Lumity™ Remote Temperature Sensing Platform

Wireless gateways and transmitters for
remote temperature management

EMERSON™

Introduction

Leveraging today's IoT technology and Emerson's comprehensive end-to-end services, our customers can rely on us to help their food safety plans become more efficient, compliant and streamlined in order to help grow their business.

Functional Overview

A Remote Temperature Sensing (RTS) platform that provides 24/7 wireless monitoring offers a key component to facilities with implemented HACCP/HARPC plans. It will provide data necessary for remote temperature monitoring and equipment efficiencies as well as providing data to help support global food safety compliance and regulations.

Emerson's wireless transmitters and gateways form our RTS platform and can be provisioned with compatible smart devices and utilize current Bluetooth - Wi-Fi protocols. They transmit data (in sBeacon format) from storage equipment e.g., a refrigerator, via compatible smart devices to a cloud service. The data is then integrated into an end-user online portal.

Transmitters make it easy and cost efficient to cover an area with Bluetooth Low Energy to internet connectivity to centralize management of temperature monitoring with a fraction of the effort required by alternative technologies.

How It Works

sBeacon data format

Transmitter   Gateway   Cloud   Online Portal

1	2	3	4
Using a smart device with Bluetooth wireless technology, provision and install transmitters	Data is transferred from the transmitter to the gateway using Bluetooth Low Energy wireless technology	Wireless gateways transmit data over Wi-Fi networks to the Emerson cloud	Data is integrated into software via the online portal

Emerson's Bluetooth Gateways utilize Bluetooth Low-Energy to Wi-Fi technology to relay signals between Emerson's wireless transmitters and the Emerson cloud as part of an end-to-end IoT ecosystem.

17050 Wireless Transmitters

Emerson's wireless transmitters are among the most advanced in the industry. They utilize sBeacon (Emerson) data format and Bluetooth Low Energy technology to provide temperature monitoring services to smartphone, tablet and computer users. Their unique design allows them to broadcast reliably even in densely populated Wi-Fi environments.

Transmitters do not provide automated alerting, but alerts and notifications may be customized and implemented by an end-user via an API layer.

They provide temperature data accessible via an online portal and compatible smart devices. Combined with Emerson's end-to-end cold chain solutions, these transmitters can be centrally managed remotely through the cloud service to transfer new messages and make battery status checks.

Technology Highlights

- Bluetooth 4.2 (supports Low Energy feature)
- sBeacon (Emerson) data format
- Highly accurate temperature transmitters
- Up to 3 years battery life
- Emerson central management
- Low capital investment
- Fast and easy roll-out, equipment agnostic
- Eliminates the need for wired access points

Features & Benefits Highlights

- A low-cost solution with simple installation and no hard-wired access points.
- Accurate, high resolution, wireless temperature transmitter provides insight into equipment status.
- Collect real-time actionable data on temperature data

Easy Installation

Wireless transmitters are easy to install. Identify the location and prep the surface by using alcohol wipes to degrease the area and allow for optimum adhesion. Remove the VHB adhesive tape and press firmly into place.

Installing a transmitter is simple

Verify contents   Prep the surface   Install transmitter

17050 Specifications

Technical Specifications	Transmitter -17050 EMERSON
Temperature Range	-13° to185°F (-25° to 85°C)
Operating Temperature Range	-13° to185°F (-25° to 85°C)
Accuracy	13° F to +185° F (-25° C to +85° C) range +/- 0.5° C steady state accuracy (0° C to +65° C); +/- 1.0° C steady state accuracy (-25°C to 0°C, +65°C to +85°C)
Storage Temperature Range	-22° to185°F (-30° to 85°C)
Battery	3.6V/2600mAh Lithium
Battery Life	Up to 3 years
Dimensions	2.36" x 0.83" x 0.98" (60mm x 21mm x 25mm)
Weight	1 oz (28g)
IP Rating	IP67
Mounting	Magnetic mounting bracket - sold separately
sBeacon / RF Output	Bluetooth 4.2 compliant (supports Low Energy feature), 2.4GHz ISM
Transmission Power/Range	-40dBm to 5dBm / 3m to 150m line of sight
Processor Type	ARM Cortex M3 and M0
Bandwidth Requirements	0.1 to 1Mbps Upload Speed
Sensitivity	-97dBm
Data Rates	1Mbit/s 2MBit/s
Housing Material	Polycarbonate and ABS
Withstands exposure to	Water and UV resistant
Warranty	1 year

FC IC CE ⚠ ⊞ Ⓡ 005-102664
Model BEEKS001

17501 Wireless Gateways

Emerson's wireless gateways utilize Bluetooth Low Energy to Wi-Fi technology to relay signals between Emerson's 17050 wireless transmitters and the Emerson cloud as part of an end-to-end IoT ecosystem. Gateway devices make it easy and cost efficient to cover an area with Bluetooth Low Energy to internet connectivity to centralize management of temperature monitoring. Alerts can be retrieved via Rest API calls.

17501 Specifications

AC devices are available in four major international power plug versions and can be installed in any standard power outlet on a wall or ceiling.

Technology Highlights

- Bluetooth 4.2 (supports Low Energy feature) and Wi-Fi compliant
- sBeacon (Emerson) data format
- Models for any standard AC power outlet

Technical Specifications	Gateway 17501-US	Gateway 17501-AU	Gateway 17501-UK	Gateway 17501-EU
Ambient Temperature Range	-13° to 149°F (-25° to 65°C)			
Storage Temperature Range	-13° to 149°F (-25° to 65°C)			
Power Source	AC (100-240VAC, 50/60Hz)			
Housing Material	Polycarbonate and ABS			
Bluetooth Type	Bluetooth 4.2 compliant (supports Low Energy feature)			
Bluetooth Sensitivity	-98dBm			
Wi-Fi Type	802.11 b/g/n			
Wi-Fi Sensitivity	-98.5dBm @ 1DSSS -88.5dBm @ 11 CCK			
Wi-Fi Frequency	2.4 Ghz with coexistence built-in Bluetooth			
Processor Type	ARM Cortex M4 and M3			
Power Consumption	200mA when TX; 20 mA on sleep			
Color	White			
Weight	1.3 oz (37g)	1.3 oz (37g)	1.7 oz (48g)	1.6 oz (46g)
Dimensions	2.25" x 1.50" x 1.75" (57 mm x 38 mm x 45 mm)	2.25" x 1.50" x 1.375" (57 mm x 38 mm x 35mm)	2.75" x 2.00" x 1.50" (70 mm x 51mm x 38 mm)	3.00" x 1.50" x 1.375" (76 mm x 38 mm x 35 mm)
Unit	1.3 oz (37g)	1.3 oz (37g)	1.7 oz (48g)	1.6 oz (46g)
Warranty	1 year			

FC IC CE ⚠ ⊞ Ⓡ 216-210012
Model BluFI-AC00

Hardware Operational Requirements

This document describes the operational requirements for setting up wireless gateways.

General Requirements

The section of "General Requirements" is common to all gateway installations. Gateways must have access to Emerson cloud. Gateways connect to to the software interface using *HTTPS protocol (secure web socket wss://)* and require port TCP 443. Gateways also require access to NTP servers on port UDP 123. Communication is secured using TLS v1.2

Client Browser

The client browser requires access to a RTS server via a URL. All major browsers supported (Internet Explorer, Firefox, Chrome, Opera, & Safari).

Mobile Device Requirements

Stable internet (cellular or Wi-Fi) connection is required to provision sensors and gateways with the RTS server. Emerson's UnifEye™ app is required on the mobile device. This is available for download in the iOS App Store and Android Play Store.

Network Requirements (Outbound)

The following ports and hostnames are required:

- UDP 123 (NTP) - 0.pool.ntp.org, 1.pool.ntp.org, 2.pool.ntp.org, 3.pool.ntp.or
- TCP 443 (wss/https) - bluzone.io

Network Requirements (Inbound)

There are no inbound network requirements – ie., there are no connections initiated from the cloud to the RTS gateways.

Wi-Fi Requirements

- Wi-Fi Type - 802.11 b/g/n
- Wi-Fi Frequency - 2.4Ghz

RTS Gateway Limitation

The RTS gateway does NOT support the Captive Portal environment unless the gateway can be white-listed. An example of Captive Portal is free Wi-Fi at a hotel or airport which requires the user to launch a browser and accept terms & conditions or view an advertisement.

Supported Security Types

EAP_PEAP0_MSCHAPv2	EAP_PEAP1_TLS	Open
EAP_PEAP0_PSK	EAP_TLS	WEP
EAP_PEAP0_TLS	EAP_TTLS_MSCHAPv2	WPA/WPA2
EAP_PEAP1_MSCHAPv2	EAP_TTLS_PSK	
EAP_PEAP1_PSK	EAP_TTLS_TLS	

Testing

To connect a gateway to a Wi-Fi network using enterprise security connect a laptop computer using the credentials provided. Once connected to the Internet verify that the enterprise network allows outbound traffic to online portal via a websocket.

There is a helpful online tool that an be used to perform this test. Open the following URL in a browser: *https://www.websocket.org/echo.html*. Enter *wss://bluzone.io/client* into the "Location" field and click "Connect". If "CONNECTED" shows up in the "Log" window, a gateway should be able to connect to the Emerson cloud.

NOTE: Port UDP 123 needs to be verified it is open for NTP.
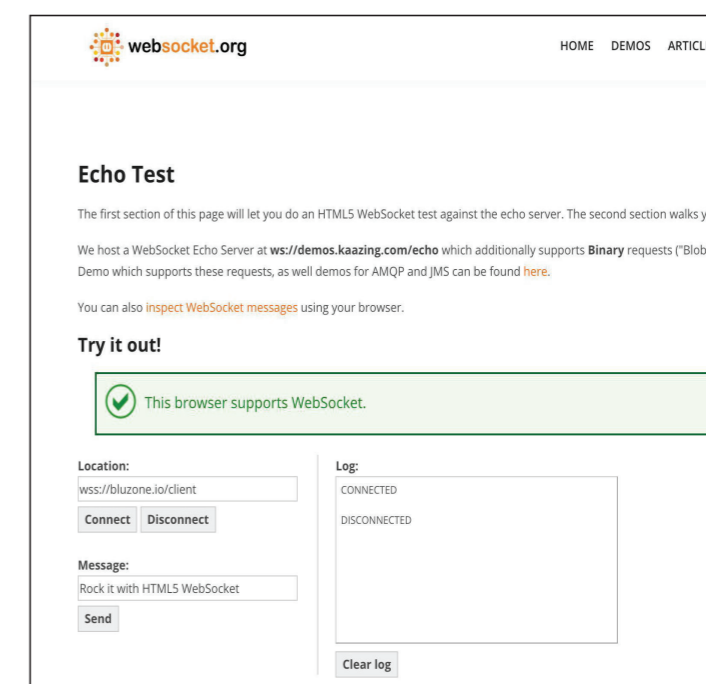
About Cooper-Atkins

Cooper-Atkins is a longtime technology leader serving the food service and food processing markets. Established in 1885, Cooper-Atkins has a comprehensive offering of temperature management products and monitoring solutions. These are essential for spot inspection and fixed location uses, including restaurants, supermarkets and other facilities where food is handled, prepared and stored. This added expertise extends–Emerson's global capabilities in monitoring food service facilities throughout the entire supply chain. In today's rapidly changing world, we continue to expand our technological capabilities to support and protect brand integrity by providing the right tools that ensure consistent food quality and safety.

About Emerson

Emerson (NYSE: EMR), headquartered in St. Louis, Missouri (USA), is a global technology and engineering company providing innovative solutions for customers in industrial, commercial, and residential markets. Our Emerson Automation Solutions business helps process, hybrid, and discretemanufacturersmaximize production, protect personnel and the environment while optimizing their energy and operating costs. Our Emerson Commercial and Residential Solutions business helps ensure human comfort and health, protect food quality and safety, advance energy efficiency, and create sustainable infrastructure.

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