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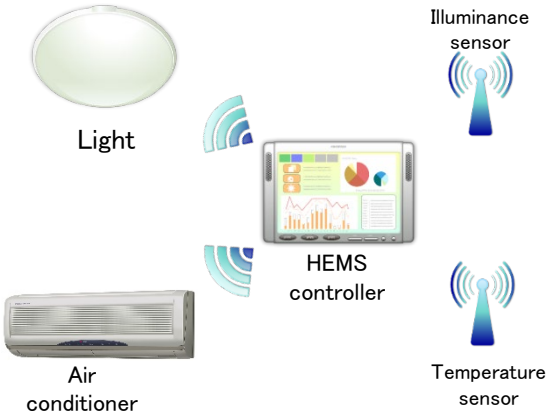
BIG IDEAS FOR EVERY SPACE

Bluetooth® Low Energy Wireless Solution

Sensor Devices Keep Life Comfortable



Sensor devices are used to control various home appliances so that users can live comfortably.

In recent years, easy-to-install wireless sensor devices have been in great demand and Bluetooth Low Energy-enabled products that operate on low power consumption are now used by an increasing number of customers.

Our Bluetooth Low Energy microcontroller "RL78/G1D" enables the implementation of low-power wireless sensor devices.

Benefits

Wireless microcontroller with low power consumption

The low-power RL78 microcontroller is equipped with a Bluetooth Low Energy wireless module with low power consumption.

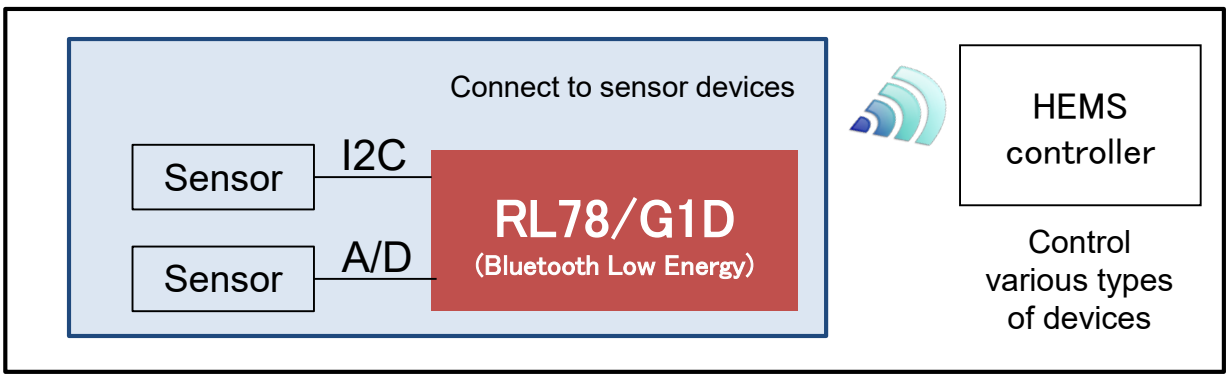
Microcontroller supporting a variety of peripherals

The RL78/G1D microcontroller allows multiple sensors to be connected to its diverse serial and analog interfaces.

Useful sample programs

Application notes that can be used for sensor control are provided (R01AN3319).

Application example



Application products

Category	Application	Use
Home Appliance	Air conditioner	Allows remote temperature and humidity control.
Home Appliance	Air cleaner	Monitors for even the tiniest pollutants in the air.
Home Appliance	Kettle	Detects water boiling via a thermal sensor and stops the heating of the kettle when vibration is detected.
Home Automation	Security	Detects intruders (window being broken).
Smart Home	Awning	Extends and retracts the awning based on weather conditions and brightness.
Smart Home	Lighting (outdoor lights)	Turns on or off lights based on brightness.
Smart Home	Crime prevention system	Motion sensors give alerts.
Building Automation	Lighting and air conditioning	Controls various systems based on data from motion sensors.
Building Automation	Doors	Doors open and close in response to sounds.
Hobby	Watering (gardening)	Sprinkles water by monitoring the soil condition and temperature.
Hobby	Pet monitoring	Informs the user about how his or her pet is doing.
Hobby	Gadget for walking a dog	Notifies the user of the force with which the dog pulls the leash.

Recommended devices

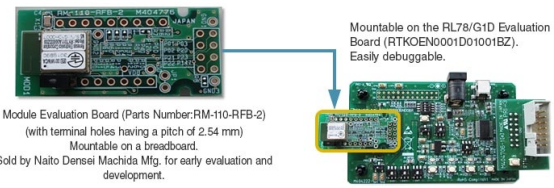
Block	Semiconductor	Recommended component	Features and others
Control microcontroller	Microcontroller	RL78/G1D group(R5F11A)	Built-in Bluetooth Low Energy
	Module	RL78/G1D module (RY7011A0000DZ00)	Equipped with RL78/G1D, built-in antenna and RF crystal oscillator, consumer-use applications

Related application notes/sample code

Name	Document No.
Bluetooth® Low Energy Protocol Stack Embedded Configuration Sample Program	R01AN3319

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.

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.