**YDLIDAR Experience**
James H Phelan MD
2021.07.30 -

**2021.07.30**
Note from supplier: TX8 LIDAR out of stock, cancel.
Wouldn't have arrived for 1-2 mos! (Slow boat from China??).
Ordered EAI YDLIDAR X2L. Prime. Arriving day after tomorrow:
https://www.amazon.com/gp/product/B07W613C1K/ref=ppx_od_dt_b_asin_title_s00?ie=UTF8&psc=1

YDLIDAR X2 arrived!

Team,

When I plug it into the USB it spins. So far, so good.
The mounting holes are metric spaced & I find no adapters online (not even Thingiverse) to match to rover's pattern plate top.
Will need to create one & "give back". Roberto??
<https://www.ydlidar.com/Public/upload/files/2020-04-13/YDLIDAR%20X2%20Datasheet.pdf>
<https://www.servocity.com/9-x-12-aluminum-pattern-plate/>
There are 2 similar github repos for the YDLIDAR X2:
This older one:
<https://github.com/yangfuyuan/ydlidar_ros2>
and this newer one that specifically mentions ROS2 drivers:
<https://github.com/YDLIDAR/ydlidar_ros2_driver>
unless advised otherwise, I'll try the newer one.
Tips or tricks before I blunder on?

**2021.08.07**

Plan for installing YDLIDAR:
YDLIDAR / ydlidar_ros2_driver
which points to required SDK:
https://github.com/YDLIDAR/YDLidar-SDK

Installation
Fork and then Clone YDLidar-SDK's GitHub code
Build and Install - This step is required
    Install Cmake
        YDLidar SDK requires CMake 2.8.2+ as dependencies
        ubuntu@AUDACITY:~$ **cmake --version**
        cmake version 3.16.3
This I didn't do at first:

```
     if you want to use python API, you need to install python and
     swig(3.0 or higher):
     sudo apt-get install python swig
     sudo apt-get install python-pip

So I did this afterward:
python API install separtately:
The Next operation only installs the python API, if the above
command has been executed, there is no need to perform the next
operation.
     cd YDLidar-SDK
     pip install .
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK$ pip install .
Defaulting to user installation because normal site-packages is
not writeable
Processing /home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK
  DEPRECATION: A future pip version will change local packages to
be built in-place without first copying to a temporary directory.
We recommend you use --use-feature=in-tree-build to test your
packages with this new behavior before it becomes the default.
   pip 21.3 will remove support for this functionality. You can
find discussion regarding this at
https://github.com/pypa/pip/issues/7555.
Building wheels for collected packages: ydlidar
  Building wheel for ydlidar (setup.py) ... error
... lot of red text ...
  Running setup.py clean for ydlidar
Failed to build ydlidar
Installing collected packages: ydlidar
    Running setup.py install for ydlidar ... error
... lot of red text ...

# Another method
python setup.py build
python setup.py install

ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK$ python setup.py
build
Command 'python' not found, did you mean:
  command 'python3' from deb python3
  command 'python' from deb python-is-python3
```

**Build YDLidar-SDK**

Ubuntu 18.04/16.04/14.04 LTS

*No mention of 20.04 I assume came later & is compatible*

In the YDLidar SDK directory,..

Need to make directory

ubuntu@AUDACITY:~$ **mkdir -p YDLidar_SDK.ws**

ubuntu@AUDACITY:~$ **cd YDLidar_SDK.ws**

run the following commands to compile the project:

```
ubuntu@AUDACITY:~/YDLidar_SDK.ws$ git clone
     https://github.com/YDLIDAR/YDLidar-SDK.git
Cloning into 'YDLidar-SDK'...
remote: Enumerating objects: 449, done.
remote: Counting objects: 100% (449/449), done.
remote: Compressing objects: 100% (328/328), done.
remote: Total 449 (delta 230), reused 328 (delta 116), pack-reused
0
Receiving objects: 100% (449/449), 6.86 MiB | 5.66 MiB/s, done.
Resolving deltas: 100% (230/230), done.

ubuntu@AUDACITY:~/YDLidar_SDK.ws$ ls
YDLidar-SDK
ubuntu@AUDACITY:~/YDLidar_SDK.ws$ cd YDLidar-SDK/
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK$ ls
CMakeLists.txt  LICENSE.txt  README.pdf  cmake  csharp  python
setup.py  startup  ydlidar_config.h.in
Doxyfile        README.md    build       core   doc     samples
src       test

ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK$ cd build/
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/build$ ls
notes.txt
```

```
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/build$ cmake ..
-- The C compiler identification is GNU 9.3.0
-- The CXX compiler identification is GNU 9.3.0
-- Check for working C compiler: /usr/bin/cc
-- Check for working C compiler: /usr/bin/cc -- works
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Detecting C compile features
-- Detecting C compile features - done
-- Check for working CXX compiler: /usr/bin/c++
-- Check for working CXX compiler: /usr/bin/c++ -- works
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Detecting CXX compile features
-- Detecting CXX compile features - done
[Cmake depriction warnings.  Not relevant]
  The file

    /home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/build/ydlidar_sdkTargets.cmake

  was generated by the export() command.  It should not be installed with the
  install() command.  Use the install(EXPORT) mechanism instead.  See the
  cmake-packages(7) manual for more.

Call Stack (most recent call first):
  CMakeLists.txt:161 (install_package)
This warning is for project developers.  Use -Wno-dev to suppress it.

--
-- +============================================================================+
-- |         Resulting configuration for                                        |
-- +============================================================================+
--  _____________________________ PLATFORM _____________________________________
--  Host                          : Linux5.4.0-1041-raspiaarch64
--  Is the system big endian?     :  No
--  Word size (32/64 bit)         : 64
--  CMake version                 : 3.16.3
--  CMake generator               : Unix Makefiles
--  CMake build tool              : /usr/bin/make
--  Compiler                      : GNU
--  Configuration                 :
--
--  _____________________________ OPTIONS ____________________________________
--  Build YDLidar-SDK as a shared library?   :  No
--  Build Examples?                 : Yes
--  Build C Sharp API?               :  No
--  Build TEST?                              : Yes
--
--  _____________________________ INSTALL ___________________________
--  Install prefix                       : /usr/local
--
--  ____________________________ WRAPPERS/BINDINGS ____________________________
--  Python bindings (pyydlidar)    :  No
--    - dep: Swig found?           :  No [Version: ]
--    - dep: PythonLibs found?  : Yes [Version: 3.8.10]
--
-- Configuring done
-- Generating done
-- Build files have been written to: /home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/build
```

ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/build$ **make**

*[make successful with warnings]*

```
Scanning dependencies of target ydlidar_sdk
[  4%] Building CXX object CMakeFiles/ydlidar_sdk.dir/core/base/timer.cpp.o
[  8%] Building CXX object CMakeFiles/ydlidar_sdk.dir/core/common/ydlidar_def.cpp.o
[ 12%] Building CXX object CMakeFiles/ydlidar_sdk.dir/core/network/ActiveSocket.cpp.o
[ 16%] Building CXX object CMakeFiles/ydlidar_sdk.dir/core/network/PassiveSocket.cpp.o
[ 20%] Building CXX object CMakeFiles/ydlidar_sdk.dir/core/network/SimpleSocket.cpp.o
[ 25%] Building CXX object CMakeFiles/ydlidar_sdk.dir/core/serial/serial.cpp.o
[ 29%] Building C object CMakeFiles/ydlidar_sdk.dir/core/serial/impl/unix/lock.c.o
[ 33%] Building CXX object CMakeFiles/ydlidar_sdk.dir/core/serial/impl/unix/list_ports_linux.cpp.o
[ 37%] Building CXX object CMakeFiles/ydlidar_sdk.dir/core/serial/impl/unix/unix_serial.cpp.o
[ 41%] Building CXX object CMakeFiles/ydlidar_sdk.dir/src/CYdLidar.cpp.o
[ 45%] Building CXX object CMakeFiles/ydlidar_sdk.dir/src/ETLidarDriver.cpp.o
[ 50%] Building CXX object CMakeFiles/ydlidar_sdk.dir/src/ydlidar_driver.cpp.o
[ 54%] Building CXX object CMakeFiles/ydlidar_sdk.dir/src/ydlidar_sdk.cpp.o
[ 58%] Linking CXX static library libydlidar_sdk.a
[ 58%] Built target ydlidar_sdk
Scanning dependencies of target ydlidar_test
[ 62%] Building CXX object samples/CMakeFiles/ydlidar_test.dir/ydlidar_test.cpp.o
/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/samples/ydlidar_test.cpp: In function ‘int main(int,
char**)’:
/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/samples/ydlidar_test.cpp:262:41: warning: format ‘%llu’
expects argument of type ‘long long unsigned int’, but argument 3 has type ‘uint64_t’ {aka ‘long
unsigned int’} [-Wformat=]
  262 |       fprintf(stdout, "Scan received[%llu]: %u ranges is [%f]Hz\n",
      |                                       ~~~^
      |                                          |
      |                                          long long unsigned int
      |                                       %lu
  263 |               scan.stamp,
      |               ~~~~~~~~~~
      |                    |
      |                    uint64_t {aka long unsigned int}
[ 66%] Linking CXX executable ../ydlidar_test
[ 66%] Built target ydlidar_test
Scanning dependencies of target tof_test
[ 70%] Building CXX object samples/CMakeFiles/tof_test.dir/tof_test.cpp.o
/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/samples/tof_test.cpp: In function ‘int main(int, char**)’:
/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/samples/tof_test.cpp:259:41: warning: format ‘%llu’ expects
argument of type ‘long long unsigned int’, but argument 3 has type ‘uint64_t’ {aka ‘long unsigned
int’} [-Wformat=]
  259 |       fprintf(stdout, "Scan received[%llu]: %u ranges is [%f]Hz\n",
      |                                       ~~~^
      |                                          |
      |                                          long long unsigned int
      |                                       %lu
  260 |               scan.stamp,
      |               ~~~~~~~~~~
      |                    |
      |                    uint64_t {aka long unsigned int}
[ 75%] Linking CXX executable ../tof_test
[ 75%] Built target tof_test
Scanning dependencies of target lidar_c_api_test
[ 79%] Building C object samples/CMakeFiles/lidar_c_api_test.dir/lidar_c_api_test.c.o
cc1: warning: command line option ‘-std=c++11’ is valid for C++/ObjC++ but not for C
/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/samples/lidar_c_api_test.c: In function ‘main’:
/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/samples/lidar_c_api_test.c:102:47: warning: format ‘%llu’
expects argument of type ‘long long unsigned int’, but argument 3 has type ‘uint64_t’ {aka ‘long
unsigned int’} [-Wformat=]
  102 |             fprintf(stdout, "Scan received[%llu]: %u ranges is [%f]Hz\n",
      |                                           ~~~^
      |                                              |
      |                                              long long unsigned int
      |                                           %lu
  103 |                     scan.stamp,
      |                     ~~~~~~~~~~
      |                         |
      |                         uint64_t {aka long unsigned int}
```

```
[ 83%] Linking CXX executable ../lidar_c_api_test
[ 83%] Built target lidar_c_api_test
Scanning dependencies of target etlidar_test
[ 87%] Building CXX object samples/CMakeFiles/etlidar_test.dir/etlidar_test.cpp.o
/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/samples/etlidar_test.cpp: In function ‘int main(int,
char**)’:
/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/samples/etlidar_test.cpp:178:41: warning: format ‘%llu’
expects argument of type ‘long long unsigned int’, but argument 3 has type ‘uint64_t’ {aka ‘long
unsigned int’} [-Wformat=]
  178 |       fprintf(stdout, "Scan received[%llu]: %u ranges is [%f]Hz\n",
      |                                        ~~~^
      |                                           |
      |                                           long long unsigned int
      |                                        %lu
  179 |               scan.stamp,
      |               ~~~~~~~~~~
      |                     |
      |                     uint64_t {aka long unsigned int}
[ 91%] Linking CXX executable ../etlidar_test
[ 91%] Built target etlidar_test
Scanning dependencies of target lidar_test
[ 95%] Building CXX object test/CMakeFiles/lidar_test.dir/lidar_test.cpp.o
[100%] Linking CXX executable lidar_test
[100%] Built target lidar_test
```

ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/build$ **sudo make install**
*[install successful]*

Packaging Project
    Cpack
*I don’t think I need to package this*

Run this from the desktop on the rover, not via PuTTY.
ubuntu@AUDACITY:~$ **./ydlidar_test**
-bash: ./ydlidar_test: No such file or directory

ubuntu@AUDACITY:~$ **sudo find / -name ydlidar_test**
/usr/local/bin/ydlidar_test

ubuntu@AUDACITY:~$ **cd /usr/local/bin/**
ubuntu@AUDACITY:/usr/local/bin$ **ls**
etlidar_test  lidar_c_api_test  tof_test  ydlidar_test

ubuntu@AUDACITY:/usr/local/bin$ **ydlidar_test**

Run YDLidar SDK Sample *(see above)*

For Ubuntun 18.04/16.04/14.04 LTS,
run the ydlidar_test if connect with the Triangle LiDAR
unit(s) or TOF LiDAR unit(s):
**./ydlidar_test**
[Please select the lidar baudrate:]: input LiDAR BaudRate.
[Whether the Lidar is one-way communication[yes/no]:]:
Whether The Current LiDAR is single-channel.
[Please enter the lidar scan frequency[5-12]:]:
input LiDAR Scan Frequency.

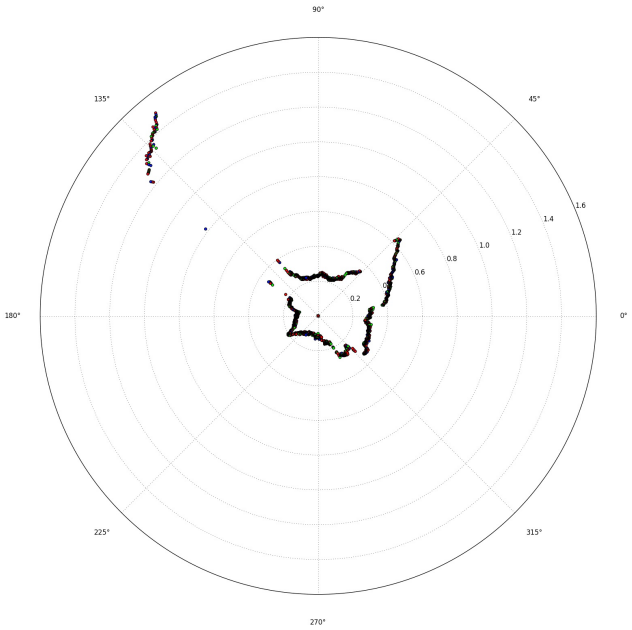
```
__   ______  _     ____ _____     _     _____
\ \ / /  _ \| |   |_ _|  _ \  / \   |   _ \
 \ V /| | | | |    | || | | |/ _ \  | |_) |
  | | | |_| | |___ | || |_| / ___ \|  _ <
  |_| |____/|_____|___|____/_/   \_\_| \_\
```

Baudrate:
0. **115200**
1. 128000
2. 153600
3. 230400
4. 512000
Please select the lidar baudrate:**4 0**
Whether the Lidar is one-way communication[**yes**/no]:~~**no**~~ **yes**
Please enter the lidar scan frequency[5-12]:**10**

I have both python2.7 & python3 installed but it's defaulting to python3. I may have to be explicit with python2?
Python Run

cd python/examples
# Console
python tof_test.py
# If it's a drawing
pip install numpy
pip install matplotlib
python plot_tof_test.py

```
ubuntu@AUDACITY:~$ sudo find / -name tof_test.py
/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/python/examples/tof_test.py
ubuntu@AUDACITY:~$ python3
/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/python/examples/tof_test.py
Traceback (most recent call last):
  File "/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/python/examples/tof_test.py",
li                                                          ne 2, in
<module>
    import ydlidar
ModuleNotFoundError: No module named 'ydlidar'
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/python/examples$ sudo find / -name
ydlidar.py        NEGATIVE
```




***So the above sample image did NOT appear.***

**YDLIDAR ROS2 Driver**
Clone ydlidar_ros2_driver
create workspace folder:
ubuntu@AUDACITY:~$ **mkdir ydlidar_ros2_ws**
ubuntu@AUDACITY:~$ **cd ydlidar_ros2_ws/**
Clone ydlidar_ros2_driver package for github :
     git clone https://github.com/YDLIDAR/ydlidar_ros2_driver.git
     ydlidar_ros2_ws/src/ydlidar_ros2_driver

ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **git clone**
**https://github.com/YDLIDAR/ydlidar_ros2_driver.git**
*[incomplete, see above. Don't' need to mkdir as git clone does it]*
Cloning into 'ydlidar_ros2_driver'...
remote: Enumerating objects: 38, done.
remote: Counting objects: 100% (38/38), done.
remote: Compressing objects: 100% (26/26), done.
remote: Total 38 (delta 8), reused 37 (delta 7), pack-reused 0
Unpacking objects: 100% (38/38), 806.10 KiB | 1.89 MiB/s, done.

ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **ls**
ydlidar_ros2_driver

ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **colcon build --symlink-install**

```
Starting >>> ydlidar_ros2_driver
[Processing: ydlidar_ros2_driver]
[Processing: ydlidar_ros2_driver]
--- stderr: ydlidar_ros2_driver
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.c
pp: In lambda function:
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.c
pp:163:54: warning: unused parameter ‘request_header’ [-Wunused-parameter]
  163 |     [&laser](const std::shared_ptr<rmw_request_id_t> request_header,
      |              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.c
pp:164:56: warning: unused parameter ‘req’ [-Wunused-parameter]
  164 |   const std::shared_ptr<std_srvs::srv::Empty::Request> req,
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.c
pp:165:51: warning: unused parameter ‘response’ [-Wunused-parameter]
  165 |   std::shared_ptr<std_srvs::srv::Empty::Response> response) -> bool
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.c
pp: In lambda function:
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.c
pp:173:54: warning: unused parameter ‘request_header’ [-Wunused-parameter]
  173 |     [&laser](const std::shared_ptr<rmw_request_id_t> request_header,
      |              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.c
pp:174:56: warning: unused parameter ‘req’ [-Wunused-parameter]
  174 |   const std::shared_ptr<std_srvs::srv::Empty::Request> req,
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.c
pp:175:51: warning: unused parameter ‘response’ [-Wunused-parameter]
  175 |   std::shared_ptr<std_srvs::srv::Empty::Response> response) -> bool
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
---
Finished <<< ydlidar_ros2_driver [1min 16s]

Summary: 1 package finished [1min 16s]
  1 package had stderr output: ydlidar_ros2_driver

Package environment setup :
     source ./install/setup.bash
Note: Add permanent workspace environment variables. It's
convenient if the ROS2 environment variables are automatically
added to your bash session every time a new shell is launched:
$ echo "source ~/ydlidar_ros2_ws/install/setup.bash" >> ~/.bashrc
$ source ~/.bashrc
```

ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **echo "source ~/ydlidar_ros2_ws/install/setup.bash" >> ~/.bashrc**

ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **source ~/.bashrc**

Configure LiDAR paramters

ubuntu@AUDACITY:~/ydlidar_ros2_ws/ydlidar_ros2_driver/params$ **cat ydlidar.yaml**

```
ydlidar_ros2_driver_node:
  ros__parameters:
    port: /dev/ttyUSB0
    frame_id: laser_frame
    ignore_array: ""
    baudrate: 230400
    lidar_type: 1
    device_type: 0
    sample_rate: 9
    abnormal_check_count: 4
    resolution_fixed: true
    reversion: true
    inverted: true
    auto_reconnect: true
    isSingleChannel: false
    intensity: false
    support_motor_dtr: false
    angle_max: 180.0
    angle_min: -180.0
    range_max: 64.0
    range_min: 0.01
    frequency: 10.0
    invalid_range_is_inf: false
```

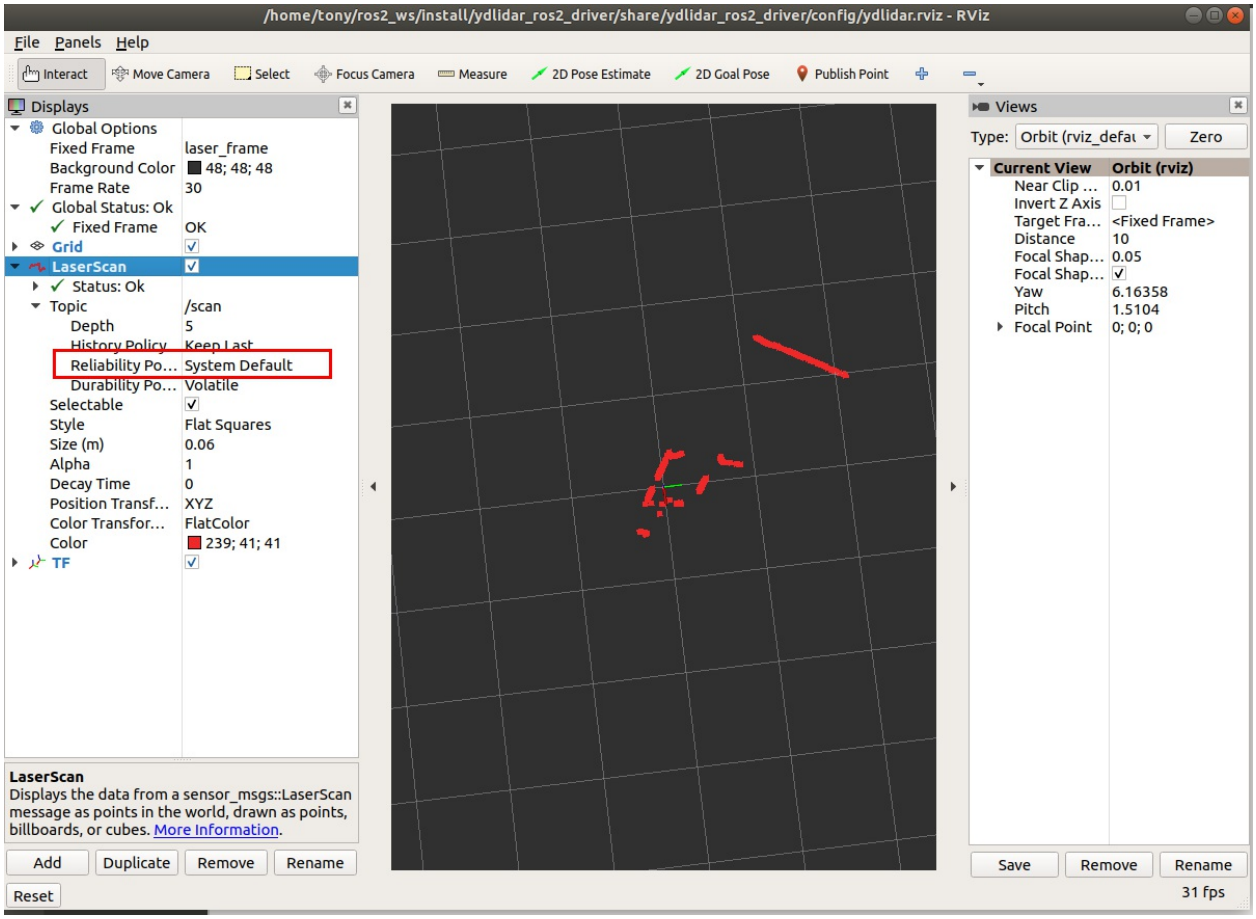
**Run ydlidar_ros2_driver**

```
     ros2 launch ydlidar_ros2_driver [launch file].py
          ros2 launch ydlidar_ros2_driver ydlidar_launch.py
     or
          launch $(ros2 pkg prefix
ydlidar_ros2_driver)/share/ydlidar_ros2_driver/launch/ydlidar.py
```

```
ubuntu@AUDACITY:~/ydlidar_ros2_ws$ ros2 launch ydlidar_ros2_driver
ydlidar_launch.py
[INFO] [launch]: All log files can be found below
/home/ubuntu/.ros/log/2021-08-07-23-13-03-783925-AUDACITY-20218
[INFO] [launch]: Default logging verbosity is set to INFO
/opt/ros/foxy/lib/python3.8/site-packages/launch_ros/actions/lifecycle_node.py:
84: UserWarning: The parameter 'node_name' is deprecated, use 'name' instead
  warnings.warn("The parameter 'node_name' is deprecated, use 'name' instead")
/opt/ros/foxy/lib/python3.8/site-packages/launch_ros/actions/lifecycle_node.py:
95: UserWarning: The parameter 'node_executable' is deprecated, use
'executable' instead
  super().__init__(name=name, namespace=namespace, **kwargs)
/opt/ros/foxy/lib/python3.8/site-packages/launch_ros/actions/node.py:185:
UserWarning: The parameter 'node_namespace' is deprecated, use 'namespace'
instead
  warnings.warn("The parameter 'node_namespace' is deprecated, use 'namespace'
instead")
/home/ubuntu/ydlidar_ros2_ws/install/ydlidar_ros2_driver/share/ydlidar_ros2_dri
ver/launch/ydlidar_launch.py:46: UserWarning: The parameter 'node_executable'
is deprecated, use 'executable' instead
  tf2_node = Node(package='tf2_ros',
/home/ubuntu/ydlidar_ros2_ws/install/ydlidar_ros2_driver/share/ydlidar_ros2_dri
ver/launch/ydlidar_launch.py:46: UserWarning: The parameter 'node_name' is
deprecated, use 'name' instead
  tf2_node = Node(package='tf2_ros',
[INFO] [ydlidar_ros2_driver_node-1]: process started with pid [20242]
[INFO] [static_transform_publisher-2]: process started with pid [20244]
[ydlidar_ros2_driver_node-1] [INFO] [1628377984.401749174]
[ydlidar_ros2_driver_node]: [YDLIDAR INFO] Current ROS Driver Version: 1.0.1
[ydlidar_ros2_driver_node-1]
[ydlidar_ros2_driver_node-1] YDLidar SDK initializing
[ydlidar_ros2_driver_node-1] YDLidar SDK has been initialized
[ydlidar_ros2_driver_node-1] [YDLIDAR]:SDK Version: 1.0.3
[static_transform_publisher-2] [INFO] [1628377984.441821548]
[static_tf_pub_laser]: Spinning until killed publishing transform from
'base_link' to 'laser_frame'
[ydlidar_ros2_driver_node-1] LiDAR successfully connected
[ydlidar_ros2_driver_node-1] Error, cannot retrieve YDLidar health code:
ffffffff
[ydlidar_ros2_driver_node-1] get Device Information Error
[ydlidar_ros2_driver_node-1] [CYdLidar::initialize] Error initializing YDLIDAR
check status under [/dev/ttyUSB0] and [230400].
[ydlidar_ros2_driver_node-1] [ERROR] [1628377987.089596832]
[ydlidar_ros2_driver_node]: Unknown error
[ydlidar_ros2_driver_node-1]
[ydlidar_ros2_driver_node-1] [INFO] [1628377987.101070981]
[ydlidar_ros2_driver_node]: [YDLIDAR INFO] Now YDLIDAR is stopping .......
[INFO] [ydlidar_ros2_driver_node-1]: process has finished cleanly [pid 20242]
```

**RVIZ**

```
ros2 launch ydlidar_ros2_driver ydlidar_launch_view.py
```




**echo scan topic**

**ros2 run ydlidar_ros2_driver ydlidar_ros2_driver_client**

*no output, ^C*

or

**ros2 topic echo /scan**

*no output, ^C*

```
ubuntu@AUDACITY:~$ lsusb
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 006: ID 045e:028e Microsoft Corp. Xbox360
Controller
Bus 001 Device 005: ID 413c:3012 Dell Computer Corp. Optical Wheel
Mouse
Bus 001 Device 004: ID 413c:2105 Dell Computer Corp. Model L100
Keyboard
Bus 001 Device 009: ID 10c4:ea60 Silicon Labs CP210x UART Bridge
Bus 001 Device 002: ID 2109:3431 VIA Labs, Inc. Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```

**START OVER & REINSTALL**

```
ubuntu@AUDACITY:~$ rm -rf YDLidar_SDK.ws/
ubuntu@AUDACITY:~$ rm -rf ydlidar_ros2_ws/
ubuntu@AUDACITY:~$ sudo apt update
ubuntu@AUDACITY:~$ sudo apt upgrade
```

if you want to use python API, you need to install python and swig(3.0 or higher):

```
sudo apt-get install python swig
sudo apt-get install python-pip
```

```
ubuntu@AUDACITY:~$ sudo apt-get install python swig
...
Note, selecting 'python-is-python2' instead of 'python'
The following package was automatically installed and is no longer required:
  libllvm11
Use 'sudo apt autoremove' to remove it.
The following additional packages will be installed:
  swig4.0
...
ubuntu@AUDACITY:~$ sudo apt autoremove
```

```
ubuntu@AUDACITY:~$ sudo apt-get install python-pip
Reading package lists... Done
Building dependency tree
Reading state information... Done
Package python-pip is not available, but is referred to by another package.
This may mean that the package is missing, has been obsoleted, or
is only available from another source
However the following packages replace it:
  python3-pip

E: Package 'python-pip' has no installation candidate
```

Build YDLidar-SDK
In the YDLidar SDK directory, run the following commands to compile the project:

```
ubuntu@AUDACITY:~$ mkdir YDLidar_SDK.ws
ubuntu@AUDACITY:~$ cd YDLidar_SDK.ws/
ubuntu@AUDACITY:~/YDLidar_SDK.ws$ ls
empty
```

```
ubuntu@AUDACITY:~/YDLidar_SDK.ws$ git clone
https://github.com/YDLIDAR/YDLidar-SDK.git
done
ubuntu@AUDACITY:~/YDLidar_SDK.ws$ ls
YDLidar-SDK
ubuntu@AUDACITY:~/YDLidar_SDK.ws$ cd YDLidar-SDK
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK$ ls
CMakeLists.txt  LICENSE.txt  README.pdf  cmake  csharp  python
setup.py  startup  ydlidar_config.h.in
Doxyfile        README.md    build       core   doc     samples
src       test
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK$ cd build/
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/build$ ls
notes.txt
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/build$ cmake ..
done
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/build$ make
same “long long unsigned int” warnings as prev
done
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/build$ sudo make
install
done
Note: If already installed python and swig, sudo make install
command will also install python API without the following
operations.
```

**Run YDLidar SDK Sample**

```
connect LIDAR
./ydlidar_test
__   ______  _     ___ ____     _    ____
\ \ / /  _ \| |   |_ _|  _ \   / \  |  _ \
 \ V /| | | | |    | || | | |/ _ \ | |_) |
  | | | |_| | |___ | || |_| / ___ \|  _ <
  |_| |____/|_____|___|____/_/   \_\_| \_\

Not Lidar was detected. Please enter the lidar serial port:
$ lsusb
failed to show bridge
fiddled with plug
$ lsusb
bridge now displays
```

```
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/build$ ./ydlidar_test
__   ______  _     ___ ____     _    ____
\ \ / /  _ \| |   |_ _|  _ \   / \  |  _ \
 \ V /| | | | |    | || | | | / _ \ | |_) |
  | | | |_| | |___ | || |_| |/ ___ \|  _ <
  |_| |____/|_____|___|____//_/   \_\_| \_\

Baudrate:
0. 115200
1. 128000
2. 153600
3. 230400
4. 512000
Please select the lidar baudrate: 4
Whether the Lidar is one-way communication[yes/no]:no
Please enter the lidar scan frequency[5-12]:10
YDLidar SDK initializing
YDLidar SDK has been initialized
[YDLIDAR]:SDK Version: 1.0.3
LiDAR successfully connected
Error, cannot retrieve YDLidar health code: ffffffff
get Device Information Error
[CYdLidar::initialize] Error initializing YDLIDAR check status
under [/dev/ttyUSB0] and [512000].
Unknown error
```

*Try REBOOT*

No Signal on 5" monitor
PuTTY timed out w/o response
only red light on RPi
not seen on router’s attached devices
POWER OFF
Make Vizio HDMI#0, Elecrow 5" HDMI#1
POWER ON
No Signal on 5" monitor
PuTTY timed out w/o response
only red light on Rpi
not seen on router’s attached devices
POWER OFF
Corrupted SD card??

**2021.08.08**
Test LIDAR install again:

ubuntu@AUDACITY:~$ **lsusb**
...
Bus 001 Device 013: ID 10c4:ea60 Silicon Labs CP210x UART Bridge

ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/build$ **./ydlidar_test**
Please select the lidar baudrate:**4**
Whether the Lidar is one-way communication[yes/no]:**no**
Please enter the lidar scan frequency[5-12]:~~**10**~~ **7**
YDLidar SDK initializing
YDLidar SDK has been initialized
[YDLIDAR]:SDK Version: 1.0.3
LiDAR successfully connected
Error, cannot retrieve YDLidar health code: ffffffff
get Device Information Error
[CYdLidar::initialize] Error initializing YDLIDAR check status under [/dev/ttyUSB0] and [512000].
Unknown error

Google: “Error, cannot retrieve YDLidar health code: ffffffff”
https://answers.ros.org/question/339376/ydlidar-x2-health-code-ffffffff/
...
This worked after making the serial port executable, adding my user to the DIALOUT group, and restarting.

find the serial port your Lidar is at and change perms chmod 666 /dev/ttyS0

Make sure your user is part of dialout group **sudo adduser YOURUSER dialout**...

*This was an issue with the Xbox controller, I believe, and should already be configured.*

ubuntu@AUDACITY:~$ **groups ubuntu**
ubuntu : ubuntu adm tty dialout cdrom floppy sudo audio dip video plugdev netdev lxd

ubuntu@AUDACITY:~$ **ls -l /dev/ttyUSB***
crw-rw---- 1 root dialout 188,   0 Aug  8 14:22 /dev/ttyUSB0

Let’s try changing the test parameters to match datasheet specs--
Datasheet baud rate = **115200**, not 515000 as test example suggests.
Developer manual suggests is two-way but gives no further info as
to sending commands.  Assume **unidirectional**.

```
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/build$ ./ydlidar_test
baud 115200; assume comm is unidirectional:
Please select the lidar baudrate:0      [=115200]
Whether the Lidar is one-way communication[yes/no]:yes

YDLidar SDK initializing
YDLidar SDK has been initialized
[YDLIDAR]:SDK Version: 1.0.3
LiDAR successfully connected
[YDLIDAR]:Lidar running correctly ! The health status: good
LiDAR init success!
[YDLIDAR3]:Fixed Size: 720
[YDLIDAR3]:Sample Rate: 4K
[YDLIDAR]:Single Fixed Size: 470
[YDLIDAR]:Sample Rate: 4K
[YDLIDAR INFO] Current Sampling Rate : 4K
[YDLIDAR INFO] Now YDLIDAR is scanning ......
Scan received[1628445908677342000]: 468 ranges is [8.565310]Hz
Scan received[1628445908794342000]: 468 ranges is [8.565310]Hz
Scan received[1628445908911557000]: 468 ranges is [8.565310]Hz
Scan received[1628445909028580000]: 470 ranges is [8.528784]Hz
Scan received[1628445909147006000]: 471 ranges is [8.510638]Hz
...

Now for further testing...

ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK/python/examples$
python tof_test.py
Traceback (most recent call last):
  File "tof_test.py", line 2, in <module>
    import ydlidar
  File "/usr/local/lib/python2.7/dist-packages/ydlidar.py", line
15, in <module>
    import _ydlidar
ImportError: dynamic module does not define init function
(init_ydlidar).

...python3 same error.
...other ...test.py same error
Google research suggests it’s a python/python3 conflict and
suggests recompiling swig/python or swig/python3
```

```
ubuntu@AUDACITY:~$ sudo find / -name swig
/usr/bin/swig
/usr/share/doc/swig
none contain python

ubuntu@AUDACITY:~$ sudo find / -name python
...
/usr/share/swig4.0/python

ubuntu@AUDACITY:/usr/share/swig4.0/python$ make
make: *** No targets specified and no makefile found.  Stop.
```

MEANWHILE, ON TO INSTALL ROS2 Driver...

**YDLIDAR ROS2 Driver**
*ref back to p518 install...*following:
https://github.com/YDLIDAR/ydlidar_ros2_driver

ubuntu@AUDACITY:~$ **mkdir ydlidar_ros2_ws**
ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **cd ydlidar_ros2_ws/**
ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **git clone https://github.com/YDLIDAR/ydlidar_ros2_driver.git ydlidar_ros2_ws/src/ydlidar_ros2_driver**
*created nested ydlidar_ros2_ws folders. Remove & start over.*

ubuntu@AUDACITY:~$ **rm -rf ydlidar_ros2_ws/**
*done*
ubuntu@AUDACITY:~$ **cd ydlidar_ros2_ws/**
ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **colcon build --symlink-install**
*Done?*
ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **source ./install/setup.bash**
ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **echo "source ~/ydlidar_ros2_ws/install/setup.bash" >> ~/.bashrc**
ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **source ~/.bashrc**

Confirmation To confirm that your package path has been set, printenv the grep -i ROS variable.
ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **printenv | grep -i ROS**
You should see something similar to:
OLDPWD=/home/tony/ydlidar_ros2_ws/install

```
ROS_VERSION=2
ROS_PYTHON_VERSION=3
PWD=/home/ubuntu/ydlidar_ros2_ws
AMENT_PREFIX_PATH=/home/ubuntu/ydlidar_ros2_ws/install/ydlidar_ros2_driver:/opt/ros/foxy
CMAKE_PREFIX_PATH=/home/ubuntu/ydlidar_ros2_ws/install/ydlidar_ros2_driver
COLCON_PREFIX_PATH=/home/ubuntu/ydlidar_ros2_ws/install
PYTHONPATH=/opt/ros/foxy/lib/python3.8/site-packages
LD_LIBRARY_PATH=/opt/ros/foxy/opt/yaml_cpp_vendor/lib:/opt/ros/foxy/opt/rviz_ogre_vendor/lib:/opt/r
os/foxy/lib/aarch64-linux-gnu:/opt/ros/foxy/lib
ROS_LOCALHOST_ONLY=0
PATH=/home/ubuntu/.local/bin:/opt/ros/foxy/bin:/usr/local/sbin:/usr/local/bin:/usr/sbin:/usr/bin:/s
bin:/bin:/usr/games:/usr/local/games:/snap/bin
ROS_DISTRO=foxy
```

**Run ydlidar_ros2_driver**

ubuntu@AUDACITY:~$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**

```
...
[ydlidar_ros2_driver_node-1] Error, cannot retrieve YDLidar health code: ffffffff
[ydlidar_ros2_driver_node-1] get Device Information Error
[ydlidar_ros2_driver_node-1] [CYdLidar::initialize] Error initializing YDLIDAR check status under [/dev/ttyUSB0] and [230400].
[ydlidar_ros2_driver_node-1] [ERROR] [1628460129.241122333]
[ydlidar_ros2_driver_node]: Unknown error
[ydlidar_ros2_driver_node-1]
[ydlidar_ros2_driver_node-1] [INFO] [1628460129.256331552]
[ydlidar_ros2_driver_node]: [YDLIDAR INFO] Now YDLIDAR is stopping .......
[INFO] [ydlidar_ros2_driver_node-1]: process has finished cleanly [pid 106502]
```

Configure LiDAR paramters

*These are apparently configured wrong for this LIDAR*

ydlidar_ros2_driver_node:

ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **sudo find . -name ydlidar_ros2_driver_node**

```
./build/ydlidar_ros2_driver/ydlidar_ros2_driver_node
./install/ydlidar_ros2_driver/lib/ydlidar_ros2_driver/ydlidar_ros2_driver_node
```

*The node itself is executable code.*

*The parameters are here:*

ydlidar_ros2_driver/params/ydlidar.yaml

ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **sudo find . -name ydlidar.yaml**

```
./install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/params/ydlidar.yaml
./src/ydlidar_ros2_driver/params/ydlidar.yaml
```

ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **cd ./src/ydlidar_ros2_driver/params/**

ubuntu@AUDACITY:~/ydlidar_ros2_ws/src/ydlidar_ros2_driver/params$ **nano ydlidar.yaml**

baudrate: 230400 >> **115200**

ubuntu@AUDACITY:~/ydlidar_ros2_ws/src/ydlidar_ros2_driver/params$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**

*Same error*

*Fix the other .yaml*

ubuntu@AUDACITY:~/ydlidar_ros2_ws/install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/params$ **nano ydlidar.yaml**

*apparently is symlink as .yaml baud rate is already corrected.*

*Must be another parameter.  Which one for 1 vs 2 way comm?*

**Run ydlidar_ros2_driver**

ubuntu@AUDACITY:~$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**

```
...
[ydlidar_ros2_driver_node-1] Error, cannot retrieve YDLidar health code: ffffffff
[ydlidar_ros2_driver_node-1] get Device Information Error
[ydlidar_ros2_driver_node-1] [CYdLidar::initialize] Error initializing YDLIDAR check status under [/dev/ttyUSB0] and [230400].
[ydlidar_ros2_driver_node-1] [ERROR] [1628460129.241122333]
[ydlidar_ros2_driver_node]: Unknown error
[ydlidar_ros2_driver_node-1]
[ydlidar_ros2_driver_node-1] [INFO] [1628460129.256331552]
[ydlidar_ros2_driver_node]: [YDLIDAR INFO] Now YDLIDAR is stopping .......
[INFO] [ydlidar_ros2_driver_node-1]: process has finished cleanly [pid 106502]
```

Configure LiDAR paramters

*These are apparently configured wrong for this LIDAR*

ydlidar_ros2_driver_node:

ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **sudo find . -name ydlidar_ros2_driver_node**

```
./build/ydlidar_ros2_driver/ydlidar_ros2_driver_node
./install/ydlidar_ros2_driver/lib/ydlidar_ros2_driver/ydlidar_ros2_driver_node
```

*The node itself is executable code.*

*The parameters are here:*

ydlidar_ros2_driver/params/ydlidar.yaml

ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **sudo find . -name ydlidar.yaml**

```
./install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/params/ydlidar.yaml
./src/ydlidar_ros2_driver/params/ydlidar.yaml
```

ubuntu@AUDACITY:~/ydlidar_ros2_ws$ **cd ./src/ydlidar_ros2_driver/params/**

ubuntu@AUDACITY:~/ydlidar_ros2_ws/src/ydlidar_ros2_driver/params$ **nano ydlidar.yaml**

baudrate: 230400 >> **115200**

ubuntu@AUDACITY:~/ydlidar_ros2_ws/src/ydlidar_ros2_driver/params$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**

*Same error*

*Fix the other .yaml*

ubuntu@AUDACITY:~/ydlidar_ros2_ws/install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/params$ **nano ydlidar.yaml**

*apparently is symlink as .yaml baud rate is already corrected.*

*Must be another parameter.  Which one for 1 vs 2 way comm?*

ubuntu@AUDACITY:~$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**

```
..
/opt/ros/foxy/lib/python3.8/site-packages/launch_ros/actions/lifecycle_node.py:84: UserWarning: The
parameter 'node_name' is deprecated, use 'name' instead
  warnings.warn("The parameter 'node_name' is deprecated, use 'name' instead")
/opt/ros/foxy/lib/python3.8/site-packages/launch_ros/actions/lifecycle_node.py:95: UserWarning: The
parameter 'node_executable' is deprecated, use 'executable' instead
  super().__init__(name=name, namespace=namespace, **kwargs)
/opt/ros/foxy/lib/python3.8/site-packages/launch_ros/actions/node.py:185: UserWarning: The
parameter 'node_namespace' is deprecated, use 'namespace' instead
  warnings.warn("The parameter 'node_namespace' is deprecated, use 'namespace' instead")
/home/ubuntu/ydlidar_ros2_ws/install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/launch/ydlidar_l
aunch.py:46: UserWarning: The parameter 'node_executable' is deprecated, use 'executable' instead
  tf2_node = Node(package='tf2_ros',
/home/ubuntu/ydlidar_ros2_ws/install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/launch/ydlidar_l
aunch.py:46: UserWarning: The parameter 'node_name' is deprecated, use 'name' instead
  tf2_node = Node(package='tf2_ros',
[INFO] [ydlidar_ros2_driver_node-1]: process started with pid [114175]
[INFO] [static_transform_publisher-2]: process started with pid [114177]
[ydlidar_ros2_driver_node-1] [INFO] [1628462769.156486794] [ydlidar_ros2_driver_node]: [YDLIDAR
INFO] Current ROS Driver Version: 1.0.1
[ydlidar_ros2_driver_node-1]
[ydlidar_ros2_driver_node-1] YDLidar SDK initializing
[ydlidar_ros2_driver_node-1] YDLidar SDK has been initialized
[ydlidar_ros2_driver_node-1] [YDLIDAR]:SDK Version: 1.0.3
[static_transform_publisher-2] [INFO] [1628462769.178078198] [static_tf_pub_laser]: Spinning until
killed publishing transform from 'base_link' to 'laser_frame'
[ydlidar_ros2_driver_node-1] LiDAR successfully connected
[ydlidar_ros2_driver_node-1] [YDLIDAR]:Lidar running correctly ! The health status: good
[ydlidar_ros2_driver_node-1] LiDAR init success!
[ydlidar_ros2_driver_node-1] [YDLIDAR3]:Fixed Size: 720
[ydlidar_ros2_driver_node-1] [YDLIDAR3]:Sample Rate: 4K     [NOT 3 AS IN .YAML?]
[ydlidar_ros2_driver_node-1] [YDLIDAR]:Single Fixed Size: 230
[ydlidar_ros2_driver_node-1] [YDLIDAR]:Sample Rate: 4K
[ydlidar_ros2_driver_node-1] [YDLIDAR INFO] Current Sampling Rate : 4K
[ydlidar_ros2_driver_node-1] [YDLIDAR INFO] Now YDLIDAR is scanning ......
```

HOORAY!!

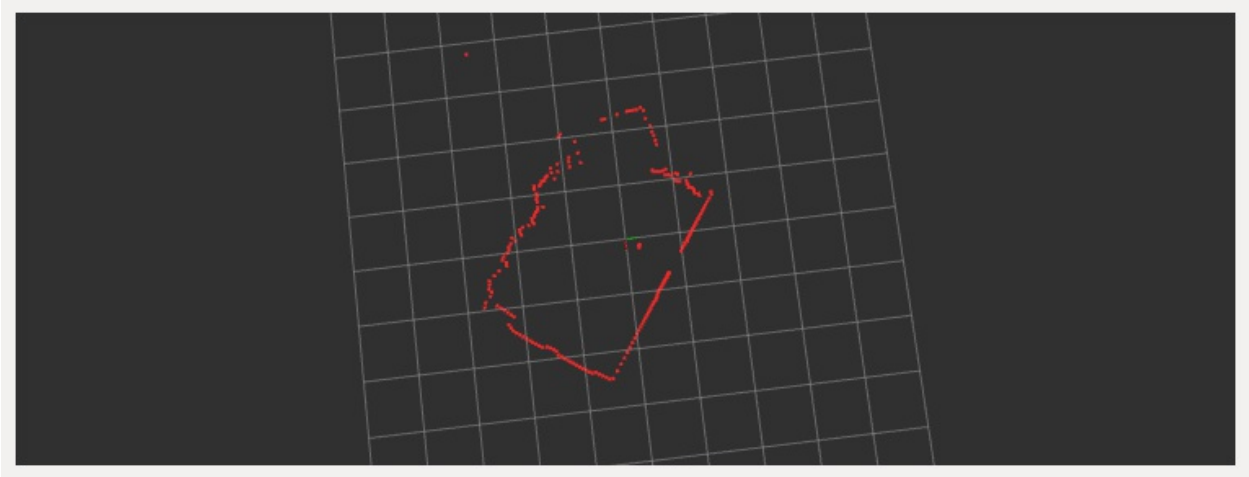
Remove slsnif as not useful:
~$ **rm -rf slsnif**

**RVIZ**
from desktop:
ros2 launch ydlidar_ros2_driver ydlidar_launch_view.py
*failed, duplicate in PuTTY--*
ubuntu@AUDACITY:~$ **ros2 launch ydlidar_ros2_driver ydlidar_launch_view.py**
Runs in PuTTY but can't display (as expected):

```
[rviz2-3] qt.qpa.xcb: could not connect to display
[rviz2-3] qt.qpa.plugin: Could not load the Qt platform plugin "xcb" in "" even though it was found.
[rviz2-3] This application failed to start because no Qt platform plugin could be initialized. Reinstalling the application may fix this problem.
[rviz2-3]
[rviz2-3] Available platform plugins are: eglfs, linuxfb, minimal, minimalegl, offscreen, vnc, xcb.
```

*-view.py launches driver too.  Driver was already running in another terminal.  Try again from desktop.*
*Couldn't find package.  Terminal open long time.  Not "sourced". Close and open another.*

**SUCCESS!  Rviz opens and displays scan!!!!**



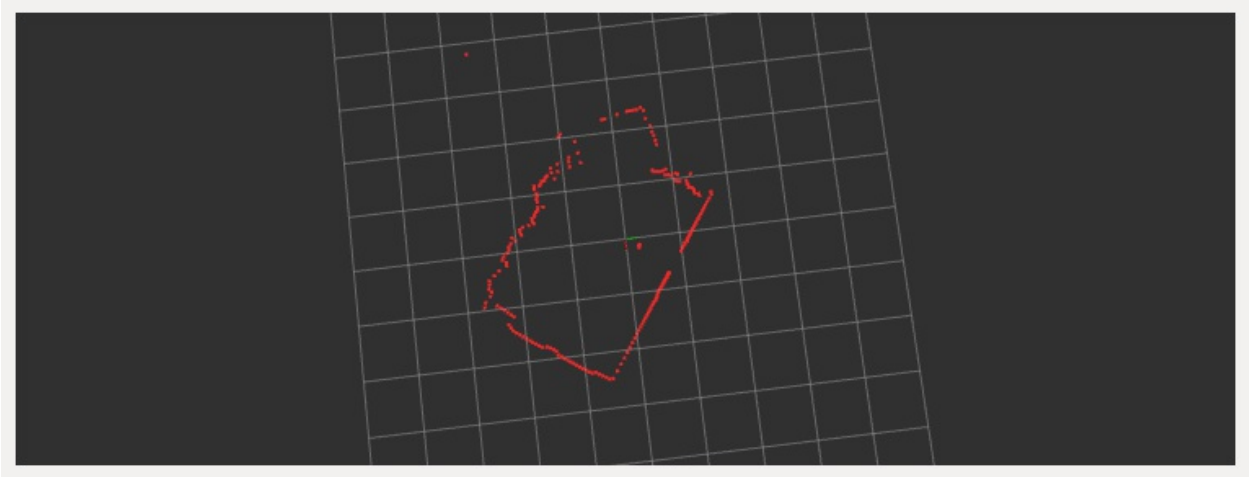
https://github.com/YDLIDAR/ydlidar_ros2_driver

**RVIZ**
from desktop:
ros2 launch ydlidar_ros2_driver ydlidar_launch_view.py
*failed, duplicate in PuTTY--*
ubuntu@AUDACITY:~$ **ros2 launch ydlidar_ros2_driver ydlidar_launch_view.py**
Runs in PuTTY but can't display (as expected):

```
[rviz2-3] qt.qpa.xcb: could not connect to display
[rviz2-3] qt.qpa.plugin: Could not load the Qt platform plugin "xcb" in "" even though it was found.
[rviz2-3] This application failed to start because no Qt platform plugin could be initialized. Reinstalling the application may fix this problem.
[rviz2-3]
[rviz2-3] Available platform plugins are: eglfs, linuxfb, minimal, minimalegl, offscreen, vnc, xcb.
```

*-view.py launches driver too.  Driver was already running in another terminal.  Try again from desktop.*
*Couldn't find package.  Terminal open long time.  Not "sourced". Close and open another.*

**SUCCESS!  Rviz opens and displays scan!!!!**



https://github.com/YDLIDAR/ydlidar_ros2_driver

```
ubuntu@AUDACITY:~$ ros2 topic echo /scan
header:
  stamp:
    sec: 1628467791
    nanosec: 297564000
  frame_id: laser_frame
angle_min: -3.1415927410125732
angle_max: 3.1415927410125732
angle_increment: 0.026289477944374084
time_increment: 0.00024999998277053237
scan_time: 0.05974999815225601
range_min: 0.009999999776482582
range_max: 64.0
ranges:
- 0.0
- 1.871500015258789
- 1.7944999933242798
- 1.6722500324249268
- 1.7072499990463257
- 1.7372499704360962
- 1.7762500047683716
- 1.80649995803833
- 0.0
- 2.0815000534057617
- 1.7584999799728394
- 1.9325000047683716
- 0.0
...
intensities:
- 0.0
- 1016.0
- 1016.0
- 1012.0
- 1012.0
- 1012.0
- 1012.0
- 1016.0
- 0.0
- 1016.0
- 1016.0
- 1016.0
- 0.0
- 1008.0
- 1012.0
...
DETOUR to URDF_Tutorial.wpd
```

**2022.09.11**  NOTE THE DATE 9/11
Starting over from
https://github.com/YDLIDAR/ydlidar_ros2_driver

ROS2 Humble already installed
Download or clone the YDLIDAR/YDLidar-SDK repository on GitHub.
https://github.com/YDLIDAR/YDLidar-SDK

Forked above repo to my repo.

ubuntu@LINOROBOT:~$ **git clone**
**https://github.com/JHPHELAN/YDLidar-SDK.git**
```
Cloning into 'YDLidar-SDK'...
fatal: unable to access 'https://github.com/JHPHELAN/YDLidar-SDK.git/': Failed
to connect to github.com port 443 after 29 ms: Network is unreachable
```
ubuntu@LINOROBOT:~$ **ping github.com**
```
PING github.com (140.82.114.3) 56(84) bytes of data.
From _gateway (10.0.0.1) icmp_seq=1 Destination Net Unreachable
From _gateway (10.0.0.1) icmp_seq=3 Destination Net Unreachable
```

Log into github from RPi desktop.

ubuntu@LINOROBOT:~$ **git clone**
**https://github.com/JHPHELAN/YDLidar-SDK.git**
*success*

Build and Install - This step is required
https://github.com/JHPHELAN/YDLidar-SDK/blob/master/doc/howto/how_to_build_and_install.md

How to Build and Install
1. Install CMake
2. Build YDLidar-SDK
3. Run Samples
4. Build in VSCode

Install CMake
*I think already installed*
ubuntu@LINOROBOT:~$ **cmake --version**
```
cmake version 3.22.1
```

if you want to use python API, you need to install python and swig(3.0 or higher):
*already done*

```
ubuntu@LINOROBOT:~$ cd YDLidar-SDK/build
bash: cd: YDLidar-SDK/build: No such file or directory
ubuntu@LINOROBOT:~$ ls
ydlidar_script.txt
YDLidar_SDK.ws
YDLidar-SDK
ubuntu@LINOROBOT:~$ cd YDLidar-SDK
ubuntu@LINOROBOT:~/YDLidar-SDK$ ls
no /build
ubuntu@LINOROBOT:~/YDLidar-SDK$ cd ..
ubuntu@LINOROBOT:~$ cd YDLidar_SDK.ws/
ubuntu@LINOROBOT:~/YDLidar_SDK.ws$ ls
YDLidar-SDK
ubuntu@LINOROBOT:~/YDLidar_SDK.ws$ cd YDLidar-SDK/
ubuntu@LINOROBOT:~/YDLidar_SDK.ws/YDLidar-SDK$ ls
/build exists
ubuntu@LINOROBOT:~/YDLidar_SDK.ws/YDLidar-SDK$ cd build
ubuntu@LINOROBOT:~/YDLidar_SDK.ws/YDLidar-SDK/build$ cmake ..
...
CMake Warning (dev) at /usr/share/cmake-3.22/Modules/UseSWIG.cmake:775
(message):
  Policy CMP0078 is not set: UseSWIG generates standard target names.  Run
  "cmake --help-policy CMP0078" for policy details.  Use the cmake_policy
  command to set the policy and suppress this warning.

Call Stack (most recent call first):
  python/CMakeLists.txt:35 (swig_add_library)
This warning is for project developers.  Use -Wno-dev to suppress it.

CMake Warning (dev) at /usr/share/cmake-3.22/Modules/UseSWIG.cmake:617
(message):
  Policy CMP0086 is not set: UseSWIG honors SWIG_MODULE_NAME via -module
  flag.  Run "cmake --help-policy CMP0086" for policy details.  Use the
  cmake_policy command to set the policy and suppress this warning.

Call Stack (most recent call first):
  /usr/share/cmake-3.22/Modules/UseSWIG.cmake:888 (SWIG_ADD_SOURCE_TO_MODULE)
  python/CMakeLists.txt:35 (swig_add_library)
This warning is for project developers.  Use -Wno-dev to suppress it.

Traceback (most recent call last):
  File "<string>", line 2, in <module>
ImportError: cannot import name 'sysconfig' from 'distutils'
(/usr/lib/python3.8/distutils/__init__.py)
CMake Error at python/CMakeLists.txt:54 (install):
  install TARGETS given no LIBRARY DESTINATION for module target "_ydlidar".


CMake Error at python/CMakeLists.txt:55 (install):
  install FILES given no DESTINATION!
```

```
CMake Warning (dev) at cmake/install_package.cmake:191 (install):
  Policy CMP0062 is not set: Disallow install() of export() result.  Run
  "cmake --help-policy CMP0062" for policy details.  Use the cmake_policy
  command to set the policy and suppress this warning.

  The file

    /home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/build/ydlidar_sdkTargets.cmake

  was generated by the export() command.  It should not be installed with the
  install() command.  Use the install(EXPORT) mechanism instead.  See the
  cmake-packages(7) manual for more.

Call Stack (most recent call first):
  CMakeLists.txt:168 (install_package)
This warning is for project developers.  Use -Wno-dev to suppress it.

--
+------------------------------------------------------------------------------+
-- |         Resulting configuration for                                        |
--
+------------------------------------------------------------------------------+
--  _____________________________ PLATFORM _____________________________________
--  Host                          : Linux5.15.0-1013-raspiaarch64
--  Is the system big endian?     :  No
--  Word size (32/64 bit)         : 64
--  CMake version                 : 3.22.1
--  CMake generator               : Unix Makefiles
--  CMake build tool              : /usr/bin/gmake
--  Compiler                      : GNU
--  Configuration                 :
--
--  _____________________________ OPTIONS ____________________________________
--  Build YDLidar-SDK as a shared library?   :  No
--  Build Examples?                 : Yes
--  Build C Sharp API?               :  No
--  Build TEST?                              : Yes
--
--  _____________________________ INSTALL ___________________________
--  Install prefix                       : /usr/local
--
--  ___________________________ WRAPPERS/BINDINGS ____________________________
--  Python bindings (pyydlidar)   : Yes
--    - dep: Swig found?          : Yes [Version: 4.0.2]
--    - dep: PythonLibs found?    : Yes [Version: 3.8.13]
--
-- Configuring incomplete, errors occurred!
See also
"/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/build/CMakeFiles/CMakeOutput.log".
```

ubuntu@LINOROBOT:/usr/lib/python3.8/distutils$ **cat __init__.py**

```
"""distutils

The main package for the Python Module Distribution Utilities.  Normally
used from a setup script as

   from distutils.core import setup

   setup (...)
"""

import sys

__version__ = sys.version[:sys.version.index(' ')]
```

*Not sure how significant the errors are.  We'll find out..!*

ubuntu@LINOROBOT:~/YDLidar_SDK.ws/YDLidar-SDK/build$ **make**

```
make: *** No targets specified and no makefile found.  Stop.
```

**2022.09.11** contd
**YDLIDAR SDK INSTALL**
*START OVER*
Install ROS - *DONE*
Create a workspace - *Don't think necessary as git clone creates its own*

*python3-pip already installed*
ubuntu@LINOROBOT:~$ **pip -V**
pip 22.2.2 from /home/ubuntu/.local/lib/python3.10/site-packages/pip (python 3.10)

python swig *already installed*
ubuntu@LINOROBOT:~$ **swig -version**
SWIG Version 4.0.2

Compile & Install YDLidar SDK
ubuntu@LINOROBOT:~$ **git clone https://github.com/YDLIDAR/YDLidar-SDK.git**
Cloning into 'YDLidar-SDK'...
remote: Enumerating objects: 761, done.
remote: Counting objects: 100% (287/287), done.
remote: Compressing objects: 100% (158/158), done.
remote: Total 761 (delta 207), reused 186 (delta 128), pack-reused 474
Receiving objects: 100% (761/761), 11.27 MiB | 6.76 MiB/s, done.
Resolving deltas: 100% (432/432), done.
ubuntu@LINOROBOT:~$ ls
... YDLidar-SDK
ubuntu@LINOROBOT:~$ **cd YDLidar-SDK/**
ubuntu@LINOROBOT:~/YDLidar-SDK$ **ls**
cmake CMakeLists.txt core csharp doc Doxyfile LICENSE.txt python README.md README.pdf samples setup.py src startup test ydlidar_config.h.in

*No /build directory*
*Advice elsewhere says to either create a build directory or use the /src directory. In either case "cmake .." indicates (with "..") to execute from the directory above. So it shouldn't matter. Will create the /build directory in case it looks for one.*

ubuntu@LINOROBOT:~/YDLidar-SDK$ **mkdir build**
ubuntu@LINOROBOT:~/YDLidar-SDK$ **ls**
**build** CMakeLists.txt csharp Doxyfile python README.pdf setup.py startup ydlidar_config.h.in
cmake core doc LICENSE.txt README.md samples src test

```
ubuntu@LINOROBOT:~/YDLidar-SDK$ cd build
ubuntu@LINOROBOT:~/YDLidar-SDK/build$ cmake ..
...
Traceback (most recent call last):
  File "<string>", line 2, in <module>
ImportError: cannot import name 'sysconfig' from 'distutils'
(/usr/lib/python3.8/distutils/__init__.py)
CMake Error at python/CMakeLists.txt:54 (install):
  install TARGETS given no LIBRARY DESTINATION for module target "_ydlidar".
CMake Error at python/CMakeLists.txt:55 (install):
  install FILES given no DESTINATION!
...
```

*Examining CmakeLists.txt, I'm not finding the source of these errors.*

*Tried colcon build just to see.  Similar errors.*

*GO BACK TO p3 successful install after creating YDLidar_SDK.ws directory and start over...*
*Exactly the same errors as no /build directory and same CMake errors as above.  Posted to "Issues" on YDLidar github.*

*Instead of git clone, try downloading instead....*
*No better.*

## Sent email to Chaz / Roberto / David Taylor:

Chaz & Roberto & David

Toward adding LIDAR to the OSR as a step toward SLAM and autonomy.  (Eventually want to do DepthCamera, but that's a MUCH more difficult problem.)

Previously (July last year) I was able to install YDLidar SDK and the ROS2 driver and have it work with ROS2, Rviz and even the Freedom Robotics dashboard (but forget that).

Currently the cloned repo fails to create a /build directory and has some CMakeList.txt errors that I haven't been able to identify.

Per advice elsewhere I tried just creating the /build directory or running "cmake .." from the /src directory but the CMakeList.txt errors prevail.

Attached is my install experience file w/ the appropriate github links.

Can you figure out what's wrong with CMakeList.txt or whatever in the install procedure and correct it?

BTW I've learned that I can't reach github to clone anything unless I've logged into github from the rover via Chromium first.  Otherwise git and even ping thinks it's not there!

It was particularly a pain when I had 2-factor authentication configured, but quit that!

Second issue.

Which way do you think is the best path toward OSR autonomy?

a) take the original OSR ROS2 code, add NAV2 and output to the current OSR remote control drive node.

b) take the Linorobot code and reconfigure the motor controls to the OSR 6 wheel drive, 4 wheel steering using the OSR code as a model.

The host/robot configuration of the Linorobot makes it more complicated, but might allow us to offload some work to the laptop which I have/can configure for Windows Linux Service.

I have a very primitive .urdf based on the Linorobot 4WD so it only has 4 wheels.  See .xacro, attached.  It's still a long way from the OSR configuration.

Roberto,

Can you go ahead and 3D print a prototype LIDAR/OSR adapter so I can play with it?  Thanks!

RoboDoc.

Attached
YDLidar Experience 2022.09.11.pdf;
4WD_properties.urdf.xacro

**2022.10.05**
Delete ydlidar directories & start over.
Set up dependencies first
ubuntu@LINOROBOT:~$ **cmake --version**
cmake version 3.22.1
ubuntu@LINOROBOT:~$ **sudo apt install python3 swig**
ubuntu@LINOROBOT:~$ **sudo apt install python3-pip**

https://github.com/YDLIDAR/YDLidar-SDK
ubuntu@LINOROBOT:~$ **git clone**
**https://github.com/YDLIDAR/YDLidar-SDK.git**
*success*
ubuntu@LINOROBOT:~$ **cd YDLidar-SDK/build**
-bash: cd: YDLidar-SDK/build: No such file or directory
ubuntu@LINOROBOT:~$ **cd YDLidar-SDK/**
ubuntu@LINOROBOT:~/YDLidar-SDK$ **mkdir build**
ubuntu@LINOROBOT:~/YDLidar-SDK$ **cd build**
ubuntu@LINOROBOT:~/YDLidar-SDK/build$ **cmake ..**
**...**
**Traceback (most recent call last):**
**  File "<string>", line 2, in <module>**
**ImportError: cannot import name 'sysconfig' from 'distutils'**
**(/usr/lib/python3.8/distutils/__init__.py)**
**CMake Error at python/CMakeLists.txt:54 (install):**
**  install TARGETS given no LIBRARY DESTINATION for module target "_ydlidar".**
**CMake Error at python/CMakeLists.txt:55 (install):**
**  install FILES given no DESTINATION!**

```
-- +==========================================================================+
-- |         Resulting configuration for                                      |
-- +==========================================================================+
--  _____________________________ PLATFORM _____________________________________
--  Host                          : Linux5.15.0-1015-raspiaarch64
--  Is the system big endian?     :  No
--  Word size (32/64 bit)         : 64
--  CMake version                 : 3.22.1
--  CMake generator               : Unix Makefiles
--  CMake build tool              : /usr/bin/gmake
--  Compiler                      : GNU
--  Configuration                 :
--
--  _____________________________ OPTIONS ____________________________________
--  Build YDLidar-SDK as a shared library?   :  No
--  Build Examples?                : Yes
--  Build C Sharp API?              :  No
--  Build TEST?                              : Yes
--
--  _____________________________ INSTALL ___________________________
--  Install prefix                      : /usr/local
--
--  ___________________________ WRAPPERS/BINDINGS ____________________________
--  Python bindings (pyydlidar)   : Yes
--    - dep: Swig found?          : Yes [Version: 4.0.2]
--    - dep: PythonLibs found?    : Yes [Version: 3.8.13]
--
-- Configuring incomplete, errors occurred!
See also "/home/ubuntu/YDLidar-SDK/build/CMakeFiles/CMakeOutput.log".
```

ubuntu@LINOROBOT:~/YDLidar-SDK/build$ **make**
make: *** No targets specified and no makefile found.  Stop.

**2022.10.27**
From “YDLidar Experience.wpd” p. 3.
https://github.com/YDLIDAR/YDLidar-SDK
U22.04 JJ installed
ROS2 HH installed ok
Python3 is 3.10.4
cmake version 3.22.1

ubuntu@ubuntu:~$ **swig --version**  [NO use only 1 ‘-‘]

```
Command 'swig' not found, but can be installed with:
sudo apt install swig
```

ubuntu@ubuntu:~$ **sudo apt install swig**

```
...
```

ubuntu@ubuntu:~$ **swig -version**

```
SWIG Version 4.0.2
```

ubuntu@ubuntu:~$ **pip3 --version**

```
pip 22.0.2 from /usr/lib/python3/dist-packages/pip (python 3.10)
```

ubuntu@ubuntu:~$ **mkdir -p YDLidar_SDK.ws**
ubuntu@ubuntu:~$ **cd YDLidar_SDK.ws**
ubuntu@ubuntu:~/YDLidar_SDK.ws$ **git clone**
**https://github.com/YDLIDAR/YDLidar-SDK.git**

```
Cloning into 'YDLidar-SDK'...
remote: Enumerating objects: 781, done.
remote: Counting objects: 100% (307/307), done.
remote: Compressing objects: 100% (176/176), done.
remote: Total 781 (delta 223), reused 190 (delta 130), pack-reused 474
Receiving objects: 100% (781/781), 11.29 MiB | 9.28 MiB/s, done.
Resolving deltas: 100% (448/448), done.
```

ubuntu@ubuntu:~/YDLidar_SDK.ws$ **cd YDLidar-SDK/build**
*Directions say to*

cd YDLidar-SDK/build

*but there IS NO /build anywhere in the YDLIDAR directory*!
*There IS a cmake directory.  Let’s try that:*
*ubuntu@ubuntu:~/YDLidar_SDK.ws/YDLidar-SDK/cmake$* ***ls -w 1***

```
cmake_uninstall.cmake.in
common
FindPackage.cmake.in
install_package.cmake
PackageConfig.cmake.in
PackageConfigVersion.cmake.in
PkgConfig.pc.in
script_show_final_summary.cmake
```

ubuntu@ubuntu:~/YDLidar_SDK.ws/YDLidar-SDK/cmake$ **cmake**

```
Usage
  cmake [options] <path-to-source>
  cmake [options] <path-to-existing-build>
  cmake [options] -S <path-to-source> -B <path-to-build>
Specify a source directory to (re-)generate a build system for it in the
current working directory.  Specify an existing build directory to
re-generate its build system.
Run 'cmake --help' for more information.
```

*Following prior experience and advice from elsewhere, simply CREATE the build directory and go:*

ubuntu@ubuntu:~/YDLidar_SDK.ws/YDLidar-SDK$ **mkdir build**
ubuntu@ubuntu:~/YDLidar_SDK.ws/YDLidar-SDK$ **cd build**
ubuntu@ubuntu:~/YDLidar_SDK.ws/YDLidar-SDK/build$ **cmake ..**
***IMPORTANT DETAIL! DON'T LEAVE OFF THE .. AFTER cmake!***
Lot of deprecated policy, project developer warnings, ignore.

```
--
+=============================================================================+
-- |         Resulting configuration for                                       |
--
+=============================================================================+
--  _____________________________ PLATFORM _____________________________________
--  Host                          : Linux5.15.0-1017-raspiaarch64
--  Is the system big endian?     :  No
--  Word size (32/64 bit)         : 64
--  CMake version                 : 3.22.1
--  CMake generator               : Unix Makefiles
--  CMake build tool              : /usr/bin/gmake
--  Compiler                      : GNU
--  Configuration                 :
--
--  _____________________________ OPTIONS ____________________________________
--  Build YDLidar-SDK as a shared library?   :  No
--  Build Examples?                 : Yes
--  Build C Sharp API?               :  No
--  Build TEST?                                : Yes
--
--  _____________________________ INSTALL ____________________________
--  Install prefix                        : /usr/local
--
--  ___________________________ WRAPPERS/BINDINGS ___________________________
--  Python bindings (pyydlidar)   : Yes
--    - dep: Swig found?          : Yes [Version: 4.0.2]
--    - dep: PythonLibs found?    : Yes [Version: 3.10.4]
--
-- Configuring done
-- Generating done
-- Build files have been written to:
/home/ubuntu/YDLidar_SDK.ws/YDLidar-SDK/build
```

ubuntu@ubuntu:~/YDLidar_SDK.ws/YDLidar-SDK/build$ **make**
ubuntu@ubuntu:~/YDLidar_SDK.ws/YDLidar-SDK/build$ **sudo make install**
*[install successful]*

```
ubuntu@ubuntu:~$ cd /usr/local/bin/
ubuntu@AUDACITY:/usr/local/bin$ ./tri_test

Get needed data from YDLIDAR X2 Datasheet.pdf
__   ______  _     ___ ____     _    ____
\ \ / /  _ \| |   |_ _|  _ \   / \  |  _ \
 \ V /| | | | |    | || | | | / _ \ | |_) |
  | | | |_| | |___ | || |_| |/ ___ \|  _ <
  |_| |____/|_____|___|____/_/   \_\_| \_\

0. ydlidar
1. ydlidar1.2.4.3
Please select the lidar port:1
Baudrate:
0. 115200
1. 128000
2. 153600
3. 230400
4. 460800
5. 512000
Please select the lidar baudrate:0
Whether the Lidar is one-way communication[yes/no]:y
YDLidar SDK initializing
YDLidar SDK has been initialized
[YDLIDAR]:SDK Version: 1.1.2
LiDAR successfully connected
[YDLIDAR]:Lidar running correctly ! The health status: good
LiDAR init success, Elapsed time 633 ms
Start to getting intensity flag
lastPos 98 currPos 110 offset 12
lastPos 989 currPos 1001 offset 12
Auto set intensity 0
End to getting intensity flag
[CYdLidar] Successed to start scan mode, Elapsed time 1067 ms
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3K
[YDLIDAR]:Single Fixed Size: 440
[YDLIDAR]:Sample Rate: 3K
[YDLIDAR INFO] Single Channel Current Sampling Rate: 3K
[YDLIDAR INFO] Now YDLIDAR is scanning ......
[YDLIDAR]: User version 0.0
Scan received [438] points stamp [0x1722192221C3FE20]
Scan received [440] points stamp [0x17221922284B6120]
...
```

Continue from p. 8 of YDLidar Experience.wpd to install ROS nodes
When I try to run any of the
     /usr/local/bin$ **python3 -----.py**
I get
     ModuleNotFoundError: No module named ‘ydlidar’

**2022.10.29**
*Continue on to install YDLIDAR ROS2 Driver*
*maybe ydlidar.py module will be in there?*
From “YDLidar Experience.wpd” p.8 and
https://github.com/YDLIDAR/ydlidar_ros2_driver
ubuntu@ubuntu:~$ **git clone**
**https://github.com/YDLIDAR/ydlidar_ros2_driver.git**
**ydlidar_ros2_ws/src/ydlidar_ros2_driver**
ubuntu@ubuntu:~$ **ls -w 1**
```
Desktop
Documents
Downloads
Music
Pictures
Public
ros2me
snap
Templates
Videos
ydlidar_ros2_ws
YDLidar_SDK.ws
```
ubuntu@ubuntu:~$ **cd ydlidar_ros2_ws/**
ubuntu@ubuntu:~/ydlidar_ros2_ws$ **colcon build --symlink-install**

**On 10/30/2022 8:53 PM, James H Phelan wrote:**
Re: [HBRobotics] YDLidar X2 problems - anybody experience with this?
RoboBuds,
Have a YDLidar X2.
Having some cmake warnings and not finding module 'ydlidar' when running python tests.
I won't overshare details with the whole group, but can with anyone interested.
Thanks!
RoboDoc

**2022.11.01**
Looking back through “YDLidar Experience.wpd”
It appears I didn’t -
ubuntu@AUDACITY:~/YDLidar_SDK.ws/YDLidar-SDK$ **pip install .**
(This shouldn’t be needed if SDK is installed)
Starting over by removing ydlidar directories and reinstalling.

**2023.02.18**
Starting from scratch after long absence:
https://github.com/YDLIDAR/YDLidar-SDK  Github requires login first else won't find.

*Fork and then Clone YDLidar-SDK's GitHub code*
ubuntu@ubuntu:~$ **git clone**
**https://github.com/YDLIDAR/YDLidar-SDK.git**
```
Cloning into 'YDLidar-SDK'...
remote: Enumerating objects: 830, done.
remote: Counting objects: 100% (78/78), done.
remote: Compressing objects: 100% (42/42), done.
remote: Total 830 (delta 46), reused 45 (delta 36), pack-reused 752
Receiving objects: 100% (830/830), 11.31 MiB | 6.00 MiB/s, done.
Resolving deltas: 100% (501/501), done.
```

*Build and Install - This step is required*
https://github.com/YDLIDAR/YDLidar-SDK/blob/master/doc/howto/how_to_build_and_install.md

*1. Install Cmake*
ubuntu@ubuntu:~$ **cmake --version**
```
cmake version 3.22.1
```
Already installed

*if you want to use python API, you need to install python and swig(3.0 or higher):*
ubuntu@ubuntu:~$ **sudo apt-get install python swig**
```
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Package python is not available, but is referred to by another package.
This may mean that the package is missing, has been obsoleted, or
is only available from another source
However the following packages replace it:
  python2-minimal python2 dh-python 2to3 python-is-python3

E: Package 'python' has no installation candidate
```
ubuntu@ubuntu:~$ **sudo apt-get install python3 swig**
```
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
python3 is already the newest version (3.10.4-0ubuntu2).
python3 set to manually installed.
swig is already the newest version (4.0.2-1ubuntu1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

*sudo apt-get install python-pip*

```
ubuntu@ubuntu:~$ sudo apt-get install python3-pip
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
python3-pip is already the newest version (22.0.2+dfsg-1).
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

*Build YDLidar-SDK*
*git clone https://github.com/YDLIDAR/YDLidar-SDK.git*
already done

*cd YDLidar-SDK/build*

```
ubuntu@ubuntu:~/YDLidar-SDK$ ls -w 1
[NO build directory - have to create one per issues on github]
cmake
CMakeLists.txt
core
csharp
doc
Doxyfile
LICENSE.txt
python
README.md
README.pdf
samples
setup.py
src
startup
test

ubuntu@ubuntu:~/YDLidar-SDK$ mkdir build
ubuntu@ubuntu:~/YDLidar-SDK$ ls -w 1
build
cmake
CMakeLists.txt
core
csharp
doc
Doxyfile
LICENSE.txt
python
README.md
README.pdf
samples
setup.py
src
startup
test
ydlidar_config.h.in
```

```
ubuntu@ubuntu:~/YDLidar-SDK$ cd build
ubuntu@ubuntu:~/YDLidar-SDK/build$
```

*cmake ..*

```
ubuntu@ubuntu:~/YDLidar-SDK/build$ cmake ..  [don't forget the ..]
Multiple deprecation and developer warnings, ignored.
--
+==========================================================================+
-- |        Resulting configuration for                                     |
--
+==========================================================================+
--  _____________________________ PLATFORM _____________________________
--  Host                          : Linux5.15.0-1017-raspiaarch64
--  Is the system big endian?     :  No
--  Word size (32/64 bit)         : 64
--  CMake version                 : 3.22.1
--  CMake generator               : Unix Makefiles
--  CMake build tool              : /usr/bin/gmake
--  Compiler                      : GNU
--  Configuration                 :
--
--  _____________________________ OPTIONS _____________________________
--  Build YDLidar-SDK as a shared library?   :  No
--  Build Examples?                 : Yes
--  Build C Sharp API?               :  No
--  Build TEST?                             : Yes
--
--  _____________________________ INSTALL _____________________
--  Install prefix                      : /usr/local
--
--  _____________________________ WRAPPERS/BINDINGS _____________________________
--  Python bindings (pyydlidar)   : Yes
--    - dep: Swig found?          : Yes [Version: 4.0.2]
--    - dep: PythonLibs found?    : Yes [Version: 3.10.4]
--
-- Configuring done
-- Generating done
-- Build files have been written to: /home/ubuntu/YDLidar-SDK/build
```

*make*

```
ubuntu@ubuntu:~/YDLidar-SDK/build$ make
multiple warning like:
In member function 'int ydlidar::core::base::Thread::join(long unsigned int)':
/home/ubuntu/YDLidar-SDK/./core/base/thread.h:118:18: warning: format '%X'
expects argument of type 'unsigned int', but argument 2 has type '_size_t' {aka
'long unsigned int'} [-Wformat=]
  118 |       printf("0x%X thread has been canceled\n", this->_handle);
      |                  ~^                              ~~~~~~~~~~~~~
      |                   |                                    |
      |                   unsigned int                         _size_t {aka long
unsigned int}
      |                  %lX
```

*sudo make install*

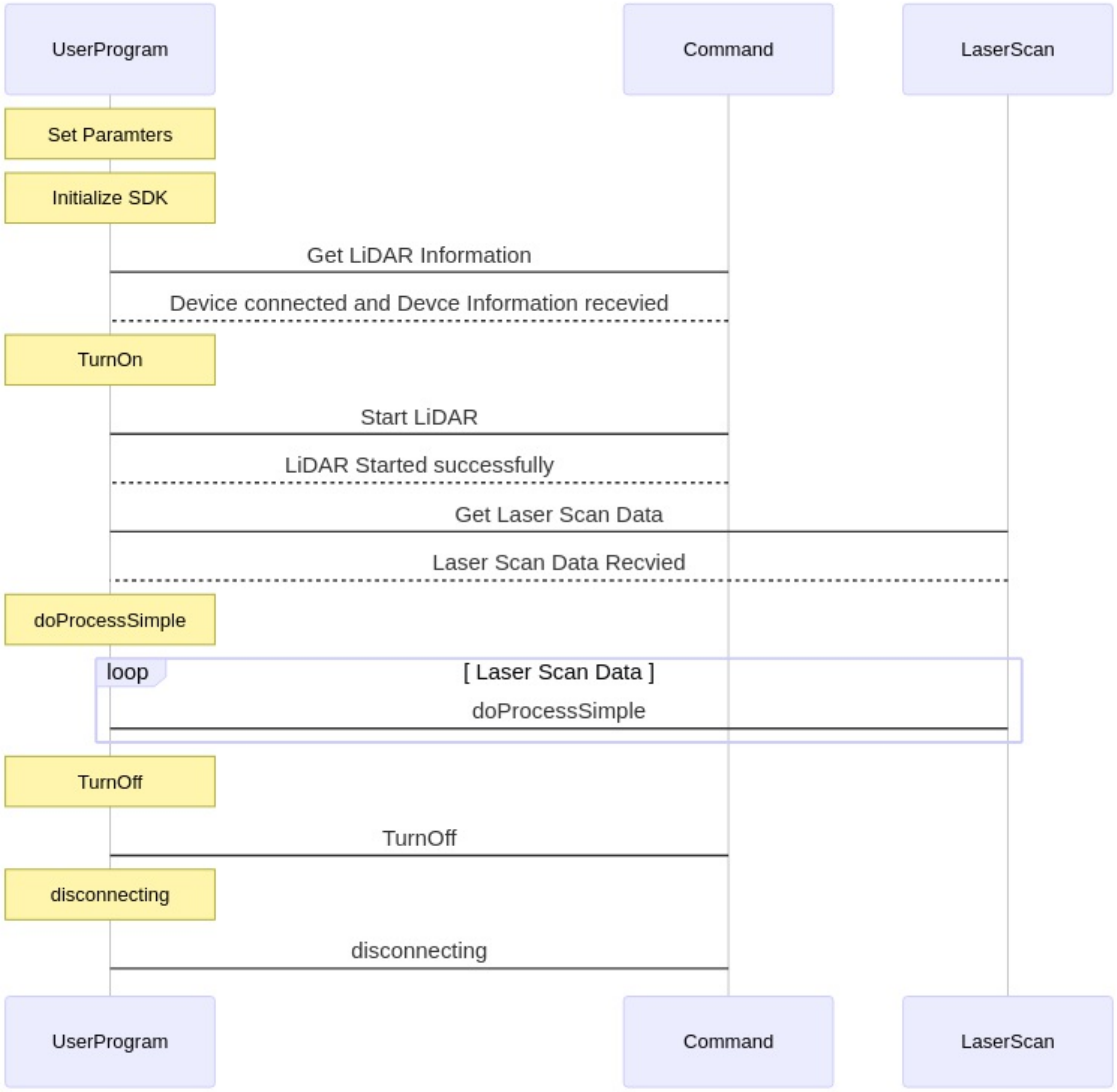
ubuntu@ubuntu:~/YDLidar-SDK/build$ **sudo make install**

```
Consolidate compiler generated dependencies of target ydlidar_sdk
[ 46%] Built target ydlidar_sdk
Consolidate compiler generated dependencies of target et_test
[ 51%] Built target et_test
Consolidate compiler generated dependencies of target gs_test
[ 56%] Built target gs_test
Consolidate compiler generated dependencies of target sdm_test
[ 61%] Built target sdm_test
Consolidate compiler generated dependencies of target tmini_test
[ 66%] Built target tmini_test
Consolidate compiler generated dependencies of target tof_test
[ 71%] Built target tof_test
Consolidate compiler generated dependencies of target tri_and_gs_test
[ 76%] Built target tri_and_gs_test
Consolidate compiler generated dependencies of target tri_test
[ 82%] Built target tri_test
Consolidate compiler generated dependencies of target lidar_c_api_test
[ 87%] Built target lidar_c_api_test
[ 89%] Built target ydlidar_swig_compilation
Consolidate compiler generated dependencies of target _ydlidar
[ 94%] Built target _ydlidar
Consolidate compiler generated dependencies of target lidar_test
[100%] Built target lidar_test
Install the project...
-- Install configuration: ""
-- Installing: /usr/local/include/core/base/datatype.h
-- Installing: /usr/local/include/core/base/locker.h
-- Installing: /usr/local/include/core/base/thread.h
-- Installing: /usr/local/include/core/base/timer.h
-- Installing: /usr/local/include/core/base/typedef.h
-- Installing: /usr/local/include/core/base/utils.h
-- Installing: /usr/local/include/core/base/v8stdint.h
-- Installing: /usr/local/include/core/base/ydlidar.h
-- Installing: /usr/local/include/core/common/ChannelDevice.h
-- Installing: /usr/local/include/core/common/DriverInterface.h
-- Installing: /usr/local/include/core/common/ydlidar_datatype.h
-- Installing: /usr/local/include/core/common/ydlidar_def.h
-- Installing: /usr/local/include/core/common/ydlidar_help.h
-- Installing: /usr/local/include/core/common/ydlidar_protocol.h
-- Installing: /usr/local/include/core/math/angles.h
-- Installing: /usr/local/include/core/network/ActiveSocket.h
-- Installing: /usr/local/include/core/network/PassiveSocket.h
-- Installing: /usr/local/include/core/network/SimpleSocket.h
-- Installing: /usr/local/include/core/network/StatTimer.h
-- Installing: /usr/local/include/core/serial/common.h
-- Installing: /usr/local/include/core/serial/serial.h
-- Installing: /usr/local/include/core/serial/impl/unix/lock.h
-- Installing: /usr/local/include/core/serial/impl/unix/unix.h
-- Installing: /usr/local/include/core/serial/impl/unix/unix_serial.h
-- Installing: /usr/local/include/src/CYdLidar.h
-- Installing: /usr/local/include/src/ETLidarDriver.h
-- Installing: /usr/local/include/src/GS1LidarDriver.h
-- Installing: /usr/local/include/src/GS2LidarDriver.h
-- Installing: /usr/local/include/src/SDMLidarDriver.h
-- Installing: /usr/local/include/src/YDlidarDriver.h
-- Installing: /usr/local/include/src/ydlidar_sdk.h
-- Installing: /usr/local/include/src/filters/FilterInterface.h
-- Installing: /usr/local/include/src/filters/NoiseFilter.h
-- Installing: /usr/local/include/ydlidar_config.h
-- Installing: /usr/local/lib/libydlidar_sdk.a
-- Installing: /usr/local/lib/pkgconfig/YDLIDAR_SDK.pc
-- Installing: /usr/local/lib/cmake/ydlidar_sdk/ydlidar_sdkConfig.cmake
-- Installing: /usr/local/lib/cmake/ydlidar_sdk/ydlidar_sdkTargets.cmake
-- Installing: /usr/local/lib/cmake/ydlidar_sdk/ydlidar_sdkConfigVersion.cmake
-- Installing: /usr/local/share/YDLIDAR_SDK/FindYDLIDAR_SDK.cmake
-- Up-to-date: /usr/local/share/YDLIDAR_SDK
-- Up-to-date: /usr/local/share/YDLIDAR_SDK/common
-- Installing: /usr/local/share/YDLIDAR_SDK/common/ydlidar_parse.cmake
-- Installing: /usr/local/share/YDLIDAR_SDK/common/ydlidar_base.cmake
-- Installing: /usr/local/share/YDLIDAR_SDK/PkgConfig.pc.in
-- Installing: /usr/local/share/YDLIDAR_SDK/script_show_final_summary.cmake
-- Installing: /usr/local/share/YDLIDAR_SDK/PackageConfigVersion.cmake.in
-- Installing: /usr/local/share/YDLIDAR_SDK/FindPackage.cmake.in
-- Installing: /usr/local/share/YDLIDAR_SDK/install_package.cmake
-- Installing: /usr/local/share/YDLIDAR_SDK/cmake_uninstall.cmake.in
-- Installing: /usr/local/share/YDLIDAR_SDK/PackageConfig.cmake.in
-- Installing: /usr/local/share/YDLIDAR_SDK/LICENSE.txt
-- Installing: /usr/local/share/YDLIDAR_SDK/README.md
-- Up-to-date: /usr/local/share/YDLIDAR_SDK/doc
-- Up-to-date: /usr/local/share/YDLIDAR_SDK/doc/quickstart
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/quickstart/ydlidar_sdk_software_installation_guide.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/quickstart/README.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/SDK.pdf
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/YDLidar_SDK_Communication_Protocol.pdf
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/Diagram.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/YDLidar-SDK-Communication-Protocol.pdf
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/YDLIDAR_SDK_API_for_Developers.md
-- Up-to-date: /usr/local/share/YDLIDAR_SDK/doc/images
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/FlowChart.png
```

```
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/sdk_architecture.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/frame_intensity.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/EAI.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/system_workflow.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/YDLidar.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/sequence.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/sdk_scanning.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/sdk_init.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/frame.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/communication_mechanism.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/angle_q2.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/images/YDLidar.jpg
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/YDLidar-SDK-Communication-Protocol.html
-- Up-to-date: /usr/local/share/YDLIDAR_SDK/doc/FAQs
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/FAQs/Software_FAQs_cn.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/FAQs/Hardware_FAQs_cn.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/FAQs/Software_FAQs.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/FAQs/README.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/FAQs/General_FAQs_cn.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/FAQs/General_FAQs.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/FAQs/Hardware_FAQs.md
-- Up-to-date: /usr/local/share/YDLIDAR_SDK/doc/tutorials
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/tutorials/writing_lidar_network_adapter_tutorial_c++.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/tutorials/writing_lidar_tutorial_c++.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/tutorials/examine_the_simple_lidar_tutorial.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/tutorials/writing_lidar_tutorial_python.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/tutorials/writing_lidar_tutorial_c.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/README.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/Dataset.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/Tutorials.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/YDLidar-SDK-Communication-Protocol.md
-- Up-to-date: /usr/local/share/YDLIDAR_SDK/doc/howto
-- Up-to-date: /usr/local/share/YDLIDAR_SDK/doc/howto/images
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/csharp_exception.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/csharp_build.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/csharp_library.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/ttyUSB1.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/csharp_running.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/cpack.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/ttyUSB0.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/csharp_project.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/sequence.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/sdk_scanning.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/sdk_init.png
-- Up-to-date: /usr/local/share/YDLIDAR_SDK/doc/howto/images/vscode
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/vscode/run_tasks.jpg
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/vscode/tasks.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/images/ydlidar_lidar_monitor.png
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/how_to_create_a_udev_rules.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/how_to_gerenrate_vs_project_by_cmake.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/how_to_build_and_install.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/README.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/how_to_create_a_pull.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/how_to_create_a_csharp_project.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/how_to_build_and_debug_using_vscode.md
-- Installing: /usr/local/share/YDLIDAR_SDK/doc/howto/how_to_solve_slow_pull_from_cn.md
-- Installing: /usr/local/startup/initenv.sh
-- Installing: /usr/local/bin/et_test
-- Installing: /usr/local/bin/gs_test
-- Installing: /usr/local/bin/sdm_test
-- Installing: /usr/local/bin/tmini_test
-- Installing: /usr/local/bin/tof_test
-- Installing: /usr/local/bin/tri_and_gs_test
-- Installing: /usr/local/bin/tri_test
-- Installing: /usr/local/bin/lidar_c_api_test
-- Installing: /usr/local/lib/python3/dist-packages/_ydlidar.so
-- Installing: /usr/local/lib/python3/dist-packages/ydlidar.py
-- Installing: /usr/local/bin/etlidar_test.py
-- Installing: /usr/local/bin/plot_tof_test.py
-- Installing: /usr/local/bin/plot_ydlidar_test.py
-- Installing: /usr/local/bin/test.py
-- Installing: /usr/local/bin/tof_test.py
-- Installing: /usr/local/bin/ydlidar_test.py
```

*Run YDLidar SDK Sample*

*Three samples are provided in samples, which demonstrate how to configure YDLidar LiDAR units and receive the laser scan data when directly connecting YDLidar SDK to LiDAR units or by using a YDLidar Adapter board, respectively. The sequence diagram is shown as below:*



*For Ubuntun 18.04/16.04/14.04 LTS, run the tri_test if connect with the Triangle LiDAR unit(s) or TOF LiDAR unit(s):*
Per the data sheet, the X2 is a **triangulation** LiDAR.
*./tri_test*
ubuntu@ubuntu:~/YDLidar-SDK/build$ **./tri_test**

```
__   ______  _     ___ ____     _    ____
\ \ / /  _ \| |   |_ _|  _ \   / \  |  _ \
 \ V /| | | | |    | || | | | / _ \ | |_) |
  | | | |_| | |___ | || |_| |/ ___ \|  _ <
  |_| |____/|_____|___|____/_/   \_\_| \_\
```

```
0. ydlidar
1. ydlidar1.1
Please select the lidar port:
```

Ah, not sure here.  Try 0.  If fails, then 1.
Please select the lidar port:**0**  [should be 1]
[Previously, the correct answer was 1]

```
Baudrate:
0. 115200
1. 128000
2. 153600
3. 230400
4. 460800
5. 512000
Please select the lidar baudrate:
```

Please select the lidar baudrate:**0**
[according to docs above.  In practice, they ALL seem to work]

```
Whether the Lidar is one-way communication[yes/no]:
```

Whether the Lidar is one-way communication[yes/no]: **yes** [“]

```
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.4
[YDLIDAR] Error, cannot bind to the specified serial port[/dev/ttyS0] and
baudrate[115200]
[YDLIDAR] Error initializing YDLIDAR check Comms.
Fail to initialize Unknown error
```

Go back to port 1

```
ubuntu@ubuntu:~/YDLidar-SDK/build$ ./tri_test
__   ______  _     ____ _____     _     ____
\ \ / /  _ \| |   |_ _|  _ \  / \   |  _ \
 \ V /| | | | |    | || | | |/ _ \ | |_) |
  | | | |_| | |___ | || |_| / ___ \|  _ <
  |_| |____/|_____|___|____/_/   \_\_| \_\

0. ydlidar
1. ydlidar1.1
Please select the lidar port:1
Please select the lidar baudrate:1
Whether the Lidar is one-way communication[yes/no]:yes
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.4
[YDLIDAR] Lidar successfully connected
[YDLIDAR]:Lidar running correctly ! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 635 ms
Segmentation fault (core dumped)
```

*Python Run*
*cd python/examples*
*# Console*
*python tof_test.py*
*# If it's a drawing*
*pip install numpy*
*pip install matplotlib*
*python plot_tof_test.py*

Remember I have python3, not just python.

```
ubuntu@ubuntu:~/YDLidar-SDK/build$ cd python/examples
ubuntu@ubuntu:~/YDLidar-SDK/build/python/examples$ ls -w 1
CMakeFiles
cmake_install.cmake
CTestTestfile.cmake
Makefile
```
No examples in this directory [but there was ‘samples’ in /build]

```
ubuntu@ubuntu:~/YDLidar-SDK/build/samples$ ls -w 1
CMakeFiles
cmake_install.cmake
Makefile
```
No examples here, either.

Look in /build:

```
ubuntu@ubuntu:~/YDLidar-SDK/build$ ls -w 1
CMakeCache.txt
CMakeFiles
cmake_install.cmake
cmake_uninstall.cmake
compile_commands.json
core
CPackConfig.cmake
CPackSourceConfig.cmake
CTestTestfile.cmake
et_test
FindYDLIDAR_SDK.cmake
gs_test
install_manifest.txt
libydlidar_sdk.a
lidar_c_api_test
Makefile
python
samples
sdm_test
src
test
tmini_test
tof_test
tri_and_gs_test
tri_test
ydlidar_config.h
ydlidar_sdkConfig.cmake
ydlidar_sdkConfigVersion.cmake
YDLIDAR_SDK.pc
ydlidar_sdkTargets.cmake

ubuntu@ubuntu:~/YDLidar-SDK/build$ cd test
ubuntu@ubuntu:~/YDLidar-SDK/build/test$ ls
CMakeFiles  cmake_install.cmake  CTestTestfile.cmake  lidar_test  Makefile
ubuntu@ubuntu:~/YDLidar-SDK/build/test$ ./lidar_test
[==========] Running 6 tests from 1 test suite.
[----------] Global test environment set-up.
[----------] 6 tests from LidarTest
[ RUN      ] LidarTest.SystemSignal
[       OK ] LidarTest.SystemSignal (0 ms)
[ RUN      ] LidarTest.SerialPort
[       OK ] LidarTest.SerialPort (0 ms)
[ RUN      ] LidarTest.SerialBaudrate
[       OK ] LidarTest.SerialBaudrate (0 ms)
[ RUN      ] LidarTest.SingleChannel
[       OK ] LidarTest.SingleChannel (0 ms)
[ RUN      ] LidarTest.ScanFequency
[       OK ] LidarTest.ScanFequency (0 ms)
[ RUN      ] LidarTest.TurnOn
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.4
[YDLIDAR] Lidar successfully connected
Error, cannot retrieve YDLidar health code: ffffffff
[YDLIDAR INFO] Fail to get device information              [that's because it's one-way communication only]
[YDLIDAR] Lidar init success, Elapsed time 2674 ms
/home/ubuntu/YDLidar-SDK/test/lidar_test.cpp:63: Failure
Expected equality of these values:
  version.soft_major != 0
    Which is: false
  true
Segmentation fault (core dumped)
```

```
ubuntu@ubuntu:~/YDLidar-SDK/build$ ./et_test
This is for LIDAR at an IP address, which this isn't

ubuntu@ubuntu:~/YDLidar-SDK/build$ ./gs_test
[0] ydlidar /dev/ttyS0
[1] ydlidar1.1 /dev/ttyUSB0
Please select the lidar port:1      [this is USB not tty enabled]
Baudrate:
0. 921600                           [Only choice here tho supposedly 115200]
Please select the lidar baudrate:0
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.4
[YDLIDAR] Lidar successfully connected
[YDLIDAR]:Lidar running correctly ! The health status: good
[YDLIDAR INFO] Fail to get device information
[YDLIDAR] Lidar init success, Elapsed time 5132 ms
[YDLIDAR] Failed to start scan mode: ffffffff
Fail to turn on Unknown error

ubuntu@ubuntu:~/YDLidar-SDK/build$ ./lidar_c_api_test
port: /dev/ttyS0
port: /dev/ttyUSB0
baudrate: 512000
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.4
[YDLIDAR] Lidar successfully connected
Error, cannot retrieve YDLidar health code: ffffffff
[YDLIDAR INFO] Fail to get device information
[YDLIDAR] Lidar init success, Elapsed time 2675 ms
Segmentation fault (core dumped)

ubuntu@ubuntu:~/YDLidar-SDK/build$ ./tmini_test
0. ydlidar
1. ydlidar1.1
Please select the lidar port:1
Baudrate:
0. 115200
1. 128000
2. 153600
3. 230400
4. 460800
5. 512000
Please select the lidar baudrate:0
Whether the Lidar is one-way communication[yes/no]:yes
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.4
[YDLIDAR] Lidar successfully connected
[YDLIDAR]:Lidar running correctly ! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 636 ms
Segmentation fault (core dumped)
```

```
ubuntu@ubuntu:~/YDLidar-SDK/build$ ./tof_test
0. ydlidar
1. ydlidar1.1
Please select the lidar port:1
Baudrate:
0. 115200
1. 230400
2. 460800
3. 512000
Please select the lidar baudrate:3
Whether the Lidar is one-way communication[yes/no]:yes
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.4
[YDLIDAR] Lidar successfully connected
[YDLIDAR]:Lidar running correctly ! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 635 ms
Segmentation fault (core dumped)

ubuntu@ubuntu:~/YDLidar-SDK/build$ ./tri_and_gs_test
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.4
send: A5A5A5A500640000
send: 64
[YDLIDAR] Lidar successfully connected
send: A5A5A5A500640000
send: 64
[YDLIDAR]:Lidar running correctly ! The health status: good
send: A5A5A5A500620000
send: 62
[YDLIDAR INFO] Fail to get device information
[YDLIDAR] Lidar init success, Elapsed time 5124 ms
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.4
[YDLIDAR] Error, cannot bind to the specified serial port[/dev/ttyUSB1] and
baudrate[115200]
[YDLIDAR] Error initializing YDLIDAR check Comms.
Fail to initialize Unknown error
send: A5A5A5A500640000
send: 64
```

```
ubuntu@ubuntu:~/YDLidar-SDK/build$ ./tri_test
0. ydlidar
1. ydlidar1.1
Please select the lidar port:1
Baudrate:
0. 115200
1. 128000
2. 153600
3. 230400
4. 460800
5. 512000
Please select the lidar baudrate:5
Whether the Lidar is one-way communication[yes/no]:yes
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.4
[YDLIDAR] Lidar successfully connected
[YDLIDAR]:Lidar running correctly ! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 635 ms
Segmentation fault (core dumped)
```

PYTHON EXAMPLES

```
ubuntu@ubuntu:~/YDLidar-SDK$ sudo find . -name plot_tof_test.py
./python/examples/plot_tof_test.py

ubuntu@ubuntu:~/YDLidar-SDK$ cd python
ubuntu@ubuntu:~/YDLidar-SDK/python$ ls
CMakeLists.txt  examples  numpy.i  test  ydlidar_sdk.i
ubuntu@ubuntu:~/YDLidar-SDK/python$ cd examples
ubuntu@ubuntu:~/YDLidar-SDK/python/examples$ ls
CMakeLists.txt  etlidar_test.py  plot_tof_test.py  plot_ydlidar_test.py
test.py  tof_test.py  ydlidar_test.py

ubuntu@ubuntu:~/YDLidar-SDK/python/examples$ python3
etlidar_test.py
YDLidar SDK initializing
YDLidar SDK has been initialized
[YDLIDAR]:SDK Version: 1.1.2
[CYdLidar] Error, cannot bind to the specified IP Address[192.168.1.11]
[CYdLidar::initialize] Error initializing YDLIDAR check Comms.

ubuntu@ubuntu:~/YDLidar-SDK/python/examples$ python3
plot_tof_test.py
Traceback (most recent call last):
  File "/home/ubuntu/YDLidar-SDK/python/examples/plot_tof_test.py", line 14, in
<module>
    fig.canvas.set_window_title('YDLidar LIDAR Monitor')
AttributeError: 'FigureCanvasAgg' object has no attribute 'set_window_title'
```

ubuntu@ubuntu:~/YDLidar-SDK/python/examples$ **python3 plot_ydlidar_test.py**

```
Traceback (most recent call last):
  File "/home/ubuntu/YDLidar-SDK/python/examples/plot_ydlidar_test.py", line 14, in <module>
    fig.canvas.set_window_title('YDLidar LIDAR Monitor')
AttributeError: 'FigureCanvasAgg' object has no attribute 'set_window_title'
```

Google: “**matplotlib fig.canvas.set_window_title**”
https://matplotlib.org/stable/api/prev_api_changes/api_changes_3.6.0.html

```
FigureCanvas.get_window_title() and FigureCanvas.set_window_title(); use FigureManagerBase.get_window_title or FigureManagerBase.set_window_title if using pyplot, or use GUI-specific methods if embedding.
```

Used nano to comment out offending statement w/ successful run but no plot.

Now to ROS2

ubuntu@ubuntu:~$ **sudo apt update**
ubuntu@ubuntu:~$ **sudo apt upgrade**
ubuntu@ubuntu:~$ **sudo apt autoremove**
REBOOT

ubuntu@ubuntu:~$ **echo $ROS_DISTRO**
humble
ROS2 already installed

YDLIDAR ROS2 Driver
https://github.com/YDLIDAR/ydlidar_ros2_driver

git clone should create its own ros2_ws

ubuntu@ubuntu:~$ **git clone https://github.com/YDLIDAR/ydlidar_ros2_driver.git**
ubuntu@ubuntu:~$ **ls**
Desktop Documents Downloads Music Pictures Public ros2me snap Templates Videos **ydlidar_ros2_driver** YDLidar-SDK
ubuntu@ubuntu:~$ **cd ydlidar_ros2_driver**
ubuntu@ubuntu:~/ydlidar_ros2_driver$ **colcon build --symlink-install**
LOTS OF ERRORS...see samples below

```
gmake[1]: *** [CMakeFiles/Makefile2:139: CMakeFiles/ydlidar_ros2_driver_node.dir/all] Error 2
gmake[1]: *** Waiting for unfinished jobs....
gmake: *** [Makefile:146: all] Error 2
---
Failed   <<< ydlidar_ros2_driver [2min 1s, exited with code 2]

Summary: 0 packages finished [2min 3s]
  1 package failed: ydlidar_ros2_driver
  1 package had stderr output: ydlidar_ros2_driver
```

```
Starting >>> ydlidar_ros2_driver
--- stderr: ydlidar_ros2_driver
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In function ‘int main(int, char**)’:
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [5])’
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)’
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: note:   candidate expects 4 arguments, 1
provided
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)’
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: note:   couldn’t deduce template parameter
‘ParameterT’
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:51:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [13])’
   51 |   node->declare_parameter("ignore_array");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)’
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:51:26: note:   candidate expects 4 arguments, 1
provided
   51 |   node->declare_parameter("ignore_array");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)’
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:51:26: note:   couldn’t deduce template parameter
‘ParameterT’
   51 |   node->declare_parameter("ignore_array");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
```

etc.

**2023.02.19**

Will try this proposed answer:

https://github.com/YDLIDAR/ydlidar_ros2_driver/issues/21

stating over:

ubuntu@ubuntu:~$ **rm -rf ydlidar_ros2_ws/**

ubuntu@ubuntu:~$ **mkdir ydlidar_ros2_ws**

The clone from

https://github.com/lghrainbow/ydlidar_ros2_driver/tree/humble-devel

ubuntu@ubuntu:~$ **cd ydlidar_ros2_ws/**

ubuntu@ubuntu:~/ydlidar_ros2_ws$ **git clone https://github.com/lghrainbow/ydlidar_ros2_driver.git**

```
Cloning into 'ydlidar_ros2_driver'...
remote: Enumerating objects: 47, done.
remote: Counting objects: 100% (22/22), done.
remote: Compressing objects: 100% (13/13), done.
remote: Total 47 (delta 13), reused 9 (delta 9), pack-reused 25
Receiving objects: 100% (47/47), 807.53 KiB | 5.28 MiB/s, done.
Resolving deltas: 100% (14/14), done.
```

In above Issues:

```
In my environment, this repository gives the following errors:
[ydlidar_ros2_driver_node-1] terminate called after throwing an instance of
'rclcpp::exceptions::UninitializedStaticallyTypedParameterException'
[ydlidar_ros2_driver_node-1] what(): Statically typed parameter 'fixed_resolution' must be
initialized.
[static_transform_publisher-2] [INFO] [1666711686.062313321] [static_tf_pub_laser]: Spinning until
stopped - publishing transform

I had to change "resolution_fixed: true" to "fixed_resolution: true" in params/ydlidar.yaml and
then the @lghrainbow humble updates worked for me
```

So:

ubuntu@ubuntu:~/ydlidar_ros2_ws/ydlidar_ros2_driver/params$ **nano ydlidar.yaml**

and made the change. [fingers crossed]

...and try again -

ubuntu@ubuntu:~/ydlidar_ros2_ws$ **colcon build --symlink-install**

```
Starting >>> ydlidar_ros2_driver
[Processing: ydlidar_ros2_driver]
--- stderr: ydlidar_ros2_driver
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In function ‘int main(int, char**)’:
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [5])’
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)’
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: note:   candidate expects 4 arguments, 1
provided
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)’
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: note:   couldn’t deduce template parameter
```

```
‘ParameterT’
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
```

...essentially the same errors as before.

## Call for help:

To: hbrobotics@googlegroups.com
Dear Team of RoboNuts:

I'm trying to get my YDLidar X2 to work on my Raspberry Pi 4 4GB, Ubuntu 22.04 Jammy, ROS2 Humble
Installed, apparently successfully
https://github.com/YDLIDAR/YDLidar-SDK
But when I install
https://github.com/YDLIDAR/ydlidar_ros2_driver
and run colcon build --symlink-install
I get a bunch of 'declare_parameter' errors such as

```
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In function ‘int
main(int, char**)’:
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: error: no
matching function for call to ‘rclcpp::Node::declare_parameter(const char [5])’
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
In file included from
/opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from
/home/ubuntu/ydlidar_ros2_ws/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
```

Following an Issues suggestion
https://github.com/YDLIDAR/ydlidar_ros2_driver/issues/21
I tried a different repo
https://github.com/lghrainbow/ydlidar_ros2_driver/tree/humble-devel
but get the same errors.

A suggested 'workaround' advises:

*Added ", optvalue", ", f_optvalue", ", b_optvalue" as appropriate for each declare_parameter() to get it to properly compile.*

but I have no idea which is "appropriate" or how to properly add it.  It seems there are already some optvalue's in there.  I'm not much of a C++ programmer.

Any guidance appreciated!

RoboDoc

**2023.02.20**
To: hbrobotics@googlegroups.com
From: Sergei Grichine <vitalbytes@gmail.com>

The  YDLidar X2  looks very much like the LD14 I am using.

Maybe the LD14 driver will work just fine, and it is very easy to  try:

==========

LiDAR LD14 (on /dev/ttyUSB0)

https://www.waveshare.com/wiki/Triangulation_LiDAR_LD14  (wrong wiring diagram there)

https://www.ldrobot.com/editor/file/20220426/1650961789237754.pdf
https://github.com/ldrobotSensorTeam/ldlidar_sl_ros2   (click on white to translate to English)

```
cd ~
mkdir -p ~/ldlidar_ros2_ws/src
cd ~/ldlidar_ros2_ws/src
git clone  https://github.com/ldrobotSensorTeam/ldlidar_sl_ros2.git
cd ~/ldlidar_ros2_ws
colcon build

source ~/ldlidar_ros2_ws/install/setup.bash
ros2 launch ldlidar_sl_ros2 ld14.launch.py

source ~/ldlidar_ros2_ws/install/setup.bash
ros2 launch ldlidar_sl_ros2 viewer_ld14.launch.py
```

ubuntu@ubuntu:~$ **lsusb**
```
Bus 003 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
Bus 002 Device 001: ID 1d6b:0003 Linux Foundation 3.0 root hub
Bus 001 Device 004: ID 413c:3200 Dell Computer Corp. Mouse
Bus 001 Device 005: ID 413c:2105 Dell Computer Corp. Model L100 Keyboard
Bus 001 Device 006: ID 10c4:ea60 Silicon Labs CP210x UART Bridge
Bus 001 Device 002: ID 2109:3431 VIA Labs, Inc. Hub
Bus 001 Device 001: ID 1d6b:0002 Linux Foundation 2.0 root hub
```
highlighted device disappears when LIDAR unplugged

ubuntu@ubuntu:~$ **ls /dev/ttyUSB***
```
/dev/ttyUSB0
```

Get rid of failed install
ubuntu@ubuntu:~$ **rm -rf ydlidar_ros2_ws/**

*0. Get the ROS2 function package of the radar*
ubuntu@ubuntu:~$ **mkdir -p ldlidar_ros2_ws/src**
ubuntu@ubuntu:~$ **cd ldlidar_ros2_ws/**
ubuntu@ubuntu:~/ldlidar_ros2_ws$ **git clone https://github.com/ldrobotSensorTeam/ldlidar_sl_ros2.git**
```
Cloning into 'ldlidar_sl_ros2'...
remote: Enumerating objects: 167, done.
remote: Counting objects: 100% (167/167), done.
remote: Compressing objects: 100% (91/91), done.
remote: Total 167 (delta 80), reused 140 (delta 53), pack-reused 0
Receiving objects: 100% (167/167), 57.81 KiB | 1.48 MiB/s, done.
Resolving deltas: 100% (80/80), done.
```

*1. System Settings*
ubuntu@ubuntu:~/ldlidar_ros2_ws$ **sudo chmod 777 /dev/ttyUSB0**

*The third step is to modify the value launch/in the lanuch file corresponding to the radar product model in the directory port_name, taking ld14.launch.py as an example, as shown below.*

I'm confused by this. Mistranslation from Chinese? I *think* they mean the value *port_name* in the *launch/* directory. (If it's different than ttyUSB0?) Here goes nothing...!

*2. Compilation method*
ubuntu@ubuntu:~/ldlidar_ros2_ws$ **colcon build --symlink-install**
```
Starting >>> ldlidar_sl_ros2
[Processing: ldlidar_sl_ros2]
Finished <<< ldlidar_sl_ros2 [51.3s]
Summary: 1 package finished [52.5s]
```
Hm! No errors!

*3. Operation method*
*3.1. Set the function package environment variable*
ubuntu@ubuntu:~/ldlidar_ros2_ws$ **source install/local_setup.bash**
ubuntu@ubuntu:~/ldlidar_ros2_ws$ **echo "source ~/ldlidar_ros2_ws/install/local_setup.bash" >> ~/.bashrc**
ubuntu@ubuntu:~/ldlidar_ros2_ws$ **source ~/.bashrc**

*3.2. Start the lidar node*

*Start the ld14 lidar node:*

ubuntu@ubuntu:~/ldlidar_ros2_ws$ **ros2 launch ldlidar_sl_ros2 ld14.launch.py**

```
[INFO] [launch]: All log files can be found below /home/ubuntu/.ros/log/2023-02-20-10-45-58-303965-ubuntu-3767
[INFO] [launch]: Default logging verbosity is set to INFO
[INFO] [ldlidar_sl_ros2_node-1]: process started with pid [3768]
[INFO] [static_transform_publisher-2]: process started with pid [3770]
[static_transform_publisher-2] [WARN] [1676911559.205325614] []: Old-style arguments are deprecated; see --help for new-style
arguments
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.366004216] [ldlidar_publisher_ld14]: LDLiDAR SDK Pack Version is:3.0.3
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.366560597] [ldlidar_publisher_ld14]: ROS2 param input:
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.366685503] [ldlidar_publisher_ld14]: <laser_scan_topic_name>: scan
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.366776761] [ldlidar_publisher_ld14]: <point_cloud_2d_topic_name>: pointcloud2d
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.366860760] [ldlidar_publisher_ld14]: <frame_id>: base_laser
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.367058146] [ldlidar_publisher_ld14]: <port_name>: /dev/ttyUSB0
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.367161774] [ldlidar_publisher_ld14]: <serial_baudrate>: 115200
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.367250403] [ldlidar_publisher_ld14]: <laser_scan_dir>: Counterclockwise
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.367335383] [ldlidar_publisher_ld14]: <enable_angle_crop_func>: false
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.367418308] [ldlidar_publisher_ld14]: <angle_crop_min>: 135.000000
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.367584842] [ldlidar_publisher_ld14]: <angle_crop_max>: 225.000000
[ldlidar_sl_ros2_node-1] [INFO] [1676911559.383056533] [ldlidar_publisher_ld14]: ldlidar node start is success
[static_transform_publisher-2] [INFO] [1676911559.401164095] [base_link_to_base_laser_ld14]: Spinning until stopped - publishing
transform
[static_transform_publisher-2] translation: ('0.000000', '0.000000', '0.180000')
[static_transform_publisher-2] rotation: ('0.000000', '0.000000', '0.000000', '1.000000')
[static_transform_publisher-2] from 'base_link' to 'base_laser'
[ldlidar_sl_ros2_node-1] [ERROR] [1676911562.884187114] [ldlidar_publisher_ld14]: ldlidar communication is abnormal.
[ldlidar_sl_ros2_node-1] [LDS][INFO][1676911559.382431097][Actual BaudRate reported:115200]
[ERROR] [ldlidar_sl_ros2_node-1]: process has died [pid 3768, exit code 1, cmd
'/home/ubuntu/ldlidar_ros2_ws/install/ldlidar_sl_ros2/lib/ldlidar_sl_ros2/ldlidar_sl_ros2_node
--ros-args -r __node:=ldlidar_publisher_ld14
--params-file /tmp/launch_params_qgvbjeyc
--params-file /tmp/launch_params_8mhi1cce
--params-file /tmp/launch_params_sq61en_2
--params-file /tmp/launch_params_nuko3zr0
--params-file /tmp/launch_params_ay3ia8qc
--params-file /tmp/launch_params_d1pqtbs7
--params-file /tmp/launch_params_y0lj3bna
--params-file /tmp/launch_params_nmo9jy43
--params-file /tmp/launch_params_4tzwyrzw
--params-file /tmp/launch_params_nsnf5kr0'].
^C
^C[WARNING] [launch]: user interrupted with ctrl-c (SIGINT)
[static_transform_publisher-2] [INFO] [1676912219.122440696] [rclcpp]: signal_handler(signum=2)
[INFO] [static_transform_publisher-2]: process has finished cleanly [pid 3770]
```

**Do this from CONSOLE to display Rviz2:**

*Start ld14 lidar node and display laser data on Rviz2:*

ubuntu@ubuntu:~/ldlidar_ros2_ws$ **ros2 launch ldlidar_sl_ros2 viewer_ld14.launch.py**

```
[INFO] [launch]: All log files can be found below
/home/ubuntu/.ros/log/2023-02-20-11-04-44-889110-ubuntu-4796
[INFO] [launch]: Default logging verbosity is set to INFO
[ERROR] [launch]: Caught exception in launch (see debug for traceback): "package 'rviz2' not found,
searching: ['/home/ubuntu/ldlidar_ros2_ws/install/ldlidar_sl_ros2', '/opt/ros/humble']"
```

I thought rviz2 was installed!?

ubuntu@ubuntu:~$ **ros2 run rviz2 rviz2**

```
Package 'rviz2' not found
```

ubuntu@ubuntu:~$ **sudo find / -name rviz2**

```
/home/ubuntu/ldlidar_ros2_ws/install/ldlidar_sl_ros2/share/ldlidar_sl_ros2/rviz2
/home/ubuntu/ldlidar_ros2_ws/ldlidar_sl_ros2/rviz2
```

ubuntu@ubuntu:~$ **sudo apt install ros-humble-rviz2**

```
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Some packages could not be installed. This may mean that you have
requested an impossible situation or if you are using the unstable
distribution that some required packages have not yet been created
or been moved out of Incoming.
The following information may help to resolve the situation:

The following packages have unmet dependencies:
 qtbase5-dev : Depends: libqt5core5a (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
               Depends: libqt5dbus5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
               Depends: libqt5gui5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
               Depends: libqt5network5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
               Depends: libqt5widgets5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
               Recommends: libqt5opengl5-dev (= 5.15.3+dfsg-2) but it is not going to be installed
E: Unable to correct problems, you have held broken packages.
```

ubuntu@ubuntu:~$ **sudo apt update**

```
...All packages are up to date.
```

Reinstall ROS2 Humble this time *desktop*

ubuntu@ubuntu:~$ **locale**

```
locale settings confirmed en_US.UTF-8
```

ubuntu@ubuntu:~$ **sudo apt install software-properties-common**

```
software-properties-common is already the newest version (0.99.22.3).
```

ubuntu@ubuntu:~$ **sudo add-apt-repository universe**

```
...Reading package lists... Done
```

ubuntu@ubuntu:~$ **sudo apt update && sudo apt install curl**

```
...All packages are up to date.
...curl is already the newest version (7.81.0-1ubuntu1.7).
```

ubuntu@ubuntu:~$ **echo "deb [arch=$(dpkg --print-architecture) signed-by=/usr/share/keyrings/ros-archive-keyring.gpg] http://packages.ros.org/ros2/ubuntu $(. /etc/os-release && echo $UBUNTU_CODENAME) main" | sudo tee /etc/apt/sources.list.d/ros2.list > /dev/null**

ubuntu@ubuntu:~$ **sudo apt install ros-humble-desktop**

(Probably could have just started here)

```
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Some packages could not be installed. This may mean that you have
requested an impossible situation or if you are using the unstable
distribution that some required packages have not yet been created
or been moved out of Incoming.
The following information may help to resolve the situation:

The following packages have unmet dependencies:
 libjson-c-dev : Depends: libjson-c5 (= 0.15-2build4) but 0.15-3~ubuntu1.22.04.1 is to be installed
 libsdl2-dev : Depends: libsdl2-2.0-0 (= 2.0.20+dfsg-2build1) but 2.0.20+dfsg-2ubuntu1.22.04.1 is to be installed
               Depends: libudev-dev but it is not going to be installed
 libusb-1.0-0-dev : Depends: libusb-1.0-0 (= 2:1.0.25-1ubuntu1) but 2:1.0.25-1ubuntu2 is to be installed
                    Recommends: libusb-1.0-doc but it is not going to be installed
 qtbase5-dev : Depends: libqt5core5a (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
               Depends: libqt5dbus5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
               Depends: libqt5gui5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
               Depends: libqt5network5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
               Depends: libqt5widgets5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
E: Unable to correct problems, you have held broken packages.
```

Not this again!

Try building from source:

```
echo "deb [arch=$(dpkg --print-architecture)
signed-by=/usr/share/keyrings/ros-archive-keyring.gpg]
http://packages.ros.org/ros2/ubuntu $(. /etc/os-release && echo
$UBUNTU_CODENAME) main" | sudo tee /etc/apt/sources.list.d/ros2.list >
/dev/null

sudo apt update && sudo apt install -y \
  python3-flake8-docstrings \
  python3-pip \
  python3-pytest-cov \
  ros-dev-tools

sudo apt install -y \
   python3-flake8-blind-except \
   python3-flake8-builtins \
   python3-flake8-class-newline \
   python3-flake8-comprehensions \
   python3-flake8-deprecated \
   python3-flake8-import-order \
   python3-flake8-quotes \
   python3-pytest-repeat \
   python3-pytest-rerunfailures

mkdir -p ~/ros2_humble/src
cd ~/ros2_humble
vcs import --input
https://raw.githubusercontent.com/ros2/ros2/humble/ros2.repos src

sudo apt upgrade

sudo rosdep init
rosdep update
rosdep install --from-paths src --ignore-src -y --skip-keys "fastcdr
rti-connext-dds-6.0.1 urdfdom_headers"
```

```
executing command [sudo -H apt-get install -y qtbase5-dev]
Reading package lists... Done
Building dependency tree... Done
Reading state information... Done
Some packages could not be installed. This may mean that you have
requested an impossible situation or if you are using the unstable
distribution that some required packages have not yet been created
or been moved out of Incoming.
The following information may help to resolve the situation:

The following packages have unmet dependencies:
 qtbase5-dev : Depends: libqt5core5a (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be
installed
               Depends: libqt5dbus5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
               Depends: libqt5gui5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be installed
               Depends: libqt5network5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be
installed
               Depends: libqt5widgets5 (= 5.15.3+dfsg-2) but 5.15.3+dfsg-2ubuntu0.1 is to be
installed
               Recommends: libqt5opengl5-dev (= 5.15.3+dfsg-2) but it is not going to be installed
E: Unable to correct problems, you have held broken packages.
ERROR: the following rosdeps failed to install
  apt: command [sudo -H apt-get install -y qtbase5-dev] failed
```

Based on search of libqt5opengl5-dev:
https://launchpad.net/ubuntu/+search?text=libqt5opengl5-dev
ubuntu@ubuntu:~/ros2_humble$ **sudo apt install qtbase-opensource-src**
E: Unable to locate package qtbase-opensource-src

https://answers.ros.org/question/402781/ros-humble-ubuntu-2204-apt-install-issue/
ubuntu@ubuntu:~$ **sudo apt install aptitude**
ubuntu@ubuntu:~$ **sudo aptitude install ros-humble-desktop**

FAILED
reinstalled ROS2 humble using ros2me
but it just installs base, not desktop.
Rviz2 not available for Humble, apparently.
Bug reports suggest updates in Ubuntu are messing things up.
Try starting over from blank SD card.

**2020.03.17**
3/16/2023, 10:02 PM
From slowrunner <notifications@github.com>
To YDLIDAR/ydlidar_ros2_driver <ydlidar_ros2_driver@noreply.github.com>
Cc RoboDoc <jhphelan@hal-pc.org> Comment <comment@noreply.github.com>
Reply to YDLIDAR/ydlidar_ros2_driver <reply+AIOK5I5ZLN3WQXOEUFYM6IOCEEMOPEVBNHHFJGR5SY@reply.github.com>
Subject Re: [YDLIDAR/ydlidar_ros2_driver] Build Error in ROS2 Humble: no matching function - rclcpp::Node::declare_parameter(const char [5]) (Issue #21)

This is my version that compiles under ROS2 Humble / Ubuntu 22.04 Jammy / Python 3.10.6

https://github.com/slowrunner/ROS2-GoPiGo3/blob/main/ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp.mine

**The above ends up not working, but see below for parts that do**
Start from YDLIDAR github: https://github.com/YDLIDAR
Go to YDLidar-SDK: https://github.com/YDLIDAR/YDLidar-SDK

ubuntu@AUDACITY:~$ **sudo apt update**
ubuntu@AUDACITY:~$ **sudo apt upgrade -y**
*YDLidar SDK requires CMake 2.8.2+ as dependencies.*
ubuntu@AUDACITY:~$ **sudo apt install cmake pkg-config**
*if you want to use python API, you need to install python and swig(3.0 or higher):*
ubuntu@AUDACITY:~$ **sudo apt install python3 swig**
ubuntu@AUDACITY:~$ **sudo apt install python3-pip**

*Build YDLidar-SDK*
*In the YDLidar SDK directory, run the following commands to compile the project:*

```
git clone https://github.com/YDLIDAR/YDLidar-SDK.git
cd YDLidar-SDK/build
cmake ..
make
sudo make install
```

Git clone creates the YDLidar-SDK directory, you don't have to.
There is no /build directory, a flaw.  You just have to make one.
ubuntu@AUDACITY:~$ **git clone https://github.com/YDLIDAR/YDLidar-SDK.git**
ubuntu@AUDACITY:~$ **ls -w 1**

```
Desktop
Documents
Downloads
Music
Pictures
Public
Templates
Videos
YDLidar-SDK
```

ubuntu@AUDACITY:~$ **cd YDLidar-SDK/**
ubuntu@AUDACITY:~/YDLidar-SDK$ **ls -w 1**

```
CMakeLists.txt
Doxyfile
LICENSE.txt
README.md
README.pdf
cmake
core
csharp
doc
python
samples
setup.py
src
startup
test
ydlidar_config.h.in
```

No build directory
ubuntu@AUDACITY:~/YDLidar-SDK$ **mkdir build**
ubuntu@AUDACITY:~/YDLidar-SDK$ **ls -w 1**

```
CMakeLists.txt
Doxyfile
LICENSE.txt
README.md
README.pdf
build
cmake
core
csharp
doc
python
samples
setup.py
src
startup
test
ydlidar_config.h.in
```

ubuntu@AUDACITY:~/YDLidar-SDK$ **cd build**
ubuntu@AUDACITY:~/YDLidar-SDK/build$ **ls**
*blank*

ubuntu@AUDACITY:~/YDLidar-SDK/build$ **cmake ..**

**Don’t forget the “..” which means make the above directory**

```
CMake Deprecation Warning at CMakeLists.txt:1 (cmake_minimum_required):
  Compatibility with CMake < 2.8.12 will be removed from a future version of
  CMake.

  Update the VERSION argument <min> value or use a ...<max> suffix to tell
  CMake that the project does not need compatibility with older versions.


-- The C compiler identification is GNU 11.3.0
-- The CXX compiler identification is GNU 11.3.0
-- Detecting C compiler ABI info
-- Detecting C compiler ABI info - done
-- Check for working C compiler: /usr/bin/cc - skipped
-- Detecting C compile features
-- Detecting C compile features - done
-- Detecting CXX compiler ABI info
-- Detecting CXX compiler ABI info - done
-- Check for working CXX compiler: /usr/bin/c++ - skipped
-- Detecting CXX compile features
-- Detecting CXX compile features - done
-- Current platform: Linux
CMake Deprecation Warning at CMakeLists.txt:50 (cmake_policy):
  The OLD behavior for policy CMP0053 will be removed from a future version
  of CMake.

  The cmake-policies(7) manual explains that the OLD behaviors of all
  policies are deprecated and that a policy should be set to OLD only under
  specific short-term circumstances.  Projects should be ported to the NEW
  behavior and not rely on setting a policy to OLD.


CMake Deprecation Warning at CMakeLists.txt:53 (cmake_policy):
  The OLD behavior for policy CMP0037 will be removed from a future version
  of CMake.

  The cmake-policies(7) manual explains that the OLD behaviors of all
  policies are deprecated and that a policy should be set to OLD only under
  specific short-term circumstances.  Projects should be ported to the NEW
  behavior and not rely on setting a policy to OLD.


CMake Deprecation Warning at CMakeLists.txt:56 (cmake_policy):
  The OLD behavior for policy CMP0043 will be removed from a future version
  of CMake.

  The cmake-policies(7) manual explains that the OLD behaviors of all
  policies are deprecated and that a policy should be set to OLD only under
  specific short-term circumstances.  Projects should be ported to the NEW
  behavior and not rely on setting a policy to OLD.


-- Found SWIG: /usr/bin/swig4.0 (found version "4.0.2")
-- Found PythonInterp: /usr/bin/python3.10 (found version "3.10.6")
-- Found PythonLibs: /usr/lib/aarch64-linux-gnu/libpython3.10.so (found version "3.10.6")
-- Found GTest: /usr/lib/aarch64-linux-gnu/cmake/GTest/GTestConfig.cmake (found version "1.11.0")
CMake Deprecation Warning at core/CMakeLists.txt:1 (cmake_minimum_required):
  Compatibility with CMake < 2.8.12 will be removed from a future version of
  CMake.

  Update the VERSION argument <min> value or use a ...<max> suffix to tell
  CMake that the project does not need compatibility with older versions.

CMake Deprecation Warning at samples/CMakeLists.txt:2 (cmake_minimum_required):
  Compatibility with CMake < 2.8.12 will be removed from a future version of
  CMake.

  Update the VERSION argument <min> value or use a ...<max> suffix to tell
  CMake that the project does not need compatibility with older versions.

-- build python API....
CMake Warning (dev) at /usr/share/cmake-3.22/Modules/UseSWIG.cmake:775 (message):
  Policy CMP0078 is not set: UseSWIG generates standard target names.  Run
  "cmake --help-policy CMP0078" for policy details.  Use the cmake_policy
  command to set the policy and suppress this warning.

Call Stack (most recent call first):
  python/CMakeLists.txt:35 (swig_add_library)
This warning is for project developers.  Use -Wno-dev to suppress it.

CMake Warning (dev) at /usr/share/cmake-3.22/Modules/UseSWIG.cmake:617 (message):
  Policy CMP0086 is not set: UseSWIG honors SWIG_MODULE_NAME via -module
  flag.  Run "cmake --help-policy CMP0086" for policy details.  Use the
  cmake_policy command to set the policy and suppress this warning.

Call Stack (most recent call first):
  /usr/share/cmake-3.22/Modules/UseSWIG.cmake:888 (SWIG_ADD_SOURCE_TO_MODULE)
  python/CMakeLists.txt:35 (swig_add_library)
This warning is for project developers.  Use -Wno-dev to suppress it.
```

```
<string>:2: DeprecationWarning: The distutils package is deprecated and slated for removal in Python 3.12. Use setuptools or check
PEP 632 for potential alternatives
<string>:2: DeprecationWarning: The distutils.sysconfig module is deprecated, use sysconfig instead
-- build test is ON.....
CMake Deprecation Warning at cmake/install_package.cmake:101 (cmake_policy):
  The OLD behavior for policy CMP0026 will be removed from a future version
  of CMake.

  The cmake-policies(7) manual explains that the OLD behaviors of all
  policies are deprecated and that a policy should be set to OLD only under
  specific short-term circumstances.  Projects should be ported to the NEW
  behavior and not rely on setting a policy to OLD.
Call Stack (most recent call first):
  CMakeLists.txt:168 (install_package)


CMake Warning (dev) at cmake/install_package.cmake:191 (install):
  Policy CMP0062 is not set: Disallow install() of export() result.  Run
  "cmake --help-policy CMP0062" for policy details.  Use the cmake_policy
  command to set the policy and suppress this warning.

  The file

    /home/ubuntu/YDLidar-SDK/build/ydlidar_sdkTargets.cmake

  was generated by the export() command.  It should not be installed with the
  install() command.  Use the install(EXPORT) mechanism instead.  See the
  cmake-packages(7) manual for more.

Call Stack (most recent call first):
  CMakeLists.txt:168 (install_package)
This warning is for project developers.  Use -Wno-dev to suppress it.


--
--
+=============================================================================+
-- |         Resulting configuration for                                       |
--
+=============================================================================+
--  _______________________________ PLATFORM _____________________________________
--  Host                            : Linux5.15.0-1025-raspiaarch64
--  Is the system big endian?       :  No
--  Word size (32/64 bit)           : 64
--  CMake version                   : 3.22.1
--  CMake generator                 : Unix Makefiles
--  CMake build tool                : /usr/bin/gmake
--  Compiler                        : GNU
--  Configuration                   :
--
--  _______________________________ OPTIONS _____________________________________
--  Build YDLidar-SDK as a shared library?   :  No
--  Build Examples?                  : Yes
--  Build C Sharp API?                :  No
--  Build TEST?                                : Yes
--
--  _______________________________ INSTALL ___________________________
--  Install prefix                          : /usr/local
--
--  ____________________________ WRAPPERS/BINDINGS ____________________________
--  Python bindings (pyydlidar)   : Yes
--    - dep: Swig found?          : Yes [Version: 4.0.2]
--    - dep: PythonLibs found?    : Yes [Version: 3.10.6]
--
-- Configuring done
-- Generating done
-- Build files have been written to: /home/ubuntu/YDLidar-SDK/build
```

ubuntu@AUDACITY:~/YDLidar-SDK/build$ **make**
MULTIPLE errors of the type below are displayed.  However, it seems to compile ok!?

```
In file included from /home/ubuntu/YDLidar-SDK/core/serial/common.h:45,
                 from /home/ubuntu/YDLidar-SDK/core/serial/serial.cpp:12:
/home/ubuntu/YDLidar-SDK/./core/base/thread.h: In member function ‘int
ydlidar::core::base::Thread::join(long unsigned int)’:
/home/ubuntu/YDLidar-SDK/./core/base/thread.h:114:35: warning: format ‘%X’ expects argument of type
‘unsigned int’, but argument 2 has type ‘_size_t’ {aka ‘long unsigned int’} [-Wformat=]
  114 |       printf("[YDLIDAR] Thread 0x%X has been canceled\n", _handle);
      |                                  ~^                       ~~~~~~~
      |                                   |                       |
      |                                   unsigned int            _size_t {aka long unsigned int}
      |                                  %lX
```

ubuntu@AUDACITY:~/YDLidar-SDK/build$ **sudo make install**

```
Consolidate compiler generated dependencies of target ydlidar_sdk (etc)
[ xx%] Built target ydlidar_sdk (etc)
...
Install the project...
-- Install configuration: ""
-- Installing: /usr/local/include/core/base/datatype.h (etc)
...
```

**TOMORROW: to ./tri_test on original install**
**if fails, install other driver**

**2023.03.18**

ubuntu@AUDACITY:~$ **cd YDLidar-SDK/build**
ubuntu@AUDACITY:~/YDLidar-SDK/build$ **tri_test**

```
__   ______  _     ___ ____     _     ____
\ \ / /  _ \| |   |_ _|  _ \   / \   |  _ \
 \ V /| | | | |    | || | | | / _ \  | |_) |
  | | | |_| | |___ | || |_| |/ ___ \|  _ <
  |_| |____/|_____|___|____/_/   \_\_| \_\
```

```
[0] ydlidar
[1] ydlidar1.1
Please select the lidar port:1
Baudrate:
[0] 115200
[1] 128000
[2] 150000
[3] 153600
[4] 230400
[5] 460800
[6] 512000
Please select the lidar baudrate:0
Whether the Lidar is one-way communication [yes/no]:Y
```

```
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.6
[YDLIDAR] Lidar successfully connected
[YDLIDAR] Lidar running correctly! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 638 ms
[YDLIDAR] Start to getting intensity flag
[YDLIDAR] Auto set intensity 0
[YDLIDAR] End to getting intensity flag
[YDLIDAR] Create thread 0x94489100
[YDLIDAR] Successed to start scan mode, Elapsed time 1177 ms
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Single Fixed Size: 250
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Successed to check the lidar, Elapsed time 674 ms
[YDLIDAR] Single Channel Current Sampling Rate: 3.00K
[YDLIDAR] Now lidar is scanning...
User version 0.0
Scan received [250] points inc [0.025234]
Scan received [250] points inc [0.025234]
Scan received [250] points inc [0.025234]
Scan received [250] points inc [0.025234]
...
```

Python Run

```
cd python/examples
# Console
python tof_test.py
# If it's a drawing
pip install numpy
pip install matplotlib
python plot_tof_test.py
```

ubuntu@AUDACITY:~/YDLidar-SDK$ **cd python/**

ubuntu@AUDACITY:~/YDLidar-SDK/python$ **pip3 install numpy**

```
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: numpy in /usr/lib/python3/dist-packages (1.21.5)
```

ubuntu@AUDACITY:~/YDLidar-SDK/python$ **pip3 install matplotlib**

```
Defaulting to user installation because normal site-packages is not writeable
Requirement already satisfied: matplotlib in /usr/lib/python3/dist-packages (3.5.1)
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 test.py**

```
Traceback (most recent call last):
  File "/home/ubuntu/YDLidar-SDK/python/examples/test.py", line 2, in <module>
    import ydlidar
ModuleNotFoundError: No module named 'ydlidar'
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 ydlidar_test.py**

```
Traceback (most recent call last):
  File "/home/ubuntu/YDLidar-SDK/python/examples/ydlidar_test.py", line 2, in <module>
    import ydlidar
ModuleNotFoundError: No module named 'ydlidar'
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **find ~/ -name ydlidar.py**
/home/ubuntu/YDLidar-SDK/build/python/ydlidar.py

ubuntu@AUDACITY:~/YDLidar-SDK/build/python$ **ls -w 1**
CMakeFiles
CTestTestfile.cmake
Makefile
__init__.py
**_ydlidar.so**
cmake_install.cmake
examples
**ydlidar.py**

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **cp ~/YDLidar-SDK/build/python/ydlidar.py .**
[note '.' at end indicating 'here']

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 test.py**
```
Traceback (most recent call last):
  File "/home/ubuntu/YDLidar-SDK/python/examples/test.py", line 2, in <module>
    import ydlidar
  File "/home/ubuntu/YDLidar-SDK/python/examples/ydlidar.py", line 15, in <module>
    import _ydlidar
ModuleNotFoundError: No module named '_ydlidar'
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **cp ~/YDLidar-SDK/build/python/_ydlidar.so .**

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 test.py**
```
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.6
[YDLIDAR] Lidar successfully connected
[YDLIDAR] Error, cannot retrieve YDLidar health code: ffffffff
[YDLIDAR] Fail to get device information
[YDLIDAR] Lidar init success, Elapsed time 2671 ms
[YDLIDAR] Failed to start scan mode: ffffffff
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 ydlidar_test.py**
```
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.6
[YDLIDAR] Lidar successfully connected
[YDLIDAR] Error, cannot retrieve YDLidar health code: ffffffff
[YDLIDAR] Fail to get device information
[YDLIDAR] Lidar init success, Elapsed time 2673 ms
[YDLIDAR] Failed to start scan mode: ffffffff
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 plot_ydlidar_test.py**

```
/home/ubuntu/YDLidar-SDK/python/examples/plot_ydlidar_test.py:14: MatplotlibDeprecationWarning:
The set_window_title function was deprecated in Matplotlib 3.4 and will be removed two minor
releases later. Use manager.set_window_title or GUI-specific methods instead.
  fig.canvas.set_window_title('YDLidar LIDAR Monitor')
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.6
[YDLIDAR] Lidar successfully connected
[YDLIDAR] Error, cannot retrieve YDLidar health code: ffffffff
[YDLIDAR] Fail to get device information
[YDLIDAR] Lidar init success, Elapsed time 2675 ms
[YDLIDAR] Failed to start scan mode: ffffffff
```

**The examples fail to account for unidirectional models**

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **nano test.py**

```
      #laser.setlidaropt(ydlidar.LidarPropSingleChannel, False);
      laser.setlidaropt(ydlidar.LidarPropSingleChannel, True);
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 test.py**

```
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.6
[YDLIDAR] Lidar successfully connected
[YDLIDAR] Lidar running correctly! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 633 ms
[YDLIDAR] Start to getting intensity flag
[YDLIDAR] End to getting intensity flag
[YDLIDAR] Create thread 0x84C49120
[YDLIDAR] Successed to start scan mode, Elapsed time 2063 ms
timeout count: 1
[YDLIDAR] Thread 0x84C49120 has been canceled
[YDLIDAR] Failed to turn on the Lidar, because the lidar is [Operation timed out].
```

At least it’s getting past the health code!

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **nano test.py**

```
      #laser.setlidaropt(ydlidar.LidarPropSerialBaudrate, 230400);
      laser.setlidaropt(ydlidar.LidarPropSerialBaudrate, 115200);
      laser.setlidaropt(ydlidar.LidarPropLidarType, ydlidar.TYPE_TRIANGLE);
      laser.setlidaropt(ydlidar.LidarPropDeviceType, ydlidar.YDLIDAR_TYPE_SERIAL);
      #laser.setlidaropt(ydlidar.LidarPropScanFrequency, 10.0);
      laser.setlidaropt(ydlidar.LidarPropScanFrequency, 7.0);
      laser.setlidaropt(ydlidar.LidarPropSampleRate, 9);
      #laser.setlidaropt(ydlidar.LidarPropSingleChannel, False);
      laser.setlidaropt(ydlidar.LidarPropSingleChannel, True);
```

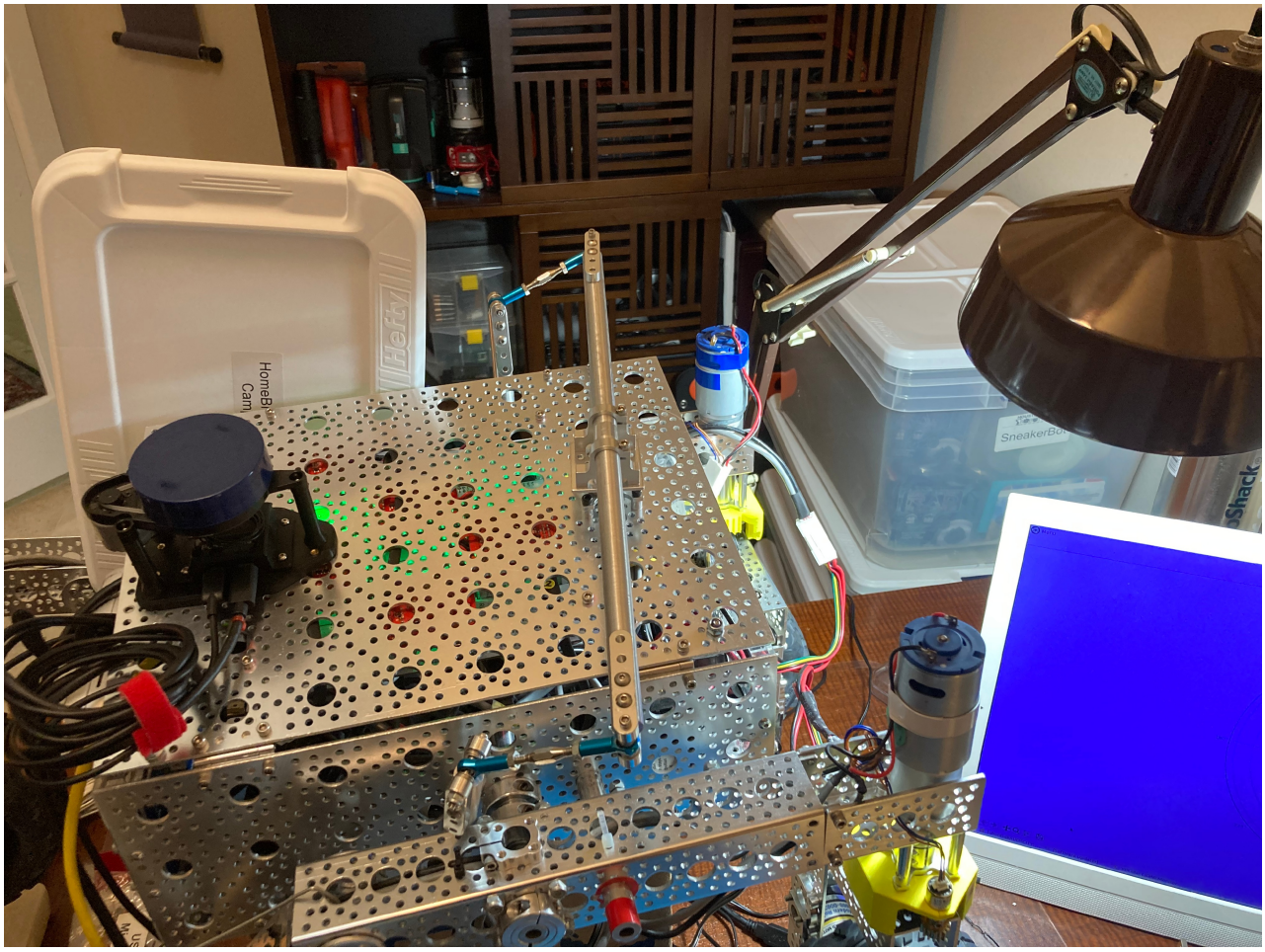
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 test.py**

```
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.6
[YDLIDAR] Lidar successfully connected
[YDLIDAR] Lidar running correctly! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 639 ms
[YDLIDAR] Start to getting intensity flag
[YDLIDAR] Auto set intensity 0
[YDLIDAR] End to getting intensity flag
[YDLIDAR] Create thread 0xA3FD9120
[YDLIDAR] Successed to start scan mode, Elapsed time 1067 ms
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Single Fixed Size: 500
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Successed to check the lidar, Elapsed time 773 ms
[YDLIDAR] Single Channel Current Sampling Rate: 3.00K
[YDLIDAR] Now lidar is scanning...
Scan received[ 1679187087134970000 ]: 501 ranges is [ 8.12321298544993 ]Hz
angle: -0.3324306607246399  range:  1.812999963760376
angle: -0.3193405270576477  range:  1.8102500438690186
angle: -0.3067963719367981  range:  1.847249984741211
angle: -0.29316073656082153  range:  1.6864999532699585
...
```

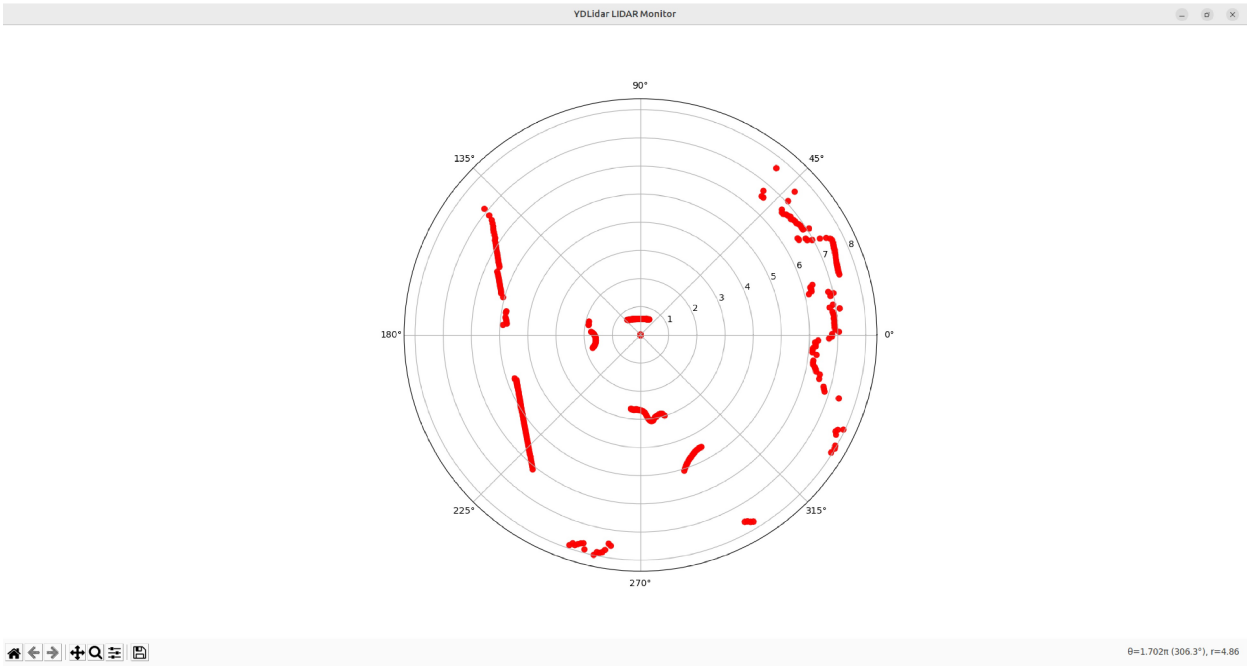
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **nano's plot_tof_test.py**

```
laser = ydlidar.CYdLidar();
laser.setlidaropt(ydlidar.LidarPropSerialPort, port);
#laser.setlidaropt(ydlidar.LidarPropSerialBaudrate, 512000)
laser.setlidaropt(ydlidar.LidarPropSerialBaudrate, 115200)
# it's really a triangle but this is tof_test.py
laser.setlidaropt(ydlidar.LidarPropLidarType, ydlidar.TYPE_TOF);
laser.setlidaropt(ydlidar.LidarPropDeviceType, ydlidar.YDLIDAR_TYPE_SERIAL);
#laser.setlidaropt(ydlidar.LidarPropScanFrequency, 10.0);
laser.setlidaropt(ydlidar.LidarPropScanFrequency, 7.0);
#laser.setlidaropt(ydlidar.LidarPropSampleRate, 20);
laser.setlidaropt(ydlidar.LidarPropSampleRate, 3);
#laser.setlidaropt(ydlidar.LidarPropSingleChannel, False);
laser.setlidaropt(ydlidar.LidarPropSingleChannel, True);
laser.setlidaropt(ydlidar.LidarPropMaxAngle, 180.0);
laser.setlidaropt(ydlidar.LidarPropMinAngle, -180.0);
#laser.setlidaropt(ydlidar.LidarPropMaxRange, 32.0);
laser.setlidaropt(ydlidar.LidarPropMaxRange, 8.0);
#laser.setlidaropt(ydlidar.LidarPropMinRange, 0.01);
laser.setlidaropt(ydlidar.LidarPropMinRange, 0.10);
scan = ydlidar.LaserScan()
```

**FROM Desktop (NOT remote) terminal:**
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 plot_tof_test.py**



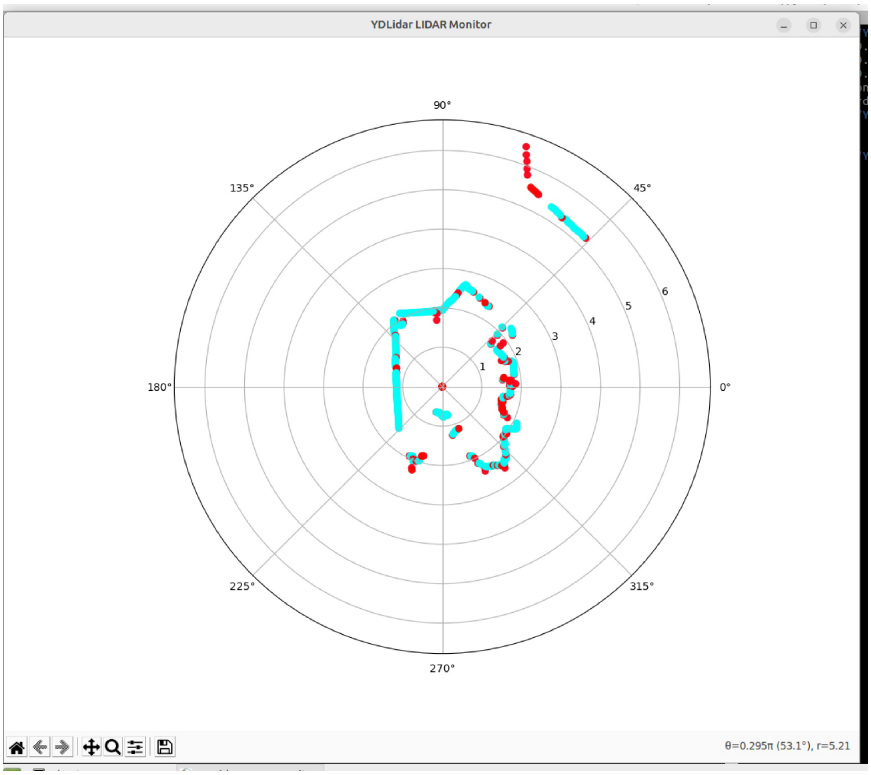
YDLidar X2 is pointing with 0° to the left facing a bookshelf out of view which appears ragged on the plot.  A circular lamp is at 180° the curve on the graph just inside ‘2' at 180°.  Behind it is a flat wall seen at 180°.  A plastic lid is at 270°.  However, in the graph, it appears flipped - the line just inside ‘1' but at 90° on the graph.  Probably it’s a clockwise/counter-clockwise issue as the scan goes clockwise but standard polar graphs go counter-clockwise.



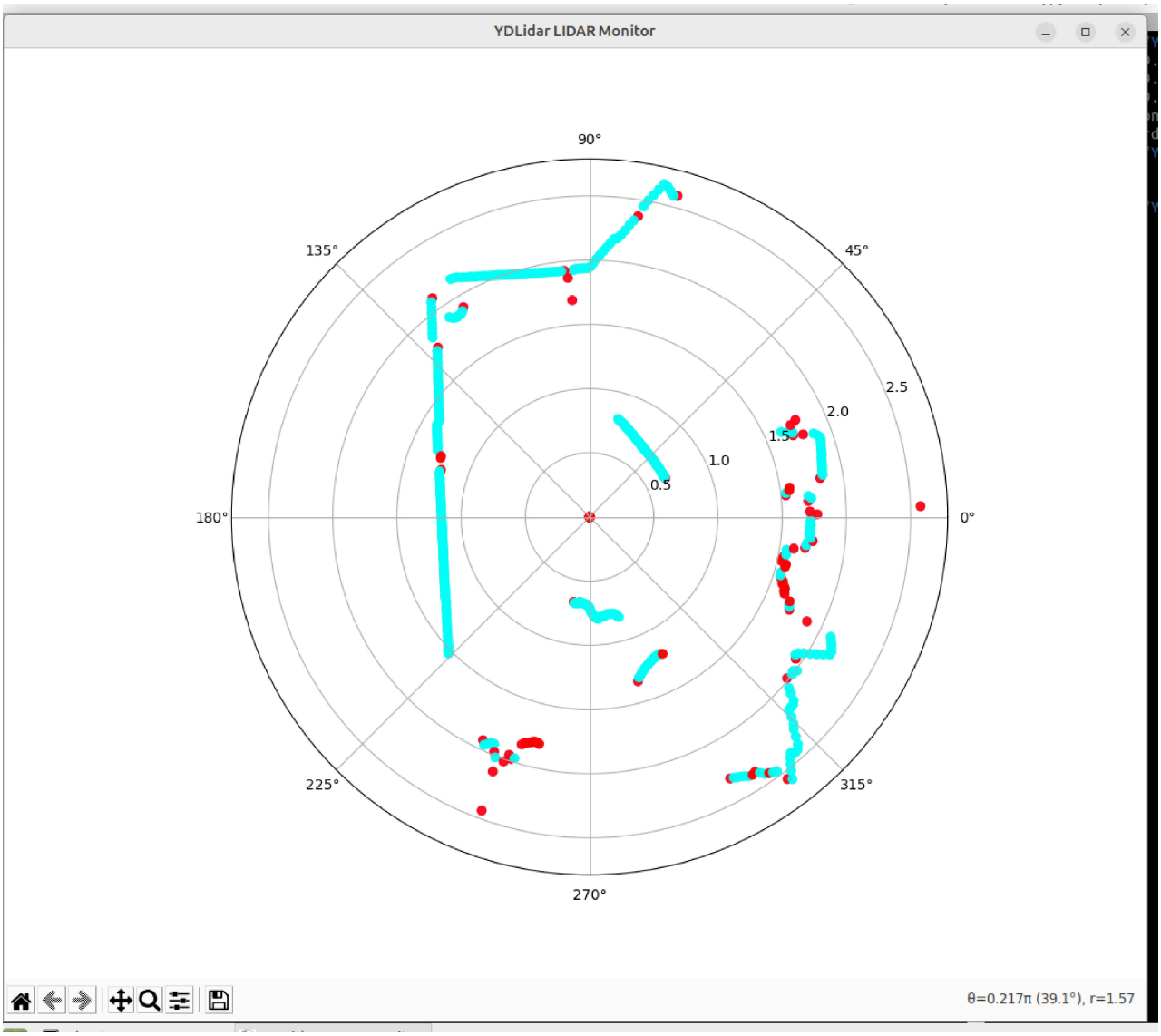

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **nano plot_tof_test.py**

```
#laser.setlidaropt(ydlidar.LidarPropLidarType, ydlidar.TYPE_TOF);
laser.setlidaropt(ydlidar.LidarPropLidarType, ydlidar.TYPE_TRIANGLE);
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 plot_tof_test.py**




This time the plot has blue and red dots and swells and shrinks pulsating within the outer dircle. The hall outside the room is seen between 45° and 90°. Should be between 270° and 315°. If I block that view with a tub lid, the plot zooms in. See next plot. The line at 45° between the 0.5 and 1.0 circles is the lid.


YDLidar LIDAR Monitor
90°
135°
45°
180°
0°
225°
315°
270°
0.5
1.0
1.5
2.0
2.5
θ=0.217π (39.1°), r=1.57

**2023.03.19**
Install ydlidar ros2 driver
https://github.com/YDLIDAR/ydlidar_ros2_driver

ALWAYS FIRST:
ubuntu@AUDACITY:~$ **sudo apt update**
```
2 packages can be upgraded. Run 'apt list --upgradable' to see them.
```
ubuntu@AUDACITY:~$ **sudo apt upgrade**
```
2 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```
ubuntu@AUDACITY:~$ **sudo apt autoremove**
```
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```
ubuntu@AUDACITY:~$ **sudo apt install python3-colcon-common-extensions**
ubuntu@AUDACITY:~$ **mkdir ros2_ws**
ubuntu@AUDACITY:~$ **cd ros2_ws/**
ubuntu@AUDACITY:~/ros2_ws$ **git clone https://github.com/YDLIDAR/ydlidar_ros2_driver.git ydlidar_ros2_ws/src/ydlidar_ros2_driver**
ubuntu@AUDACITY:~/ros2_ws$ **cd ydlidar_ros2_ws/**
ubuntu@AUDACITY:~/ros2_ws/ydlidar_ros2_ws$ **colcon build --symlink-install**
```
Failed   <<< ydlidar_ros2_driver [51.5s, exited with code 2]
```
MULTIPLE errors of the sort:
```
/home/ubuntu/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26
: error: no matching function for call to ‘rclcpp::Node::declare_parameter(const char [5])’
   44 |   node->declare_parameter("port");
/home/ubuntu/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26
: note:   candidate expects 4 arguments, 1 provided
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
/home/ubuntu/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:56:26
: error: no matching function for call to ‘rclcpp::Node::declare_parameter(const char [9])’
   56 |   node->declare_parameter("frame_id");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
```

https://github.com/YDLIDAR/ydlidar_ros2_driver/issues/21
https://github.com/slowrunner/ROS2-GoPiGo3/blob/main/ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp.mine
ubuntu@AUDACITY:~/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src$ **mv ydlidar_ros2_driver_node.cpp ydlidar_ros2_driver_node.ORIG_BAD**
ubuntu@AUDACITY:~/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src$ **git clone ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp.mine**
```
fatal: repository
'ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp.mine' does not
exist
```

ubuntu@AUDACITY:~/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src$ **git clone https://github.com/slowrunner/ROS2-GoPiGo3/blob/main/ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp.mine**

```
fatal: repository 'https://github.com/slowrunner/ROS2-GoPiGo3/blob/main/ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp.mine/' not found
```

ubuntu@AUDACITY:~/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src$ **nano ydlidar_ros2_driver_node.cpp**

copy / paste from https://raw.githubusercontent.com/slowrunner/ROS2-GoPiGo3/main/ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp.mine

Raw

ubuntu@AUDACITY:~/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver$ **colcon build --symlink-install**

```
Starting >>> ydlidar_ros2_driver
[Processing: ydlidar_ros2_driver]
--- stderr: ydlidar_ros2_driver
/home/ubuntu/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In lambda function:
/home/ubuntu/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:163:54: warning: unused parameter ‘request_header’ [-Wunused-parameter]
  163 |     [&laser](const std::shared_ptr<rmw_request_id_t> request_header,
      |              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
/home/ubuntu/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:164:56: warning: unused parameter ‘req’ [-Wunused-parameter]
  164 |   const std::shared_ptr<std_srvs::srv::Empty::Request> req,
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~
/home/ubuntu/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:165:51: warning: unused parameter ‘response’ [-Wunused-parameter]
  165 |   std::shared_ptr<std_srvs::srv::Empty::Response> response) -> bool
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
/home/ubuntu/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In lambda function:
/home/ubuntu/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:173:54: warning: unused parameter ‘request_header’ [-Wunused-parameter]
  173 |     [&laser](const std::shared_ptr<rmw_request_id_t> request_header,
      |              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
/home/ubuntu/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:174:56: warning: unused parameter ‘req’ [-Wunused-parameter]
  174 |   const std::shared_ptr<std_srvs::srv::Empty::Request> req,
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~
/home/ubuntu/ros2_ws/ydlidar_ros2_ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:175:51: warning: unused parameter ‘response’ [-Wunused-parameter]
  175 |   std::shared_ptr<std_srvs::srv::Empty::Response> response) -> bool
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
---
Finished <<< ydlidar_ros2_driver [52.0s]

Summary: 1 package finished [52.9s]
  1 package had stderr output: ydlidar_ros2_driver
```

Reading Pull Requests and Issues at https://github.com/YDLIDAR/ydlidar_ros2_driver/issues shows that this is still a problem in my environment. ☹

Await resolution from the powers that be....

Clean up:
ubuntu@AUDACITY:~$ **rm -rf ros2_ws/**
ubuntu@AUDACITY:~$ **rm -rf YDLidar-SDK/**

Trying again from here:
https://github.com/YDLIDAR  Then
https://github.com/YDLIDAR/YDLidar-SDK
ubuntu@AUDACITY:~$ **git clone**
**https://github.com/YDLIDAR/YDLidar-SDK.git**
There is no build directory so have to make one
ubuntu@AUDACITY:~/YDLidar-SDK$ **mkdir build**
ubuntu@AUDACITY:~/YDLidar-SDK$ **cd build**
ubuntu@AUDACITY:~/YDLidar-SDK/build$ **cmake ..**
Don't forget the '..' at the end indicating above directory

```
-- +=============================================================================+
-- |         Resulting configuration for                                         |
-- +=============================================================================+
--  _____________________________ PLATFORM _____________________________________
--  Host                          : Linux5.15.0-1025-raspiaarch64
--  Is the system big endian?     :  No
--  Word size (32/64 bit)         : 64
--  CMake version                 : 3.22.1
--  CMake generator               : Unix Makefiles
--  CMake build tool              : /usr/bin/gmake
--  Compiler                      : GNU
--  Configuration                 :
--
--  _____________________________ OPTIONS ____________________________________
--  Build YDLidar-SDK as a shared library?   :  No
--  Build Examples?                : Yes
--  Build C Sharp API?              :  No
--  Build TEST?                              : Yes
--
--  _____________________________ INSTALL ___________________________
--  Install prefix                       : /usr/local
--
--  ___________________________ WRAPPERS/BINDINGS ___________________________
--  Python bindings (pyydlidar)   : Yes
--    - dep: Swig found?          : Yes [Version: 4.0.2]
--    - dep: PythonLibs found?    : Yes [Version: 3.10.6]
--
-- Configuring done
-- Generating done
-- Build files have been written to: /home/ubuntu/YDLidar-SDK/build
```

ubuntu@AUDACITY:~/YDLidar-SDK/build$ **make**
Lot of 'unsigned int' errors, but make doesn't fail.
ubuntu@AUDACITY:~/YDLidar-SDK/build$ **sudo make install**
success

Now to https://github.com/YDLIDAR/ydlidar_ros2
ubuntu@AUDACITY:~$ **mkdir YDLidar_ROS2_ws**
ubuntu@AUDACITY:~$ **cd YDLidar_ROS2_ws/**
ubuntu@AUDACITY:~/YDLidar_ROS2_ws$ **mkdir src**
ubuntu@AUDACITY:~/YDLidar_ROS2_ws$ **cd src**
ubuntu@AUDACITY:~/YDLidar_ROS2_ws/src$ **git clone https://github.com/YDLIDAR/ydlidar_ros2.git**
ubuntu@AUDACITY:~/YDLidar_ROS2_ws/src$ **colcon build**
Failed w/ 'parameter' errors

STARTING OVER
https://github.com/YDLIDAR/YDLidar-SDK/tree/master
ubuntu@AUDACITY:~$ **git clone https://github.com/YDLIDAR/YDLidar-SDK.git**
ubuntu@AUDACITY:~/YDLidar-SDK$ **mkdir build**
ubuntu@AUDACITY:~/YDLidar-SDK$ **cd build**
ubuntu@AUDACITY:~/YDLidar-SDK/build$ **cmake ..**

```
-- +==========================================================================+
-- |         Resulting configuration for                                      |
-- +==========================================================================+
--  _____________________________ PLATFORM _____________________________
--  Host                          : Linux5.15.0-1025-raspiaarch64
--  Is the system big endian?     :  No
--  Word size (32/64 bit)         : 64
--  CMake version                 : 3.22.1
--  CMake generator               : Unix Makefiles
--  CMake build tool              : /usr/bin/gmake
--  Compiler                      : GNU
--  Configuration                 :
--
--  _____________________________ OPTIONS _____________________________
--  Build YDLidar-SDK as a shared library?   :  No
--  Build Examples?                 : Yes
--  Build C Sharp API?               :  No
--  Build TEST?                               : Yes
--
--  _____________________________ INSTALL _____________________________
--  Install prefix                        : /usr/local
--
--  ___________________________ WRAPPERS/BINDINGS ___________________________
--  Python bindings (pyydlidar)   : Yes
--    - dep: Swig found?          : Yes [Version: 4.0.2]
--    - dep: PythonLibs found?    : Yes [Version: 3.10.6]
--
-- Configuring done
-- Generating done
-- Build files have been written to: /home/ubuntu/YDLidar-SDK/build
```

ubuntu@AUDACITY:~/YDLidar-SDK/build$ **make**
MULTIPLE 'unsigned int' errors but makes ok
ubuntu@AUDACITY:~/YDLidar-SDK/build$ **sudo make install**
success

```
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ cp
~/YDLidar-SDK/build/python/ydlidar.py .
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ cp
~/YDLidar-SDK/build/python/_ydlidar.so .
     [note '.' at end indicating 'here']
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ nano test.py
      #laser.setlidaropt(ydlidar.LidarPropSerialBaudrate, 230400);
      laser.setlidaropt(ydlidar.LidarPropSerialBaudrate, 115200);
      laser.setlidaropt(ydlidar.LidarPropLidarType, ydlidar.TYPE_TRIANGLE);
      laser.setlidaropt(ydlidar.LidarPropDeviceType, ydlidar.YDLIDAR_TYPE_SERIAL);
      #laser.setlidaropt(ydlidar.LidarPropScanFrequency, 10.0);
      laser.setlidaropt(ydlidar.LidarPropScanFrequency, 7.0);
      laser.setlidaropt(ydlidar.LidarPropSampleRate, 9);
      #laser.setlidaropt(ydlidar.LidarPropSingleChannel, False);
      laser.setlidaropt(ydlidar.LidarPropSingleChannel, True);
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ python3 test.py
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.6
[YDLIDAR] Lidar successfully connected
[YDLIDAR] Lidar running correctly! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 639 ms
[YDLIDAR] Start to getting intensity flag
[YDLIDAR] Auto set intensity 0
[YDLIDAR] End to getting intensity flag
[YDLIDAR] Create thread 0xA3FD9120
[YDLIDAR] Successed to start scan mode, Elapsed time 1067 ms
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Single Fixed Size: 500
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Successed to check the lidar, Elapsed time 773 ms
[YDLIDAR] Single Channel Current Sampling Rate: 3.00K
[YDLIDAR] Now lidar is scanning...
Scan received[ 1679187087134970000 ]: 501 ranges is [ 8.12321298544993 ]Hz
angle: -0.3324306607246399  range:  1.812999963760376
angle: -0.3193405270576477  range:  1.8102500438690186
angle: -0.3067963719367981  range:  1.847249984741211
angle: -0.29316073656082153  range:  1.6864999532699585
...
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ nano
plot_tof_test.py
...
#laser.setlidaropt(ydlidar.LidarPropSerialBaudrate, 512000)
laser.setlidaropt(ydlidar.LidarPropSerialBaudrate, 115200)
#laser.setlidaropt(ydlidar.LidarPropLidarType, ydlidar.TYPE_TOF);
laser.setlidaropt(ydlidar.LidarPropLidarType, ydlidar.TYPE_TRIANGLE);
laser.setlidaropt(ydlidar.LidarPropDeviceType, ydlidar.YDLIDAR_TYPE_SERIAL);
#laser.setlidaropt(ydlidar.LidarPropScanFrequency, 10.0);
laser.setlidaropt(ydlidar.LidarPropScanFrequency, 7.0);
#laser.setlidaropt(ydlidar.LidarPropSampleRate, 20);
laser.setlidaropt(ydlidar.LidarPropSampleRate, 3);
#laser.setlidaropt(ydlidar.LidarPropSingleChannel, False);
laser.setlidaropt(ydlidar.LidarPropSingleChannel, True);
laser.setlidaropt(ydlidar.LidarPropMaxAngle, 180.0);
laser.setlidaropt(ydlidar.LidarPropMinAngle, -180.0);
#laser.setlidaropt(ydlidar.LidarPropMaxRange, 32.0);
laser.setlidaropt(ydlidar.LidarPropMaxRange, 8.0);
#laser.setlidaropt(ydlidar.LidarPropMinRange, 0.01);
laser.setlidaropt(ydlidar.LidarPropMinRange, 0.10);
...
```

Noted and proved by covering with a sheet that LIDAR can see through the glass windows of the study's french doors.  A factor to consider in navagation.

Try ydlidar_ros2 again:
https://github.com/YDLIDAR/ydlidar_ros2
```
Cloning into 'ydlidar_ros2'...
remote: Enumerating objects: 2593, done.
remote: Total 2593 (delta 0), reused 0 (delta 0), pack-reused 2593
Receiving objects: 100% (2593/2593), 4.06 MiB | 5.26 MiB/s, done.
Resolving deltas: 100% (1819/1819), done.
```
ubuntu@AUDACITY:~/ydlidar_ros2/src$ **cd ..**
ubuntu@AUDACITY:~/ydlidar_ros2$ **colcon build --symlink-install**
MULTIPLE ERRORS.  Need to look at the .cpp and compare to suggested alternatives.

Today 13:36
From slowrunner <notifications@github.com>
To slowrunner/ROS2-GoPiGo3 <ROS2-GoPiGo3@noreply.github.com>
Cc RoboDoc <jhphelan@hal-pc.org>
Author <author@noreply.github.com>
Reply to slowrunner/ROS2-GoPiGo3 <reply+AIOK5I7UWXKEQJN4OPA73W6CESLT5EVBNHHGCNTMGE@reply.github.com>
Subject Re: [slowrunner/ROS2-GoPiGo3] package fails to build (Issue #3)

[reply to my Issue posting of failure of package to build]
Indeed - pointed to old attempt - ended up using @lghrainbow version -
https://raw.githubusercontent.com/slowrunner/ROS2-GoPiGo3/main/ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp

https://github.com/lghrainbow/ydlidar_ros2_driver

Remove failed code:
ubuntu@AUDACITY:~$ **rm -rf ydlidar_ros2/**
ubuntu@AUDACITY:~$ **git clone https://github.com/lghrainbow/ydlidar_ros2_driver.git**
```
Cloning into 'ydlidar_ros2_driver'...
remote: Enumerating objects: 47, done.
remote: Counting objects: 100% (22/22), done.
remote: Compressing objects: 100% (13/13), done.
remote: Total 47 (delta 13), reused 9 (delta 9), pack-reused 25
Receiving objects: 100% (47/47), 807.53 KiB | 4.56 MiB/s, done.
Resolving deltas: 100% (14/14), done.
```

ubuntu@AUDACITY:~$ **ls -w 1**

```
Desktop
Documents
Downloads
Music
Pictures
Public
Templates
Videos
YDLidar-SDK
```
**ydlidar_ros2_driver**

ubuntu@AUDACITY:~$ **cd ydlidar_ros2_driver/**

ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **ls -w 1**

```
CMakeLists.txt
LICENSE.txt
README.md
config
details.md
images
launch
package.xml
params
src
startup
```

ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **cd src**

ubuntu@AUDACITY:~/ydlidar_ros2_driver/src$ **ls**

```
ydlidar_ros2_driver_client.cpp  ydlidar_ros2_driver_node.cpp
```

ubuntu@AUDACITY:~/ydlidar_ros2_driver/src$ **cd ..**

ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **colcon build --symlink-install**

```
Starting >>> ydlidar_ros2_driver
[Processing: ydlidar_ros2_driver]
[Processing: ydlidar_ros2_driver]
--- stderr: ydlidar_ros2_driver
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In function ‘int main(int, char**)’:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [5])’
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)’
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: note:   candidate expects 4 arguments, 1 provided
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)’
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: note:   couldn’t deduce template parameter ‘ParameterT’
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
...
```

Posted problem to slowrunner’s github.
Response:
“Yes, but they are all warnings:”
lists output.

ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **colcon build --symlink-install**

```
Starting >>> ydlidar_ros2_driver
--- stderr: ydlidar_ros2_driver
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In function ‘int main(int, char**)’:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: error: no matching function for call to
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   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~
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                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)’
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: note:   candidate expects 4 arguments, 1 provided
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
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                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)’
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: note:   couldn’t deduce template parameter ‘ParameterT’
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:51:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [13])’
   51 |   node->declare_parameter("ignore_array");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
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  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:51:26: note:   candidate expects 4 arguments, 1 provided
   51 |   node->declare_parameter("ignore_array");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
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/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
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  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:51:26: note:   couldn’t deduce template parameter ‘ParameterT’
   51 |   node->declare_parameter("ignore_array");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:56:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [9])’
   56 |   node->declare_parameter("frame_id");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~
```

```
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)’
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:56:26: note:   candidate expects 4 arguments, 1 provided
   56 |   node->declare_parameter("frame_id");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
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  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
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/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:56:26: note:   couldn’t deduce template parameter ‘ParameterT’
   56 |   node->declare_parameter("frame_id");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
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                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
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rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
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      |   ^~~~~~~~~~~~~~~~~
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  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:62:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [9])’
   62 |   node->declare_parameter("baudrate");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
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  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
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   62 |   node->declare_parameter("baudrate");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
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      |   ^~~~~~~~~~~~~~~~~
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   62 |   node->declare_parameter("baudrate");
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                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
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  366 |   declare_parameter(
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/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
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      |   ^~~~~~~~~~~~~~~~~
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/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:67:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [11])’
   67 |   node->declare_parameter("lidar_type");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
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  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
```

```
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:67:26: note:   candidate expects 4 arguments, 1 provided
   67 |   node->declare_parameter("lidar_type");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)’
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:67:26: note:   couldn’t deduce template parameter ‘ParameterT’
   67 |   node->declare_parameter("lidar_type");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:72:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [12])’
   72 |   node->declare_parameter("device_type");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)’
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:72:26: note:   candidate expects 4 arguments, 1 provided
   72 |   node->declare_parameter("device_type");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)’
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:72:26: note:   couldn’t deduce template parameter ‘ParameterT’
   72 |   node->declare_parameter("device_type");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:77:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [12])’
   77 |   node->declare_parameter("sample_rate");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)’
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:77:26: note:   candidate expects 4 arguments, 1 provided
   77 |   node->declare_parameter("sample_rate");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)’
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  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:77:26: note:   couldn't deduce template parameter 'ParameterT'
   77 |   node->declare_parameter("sample_rate");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: 'const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)'
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: 'const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)'
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:82:26: error: no matching function for call to
'rclcpp::Node::declare_parameter(const char [21])'
   82 |   node->declare_parameter("abnormal_check_count");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: 'template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)'
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:82:26: note:   candidate expects 4 arguments, 1 provided
   82 |   node->declare_parameter("abnormal_check_count");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: 'template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)'
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:82:26: note:   couldn't deduce template parameter 'ParameterT'
   82 |   node->declare_parameter("abnormal_check_count");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: 'const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)'
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: 'const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)'
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:90:26: error: no matching function for call to
'rclcpp::Node::declare_parameter(const char [17])'
   90 |   node->declare_parameter("fixed_resolution");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: 'template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)'
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:90:26: note:   candidate expects 4 arguments, 1 provided
   90 |   node->declare_parameter("fixed_resolution");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: 'template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)'
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:90:26: note:   couldn't deduce template parameter 'ParameterT'
   90 |   node->declare_parameter("fixed_resolution");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
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                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:95:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [10])’
   95 |   node->declare_parameter("reversion");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)’
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:95:26: note:   candidate expects 4 arguments, 1 provided
   95 |   node->declare_parameter("reversion");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)’
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:95:26: note:   couldn’t deduce template parameter ‘ParameterT’
   95 |   node->declare_parameter("reversion");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:100:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [9])’
  100 |   node->declare_parameter("inverted");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
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  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:100:26: note:   candidate expects 4 arguments, 1 provided
  100 |   node->declare_parameter("inverted");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
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  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:100:26: note:   couldn’t deduce template parameter ‘ParameterT’
  100 |   node->declare_parameter("inverted");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
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  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
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      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:104:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [15])’
  104 |   node->declare_parameter("auto_reconnect");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
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  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:104:26: note:   candidate expects 4 arguments, 1 provided
  104 |   node->declare_parameter("auto_reconnect");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
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  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:104:26: note:   couldn’t deduce template parameter ‘ParameterT’
  104 |   node->declare_parameter("auto_reconnect");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
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  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
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  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:109:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [16])’
  109 |   node->declare_parameter("isSingleChannel");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
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  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
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  109 |   node->declare_parameter("isSingleChannel");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
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/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:109:26: note:   couldn’t deduce template parameter ‘ParameterT’
  109 |   node->declare_parameter("isSingleChannel");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~
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                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
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      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
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rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:114:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [10])’
  114 |   node->declare_parameter("intensity");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
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                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
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/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:114:26: note:   candidate expects 4 arguments, 1 provided
  114 |   node->declare_parameter("intensity");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
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  114 |   node->declare_parameter("intensity");
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                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
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  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
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/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:119:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [18])’
  119 |   node->declare_parameter("support_motor_dtr");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
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/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
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  421 |   declare_parameter(
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  119 |   node->declare_parameter("support_motor_dtr");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~
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                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
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/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:119:26: note:   couldn’t deduce template parameter ‘ParameterT’
  119 |   node->declare_parameter("support_motor_dtr");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~
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                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
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  366 |   declare_parameter(
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  391 |   declare_parameter(
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/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:126:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [10])’
  126 |   node->declare_parameter("angle_max");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
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  126 |   node->declare_parameter("angle_max");
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  126 |   node->declare_parameter("angle_max");
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‘rclcpp::Node::declare_parameter(const char [10])’
  130 |   node->declare_parameter("angle_min");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
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  130 |   node->declare_parameter("angle_min");
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‘rclcpp::Node::declare_parameter(const char [10])’
  135 |   node->declare_parameter("range_max");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~
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  135 |   node->declare_parameter("range_max");
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‘rclcpp::Node::declare_parameter(const char [10])’
  139 |   node->declare_parameter("range_min");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~
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/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:144:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [10])’
  144 |   node->declare_parameter("frequency");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)’
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:144:26: note:   candidate expects 4 arguments, 1 provided
  144 |   node->declare_parameter("frequency");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)’
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:144:26: note:   couldn’t deduce template parameter ‘ParameterT’
  144 |   node->declare_parameter("frequency");
      |   ~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
```

```
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:149:26: error: no matching function for call to
‘rclcpp::Node::declare_parameter(const char [21])’
  149 |   node->declare_parameter("invalid_range_is_inf");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterT&, const ParameterDescriptor&, bool)’
  421 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:421:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:149:26: note:   candidate expects 4 arguments, 1 provided
  149 |   node->declare_parameter("invalid_range_is_inf");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note: candidate: ‘template<class ParameterT> auto
rclcpp::Node::declare_parameter(const string&, const ParameterDescriptor&, bool)’
  434 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:434:3: note:   template argument deduction/substitution failed:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:149:26: note:   couldn’t deduce template parameter ‘ParameterT’
  149 |   node->declare_parameter("invalid_range_is_inf");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~~~~~~~~~~~
In file included from /opt/ros/humble/include/rclcpp/rclcpp/executors/single_threaded_executor.hpp:28,
                 from /opt/ros/humble/include/rclcpp/rclcpp/executors.hpp:22,
                 from /opt/ros/humble/include/rclcpp/rclcpp/rclcpp.hpp:155,
                 from /home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:23:
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, const rclcpp::ParameterValue&, const ParameterDescriptor&, bool)’
  366 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:366:3: note:   candidate expects 4 arguments, 1 provided
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note: candidate: ‘const rclcpp::ParameterValue&
rclcpp::Node::declare_parameter(const string&, rclcpp::ParameterType, const ParameterDescriptor&, bool)’
  391 |   declare_parameter(
      |   ^~~~~~~~~~~~~~~~~
/opt/ros/humble/include/rclcpp/rclcpp/node.hpp:391:3: note:   candidate expects 4 arguments, 1 provided
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In lambda function:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:163:54: warning: unused parameter ‘request_header’
[-Wunused-parameter]
  163 |     [&laser](const std::shared_ptr<rmw_request_id_t> request_header,
      |              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:164:56: warning: unused parameter ‘req’ [-Wunused-parameter]
  164 |   const std::shared_ptr<std_srvs::srv::Empty::Request> req,
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:165:51: warning: unused parameter ‘response’ [-Wunused-parameter]
  165 |   std::shared_ptr<std_srvs::srv::Empty::Response> response) -> bool
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In lambda function:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:173:54: warning: unused parameter ‘request_header’
[-Wunused-parameter]
  173 |     [&laser](const std::shared_ptr<rmw_request_id_t> request_header,
      |              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:174:56: warning: unused parameter ‘req’ [-Wunused-parameter]
  174 |   const std::shared_ptr<std_srvs::srv::Empty::Request> req,
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:175:51: warning: unused parameter ‘response’ [-Wunused-parameter]
  175 |   std::shared_ptr<std_srvs::srv::Empty::Response> response) -> bool
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
gmake[2]: *** [CMakeFiles/ydlidar_ros2_driver_node.dir/build.make:76:
CMakeFiles/ydlidar_ros2_driver_node.dir/src/ydlidar_ros2_driver_node.cpp.o] Error 1
gmake[1]: *** [CMakeFiles/Makefile2:139: CMakeFiles/ydlidar_ros2_driver_node.dir/all] Error 2
gmake: *** [Makefile:146: all] Error 2
---
Failed   <<< ydlidar_ros2_driver [15.9s, exited with code 2]

Summary: 0 packages finished [16.8s]
  1 package failed: ydlidar_ros2_driver
  1 package had stderr output: ydlidar_ros2_driver
ubuntu@AUDACITY:~/ydlidar_ros2_driver/build$ ls -alt
total 16
drwxrwxr-x 17 ubuntu ubuntu 4096 Mar 19 20:05 ydlidar_ros2_driver
drwxrwxr-x  3 ubuntu ubuntu 4096 Mar 19 20:03 .
drwxrwxr-x 12 ubuntu ubuntu 4096 Mar 19 20:03 ..
-rw-rw-r--  1 ubuntu ubuntu    7 Mar 19 20:03 .built_by
-rw-rw-r--  1 ubuntu ubuntu    0 Mar 19 20:03 COLCON_IGNORE
```

**2023.03.20**
From slowrunner <notifications@github.com>
Subject Re: [slowrunner/ROS2-GoPiGo3] package fails to build (Issue #3)

I am very confused by your error:

/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: error: no matching function for call to ‘rclcpp::Node::declare_parameter(const char [5])’
   44 |   node->declare_parameter("port");

because my file has this:
     node->declare_parameter<std::string>("port");

My reply:
@slowrunner
I think I misunderstood your note above:
https://github.com/slowrunner/ROS2-GoPiGo3/issues/3#issuecomment-1475356693
I got the lghrainbow code from here:
https://github.com/lghrainbow/ydlidar_ros2_driver
instead of your code here:
https://raw.githubusercontent.com/slowrunner/ROS2-GoPiGo3/main/ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp
Also, previously I cut/pasted your ydlidar_ros2_driver_node.cpp.mine instead of just -.cpp
I'll cut/paste your .cpp and try again.

ubuntu@AUDACITY:~/ydlidar_ros2_driver/src$ **mv ydlidar_ros2_driver_node.cpp ydlidar_ros2_driver_node.ORIGINAL**
ubuntu@AUDACITY:~/ydlidar_ros2_driver/src$ **nano ydlidar_ros2_driver_node.cpp**
     past raw code from:
https://raw.githubusercontent.com/slowrunner/ROS2-GoPiGo3/main/ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp

ubuntu@AUDACITY:~/ydlidar_ros2_driver/src$ **cd ..**
ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **colcon build --symlink-install**

```
Starting >>> ydlidar_ros2_driver
--- stderr: ydlidar_ros2_driver
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In lambda function:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:165:54: warning: unused parameter ‘request_header’
[-Wunused-parameter]
  165 |     [&laser](const std::shared_ptr<rmw_request_id_t> request_header,
      |              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:166:56: warning: unused parameter ‘req’ [-Wunused-parameter]
  166 |   const std::shared_ptr<std_srvs::srv::Empty::Request> req,
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:167:51: warning: unused parameter ‘response’ [-Wunused-parameter]
  167 |   std::shared_ptr<std_srvs::srv::Empty::Response> response) -> bool
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In lambda function:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:175:54: warning: unused parameter ‘request_header’
[-Wunused-parameter]
  175 |     [&laser](const std::shared_ptr<rmw_request_id_t> request_header,
      |              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:176:56: warning: unused parameter ‘req’ [-Wunused-parameter]
  176 |   const std::shared_ptr<std_srvs::srv::Empty::Request> req,
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:177:51: warning: unused parameter ‘response’ [-Wunused-parameter]
  177 |   std::shared_ptr<std_srvs::srv::Empty::Response> response) -> bool
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
---
Finished <<< ydlidar_ros2_driver [25.2s]

Summary: 1 package finished [26.0s]
  1 package had stderr output: ydlidar_ros2_driver
```

Only warnings.  No fatal errors!
Reply to @slowrunner:
@slowrunner YES!!! (now let's see if the node works....)

Continuing on from:
https://github.com/YDLIDAR/ydlidar_ros2_driver

*Note: Add permanent workspace environment variables. It's convenientif the ROS2 environment variables are automatically added to your bash session every time a new shell is launched:*
ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **echo "source ~/ydlidar_ros2_driver/install/setup.bash" >> ~/.bashrc**
ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **source ~/.bashrc**

*Confirmation To confirm that your package path has been set, printenv the grep -i ROS variable.*

```
printenv | grep -i ROS
```

ubuntu@AUDACITY:~$ **printenv | grep -i ROS**

*Create serial port Alias [optional]*  [skip. Not sure what this does]

```
$chmod 0777 src/ydlidar_ros2_driver/startup/*
$sudo sh src/ydlidar_ros2_driver/startup/initenv.sh
```

*Configure LiDAR paramters*

```
ydlidar_ros2_driver_node:
  ros__parameters:
    port: /dev/ttyUSB0
    frame_id: laser_frame
    ignore_array: ""
    baudrate: 115200
    lidar_type: 1
    device_type: 0
    sample_rate: 3
    abnormal_check_count: 4
    resolution_fixed: true
    reversion: true
    inverted: true
    auto_reconnect: true
    isSingleChannel: true
    intensity: false
    support_motor_dtr: false
    angle_max: 180.0
    angle_min: -180.0
    range_max: 8.0
    range_min: 0.10
    frequency: 10.0
    invalid_range_is_inf: false
```

ubuntu@AUDACITY:~/ydlidar_ros2_driver/params$ **nano ydlidar.yaml**

adjust parameters as above & save

On desktop monitor in terminator:

ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**

```
[INFO] [launch]: All log files can be found below
/home/ubuntu/.ros/log/2023-03-20-21-18-24-253959-AUDACITY-31825
[INFO] [launch]: Default logging verbosity is set to INFO
[ERROR] [launch]: Caught exception in launch (see debug for traceback): Caught
exception when trying to load file of format [py]: LifecycleNode.__init__()
missing 2 required keyword-only arguments: 'name' and 'namespace'
```

ubuntu@AUDACITY:~/.ros/log/2023-03-20-21-18-24-253959-AUDACITY-31825$ **nano launch.log**

[provides NO additional info!]

ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **nano ydlidar_launch.py**

```
...
driver_node = LifecycleNode(package='ydlidar_ros2_driver',
     node_executable='ydlidar_ros2_driver_node',
     node_name='ydlidar_ros2_driver_node',
     output='screen',
     emulate_tty=True,
     parameters=[parameter_file],
     node_namespace='/',
     )
...
```

I Think the node_ prefix has been denegrated & omitted.
Example:
https://github.com/Slamtec/sllidar_ros2/pull/3/commits/6ee63d8c524bb7a5d28227b6cf2c19f65eb13c8c
I think that includes node_executable also.
ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **cp ydlidar_launch.py ydlidar_launch.ORIGINAL**
ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **nano ydlidar_launch.py**
remove node_ from node_executable, node_name, node_namespace
Try again:
ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**
```
[ERROR] [launch]: Caught exception in launch (see debug for traceback): Caught exception when trying to load file of format [py]: Node.__init__() missing 1 required keyword-only argument: 'executable'
```
Might have been wrong about the node_executable part!
Try putting it back.
```
[ERROR] [launch]: Caught exception in launch (see debug for traceback): Caught exception when trying to load file of format [py]: Node.__init__() missing 1 required keyword-only argument: 'executable'
```

In other examples, the suffix _node is not included in the executable.  Try removing it.
```
[ERROR] [launch]: Caught exception in launch (see debug for traceback): Caught exception when trying to load file of format [py]: Node.__init__() missing 1 required keyword-only argument: 'executable'
```
Nope, neither edits work & putting node_executable back doesn't work. ??
Recompiling with colcon build --symlink-install doesn't help, shouldn't be needed with --symlink-install, and gives me a warning:
```
CMake Warning (dev) at ament_cmake_symlink_install/ament_cmake_symlink_install.cmake:62 (file):
  Policy CMP0009 is not set: FILE GLOB_RECURSE calls should not follow
  symlinks by default.  Run "cmake --help-policy CMP0009" for policy details.
  Use the cmake_policy command to set the policy and suppress this warning.
Call Stack (most recent call first):
  ament_cmake_symlink_install/ament_cmake_symlink_install.cmake:317
(ament_cmake_symlink_install_directory)
  cmake_install.cmake:46 (include)
This warning is for project developers.  Use -Wno-dev to suppress it.
```

There's another section, not named in error with node_ issues:
tf2_node = Node(package='tf2_ros',
**node_**executable='static_transform_publisher',
**node_**name='static_tf_pub_laser',
ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **nano ydlidar_launch.py**
remove nano_

run from PuTTY:
ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**

```
[INFO] [launch]: All log files can be found below
/home/ubuntu/.ros/log/2023-03-20-22-15-33-590404-AUDACITY-32476
[INFO] [launch]: Default logging verbosity is set to INFO
[INFO] [ydlidar_ros2_driver_node-1]: process started with pid [32489]
[INFO] [static_transform_publisher-2]: process started with pid [32491]
[static_transform_publisher-2] [WARN] [1679350534.443535192] []: Old-style arguments are
deprecated; see --help for new-style arguments
[ydlidar_ros2_driver_node-1] [INFO] [1679350534.572771567] [ydlidar_ros2_driver_node]: [YDLIDAR
INFO] Current ROS Driver Version: 1.0.2
[ydlidar_ros2_driver_node-1]
[ydlidar_ros2_driver_node-1] terminate called after throwing an instance of
'rclcpp::exceptions::UninitializedStaticallyTypedParameterException'
[ydlidar_ros2_driver_node-1]   what():  Statically typed parameter 'fixed_resolution' must be
initialized.
[static_transform_publisher-2] [INFO] [1679350534.598176371] [static_tf_pub_laser]: Spinning until
stopped - publishing transform
[static_transform_publisher-2] translation: ('0.000000', '0.000000', '0.020000')
[static_transform_publisher-2] rotation: ('0.000000', '0.000000', '0.000000', '1.000000')
[static_transform_publisher-2] from 'base_link' to 'laser_frame'
[ERROR] [ydlidar_ros2_driver_node-1]: process has died [pid 32489, exit code -6, cmd
'/home/ubuntu/ydlidar_ros2_driver/install/ydlidar_ros2_driver/lib/ydlidar_ros2_driver/ydlidar_ros2_
driver_node --ros-args -r __node:=ydlidar_ros2_driver_node -r __ns:=/ --params-file
/home/ubuntu/ydlidar_ros2_driver/install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/params/ydlid
ar.yaml'].
```

Stops here

**^C**

```
[WARNING] [launch]: user interrupted with ctrl-c (SIGINT)
[static_transform_publisher-2] [INFO] [1679350653.707765685] [rclcpp]: signal_handler(signum=2)
[INFO] [static_transform_publisher-2]: process has finished cleanly [pid 32491]
```

Try running from desktop terminal:
same error

Try rviz2 launch:
ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **ros2 launch ydlidar_ros2_driver ydlidar_launch_view.py**

```
[INFO] [launch]: All log files can be found below /home/ubuntu/.ros/log/2023-03-20-23-09-08-494649-AUDACITY-32824
[INFO] [launch]: Default logging verbosity is set to INFO
[INFO] [ydlidar_ros2_driver_node-1]: process started with pid [32836]
[INFO] [static_transform_publisher-2]: process started with pid [32838]
[INFO] [rviz2-3]: process started with pid [32840]
[static_transform_publisher-2] [WARN] [1679353749.417539588] []: Old-style arguments are deprecated; see --help for new-style
arguments
[ydlidar_ros2_driver_node-1] [INFO] [1679353749.579641524] [ydlidar_ros2_driver_node]: [YDLIDAR INFO] Current ROS Driver Version:
1.0.2
[ydlidar_ros2_driver_node-1]
[ydlidar_ros2_driver_node-1] terminate called after throwing an instance of
'rclcpp::exceptions::UninitializedStaticallyTypedParameterException'
[ydlidar_ros2_driver_node-1]   what():  Statically typed parameter 'fixed_resolution' must be initialized.
[rviz2-3] qt.qpa.xcb: could not connect to display
[rviz2-3] qt.qpa.plugin: Could not load the Qt platform plugin "xcb" in "" even though it was found.
[rviz2-3] This application failed to start because no Qt platform plugin could be initialized. Reinstalling the application may fix
this problem.
[rviz2-3]
[rviz2-3] Available platform plugins are: eglfs, linuxfb, minimal, minimalegl, offscreen, vnc, xcb.
[rviz2-3]
[static_transform_publisher-2] [INFO] [1679353749.634647959] [static_tf_pub_laser]: Spinning until stopped - publishing transform
[static_transform_publisher-2] translation: ('0.000000', '0.000000', '0.020000')
[static_transform_publisher-2] rotation: ('0.000000', '0.000000', '0.000000', '1.000000')
[static_transform_publisher-2] from 'base_link' to 'laser_frame'
[ERROR] [ydlidar_ros2_driver_node-1]: process has died [pid 32836, exit code -6, cmd
'/home/ubuntu/ydlidar_ros2_driver/install/ydlidar_ros2_driver/lib/ydlidar_ros2_driver/ydlidar_ros2_driver_node --ros-args -r
__node:=ydlidar_ros2_driver_node -r __ns:=/ --params-file
/home/ubuntu/ydlidar_ros2_driver/install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/params/ydlidar.yaml'].
[ERROR] [rviz2-3]: process has died [pid 32840, exit code -6, cmd '/opt/ros/humble/lib/rviz2/rviz2 -d
/home/ubuntu/ydlidar_ros2_driver/install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/config/ydlidar.rviz --ros-args -r
__node:=rviz2'].
```

**2023.04.15**
Taking a fresh approach to see if anything has improved:
https://github.com/YDLIDAR
ubuntu@AUDACITY:~$ **sudo apt update**
ubuntu@AUDACITY:~$ **sudo apt upgrade**
ubuntu@AUDACITY:~$ **rm -rf YDLidar-SDK**
ubuntu@AUDACITY:~$ **rm -rf ydlidar_ros2_driver**

ubuntu@AUDACITY:~$ **git clone https://github.com/YDLIDAR/YDLidar-SDK.git**
ubuntu@AUDACITY:~$ **cd YDLidar-SDK/**
build directory is missing, create!
ubuntu@AUDACITY:~/YDLidar-SDK$ **mkdir build**
ubuntu@AUDACITY:~/YDLidar-SDK$ **cd build**
instead of cmake, do colcon build
ubuntu@AUDACITY:~/YDLidar-SDK/build$ **colcon build --symlink-install**
Summary: 0 packages finished [1.29s]
have to run colcon from directory ABOVE build!
ubuntu@AUDACITY:~/YDLidar-SDK/build$ **cd ..**
ubuntu@AUDACITY:~/YDLidar-SDK$ **colcon build --symlink-install**
lot of unsigned int errors, but compiles anyway:

```
...
/home/ubuntu/YDLidar-SDK/./core/base/thread.h:151:40: warning: format ‘%X’ expects argument of type
‘unsigned int’, but argument 2 has type ‘_size_t’ {aka ‘long unsigned int’} [-Wformat=]
  151 |           printf("[YDLIDAR] Thread [0x%X] has been canceled\n", _handle);
      |                                      ~^                        ~~~~~~~
      |                                       |                        |
      |                                       unsigned int             _size_t {aka long unsigned
int}
      |                                      %lX
Summary: 1 package finished [38.1s]
```

1 package had stderr output: ydlidar_sdk

Back to home directory
ubuntu@AUDACITY:~/YDLidar-SDK$ **cd**
ubuntu@AUDACITY:~$ **git clone https://github.com/YDLIDAR/ydlidar_ros2_driver.git**

```
Cloning into 'ydlidar_ros2_driver'...
remote: Enumerating objects: 38, done.
remote: Counting objects: 100% (15/15), done.
remote: Compressing objects: 100% (11/11), done.
remote: Total 38 (delta 8), reused 4 (delta 4), pack-reused 23
Receiving objects: 100% (38/38), 806.68 KiB | 2.81 MiB/s, done.
Resolving deltas: 100% (8/8), done.
```

Move to directory created:
ubuntu@AUDACITY:~$ **cd ydlidar_ros2_driver/**
ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **colcon build --symlink-install**
several Cmake Deprication Warnings
Many unsigned int errors of the form:

```
In file included from /home/ubuntu/YDLidar-SDK/core/serial/common.h:45,
                 from /home/ubuntu/YDLidar-SDK/core/serial/serial.cpp:12:
/home/ubuntu/YDLidar-SDK/./core/base/thread.h: In member function ‘int
ydlidar::core::base::Thread::join(long unsigned int)’:
/home/ubuntu/YDLidar-SDK/./core/base/thread.h:136:46: warning: format ‘%X’ expects argument of type
‘unsigned int’, but argument 2 has type ‘_size_t’ {aka ‘long unsigned int’} [-Wformat=]
  136 |           printf("[YDLIDAR DEBUG] Thread [0x%X] ready to cancel[%d]\n", _handle, s);
      |                                            ~^                           ~~~~~~~
      |                                             |                           |
      |                                             unsigned int                _size_t {aka long
unsigned int}
      |                                            %lX
```

Then multiple node->declare_parameter errors of the form:

```
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In function ‘int main(int,
char**)’:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:44:26: error: no matching function
for call to ‘rclcpp::Node::declare_parameter(const char [5])’
   44 |   node->declare_parameter("port");
      |   ~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
```

```
node->declare_parameter("ignore_array");
node->declare_parameter("frame_id"); node->declare_parameter("baudrate");
node->declare_parameter("lidar_type");
node->declare_parameter("device_type");
node->declare_parameter("sample_rate");
node->declare_parameter("abnormal_check_count");
node->declare_parameter("fixed_resolution");
node->declare_parameter("reversion");
node->declare_parameter("inverted");
node->declare_parameter("auto_reconnect");
node->declare_parameter("isSingleChannel");
node->declare_parameter("intensity");
node->declare_parameter("support_motor_dtr");
node->declare_parameter("angle_max");
node->declare_parameter("angle_min");
node->declare_parameter("range_max");
node->declare_parameter("range_min");
node->declare_parameter("frequency");
node->declare_parameter("invalid_range_is_inf");
```

Then several unused parameter errors:

```
unused parameter ‘request_header’
unused parameter ‘req’
unused parameter ‘response’
```

Summary: 1 package finished [1min 5s]
  1 package failed: ydlidar_ros2_driver
  2 packages had stderr output: ydlidar_ros2_driver ydlidar_sdk

Searching Issues I found this ray of hope:
https://github.com/YDLIDAR/ydlidar_ros2_driver/issues/21#issuecomment-1473047769
slowrunner commented last month
This is the version I used by @lghrainbow that compiles under ROS2 Humble / Ubuntu 22.04 Jammy / Python 3.10.6
(Updated 3/19/23 to point to file I used successfully):
https://raw.githubusercontent.com/slowrunner/ROS2-GoPiGo3/main/ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp
Go to appropriate directory & mv original to backup:
ubuntu@AUDACITY:~/ydlidar_ros2_driver/src$ **mv ydlidar_ros2_driver_node.cpp ydlidar_ros2_driver_node.ORIGINAL.cpp**
Create new .cpp file:
ubuntu@AUDACITY:~/ydlidar_ros2_driver/src$ **nano ydlidar_ros2_driver_node.cpp**
Cut and paste above link .cpp file into new file.  Save.
Go home:
ubuntu@AUDACITY:~/ydlidar_ros2_driver/src$ **cd**
Go to ydlidar_ros2_driver directory
ubuntu@AUDACITY:~$ **cd ydlidar_ros2_driver/**
(Or you could have just cd .. to back up a directory.)
Rebuild
ubuntu@AUDACITY:~$ **colcon build --symlink-install**
WRONG DIRECTORY.  BUILD FROM ydlidar_ros2_driver

```
Starting >>> ydlidar_ros2_driver
Starting >>> ydlidar_sdk
Finished <<< ydlidar_sdk [1.58s]
--- stderr: ydlidar_ros2_driver
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In lambda function:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:165:54: warning: unused parameter
‘request_header’ [-Wunused-parameter]
  165 |     [&laser](const std::shared_ptr<rmw_request_id_t> request_header,
      |              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:166:56: warning: unused parameter
‘req’ [-Wunused-parameter]
  166 |   const std::shared_ptr<std_srvs::srv::Empty::Request> req,
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:167:51: warning: unused parameter
‘response’ [-Wunused-parameter]
  167 |   std::shared_ptr<std_srvs::srv::Empty::Response> response) -> bool
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp: In lambda function:
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:175:54: warning: unused parameter
‘request_header’ [-Wunused-parameter]
  175 |     [&laser](const std::shared_ptr<rmw_request_id_t> request_header,
      |              ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~~~~~~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:176:56: warning: unused parameter
‘req’ [-Wunused-parameter]
  176 |   const std::shared_ptr<std_srvs::srv::Empty::Request> req,
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~
/home/ubuntu/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp:177:51: warning: unused parameter
‘response’ [-Wunused-parameter]
  177 |   std::shared_ptr<std_srvs::srv::Empty::Response> response) -> bool
      |   ~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~~^~~~~~~~
---
Finished <<< ydlidar_ros2_driver [24.7s]
Summary: 2 packages finished [26.1s]
  1 package had stderr output: ydlidar_ros2_driver
```

Now to test:

*Run YDLidar SDK Sample*

*./tri_test*

Where is it?

ubuntu@AUDACITY:~$ **find / -name tri_test 2>/dev/null**

/usr/local/bin/tri_test

**/home/ubuntu/install/ydlidar_sdk/bin/tri_test**

/home/ubuntu/YDLidar-SDK/install/ydlidar_sdk/bin/tri_test

/home/ubuntu/YDLidar-SDK/build/ydlidar_sdk/tri_test

/home/ubuntu/build/ydlidar_sdk/tri_test

ubuntu@AUDACITY:~$ **/home/ubuntu/install/ydlidar_sdk/bin/tri_test**

```
__   ______  _     ___ ____     _    ____
\ \ / /  _ \| |   |_ _|  _ \  / \  |  _ \
 \ V /| | | | |    | || | | |/ _ \ | |_) |
  | | | |_| | |___ | || |_| / ___ \|  _ <
  |_| |____/|_____|___|____/_/   \_\_| \_\

[0] ydlidar /dev/ttyS0
[1] ydlidar1.2.4.3 /dev/ttyUSB0
Please select the lidar port: 1
Baudrate:
[0] 115200
[1] 128000
[2] 150000
[3] 153600
[4] 230400
[5] 460800
[6] 512000
Please select the lidar baudrate: 0
Whether the Lidar is one-way communication [yes/no]: yes
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.7
[YDLIDAR] Lidar successfully connected /dev/ttyUSB0[115200]
[YDLIDAR] Lidar running correctly! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 638 ms
[YDLIDAR] Start to getting intensity flag
[YDLIDAR] Auto set intensity 0
[YDLIDAR] End to getting intensity flag
[YDLIDAR] Create thread 0x9CF44100
[YDLIDAR] Successed to start scan mode, Elapsed time 1191 ms
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Single Fixed Size: 250
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Successed to check the lidar, Elapsed time 144 ms
[YDLIDAR] Single Channel Current Sampling Rate: 3.00K
[YDLIDAR] Now lidar is scanning...
User version 0.0
Scan received [250] points inc [0.025234]
Scan received [250] points inc [0.025234]
Scan received [250] points inc [0.025234]
...
```

*Python Run*

```
cd python/examples
# Console
python tof_test.py
# If it's a drawing
pip install numpy
pip install matplotlib
python plot_tof_test.py
```

Since graphic, launch from desktop not PuTTY.

Where is it?

ubuntu@AUDACITY:~$ **find / -name tof_test.py 2>/dev/null**

```
/usr/local/bin/tof_test.py
/home/ubuntu/install/ydlidar_sdk/bin/tof_test.py
/home/ubuntu/YDLidar-SDK/install/ydlidar_sdk/bin/tof_test.py
/home/ubuntu/YDLidar-SDK/python/examples/tof_test.py
```

ubuntu@AUDACITY:~$ **python3 /home/ubuntu/YDLidar-SDK/python/examples/tof_test.py**

```
Traceback (most recent call last):
  File "/home/ubuntu/YDLidar-SDK/python/examples/tof_test.py", line 2, in
<module>
    import ydlidar
ModuleNotFoundError: No module named 'ydlidar'
```

ubuntu@AUDACITY:~$ **find / -name ydlidar.py 2>/dev/null**

```
/usr/local/lib/python3/dist-packages/ydlidar.py
/home/ubuntu/install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/launch/ydlidar.py
/home/ubuntu/install/ydlidar_sdk/lib/python3/dist-packages/ydlidar.py
/home/ubuntu/YDLidar-SDK/install/ydlidar_sdk/lib/python3/dist-packages/ydlidar.py
/home/ubuntu/YDLidar-SDK/build/ydlidar_sdk/python/ydlidar.py
/home/ubuntu/ydlidar_ros2_driver/install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/launch/ydlida
r.py
/home/ubuntu/ydlidar_ros2_driver/launch/ydlidar.py
/home/ubuntu/build/ydlidar_sdk/python/ydlidar.py
```

Well, there’s plenty of ydlidar.py’s.  I suspect I last built in wrong directories as I ran colon build from /home/ instead of /ydlidar_ros2_driver/.

ubuntu@AUDACITY:~$ **ls -w 1**

```
Desktop
Documents
Downloads
Music
Pictures
Public
Templates
Videos
YDLidar-SDK
build
install
log
os
snap
ydlidar_ros2_driver
```

ubuntu@AUDACITY:~$ **rm -rf install**

ubuntu@AUDACITY:~$ **rm -rf os**

ubuntu@AUDACITY:~$ **rm -rf build**

ubuntu@AUDACITY:~$ **rm -rf log**

ubuntu@AUDACITY:~$ **cd ydlidar_ros2_driver/**
ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **colcon build**
```
Starting >>> ydlidar_ros2_driver
Finished <<< ydlidar_ros2_driver [6.73s]
Summary: 1 package finished [7.61s]
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 tof_test.py**
```
Traceback (most recent call last):
  File "/home/ubuntu/YDLidar-SDK/python/examples/tof_test.py", line 2, in <module>
    import ydlidar
ModuleNotFoundError: No module named 'ydlidar'
```
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 test.py**
```
Traceback (most recent call last):
  File "/home/ubuntu/YDLidar-SDK/python/examples/test.py", line 2, in <module>
    import ydlidar
ModuleNotFoundError: No module named 'ydlidar'
```
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 ydlidar_test.py**
```
Traceback (most recent call last):
  File "/home/ubuntu/YDLidar-SDK/python/examples/ydlidar_test.py", line 2, in <module>
    import ydlidar
ModuleNotFoundError: No module named 'ydlidar'
```
ubuntu@AUDACITY:~$ find / -name ydlidar.py 2>/dev/null
```
/usr/local/lib/python3/dist-packages/ydlidar.py
/home/ubuntu/YDLidar-SDK/install/ydlidar_sdk/lib/python3/dist-packages/ydlidar.py
/home/ubuntu/YDLidar-SDK/build/ydlidar_sdk/python/ydlidar.py
/home/ubuntu/ydlidar_ros2_driver/install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/launch/ydlida
r.py
/home/ubuntu/ydlidar_ros2_driver/launch/ydlidar.py
```
Did a ‘deff’ comparison of #1 and #2 and got what looked like gibberish comparisons.  So did a side-by-side nano of both in terminator.  Looked the same until
class LaserDebug(object):
#1's first different line is
```
cVer = property(_ydlidar.LaserDebug_cVer_get, ...
```
#2's parallel line is
```
W3F4CusMajor_W4F0CusMinor = property(_ydlidar.LaserDebug_W3F0Cus..
```
#3 is like #1
#4 and I believe #5 are launch programs.
So, discount #2 as an oddball.
Try cc #1 into to examples directory
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **cp /usr/local/lib/python3/dist-packages/ydlidar.py .** [note the ‘.’]
Didn’t help.  Same missing ydlidar module.
Since I rebuilt ydlidar_ros2_driver from it’s directory, I should probably rebuild YDLidar-SDK also!
ubuntu@AUDACITY:~/YDLidar-SDK$ **colcon build --symlink-install**
```
Starting >>> ydlidar_sdk
Finished <<< ydlidar_sdk [1.64s]
Summary: 1 package finished [2.63s]
```
Didn’t help!
Maybe I need to do Cmake instead of colcon build for this?

**2023.04.16**

Clean slate:

ubuntu@AUDACITY:~$ **rm -fr YDLidar-SDK/**

ubuntu@AUDACITY:~$ **rm -fr ydlidar_ros2_driver/**

ubuntu@AUDACITY:~$ **sudo apt update**

```
All packages are up to date.
(Which makes the following unnecessary)
```

ubuntu@AUDACITY:~$ **sudo apt upgrade**

```
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
(Which makes the following unnecessary)
```

ubuntu@AUDACITY:~$ **sudo apt autoremove**

```
0 upgraded, 0 newly installed, 0 to remove and 0 not upgraded.
```

Start w/ SDK:

ubuntu@AUDACITY:~$ **git clone https://github.com/YDLIDAR/YDLidar-SDK.git**

ubuntu@AUDACITY:~$ **cd YDLidar-SDK/**

build directory is absent and they haven’t fixed that despite notifications

ubuntu@AUDACITY:~/YDLidar-SDK$ **mkdir build**

ubuntu@AUDACITY:~/YDLidar-SDK$ **cd build**

ubuntu@AUDACITY:~/YDLidar-SDK/build$ **cmake ..**  [note ‘..’]

Some policy & deprecation warnings, but it compiled.

```
-- +==========================================================================+
-- |         Resulting configuration for                                      |
-- +==========================================================================+
--  _____________________________ PLATFORM _____________________________________
--  Host                          : Linux5.15.0-1026-raspiaarch64
--  Is the system big endian?     :  No
--  Word size (32/64 bit)         : 64
--  CMake version                 : 3.22.1
--  CMake generator               : Unix Makefiles
--  CMake build tool              : /usr/bin/gmake
--  Compiler                      : GNU
--  Configuration                 :
--
--  _____________________________ OPTIONS ____________________________________
--  Build YDLidar-SDK as a shared library?   :  No
--  Build Examples?                : Yes
--  Build C Sharp API?              :  No
--  Build TEST?                               : Yes
--
--  _____________________________ INSTALL ____________________________
--  Install prefix                      : /usr/local
--
--  _____________________________ WRAPPERS/BINDINGS ____________________________
--  Python bindings (pyydlidar)   : Yes
--    - dep: Swig found?          : Yes [Version: 4.0.2]
--    - dep: PythonLibs found?    : Yes [Version: 3.10.6]
--
-- Configuring done
-- Generating done
-- Build files have been written to: /home/ubuntu/YDLidar-SDK/build
```

Forgot to do this part earlier, maybe by .py tests failed?
ubuntu@AUDACITY:~/YDLidar-SDK/build$ **make**
Lots of unsigned integer warnings of the form:

```
/home/ubuntu/YDLidar-SDK/./core/base/thread.h:151:40: warning: format ‘%X’ expects argument of type
‘unsigned int’, but argument 2 has type ‘_size_t’ {aka ‘long unsigned int’} [-Wformat=]
  151 |           printf("[YDLIDAR] Thread [0x%X] has been canceled\n", _handle);
      |                                      ~^                          ~~~~~~~
      |                                       |                          |
      |                                       unsigned int               _size_t {aka long unsigned
int}
      |                                      %lX
```

but it compiles.
ubuntu@AUDACITY:~/YDLidar-SDK/build$ **sudo make install**
success

Now for ros2 driver:
Go to home directory:
ubuntu@AUDACITY:~/YDLidar-SDK/build$ **cd**
ubuntu@AUDACITY:~$ **git clone https://github.com/YDLIDAR/ydlidar_ros2_driver.git**

```
Cloning into 'ydlidar_ros2_driver'...
remote: Enumerating objects: 38, done.
remote: Counting objects: 100% (15/15), done.
remote: Compressing objects: 100% (11/11), done.
remote: Total 38 (delta 8), reused 4 (delta 4), pack-reused 23
Receiving objects: 100% (38/38), 806.68 KiB | 4.46 MiB/s, done.
Resolving deltas: 100% (8/8), done.
```

ubuntu@AUDACITY:~$ **cd ydlidar_ros2_driver/**
ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **colcon build --symlink-install**
Errors as before.  Need to substitute the ydlidar_ros2_driver_node.cpp from https://raw.githubusercontent.com/slowrunner/ROS2-GoPiGo3/main/ros2ws/src/ydlidar_ros2_driver/src/ydlidar_ros2_driver_node.cpp
ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **cd src**
ubuntu@AUDACITY:~/ydlidar_ros2_driver/src$ **mv ydlidar_ros2_driver_node.cpp ydlidar_ros2_driver_node.ORIGINAL.cpp**
ubuntu@AUDACITY:~/ydlidar_ros2_driver/src$ **nano ydlidar_ros2_driver_node.cpp**
Cut & paste above link code, save.
ubuntu@AUDACITY:~/ydlidar_ros2_driver/src$ **cd ..**
ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **colcon build --symlink-install**

```
Starting >>> ydlidar_ros2_driver
Finished <<< ydlidar_ros2_driver [1.04s]
Summary: 1 package finished [1.91s]
```

ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **source ./install/setup.bash**

Try test programs on Desktop, not remote:
all fail as before: “No module names ‘ydlidar’”.
Going back to SDK
*python API install separtately:*

```
cd YDLidar-SDK
pip install .
# Another method
python setup.py build
python setup.py install
```

ubuntu@AUDACITY:~/YDLidar-SDK$ **pip install .**

```
Defaulting to user installation because normal site-packages is not writeable
Processing /home/ubuntu/YDLidar-SDK
  Preparing metadata (setup.py) ... done
Building wheels for collected packages: ydlidar
  Building wheel for ydlidar (setup.py) ... done
  Created wheel for ydlidar: filename=ydlidar-1.1.7-cp310-cp310-linux_aarch64.whl size=232794
sha256=24ef655b525a53bc610ebe88d6d66ba8b1565778669a5951fe35e160b96a668e
  Stored in directory:
/home/ubuntu/.cache/pip/wheels/56/15/f4/c9cb389a910e1f5bb1eb6cf726fa8c9684080b0c59bdaec758
Successfully built ydlidar
Installing collected packages: ydlidar
Successfully installed ydlidar-1.1.7
```

ubuntu@AUDACITY:~/YDLidar-SDK$ **cd python/examples/**
ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 test.py**

```
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.7
[YDLIDAR] Lidar successfully connected /dev/ttyUSB0[230400]
[YDLIDAR] Error, cannot retrieve YDLidar health code: ffffffff     [Unit is unidirectional]
[YDLIDAR] Fail to get device information
[YDLIDAR] Lidar init success, Elapsed time 2673 ms
[YDLIDAR] Failed to start scan mode: ffffffff
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 tof_test.py**

```
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.7
[YDLIDAR] Lidar successfully connected /dev/ttyUSB0[512000]
[YDLIDAR] Error, cannot retrieve YDLidar health code: ffffffff
[YDLIDAR] Fail to get device information
[YDLIDAR] Lidar init success, Elapsed time 2671 ms
[YDLIDAR] Failed to start scan mode: ffffffff
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 ydlidar_test.py**

```
/dev/ttyS0
/dev/ttyUSB0
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.7
[YDLIDAR] Lidar successfully connected /dev/ttyUSB0[128000]
[YDLIDAR] Lidar running correctly! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 631 ms
[YDLIDAR] Start to getting intensity flag
[YDLIDAR] End to getting intensity flag
[YDLIDAR] Create thread 0x9D939120
[YDLIDAR] Successed to start scan mode, Elapsed time 2064 ms
timeout count: 1
timeout count: 2
[YDLIDAR DEBUG] Thread [0x9D939120] ready to cancel[0]
[YDLIDAR DEBUG] Thread [0x9D939120] ready to cancel[0] time[0]
[YDLIDAR] Thread [0x9D939120] has been canceled
[YDLIDAR] Failed to turn on the Lidar, because the lidar is [Operation timed out].
```

Try tri_test.
Directories seemed to have changed since rebuild.
ubuntu@AUDACITY:~$ **find / -name tri_test 2>/dev/null**

```
/usr/local/bin/tri_test
/home/ubuntu/YDLidar-SDK/build/temp.linux-aarch64-3.10/tri_test
/home/ubuntu/YDLidar-SDK/build/tri_test
```

ubuntu@AUDACITY:~$ **/usr/local/bin/tri_test**

```
__   ______  _     ___ ____     _    ____
\ \ / /  _ \| |   |_ _|  _ \  / \  |  _ \
 \ V /| | | | |    | || | | |/ _ \ | |_) |
  | | | |_| | |___ | || |_| / ___ \|  _ <
  |_| |____/|_____|___|____/_/   \_\_| \_\

[0] ydlidar /dev/ttyS0
[1] ydlidar1.2.4.3 /dev/ttyUSB0
Please select the lidar port:1
Baudrate:
[0] 115200
[1] 128000
[2] 150000
[3] 153600
[4] 230400
[5] 460800
[6] 512000
Please select the lidar baudrate:0
Whether the Lidar is one-way communication [yes/no]:yes
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.7
[YDLIDAR] Lidar successfully connected /dev/ttyUSB0[115200]
[YDLIDAR] Lidar running correctly! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 638 ms
[YDLIDAR] Start to getting intensity flag
[YDLIDAR] Auto set intensity 0
[YDLIDAR] End to getting intensity flag
[YDLIDAR] Create thread 0xAC079100
[YDLIDAR] Successed to start scan mode, Elapsed time 1067 ms
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Single Fixed Size: 250
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Successed to check the lidar, Elapsed time 135 ms
[YDLIDAR] Single Channel Current Sampling Rate: 3.00K
[YDLIDAR] Now lidar is scanning...
User version 0.0
Scan received [250] points inc [0.025234]
Scan received [250] points inc [0.025234]
Scan received [250] points inc [0.025234]
Scan received [250] points inc [0.025234]
Scan received [250] points inc [0.025234]
Scan received [250] points inc [0.025234]
```

ubuntu@AUDACITY:~$
**/home/ubuntu/YDLidar-SDK/build/temp.linux-aarch64-3.10/tri_test**
same
ubuntu@AUDACITY:~$ **/home/ubuntu/YDLidar-SDK/build/tri_test**
same

Got help here: https://github.com/YDLIDAR/YDLidar-SDK/issues/23

ubuntu@AUDACITY:~$ **cd YDLidar-SDK/python/examples/**

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **nano plot_tof_test.py**

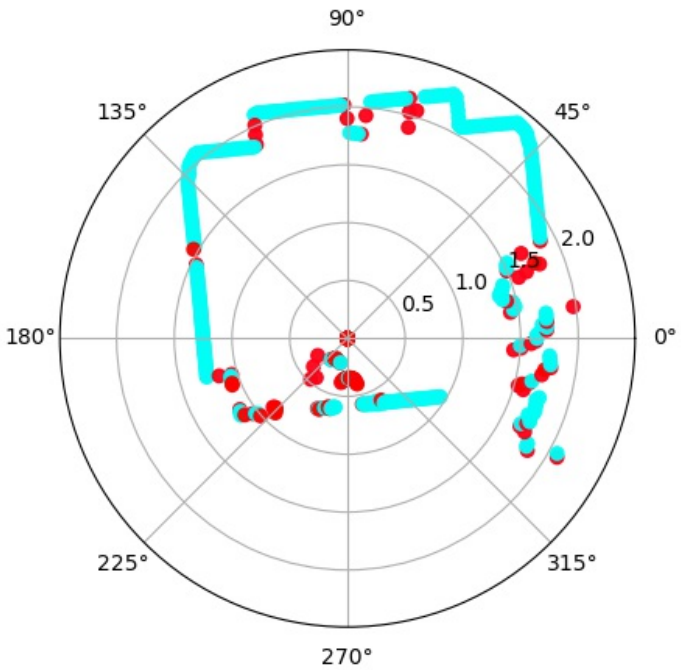
From:

```
laser = ydlidar.CYdLidar();
laser.setlidaropt(ydlidar.LidarPropSerialPort, port);
laser.setlidaropt(ydlidar.LidarPropSerialBaudrate, 512000)
laser.setlidaropt(ydlidar.LidarPropLidarType, ydlidar.TYPE_TOF);
laser.setlidaropt(ydlidar.LidarPropDeviceType, ydlidar.YDLIDAR_TYPE_SERIAL);
laser.setlidaropt(ydlidar.LidarPropScanFrequency, 10.0);
laser.setlidaropt(ydlidar.LidarPropSampleRate, 20);
laser.setlidaropt(ydlidar.LidarPropSingleChannel, False);
laser.setlidaropt(ydlidar.LidarPropMaxAngle, 180.0);
laser.setlidaropt(ydlidar.LidarPropMinAngle, -180.0);
laser.setlidaropt(ydlidar.LidarPropMaxRange, 32.0);
laser.setlidaropt(ydlidar.LidarPropMinRange, 0.01);
```

To:

```
laser = ydlidar.CYdLidar();
laser.setlidaropt(ydlidar.LidarPropSerialPort, port);
laser.setlidaropt(ydlidar.LidarPropSerialBaudrate, 115200)
laser.setlidaropt(ydlidar.LidarPropLidarType, ydlidar.TYPE_TRIANGLE);
laser.setlidaropt(ydlidar.LidarPropDeviceType, ydlidar.YDLIDAR_TYPE_SERIAL);
laser.setlidaropt(ydlidar.LidarPropScanFrequency, 7.0);
laser.setlidaropt(ydlidar.LidarPropSampleRate, 3);
laser.setlidaropt(ydlidar.LidarPropSingleChannel, True);
laser.setlidaropt(ydlidar.LidarPropMaxAngle, 180.0);
laser.setlidaropt(ydlidar.LidarPropMinAngle, -180.0);
laser.setlidaropt(ydlidar.LidarPropMaxRange, 8.0);
laser.setlidaropt(ydlidar.LidarPropMinRange, 0.10);
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 plot_tof_test.py**



Similar adjustment to other example .py files.

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 plot_ydlidar_test.py**

Similar result

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 test.py**

```
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.7
[YDLIDAR] Lidar successfully connected /dev/ttyUSB0[115200]
[YDLIDAR] Lidar running correctly! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 633 ms
[YDLIDAR] Start to getting intensity flag
[YDLIDAR] Auto set intensity 0
[YDLIDAR] End to getting intensity flag
[YDLIDAR] Create thread 0x8F809120
[YDLIDAR] Successed to start scan mode, Elapsed time 1068 ms
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Single Fixed Size: 440
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Successed to check the lidar, Elapsed time 1429 ms
[YDLIDAR] Single Channel Current Sampling Rate: 3.00K
[YDLIDAR] Now lidar is scanning...
Scan received[ 1681684116693239000 ]: 436 ranges is [ 9.286258360506928 ]Hz
angle: -0.3242495656013489  range:  1.7272499799728394
angle: -0.30952340364456177  range:  1.718250036239624
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 tof_test.py**

```
[YDLIDAR] SDK initializing
[YDLIDAR] SDK has been initialized
[YDLIDAR] SDK Version: 1.1.7
[YDLIDAR] Lidar successfully connected /dev/ttyUSB0[115200]
[YDLIDAR] Lidar running correctly! The health status: good
[YDLIDAR] Lidar init success, Elapsed time 633 ms
[YDLIDAR] Start to getting intensity flag
[YDLIDAR] Auto set intensity 0
[YDLIDAR] End to getting intensity flag
[YDLIDAR] Create thread 0x8F829120
[YDLIDAR] Successed to start scan mode, Elapsed time 1075 ms
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Fixed Size: 720
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Single Fixed Size: 440
[YDLIDAR] Sample Rate: 3.00K
[YDLIDAR] Successed to check the lidar, Elapsed time 1367 ms
[YDLIDAR] Single Channel Current Sampling Rate: 3.00K
[YDLIDAR] Now lidar is scanning...
Scan received[ 1681684362943172000 ]: 439 ranges is [ 9.220159173059589 ]Hz
Scan received[ 1681684363052911000 ]: 440 ranges is [ 9.182146299748585 ]Hz
Scan received[ 1681684363162937000 ]: 440 ranges is [ 9.185182630280629 ]Hz
Scan received[ 1681684363272926000 ]: 440 ranges is [ 9.184591796081365 ]Hz
```

ubuntu@AUDACITY:~/YDLidar-SDK/python/examples$ **python3 ydlidar_test.py**

Same as above

*Run ydlidar_ros2_driver*
*ros2 launch ydlidar_ros2_driver [launch file].py*
*1. Connect LiDAR uint(s)*
*ros2 launch ydlidar_ros2_driver ydlidar_launch.py*
*or*
*launch $(ros2 pkg prefix ydlidar_ros2_driver)/share/ydlidar_ros2_driver/launch/ydlidar.py*
*2. RVIZ*
*ros2 launch ydlidar_ros2_driver ydlidar_launch_view.py*

ubuntu@AUDACITY:~/ydlidar_ros2_driver$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**

```
[INFO] [launch]: All log files can be found below
/home/ubuntu/.ros/log/2023-04-16-23-03-00-572141-AUDACITY-57451
[INFO] [launch]: Default logging verbosity is set to INFO
[ERROR] [launch]: Caught exception in launch (see debug for traceback): Caught exception when trying
to load file of format [py]: LifecycleNode.__init__() missing 2 required keyword-only arguments:
'name' and 'namespace'
```

Log file gives same info, no help.
This helps:
https://github.com/YDLIDAR/ydlidar_ros2_driver/pull/6
ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **cp ydlidar_launch.py ydlidar_launch_ORIGINAL.py**
ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **nano ydlidar_launch.py**
Remove ‘node_’ prefixes to name, namespace.  Save.
ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**

```
...
[ERROR] [launch]: Caught exception in launch (see debug for traceback): Caught exception when trying
to load file of format [py]: Node.__init__() missing 1 required keyword-only argument: 'executable'
```

ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **nano ydlidar_launch.py**
Remove ‘node_’ prefix to executable.  Save.

```
...
[ERROR] [launch]: Caught exception in launch (see debug for traceback): Caught exception when trying
to load file of format [py]: Action.__init__() got an unexpected keyword argument 'node_name'
```

...
Remove ‘node_’ prefix to name.  Save.

ubuntu@AUDACITY:~/ydlidar_ros2_driver/launch$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**

```
[INFO] [launch]: All log files can be found below
/home/ubuntu/.ros/log/2023-04-16-23-22-08-325223-AUDACITY-57527
[INFO] [launch]: Default logging verbosity is set to INFO
[INFO] [ydlidar_ros2_driver_node-1]: process started with pid [57539]
[INFO] [static_transform_publisher-2]: process started with pid [57541]
[static_transform_publisher-2] [WARN] [1681687329.921006469] []: Old-style arguments are deprecated;
see --help for new-style arguments
[ydlidar_ros2_driver_node-1] [INFO] [1681687329.945558078] [ydlidar_ros2_driver_node]: [YDLIDAR
INFO] Current ROS Driver Version: 1.0.2
[ydlidar_ros2_driver_node-1]
[ydlidar_ros2_driver_node-1] terminate called after throwing an instance of
'rclcpp::exceptions::UninitializedStaticallyTypedParameterException'
[ydlidar_ros2_driver_node-1]   what():  Statically typed parameter 'fixed_resolution' must be
initialized.
[static_transform_publisher-2] [INFO] [1681687330.019983193] [static_tf_pub_laser]: Spinning until
stopped - publishing transform
[static_transform_publisher-2] translation: ('0.000000', '0.000000', '0.020000')
[static_transform_publisher-2] rotation: ('0.000000', '0.000000', '0.000000', '1.000000')
[static_transform_publisher-2] from 'base_link' to 'laser_frame'
[ERROR] [ydlidar_ros2_driver_node-1]: process has died [pid 57539, exit code -6, cmd
'/home/ubuntu/ydlidar_ros2_driver/install/ydlidar_ros2_driver/lib/ydlidar_ros2_driver/ydlidar_ros2_d
river_node --ros-args -r __node:=ydlidar_ros2_driver_node -r __ns:=/ --params-file
/home/ubuntu/ydlidar_ros2_driver/install/ydlidar_ros2_driver/share/ydlidar_ros2_driver/params/ydlida
r.yaml'].
```

...then frozen

**^C**

Let’s look at ydlidar.yaml:

*parameter resolution_fixed: true*

Elsewhere in -.cpp resolution_fixed was changed to fixed_resolution

So, do I reverse the order in .yaml or change to ‘false’?

Let’s try true > false as easiest.

Same error.

Try reversing resolution_fixed to fixed_resolution

ubuntu@AUDACITY:~/ydlidar_ros2_driver/params$ **ros2 launch ydlidar_ros2_driver ydlidar_launch.py**

```
[INFO] [launch]: All log files can be found below
/home/ubuntu/.ros/log/2023-04-16-23-39-14-035154-AUDACITY-57635
[INFO] [launch]: Default logging verbosity is set to INFO
[INFO] [ydlidar_ros2_driver_node-1]: process started with pid [57647]
[INFO] [static_transform_publisher-2]: process started with pid [57649]
[static_transform_publisher-2] [WARN] [1681688354.776210719] []: Old-style arguments are deprecated;
see --help for new-style arguments
[ydlidar_ros2_driver_node-1] [INFO] [1681688354.826144476] [ydlidar_ros2_driver_node]: [YDLIDAR
INFO] Current ROS Driver Version: 1.0.2
[ydlidar_ros2_driver_node-1]
[ydlidar_ros2_driver_node-1] [YDLIDAR] SDK initializing
[ydlidar_ros2_driver_node-1] [YDLIDAR] SDK has been initialized
[ydlidar_ros2_driver_node-1] [YDLIDAR] SDK Version: 1.1.6
[static_transform_publisher-2] [INFO] [1681688354.845115203] [static_tf_pub_laser]: Spinning until
stopped - publishing transform
[static_transform_publisher-2] translation: ('0.000000', '0.000000', '0.020000')
[static_transform_publisher-2] rotation: ('0.000000', '0.000000', '0.000000', '1.000000')
[static_transform_publisher-2] from 'base_link' to 'laser_frame'
[ydlidar_ros2_driver_node-1] [YDLIDAR] Lidar successfully connected
[ydlidar_ros2_driver_node-1] [YDLIDAR] Lidar running correctly! The health status: good
[ydlidar_ros2_driver_node-1] [YDLIDAR] Lidar init success, Elapsed time 636 ms
[ydlidar_ros2_driver_node-1] [YDLIDAR] Start to getting intensity flag
[ydlidar_ros2_driver_node-1] [YDLIDAR] Auto set intensity 0
[ydlidar_ros2_driver_node-1] [YDLIDAR] End to getting intensity flag
```

```
[ydlidar_ros2_driver_node-1] [YDLIDAR] Create thread 0xB26988E0
[ydlidar_ros2_driver_node-1] [YDLIDAR] Successed to start scan mode, Elapsed time 1123 ms
[ydlidar_ros2_driver_node-1] [YDLIDAR] Fixed Size: 720
[ydlidar_ros2_driver_node-1] [YDLIDAR] Sample Rate: 3.00K
[ydlidar_ros2_driver_node-1] [YDLIDAR] Fixed Size: 720
[ydlidar_ros2_driver_node-1] [YDLIDAR] Sample Rate: 3.00K
[ydlidar_ros2_driver_node-1] [YDLIDAR] Single Fixed Size: 240
[ydlidar_ros2_driver_node-1] [YDLIDAR] Sample Rate: 3.00K
[ydlidar_ros2_driver_node-1] [YDLIDAR] Successed to check the lidar, Elapsed time 678 ms
[ydlidar_ros2_driver_node-1] [YDLIDAR] Single Channel Current Sampling Rate: 3.00K
[ydlidar_ros2_driver_node-1] [YDLIDAR] Now lidar is scanning...
Yes!
^C
[WARNING] [launch]: user interrupted with ctrl-c (SIGINT)
[static_transform_publisher-2] [INFO] [1681688483.150253247] [rclcpp]: signal_handler(signum=2)
[INFO] [static_transform_publisher-2]: process has finished cleanly [pid 57649]
[ydlidar_ros2_driver_node-1] [INFO] [1681688483.150940053] [rclcpp]: signal_handler(signum=2)
[ydlidar_ros2_driver_node-1] [INFO] [1681688483.205674244] [ydlidar_ros2_driver_node]: [YDLIDAR
INFO] Now YDLIDAR is stopping .......
[ydlidar_ros2_driver_node-1] [YDLIDAR] Thread 0xB26988E0 has been canceled
[ydlidar_ros2_driver_node-1] [YDLIDAR] Now lidar scanning has stopped!
[INFO] [ydlidar_ros2_driver_node-1]: process has finished cleanly [pid 57647]
```