pH Sensor Adapter Datasheet

1 Introduction

The LDSBus pH Sensor Adapter is designed to work with pH probes to form a complete pH sensor. The adapter consists of a built-in BNC connector used to attach pH probes. The adapter and probe are calibrated using a 2-point calibration algorithm and supports measurement of pH ranging from 0 to 14 pH with a 0.01 pH resolution.

The adapter and probe combination are suitable for use in applications such as nutrient tanks, water treatment plants, sewage treatment plants, swimming pools. Real time monitoring, alert notifications and control automation can be achieved.

1.1 Features

- pH Sensor Adapter to integrate with any pH probe with a BNC connector
- Measures pH range of 0 to 14pH with linearized output and 0.01 pH resolution
- 2 Point calibration guided step-by-step
- Supports BRTSys LDSBus protocol.
- High report rate of 1 report every 5 seconds
- Low power consumption of 108mW (5V)
- Operating temperature range: 0°C to +70°C
- Flush Mount and DIN Rail mounting 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-0401-01A	LDSBus pH 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 - Connect to pH probe 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 108mW
	Max. Power	218mW
pH Sensor input module	Range	0 – 14pH
	Resolution	0.01pH
	Response Time	<1Minute
	Calibration	2 Point Calibration
Physical Characteristics	Colour	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 pH Sensor Adapter
	Wire Assembly	1x LDSBus RJ11-RJ11 Cable (5m)
Optional	Mounting Accessories	1x LDSBus DIN Rail Mount set

Table 2 - LDSBus pH 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

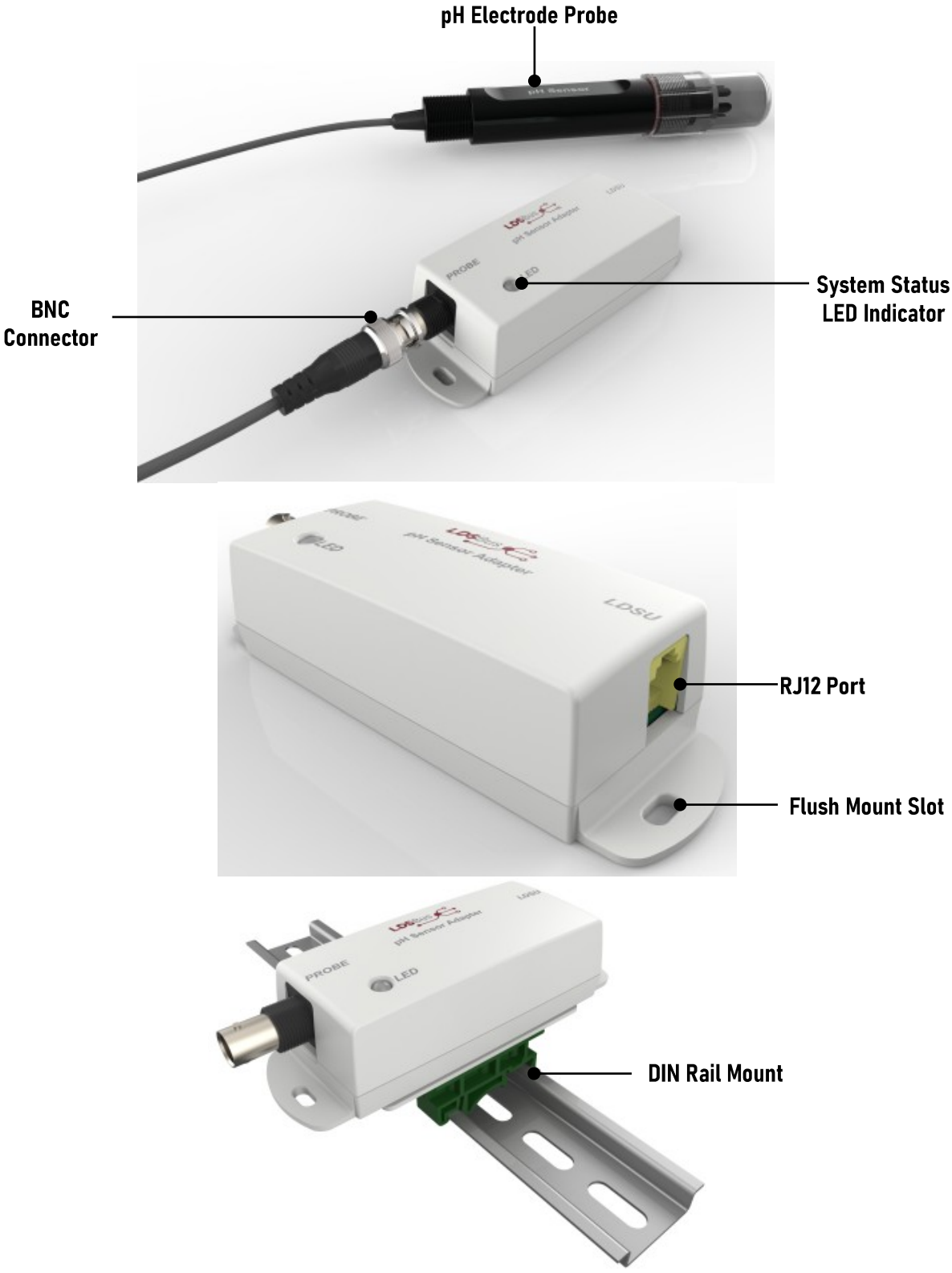

Figure 1 - LDSBus pH Sensor Adapter Hardware Features

Function	Labels	Description
BNC Connector	Probe	Probe Interface
pH 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 pH 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 pH Sensor Adapter (LDSBus Device) to the LDSBus. Please visit https://brtsys.com/resources to view the full device application, setup, and installation guides.

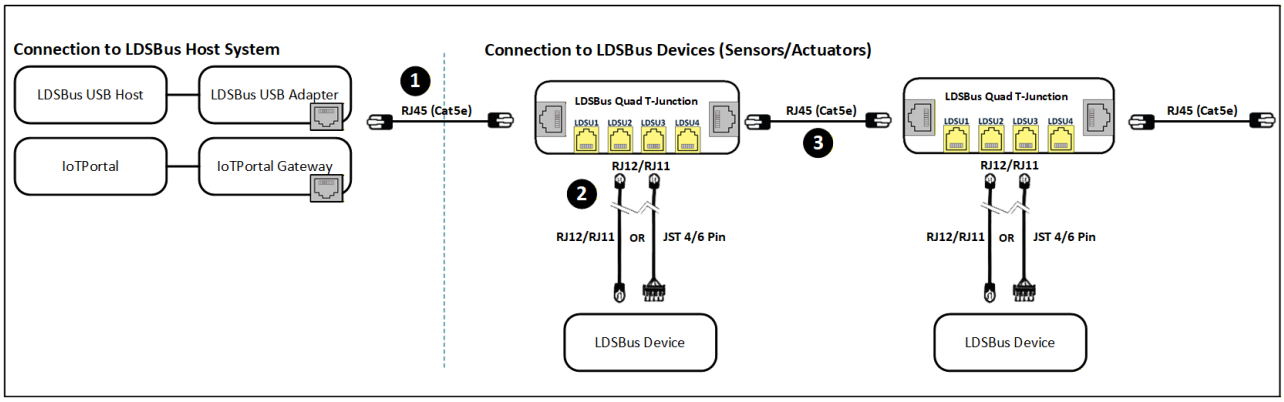

Figure 2 - Connection Diagram

Setup Instructions:

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

2. Connect the configured LDSBus pH 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 device can be flush mounted directly on a wall or any flat surface using 2 M3.5*16mm (thread) screws.

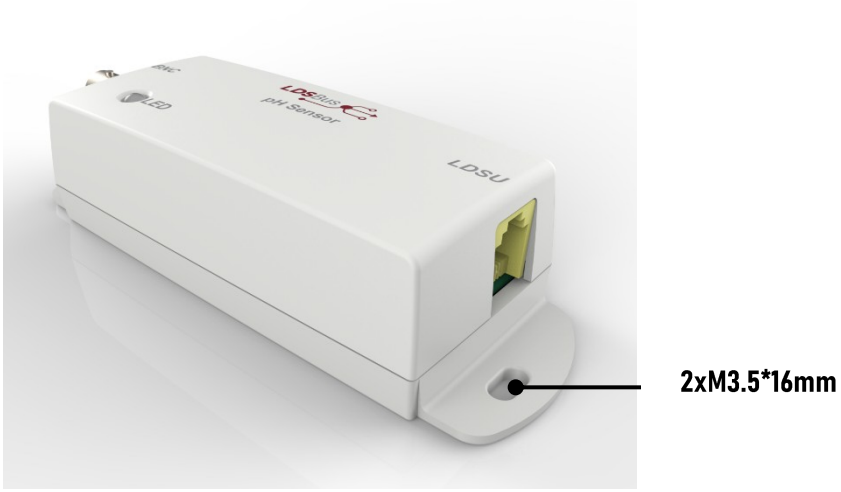

Figure 3 - LDSBus pH Sensor Adapter Flush Mount

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 #.

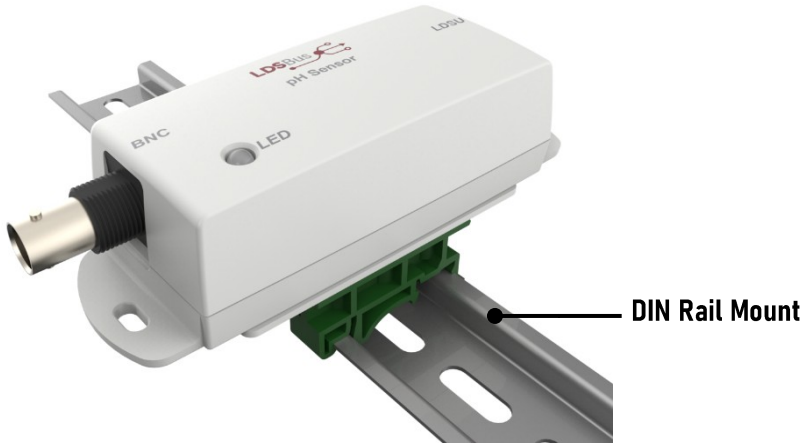

Figure 4 - LDSBus pH Sensor Adapter DIN Rail Mount

8 Mechanical Dimensions

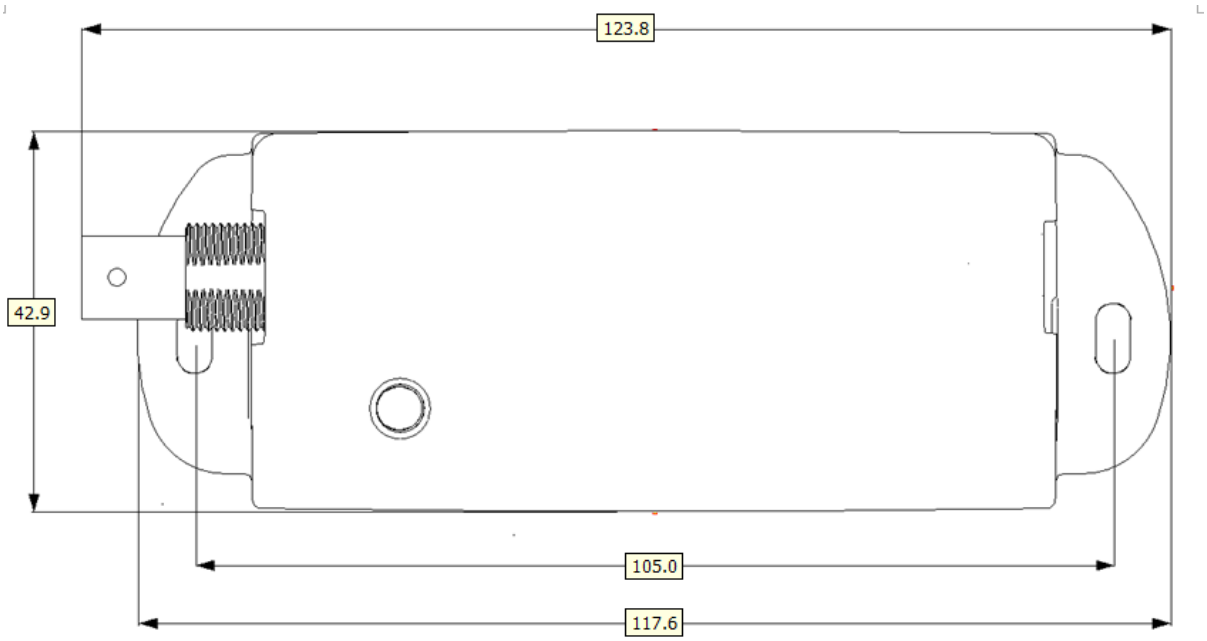

Figure 5 - LDSBus pH Sensor Adapter Dimension – Top View

Figure 6 - LDSBus pH Sensor Adapter Dimension – Side View

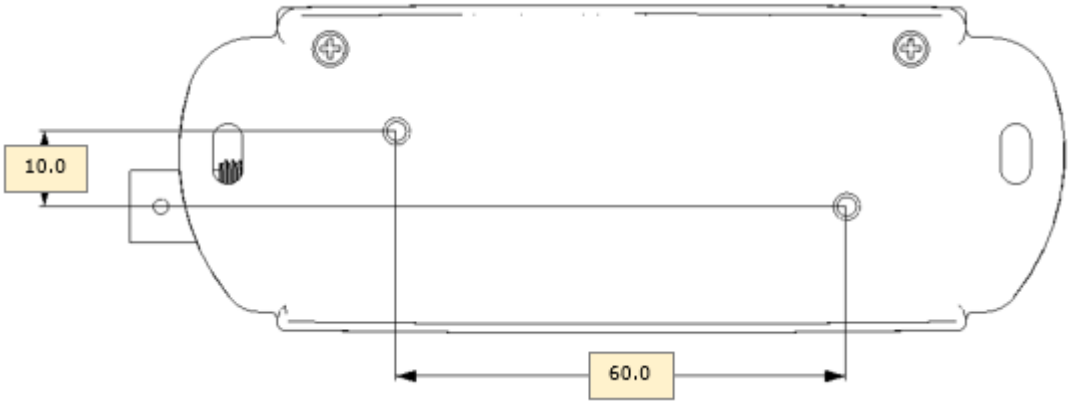

Figure 7 - LDSBus pH Sensor Adapter Dimension – Bottom View

Note: All dimensions are in millimetres.

9 System Status LED Indicators

LDSU devices come with a tri-color LED, and LED status are mentioned in the table below.

Status display colors:

1. RED - Device in error conditions
2. YELLOW - Unconfigured 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
Unconfigured device	YELLOW		LED flashing @1Hz	Unconfigured 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 a Probe –

pH Range	Connector Interface	Zero Point	Theoretical slope %	Internal Resistance
0~14pH	BNC	Max. 7±0.5pH	≥90% and ≤105%	≤250MΩ

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
DC	Direct Current
IoT	Internet of Things
LED	Light Emitting Diode
LDSBus	Long Distance Sensor Bus

Appendix B – List of Figures and Tables

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Appendix C – Revision History

Document Title: LDSBus pH Sensor Adapter Datasheet

Document Reference No.: BRTSYS_000004

Clearance No.: BRTSYS#012

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

Document Feedback: Send Feedback

Revision	Changes	Date
Version 1.0	Initial Release	18-11-2021
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 Section 6.1 - Added point #4; Appendix A – References > Document References - updated	10-11-2025
Version 1.6	Updated the Product Picture on the cover page; Updated Figure 2 – Connection Diagram (removed support for PanL (PSL)	26-02-2026