Dissolved Oxygen Sensor Adapter Datasheet

1 Introduction

The LDSBus **D**issolved **O**xygen **(DO)** Sensor Adapter is designed to work with an analog galvanic probe to form a complete DO sensor. A BNC connector is built into the adapter for attaching such a probe.

The adapter and probe are calibrated using a single-point calibration procedure and the resulting sensor supports DO measurements ranging from 0 to 20 mg/L with a resolution of 0.01mg/L.

The sensor is suitable for use in water quality measurement applications such as nutrient tanks, fisheries and hatcheries, water treatment and sewage treatment plants, swimming pools, aquariums, and many other applications. Monitoring, alerting, and controlling the system can be done in real-time.

1.1 Features

- DO Sensor Adapter integrates directly with Analog Galvanic Dissolved Oxygen probe via BNC connector
- DO measurement range of 0 to 20 mg/L with linearized output and 0.01mg/L resolution
- Single point step-by-step guided calibration
- Supports BRTSys LDSBus protocol
- High report rate of 1 report every 5 seconds
- Low power consumption of 88mW (5V)
- Operating temperature range: 0°C to +70°C
- Flush Mount and DIN Rail Mount options
- Supported platforms:
  - IoTPortal
  - LDSBus Python SDK
  - LDSBus .Net SDK

Visit https://brtsys.com/resources for more information.

2 Part Numbers/Ordering Information

Part#	Description
LS-1001-01A	LDSBus Dissolved Oxygen Sensor Adapter
LA-0501-01A	LDSBus RJ11-RJ11 Cable (5m)
LA-1201-01A	LDSBus DIN Rail Mount Set

Table 1 - Part Numbers / Ordering Information

Table of Contents

3 Specifications

Features	Interface	BNC – DO probe connector RS485 – LDSBus communication
	LED Indicator (RGB)	System Status Indicator (Please refer to LED section)
	Mounting	Flush Mount
		DIN Rail Mount
Power	Input Voltage	5V DC Bus Power
	Typical Power	5V, 88mW
	Max. Power	223mW
DO Sensor input module	Detection Range	0– 20 mg/L
	Resolution	0.01mg/L
	Response Time	<1Minute
	Calibration	1 Point Calibration
Physical Characteristics	Color	White
	Housing	Polycarbonate
	Dimensions	L117.6mm x W42.9mm x H29.7mm
Environmental Limits	Operating Temperature	0 to 70°C
	Storage Temperature	-20 to 85°C
	Ambient Relative Humidity	5 to 95% (non-condensing)
Package Contents	Device	1x LDSBus Dissolved Oxygen Sensor Adapter
	Wire Assembly	1x LDSBus RJ11-RJ11 Cable (5m)
Optional	Mounting Accessories	1x LDSBus DIN Rail Mount set

Table 2 - LDSBus Dissolved Oxygen Sensor Adapter Specifications

4 FCC Compliance Statement

This device complies with part 15 of the FCC Rules. Operation is subject to the following two conditions:

(1) These devices may not cause harmful interference, and

(2) These devices must accept any interference received, including interference that may cause undesired operation.

NOTE: The equipment has been tested and found to comply with the limits for a Class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide reasonable protection against harmful interference in a residential installation. This equipment generates, uses, and can radiate radio frequency energy and, if not installed and used in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If the equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- Re-orient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.
- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

To maintain compliance with FCC's RF exposure guidelines, at least 20cm of separation distance between the device and the user's body must be always maintained.

FCC Radiation Exposure Statement

This device complies with FCC radiation exposure limits set forth for an uncontrolled environment and it also complies with Part 15 of the FCC RF Rules. This equipment must be installed and operated in accordance with provided instructions and the antenna(s) used for this transmitter must be installed to provide a separation distance of at least 20 cm from all persons and must not be co-located or operating in conjunction with any other antenna or transmitter. End-users and installers must be provided with antenna installation instructions and consider removing the no-collocation statement.

Caution

Any changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

5 Hardware Features

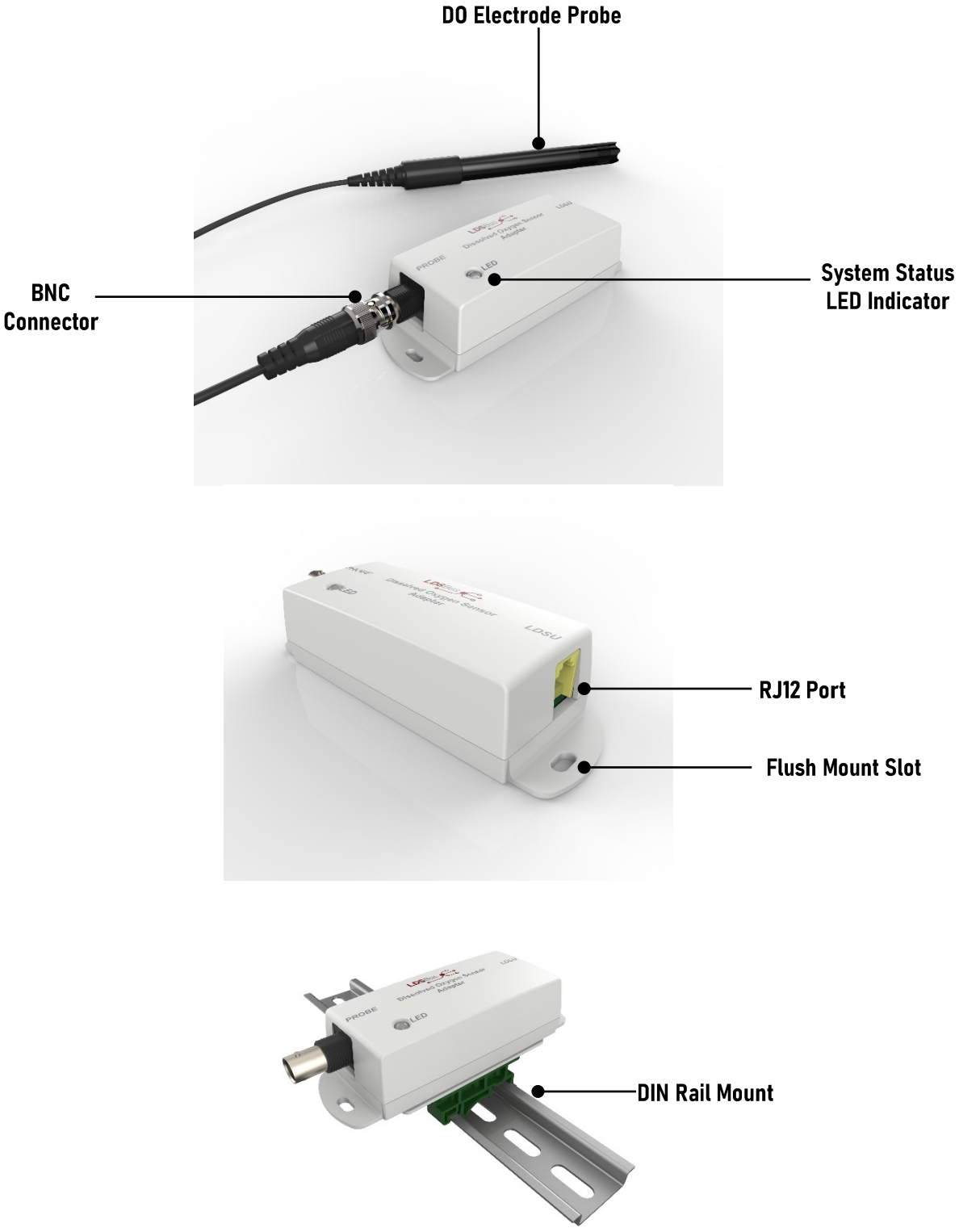

Figure 1 - LDSBus Dissolved Oxygen Sensor Adapter Hardware Features

Function	Labels	Description
BNC Connector	Probe	Probe Interface
DO Electrode Probe	-	Sensing Probe
System Status LED Indicator	LED	LDSBus status LED
RJ12 Port	LDSU	LDSBus data and power interface port. The physical port is RJ12. The connection interface can be RJ11/RJ12.

Table 3 - LDSBus DO Sensor Adapter Hardware Features

6 Sensor Adapter Configuration and Installation

Please refer to LDSBus Configuration Utility User Guide on how to configure the device name, address, and termination settings before using it for your application.

6.1 Connection Diagram

Figure 2 illustrates the connection of the LDSBus DO Sensor Adapter (LDSBus Device) to the LDSBus. Please visit https://brtsys.com/resources to view the full device application, setup, and installation guides.

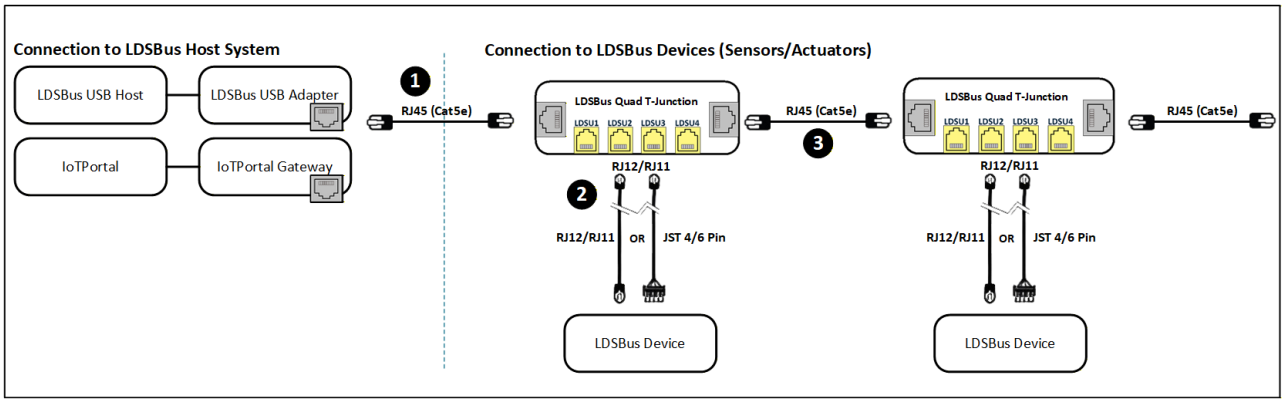

Figure 2 - Connection Diagram

Setup Instructions:

1. Connect the first LDSBus Quad T-Junction to any of the LDSBus Host Systems using the RJ45 (CAT5e) cable as shown in Figure 2.

2. Connect the configured LDSBus DO Sensor Adapter to the LDSBus Quad T-Junction as shown in Figure 2.

3. If there is more than one LDSBus Quad T-Junction, chain them together as shown in Figure 2.

   Enable termination for the last device in LDSBus.

7 Mounting Instructions

7.1 Flush Mount

The LDSBus DO Sensor Adapter can be flush mounted directly on a wall or any flat surface using 2 M3.5*16mm (thread) screws.

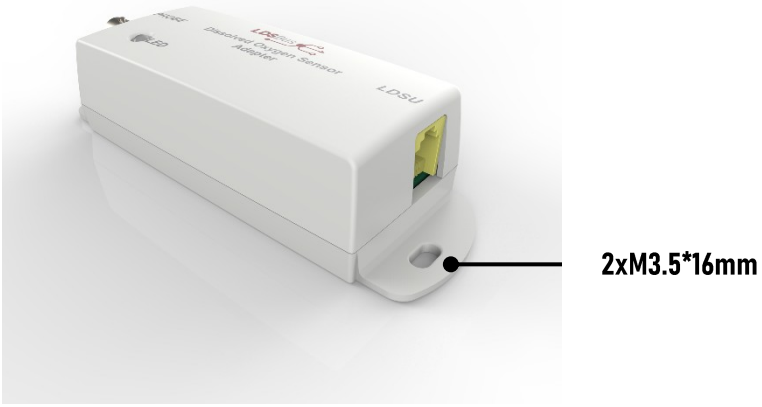

Figure 3 - LDSBus Dissolved Oxygen Sensor Adapter Flush Mount

7.2 DIN Rail Mount

The device can be mounted on a DIN Rail using the LDSBus DIN Rail Mount Set. This set is optional and includes the bracket and mounting screws. Refer to Table 1 for Part #.

Figure 4 - LDSBus Dissolved Oxygen Sensor Adapter DIN Rail Mount

8 Mechanical Dimensions

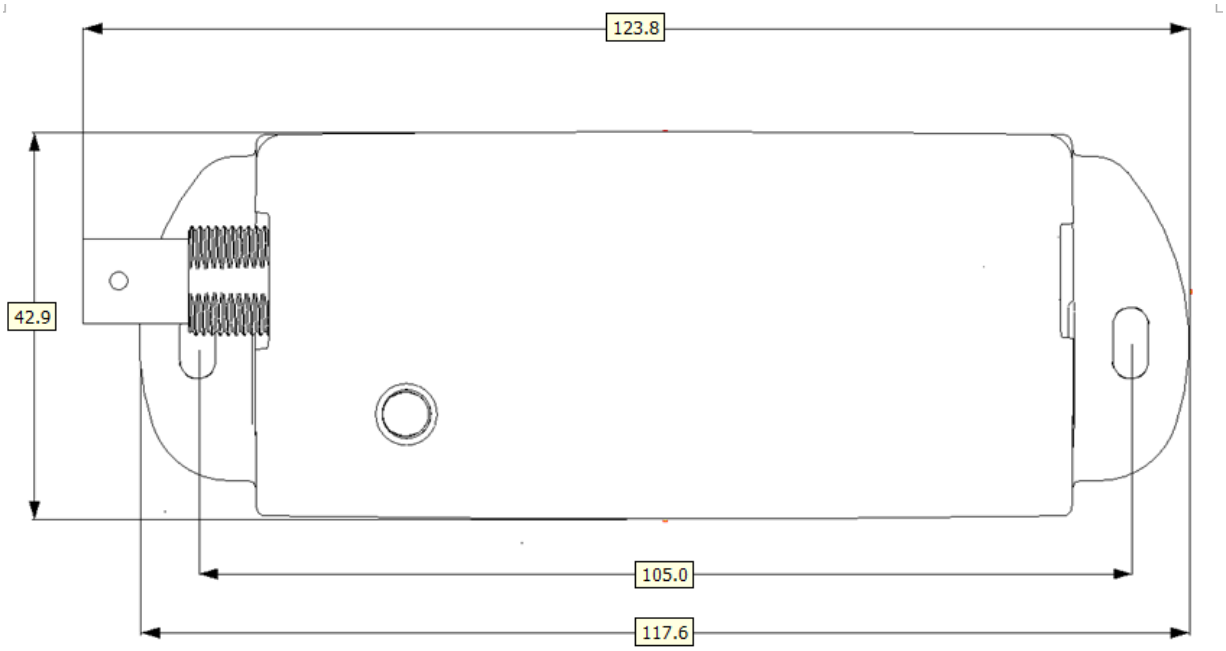

Figure 5 - LDSBus Dissolved Oxygen Sensor Adapter Dimension – Top View

Figure 6 - LDSBus Dissolved Oxygen Sensor Adapter Dimension – Side View

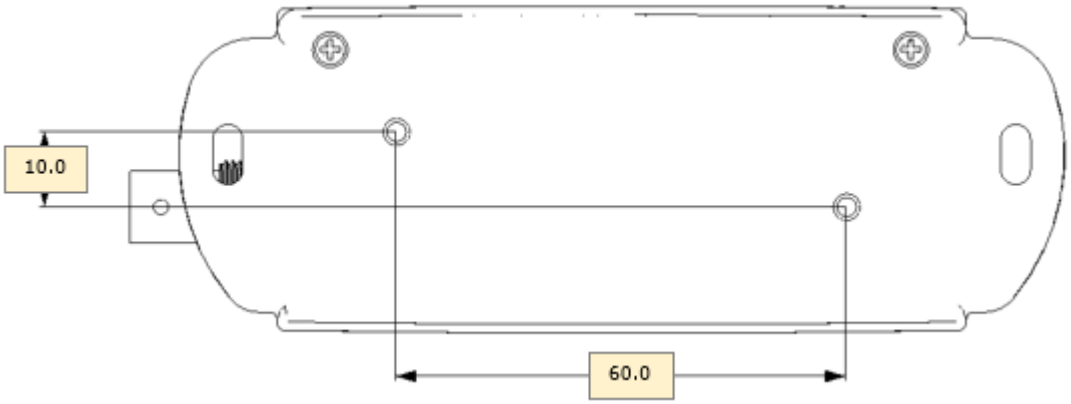

Figure 7 - LDSBus Dissolved Oxygen Sensor Adapter Dimension – Bottom View

Note: All dimensions are in millimetres.

9 System Status LED Indicators

LDSU devices come with an RGB LED (4 status colors) as mentioned in the table below.

Status display colors:

1. RED - Device in error condition
2. YELLOW - Un-configured device
3. GREEN - Device in normal state (Device termination is OFF)
4. BLUE - Device in normal state (Device termination is ON)

Device Status	LED Color		Flashing Frequency	Description
Un-configured device	YELLOW		LED flashing @1Hz	Un-configured device with factory default address (126)
Configured device	GREEN		Steady – Non-flashing	Configured device (Device ID 1-125) and device is idle
	BLUE			
Addressed device	GREEN		LED flashing @5Hz	Device is busy communicating
	BLUE			
Identified device	GREEN		LED flashing @1Hz	Device in identify state
	BLUE			
Device error	RED		Steady – Non-flashing	Device error has occurred
Firmware update	YELLOW		Steady – Non-flashing	Device firmware update

Table 4 - System Status LED Indicators

10 Probe Selection

The following specifications are recommended for selecting Dissolved Oxygen Probe –

Type	Detection Range	Connector
Galvanic Probe	0-50mg/L	BNC

Table 5 - Probe Specifications

For more information on calibration, please refer to the section "Calibration Procedure" in LDSBus Configuration Utility User Guide.

For information related to probes recommendation and selection criteria, please refer to 3rd Party Compatible Probes Specifications.

11 Contact Information

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

Appendix A – References

Document References

LDSBus Configuration Utility User Guide

LDSBus Python SDK V3.0.0 Guide

LDSBus .Net SDK V3.0.0 Guide

3rd Party Compatible Probes Specifications

Sensors and Actuators Quick Start Guide for USB Hosts

Sensors and Actuators Quick Start Guide for IoTPortal

Acronyms and Abbreviations

Terms	Description
DO	Dissolved Oxygen
LDSBus	Long Distance Sensor Bus
LED	Light Emitting Diode

Appendix B – List of Figures and Tables

List of Figures

List of Tables

Appendix C – Revision History

Document Title: LDSBus Dissolved Oxygen Sensor Adapter Datasheet

Document Reference No.: BRTSYS_000012

Clearance No.: BRTSYS#010

Product Page: https://brtsys.com/product/do-sensor-adapter/

Document Feedback: Send Feedback

Revision	Changes	Date
Version 1.0	Initial Release	04-03-2022
Version 1.1	Updated release under BRT Systems	15-09-2022
Version 1.2	Corrected BRTSYS to BRTSys	24-03-2023
Version 1.3	Updated the following – HVT references to Quad T-Junction; Singapore address	11-09-2023
Version 1.4	Updated Section 3. Specifications	04-09-2024
Version 1.5	Section 1.1 - Added .Net SDK to Supported platforms; ROHS icon added Section 2 - Added LA-0501-01A in part number. Section 3 - Updated "Wire Assembly". Section 4 – Added FCC statement. Section 5 - Added Table 3; Updated Figure 1 (Changed from "RJ11" to RJ12" for LDSU port) Section 6.1 - Added point #3 & #4. Appendix A – References > Document References - updated	10-11-2025
Version 1.6	Updated Product Picture on the cover page. Updated Figure 2 – Connection Diagram (removed support for PanL (PSL)	26-02-2026