



Operating the Mojave Sensor with a ROS

1.0 ROS Camera Driver

1.1 What is ROS?

The Robot Operating System (ROS) is a set of software libraries and tools that help you build robot applications. From drivers to state-of-the-art algorithms, and with powerful developer tools, ROS has what you need for a robotics project. It is all open source (Source: ROS.org). For more details, also refer to ROS.org and ROS Wiki sensors.

1.2 Building the ROS Driver

System requirement: Linux operating system.

Clone from the following repository and follow build instructions:

https://github.com/preact-tech/tofcore_ros

Change to the home directory and open the bash-file:

```
> cd ~  
> gedit .bashrc
```

Insert the following line at the end of the bash-file:

```
source <path to ROS project>/install/setup.bash
```

Save the file and exit editor.

Log-out and again log-in Linux or execute command:

```
> source <path to ROS project>/install/setup.bash
```

1.3 Running the ROS Driver with Launch File

Start the ROS with GUI in terminal mode with the following command:

```
ros2 launch truesense tofcore.launch.py
```

The ROS tool opens with the different node windows and is ready to use.



2.0 ROS API

This is the official driver for the ESPROS TOFcam-660. The annotation follows the rules of ROS.org.

2.1 Start of the Node

If you use in terminal mode the APIs only, without GUI:

Start the tof sensor in a Terminal with the command: *ros2 run truesense tof_sensor*

2.2 Published Topics

Topic Name	ROS msgs file	ROS message type	Function
truesense/points	sensor_msgs	PointCloud2	Point cloud, ambient, amplitude, and distance images
truesense/ambient	sensor_msgs	Image	ambient image
truesense/amplitude	sensor_msgs	Image	amplitude image
truesense/sensor_temperature_tl	sensor_msgs	Temperature	Temperature data from top left temperature sensor
truesense/sensor_temperature_tr	sensor_msgs	Temperature	Temperature data from top right temperature sensor
truesense/sensor_temperature_bl	sensor_msgs	Temperature	Temperature data from bottom left temperature sensor
truesense/sensor_temperature_br	sensor_msgs	Temperature	Temperature data from bottom right temperature sensor

Table 1: PreAct Mojave ROS topics



2.3 Dynamically Reconfigurable Parameters

Refer for details on the dynamically reconfigurable parameters to the enclosed “dynamic_reconfigure package” or to http://wiki.ros.org/dynamic_reconfigure.

/truesense/tof sensor rear	
api_version	5dad3555
binning	<input type="checkbox"/>
capture_mode	distance_amplitude
chip_id	79364308
desired_location	rear
distance_offset	0
flip_horizontal	<input checked="" type="checkbox"/>
flip_vertical	<input checked="" type="checkbox"/>
integration_time	4000
minimum_amplitude	0
model_name	MOJAVE
modulation_frequency	11215
qos_overrides./parameter_events.publisher.depth	1000
qos_overrides./parameter_events.publisher.durability	volatile
qos_overrides./parameter_events.publisher.history	keep_last
qos_overrides./parameter_events.publisher.reliability	reliable
sensor_location	rear
sensor_name	Sahara
sensor_uri	10.10.31.181
streaming	<input checked="" type="checkbox"/>
sw_version	2.0.1423.5dad3555
use_sim_time	<input type="checkbox"/>

Figure 1



Parameter	Function	Data Type	Default
binning	Enable/Disable binning	bool	false
capture mode	Method of capture. Choices: <ul style="list-style-type: none">- distance- dcs- dcs_ambient- distance_amplitude	string	distance_amplitude
desired_location	Location used for device discovery	string	N/A
distance_offset	Distance offset to apply to data	int	0
flip_horizontal	Enable/Disable horizontal flip	bool	false
flip_vertical	Enable/Disable vertical flip	bool	false
integration_time	Length in ms of integration time	int	4000
minimum_amplitude	Minimum amplitude for thresholding (currently not used)	int	0
modulation_frequency	Modulation frequency to drive sensor at in kHz	int	12000
sensor_location	Location of sensor, used for coordinating multiple sensors	string	Unknown
sensor_name	Name of sensor	string	Mojave
sensor_uri	Connection to use for sensor	string	/dev/ttyACM0
streaming	Enable/Disable streaming	bool	true

Table 2

2.4 Read-Only Parameters

Refer for details on the dynamically reconfigurable parameters to the enclosed “dynamic_reconfigure package” or to http://wiki.ros.org/dynamic_reconfigure.

Parameter	Function	Data Type	Default
api_version	version of client library API	string	N/A
chip_id	ID of sensor chip	string	N/A
model_name	Name of sensor model	string	Mojave
sw_version	Version of firmware on sensor	string	Unknown

Table 3