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› DSD TECH SH-UR01A USB Relay Controller User Manual

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Model: SH-UR01A

1. INTRODUCTION

The DSD TECH SH-UR01A is a 1-channel USB Relay Controller designed for controlling switches via a personal computer or laptop. This device utilizes a Silicon Labs CP2102N serial chip, which creates a virtual serial port on your computer, allowing you to send commands for relay operation. It features an OMRON G5V-1 relay, suitable for various switching applications.

This manual provides essential information for setting up, operating, maintaining, and troubleshooting your SH-UR01A USB Relay Controller.

2. PRODUCT OVERVIEW

The SH-UR01A USB Relay Controller is a compact device that connects to your computer via a standard USB Type-A male connector. It features a single relay channel with screw terminals for connecting external circuits.

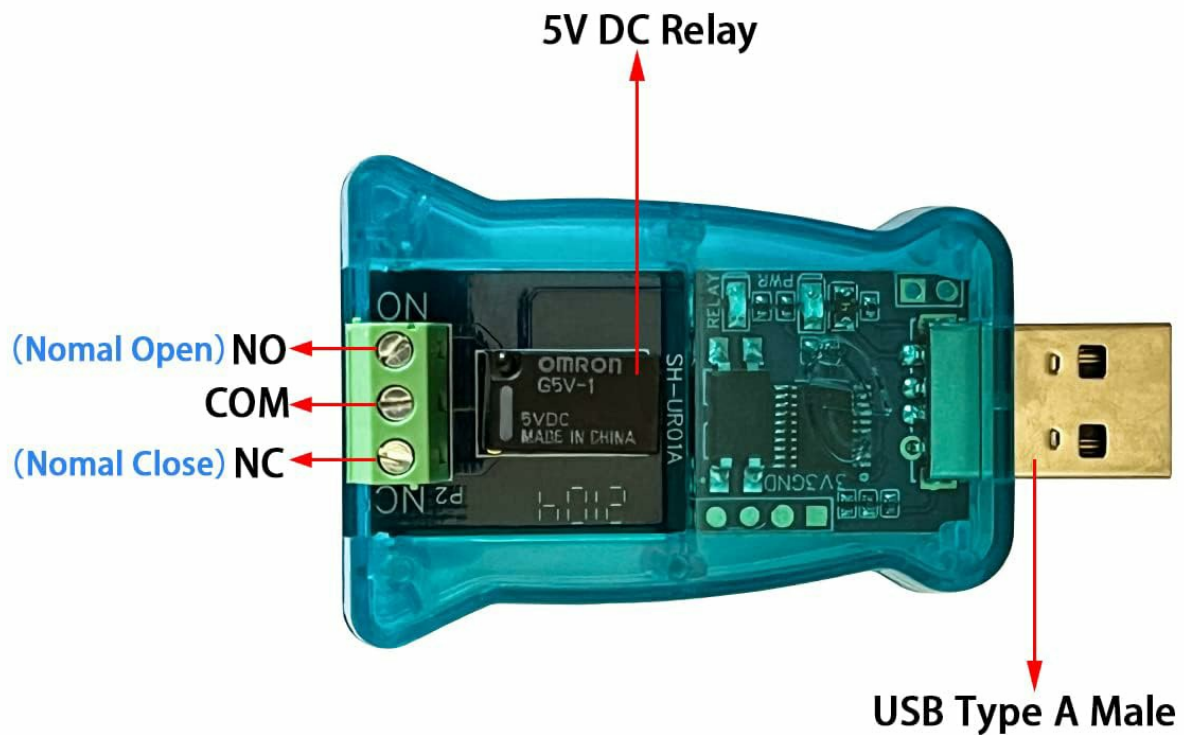


Figure 2.1: Component Diagram of SH-UR01A. This image highlights the 5V DC Relay, Normal Open (NO), Common (COM), Normal Close (NC) terminals, and the USB Type A Male connector.

2.1 Key Features

- **USB Relay Control:** Enables switching operations directly from your PC or laptop.
- **Silicon Labs CP2102N Serial Chip:** Provides a virtual serial port interface for command-based control.
- **OMRON G5V-1 Relay:** Rated load of 0.5A at 125 VAC; 1A at 24 VDC. Maximum switching voltage of 125 VAC, 60 VDC.
- **Broad Compatibility:** Supports Windows 7, 8, 10, and various Linux OS and Mac OS.



Figure 2.2: Various angles of the SH-UR01A USB Relay Controller, showcasing its compact design.



Figure 2.3: The SH-UR01A connected to a USB cable, illustrating its typical connection method.

3. SETUP INSTRUCTIONS

3.1 Driver Installation

Before using the SH-UR01A, you must install the appropriate driver for the Silicon Labs CP2102N serial chip. This is typically required only for the first use. Once installed, a virtual serial port will appear on your computer, enabling communication with the device.

1. **Download Driver:** Obtain the latest Silicon Labs CP2102N driver from the official DSD TECH website or Silicon Labs website.
2. **Install Driver:** Follow the on-screen instructions to install the driver on your operating system.
3. **Connect Device:** Plug the SH-UR01A USB Relay Controller into an available USB port on your computer.
4. **Verify Installation:** Check your computer's Device Manager (Windows) or equivalent system information (macOS/Linux) to confirm that the virtual serial port (e.g., COM port on Windows, /dev/ttyUSBx on Linux)

is recognized.

3.2 System Compatibility

The SH-UR01A USB Relay Controller is compatible with the following operating systems:

- Windows 7
- Windows 8
- Windows 10
- Various Linux OS (e.g., Ubuntu)
- Mac OS

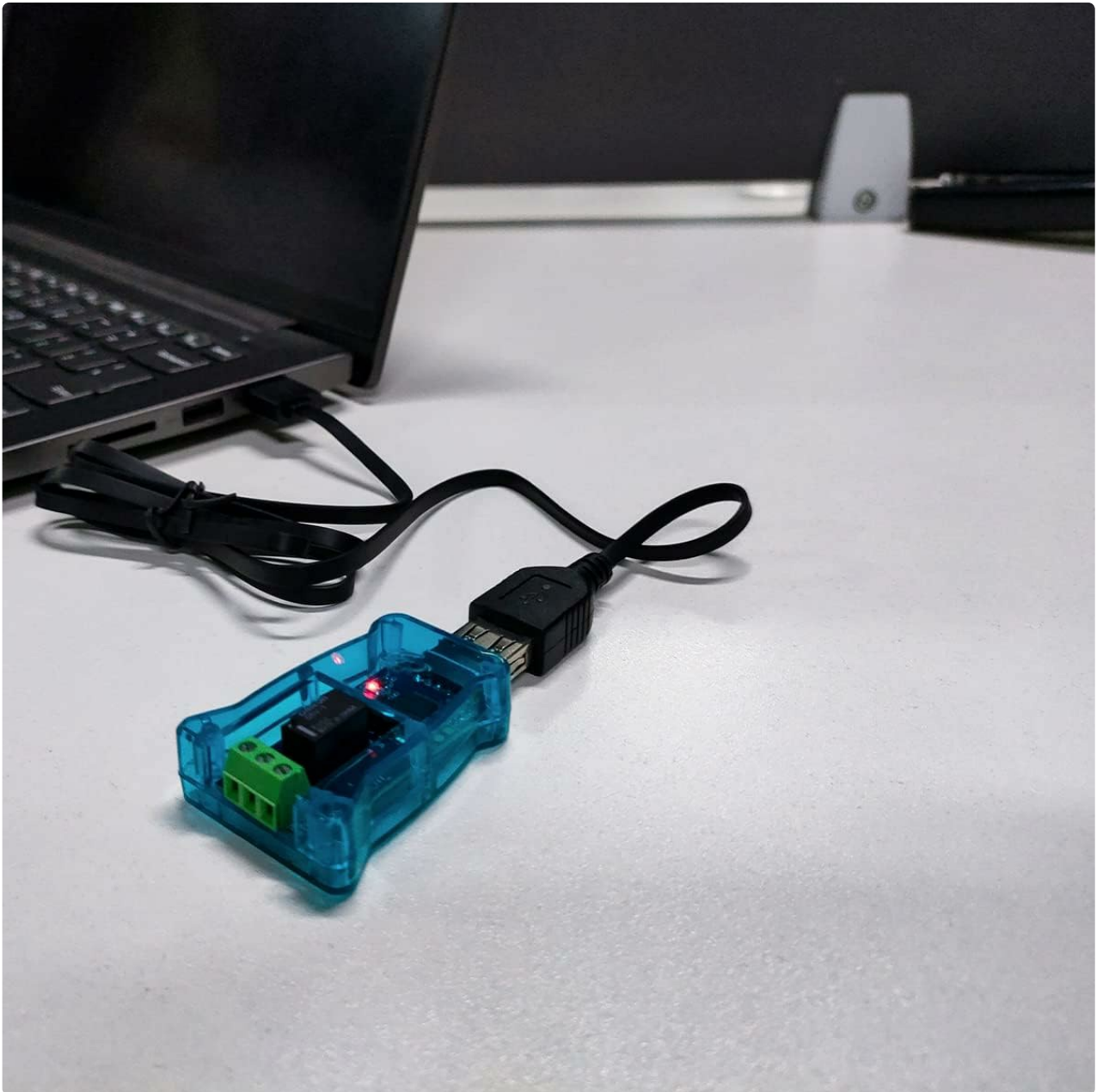


Figure 3.1: The SH-UR01A connected to a laptop, demonstrating a typical setup.

4. OPERATING INSTRUCTIONS

The SH-UR01A is controlled by sending specific AT commands to its virtual serial port. You can use any serial terminal program (e.g., PuTTY, Realterm, Tera Term) or custom software to send these commands.

4.1 Serial Port Settings

The default UART settings for communication are:

- **Baud Rate:** 9600
- **Stop Bits:** 1
- **Parity:** None
- **Data Bits:** 8

4.2 AT Command List

Use the following commands to control the relay:

AT Command List
Default UART Setting: Baud rate : 9600 ;Stop Bits:1 ;Parity : None; Data Bits : 8
1, AT ; Test Command, you will get "OK"
2, AT+CH1=1; Close the relay of channel 1
3, AT+CH1=0; Turn on the relay of channel 1
4, AT+BAUD=115200; Modify the baud rate to 115200

Figure 4.1: AT Command List for SH-UR01A.

Command	Description
AT	Test Command. The device will respond with "OK" if communication is successful.
AT+CH1=1	Closes the relay of channel 1 (activates the relay).
AT+CH1=0	Opens the relay of channel 1 (deactivates the relay).
AT+BAUD=115200	Modifies the baud rate to 115200. (Other baud rates may be supported; refer to advanced documentation if available).

4.3 Example: Python Demo Code

The following Python code snippet demonstrates how to communicate with the SH-UR01A using the `pyserial` library. This example shows how to open the serial port, send commands to turn the relay off and on, and then close the port.

Python Demo Code

```
sh-ur01A serial.py 2 ●
C: > Users > Eric > Desktop > sh-ur01A serial.py > ...
1
2 #This demo code is issued by DSD TECH Team exclusively for the SH-UR01A USB Relay
3 import serial # pip install pyserial
4 import time
5 import serial.tools.list_ports
6
7
8 ports_list = list(serial.tools.list_ports.comports())
9
10 if len(ports_list)<=0:
11 | print("no serial port")
12 else:
13 | print("serial port as follow:")
14 | for comport in ports_list:
15 | | print(list(comport)[0],list(comport)[1])
16
17 ser=serial.Serial('COM101',9600,timeout=0.5) # please modify your uart port name such as COM10
18
19 if ser.is_open:
20 | print("open sucess")
21 | print(ser.name)
22
23 else:
24 | print("open failed")
25
26 myLen = ser.write('AT+CH1=0') # Relay Off
27
28 time.sleep( 3 )
29
30 myLen = ser.write('AT+CH1=1') # Relay ON
31
32 ser.close()
33 print("serial close")
```

Figure 4.2: Python Demo Code for SH-UR01A.

```

#This demo code is issued by DSD Tech Team exclusively for the SH-UR01A USB Relay
import serial
import time
import serial.tools.list_ports

ports_list = list(serial.tools.list_ports.comports())

if len(ports_list)<=0:
    print("no serial port")
else:
    print("serial port as follow:")
    for comport in ports_list:
        print(list(comport)[0],list(comport)[1])

ser=serial.Serial('COM101',9600,timeout=0.5) # please modify your uart port name such as COM10

if ser.is_open:
    print("open sucess")
    print(ser.name)
else:
    print("open failed")

mylen = ser.write('AT+CH1=0') # Relay Off
time.sleep( 3 )

mylen = ser.write('AT+CH1=1') # Relay ON

ser.close()
print("serial close")

```

Note: Replace 'COM101' with the actual serial port name assigned to your SH-UR01A device (e.g., COM3, /dev/ttyUSB0).

5. MAINTENANCE

The DSD TECH SH-UR01A USB Relay Controller is designed for durability and requires minimal maintenance. To ensure optimal performance and longevity:

- **Keep Dry:** Avoid exposing the device to moisture or liquids.
- **Clean Gently:** If cleaning is necessary, use a dry, soft cloth. Do not use harsh chemicals or abrasive materials.
- **Handle with Care:** Avoid dropping or subjecting the device to strong impacts.
- **Proper Storage:** When not in use, store the device in a cool, dry place away from direct sunlight.

6. TROUBLESHOOTING

If you encounter issues with your SH-UR01A USB Relay Controller, refer to the following common problems and solutions:

- **Device Not Recognized:**

- Ensure the USB cable is securely connected.
- Verify that the Silicon Labs CP2102N driver is correctly installed. Check Device Manager (Windows) or system information (macOS/Linux) for any driver errors or unrecognized devices.
- Try connecting to a different USB port or another computer to rule out port or system-specific issues.

- **Relay Not Responding to Commands:**

- Confirm that the correct virtual serial port (e.g., COM port number) is selected in your terminal program or software.
- Check that the serial port settings (Baud Rate: 9600, Stop Bits: 1, Parity: None, Data Bits: 8) match the device's default settings.
- Ensure the AT commands are sent correctly, including the exact syntax (e.g., AT+CH1=1). Some terminal programs may require specific settings for sending commands (e.g., appending carriage return/line feed).
- Test communication with the simple AT command; if it responds with "OK", the communication link is established.

- **Intermittent Connection or Errors:**

- USB cable quality can affect communication. Try a different USB cable.
- Ensure there are no other applications or processes using the same serial port simultaneously.
- Electrical noise or interference can affect serial communication. Keep the device away from strong electromagnetic fields.

- **Relay Clicking but Not Switching External Device:**

- Verify the wiring of your external device to the relay terminals (NO, COM, NC).
- Ensure the external device's voltage and current requirements do not exceed the OMRON G5V-1 relay's rated load (0.5A at 125 VAC; 1A at 24 VDC). Overloading can damage the relay.

If these steps do not resolve the issue, please contact DSD TECH customer support for further assistance.

7. SPECIFICATIONS

Feature	Detail
Model Number	SH-UR01A
Product Dimensions	2.56 x 1.46 x 0.63 inches
Item Weight	1.3 ounces
Manufacturer	DSD TECH
Hardware Interface	USB 2.0
Compatible Devices	Laptop, Personal Computer
Relay Type	OMRON G5V-1
Relay Rated Load	0.5A at 125 VAC; 1A at 24 VDC
Max. Switching Voltage	125 VAC, 60 VDC
Serial Chip	Silicon Labs CP2102N
Supported Platforms	Windows 7, 8, 10; Linux; Mac OS



Figure 7.1: Physical dimensions of the SH-UR01A and its cable.

8. WARRANTY AND CUSTOMER SUPPORT

DSD TECH is committed to providing high-quality products and excellent customer service.

8.1 Warranty Information

This USB Relay Controller comes with a **1-year product replacement service** from the date of purchase.

8.2 Technical Support

DSD TECH offers **permanent technical support** for this product. If you have any questions, require assistance with setup, operation, or troubleshooting, please do not hesitate to contact our support team. All inquiries will be addressed within 1 working day.

For support, please visit the official DSD TECH website or refer to the contact information provided with your

product packaging.



Figure 8.1: Example of DSD TECH packaging and warranty statement.