청소로봇용 LDROBOT社 LD06 2D LiDAR (d-ToF) BM

광학솔루션 플랫폼개발3팀

22.01.27

LG이노텍

LDROBOT I 제품 Line-up

대외비 2급

중국 모듈업체인 LDROBOT 홈페이지
→ Ultrasonic, d-ToF 등의 Line-up 보유

LD22 Ultrasonic Sensor

Further exploration >

DTOF LiDAR LD06

Further exploration >

DTOF LiDAR LD19

Further exploration >

Triangulation LiDAR LD08

Further exploration >

Triangulation LiDAR LD14

Further exploration >

Solid state LiDAR

Further exploration >

visionICs 업체 0D Single SPAD 사용

WI-XP-002

visionICs

Datasheet - VI4300

ToF Range-finder

Features

- Optical properties
  - Active area: 264 μ m × 264 μ m
  - SPAD PDE: 8% @ 905 nm
- Distance measurement
  - Range: 0.05 m ~ 12 m
  - Range resolution: 1.5 cm
  - Measurement accuracy: ±1%
- On-chip calibration
  - Background light compensation
  - System-level calibration for non-linear signal distortions
- Digital interface
  - Configuration: I²C, up to 400 kHz
  - ToF output: SPI, up to 37.5 MHz
- Optimized optical package
  - PLCC / OPLGA / QFN / OCQFN / LGA
  - 4.5 mm × 4.5 mm × (0.9 ~ 1.5) mm
- Operating temperature: -20 °C to 65 °C

Applications

- SLAM for robotic vacuum
- Location and proximity sensing
- Altimeter and collisions avoidance for UAV
- Optical sensor for LiDAR

General description

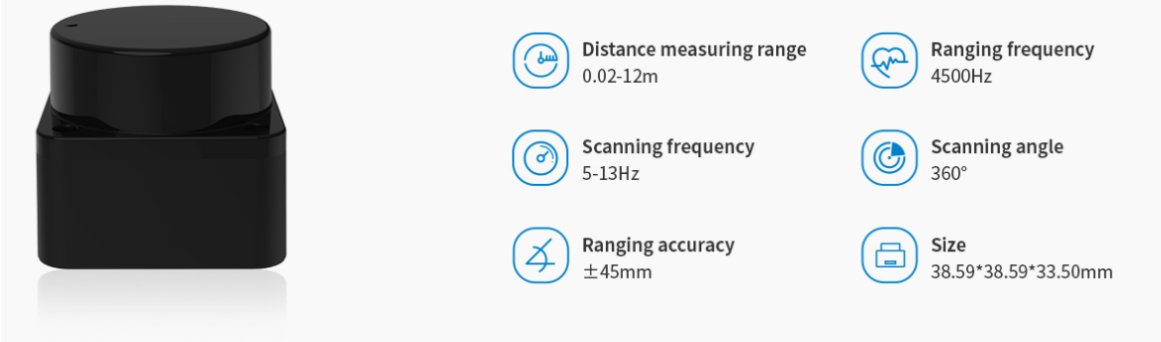
The VI4300 is a time-of-flight laser ranging SoC. This sensor provides a compact solution for the miniature ToF sensing applications. With the self-developed SPAD (single-photon avalanche diode) and unique ToF acquisition and processing technology, the VI4300 can achieve an accurate distance measurement up to 12 meters. The measurement data and system configuration are transferred via SPI and I²C interfaces.

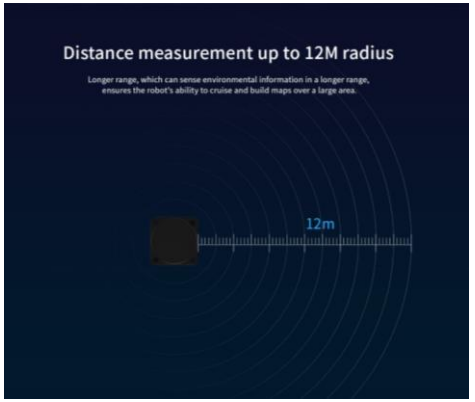
The sensor module consists of an optional integrated laser source (Class 1), a ToF ranging SoC and customized optics. It enables high ambient light suppression and can be used for distance measurement in the outdoor sunlight environment.

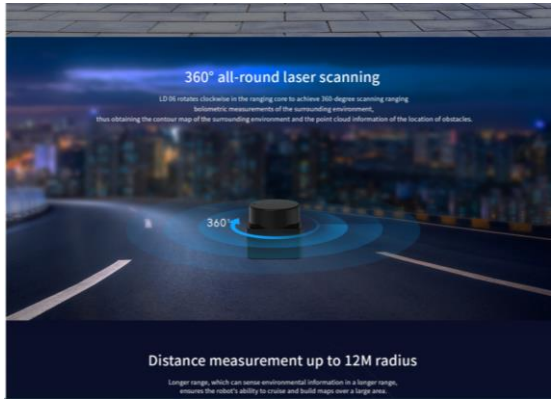
LD06 TOF Coaxial radar is a laser radar device developed by Shenzhen LDRobot Co., Ltd. This LiDAR can realize 360° laser ranging scan, measuring visual point cloud information, which can be widely used in map construction (SLAM), robot positioning and navigation applications, as well as intelligent equipment obstacle avoidance.

SPECIFICATIONS:
Dimensions: 38*38*34.3mm
Detection range: 0.02~12m
Angular resolution: 0.2°~1.0°
The laser wavelength: 905nm
Measurement frequency: 4500Hz
Sweep frequency: 5~13Hz
Protection grade: IPX-4
Measuring Angle: 0°~360°

Application field
Education
Scientific research
Algorithm
Robot obstacle avoidance
Autonomous navigation
Navigation and positioning



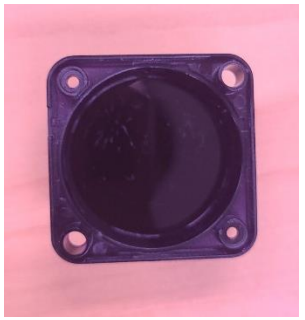
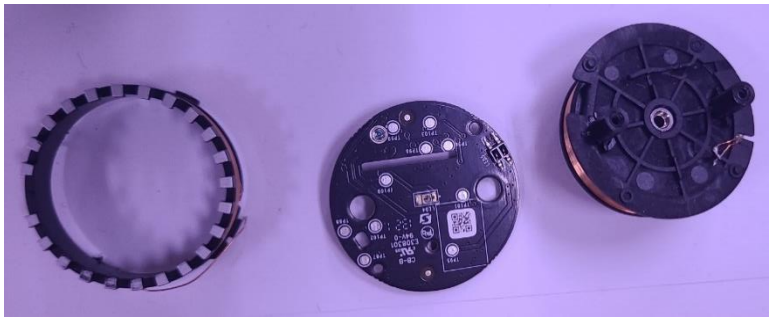
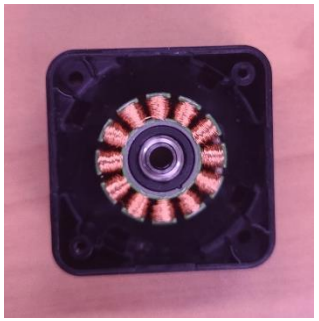




LDROBOT I LD06 분해

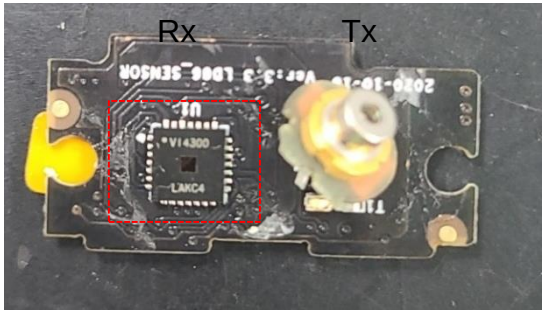
대외비 2급

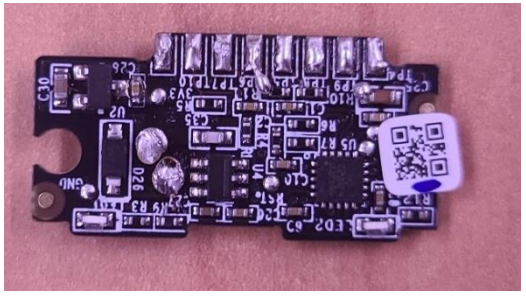
VCM 회전 모터 방식 → 360도 Scan

Tx : EEL (0D) TO-Can 구조
Rx : 중국 Evisionics社 VI4300 (0D) SPAD

EEL TO-Can





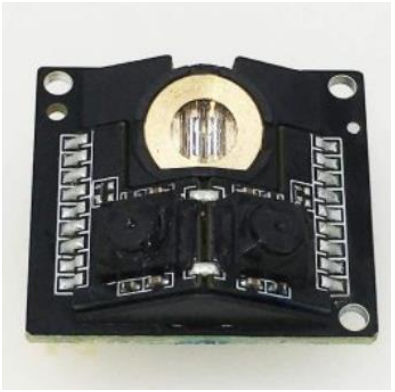


참고. LDROBOT I LD07 Solid-state Spec.

테이블 2급

Dimensions: 19.7*24*15.3mm
Detection range：2cm~30cm
Angular resolution: 0.5°
The standard deviation: 1mm
Measurement frequency: 30Hz
Hardware interface: UART
Accuracy of measurement: 1%
Obstacle avoidance horizontal field angle: 90°

LD07 line structured light radar is a solid-state lidar is developed by Shenzhen LDROBOT Co., Ltd.
This LiDAR can scan and measure visual point-cloud signal in 90 degree of laser scanning , be widely applied in map construction (SLAM), robot positioning and navigation device.
For robots device, LD07 has shown an excellent 3D obstacle avoidance and 3D edge-along ability, the angular resolution of LD07 LIdar can reach 0.5 degree at minimum, and recognize objects as small as 5mm in width; In terms of 3D edge along performance, LD07 covers 90 degree of viewing angle and can walk precisely along obstacles with height of 5mm at minimum. LD07 has greatly improved customer experience in minor obstacles recognition and avoidance ,as well as edge-along performance.

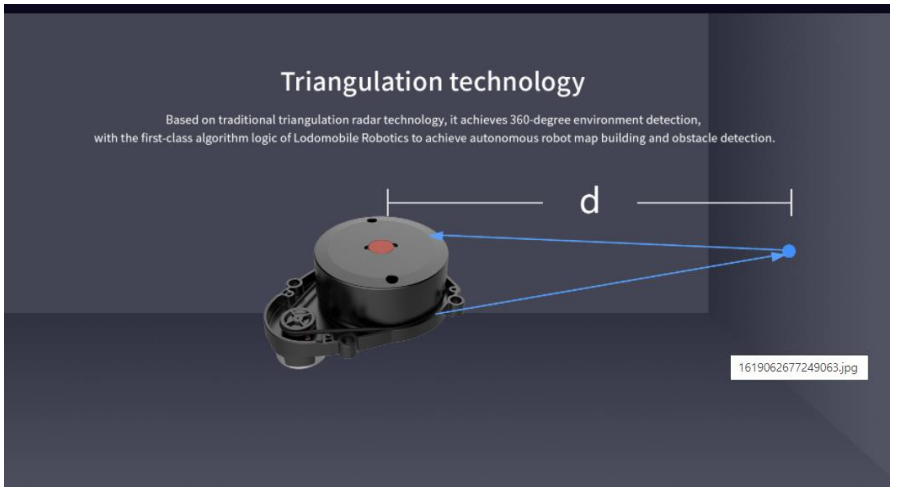


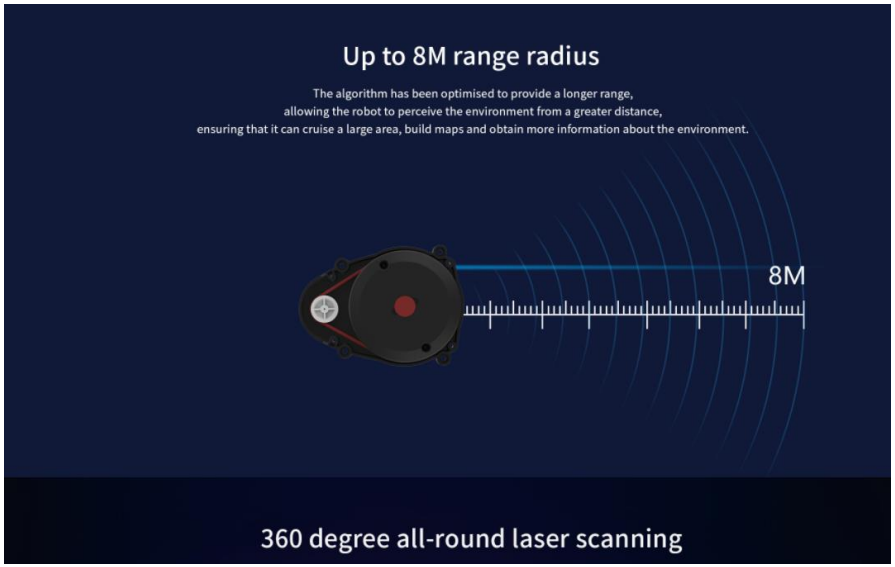
참고. LDROBOT I LD08 Triangulation Spec.

대장연구

Triangulation LiDAR LD08

- Distance measuring range: 0.16-8m
- Ranging frequency: 2300Hz
- Scanning frequency: 2-10Hz
- Scanning angle: 360°
- Ranging accuracy: 1°
- Size: 90*70*42mm





참고. LDROBOT I LD19 dToF Spec.

대외비 2급

DTOF LiDAR LD19

- Distance measuring range: 0.03-12m
- Ranging frequency: 4500Hz
- Scanning frequency: 5-13Hz
- Scanning angle: 360°
- Ranging accuracy: ±45mm
- Size: 38.59*38.59*34.8mm