋ Tag Beacon linked to person/item transmits the data with limited energy consumption

❋ Advertising Interval and Power (communication distance) can be set via software.

❋ Beacons are also available with accelerometer, temperature and humidity sensors.

Highlight

❋ **Low cost devices** to implement micro localization & track position of people & objects wearing Beacons.

❋ **IoT & Active RFID application**. Real Time Location System (zone method).

❋ **Battery** can be easily replaced thanks to the interlocking open/close system of the ABS/plastic case.

❋ **Reading distance** can reach 100 meters in open spaces.

❋ **Small dimensions** and **mounting accessories** allow easy use in both indoor and outdoor situations

❋ Some **application scenarios**: vehicle & people access control (also stand alone), home & building management , safety (hospital, construction site, etc…), process automation, asset & facility management, smart city (parking, leisure & tourism, etc…)

BE Disk Family R2

BE-DSK2-BLE	BLE Disk Beacon R2 standard
BE-DSK2-A-BLE	BLE Disk Beacon R2 with accelerometer Sensor
BE-DSK2-TH-BLE	BLE Disk Beacon R2 with temperature and humidity Sensor
BE-DSK2-ATH-BLE	BLE Disk Beacon R2 with accelerometer, temperature and humidity Sensor

- **ON/OFF push button (additional functions: reset, alarm). 2 Led: blue & red.**
- **Label with Mac Address (QRcode) & Friendly Name (easy association and coding).**
- **Waterproof with seal and easy open/close system.**
- Operation Frequency: 2400-2483,5MHz - IEEE Standard: 802.15.1 (Bluetooth Low Energy)
- Transmission distance: up to 120 meters (in open air).
- Transmission Power: 4 different levels can be set via OTA (-23dB, -6dB, 0dB, 4dB)
- Transmission interval can be set via OTA (from 100 msec. to 10 sec. in step of 100ms).
- Battery: Panasonic replaceable CR2032 3V Li. Battery life: 1 year based on broadcasting rate 1 sec. @ 0dB RF power. Accurate digital RSSI
- Operating System Supported: iOS and Android. iBeacon or Eddystone standard.
- Size: 31 mm diameter, 10 mm thickness. Weight: 4,2 gr. Material: PC (Polycarbonate)
- Mounting accessories IP67 available for outdoor use
- Different colors available. Customizable with color printing of logos
- **Accelerometer, temperature and humidity sensors available**

Silicone Accessories – IP67

BE-PC-ACC - Silicone 'Protection Case' Accessory
BE-WS-ACC - Silicone 'Wristband' Accessory.
BE-WM-ACC - Silicone 'Wall Mount' Accessory
BE-KF-ACC - Silicone 'Keyfob' Accessory

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