BRTSys

IoT Portal

SENSE | MONITOR | CONTROL

Versatile, Scalable Sensor-to-Cloud Connectivity

USER GUIDE

Introduction

Document Version: 1.0

Issue Date: 12-08-2024

Table of Contents

1. Introduction

1.1 About IoTPortal User Guides

The below set of IoTPortal user guides for the following components aims to provide necessary information for hardware setup, configuration, and operating information.

S/N	Components	Document Name
1	Porta Web Application(WMC)	BRTSYS_AN_033_IoTPortal User Guide – Portal Web Application(WMC)
2	Android Mobile App	BRTSYS_AN_034_IoTPortal User Guide - Android Mobile App

1.2 About This Guide

The guide provides an overview of IoTPortal Eco-system, its features, hardware / software pre-requisites and hardware setup instructions.

1.3 Intended Audience

The intended audience are System Integrators, Technical / Administrative users who will assist with the installation, realize the capabilities, functions, and the full benefits of the product.

2. Product Overview

IoTPortal is a cloud-based mobile internet platform implemented with BRTSys IoTPortal and proprietary LDSBus Devices (Sensors/Actuators); also known as LDSBus Units (LDSUs), which provide a turnkey sensor to cloud solution.

IoTPortal is application agnostic and can be widely used in a range of fields such as smart buildings, agriculture, aquaculture, data centres, and industrial environments. Without the need for programming or technical know-how, users can rapidly implement IoT in their applications. Using various sensing and monitoring techniques, productivity, efficiency, and safety are enhanced resulting in higher revenue and security with lower maintenance costs.

The IoTPortal Mobile app which can be downloaded from the Play Store or App Store provides global real-time monitoring, alert notifications, and control automation through the cloud. The system can automatically send SMS, email, or push notifications to the relevant organization or user group in case of any excursions according to the pre-configured parameters. External devices and appliances can be controlled automatically or manually by LDSBus actuator hardware through pre-configured events.

The IoTPortal provides a data dashboard that allows users to view historical data charts as well as make comparisons between two or more sensors. Figure 1 shows the IoTPortal ecosystem with the IoTPortal Gateway serving as a principal component connecting the LDSBus devices (Sensors/Actuators) to the cloud.
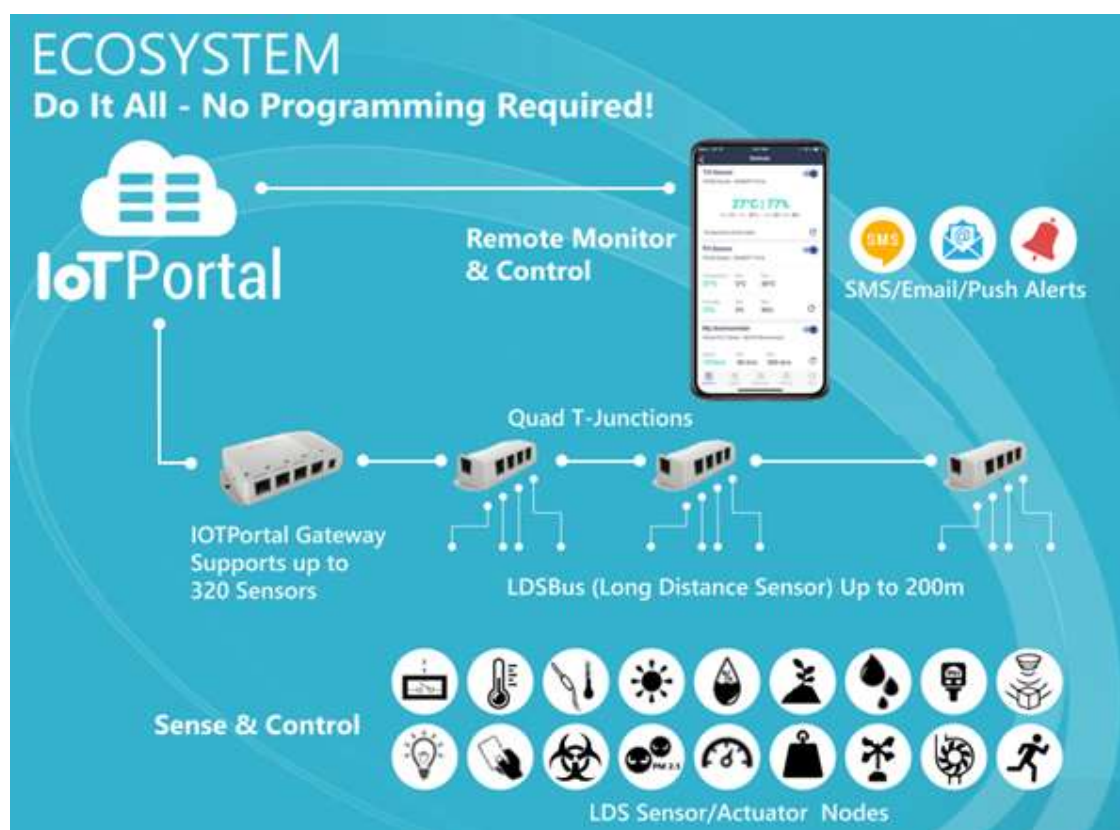
Figure 1 – IoTPortal Ecosystem

IoTPortal gateways connect to the cloud via Ethernet or Wi-Fi. It is powered by either Power over Ethernet (PoE) or an external power source (DC Adapter). By using the IoTPortal Gateway, users can communicate from LDSBus-based devices (sensors/actuators) directly with the BRTSys IoTPortal Cloud services without requiring a PC. The gateway is equipped with three LDSBus RJ45 ports, which serve as data communication/power interfaces to the 24V LDSBus network. Each port may be connected to a large number of sensors/actuators via LDSBus Quad T-Junctions using RJ45 cables

(Cat5e); a maximum of 100 LDSBus Devices are supported per gateway. A LDSBus device can support more than one sensor or actuator. If a local network connection is lost or severed, the IoTPortal gateway continuous to collect sensor data, storing the data in its on-board buffer and uploads this data to the cloud once a connection is established again.

3. Features

IoTPortal offers the following key features –

❖ Turnkey sensor to cloud solution for integrating the Internet of Things into any application without requiring programming or technical expertise.

❖ With the IoTPortal mobile app, users can create and manage their organizations, manage user groups, configure gateways and sensors, create events, and manage subscriptions.

❖ The sensor-to-gateway architecture eliminates battery issues associated with wireless sensor solutions. There is no signal fallout, with inherent privacy and security benefits.

❖ IoTPortal Gateway supports up to 80 LDSBus devices with a reach of 200 meters (about 12 soccer fields or 12.6 hectares).

❖ This product family includes BRTSys LDSBus Devices (Sensors/Actuators) that sense and control a wide range of parameters (For more information on LDSBus devices, visit https://brtsys.com/ldsbus/ .

❖ With the LDSBus Quad T-Junction, sensors/actuators can be mixed and matched to fulfil any application need.

❖ Automate control events based on sensor triggers.

❖ A dashboard for viewing and comparing historical data charts for two or more sensors (Viewable via the web browser as well).

4. What's New in IoTPortal 2.0.0?

❖ Subscription – Bonus tokens and recurring add-ons purchases are now available (Portal Web Application (a) WMC)

❖ Dashboard - Sensor data can be downloaded directly from charts; chart arrangement is persistent (Portal Web Application (a) WMC / Android Mobile App and iOS Mobile App)

❖ Gateway – individual LDSBus port power and scan control (Portal Web Application (a) WMC / Android Mobile App and iOS Mobile App)

❖ 3rd Party Data and Control API (Portal Web Application (a) WMC / Android Mobile App and iOS Mobile App)

❖ Several GUI enhancements (Portal Web Application (a) WMC / Android Mobile App and iOS Mobile App)

5. Knowns Issues and Limitations

- Event condition with LDSU reachability status works for LDSUs that report at 5seconds report rate only.

- Event conditions support level modes and recurrence events require a mandatory delay to limit token depletion.

6. Hardware / Software Pre-requisites

To implement IoTPortal, ensure that the following system pre-requisites are met.

6.1 Hardware Pre-requisites

- **IoTPortal Gateway (PoE / non-PoE).** A PoE device requires an RJ45 network cable. Non-PoE devices require a power adapter, which is included in the package.

- **Router/Switch connected to the internet.** If IoTPortal Gateway is to be powered by PoE, it must be PoE-enabled (IEEE802.3af/at). If not using Wi-Fi, a network cable is required to connect to the IoTPortal Gateway.

- A package that includes LDSBus devices with cables is included.

- LDSBus Quad T-Junction(s) which connect LDSBus Devices and the gateway.

- To connect the LDSBus Quad T-Junction to the IoTPortal Gateway and to form a daisy chain with other LDSBus Quad T-Junctions, several RJ45(Cat5e) cables will be required.

As part of initial pre-configuration of LDSBus Devices (Sensors/Actuators), the following additional hardware is required –

- A windows-based PC to download the configuration utility tool for configuring LDSBus devices. For more information, visit https://brtsys.com/resources/.

- LDSBus USB Adapter

- USB C to USB A cable

6.2 Software Pre-requisites

- IoTPortal Mobile app (for Android / iOS) that can be downloaded from the Play Store or the App Store.

- LDSBus Configuration Utility Tool which can be downloaded from here - https://brtsys.com/resources/.

7. Hardware Setup Instructions

7.1 Configuring LDSBus Devices (Sensors / Actuators)

LDSBus devices must be configured before they can be utilized in any application. Download the LDSBus Configuration Utility from https://brtsys.com/resources/.

1. Connect the LDSBus Device to the Windows PC with a USB-C to USB-A cable.

2. Ensure that the LDSBus Device is connected to its cable at one end.

3. Attach the other end of the cable to the LDSBus USB Adapter as shown in Figure 2.

4. For detailed instructions on configuring the device, refer to the LDSBus Configuration Utility guide at https://brtsys.com/resources/.

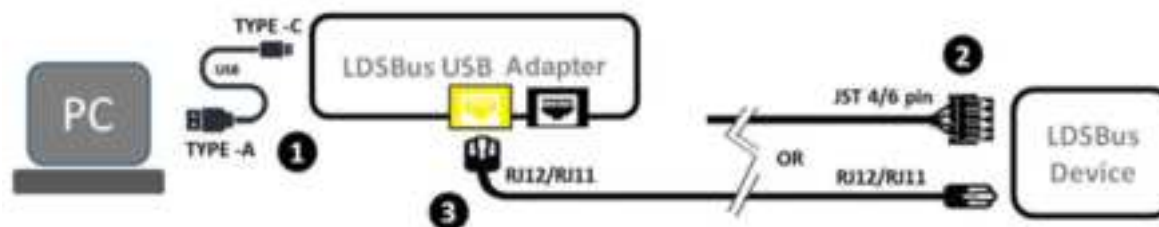Repeat steps 1 through 4 for all the LDSBus devices.

Figure 2 – LDSBus Device Configuration - Connection Diagram

7.2 Connecting LDSBus Devices to IoTPortal Gateway

Having configured the LDSBus Devices, the IoTPortal Gateway can be used to connect them to the cloud and make them accessible.

1. Connect the first LDSBus connector to the IoTPortal Gateway via the LDSBus Port.

2. As shown in Figure 3, connect the configured LDSBus device(s) to the LDSBus Quad T-Junction. Make sure the termination is set to "ON" on the last device.
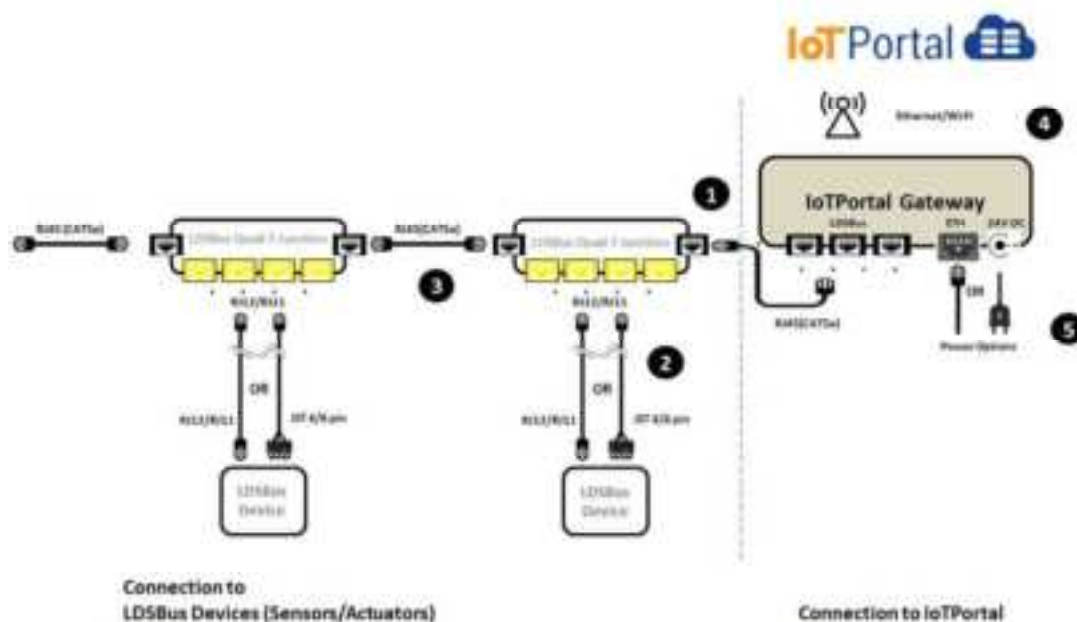

Figure 3 – LDSBus Devices – IoTPortal Gateway Connection

3. Chain the LDSBus Quad T-Junctions together (as shown in Figure 3) if there are more than one.

4. If PoE based gateways are being used, connect the gateway to the PoE router/switch via Ethernet cable. To connect to the Wi-Fi, skip to the next step.

5. Power the gateway either with PoE or DC input. The power LED will display either red (PoE -af input active) or orange (PoE-at input active/DC input active).

6. Refer to BRTSYS_AN_034_IoT_Portal_Gateway_User_Guide_-_3. Android Mobile App or BRTSYS_AN_035_IoT Portal Gateway User Guide - 4. iOS Mobile App for further instructions.

8. Appendix

8.1 Glossary of Terms, Acronyms & Abbreviations

Term or Acronym	Definition or Meaning
DC	Direct Current is one-directional flow of electric charge.
IoT	The Internet of Things is a network of interrelated devices that connect and exchange data with other IoT devices and the cloud.
LED	Light Emitting Diode is a semiconductor device that emits light when current flows through it.
PoE	Power over Ethernet is a technology for implementing wired Ethernet local area networks (LANs) that enables the electrical current necessary for operating each device to be carried by Ethernet data cables instead of standard electrical power cords and wiring.
SMS	Short Message or Messaging Service is a text messaging service that allows the exchange of short text messages between mobile devices.
USB	Universal Serial Bus is an industry standard that allows data exchange and delivery of power between many several types of such electronics.

8.2   List of Figures

8.3   List of Tables

NA

Revision History

Document Title   :   BRTSYS_AN_032IoTPortal User Guide - Introduction

Document Reference No.   :   BRTSYS_000102

Clearance No.   :   BRTSYS#082

Product Page   :   https://brtsys.com/iotportal/

Document Feedback   :   Send Feedback

Revision	Changes	Date
1.0	Initial Release for V2.0.0	12-08-2024