Bluetooth® Low Energy with Low Power Consumption

Beacons Used for Monitoring and Other Applications

ID + location information, etc.

Location information, etc.

Receive-only device

Beacon

ID

Location information, sensor information, etc.

A beacon refers to a transmitter intended to send a small amount of data; it transmits a signal within a radius of tens of meters once every several milliseconds or every several seconds.

Using these signals, beacons are employed for a number of applications such as monitoring, indoor guidance, position detection, mobility management for moving objects, and coupon issuance.

Most beacon transmitters operate on coin cells or small batteries. In order to keep sending radio waves at regular intervals, they need to be as low in power consumption as possible.

Our Bluetooth Low Energy microcontroller "RL78/G1D" enables low power consumption for Beacons .

Benefits

〉 Low power consumption

The beacon stack can be tailored exclusively to transmission, and the beacon device with lower power consumption can operate on a tiny battery for a long time.
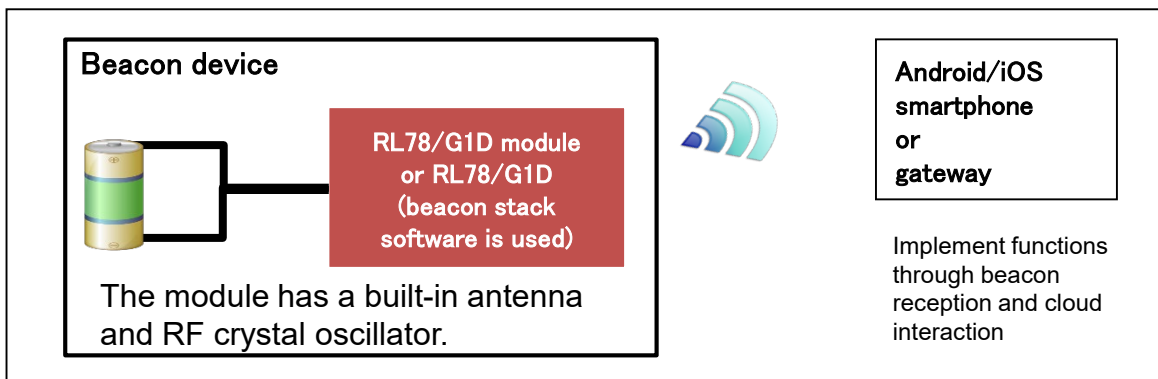
〉 Easy initial setup of the beacon device

The Bluetooth Low Energy protocol stack and the beacon stack are connected over the air (OTA) to update beacon data.
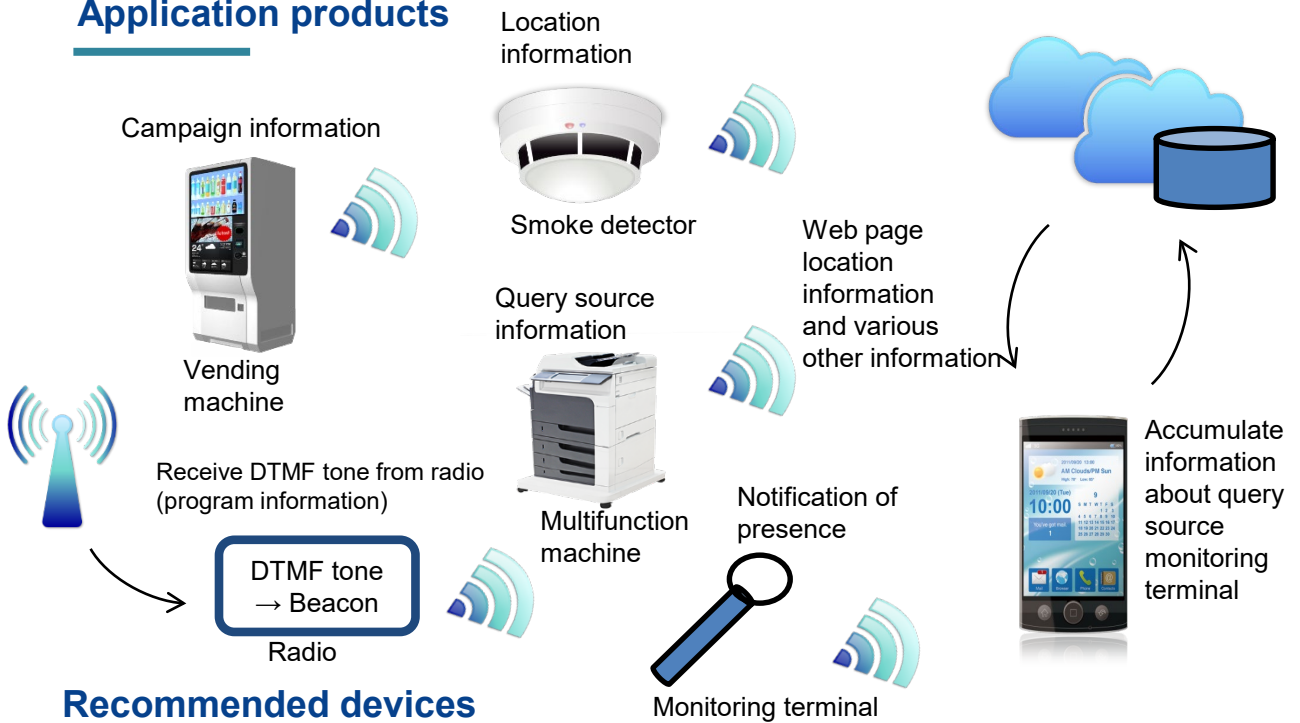
〉 Energy harvesting for beacon transmission

The beacon stack allows shorter initialization and beacon transmission with lower power consumption (notification is given in response to action).

Application example

Beacon device

RL78/G1D module or RL78/G1D (beacon stack software is used)

The module has a built-in antenna and RF crystal oscillator.

Android/iOS smartphone or gateway

Implement functions through beacon reception and cloud interaction

Bluetooth is a registered trademark of Bluetooth SIG, Inc. of the U.S.

Application products

Campaign information

Location information

Smoke detector

Query source information

Web page location information and various other information

Multifunction machine

Vending machine

Receive DTMF tone from radio (program information)

DTMF tone → Beacon

Radio

Notification of presence

Monitoring terminal

Accumulate information about query source monitoring terminal

Recommended devices

Block	Semiconductor	Recommended component	Features and others
Control microcontroller	Microcontroller	RL78/G1D group(R5F11A)	Built-in Bluetooth Low Energy
	Module	RL78/G1D module (RY7011A0000DZ00)	Equipped with RL78/G1D, built-in antenna and RF crystal oscillator

Related application notes/sample code

Name	Document No.
RL78/G1D Beacon Stack User's Manual	R01UW0171
RL78/G1D Beacon Stack Basic Operation Sample Program	R01AN3045
RL78/G1D Beacon Stack Connecting and Updating Beacon Data Sample Program	R01AN3313

Evaluation board

Name	Model name
RTK0EN0001D01001BZ (RL78/G1D evaluation board) The module mounted on the evaluation board can be replaced with the Bluetooth® Low Energy-enabled embedded radio module (RM-110-RFB-2) manufactured by NAITO DENSEI MACHIDA MFG. Co., Ltd.	RTK0EN0001D01001BZ
Bluetooth® Low Energy-enabled embedded radio module (RM-110-RFB-2) (Equipped with an RL78/G1D module, which can be used to replace the module mounted on the RL78/G1D evaluation board.)	RM-110-RFB-2 (Manufactured by NAITO DENSEI MACHIDA MFG. Co., Ltd.)

Module Evaluation Board (Parts Number:RM-110-RFB-2)
(with terminal holes having a pitch of 2.54 mm)
Mountable on a breadboard.
Sold by Naito Densei Machida Mfg. for early evaluation and development.

Mountable on the RL78/G1D Evaluation Board (RTKOEN0001D01001BZ).
Easily debuggable.

For details, go to:
https://www.renesas.com/solutions/bluetooth

■Refer to "http://www.renesas.com" for information on the latest and detailed sales offices.