# SynexensROS2 User Manual v4.3.0

| Revised historical versions | | | | | |
|---|---|---|---|---|---|
| Date | ROS version | SDK version | Documentation version | Description | Author |
| 20221211 4 | v4.0.1 | v4.0.3. 0 | v4.0.1 | Initial version | YSY |
| 20230907 | v4.1.0 | v4.1.0. 0 | v4.1.0 | Update SDK | YSY |
| 20240229 | v4.1.3 | v4.1.3. 0 | v4.1.3 | Update Documentation | YSY |
| 20250427 | v4.3.0 | v4.2.4. 0 | v4.3.0 | Add Yaml configuration | YSY |

## Contents

# 1. Foreword

This ROS is developed based on SDK4.+ please read the SDK instructions in advance before use. This program only implements some functions. Please use it according to your actual needs.

# 2. Overview

Supported devices: cs20 Single band cs20 Dual band cs30 Single band cs30 Dual band CS20-P cs40

Supported systems: Ubuntu 20.04_x86, Ubuntu 18.04_x86, Ubuntu 22.04_x86

ROS supported version: Foxy Galactic Humble

# 3. Compile and Run

## 3.1. Compile

### 3.1.1. Package file directory knot

```
synexens_ros2
├── CMakeLists.txt
├── ext
│   └── sdk
│       ├── include
│       ├── lib
│       └── opencv
├── include
│   └── synexens_ros2
│       ├── SYCalibrationTransformData.h
│       ├── SYRosDevice.h
│       ├── SYRosDeviceParmas.h
│       └── SYRosTypes.h
├── launch
│   ├── driver_launch.py
│   └── viewer_launch.py
├── package.xml
```

```
├── rviz
│   └── view.rviz
├── script
│   ├── setup.sh
│   └── synexens-usb.rules
├── src
│   ├── SYCalibrationTransformData.cpp
│   ├── SYRosDevice.cpp
│   ├── SYRosDeviceParams.cpp
│   └── SYRosNode.cpp
```

Core code file: include/synexens_ros2/*.h src/*.cpp Main node functions

Core package file: CMakeLists.txt package.xml ROS package core file

SDK dependencies: ext/sdk synexensSDK4.0 dependency libraries

Rviz visualization file: rviz/view.rviz Rviz configuration

USB Rules: scripts/synexens-usb.rules setup.sh USB permission file

launch file: launch/*.py ROSLaunch boot file

### 3.1.2. Compile with colcon build

1. Extract the compressed package file in a Linux system
2. Copy the synexens_ros2 package to the workspace(custom name)/src folder

3. Execute the compilation command: $cd workspace && colcon build

### 3.1.3. The workspace uses synexens_ros

1. $ cd workspace && . install/setup.bash

2. $ros2 launch synexens_ros2 driver_launch.py or ros2 launch synexens_ros2 view_launch.py

### 3.1.4. Summary of compilation run issues

1. Reminder of missing library files during compilation: Note that files must be decompressed under Linux

2. When running, it prompts that the camera cannot open and there is no permission: You need to run the script script/setup.sh

### 3.1.5. Nodes provide topics

Because multiple devices can be connected to configure whether a topic is displayed or not, topic communication is not fixed.

xxx/depth_raw (' sensor_msgs::Image ') depth image data

xxx/depth_info (' sensor_msgs::CameraInfo ') depth camera information

xxx/ir_raw (' sensor_msgs::Image ') IR image data

xxx/ir_info (' sensor_msgs::CameraInfo ') IR camera information

xxx/rgb_raw (' sensor_msgs::Image ') RGB image data

xxx/points2 (' sensor_msgs::PointCloud2 ') point cloud image data

### 3.1.6. Server parameters function at startup

Parameters such as camera filtering have now been replaced with Yaml configuration. For Yaml configuration details, see the SDK documentation. The Launch file currently only provides some basic configurations.

## 3.2 SDK Replacement (e.g., need to run to arm platform)

Different platforms rely on different SDKS. If we need to run to another platform (for example, armv8), we need to find the corresponding platform version of the SDK, manually copy it to the ext/sdk directory, and replace the library files and header files.

### 3.2.1. Steps for replacing the armv8 platform

1 Find the corresponding platform version of the SDK and make sure it works properly

2 Replace ext/sdk/include/*.h

3 Replace ext/sdk/lib/*.so

4. Replace ext/sdk/opencv/*.so

5. devel/lib/*.so needs to be replaced at runtime

Note: The SDK for Linux systems is best packaged using tar, and decompression should be done within Linux. To ensure executable permissions and soft links for library files.

# 4. Notes

## 4.1. PointCloud size issues

Due to the display issue of the rviz GUI tool, the actual point cloud data is 1000 times larger than the data in ROS. The point relationship between the point cloud saved through the GUI coincides with that of the ROS point cloud, with a difference of 1000 times in size.

# Disclaimer

The device application information and other similar content described in this publication is provided for your convenience only and may be replaced by updated information. It is your own responsibility to

ensure that the application complies with the technical specifications. The Company makes no express or implied, written or oral, statutory or otherwise representations or warranties regarding this information, including but not limited to representations or warranties regarding its use, quality, performance, merchantability or fitness for a particular purpose. The Company shall not be liable for any consequences arising out of or in connection with the information and the use of such information. The product may not be used as a critical component of life support systems without the written approval of the Company.