



## Application Note

### BRT\_AN\_091

# IoTPortal - LoRaWAN Getting Started Guide

**Version 1.0**

**Issue Date: 23-10-2025**

This application note explains how to integrate the LoRaWAN network infrastructure with the IoTPortal

Use of BRTSys devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify, and hold BRTSys harmless from any and all damages, claims, suits or expense resulting from such use.

**BRT Systems Pte Ltd (BRTSys)**

1 Tai Seng Avenue, Tower A #03-07, Singapore 536464

Tel: +65 6547 4827

Web Site: <http://brtsys.com>

Copyright © BRT Systems Pte Ltd

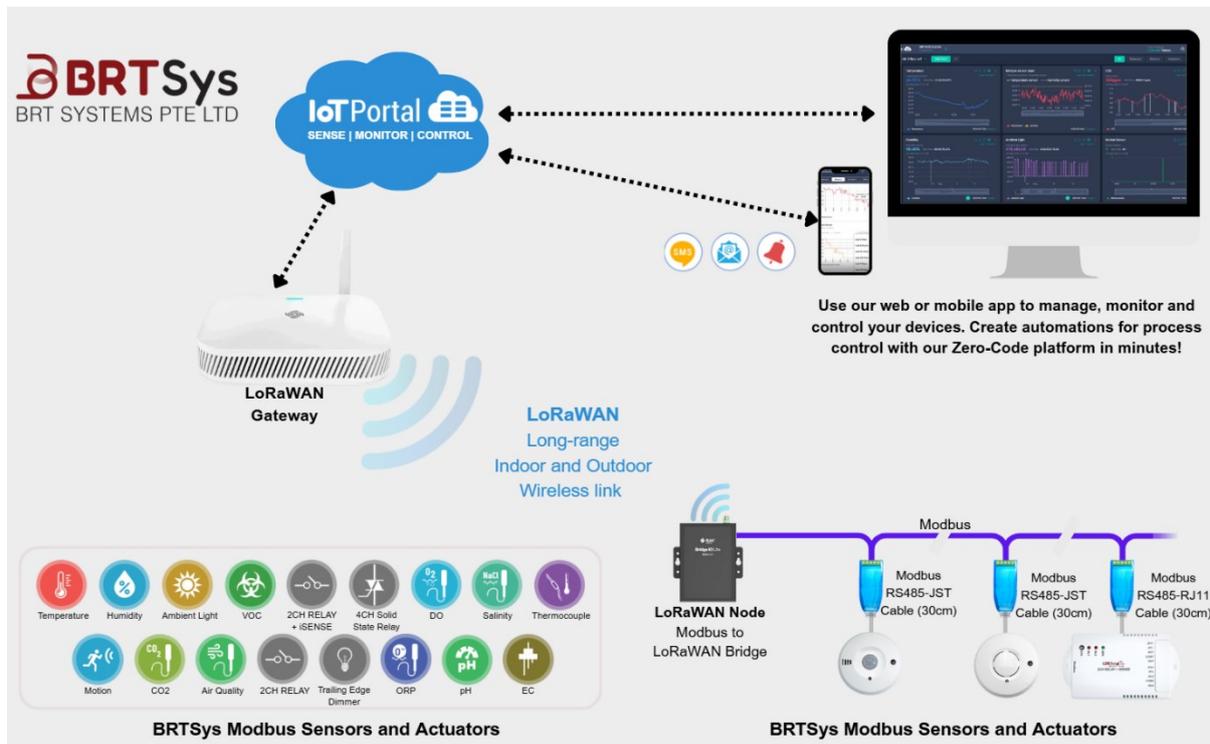
## **Table of Contents**

<b>1</b>	<b>Introduction .....</b>	<b>3</b>
1.1	Overview .....	3
1.2	Intended Audience .....	3
1.3	Prerequisites .....	4
<b>2</b>	<b>Configuring LoRaWAN Gateway .....</b>	<b>5</b>
2.1	UDP Packet Forwarder Configuration .....	5
<b>3</b>	<b>LoRaWAN – Modbus RTU Bridge Configuration .....</b>	<b>6</b>
<b>4</b>	<b>IoTPortal LoRaWAN Integration .....</b>	<b>7</b>
<b>5</b>	<b>Contact Information .....</b>	<b>8</b>
	<b>Appendix A – References .....</b>	<b>9</b>
	Document References .....	9
	Acronyms and Abbreviations.....	9
	<b>Appendix B – List of Tables &amp; Figures .....</b>	<b>10</b>
	List of Tables.....	10
	List of Figures .....	10
	<b>Appendix C – Revision History .....</b>	<b>11</b>

# 1 Introduction

This application note covers how to bridge Modbus devices to the IoTPortal over a **Long Range Wide Area Network (LoRaWAN)**. It covers the configuration of LoRaWAN gateways, LoRaWAN Modbus Bridge and how to onboard the LoRaWAN nodes into the IoTPortal.

## 1.1 Overview



**Figure 1 - IoTPortal-LoRaWAN Connectivity**

The BRTSys IoTPortal operates through seamless data flow from field devices to user interfaces. Modbus sensors and actuators (measuring temperature, humidity, air quality, CO2, pH, motion, etc.) connect via Modbus cables to the LoRaWAN Node Modbus Bridge, which converts the sensor data from Modbus protocol into LoRaWAN wireless signals and transmits them over long-range wireless links suitable for both indoor and outdoor environments. The LoRaWAN Gateway receives these wireless transmissions from multiple distributed nodes and forwards the data through the internet to the IoTPortal. Users can then access this processed data and send control commands back to the actuators through either the web application dashboard (displaying real-time charts and visualizations) or the smartphone app, with both interfaces communicating bidirectionally with IoTPortal via the internet.

## 1.2 Intended Audience

This getting started guide is designed for:

- System Integrators deploying LoRaWAN solutions
- Field Engineers commissioning IoT devices
- Technical Personnel managing IoT infrastructure
- Project Managers overseeing IoT deployments

## 1.3 Prerequisites

Before starting the setup, ensure you have the following:

1. LoRaWAN Gateway – The following gateways are supported:
  - a. RAKWireless WisGate Edge Pro RAK7289 – for outdoor applications
  - b. RAKWireless WisGate Edge Lite 2 RAK7268 – for indoor applications
  - c. Seed Studio SenseCAP M2 Multi-Platform – for indoor applications. We shall use this gateway for our example.
2. LoRaWAN – Modbus RTU Bridge (RAKWireless [RAK7431](#))
3. Modbus Configuration Utility v1.3.0 or later
4. BRTSys Modbus Devices. Refer to [Modbus Configuration Utility guide](#) for the list of supported BRTSys Modbus devices.

Note down the gateway's DevEUI and bridge's DevEUI. These information are required for configuration.

## 2 Configuring LoRaWAN Gateway

This section shows how to set up the gateway to forward LoRaWAN packets to the LoRaWAN server at the IoTPortal.

To on-board the gateway to the local network, refer to the [SenseCAP M2 User Guide](#).

### 2.1 UDP Packet Forwarder Configuration

Configure the gateway to forward LoRaWAN packets to the IoTPortal LoRaWAN server.

#### **Step 1: Login to Local Console**

Access the gateway's local console interface using the following methods:

- **Web Browser:** Navigate to the gateway's IP address
- **Credentials:** Enter the username and password (refer to gateway documentation)

#### **Step 2: Set Gateway Mode**

Enable packet forwarding mode to relay LoRaWAN traffic to the network server.

- Navigate to LoRa → LoRa Network
- Set Mode to "Packet Forwarder"
- Gateway EUI will be automatically populated

#### **Step 3: Server Configuration**

Point the gateway to the LoRaWAN server for packet forwarding.

##### **Basic Server Settings**

- Server Address: lorawan.iotportal.com
- Server Port (Up): 1700 (default)
- Server Port (Down): 1700 (default)

##### **Advanced Settings**

- Keep Alive Interval: 10 seconds (default)
- Statistics Interval: 30 seconds (default)
- Push Timeout: 100 ms (default)

#### **Step 3: Channel Plan Configuration**

Set the appropriate frequency plan based on your geographical region.

- Navigate to LoRa → Channel Plan
  - Select the appropriate region:
    - EU868: Europe
    - US915: North America
    - AS923: Asia-Pacific
    - AU915: Australia
    - IN865: India
    - KR920: Korea
    - RU864: Russia
- Click "Save & Apply" to confirm settings

## 3 LoRaWAN – Modbus RTU Bridge Configuration

This section guides you through configuring your Modbus devices and the LoRaWAN Modbus RTU bridge using the utility. The utility allows you to manage both Modbus device parameters and LoRaWAN bridge settings efficiently.

- **Modbus Device Configuration**

You can configure the following parameters for each Modbus device:

- **Communication Settings:** Set baud rate, parity, stop bits, and other communication options.
- **Device ID:** Assign a unique identifier for each Modbus device on the network.
- **Bus Termination:** Enable or disable bus termination to ensure proper signal integrity.

- **LoRaWAN Bridge Configuration**

The utility also allows configuration of the LoRaWAN bridge, including:

- **Poll Rate:** Define the frequency at which the bridge polls Modbus devices for data.
- **Adding BRTSys Modbus Devices:** Register your Modbus devices with the bridge to enable data forwarding.
- **TX Power:** Adjust the transmission power of the bridge for optimal network coverage.
- **Bridge Modbus Communication Settings:** Configure the bridge's Modbus interface to match the connected devices.

### **Step 1: Download Configuration Utility**

Obtain the latest version of the BRTSys Modbus Configuration Utility for device setup.

- Download and Install the BRTSys [Modbus Configuration Utility](#) v1.3.0 or greater

### **Step 2: Complete LoRaWAN Configuration**

Use the utility to configure Modbus devices and RAK7431

- Connect your Modbus–LoRaWAN bridge (e.g., RAK7431) to your PC via USB or serial interface.
- Launch the Modbus Configuration Utility
- Follow the configuration steps as outlined in the application
- Add Modbus devices to the RAK7431 bridge, supporting up to **16 devices**.
- Configure bridge settings such as **poll rate**, **TX power**, and **Modbus communication parameters**.

For detailed instructions, refer to the [Modbus Configuration Utility Guide](#).

## 4 IoTPortal LoRaWAN Integration

This section guides you through integrating your LoRaWAN nodes (Bridge) with the IoTPortal, enabling real-time monitoring, management, and data visualization. By following these steps, you can register devices, activate them on the network, and track their status and data through the IoTPortal dashboard.

### **Step 1: Create IoTPortal Account**

Set up a new user account on the IoTPortal:

- Visit [www.iotportal.com](http://www.iotportal.com).
- Create a new user account.
- Complete the registration process.  
For the WMC or App guide, kindly visit <https://brtsys.com/resources/>.

### **Step 2: Login to IoTPortal**

To access the IoTPortal dashboard with your registered credentials.

- Visit [www.iotportal.com](http://www.iotportal.com)
- Login with your newly created account credentials
- Navigate to the main dashboard

### **Step 3: Add LoRaWAN Node**

To register your LoRaWAN Node in the IoTPortal system using its unique identifier.

- Locate the Add Gateway section
- Select LoRaWAN Node
- Enter the bridge's DevEUI (Device EUI) and give it a name
- Click **Save**.
- Repeat the above steps to add more bridges.

### **Step 4: Device Activation**

To establish automatic connection with the IoTPortal.

- Power on the gateway followed by the bridge. The LoRaWAN bridge and gateway will automatically join the network
- Once connected, the LoRaWAN bridge and added devices will be available in [iotportal.com](http://iotportal.com).
- Monitor the device status and data flow through the IoTPortal interface

## 5 Contact Information

Refer to <https://brtsys.com/contact-us/> for contact information.

System and equipment manufacturers and designers are responsible to ensure that their systems, and any BRT Systems Pte Ltd (BRTSys) devices incorporated in their systems, meet all applicable safety, regulatory and system-level performance requirements. All application-related information in this document (including application descriptions, suggested BRTSys devices and other materials) is provided for reference only. While BRTSys has taken care to assure it is accurate, this information is subject to customer confirmation, and BRTSys disclaims all liability for system designs and for any applications assistance provided by BRTSys. Use of BRTSys devices in life support and/or safety applications is entirely at the user's risk, and the user agrees to defend, indemnify and hold harmless BRTSys from any and all damages, claims, suits, or expense resulting from such use. This document is subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. Neither the whole nor any part of the information contained in, or the product described in this document, may be adapted, or reproduced in any material or electronic form without the prior written consent of the copyright holder. BRT Systems Pte Ltd, 1 Tai Seng Avenue, Tower A, #03-01, Singapore 536464. Singapore Registered Company Number: 202220043R.

## Appendix A – References

### Document References

[BRTSYS\\_AN\\_087 IoTPortal User Guide - Portal Web Application \(WMC\)](#)

[BRTSYS\\_AN\\_088 IoTPortal User Guide – Android Mobile App](#) [For Android Users]

[BRTSYS\\_AN\\_089 IoTPortal User Guide - iOS Mobile App](#) [For iOS Users]

[BRTSYS\\_AN\\_080 ModBus Configuration Utility Guide](#)

[SenseCAP M2 User Guide](#)

### Acronyms and Abbreviations

Terms	Description
EUI	Extended Unique Identifier
IoT	Internet of Things
LoRaWAN	Long Range Wide Area Network
OTAA	Over The Air Activation
UDP	User Datagram Protocol

## **Appendix B – List of Tables & Figures**

### **List of Tables**

NA

### **List of Figures**

Figure 1 - IoTPortal-LoRaWAN Connectivity ..... 3

## Appendix C – Revision History

Document Title: BRT\_AN\_091 IoTPortal - LoRaWAN Getting Started Guide  
Document Reference No.: BRTSYS\_000219  
Clearance No.: BRTSYS#141  
Product Page: <https://brtsys.com/iotportal/>  
Document Feedback: [Send Feedback](#)

Revision	Changes	Date
1.0	Initial Release	23-10-2025