

INTRODUCTION

RPLIDAR A1 is a low cost 360 degree 2D laser scanner (LIDAR) solution developed by [SLAMTEC](#). The system can perform 360 degree scan within 12-meter range (6-meter range of A1M8-R4 and the belowing models). The produced 2D point cloud data can be used in mapping, localization and object/environment modeling.

RPLIDAR A1's scanning frequency reached 5.5 hz when sampling 1450 points each round. And it can be configured up to 10 hz maximum. RPLIDAR A1 is basically a laser triangulation measurement system. It can work excellent in all kinds of indoor environment and outdoor environment without direct sunlight exposure.

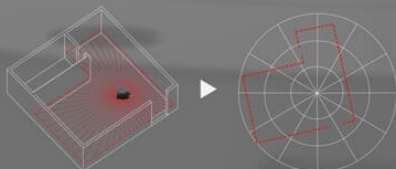
RPLIDAR A1

360° Laser Range Scanner



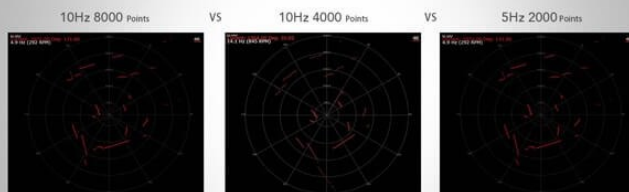
12 meters Range 360 Degree Omnidirectional 8000 points per line samples 5.5Hz OPTIMAG Technology

RPLIDAR A1 is based on laser triangulation ranging principle and uses high-speed vision acquisition and processing hardware developed by Slamtec. The system measures distance data in more than 8000 times per second.



The sample rate of LIDAR directly decides whether the robot can map quickly and accurately. RPLIDAR A1 improves the internal optical design and algorithm system to make the sample rate up to 8000 times, which is the highest in the current economical LIDAR industry.

Comparison under different condition



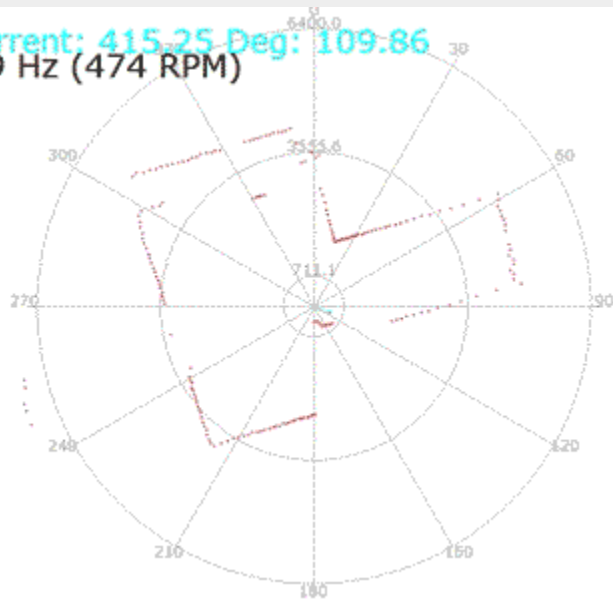
360 Degree Omnidirectional Laser Range Scanning

The core of RPLIDAR A1 runs clockwise to perform a 360 degree omnidirectional laser range scanning for its surrounding environment and then generate an outline map for the environment.





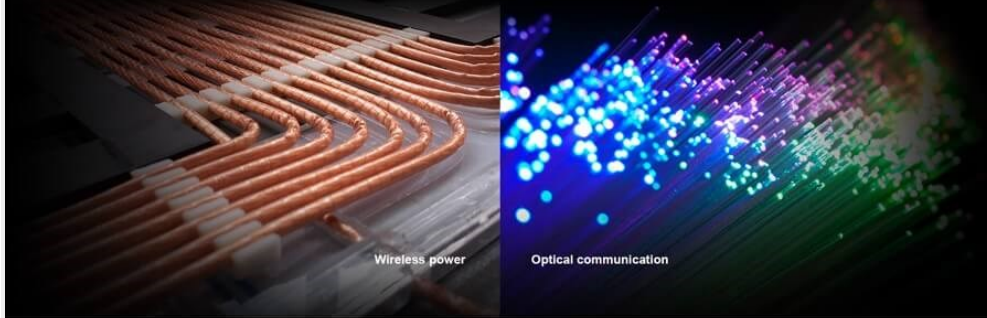
Current: 415.25 Deg: 109.86
7.9 Hz (474 RPM)



FEATURES

OPTMAG Original Design

Most traditional non-solid LIDARs use slip ring to transfer power and data information, however, they only have thousands of hours of life due to mechanical wearing out. Slamtec has integrated the wireless power and optical communication technology to self-design the OPTMAG technology, which breakouts the life limitation of traditional LIDAR system. It fixes the electrical connection failure caused by the physical wearing out so as to prolong the life-span.



Configurable Scan Rate from 2-10Hz

Users can adjust the scan rate by clicking the PWM signal button



Ideal for Robot Navigation and Localization

RPLIDAR is the designed sensor for applying SLAM algorithm



With the scan rate set as 5.5Hz and the resolution is 0.2% percent of the actual distance

Plug and Play

Just connecting the RPLIDAR and a computer via a micro USB cable, users can use the RPLIDAR without any coding job



Build in serial port and USB interface

Open source SDK and tools

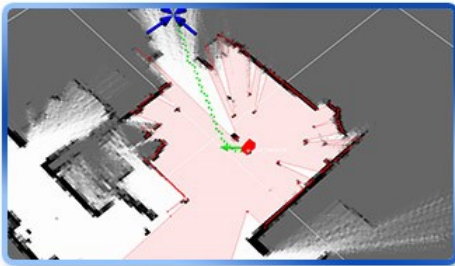
Integration with ROS



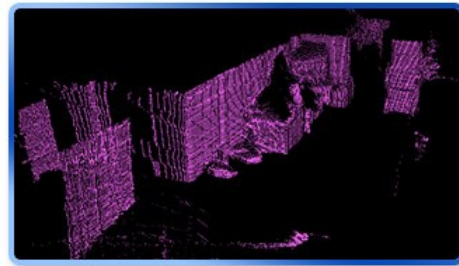
APPLICATIONS

- Home service /cleaning robot navigation and localization
- General robot navigation and localization
- Smart toy's localization and obstacle avoidance
- Environment scanning and 3D re-modeling
- General simultaneous localization and mapping (SLAM)

Applications



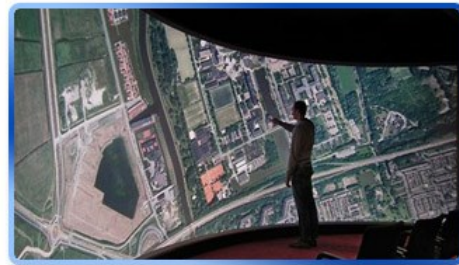
Robot Localization & Mapping
(SLAM)



3D Modeling



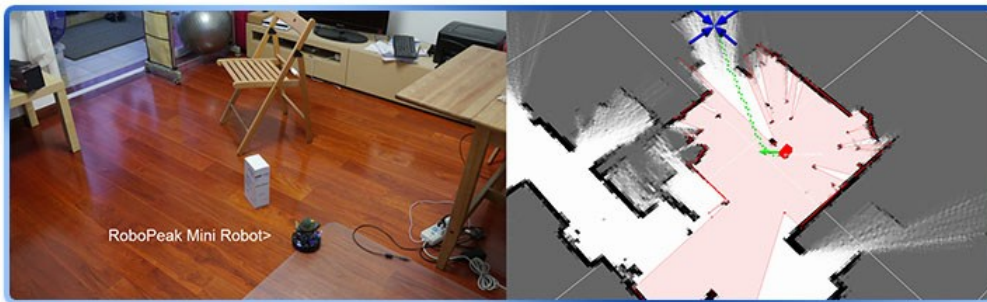
Obstacle Avoidance
Safety & Security



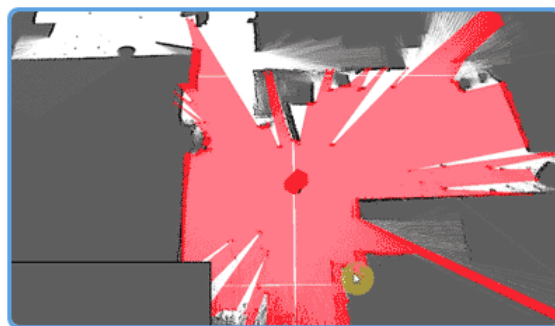
Multitouch & Human Interaction

Best Sensor for Robots

Obstacle Avoidance, Mapping, Localization, Navigation



RoboPeak Mini Robot generates the environment map and find its way to the destination using an RPLIDAR



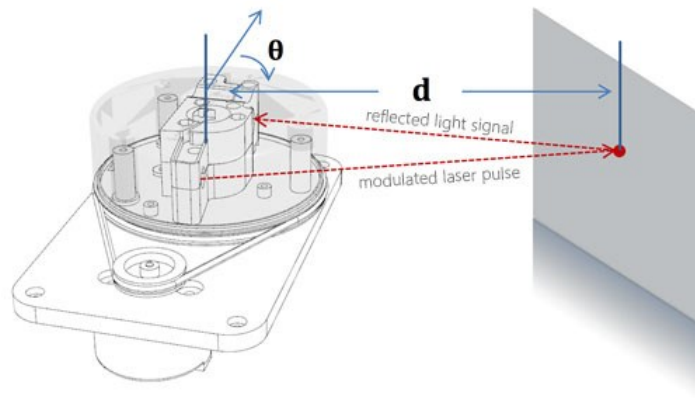
Realtime ICP-SLAM based on RPLIDAR

Mechanism

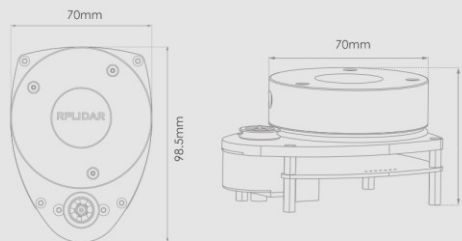
2000 fps

High Speed Laser Triangulation Vision System Designed by RoboPeak

RPLIDAR emits modulated infrared laser signal and the laser signal is then reflected by the object to be detected. The returning signal is sampled by vision acquisition system in RPLIDAR and the DSP embedded in RPLIDAR start processing the sample data and output distance value and angle value between object and RPLIDAR through communication interface.



Height : 60mm WIDTH : 98.5mm Weight : 170g



SPECIFICATION

Note: It has been newest Model: A1M8 ——2018/5/15

