Overview

Introduction

The TOF Laser Range Sensor (B) is a TOF-based (time of flight) laser ranging sensor with an embedded MCU and ranging algorithm, which is capable of offering up to 15m measuring range, ±2% accuracy, and 1mm resolution. It supports UART or I2C communication bus, features a longer measuring distance and higher light interference resistance capability due to its ultra-narrow FOV, suitable for either indoor or outdoor conditions.

This sensor can be widely used in applications like common distance measuring, robot obstacle avoidance/route planning, as well as drone altitude setting/ceiling detection, and more...

TOF Laser Range Sensor (B)

VL53L1X Distance Sensor

Specification

Product	TOF Laser Range Sensor	TOF Laser Range Sensor (B)
Typical measuring range	Short Range: 0.012 ~ 2.16m	0.10 ~ 15.0m
	Middle Range: 0.012 ~ 3.60m	
	Long Range: 0.01 ~ 5.00m	
Typical measuring accuracy	Short Range: Accuracy ±1.0cm, standard deviation <0.3cm	0.10 ~ 2m ±2cm ; 2 ~ 15m ± 2%
	Middle Range: Accuracy ±1.0cm standard deviation <1.5cm	
	Long Range: Accuracy ±1.5cm standard deviation <0.5cm@0.01~3m standard deviation <8cm@3~5m	
Resolution	1mm	
Power Supply	3.7 ~ 5.2V (reverse-proof)	
Operating temperature	-10°C ~ 60°C	
Wavelength	940nm(conform to Class1)	750 ~ 830nm, compliant with IEC 60825-1:2014 version 3 Class2 standard
Field of view (FOV)	15° ~ 27° (Multi-Angles Adjustable)	1° ~ 2°
Communication interface	UART (TTL Signal line level 3.3V)	

| Interface	CAN(2 interfaces can be used as CAN interface at the same time)	I2C (support multiple parallel connection, slave address is 0x08+module ID)
Baudrate	UART: 115200 ~ 3000000bps (921600bps by default)	
	UART: 115.2Kbps ~ 3000Kbps (921.6Kbps by default)	I2C: up to 400Kbps
Cascade support	UART interface supports cascade up to 8, CAN interface supports cascade up to 7	up to 8x cascades via I2C
Anti-background light	Weak, only supports indoor use	Approx. 100K LUX illumination (both indoor and outdoor)
Power consumption	290mW (UART active output, 5.0V power supply in long-range mode, 58mA current)	610mW (UART active output, 5.0V power supply, 122mA current)
Weight	2.7g	7.7g
Dimensions	35.58x12x8.05mm	22.7x28x13.6mm

Applications

- Unmanned aerial vehicle height setting, ceiling detection
- Robot obstacle avoidance
- Measuring and detecting
- Intelligent gesture control
- 1-dimension gesture identification

Technology Overview

TOF is one absolute distance detecting technology, that is the sensor emits the near-infrared light to be debugged, and it will reflect after encountering the object. The sensor calculates the distance of the subject being photographed by calculating the time difference or phase difference for the emission and reflection of light so as to produce depth information. Compared with the binocular plan and 3D structural light plan, TOF has the advantages of long working distances, wide application scenarios, and high precision of long distances, etc. Therefore, it is always applied to personnel proximity detection, robot obstacle avoidance, camera automatic focusing, etc. The near-infrared light coming from the sunlight in the outdoor environment will generate an impact on the measuring effect of the module.

φ_1

φ_2
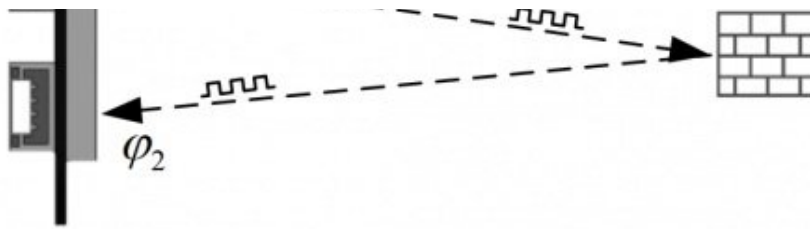
Function Description

【ID】

- ID is one variable designed for distinguishing the different sensors, which is used to identify each sensor during the cascade connection.

【Interface & Baudrate】

TOF Laser Range Sensor (B) supports UART, I2C, and I/O.

UART

The communication baud rate setting range is as follows：

UART Baud Rate	Note
115200,230400,460800,921600,1000000,1200000,2000000,3000000	921600 (by default)

The UART interface mode supports "active output" and "query output":
PC Download:

- TOF Assistant (For Windows 7/10 64 bits) ⧉

- TOF Assistant (For Windows 7/10 32 bits) ⧉

- Active Output:

  - The active output mode can only be used with a single module. In this mode, the module actively outputs measurement information at a frequency of 50 Hz, the format of output data is based on the NLink_TOFSense_Frame0 protocol.

  - Users can connect the Sensor to Windows PC by USB to TTL module and configure the module by Waveshare TOFAssistant software. Just like the picture below. You need to click the "Write Parameter" button to save the setting and don't forget to check them by "Read Parameter".
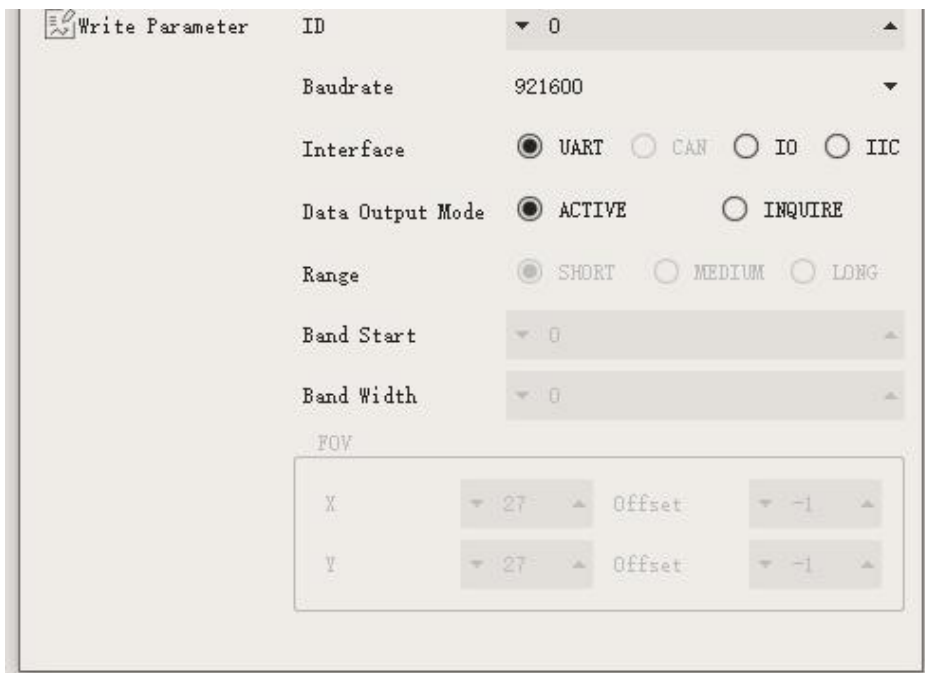
- Query Output:

  - The query output mode can be used in a single module. In this mode, the controller sends a query command containing the module ID to the desired query module, and the module can output one frame of measurement information. The query command is based on NLink_TOFSense _Read_Frame0 protocol, and the output data from the module is based on the NLink_TOFSense_Frame0 protocol.

  - Connect the TOF series products to the Waveshare TOFAssistant software through the USB TO TTL module (line sequence and power supply voltage reference data sheet), click to enter the setting page after the identification is successful, the UART query output mode configuration is as shown in the figure below, after configuring the parameters, you need to click the write parameter button To save the parameters after the parameters are written successfully, you can read the parameters once to confirm whether the parameters are written successfully. (After changing the baud rate parameter of the module, you need to re-plug the USB TO TTL module to automatically identify the module):
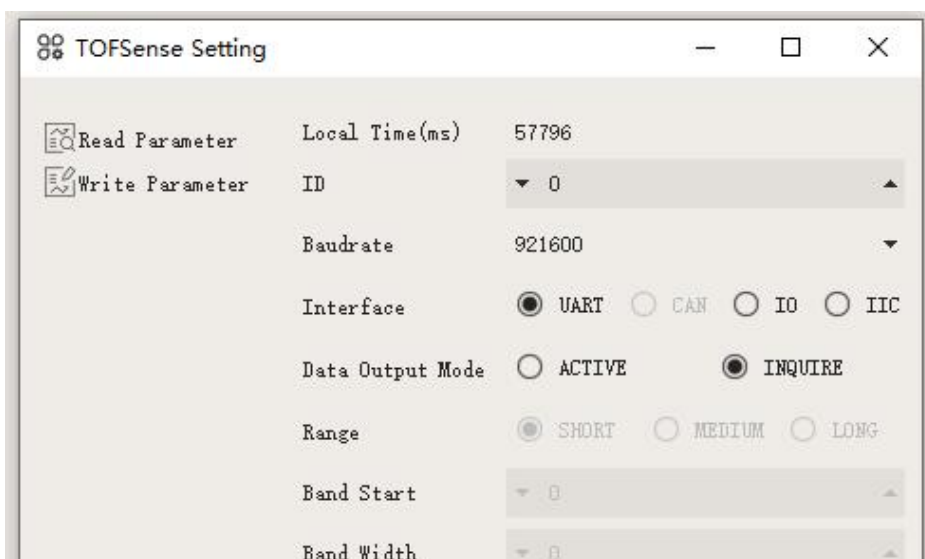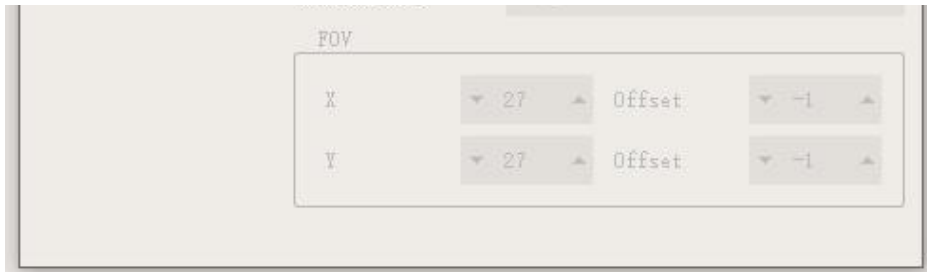
I2C

- The baudrate rate

I2C baudrate	Description
Max 400KHz	Max 4000KHz, it is defined by the host device

- I2C address

I2C address	Description
0x08 ~ 0x77	The default address is 0x08 (7 bits), and the slaver address of the module is 0x08 + ID, you can change the device address by modifying the module ID. Please take care of offset and the behavior bit while communicating. for example, if the device address is 0x08, if you need to write data, you need to add the write bit and the byte sent should be 0x10, if you need to read data, you need to add the read bit and the byte sent should be 0x11.

In the I2C communication mode, the controller sends a reading frame to the expected query module of the specified slave address, and then the information such as the distance of the module can be obtained. In addition, various parameters such as the output mode of the module can also be changed through I2C communication. The reading frame and write frame format follow the protocol NLink_TOFSense_IIC_Frame0. You can connect the sensor to the PC by USB to the TTL module and change the device address (0x08 + ID, the ID should be in the range 0 ~111) by the Waveshare TOFAssistant software. Note that, the Waveshare ToFAssitant software can only support UART mode.
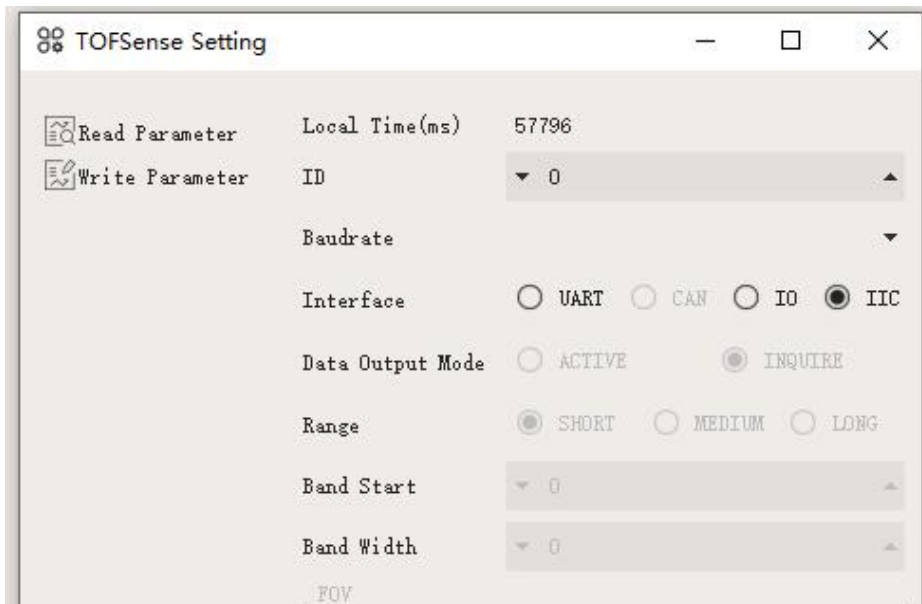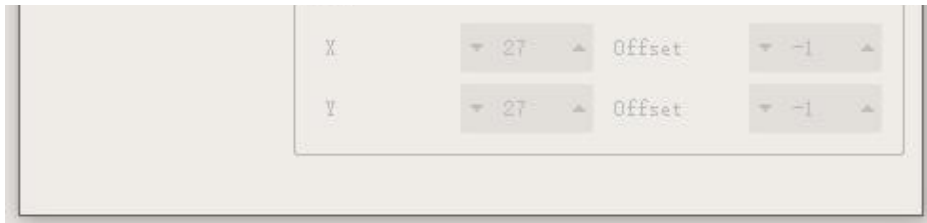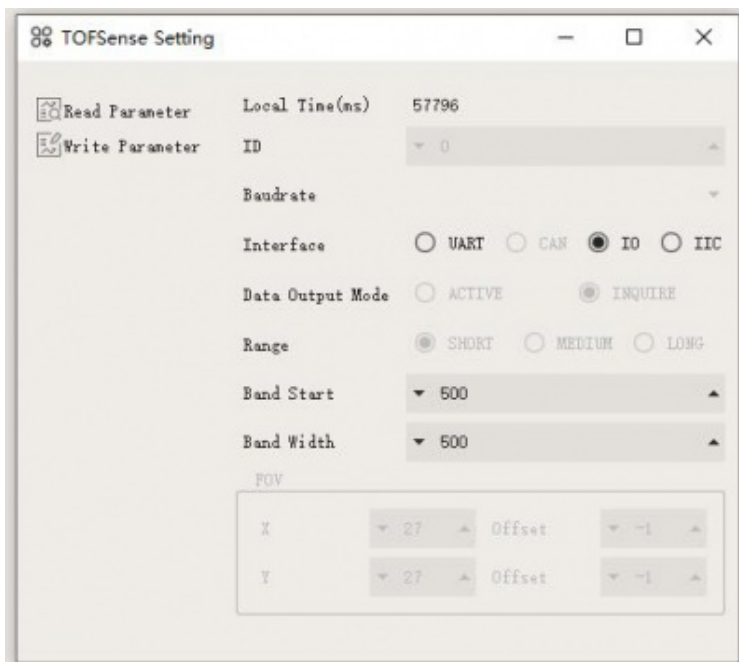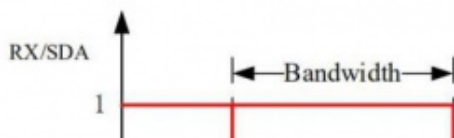
I/O output

- In I/O output mode, it doesn't output distance data. The voltage of I/O is toggled when the distance is over the threshold.

When the module is in UART mode, users can connect it to the Windows PC by USB to TTL module and configure the band data by the Waveshare TOFAssistant software. The distance value is converted to high and low-level output through hysteresis comparison. TX/SCL and RX/SDA output complementary levels. The hysteresis comparison diagram is shown in Figure 5. After configuring the parameters, you need to click the Write Parameters button to save the parameters. Note: After switching to I/O mode, you can refer to the FAQ chapter to change back to UART mode.

For example, Band_Start and Bandwidth are both set to 500, which corresponds to 0.5 meters. When the distance measurement value is 0.3 meters, RX is high, TX is low, the distance measurement value increases to 0.8 meters, RX is high, TX is low, and when the distance measurement value exceeds 1 meter, the level is reversed and RX is low, TX is high. When the distance measurement value drops from more than 1 meter to 0.8 meters, RX is low and TX is high. When the distance measurement value drops below 0.5 meters, the level is reversed, RX is high and TX is low.

- The range of Band_Start, Bandwidth is 0~15000 and 0~25000.
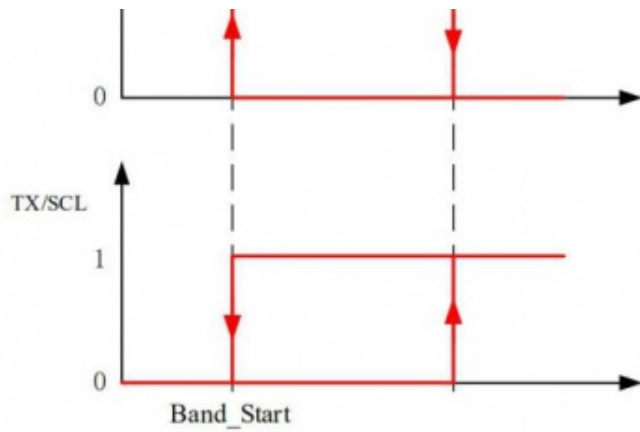
【Distance Status】

The module can output the current distance status, the user can perform the data processing with the combination of distance status. The meaning of distance status is as follows:

Value	Note
0	Measuring distance is invalid
1	Measuring distance is valid

【Signal Strength】

Indicate the strength of the current return signal, and the larger this value indicates the stronger the return signal.

【Range Precision】

Indicate the precision of the current signal, the smaller the data, the higher the prevision.

【FOV】

The field angle FOV determines the vision scope of TOFSense. The FoV of the ToF Sensor (B) is 1~2°

【Mode Switch】

If the sensor is in UART mode, users can connect it to PC and change it to I2C or I/O mode by the Waveshare TOFAssistant software. If the sensor is in I2C mode, users can send commands to switch the mode to UART. And users can check the FAQ chapter about how to change to UART from I/O mode.

Protocol Analysis

- The protocol is composed of Frame Header, Function Mark, Data, and Sum Check.

  - The Frame Header and Function Mark are fixed values;
  - Data is the content of the transmitted data;
  - Sum Check is the lowest byte after the addition of Frame Header, Function Mark, and Data (that is, the addition of all the previous bytes).

- Agreement composition:

```
Frame Header + Function Mark + Data + Sum Check
```

Note: Protocol packets follow the principle of little-endian mode, that is, the low byte is first and the high byte is last.

- The frame：

Protocol	Type	Description
NLINK_TOFSENSE_FRAME0	Fixed length	UART output data, contains the timestamp, distance, distance status, and signal strength, etc.
NLINK_TOFSENSE_READ _FRAME0	Fixed length	UART read, contain device ID
NLINK_TOFSENSE_IIC_FRAME0	Flexible length	I2C data, contain distance, distance status, and signal strength, etc.

NLink_TOFSense_Frame0

-
  - **Data Sources:** Connect the module to the host computer and configure the UART as active output mode.
  - **Raw data：**

```
57 00 ff 00 9e 8f 00 00 ad 08 00 00 03 00 06 41
```

- **Analysis table：**

Data	Type	Length (Bytes)	Hex	Result
Frame Header	uint8	1	57	0x57
Function Mark	uint8	1	00	0x00
reserved	uint8	1	ff	*
id	uint8	1	00	0
System_time	uint32	4	9e 8f 00 00	36766ms
dis*1000	uint24	3	ad 08 00	2.221m

Data	Type	Length	Hex	Result
dis_status	uint8	1	00	0
signal_strength	uint16	2	03 00	3
range_precision	uint8	1	06	6cm
Sum Check	uint8	1	41	0x41

NLink_TOFSense_Read_Frame0

- - o **Data Sources:** Connect the module to the host computer, and configure it as UART query output mode. The host device sends command to query the data

- - o **Raw data:**

```
57 10 FF FF 00 FF FF 63
```

- **Analysis table:**

Data	Type	Length (Bytes)	Hex	Result
Frame Header	uint8	1	57	0x57
Function Mark	uint8	1	10	0x10
reserved	uint8	2	ff	*
id	uint8	1	00	0
reserved	uint8	2	ff	*
Sum Check	uint8	1	63	0x63

NLink_TOFSense_IIC_Frame0

- **Device Address**: The sensor works as a slaver device, the default device address is 0x08 (7bits), the whole device address is 0x08 + ID, user can change the device address by modifying the ID.

- **Register address**:   If the register is NULL, the output is 0xff by default

```
AD 08 00 00 03 00 FF FF
```
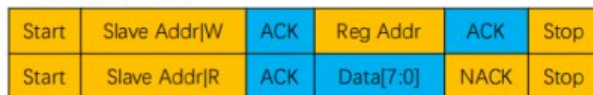
- **Analysis table:**

0x04	[15-0] hardware version：硬件版本																																RO
	[31-16] bootloader version：bootloader 版本																																

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
0x08	firmware version																																RO
	[0-31] firmware version:固件版本																																

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
0x0C	Reserved																ID								Reserved		Ragne mode		Output mode		Interface mode		RW

[0-2] Interface mode:通信模式 0-UART，1-CAN，2-I/O，3-IIC (RW)

[3] Output mode：输出方式 0-主动输出，1-查询输出 (RO)

[4-5] Ragne mode：测距模式 0-短距 ，1-中距，2-长距 (RO)

[8-15] ID：设备 ID (RW)，更改 ID 后需重新上电从机地址才会生效

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
0x10	UART Baudrate																																RW

[0-31] uart baudrate：UART 波特率

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
0x14	CAN Baudrate																																RO

[0-31] can baudrate：CAN 波特率

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
0x18	FOV.y_offest								FOV.x_offest								FOV.y								FOV.x								RO

[0-7] FOV.x：X 方向 FOV，单位：°

[8-15] FOV.y：Y 方向 FOV，单位：°

[16-23] FOV.x_offest：X 方向 FOV 偏移，单位：°

[24-31] FOV.y_offest：Y 方向 FOV 偏移，单位：°

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
0x1C	bandwidth																bandstart																RO

[0-15] bandstart：I/O 模式滞环起点，单位：mm

[16-31] bandwidth：I/O 模式滞环带宽，单位：mm

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
0x20	Systime																																RO

[0-31] Systime：系统时间，单位：ms

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
0x24	Distance																																RO

[0-31] Distance：距离，单位：mm

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
0x28	Signal_strength																Dis_status																RO

[0-15] Dis_status：距离状态

[16-31] Signal_strength :信号强度

	31	30	29	28	27	26	25	24	23	22	21	20	19	18	17	16	15	14	13	12	11	10	9	8	7	6	5	4	3	2	1	0	
0x2C	Reserved																								Range_precision								RO

[0-7] Range_precision：测距精度 单位：cm，0xFF 表示大于等于 255cm，0x00 表示小于 1cm

I2C communication

Single data write

Start	Slave Addr|W	ACK	Reg Addr	ACK	Data[7:0]	ACK	Stop

Sinal data read

Start	Slave Addr|W	ACK	Reg Addr	ACK	Stop

Start	Slave Addr|R	ACK	Data[7:0]	NACK	Stop

Multiple data write

Start	Slave Addr|W	ACK	Reg Addr	ACK	Data[7:0]	ACK	Data[7:0]	ACK	Data[7:0]	ACK	Stop

Multiple data read

Start	Slave Addr|W	ACK	Reg Addr	ACK	Stop

Start	Slave Addr|R	ACK	Data[7:0]	ACK	Data[7:0]	ACK	Data[7:0]	NACK	Stop
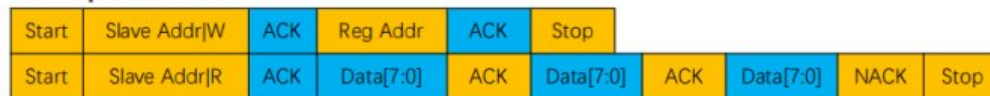
Start: starting signal

W: read the flag bit 1

R: Write the flag bit 0

ACK: response

NACK: no response

Stop: stoping signal

NLink TOFSense IIC comunication4.png

Sent by the host

Sent by the slave

NLink_TOFSense_Setting_Frame0

-
  - o **Data Sources:** : Setting Commands

- **Analysis table:**

| Data	Type	Length (Bytes)	Description
Frame Header	uint8	1	value = 0x54
Function Mark	uint8	1	value = 0x20
mix	uint8	1	bit0: [0:write],[1:read]---WO
reserved	*	1	Reserved.The default value is 0xFF
id	uint8	1	Node ID---RW
system_time	uint32	4	terminal system time,unit:ms---WO
			node system time,unit:ms---RO
mode	uint8	1	bit1:output mode-[0:active],[1:inquire]---WR
			bit2-3:range mode-[00:short],[01:medium],[10:long]---WR
			bit4:0:interface mode-[00:uart],[01:can],[10:io],[11:iic]---WR
reserved	*	2	Reserved.The default value is 0xFF
			UART: 115200 , 230400 , 460800 , 921600 , 1000000 , 1200000 , 1500000 ,

uart_baudrate	uint24	3	2000000 , 3000000
			CAN:100000，250000，500000，1000000，2000000，3000000
FOV.x	uint8	1	Reserved.The default value is 0xFF
FOV.y	uint8	1	Reserved.The default value is 0xFF
FOV.x_offect	int8	1	Reserved.The default value is 0xFF
FOV.y_offect	int8	1	Reserved.The default value is 0xFF
band_start	uint16	2	[0,25000],unit:mm
band width	uint16	2	[0,25000],unit:mm
reserved	uint8	8	Reserved.The default value is 0xFF
Sum Check	uint8	1	the sum check is equal to all previous bytes addded

Software

TOF Assistant is the debugging software supporting the TOF laser ranging module. Its main functions are configuration debugging, status display, function application, and firmware upgrade:

- **Configuration and debugging:** used to configure node-related parameters, such as ID, working mode, baud rate, etc.
- **Functional application:** used for application development, such as data import and export, motion track storage, historical track playback, etc.
- **Firmware upgrade:** used to upgrade the product by wired firmware.

Dimensions

-
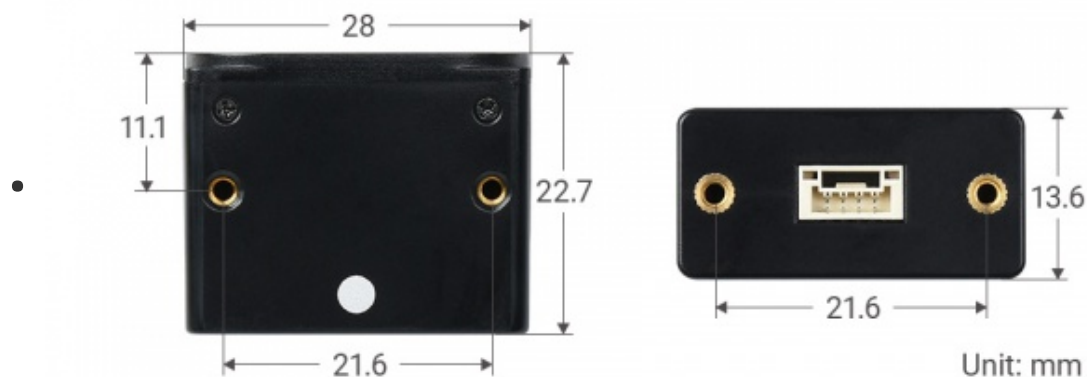
Work with Raspberry Pi

Enable UART

Execute the following command to enter the Raspberry Pi configuration:

```
sudo raspi-config
```

Choose Interfacing Options -> Serial -> No -> Yes:

You need to disable the login shell and enable the srial port hardware:
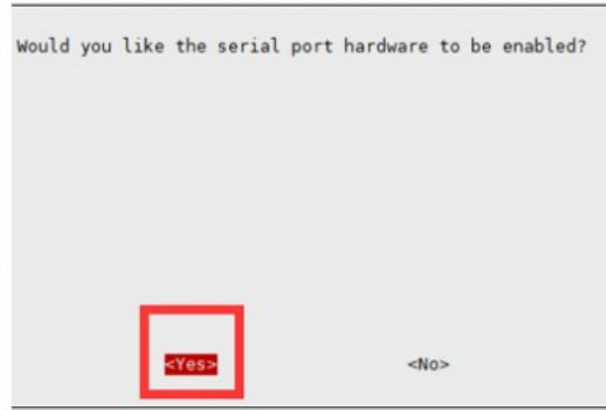
Reboot Raspberry Pi:

```
sudo reboot
```

Open the /boot/config.txt file and find the following configuration statement to enable the serial port, if not, add it at the end of the file:

```
enable_uart=1
```

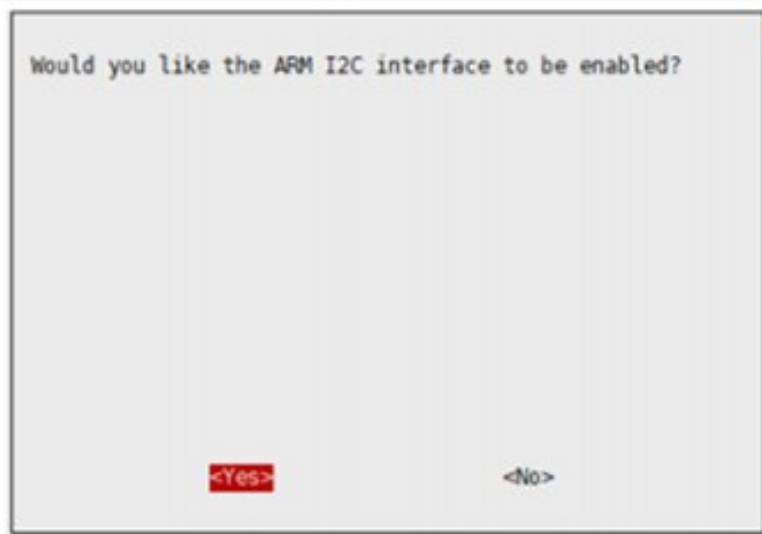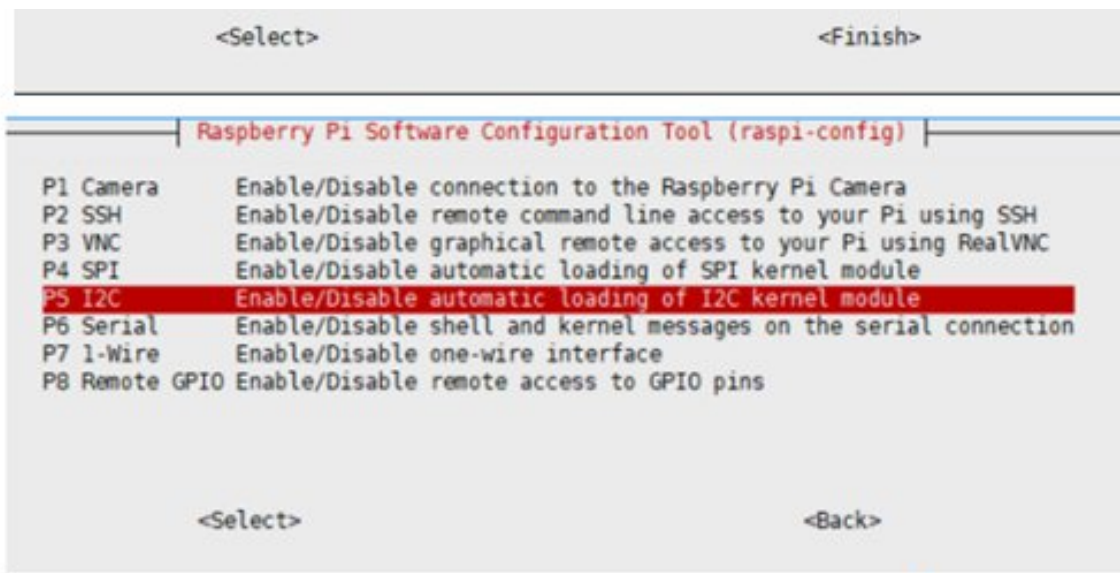Reboot to take effect.

Enable I2C Interface

Open a terminal and run the following commands:

```
sudo raspi-config
Choose Interfacing Options -> I2C -> Yes.
```

Reboot Raspberry Pi:

```
sudo reboot
```

```
                  <Select>                                      <Finish>

    ┤ Raspberry Pi Software Configuration Tool (raspi-config) ├
   P1 Camera       Enable/Disable connection to the Raspberry Pi Camera
   P2 SSH          Enable/Disable remote command line access to your Pi using SSH
   P3 VNC          Enable/Disable graphical remote access to your Pi using RealVNC
   P4 SPI          Enable/Disable automatic loading of SPI kernel module
   P5 I2C          Enable/Disable automatic loading of I2C kernel module
   P6 Serial       Enable/Disable shell and kernel messages on the serial connection
   P7 1-Wire       Enable/Disable one-wire interface
   P8 Remote GPIO Enable/Disable remote access to GPIO pins


                  <Select>                                      <Back>
```

```
   Would you like the ARM I2C interface to be enabled?




              <Yes>                        <No>
```

Module parameter Settings

The UART baud rate of the TOF Laser Range Sensor module needs to be set to:
921600 through the host computer;
The effect of using TOF Laser Range Sensor module on Raspberry Pi is as follows:

```
× ● 1 pi4 ×  +                                                    ⟨ ⟩  ▾
  TOF id is: 0
  TOF system time is: 7577469ms
  TOF distance is: 144mm
  TOF status is: 0
  TOF signal is: 18
  TOF data is ok!
  TOF id is: 0
  TOF system time is: 7577699ms
  TOF distance is: 143mm
  TOF status is: 0
  TOF signal is: 18
  TOF data is ok!
  TOF id is: 0
  TOF system time is: 7577929ms
  TOF distance is: 144mm
  TOF status is: 0
  TOF signal is: 18
  TOF data is ok!
  TOF id is: 0
  TOF system time is: 7578160ms
  TOF distance is: 147mm
  TOF status is: 0
  TOF signal is: 19
  TOF data is ok!
  TOF id is: 0
```

Hardware Connection

Connect to UART

	TXD/SCL
	RXD/SDA
	GND
	VCC

Connect to I2C
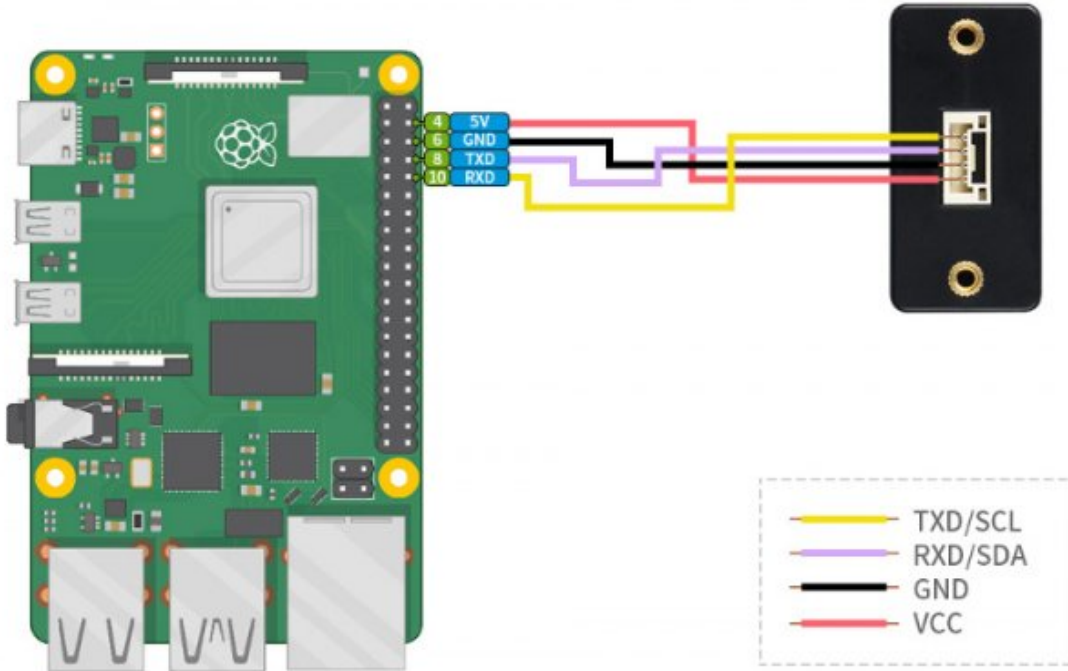
	TXD/SCL
	RXD/SDA
	GND
	VCC
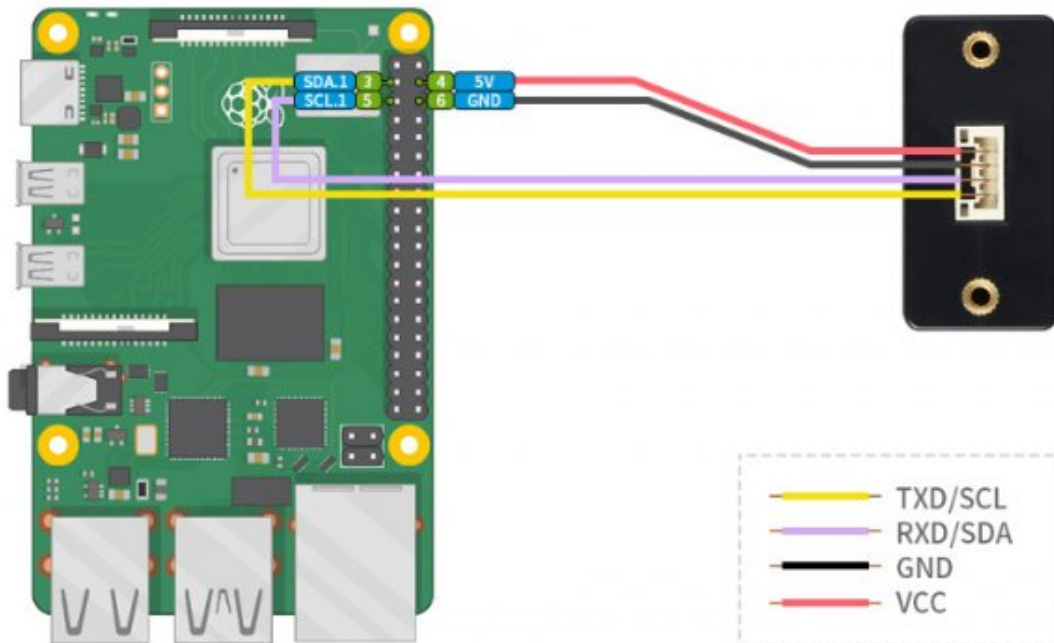
Working with Jetson Nano

Hardware Connection
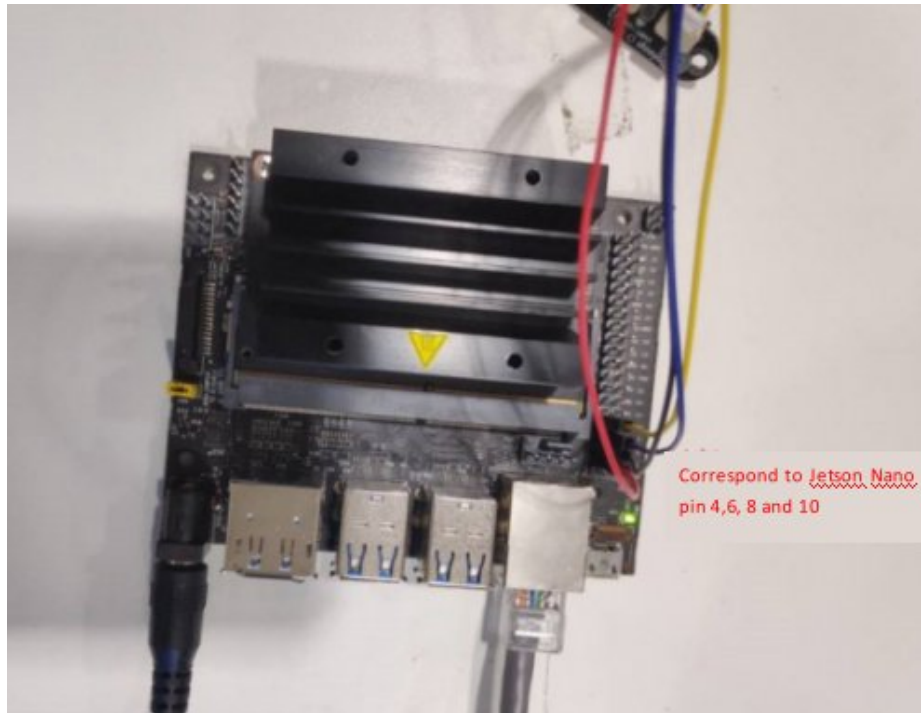
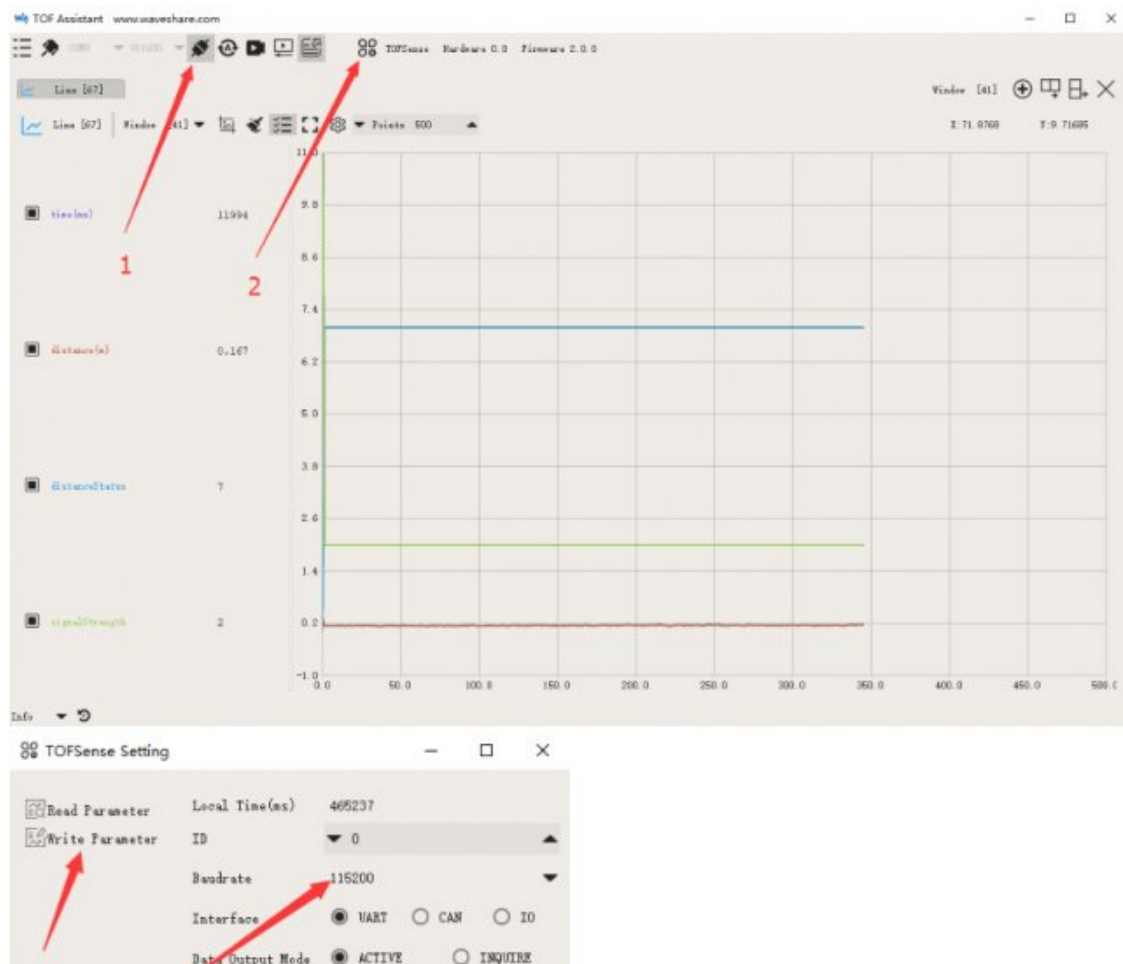Correspond to Jetson Nano pin 4,6, 8 and 10

Software Settings

The UART baud rate of the TOF Laser Range Sensor module needs to be set to 115200 by the host computer;

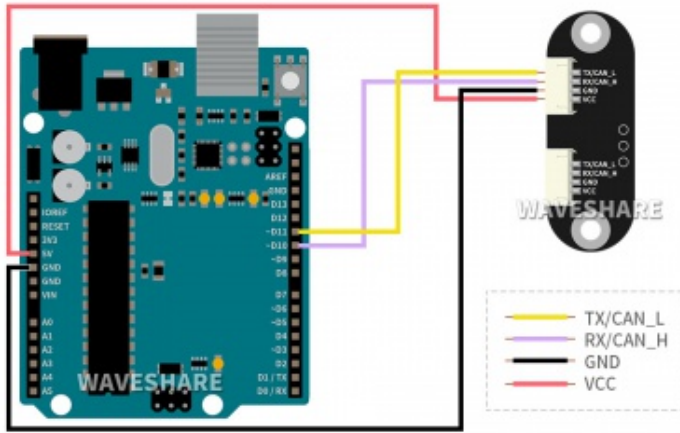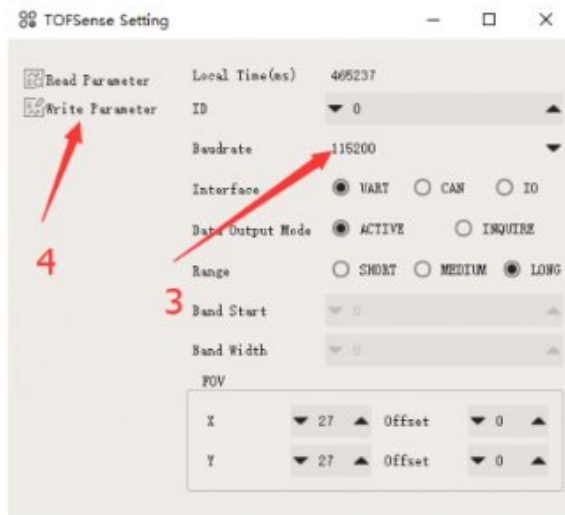The effect of Jetson nano using TOF Laser Range Sensor module is as follows:

Working with Arduino

Hardware Connection

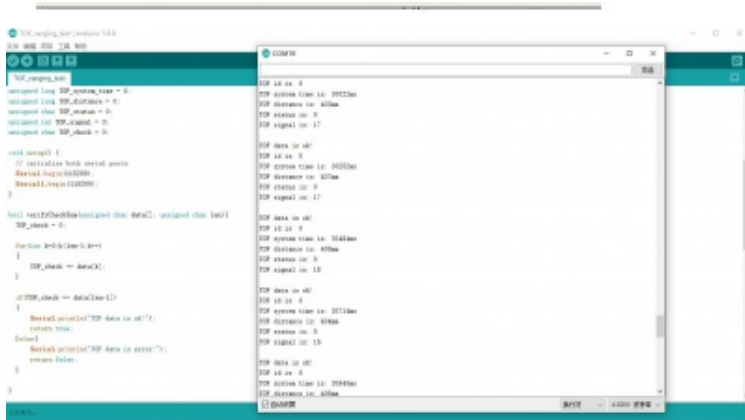|	TX/CAN_L
	RX/CAN_H
	GND
	VCC

Software Settings

- The UART baud rate of the TOF Laser Range Sensor module needs to be set to: 115200 by the host computer;
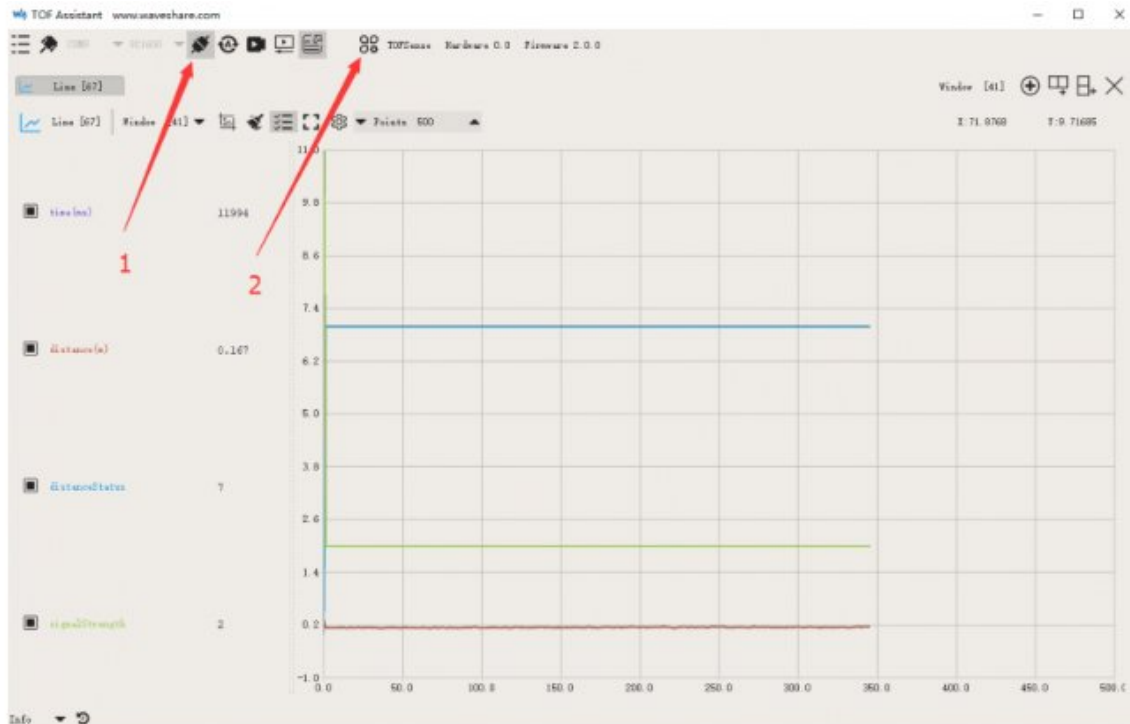
Resource

Demo code

- Demo code

Software

- TOF Assistant PC Assistant (Windows 7/10 64-bit machine)
- TOF Assistant PC Assistant (Windows 7/10 32-bit machine)

FAQ

Question: Can it be used under outdoor (strong light) conditions?

Answer:
The module is able to use outdoor.

Question: Is there interference in the work of multiple modules?

Answer:
No interference. When multiple modules work at the same time, even if the infrared rays between each other cross or hit the same position, it will not affect the actual measurement.

Question: Why is there no data output in TOFSense?

Answer:
Each module is shipped after strict testing. If there is no data, please check whether the mode, wiring, baud rate, and other configurations are correct; for I2C mode,

please check if you have to use the correct device address; for I/O mode, please check the Introduction part

Question: What should I pay attention to when installing?

Answer:
When installing, avoid obstruction in the FOV angle. In addition, attention should be paid to the height of the ground, and similar reflective surfaces such as ground occlusion in the FOV should be avoided.

Question: Is the module's UART. I2C and I/O the same interface?

Answer:
All the interfaces of the module share the same physical interface, and the corresponding line sequence can be changed for different communication modes.

Question: Why couldn't the Waveshare TOFAssistant software recognize the mode?

Answer:
The TOFAssistant software can only support UART mode. If you have set the Sensor to other modes, please switch it back to UART mode first.

Question: After switching to IIC or I/O mode, why does NAssistant software not recognize the module?How to switch between different communication modes?

Answer:

- Currently, the NAssistant software only supports the recognition of modules in UART mode. InUART mode, the host computer can enter the setting page to configure the module as an IICor I/Ocommunication mode after successful recognition through the software. In IIC communication mode, the module can be switched back to UART or I/O mode by sending instructions to the module according to the IIC communication protocol. Additionally, if there is no IIC test environment or if it is switched to I/O mode, it can be switched back to UART mode as follows:
    - The user needs to prepare a USB to TTL module that supports 921600

baud rate (CP2102 is recommended) and install the corresponding driver, connect the USB to TTL module's TX, RX, andGND to the corresponding pins of the TOF module, and temporarily not connect the VCC pin. Thenplug the USB to TTL module into the computer.

- Open the NAssistant software, click on the icon to enter the serial port debugging assistant, change the baud rate to 921600, select the COM port corresponding to the USB to TTL module, andthen click the connect button to connect to the COM port (most situations will automatically connect). In the one-way send text box, enter 54 20 00 ff 00 ff ff ff ff 00 ff ff 00 10 0e ff ff ff ff ff ff ff ff ff ff 00 ff ff ff ff 7c, change the send interval in the timer send column to 20ms, and then check the timer send.

- At this point, connect the USB to TTL module's 5V to the TOF module's VCC pin. The module will switch to UART mode and start outputting data. Then uncheck the timer send button, disconnect the USB to TTL module, and then power on the module. Finally, click the recognition button on the main page to recognize the module.

- If the switch fails, pull out the USB to TTL module and repeat the entire step. Do not plug andunplug the VCC pin repeatedly while sending commands. If the module can be recognized normallybut the serial port output data is abnormal, you can manually change to UART mode in the settingpage

- PS: If the TOF module's VCC pin is connected to the USB to TTL module's 5V and the module continuously sends protocol data such as 80 00 80 00..., first click the connect button to temporarilydisconnect the COM port, change the baud rate to 115200, and then click the connect button toreconnect to the COM port. If the data in the serial port debugging assistant starts with b3 b1 at this point, enter de ed 00 00 05 04 3b 01 00 00 10 in the one-way send text box and click send. Thendisconnect the USB to TTL module, power on the module, and click the recognition button on the mainpage to recognize the module. If the data still starts with b3 b1 after re-plugging, repeat the PS steps.

Question: What kind of data will the Sensor output if the measured distance is larger than 15m?

Answer:
If the measured distance is larger than 15m, the output data is random and it will be 0 if the distance is larger than 20m

Question: Does the module support output point cloud information?

Answer:
The module can only output one distance at a time and does not support the output of point cloud information temporarily.

Question: What kind of connector does the sensor use?

Answer:
The connector is GH1.25.

Question: How to transfer the data to distance in a meter?

Answer:
For example, if the data received is ad 08 00. Because the data is saved in little-endian mode, it should be taken as 0x0008ad, convert it to DEC mode it should be 2221, and divide with 1000 you can get the distance data 2.221m.

Question: How to calculate the CHK?

Answer:
The checksum is to add all the previous bytes and take the lowest byte of data. For example, the checksum of

```
55 01 00 ef 03 is 0x55+0x01+0x00+0xef+0x03=0x0148
```

then the checksum is 48, so The complete data of this frame is 55 01 00 ef 03 48.

Question: Why cannot the Sensor work in I2C mode?

Answer:
In IIC mode, the device's SDA and SCL pins are recommended to be output in open-drain mode. At this time, a pull-up resistor is required on the bus. During communication, functions such as start, stop, read, write, and response should be programmed according to the standard IIC communication sequence. When communicating with the TOF module, refer to the NLink_TOFSense_IIC_Frame0 protocol in the user manual to read and write the registers. Pay special attention to the shift of the 7-bit slave address and increase the read/write bit to send

Question: If reports an error "The MSVC***.dll file cannot be found...". It may be that the computer lacks the corresponding runtime components of Microsoft.?

Answer:

Visual C ++ Redistributable for Visual Studio 2017 ⧉, if the above installation fails or shows success, but opening the assistant program still prompts that the DLL file is missing. Note, please select the patch for the computer system.

Question: The software report an error "Because Qt***.dll cannot be found..."?

Answer:

Please check whether the installation file is silently intercepted by the security software, please exit the security software and reinstall it. Also, run with administrator rights.

Support

Technical Support

If you need technical support or have any feedback/review, please click the **Submit Now** button to submit a ticket, Our support team will check and reply to you within 1 to 2 working days. Please be patient as we make every effort to help you to resolve the issue.

Working Time: 9 AM - 6 AM GMT+8 (Monday to Friday)

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