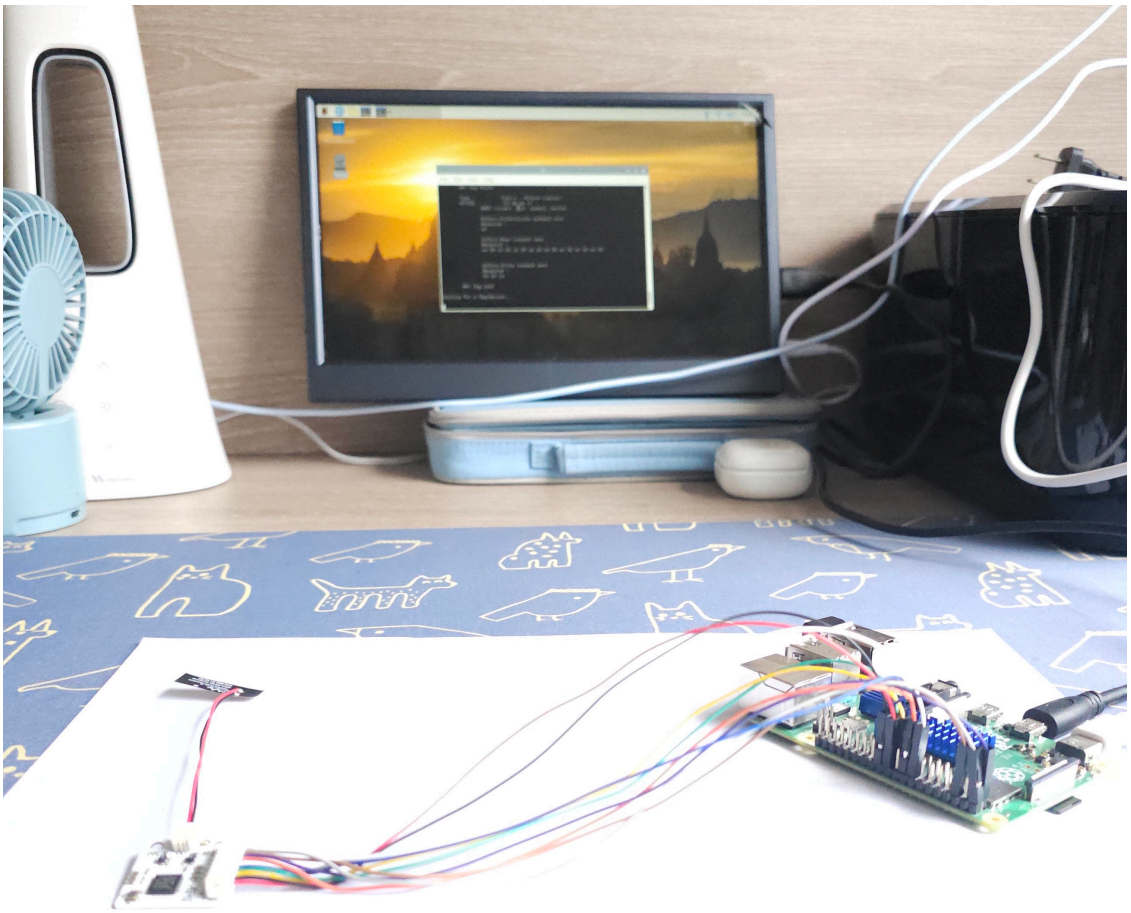
TESTING GUIDE

ELECHOUSE PN7160 SPI board quick start guide

This guide is based on NXP AN12991

For the following products:

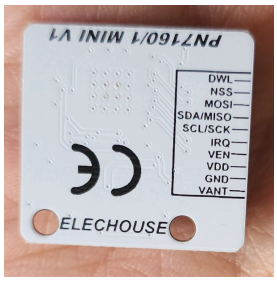
PN7161 MINI V1 — SPI

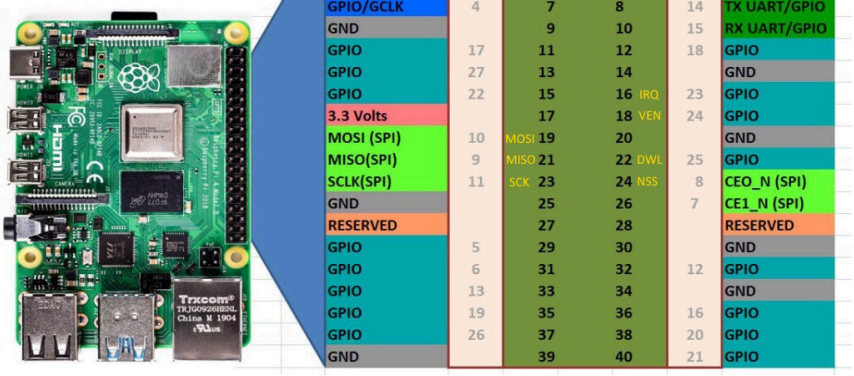


3.1 Required items

• Raspberry Pi [1] running raspbian distribution.

3.2 Hardware setup





Connection

PN7160 SPI --------Raspberry PI 4

MOSI	#19 MOSI
MISO	#21 MISO
NSS	#24 NSS
SCK	#23 SCLK
IRQ	#16 GPIO23
VEN	#18 GPIO24
VDD	#1/#17 3.3V PWR
VANT	#2/#4 5V PWR
GND	#6 GND
DWL	#22

3.3 Software setup

Use Raspbian (https://www.raspberrypi.org/software/operating-systems/). Guidelines to set up Linux environment on raspberry pi can be found here: https://www.raspberrypi.org/documentation/installation/installing-images/).

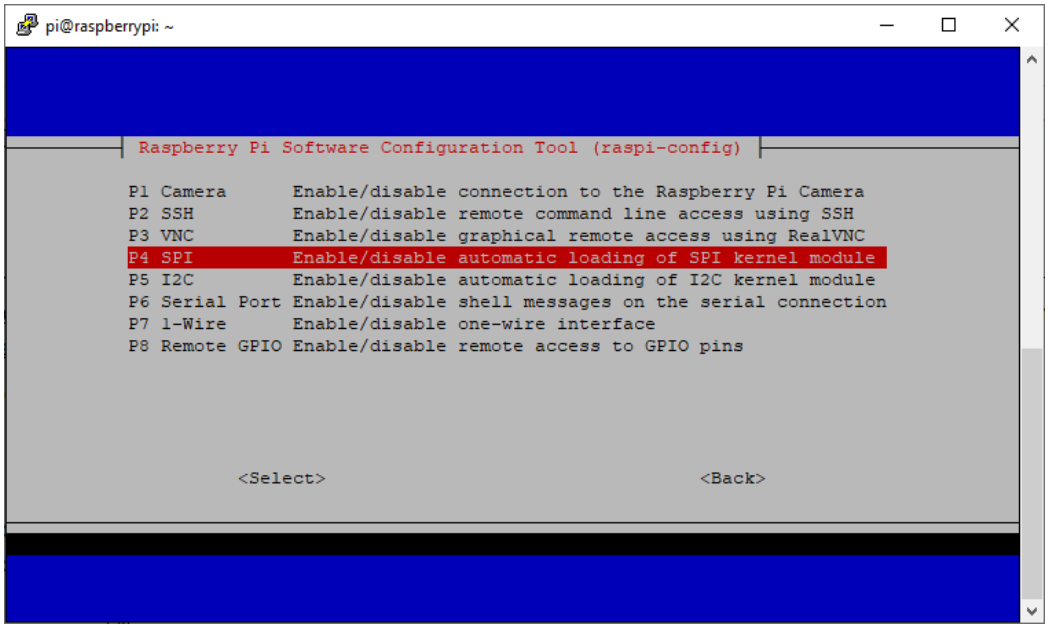
Below is the step-by-step procedure run from the Raspberry Pi to add software support for PN7160:

3.3.1 Enable SPI interface

1. Run command:

```
sudo raspi-config
```

2. Use the down arrow to select "Interface Options"
3. Arrow down to "P4 SPI"
4. Select "yes" when it asks you to enable SPI
5. Use the right arrow to select the <Finish> button



To verify the SPI interface is enabled, enter the following command `ls /dev/spi*`.

The Pi should respond with "/dev/spi0.0" which represents the user-mode SPI interface to which is connected the PN7160.

3.3.3 Install necessary tools

Execute the command:

```
sudo apt-get install autoconf automake libtool git
```

3.3.4 Clone Linux libnfc-nci library repository

Execute the command:

```
git clone https://github.com/NXPNFCLinux/linux_libnfc-nci.git -b NCI2.0_PN7160
```

3.3.5 Configure the library

Execute the commands:

```
cd linux_libnfc-nci
./bootstrap
./configure
```

3.3.6 Set the library to map SPI interface

Edit `linux_libnfc-nci/conf/libnfc-nxp.conf` file to update `NXP_TRANSPORT` and `NXP_NFC_DEV_NODE` settings as shown below:

```
################################################################################
# TRANSPORT Type
# 0x00 - I2C /SPI for noraml nxpnfc driver
# 0x01 - Not Used, kept to align with Android code
# 0x02 - ALT_I2C
# 0x03 - ALT_SPI
```

```
NXP_TRANSPORT=0x03

################################################################################
# NXP HW Device Node information
NXP_NFC_DEV_NODE="/dev/spidev0.0"
```

3.3.8 Build and install the library

Execute the commands:

```
make
sudo make install
export LD_LIBRARY_PATH=/usr/local/lib
```

To make this last setting permanent, run the following command:

```
echo "export LD_LIBRARY_PATH=/usr/local/lib" >> .bashrc
```

3.3.9 Run the demo application (built and installed together with the library during previous step)

To simply display all data collected from remote NFC device (Peer, reader/writer or card), run the demo application in "poll mode" executing the command:

```
nfcDemoApp poll
```

For more details about the demo application modes execute command:

```
nfcDemoApp --help
```

For more detailed information about the demo application, but also for additional example applications, please refer to [2].

```
pi@raspberrypi: ~/linux_libnf
pi@raspberrypi:~/linux_libnfc-nci $ ./nfcDemoApp poll
########################################################################################
##                                      NFC demo                                      ##
########################################################################################
##                                   Poll mode activated                              ##
########################################################################################
                              ... press enter to quit ...

Waiting for a Tag/Device...

        NFC Tag Found

        Type :          'Type A - Mifare Classic'
        NFCID1 :         '35 43 9F 93 '
                NDEF Content : NO, mode=1, tech=8

                Mifare Authenticate command sent
                Response :
                00

                Mifare Read command sent
                Response :
                00 00 00 00 00 00 00 00 00 00 00 00 00 00 00 00


                Mifare Write command sent
                Response :
                00 0A 14
```