VL53L3CX  
  
  
Compilation guide

&

Wiring example with VL53L3CX satellite on Raspberry Pi3 board

07/19/2021

# Hardware installation (VL53L3CX satellite with Raspberry Pi3)

xsdn-gpio = <19>;

pwren-gpio = <12>; # this is for two satellites L3, can be ignored for one device.

intr-gpio = <16>;

Chart, schematic

Description automatically generated

Raspberry connector pins -> VL53L3CX pins

3.3 V PWR pin 1 -> pin 5 (VDD)

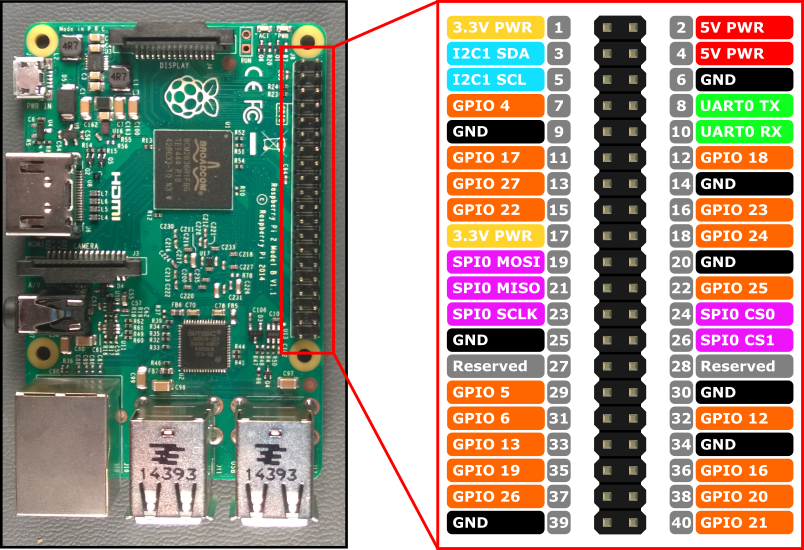
I2C1 SDA pin 3 -> pin 4 (SDA)

I2C1 SCL pin 5 -> pin 2 (SCL)

GPIO19 pin 35 -> pin 3 (XSDN)

GND pin 9 -> pin 6 (GND)

GPIO16 pin 36 -> pin 1 (INT)



To release the XSDN and then run the VL53L3CX the GPIO19 must be programmed as output and set active

sudo su

cd /sys/class/gpio

echo 19 > export

cd gpio19

echo "out" > direction

echo "1" > value

i2cdetect -r -y 1

expected output of i2cdetect command

0 1 2 3 4 5 6 7 8 9 a b c d e f

00: -- -- -- -- -- -- -- -- -- -- -- -- --

10: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --

20: -- -- -- -- -- -- -- -- -- 29 -- -- -- -- -- --

30: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --

40: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --

50: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --

60: -- -- -- -- -- -- -- -- -- -- -- -- -- -- -- --

70: -- -- -- -- -- -- -- --

Notice that the 29 is there (0x29 is the default I²C address of the VL53L3CX device)

# Software installation

H/w set up. : refer page 2 & 3.

* **For compiling module** :

Example of path : /home/pi/BN/L3CX\_Linux\_1.0.5\_bare\_1.2.4/driver/vl53Lx/

* Compile

cd driver/vl53Lx/

make clean

make VL53LX\_FULL\_KERNEL=1

* Initialize GPIOs

echo 12 > /sys/class/gpio/unexport

echo 16 > /sys/class/gpio/unexport

echo 19 > /sys/class/gpio/unexport

sudo dtoverlay -R

sudo dtoverlay stmvl53lx

sudo dtoverlay -l

* cf. Gpio.sh, execute them once for all
* run module instance and allow all access right to /dev/stmvl53lx\_ranging

sudo insmod stmvl53lx.ko

sudo chmod 777 /dev/stmvl53lx\_ranging

* **For phio compile**

cd android/hardware/vl53lx\_test/

* Modifying Makefile of phio

If path error occur, use fixed path

~~#DRIVER\_DIR = ../../../driver/vl53Lx/~~

~~CPPFLAGS=-I$(DRIVER\_DIR) -I$(DRIVER\_DIR)/inc~~

CPPFLAGS=-I../../../driver/vl53Lx -I../../../driver/vl53Lx/inc

make clean

make

# Running ranging example

* Run phio for 10 times measurement.

./phio -t=100000 -s -Z=10 -S -t=16000

|  |
| --- |
| pi@pia7e11d4f:~/BN/3CX/LinuxDriver\_1.2.4/android/hardware/vl53lx\_test $ ./phio -t=100000 -s -Z=10 -S -t=16000  [V]open fd 3 for /dev/stmvl53lx\_ranging  [I]set timing budget 100000  [V]keep using fd 3  [V]started status 0  [V]keep using fd 3  #I 0 dts= 0 range ts 122 StreamCount(0), SpadCount(212.34)  - [0] st 6 d= 49mm min/max= 17/ 55 sigma= 1.26 rate= 19.36/ 0.16  #I 1 dts= 99 range ts 221 StreamCount(1), SpadCount(212.34)  - [0] st 0 d= 49mm min/max= 16/ 55 sigma= 1.33 rate= 19.65/ 0.16  #I 2 dts= 99 range ts 320 StreamCount(2), SpadCount(212.34)  - [0] st 0 d= 49mm min/max= 17/ 55 sigma= 1.13 rate= 19.44/ 0.17  #I 3 dts= 99 range ts 419 StreamCount(3), SpadCount(212.34)  - [0] st 0 d= 50mm min/max= 16/ 56 sigma= 1.17 rate= 19.60/ 0.17  #I 4 dts= 99 range ts 518 StreamCount(4), SpadCount(212.34)  - [0] st 0 d= 50mm min/max= 17/ 56 sigma= 1.09 rate= 19.46/ 0.17  #I 5 dts= 99 range ts 617 StreamCount(5), SpadCount(212.34)  - [0] st 0 d= 50mm min/max= 17/ 56 sigma= 1.12 rate= 19.56/ 0.17  #I 6 dts= 100 range ts 717 StreamCount(6), SpadCount(212.34)  - [0] st 0 d= 50mm min/max= 17/ 56 sigma= 1.07 rate= 19.49/ 0.17  #I 7 dts= 99 range ts 816 StreamCount(7), SpadCount(212.34)  - [0] st 0 d= 50mm min/max= 17/ 56 sigma= 1.09 rate= 19.53/ 0.17  #I 8 dts= 99 range ts 915 StreamCount(8), SpadCount(212.34)  - [0] st 0 d= 51mm min/max= 17/ 56 sigma= 1.05 rate= 19.50/ 0.17  #I 9 dts= 99 range ts 1014 StreamCount(9), SpadCount(212.34)  - [0] st 0 d= 50mm min/max= 17/ 56 sigma= 1.07 rate= 19.53/ 0.17  [V]keep using fd 3  [V]stopped status 0  [V]keep using fd 3  [I]set timing budget 16000  d cl end  pi@pia7e11d4f:~/BN/3CX/LinuxDriver\_1.2.4/android/hardware/vl53lx\_test $ |