



Gas and TrueVOC Sensor Datasheet



1 Introduction

With the LDSBus Gas and TrueVOC Sensor, you can measure Total Volatile Organic Compound (TVOC) and Index Air Quality (IAQ) in a compact and low-profile design. Additionally, this device offers various mounting options including flush and swivel mounts. Both flush and swivel mounting options are suitable for installation on walls and ceilings.

These sensors are suitable for use in applications such as industrial safety, air quality monitoring, agriculture and smart homes.

1.1 Features

- Integrated sensors for TrueVOC and Index Air Quality (IAQ) measurements
- TVOC measurement up to 65000 ppb with $\pm 12\%$ Accuracy
- IAQ measurement from 0 to 500 with $\pm 12\%$ Accuracy
- Supports BRTSys LDSBus protocol
- Low power consumption of 271mW (5V)
- Operating temperature range: 0°C to +70°C
- Offers both Swivel mount and Flush mount options
- Supported platforms:
 - PanL Smart Living
 - IoTPortal
 - LDSBus Python SDK
 - LDSBus .Net SDK

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



Neither the whole nor any part of the information contained in, or the product described in this manual, may be adapted, or Reproduced in any material or electronic form without the prior written consent of the copyright holder. This product and its documentation are supplied on an as-is basis and no warranty as to their suitability for any particular purpose is either made or implied. BRT Systems Pte Ltd (BRTSys) will not accept any claim for damages howsoever arising as a result of use or failure of this product. Your statutory rights are not affected. This product or any variant of it is not intended for use in any medical appliance, device, or System in which the failure of the product might reasonably be expected to result in personal injury. This document provides preliminary information that may be subject to change without notice. No freedom to use patents or other intellectual property rights is implied by the publication of this document. BRT Systems Pte Ltd, 1 Tai Seng Avenue, Tower A, #03-01 Singapore 536464. Singapore Registered Company Number: 202220043R.

2 Part Numbers/Ordering Information

Part#	Description
LS-0203-01A	LDSBus Gas and TrueVOC Sensor – Flush
LA-0401-01A	LDSBus RJ11-JST Cable (5m)
LA-1701-01A	LDSBus Sensor Swivel Mount Set

Table 1 - Part Numbers / Ordering Information

Table of Contents

1	Introduction	1
2	Part Numbers/Ordering Information	2
3	Specifications	4
4	FCC Compliance Statement.....	5
5	Hardware Features.....	6
6	Sensor Configuration and Installation.....	7
6.1	Connection Diagram.....	7
7	Mounting Instructions.....	8
7.1	Flush Mount	8
7.2	Swivel Mount	9
8	Mechanical Dimensions	12
9	System Status LED Indicators	15
10	Contact Information.....	16
Appendix A - References		17
Document References		17
Acronyms and Abbreviations		17
Appendix B - List of Figures and Tables		18
List of Figures		18
List of Tables		18
Appendix C – Revision History		19

3 Specifications

Features	Sensor	TVOC Sensor
		IAQ Sensor
	Interface	RS485
	LED Indicator (RGB)	System Status Indicator (Please refer to LED section)
Mounting		Flush Mount - Fixed Angle Installation
		Swivel Mount - Adjustable Angle Installation (requires LDSBus Sensor Swivel Mount Set)
Power	Input Voltage	5V DC Bus Power
	Power Consumption	Typical Power: 183mW
		Max. Power: 271mW
TVOC Sensor	TVOC Output Range	0-65000 ppb
	Accuracy Sensor to Sensor	± 12%
	Initial Start Up time	1 Hour (After each power ON)
	Initial stabilisation Time	48 Hours (After first power ON)
	Warm Up Time	3 Minutes
	Sampling Rate	5 Seconds
IAQ Sensor	IAQ Output Range	0-500
	Accuracy Sensor to Sensor	± 12%
	Initial Start Up time	1 Hour (After each power ON)
	Initial stabilisation Time	48 Hours (After first power ON)
	Warm Up Time	3 Minutes
	Sampling Rate	5 Seconds
Physical Characteristics	Color	White
	Housing	Polycarbonate
	Dimensions	62mm x H25mm (Flush) 62mm x H60mm (Swivel)
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 Gas and TrueVOC Sensor
	Wire Assembly	1X 5m RJ11-JST Cable
	Self-Tapping Screws	2X M3*16mm (Thread)
Optional	Mounting Accessories	1x Swivel mount bracket

Table 2 - LDSBus Gas and TrueVOC Sensor 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

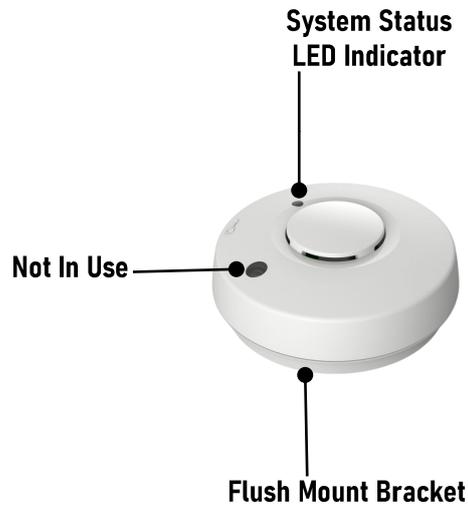


Figure 1 - LDSBus Gas and TrueVOC Sensor Hardware Features- Flush Mount

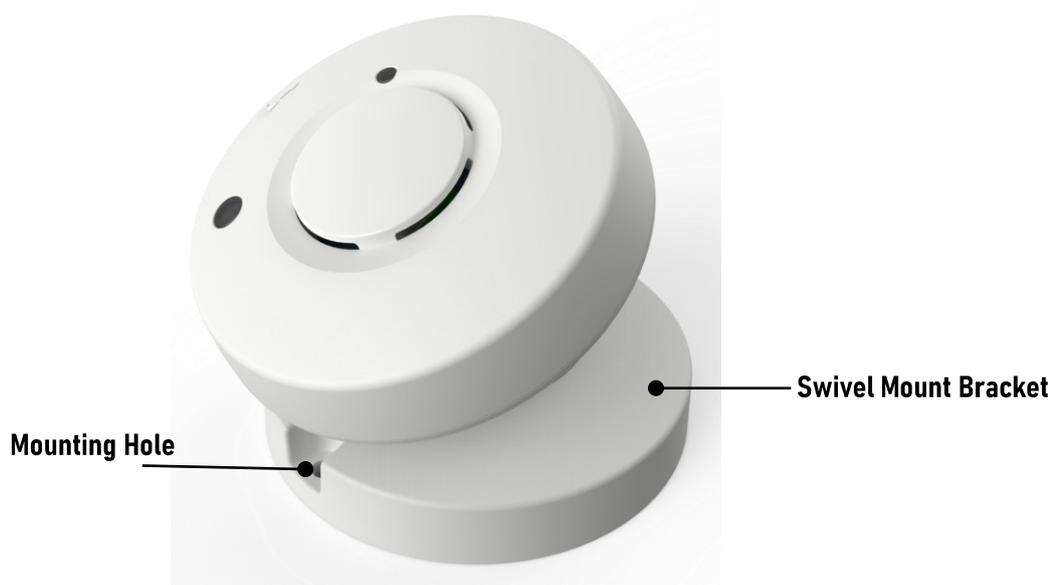


Figure 2 - LDSBus Gas and TrueVOC Sensor Hardware Features- Swivel Mount

Label	Description
System Status LED Indicator	LDSBus status LED. Refer to section 9 for more details

Table 3 - Hardware Labels & Description

6 Sensor 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 3 illustrates the connection of the LDSBus Gas and TrueVOC Sensor (LDSBus Device) to the LDSBus. Please visit <https://brtsys.com/resources> to view the full device application, setup, and installation guides.

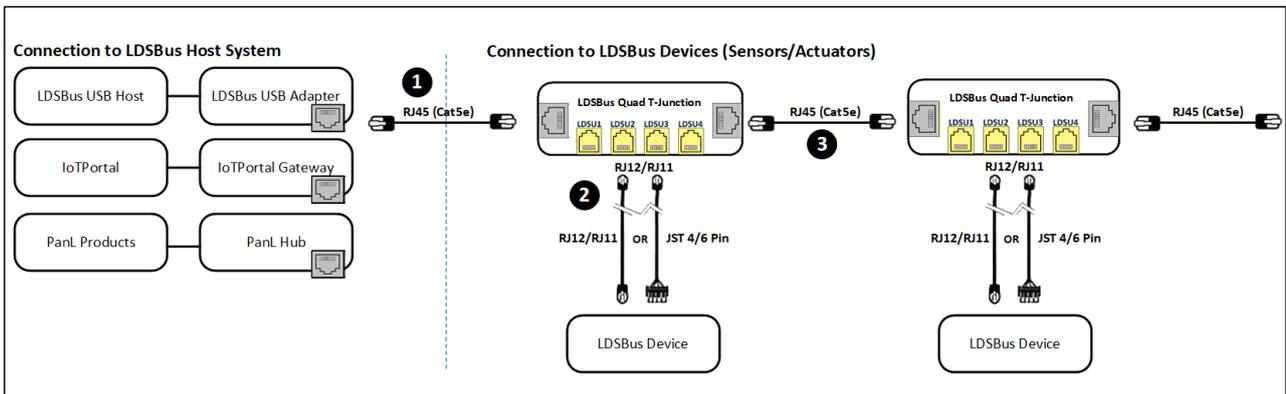


Figure 3 - Connection Diagram

Setup Instructions:

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

1. Figure 3.

Connect the configured LDSBus Gas and TrueVOC Sensor to the LDSBus Quad T-Junction as shown in

2. Figure 3.

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

3. Figure 3.

Enable termination for the last device in LDSBus.

7 Mounting Instructions

The flush mount is the default sensor setup included in the package. Use the mounting instructions in section 7.1 for the flush mount method.

The swivel mount is an optional setup that requires purchasing the swivel mount bracket. Follow the mounting instructions in section 7.2 for the swivel mount method.

Make sure the device has been configured using the LDSBus Configuration Utility before mounting.

7.1 Flush Mount

The flush mounting procedure assumes a flat hollow surface behind which the LDSBus RJ11-JST cable is concealed and made accessible through an opening. Figure 4 shows the front face of the LDSBus Gas and TrueVOC Sensor device.



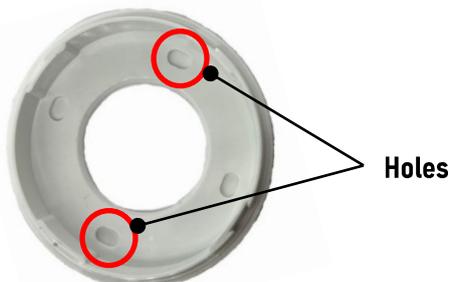
Figure 4 - LDSBus Gas and TrueVOC Sensor

Follow these steps to fix the flush mount –

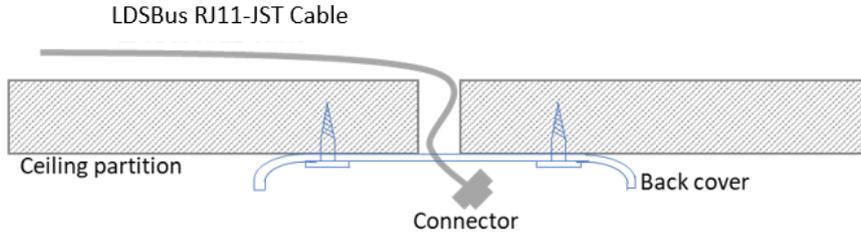
1. Unlock the back cover. Twist the top cover in the anticlockwise direction to unlock.



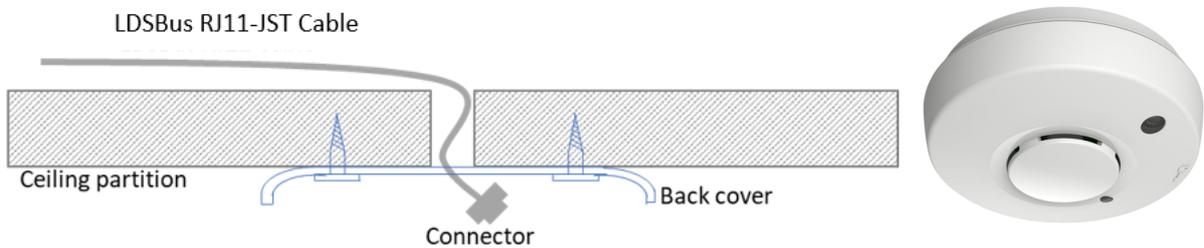
2. Make two holes in the back cover using the indentations as guides.



3. Prepare the ceiling and route the RJ11-JST cable through the ceiling opening. Run the LDSBus RJ11-JST cable through the centre (hole) of the back cover and fasten the back cover to the ceiling with self-tapping screws as shown in the picture below -



4. Attach the cable to the JST connector of the sensor.
5. Twist the front face in a clockwise direction to attach it to the back cover and lock it.



7.2 Swivel Mount

The swivel mount is shown in Figure 5.



Figure 5 - LDSBus Gas and TrueVOC Sensor – Swivel Mount – Top & Bottom View

Angle of Rotation:

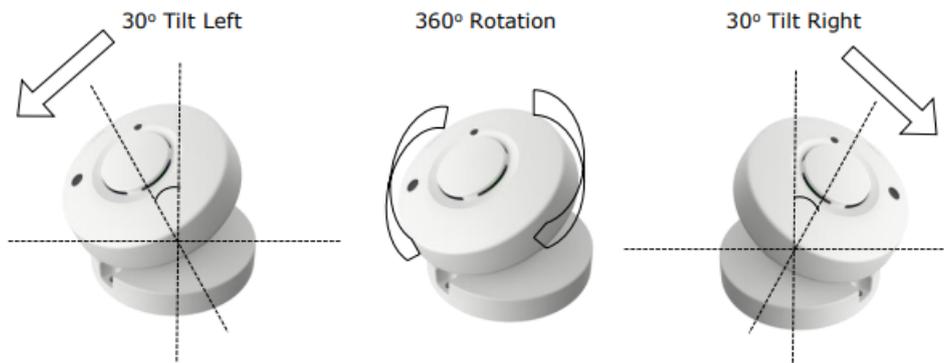
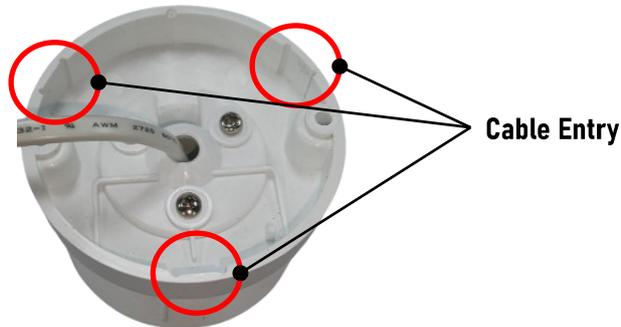


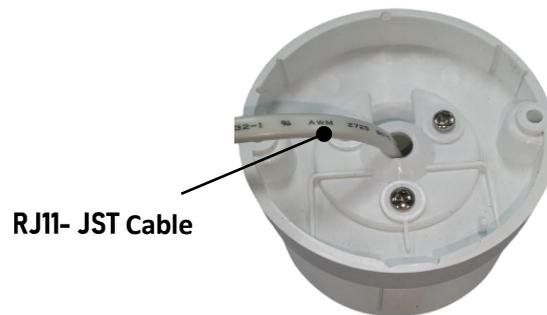
Figure 6 - LDSBus Gas and TrueVOC Sensor – Swivel Mount – Angle of Rotation

Follow these steps to fix the swivel mount –

1. Choose the position for the wall mount and drill holes for mounting the swivel mount on the wall.
2. Route and affix the LDSBus RJ11-JST cable on the wall through a buried or wall mounted conduit to butt against the base of the swivel mount.
3. Break off one of the three cable entry locations on the base plate for cable routing.



4. Connect the LDSBus RJ11-JST cable to the JST connector (Swivel Mount bottom section) as shown in the figure.



5. Fasten the swivel mount to the wall using the mounting screws. Ensure that the cable is sitting in the cable entry slot.
6. Unlock the back cover. Twist the top cover in the anticlockwise direction to unlock.



7. Connect the JST cable from the top section of the swivel mount to the JST connector located on the back of the device.



8. Attach the device to the top section of the swivel mount.



9. Turn the device clockwise to secure it to the swivel mount.



8 Mechanical Dimensions

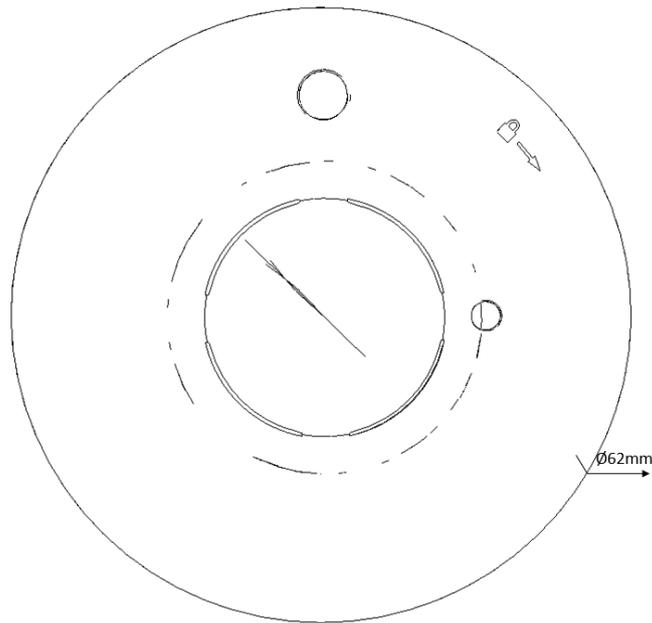


Figure 7 - LDSBus Gas and TrueVOC Sensor Dimension – Top View

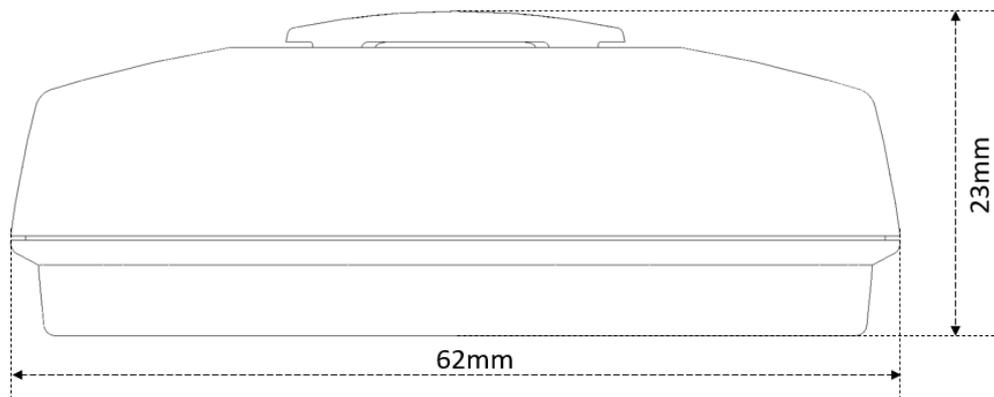


Figure 8 - LDSBus Gas and TrueVOC Sensor Dimension – Side View Flush Mount

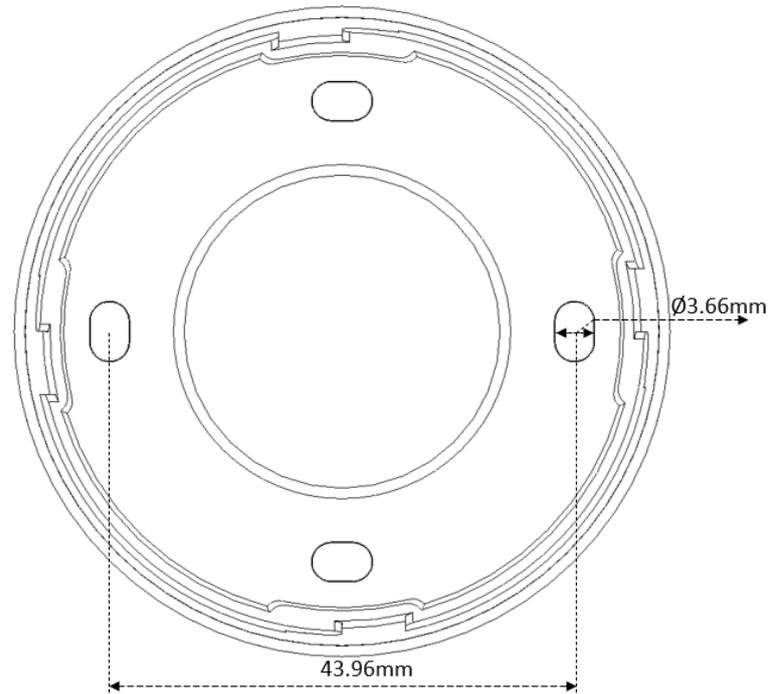


Figure 9 - LDSBus Gas and TrueVOC Sensor Mounting Holes – Flush Mount

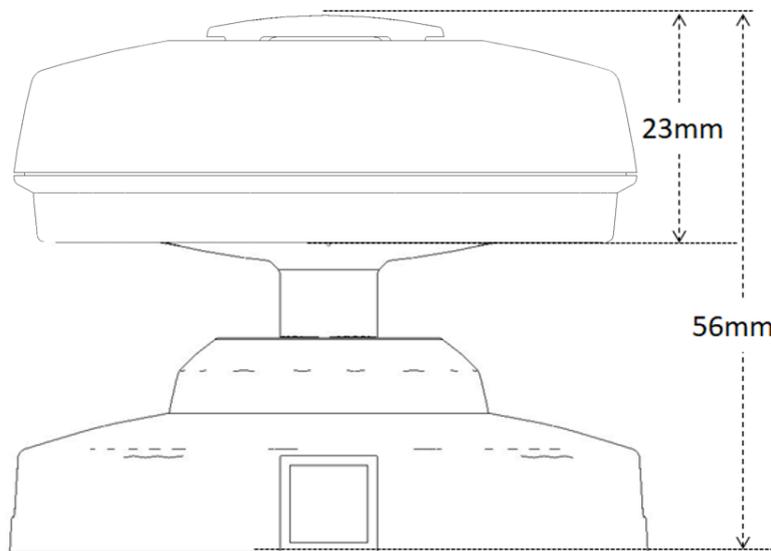


Figure 10 - LDSBus Gas and TrueVOC Sensor Dimension – Side View- Swivel Mount

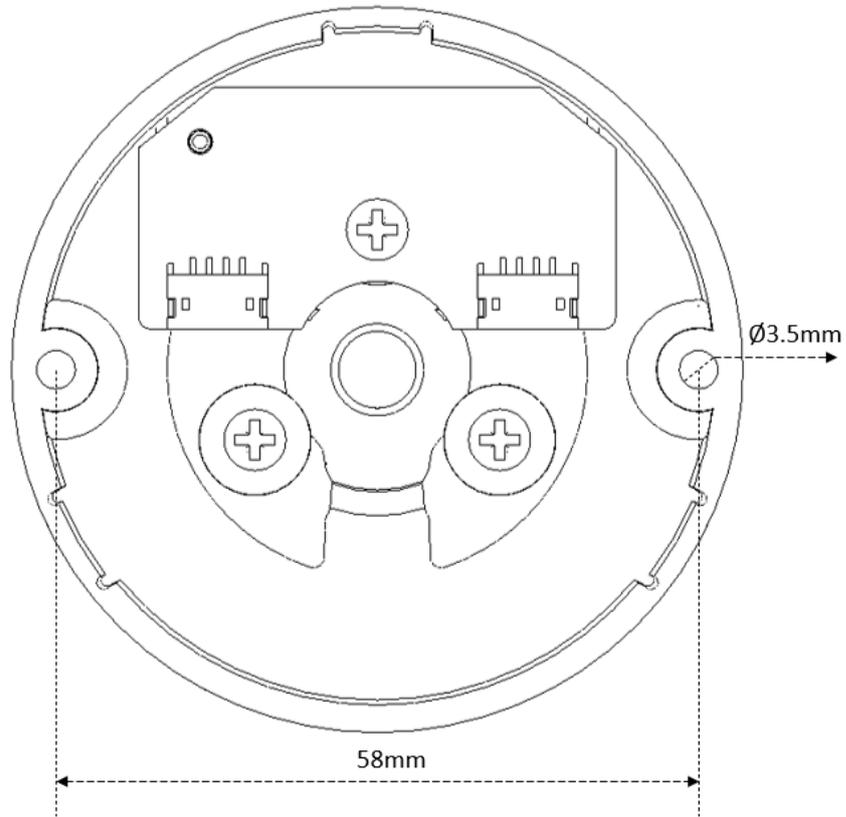


Figure 11 - LDSBus Gas and TrueVOC Sensor Mounting Holes – Swivel Mount

Note: All dimensions are in millimetres.

9 System Status LED Indicators

LDSU devices come with a tri-color LED. The LED status colors are described 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 Indicator

10 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

[LDSBus Configuration Utility User Guide](#)

[LDSBus Python SDK V3.0.0 Guide](#)

[LDSBus .Net SDK V3.0.0 Guide](#)

[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
LDSBus	Long Distance Sensor Bus
LED	Light Emitting Diode
TVOC	Total Volatile Organic Compounds
IAQ	Index Air Quality

Appendix B - List of Figures and Tables

List of Figures

Figure 1 - LDSBus Gas and TrueVOC Sensor Hardware Features- Flush Mount.....	6
Figure 2 - LDSBus Gas and TrueVOC Sensor Hardware Features- Swivel Mount	6
Figure 3 - Connection Diagram	7
Figure 4 - LDSBus Gas and TrueVOC Sensor	8
Figure 5 - LDSBus Gas and TrueVOC Sensor – Swivel Mount – Top & Bottom View.....	9
Figure 6 - LDSBus Gas and TrueVOC Sensor – Swivel Mount – Angle of Rotation	9
Figure 7 - LDSBus Gas and TrueVOC Sensor Dimension – Top View	12
Figure 8 - LDSBus Gas and TrueVOC Sensor Dimension – Side View Flush Mount.....	12
Figure 9 - LDSBus Gas and TrueVOC Sensor Mounting Holes – Flush Mount	13
Figure 10 - LDSBus Gas and TrueVOC Sensor Dimension – Side View- Swivel Mount.....	13
Figure 11 - LDSBus Gas and TrueVOC Sensor Mounting Holes – Swivel Mount.....	14

List of Tables

Table 1 - Part Numbers / Ordering Information.....	2
Table 2 - LDSBus Gas and TrueVOC Sensor Specifications	4
Table 3 - Hardware Labels & Description.....	6
Table 4 - System Status LED Indicator	15

Appendix C – Revision History

Document Title: LDSBus Gas and TrueVOC Sensor Datasheet
 Document Reference No.: BRTSYS_000100
 Clearance No.: BRTSYS#068
 Product Page: <https://brtsys.com/product/gas-and-truevoc-sensor/>
 Document Feedback: [Send Feedback](#)

Revision	Changes	Date
Version 1.0	Initial Release	17-04-2024
Version 1.1	Section 1.1 - Added .Net SDK to Supported platforms; ROHS icon added Section 2 -Added LDSBus RJ11-JST Cable part number; Table 1 – Replaced LS-0213-01A with LA-1701-01A. Section 3 - Added "Optional- Mounting Accessories". Section 4 – Updated FCC statement – removed device name. Section 5 - Added Table 3 Section 6.1 – Added point #4. Updated product pictures in section 7.2 – Swivel mount. Appendix A – References > Document References - updated;	10-11-2025
Version 1.2	Updated Figure 2 – Connection Diagram	26-02-2026