

PRODUCT SPECIFICATION

P60 360° LiDAR

96-Line Hybrid Solid-State LiDAR

Compact 3D perception platform based on VCSEL + SPAD direct Time of Flight technology for robotics, industrial automation, autonomous machines, and mobile mapping.

360° × 60°

Horizontal × vertical FOV

960k

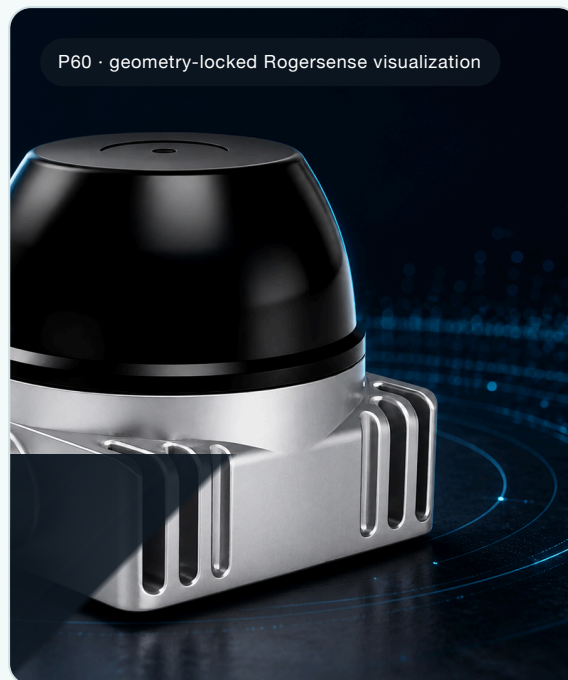
Points per second

50 m @ 10%

Low-reflectivity ranging

0.1 m

Minimum range / blind zone



Document	English Product Specification
Product	P60 360° Hybrid Solid-State LiDAR
Revision	Preview 1.1 · hardware + software edition
Release date	18 August 2026
Document status	Customer download edition

This document reorganizes the supplied P60 product information into the Rogersense product-specification format. Specifications are preliminary and should be confirmed against the final hardware configuration, production test data, interface definition, and order-specific documentation before design freeze or volume purchase.

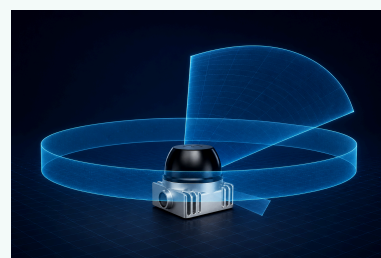
● HARDWARE · PRODUCT SNAPSHOT

Compact full-surround 3D perception

P60 is a compact 360-degree scanning 3D LiDAR built on a VCSEL emitter and SPAD receiver direct Time of Flight platform. Its integrated optical and electronic module is designed for mapping, localization, target recognition, and active obstacle avoidance in complex environments.

With a 96-line architecture, up to 960,000 points per second, dual-return support, and a short 0.1 m blind zone, P60 is positioned for robots and autonomous platforms that need dense near-field coverage without giving up longer-range awareness.

Wide 9-32 VDC input, 100BASE-T Ethernet output, PPS + GPRMC synchronization, integrated IMU support, IP67 protection, and a -40°C to +60°C operating range simplify deployment across indoor and outdoor machines.

**360°**Horizontal
coverage**60°**

Vertical coverage

**Full-surround coverage**

360° horizontal perception supports all-around awareness with fewer coverage gaps around a mobile platform.

**High-density output**

Up to 960k points/s provides a dense point cloud for mapping, localization, recognition, and avoidance pipelines.

**Short blind zone**

0.1 m minimum range supports close-proximity sensing around compact robots, machinery, and enclosed workspaces.

**Long-range perception**

50 m at 10% reflectivity with a listed maximum measurement range of 150 m under favorable target conditions.

**Harsh-environment ready**

IP67 protection and a -40°C to +60°C operating window support demanding industrial and outdoor deployments.

**Multi-sensor integration**

PPS + GPRMC timing, IMU support, dual-return output, and Ethernet simplify host and sensor-fusion integration.

150 m

Maximum range

3 cm

Accuracy, 1σ

7 W

Power consumption

< 260 g

Product weight

● HARDWARE · TECHNICAL DATA

Technical specifications

Values below are consolidated from the detailed P60 user manual.
Confirm final firmware and interface documentation before integration.

Sensing & scanning	
Technology platform	VCSEL + SPAD dTOF
Scan lines	96 lines
Field of view	360° (H) × 60° (V)
Angular resolution	0.36° × 0.625° @ 10 Hz
Low-reflectivity ranging	50 m @ 10% reflectivity
Maximum range	150 m
Blind zone / minimum range	0.1 m (10 cm)
Accuracy (1 σ)	3 cm, tested at 30 m on a 50% reflectivity target
Point rate	960,000 points/s
Frame rate	10 Hz
Returns	Dual return supported
Interference resistance	Supported
Laser eye safety	Class 1

System & interface	
Time synchronization	PPS + GPRMC
IMU	Supported
Communication	100BASE-T Ethernet
Supply voltage	DC 9-32 V
Power consumption	7 W

Mechanical & environmental	
Dimensions	65 mm (L) × 65 mm (W) × 61.5 mm (H)
Weight	< 260 g
Operating temperature	-40°C to +60°C
Storage temperature	-40°C to +85°C
Ingress protection	IP67

Range interpretation

“50 m @ 10%” is the supplied low-reflectivity target reference.
“150 m maximum” is a separate upper range value and should not be interpreted as guaranteed performance on a 10% reflector.

Configuration control

This edition is controlled as the 96-line P60. Confirm output format, connector/cable definition, return mode, firmware, and supported software package on the purchase specification.

Typical-value notice

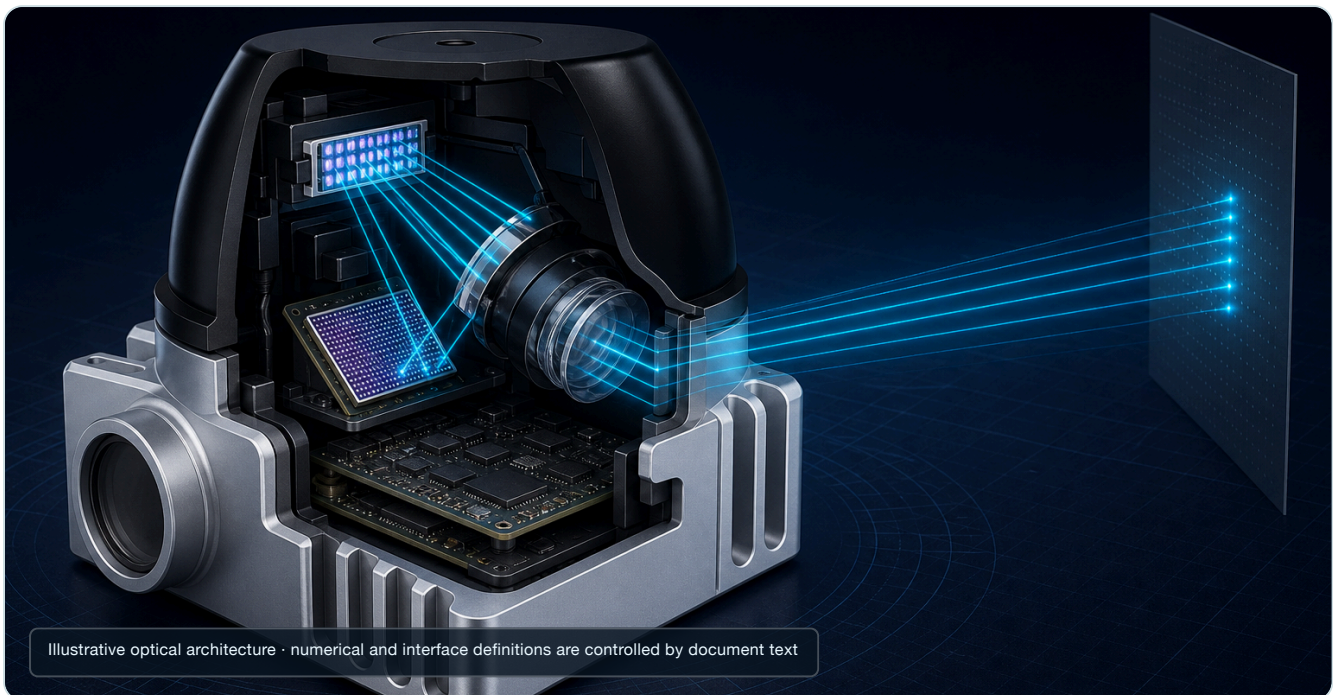
Performance may vary with target reflectivity, ambient light, weather, temperature, mounting, optical-window cleanliness, configuration, and product revision.

System-level validation

Final machine safety, obstacle-detection performance, functional behavior, and regulatory compliance remain the responsibility of the system integrator.

● HARDWARE · ARCHITECTURE

Integrated VCSEL + SPAD direct Time of Flight



External cable breakout

P60 sensor

→ Combined data, power, and synchronization harness

100BASE-T

→ Ethernet point-cloud stream to host

DC5521

→ Regulated DC 9–32 V power input

PPS + GPRMC

→ External time synchronization

Design-in priorities

- Keep the full 360° horizontal and -10° to +50° vertical field unobstructed.
- Allow connector clearance, cable bend radius, strain relief, drainage, and service access.
- Use a stable reference plane and record the final sensor-to-platform extrinsic transform.
- Validate vibration, shock, sealing, thermal path, EMC, and power transients on the final machine.

65 × 65 × 61.5

mm, cable excluded

9–32 VDC

Input range

7 W

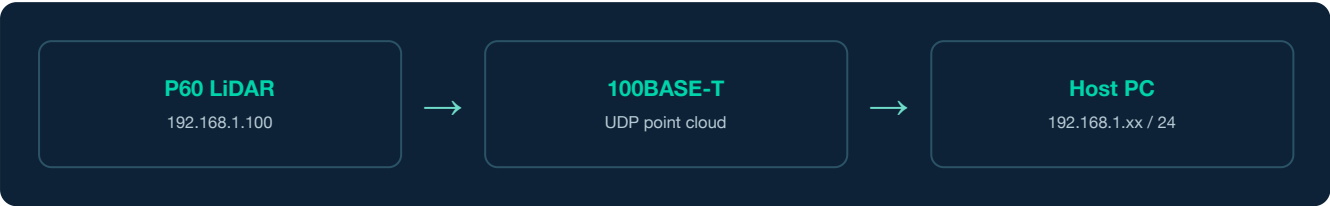
Power

PPS + GPRMC

Synchronization

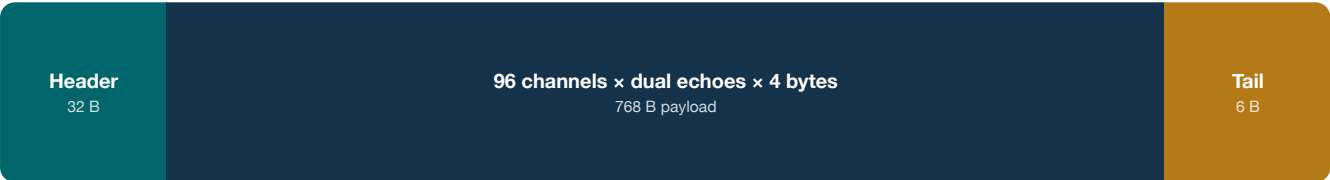
● HARDWARE · DATA & OPERATION

Network setup, packet structure, and field care



Default target address: broadcast 192.168.1.255. Assign the host another address in the 192.168.1.x subnet; do not use .100. Start connectivity checks with **ping 192.168.1.100**.

806-byte UDP packet



Frame / header		Per echo / tail	
Magic / footer	0xC055 / 0xC0FE	Distance	2 bytes; 5 mm resolution
Angles	Azimuth and elevation at 0.01° resolution	Intensity	1 byte; 0–255
Timestamp	Calendar time + microseconds	Confidence	1 byte; 0–255
Sequence	Starts at 0 for each full point-cloud frame	Integrity	4-byte CRC + 2-byte footer

Clean

- Power off first.
- Use lint-free materials and distilled water, neutral cleaner, or 99% ethanol.
- Soften mud before wiping.

Protect

- Do not scratch the optical window.
- Keep connector contacts clean and dry.
- Do not drop or disassemble.

Troubleshoot

- Verify power, link, IP, subnet, ping, and packet loss.
- Use the correct correction file.
- Inspect for contamination or damage.

● SOFTWARE · YILIPHOTONVIEW

Real-time visualization and engineering inspection

YiliphotonView provides live network visualization and offline analysis of P60 point clouds, including PCAP capture, playback, point inspection, viewpoint control, and engineering-data export.



Live stream

Visualize timestamped 3D echoes from the P60 Ethernet stream.

PCAP capture

Record raw network traffic for repeatable offline analysis.

Playback

Open captures, play, pause, seek, step, and change speed.

Point inspection

Select points and inspect angle, distance, intensity, and XYZ.

View control

Rotate, pan, zoom, crop by range, and adjust point size.

Export

Save or convert engineering data to PCAP, CSV, or PCD.

● SOFTWARE · WORKFLOW

Connect, visualize, record, inspect, and export

1

Configure host
Set 192.168.1.x / 255.255.255.0; reserve .100 for P60.

2

Select profile
Choose the P60-Correction configuration.

3

View live data
Check range, intensity, timestamp, and viewpoints.

4

Record / replay
Write PCAP; reopen through Capture File.

5

Export
Save engineering data as PCAP, CSV, or PCD.

Playback and display controls

Play, pause, seek, step to the previous/next frame, change playback speed, adjust point size, crop by distance, switch standard 3D viewpoints, or manipulate the scene with the mouse.

Timeline

Frame step

Speed

Point size

Distance crop

3D views

Point-selection spreadsheet

Use Select Points and the Spreadsheet view to inspect a trailing frame or filtered subset. Selected points are highlighted in the 3D view.

Point ID

Channel

Azimuth

Elevation

Distance

Intensity

X / Y / Z

SlotNum

Live-stream checklist	
Link	100-Mbps Ethernet or faster host NIC
Sensor	192.168.1.100 default
Host	192.168.1.x, excluding .100
Profile	P60-Correction

File operations	
Record	PCAP network capture
Playback	Capture File
Table	CSV
Point cloud	PCD

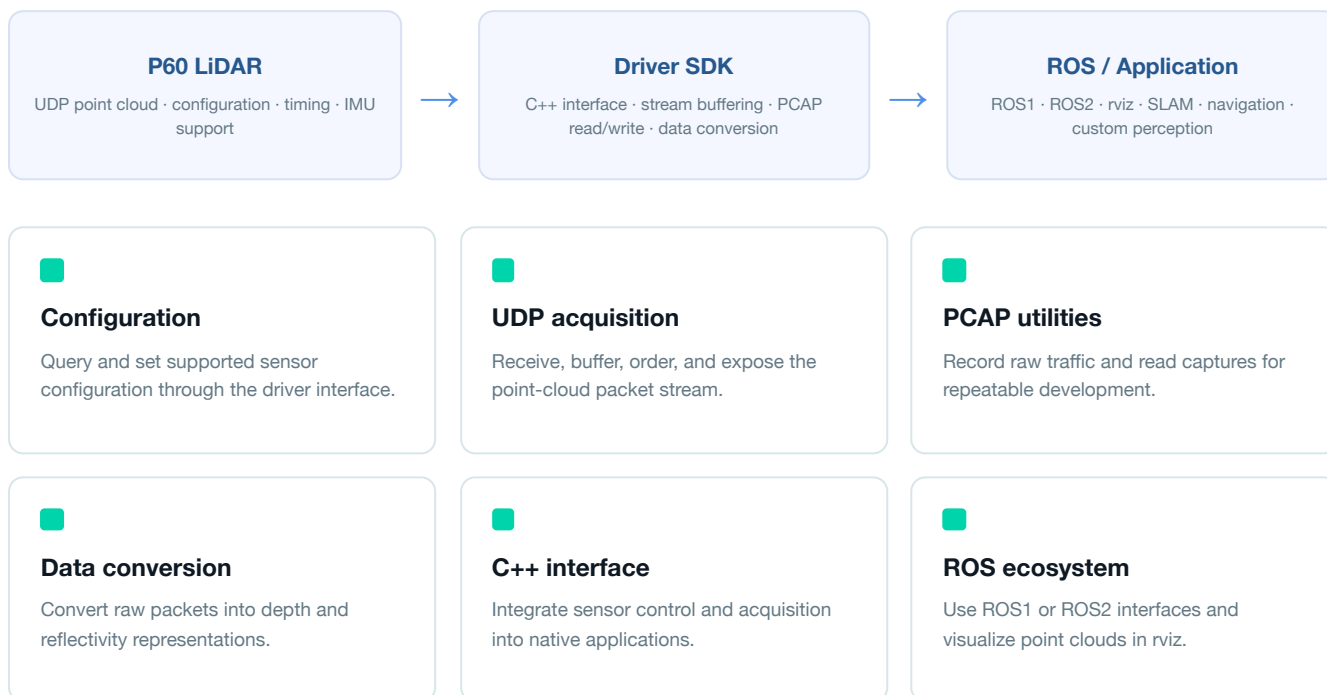
Security-safe setup

Allow YiliphotonView and the required LiDAR UDP traffic through managed endpoint controls. Do not permanently disable the host firewall or antivirus protection.

● SOFTWARE · SECONDARY DEVELOPMENT

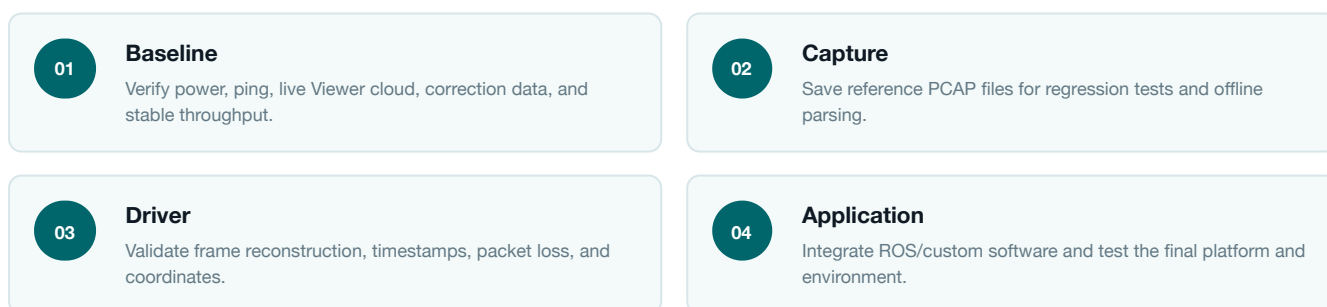
Driver SDK and ROS integration

The software stack separates reliable sensor communication and packet conversion from application-level visualization, mapping, navigation, and perception.



Recommended bring-up sequence

Verify each layer before moving upstream



Version control

Confirm Driver SDK / ROS package, operating-system support, dependencies, sample code, calibration data, firmware, protocol revision, and licensing terms before release.

DEPLOYMENT

Typical applications



Industrial automation

AMR / AGV navigation, warehouse mapping, pallet and aisle perception, people/object detection, and active obstacle avoidance.



Autonomous machines

All-around perception for service vehicles, off-road machinery, autonomous driving research, and outdoor mobile platforms.



UAV survey & mapping

Compact airborne 3D capture for mapping, terrain awareness, inspection, localization, and research payload integration.



Embodied robotics

Dense spatial perception for mobile manipulators, humanoid platforms, service robots, scene understanding, and navigation.

Integration priorities

Recommended checks before prototype design freeze

01

Optical placement

Keep the 360° horizontal and 60° vertical field unobstructed. Validate enclosure, roof, mast, payload, and cable geometry against the intended coverage map.

02

Host & network

Provision 100BASE-T Ethernet and host processing/logging capacity for up to 960,000 points/s. Confirm packet structure and output format before software freeze.

03

Timing & fusion

Use PPS + GPRMC when aligning LiDAR with cameras, GNSS, or other sensors. Confirm timestamp reference, polarity, update rate, and startup behavior.

04

Power & environment

Design a stable 9-32 VDC supply with margin above the listed 7 W load. Validate wiring, connector sealing, thermal path, vibration, and EMC at system level.

Application qualification

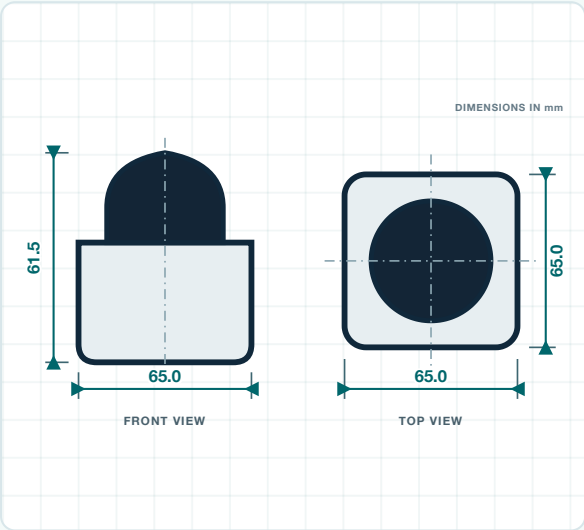
Application examples indicate potential use, not automatic suitability. Detection range, object visibility, point-cloud density, and safety performance must be validated on the intended platform, target set, environment, mounting position, and software stack.

DESIGN-IN GUIDANCE

Selection, mechanical envelope & safety

Mechanical envelope

Nominal overall envelope for packaging evaluation. Dimensions are in millimetres. Not to scale; do not use for bracket manufacture or production tooling.



< 260 g

Weight

IP67

Protection rating

Specification interpretation

50 m @ 10%	Use as the low-reflectivity ranging reference for early detection-budget planning.
150 m max.	Maximum listed range under favorable target and environmental conditions; not a 10% target guarantee.
96 lines	Controlled line count for this P60 edition. Confirm the delivered point-cloud format and firmware version.
Dual return	Confirm return selection and host-pipeline compatibility before finalizing bandwidth and data handling.
PPS + GPRMC	Define synchronization architecture and validate timestamp behavior across the complete sensor stack.

Safety & handling

- The supplied sheet lists Class 1 eye safety. Do not disassemble, modify, or operate the optical system outside approved conditions.
- Do not stare into the optical window at close range. Follow the final product label, installation manual, and applicable laser-safety requirements.
- Power down before connecting, disconnecting, cleaning, or servicing. Use a power source and protection strategy appropriate to the final machine.
- IP67 applies only when the complete installed assembly, including connectors and seals, meets the specified protection conditions.
- Keep the optical window clean and undamaged. Validate approved cleaning materials and procedures with the final hardware supplier.

Document control

Revision	Preview 1.1
Status	HTML review preview
Language	English
Prepared from	P60 product sheet, P60 user manual, and YiliphotonView user guide
Order control	Confirm purchase-specific interface, mechanical, and compliance documents

Need integration support?

Discuss field of view, mounting, synchronization, point-cloud handling, gateway adaptation, or secondary development with Rogersense engineering.

[rogersense.com/contact](https://www.rogersense.com/contact)

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