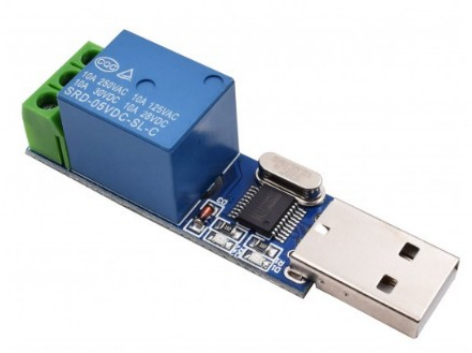
USB Relay for DC/AC/Remote On-Off Test



1. Plug USB relay to a host computer with Ubuntu OS.
   This guide will use Ubuntu 22.04.

2. Install USB driver for the USB relay.

   a. Download driver package:
   ```
   sudo apt update
   sudo apt install git
   git clone https://github.com/juliagoda/CH341SER
   ```

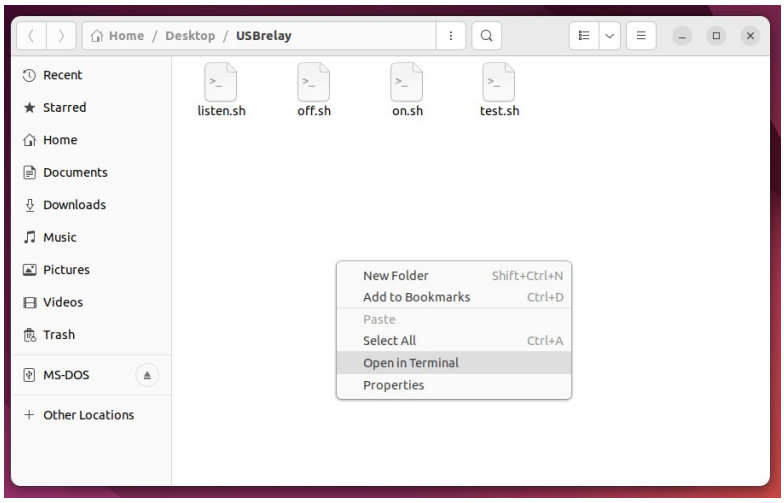
   b. Make and load driver:
   First, go to driver file folder:
   ```
   cd CH341SER
   ```
   Make and load driver:
   ```
   sudo apt install build-essential
   make
   sudo make load
   ```
   Remove brltty:
   ```
   sudo apt autoremove brltty
   ```

   c. Check that USB port is ready:
   ```
   sudo dmesg |grep USB
   ```
   This would show which USB port CH341 is attached to.

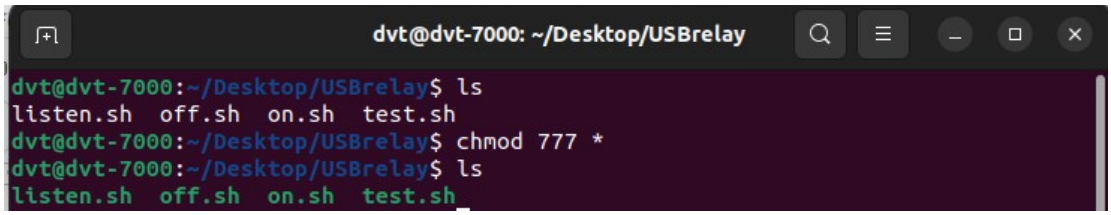
```
[    3.585574] usbserial: USB Serial support registered for generic
[    3.649084] usbserial: USB Serial support registered for ch341-uart
[    3.652225] usb 1-5: ch341-uart converter now attached to ttyUSB0
```

3. Using USB relay.

Copy the “USBrelay” folder to Desktop.
Open the folder and right click the mouse to open in Terminal:



Change permission for copied files:
You must and may only do this inside the “USBrelay” folder.
After you do this, color of the files’ names would become green.
Chmod 777 *.sh



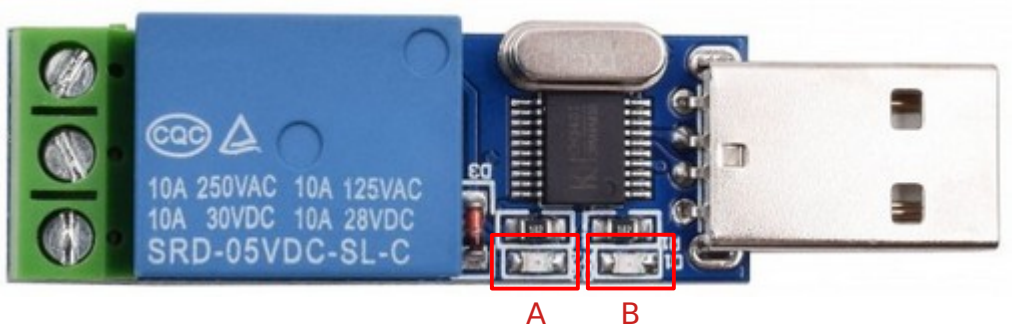
Check that USB relay can be controlled:
All four *.sh scripts must run with root, the following command allows you to do so:
sudo su

To set a relay as “open”:
./off.sh /dev/ttyUSB*

To set a relay as “closed”:
./on.sh /dev/ttyUSB*

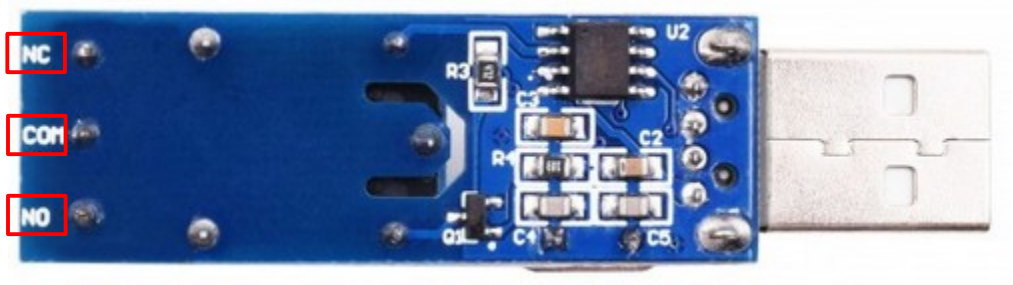
4. Short introduction to the USB relay.

   Front side:



   LED A: Relay status (lit → closed, dimmed → open)
   LED B: Relay power (lit → powered, dimmed → off)

   Back side:



   NC (normally closed)
   NO (normally open)
   COM (commom)

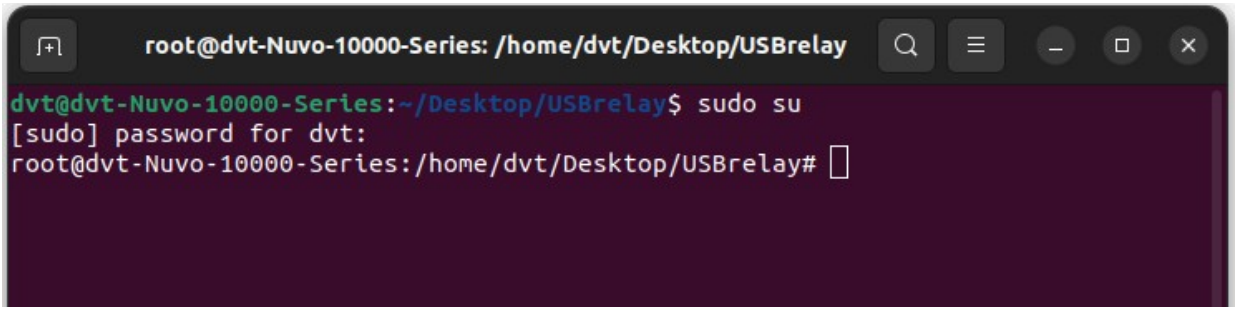
   When one used ./off.sh:
   LED A is dimmed, COM and NO is open, COM and NC is closed.

   When one used ./on.sh:
   LED A is lit, COM and NO is closed, COM and NC is open.

   Here we use NO and COM for ON/OFF test.

5. ON/OFF test usage.

   Go to “USBrelay” folder, open in terminal with root:
   sudo su



   ./test.sh
   Usage: ./test.sh [at/atx] [ttyUSB*] [ttyS*] [ON time] [OFF time]

   at/atx: at → for DC/AC/IGN on/off test
   atx → for remote on/off test

   ttyUSB*: USB port number of relay

   ttyS*: COM port number for receiving “I am good!”

   ON time: power up time span
   at → how long relay would stay closed
   atx → how long before relay turn off DUT with PWB

   OFF time: power off time span
   at → how long relay would stay open
   atx → how long before relay turn on DUT with PWB

   example:

```
root@dvt-Nuvo-10000-Series:/home/dvt/Desktop/USBrelay# ./test.sh at ttyUSB0 ttyS0 30 30
Start time: Wed, 30 Aug 2023 16:47:35 +0800
Tested: 0
Passed: 0
Failed: 0
```

   A log file would be created in USBrelay/LOG_ttyUSB*