LDSBus USB Adapter Datasheet

1 Introduction

The LDSBus USB Adapter is an integral tool of the LDSBus and issued with the LDSBus Configuration Utility and LDSBus Python SDK. It is used to:

a. Configure LDSBus Devices (Device name, address and termination settings)
b. LDSBus Device firmware update
c. Sensor Calibration
d. Form an LDS bus using the LDSBus Python SDK

The LDSBus Adapter may be used with Microsoft Windows, Ubuntu Linux, Raspberry Pi 3, Raspberry Pi 4 and RPi2040 systems.

Please visit http://bit.ly/ldsbus-resources to access the LDSBus Configuration Utility and LDSBus Python SDK Guides for more information.

1.1 Features

- Reversible USB Type-C connector
- Individually powered LDSU and LDSBus Ports
- USB powered RJ11/RJ12 LDSU port
- 24V power jack inlet to power up the LDSBus through the RJ45 LDSBus port (power Adapter provided)
- Built in LDSBus Termination
- LED status Indicators for communication status
- Flush mount and DIN Rail mounting options
- Operating temperature range : 0°C to +70°C

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2 Part Numbers

Part#	Naming
LA020101A	LDSBus USB Adapter
LA080101A	USB Cable
LA070101A	Power Adapter
LA120101A	LDSBus DIN Rail Mount Set

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3 Product Specifications

Features	Interface	USB Type C, RS485
	LED Indicator	Green (Receiving), Red (Transmitting)
	Mounting	Flush Mount
		DIN-Rail Mount
Power	Input Voltage	USB Power: 5V DC (power LDSU port) Power jack inlet: 24V DC (power RJ45 port)
	Max. Power	5V DC@2.5W 24V DC@12W
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 USB Adapter
	Installation (Optional)	1x DIN Rail Bracket set
	USB Cable	1x USB-C to USB-A 1 meter cable
	Power Adapter	1x 24VDC Power Adapter
	Documentation	1x Quick Start Guide

Table 1 - LDSBus USB Adapter Specifications

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4 Hardware Features

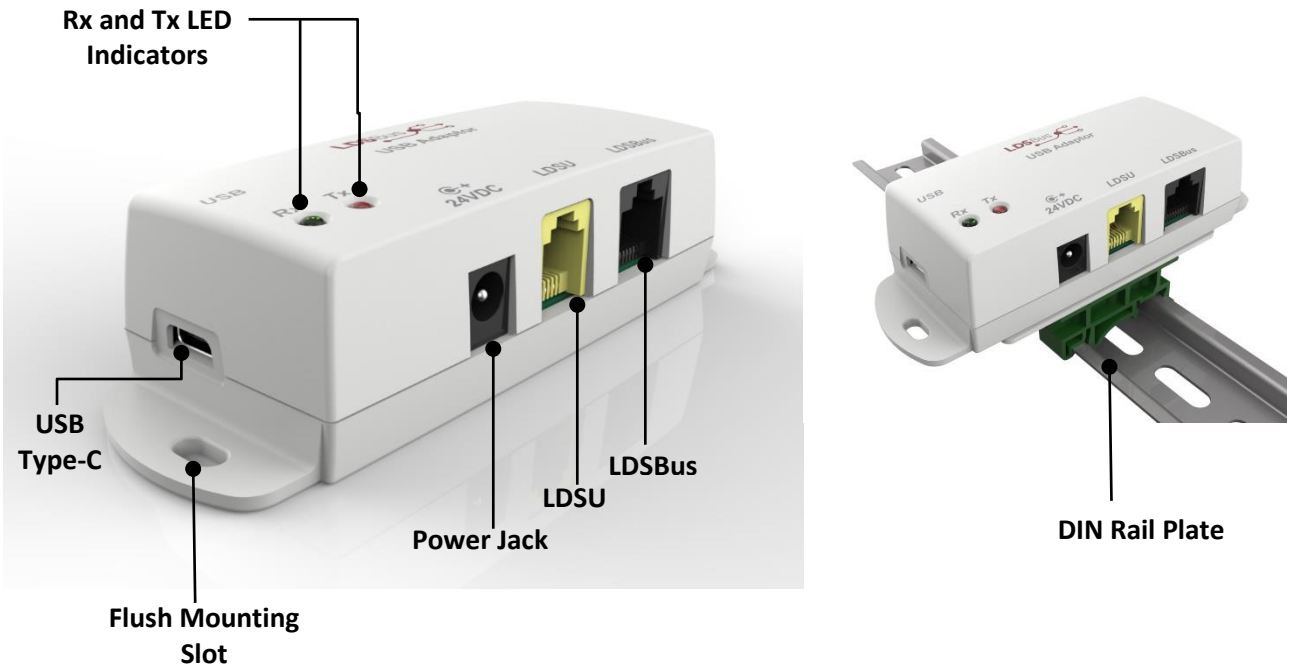

Figure 1 – LDSBus USB Adapter - Flush Mount / DIN Rail Plate – Hardware Features

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5 Connection Diagram

Figure 2 illustrates the connection of the LDSBus USB Adapter based on the applications.

Please visit http://bit.ly/ldsbus-resources to access the LDSBus Configuration Utility or LDSBus Python SDK guides for more information.

5.1 To Configure LDSBus Device (Sensors/Actuators)

1. Connect the LDSBus USB Adapter to the Windows PC with the 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. Refer to LDSBus Configuration Utility Guide for further steps on configuring the LDSBus device.

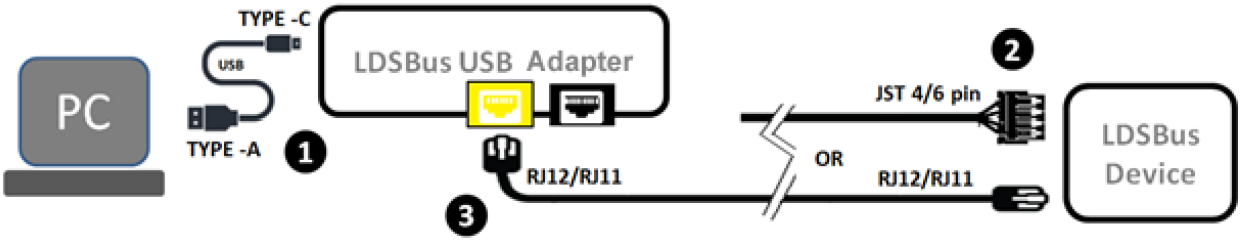

Figure 2 – LDSBus Device (Sensors / Actuators) Configuration

5.2 To Create an LDSBus

1. Connect the LDSBus USB Adapter to the Windows PC with the USB-C to USB-A cable.
2. Connect a 24VDC/18W power Adapter to the DC jack and power on. Power to the LDSBus RJ45 connector is controlled by software.
3. Connect the first LDSBus HVT-Junction to the LDSBus USB Adapter using a RJ45 (CAT5e). The LDSBus Devices connected to the LDSBus HVT-Junction must be preconfigured through the LDSBus Configuration Utility tool.
4. If there is more than one LDSBus HVT-Junction device, daisy chain them together as shown in Figure 3 using RJ45 (CAT5e) cable(s). The termination on the last LDSBus device must be set to the ON state.
5. Refer to the LDSBus Configuration Utility guide for further steps to operate the bus.

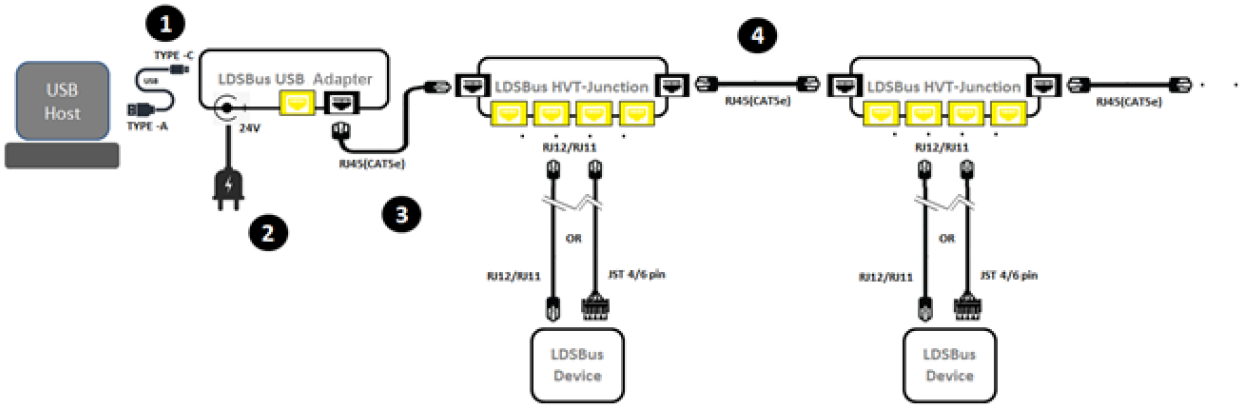

Figure 3 – LDSBus Creation

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6 Mounting Options

6.1 Flush Mount

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

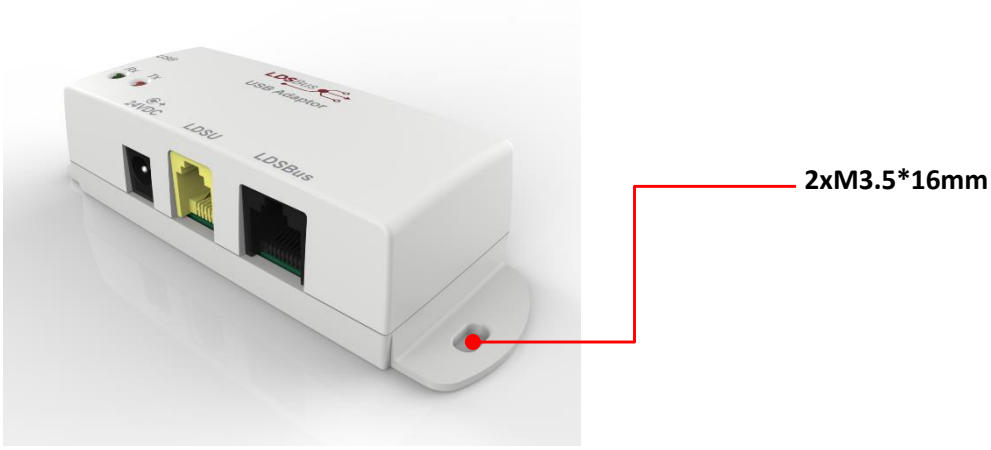

Figure 4 – LDSBus USB Adapter Flush Mount

6.2 DIN Rail Mount

The LDSBus USB Adapter 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.

Figure 5 – LDSBus USB Adapter DIN Rail Mount

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7 LDSBus USB Adapter Configuration

There are two types of configuration modes – the LDSU Mode and the LDSBus Mode.

7.1 LDSU Mode

In LDSU mode, power is applied to the RJ11/RJ12 connector interface and the adapter communicates with the LDS unit attached to this connector. Using the LDSBus Configuration Utility, the *LDSU ID*, *nickname* and *termination* settings may be modified. Sensor calibration is also performed in this mode.

7.2 LDSBus Mode

In LDSBus mode, power is sourced from the 24V power supply unit and applied to the RJ45 connector interface. LDSBus HVT-Junctions are used to extend the reach of the bus and also act as attachment points for LDS units. The LDSBus Configuration Utility may be used to scan and control the devices on the bus.

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8 Port Interface

8.1 USB Type C Port

Connect the USB-C cable to the USB interface connector on the PC. When the adapter is first plugged into the USB port, it is powered by the USB VBUS power supply (5V). This enables the utility to recognize the adapter and control the power switches for the RJ12 port (LDSU mode) and the RJ45 port (LDSBus Mode).

8.2 RJ12 Connector (LDSU Port)

The LDSU attachment port is also known as the LDSU port. Port power is disabled by default and must be enabled manually by the user via the LDSBus Configuration utility.

8.3 RJ45 Connector (LDSBus Port)

This port is used to create a LDS bus using LDSBus HVT-Junctions and RJ45 Cat5E cable segments. This port is powered via the external 24V power supply and power to the connector is controlled by the utility.

8.4 Port Power Operation

Only one port (LDSU port or LDSBus port) may be powered at a time and under control of the LDSBus Configuration Utility or LDSBus Python SDK.

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9 Mechanical Dimensions

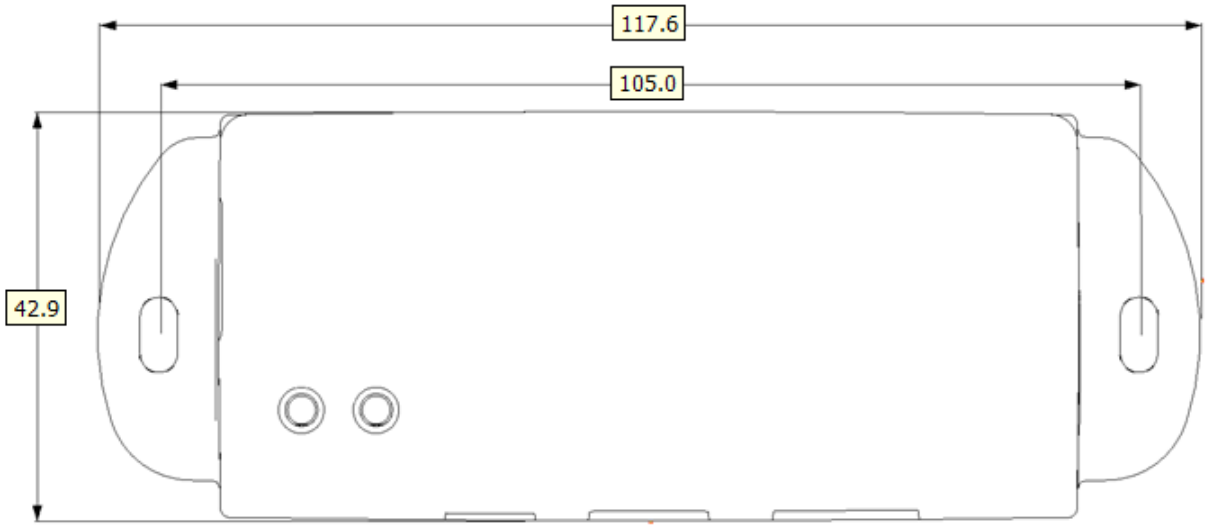

Figure 6 – LDSBUS USB Adapter Dimension – Front View

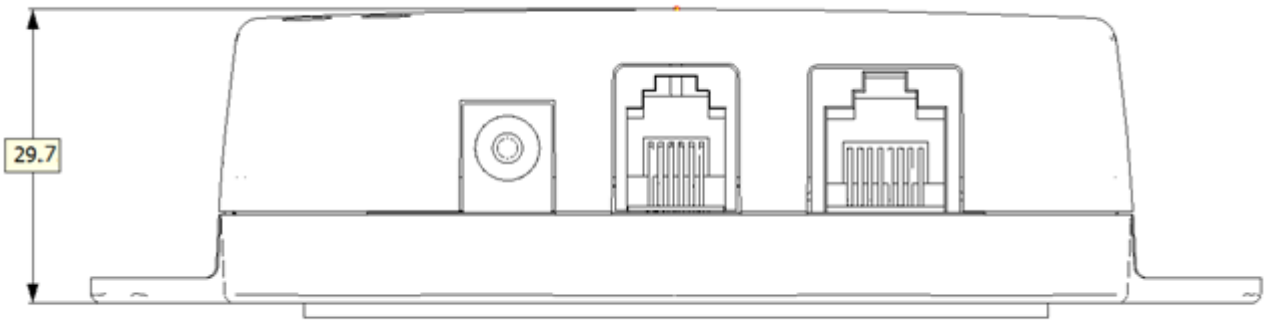

Figure 7 – LDSBUS USB Adapter Dimension – Side View

Note: All dimensions are in millimetres.

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Appendix A – References

Document References

LDSBus Configuration Utility Guide

LDSBus Python SDK Guide

Acronyms and Abbreviations

Terms	Description
DC	Direct Current
LED	Light Emitting Diode
IoT	Internet of Things
HVT	High Voltage T-Junction

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Appendix C – Revision History

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