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› DSD TECH SH-C31G Isolated USB CAN FD Adapter User Manual

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DSD TECH SH-C31G Isolated USB CAN FD Adapter User Manual

Model: SH-C31G | Brand: DSD TECH

1. INTRODUCTION

The DSD TECH SH-C31G is an isolated USB to CAN FD adapter designed for reliable high-speed CAN FD communication in demanding industrial environments. This manual provides essential information for setting up, operating, maintaining, and troubleshooting your device.

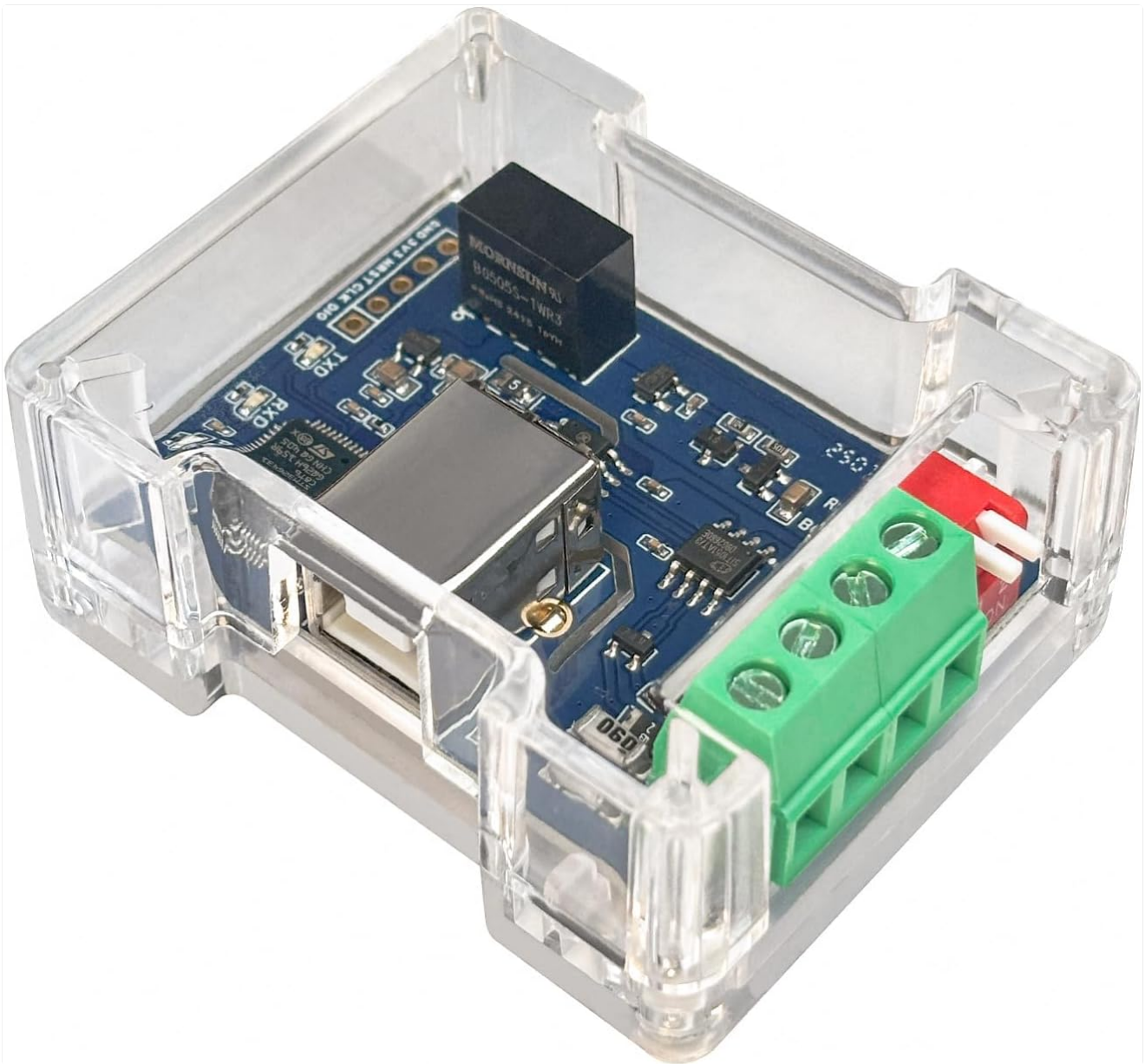


Figure 1: DSD TECH SH-C31G Isolated USB CAN FD Adapter

2. PRODUCT OVERVIEW

2.1 Key Features

- **Industrial CAN FD Support:** Enables high-speed CAN FD communication in demanding environments such as automotive, industrial automation, and robotics.
- **Complete Signal & Power Isolation:** Protects equipment from ground loops and electrical noise in high-voltage/noisy environments. The SH-C31G is an enhanced version of the SH-C31A, with added protection and isolation features for industrial applications.
- **Canable 2.0 Base & Firmware Updatable:** Based on open-source hardware, it features flash-compatible firmware that enables full CAN FD functionality via Cangaroo software.
- **Open-Source Hardware Design:** All circuit diagrams, Bill of Materials (BOM), and design files are publicly available on the DSD TECH official website for customization.

2.2 Package Contents

Verify that all items are present in your package:

- 1 x Isolated USB to CAN FD Adapter (SH-C31G)
- 1 x USB-A to USB-B Cable



Figure 2: Package Contents





3. SETUP

3.1 Hardware Connection

Connect the SH-C31G adapter to your computer using the provided USB-A to USB-B cable. Ensure the CAN-H and CAN-L terminals are correctly wired to your CAN bus network. The device features a Boot Switch and an R120 Switch for configuration.

- **Boot Switch:** Used for entering DFU (Device Firmware Update) mode. Set to OFF for normal operation (Work Mode) and ON for firmware updates.
- **R120 Switch:** Engages or disengages the 120 Ohm termination resistor for the CAN bus.

USB CAN Series

Image:				
Model:	SH-C30A	SH-C30G	SH-C31A	SH-C31G
Base on:	Canable 1.0	Canable 1.0	Canable 2.0	Canable 2.0
ASIN:	B0BQ5G3KLR	B0CDGGBZDT	B0CDGD1FSH	B0FHHCSZY8
CAN FD:	NO	NO	YES	YES
Isolated:	NO	YES	NO	YES
CAN PIN:	CAN_H,CAN_L,GND	CAN_H,CAN_L,GND	CAN_H,CAN_L,GND	CAN_H,CAN_L,GND
Interface:	USB Type A	USB Type B	USB Type A	USB Type B

DSD TECH has specialised in Serial communication products for more than 10 years, and we can meet almost any of your needs.

Figure 3: SH-C31G Component Layout

3.2 Driver Installation

For Windows operating systems, the device typically uses standard USB drivers. In Work Mode (Boot Switch OFF), it should be recognized as a 'candleLight USB to CAN adapter' or similar in Device Manager. For DFU Mode, it will appear as an 'STM Device in DFU Mode'. No specific driver installation is usually required for basic operation with compatible software like Cangaroo.

3.3 Firmware Update

The SH-C31G supports firmware updates. This process is typically performed to enable full CAN FD functionality or to update to the latest features.

1. Set the **Boot Switch** to the **ON** position.
2. Connect the adapter to your computer via USB.
3. Your computer's Device Manager should show an 'STM Device in DFU Mode'.
4. Use a compatible flashing tool (e.g., STM32CubeProg or the web-based updater at canable.io/updater/canable1.html) to flash the desired firmware (e.g., slcan with FD support).
5. After flashing, disconnect the device, set the **Boot Switch** back to **OFF**, and reconnect.

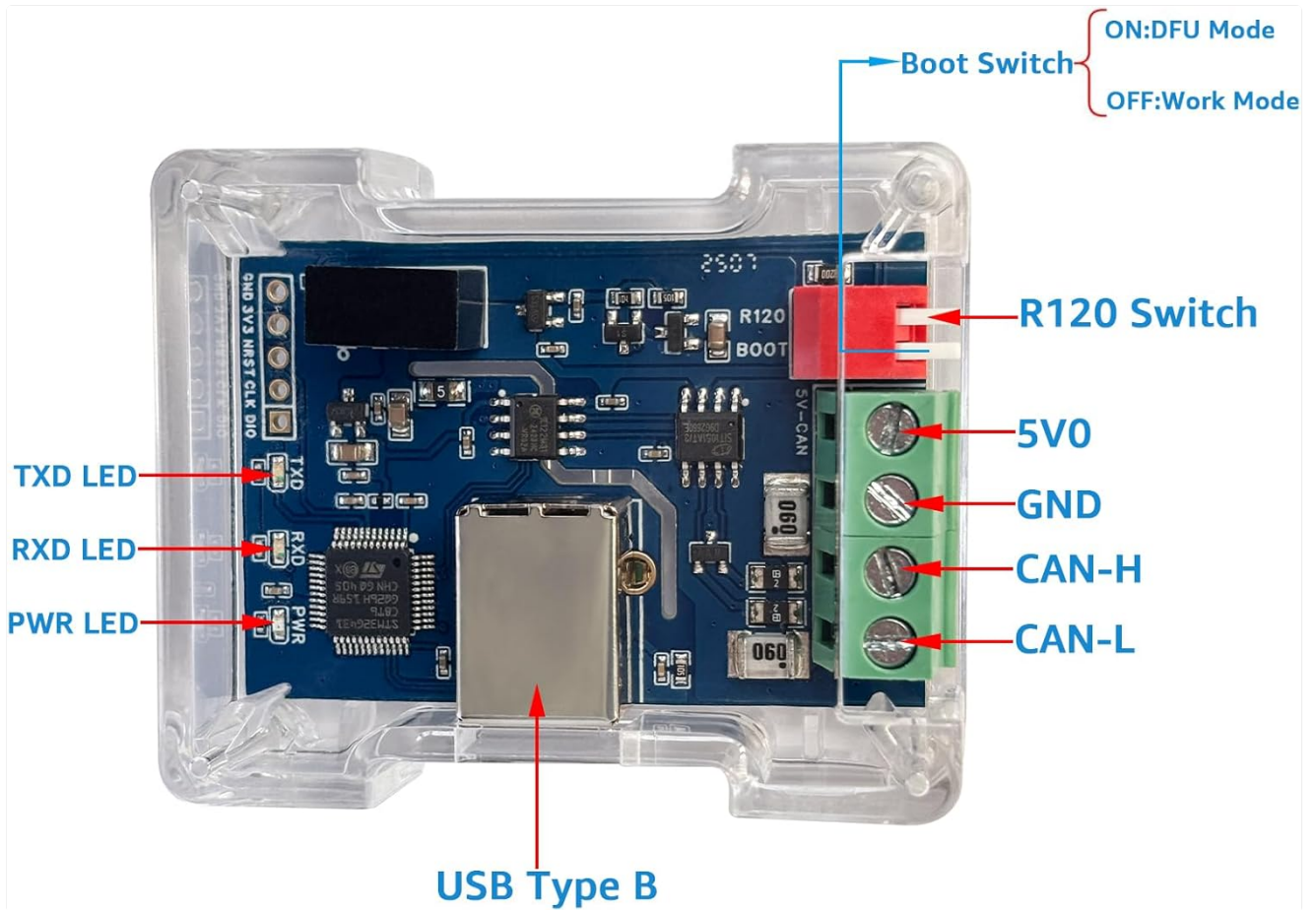


Figure 4: Firmware Update Process

Schematic of SH-C31G

All documentation of this product (schematics, BOM lists, Gerb files) is publicly available on the DSD TECH website.

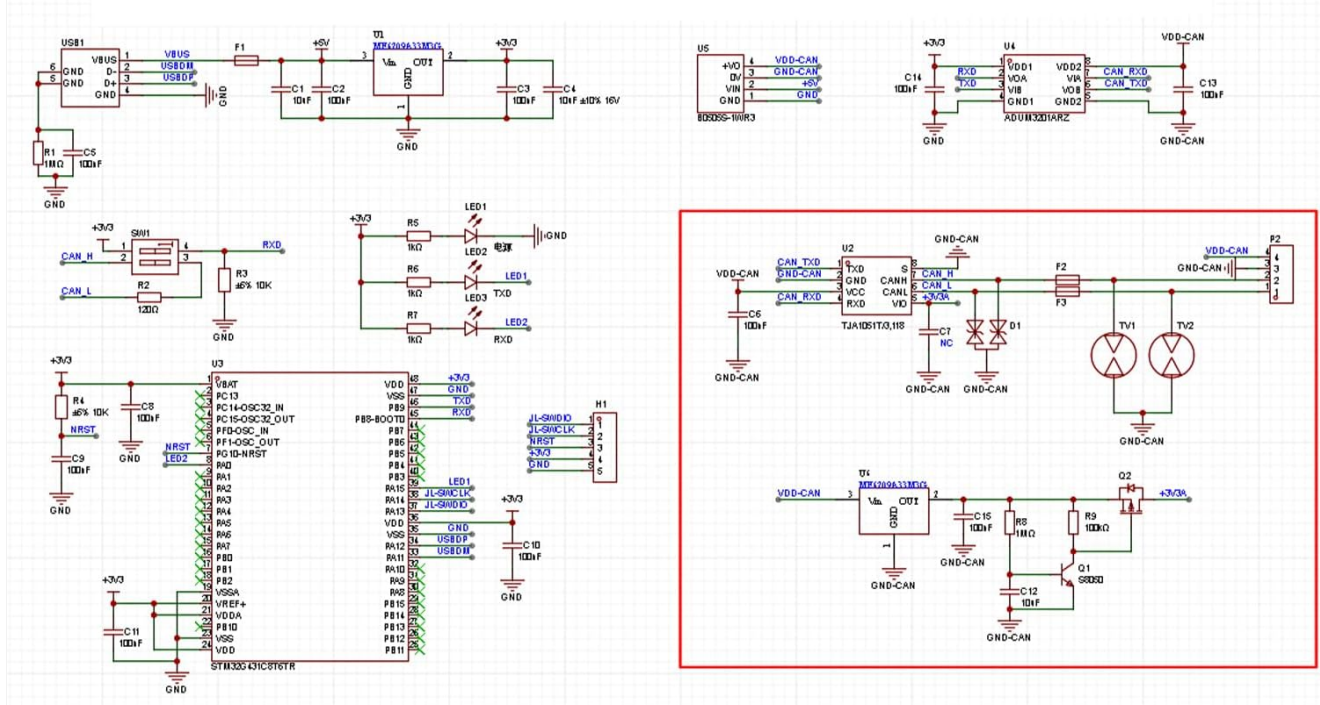


Figure 5: Device Manager Views (Work Mode vs. DFU Mode)

4. OPERATING INSTRUCTIONS

4.1 Using with Cangaroo (Windows)

The SH-C31G adapter is compatible with Cangaroo software for Windows, allowing you to monitor and interact with CAN bus networks.

1. Ensure the adapter is in Work Mode (Boot Switch OFF) and connected to your PC.
2. Launch the Cangaroo software.
3. Navigate to the 'Measurement' menu and select 'Start Measurement' (or press F5).
4. In the 'Measurement Setup' window, select the appropriate driver (e.g., 'candleLight') and verify the interface details.
5. Configure the CAN bitrate and other settings as required for your CAN network.

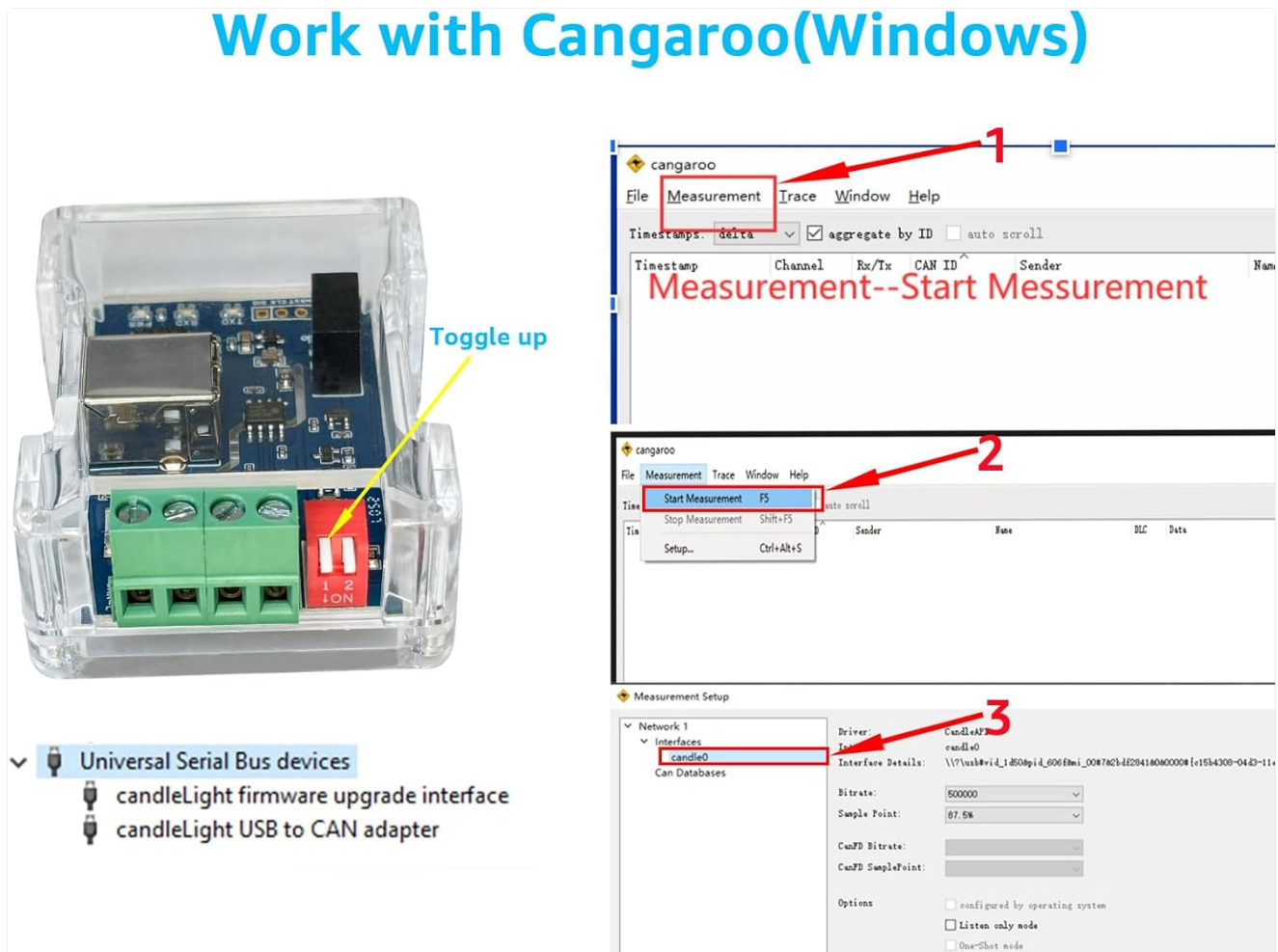


Figure 6: Cangaroo Software Interface

4.2 CAN Bus Communication

The adapter facilitates communication between your computer and a CAN bus network. Data sent from your computer can be accepted by specific CAN nodes, while other nodes may ignore it based on their configuration. Similarly, data from CAN nodes can be received and processed by your computer.

DFU Mode & Work Mode

Work Mode



DFU Mode



Features:

Boot Switch: **OFF**

Candlelight firmware is built in by default You can use it directly with Cangaroo.

Features:

Boot Switch: **ON**

In this mode , you can flash different firmware to meet different needs, and the supported firmware can be found on the canable . io and DSD TECH websites.

Figure 7: USB to CAN Bus Communication Diagram

5. SPECIFICATIONS

Feature	Description
Brand	DSD TECH
Model	SH-C31G
Hardware Interface	USB 2.0 Type B
Compatible Devices	Notebook PC
Product Dimensions (L x W x H)	6 x 5 x 2.4 cm
Product Weight	44.1 grams

Data Link Protocol	USB
CAN FD Support	Yes
Isolation	Yes
UPC	794251081399
ASIN	B0FHHCSZY8
Country of Origin	China

6. MAINTENANCE

The DSD TECH SH-C31G adapter is designed for durability and requires minimal maintenance. To ensure optimal performance and longevity:

- Keep the device clean and free from dust and debris. Use a soft, dry cloth for cleaning.
- Avoid exposing the device to extreme temperatures, humidity, or direct sunlight.
- Ensure all cable connections are secure to prevent intermittent communication issues.
- Regularly check for and install the latest firmware updates from the official DSD TECH or Canable website to benefit from performance improvements and new features.

7. TROUBLESHOOTING

If you encounter issues with your DSD TECH SH-C31G adapter, consider the following troubleshooting steps:

- **Device Not Recognized:**
 - Ensure the USB cable is securely connected to both the adapter and your computer.
 - Try connecting to a different USB port on your computer.
 - Verify the Boot Switch is in the OFF position for normal operation. If it's in ON, the device will be in DFU mode.
 - Check Device Manager for any unrecognized devices or driver issues. Reinstalling drivers or updating firmware might be necessary.
- **CAN Communication Errors:**
 - Confirm that the CAN-H and CAN-L connections are correct and secure.
 - Ensure the CAN bus termination (R120 Switch) is correctly set for your network configuration. Typically, the R120 resistor should be ON if the adapter is at one end of the bus, and OFF if it's in the middle or not required.
 - Verify that the CAN bitrate configured in your software matches the bitrate of the CAN bus network.
 - Check for any physical damage to the adapter or cables.
- **Firmware Update Issues:**
 - Ensure the Boot Switch is in the ON position before connecting for a firmware update.
 - Use the recommended flashing tool and follow the instructions precisely.
 - If using a web-based updater, ensure your browser and internet connection are stable.

8. WARRANTY AND SUPPORT

DSD TECH provides comprehensive support for its products:

- **Lifetime Maintenance Support:** All DSD TECH products come with lifetime maintenance support.
- **1-Year Product Replacement Service:** A 1-year product replacement service is included with your purchase.

For further assistance, please visit the official DSD TECH website or contact customer support through your purchase platform.