

P60 / 01 Overview

360° Hybrid Solid-State LiDAR

Brand: ROGERSENSE

Model: P60

Document version: 1.1

Hardware / firmware revision: TBD



Product presentation. Delivered configuration: TBD.

Key functions

Parameter	Value / conditions	Rev.
Technology platform	VCSEL + SPAD dTOF	1.1
Scan lines	96 lines	1.1
Field of view	360° (H) × 60° (V)	1.1

Delivery configuration

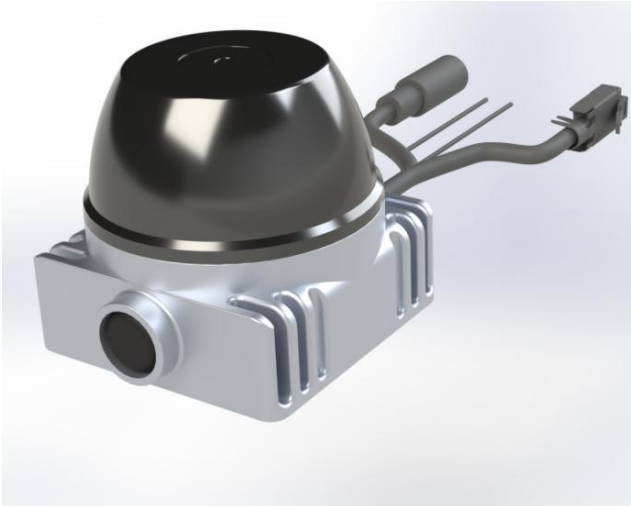
One P60 LiDAR unit; cable / connector accessories are confirmed against the delivered configuration.

Application scope

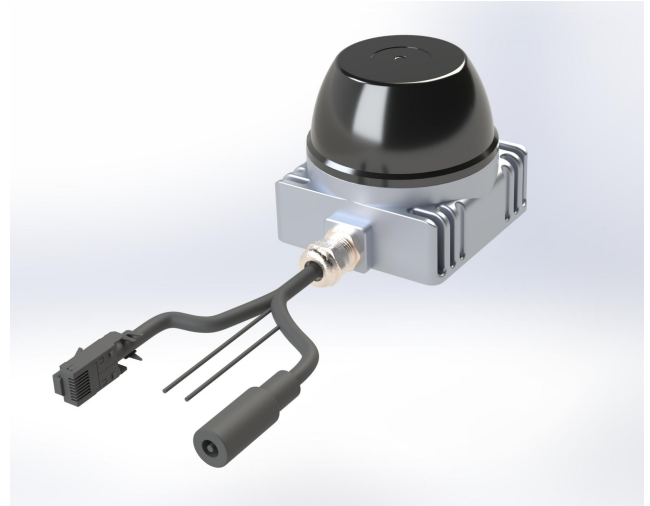
Reference specifications for project evaluation. Final delivery is subject to the agreed hardware, firmware, accessories and acceptance conditions. Presentation imagery does not define manufacturing geometry.

P60 / 01 Overview (continued)

Additional product views



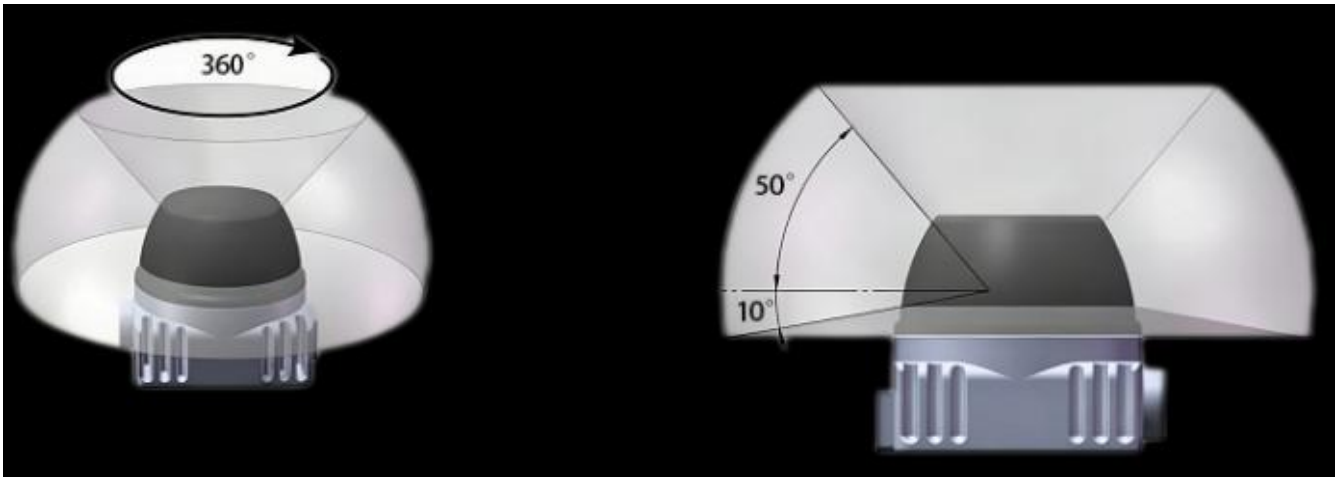
P60 / front three-quarter reference view



P60 / rear and harness reference view

Original front and rear product renderings from the supplied P60 manual. These are reference views; verified photographs of the delivered unit: TBD.

Effective field of view

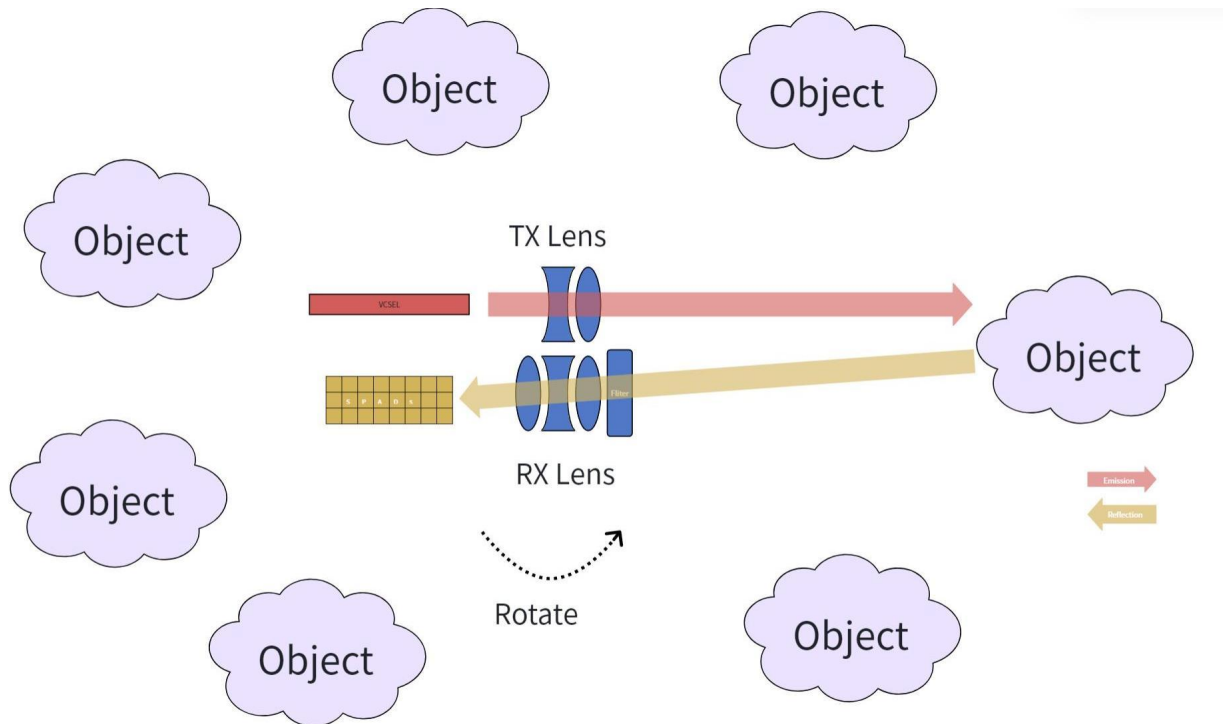


Original FOV diagram: 360 degrees horizontally; vertical extent -10 to +50 degrees. Keep the complete sensing field clear of the platform and enclosure.

P60 / 01 Overview (continued)

Optical path and scanning architecture

P60 uses a VCSEL transmitter and SPAD receiver on a direct time-of-flight platform. The original optical diagram below shows the transmit and receive paths and the rotation used for surrounding perception.



TX path: VCSEL emitter - TX lens - target. RX path: reflected light - filter and RX lens - SPAD detector array. The red arrow represents emission; the yellow arrow represents the return. The rotation arrow illustrates scanning around the sensor.

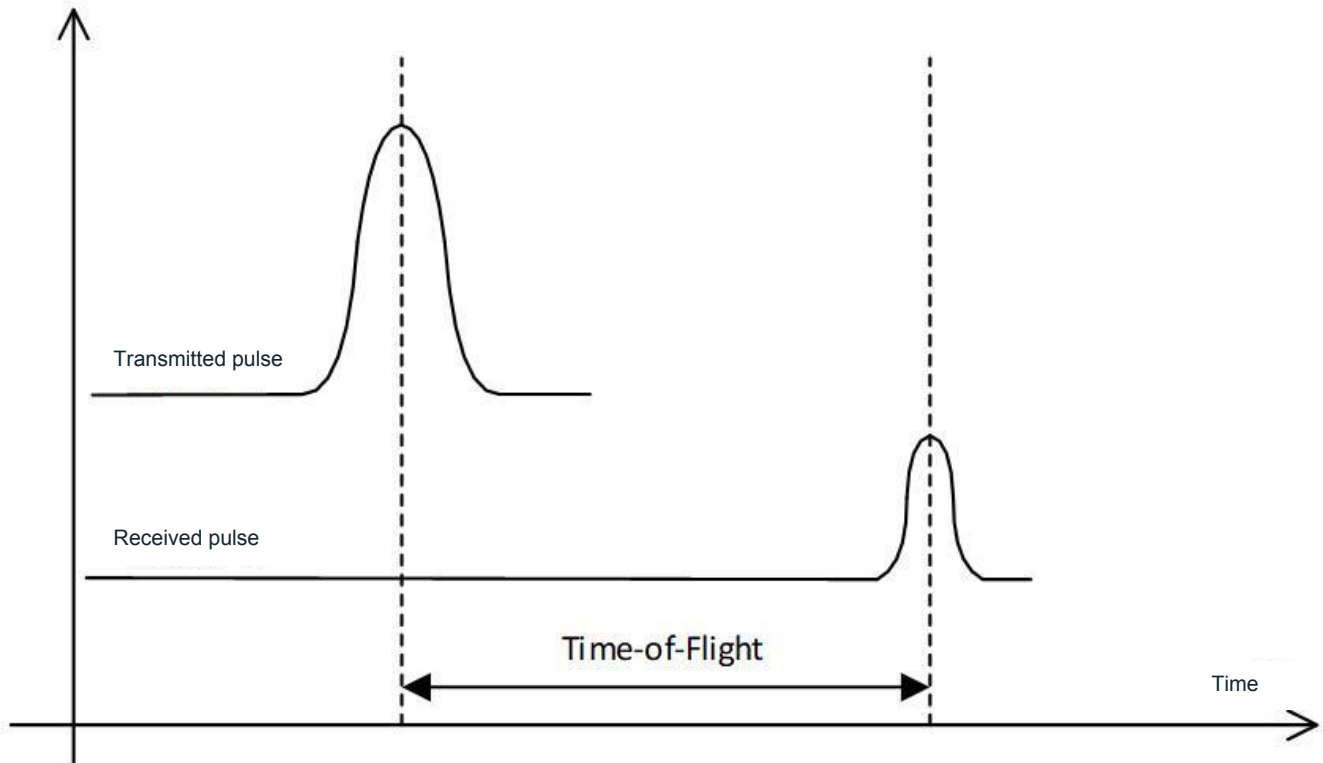
VCSEL: vertical-cavity surface-emitting laser. SPAD: single-photon avalanche diode. TX / RX: transmit / receive. The rated field is 360 degrees horizontally and -10 to +50 degrees vertically.

The original diagram is a functional optical schematic, not a manufacturing drawing. Lens prescriptions, optical spacing and internal alignment tolerances: TBD.

P60 / 01 Overview (continued)

Operating principle / direct time of flight

The transmitter emits an ultrashort laser pulse. The target reflects the pulse and the receiver detects the returning light. P60 measures the time interval between transmission and reception to determine the range.



Range equation: $d = c \times t / 2$

d is the sensor-to-target distance; c is the speed of light; t is the round-trip flight time. Division by two accounts for the outward and return paths.

P60 / 02 Technical data

Documented values and operating conditions. Conflicting or unavailable values are marked TBD.

Parameter	Value / conditions	Rev.
Technology platform	VCSEL + SPAD dTOF	1.1
Scan lines	96 lines	1.1
Field of view	360° (H) × 60° (V)	1.1
Angular resolution	0.36° × 0.625° @ 10 Hz	1.1
Scan pattern	Repetitive scanning Consistent frame-level sampling for moving platforms. Timing and motion compensation remain important.	1.1
Detection range	70-80 m Depends on target reflectivity and environment.	1.1
Instrument range	150 m	1.1
Bright-sunlight range	>35 m at 100 klx Depends on target reflectivity and environment.	1.1
Blind zone / minimum range	0.05 m (5 cm)	1.1
Accuracy	3 cm (1 σ), tested at 30 m on a 50% reflectivity target	1.1
Point rate / frame rate	960,000 points/s / 10 Hz Standard single-return stream; strongest or farthest return selectable.	1.1

P60 / 02 Technical data (continued)

Parameter	Value / conditions	Rev.
Return configuration	Single return; strongest or farthest selectable Simultaneous dual-return output requires customization.	1.1
Time synchronization	PPS + GPRMC	1.1
Communication	100BASE-T Ethernet	1.1
Supply / power	DC 9-32 V / 7 W	1.1
Dimensions / weight	65 × 65 × 61.5 mm / < 260 g	1.1
Operating temperature	-40°C to +60°C	1.1
Ingress protection	IP67	1.1
Laser eye safety	Class 1	1.1
Storage temperature	-40 to +85 deg C	1.1
Source claim boundary	Class 1 and IP67 are published claims; certificate / test report: TBD	1.1
IMU	Supported Existing P60 specification, pages 2-4.	1.1
Interference resistance	Supported Existing P60 specification, pages 2-4.	1.1
Vertical coverage limits	-10 to +50 degrees Existing P60 specification, pages 2-4.	1.1

P60 / 03 Electrical interface

Pin / terminal definitions

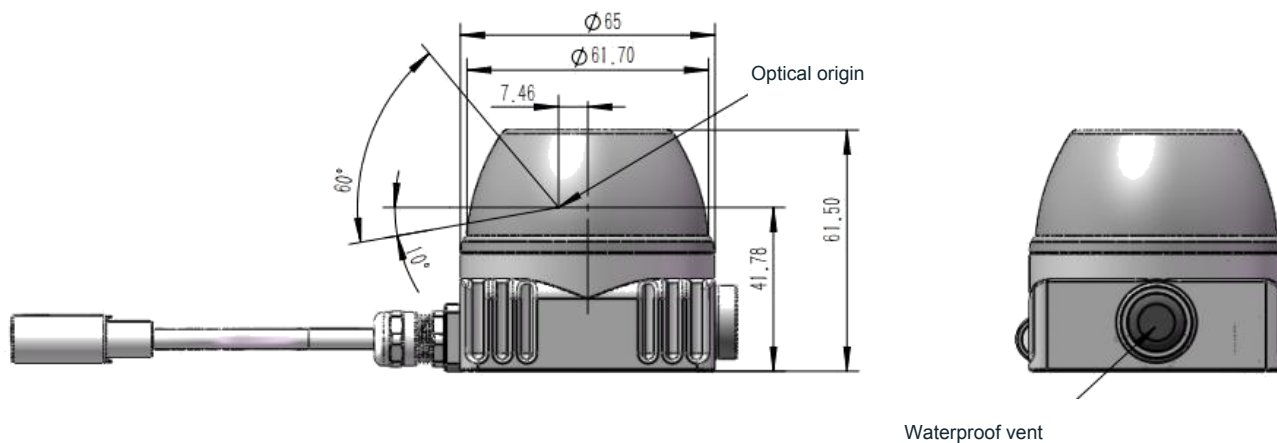
Parameter	Value / conditions	Rev.
Data breakout	RJ45, Cat5e cable reference; 100BASE-T Ethernet	1.1
Power breakout	DC5521 female connector; harness description specifies a 12 V DC adapter. Product input operating range: DC 9-32 V.	1.1
PPS wire	Gray lead, LINE_PPS; electrical level and pin numbering: TBD	1.1
GPRMC wire	Purple lead, LINE_GPRMC; electrical level and pin numbering: TBD	1.1

Electrical conditions

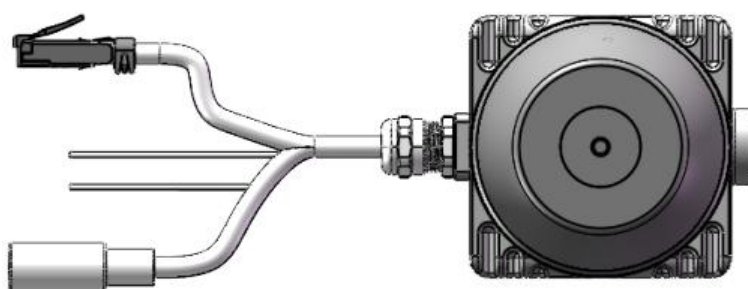
Item	Value / condition	Rev.
Pin viewing orientation	TBD unless identified in the approved wiring drawing	1.1
Harness / logic compatibility	TBD; confirm against the delivered hardware before wiring	1.1
EMC / isolation / load derating	TBD; component ratings do not establish system ratings	1.1

P60 / 04 Mechanical & installation

Dimensions / unit: mm



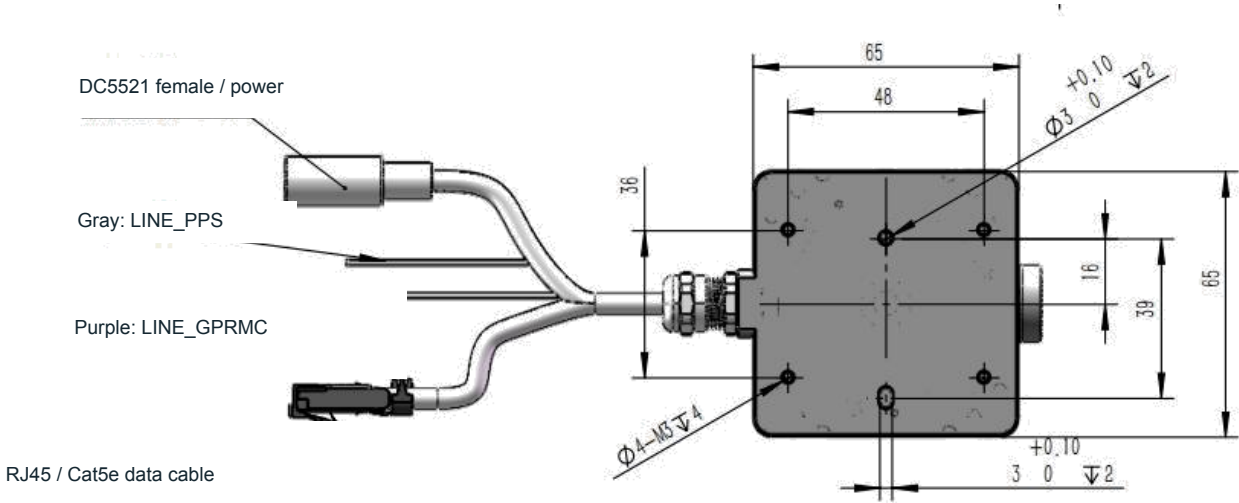
Side and front mechanical reference. Unit: mm. Optical origin and waterproof vent are identified in the drawing.



Top view and external harness routing reference.

P60 / 04 Mechanical & installation (continued)

Bottom mounting and locating features



Original dimension leaders and datums retained. English labels identify DC5521 power, gray LINE_PPS, purple LINE_GPRMC and RJ45 / Cat5e data connections.

Item	Value / condition	Rev.
Host envelope	65 x 65 x 61.5 mm; excludes cable	1.1
Optical / housing callouts	Diameter 65; diameter 61.70; height 61.50; optical-origin callouts 41.78 and 7.46 mm, datums as drawn	1.1
Mounting reference	4 x M3 threaded mounting holes, depth 4 mm; pitch 48 x 36 mm as drawn	1.1
Locating features	Diameter 3 (+0.10 / 0), depth 2; slot width 3 (+0.10 / 0), depth 2; 16 and 39 mm locating callouts as drawn	1.1
Mass	<260 g, cable excluded	1.1
Unspecified dimensions	Unspecified tolerance, slot length, complete harness length and final drawing revision: TBD	1.1

Installation control

Confirm mounting datum, clearance, connector access and the exact delivered revision. Drawing spans listed in the table require an approved drawing to establish orientation. Unspecified geometry and tolerances: TBD.

P60 / 05 Protocol & software

Native interfaces and protocol

Item	Value / condition	Rev.
Data link / UDP	100BASE-T Ethernet; 960,000 points/s single-return stream. Strongest or farthest return selectable. Simultaneous dual-return output requires customization. Delivered packet byte layout: confirm firmware ICD / PCAP.	1.1
Network defaults	Sensor 192.168.1.100; target 192.168.1.255 broadcast; host 192.168.1.x / 24, excluding .100	1.1
Timing	PPS + GPRMC; pin numbering and electrical levels: TBD	1.1
Viewer	YiliphotonView; live display, PCAP capture / playback, point inspection; CSV / PCD export	1.1
Driver / ROS	C++ driver, configuration, UDP acquisition, PCAP and data conversion; ROS1 / ROS2 / RViz. Delivered builds: TBD	1.1
Calibration / firmware	P60-Correction profile documented; delivered correction file, firmware and calibration revision: TBD	1.1

ROGERSENSE integration services

MQTT connectivity, OTA firmware updates, gateways and cloud platform are available for delivery. Model-specific controllers, interfaces and adaptation are agreed per project. These services do not imply native MQTT or OTA support inside every sensor.

Platform: <https://iot.rogersense.com>

Item	Value / condition	Rev.
Gateway / firmware build	TBD	1.1
MQTT topic / payload / credentials	TBD	1.1
OTA signing / rollback / access control	TBD	1.1

P60 / 06 Delivery & verification

Configuration and acceptance record

Item	Value / condition	Rev.
Document version	1.1	1.1
Brand / model	ROGERSENSE / P60	1.1
Hardware / firmware revision	TBD	1.1
Serial number / calibration report	TBD	1.1
Approved mechanical drawing	TBD	1.1
Inspection / acceptance report	TBD	1.1
Packing / harness / accessories	TBD; confirm the ordered configuration	1.1
Certification / compliance evidence	TBD unless identified in the delivery agreement	1.1

Open items

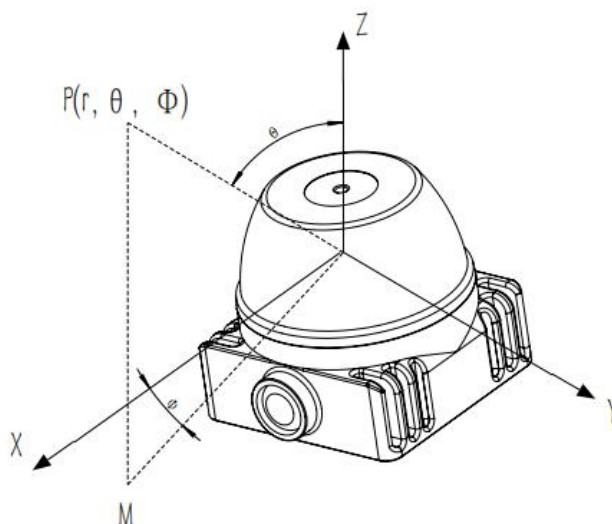
Every TBD item and any conflicting supply, accuracy, dimensional or revision requirement must be resolved in the approved delivery configuration. Calibration conditions, wiring orientation, installation datum and application suitability require project verification.

After-sales

After-sales follows the existing ROGERSENSE policy and the approved order. <https://rogersense.com/returns>

P60 / 07 Appendix A

Architecture and installation



Item	Value / condition	Rev.
Measurement principle	VCSEL transmitter and SPAD receiver; direct Time of Flight. Integrated optical and electronic module.	1.1
Coverage and placement	360 degrees horizontal; -10 to +50 degrees vertical. Keep the complete field clear of the platform and enclosure.	1.1
Coordinate frame	Z is the rotation-center axis; X defines zero-degree azimuth. The X/Y/Z intersection is the optical origin. Follow the coordinate figure and delivered calibration.	1.1
External breakout	Combined data / power / synchronization harness; 100BASE-T host link; DC5521 power breakout; PPS + GPRMC timing.	1.1
Mechanical integration	Allow connector clearance, cable bend, strain relief, drainage and service access. Use a stable reference plane and record the sensor-to-platform transform.	1.1
Power and environment	Provide regulated 9-32 VDC with margin above the listed 7 W load. Validate transients, heat dissipation, vibration, shock, sealing and EMC on the installed machine.	1.1
Host capacity	Provide a 100-Mbps Ethernet or faster host NIC and processing / recording capacity for up to 960,000 points/s.	1.1

Reference information from the existing ROGERSENSE specification. Use the approved hardware, firmware, harness and calibration revision; unlisted implementation details remain TBD.

P60 / 08 Appendix B

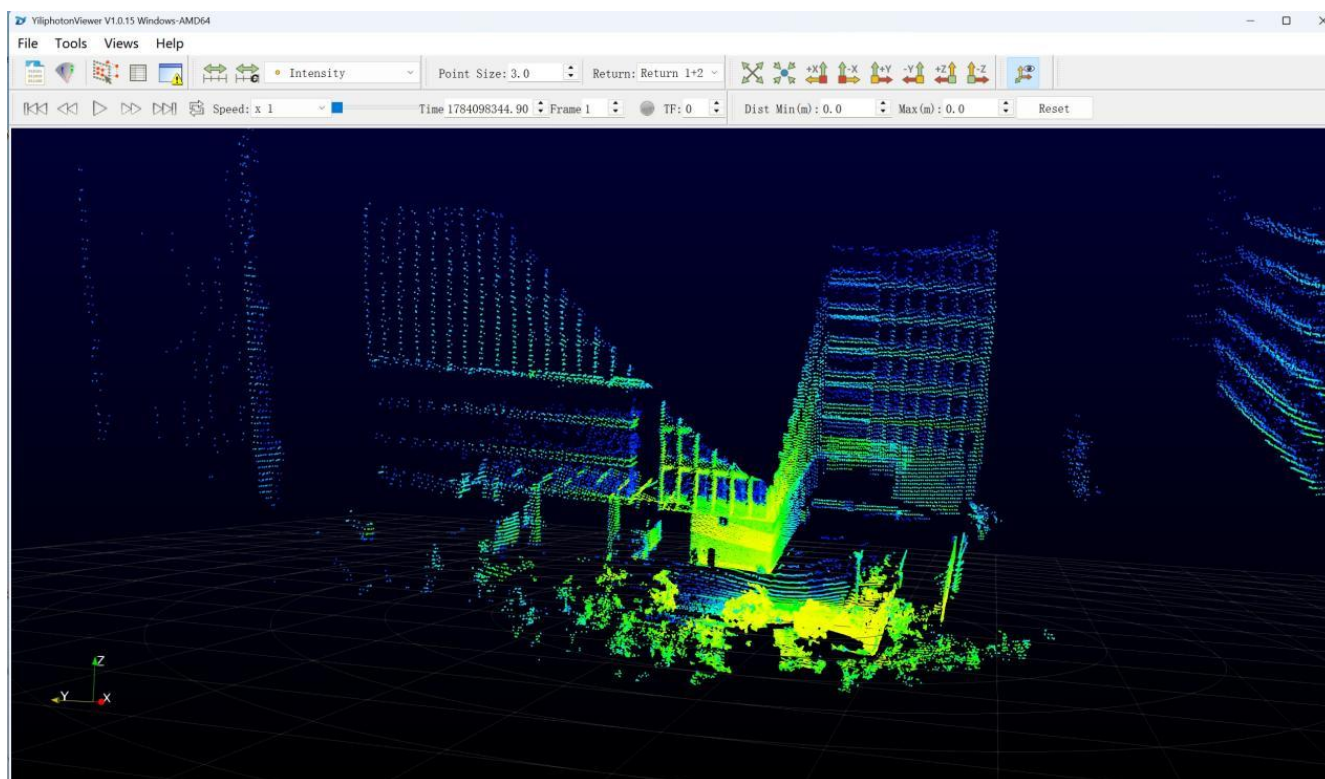
Network and UDP data

Item	Value / condition	Rev.
Sensor IP	192.168.1.100	1.1
Default target	192.168.1.255 broadcast	1.1
Host setup	Assign another 192.168.1.x address with subnet mask 255.255.255.0. Do not use the sensor address .100. Check ping 192.168.1.100.	1.1
Standard Ethernet output	100BASE-T, 960,000 points/s, single return. Select either strongest or farthest return.	1.1
Dual-return customization	Simultaneous dual-return output is not a standard stream; it requires customization. Agree the interface, firmware, throughput and acceptance conditions before ordering.	1.1
Packet format control	The earlier manual describes a dual-echo packet. It is not asserted as the current single-return output contract. Obtain the delivered firmware ICD and a matching PCAP before implementing the parser.	1.1
Validation	Confirm packet length, return selector, channel mapping, timestamps, distance units, byte order, frame sequence and integrity checks against the delivered release.	1.1

Reference information from the existing ROGERSENSE specification. Use the approved hardware, firmware, harness and calibration revision; unlisted implementation details remain TBD.

P60 / 09 Appendix C

YiliphotonView operation



Item	Value / condition	Rev.
Purpose	Real-time network visualization and offline point-cloud analysis; live mode and PCAP playback.	1.1
Installation	Run the supplied YiliphotonViewer_1.0.xx_setup.exe, choose installation directory and finish setup. The reference screenshot depicts V1.0.15; delivered installer build: TBD.	1.1
Bring-up sequence	Configure host subnet; choose P60-Correction profile; check live points, range, intensity and timestamps; record a PCAP; reopen through Capture File; inspect and export.	1.1
Color mapping	Enable Color Controls and select reflectivity / intensity mapping as described by the software manual.	1.1
Playback	Play, pause, seek, previous / next frame and change playback speed.	1.1
Display controls	Point size, distance cropping, standard 3D viewpoints and mouse-operated view manipulation.	1.1
Point inspection	Select Points and Spreadsheet views inspect a trailing frame or filtered subset; selected points are highlighted in 3D.	1.1

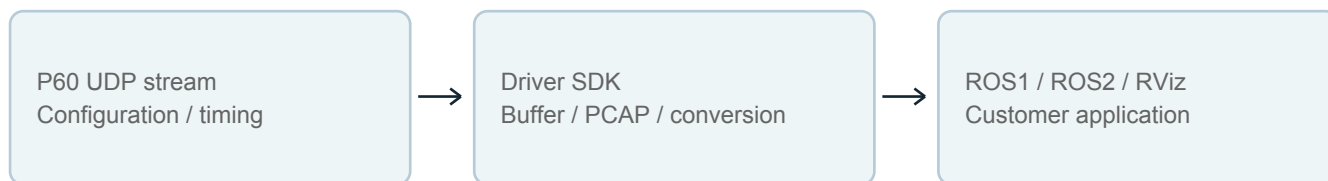
P60 / 09 Appendix C (continued)

Item	Value / condition	Rev.
Point fields	Point ID, Channel, Azimuth, Elevation, Distance, Intensity, X/Y/Z and SlotNum.	1.1
File operations	Record / replay PCAP; export engineering tables as CSV and point clouds as PCD.	1.1
Managed host access	Allow the viewer and required LiDAR UDP traffic through managed endpoint controls. Do not permanently disable firewall or antivirus protection.	1.1
Delivered software build	Viewer build, operating-system compatibility, calibration / correction file and license: TBD.	1.1
Selection / save steps	Select Points, open Spreadsheet, select Trailing Frame and enable the selected-point filter. File > Save As writes or converts PCAP, CSV or PCD. LD is the laser ID; Points contains X/Y/Z.	1.1

Reference information from the existing ROGERSENSE specification. Use the approved hardware, firmware, harness and calibration revision; unlisted implementation details remain TBD.

P60 / 10 Appendix D

SDK, ROS and bring-up



Item	Value / condition	Rev.
Configuration	Driver interface queries and sets supported sensor configuration.	1.1
Acquisition	Receive, buffer, order and expose the UDP point-cloud stream.	1.1
PCAP utilities	Record raw network traffic and read saved captures for repeatable offline development.	1.1
Data conversion	Convert raw packets into depth and reflectivity representations.	1.1
Native integration	C++ interface for sensor control and acquisition.	1.1
ROS integration	ROS1 / ROS2 interfaces and RViz point-cloud visualization.	1.1
Verification sequence	Verify power, ping, live viewer, correction data and throughput; save reference PCAP; validate reconstruction, timestamps, coordinates and packet loss; then integrate the application.	1.1
Release control	Confirm SDK / ROS package, operating system, dependencies, sample code, calibration data, firmware, protocol revision and licensing before release.	1.1
Application boundary	Mapping, localization, SLAM, navigation and custom perception are downstream integration tasks. Bundled application algorithms and licensing: TBD.	1.1

Reference information from the existing ROGERSENSE specification. Use the approved hardware, firmware, harness and calibration revision; unlisted implementation details remain TBD.

P60 / 11 Appendix E

Operation, care and applications

Item	Value / condition	Rev.
Cleaning	Power off first. Use lint-free material and distilled water, neutral cleaner or 99% ethanol as described in the existing manual; soften mud before wiping. Confirm approved materials for the delivered optical coating.	1.1
Protection	Do not scratch the optical window. Keep connector contacts clean and dry. Do not drop, disassemble or modify the optical system.	1.1
Fault checks	Check power, physical link, IP / subnet, sensor ping and packet loss. Use the correct correction file and inspect contamination or damage.	1.1
No viewer data but packets exist	Check that the PC does not use sensor address 192.168.1.100; check viewer profile, managed network / endpoint permissions and restart the device if needed.	1.1
No packets / motor fault	Use a working 100-Mbps or gigabit NIC and Cat5 or better cable; check 192.168.1.x / 24, ping and power. Re-enable the NIC / power-cycle as needed. Persistent motor or hardware faults require technical support.	1.1
Power / service	Power down before connection, disconnection, cleaning or service. Preserve mating seals and connector protection.	1.1
Applications	AMR / AGV navigation and avoidance; autonomous service vehicles; off-road and industrial machines; UAV mapping / inspection; humanoid and mobile service robots.	1.1
Ranging interpretation	P60 parameters: 70-80 m detection range; 150 m instrument range; >35 m under 100 klx sunlight. Performance depends on the target and environment.	1.1
System qualification	Validate the target set, reflectivity, ambient light, weather, temperature, mounting, window condition, timing and software on the final platform.	1.1
Document control	Version 1.1 incorporates 21 October 2026 product-owner corrections: 5 cm minimum range, repetitive scanning, 960,000 points/s single-return output, strongest or farthest return selection, and customized simultaneous dual return.	1.1
Support record	Prepare model and serial number, connected equipment, OS / software builds, complete error text and detailed fault symptoms.	1.1

P60 / 12 Appendix F

Source configuration and interpretation

Item	Value / condition	Rev.
Controlled configuration	96 lines; repetitive scanning; 360 x 60 degree FOV; 5 cm minimum range; 960,000 points/s single return at 10 Hz; 100BASE-T; -40 to +60 deg C; 7 W. Select strongest or farthest return. Dual-return output requires customization.	1.1
Configuration differences	Other supplied brochures contain different line-count, ranging, accuracy and power claims. They are not combined into this 96-line specification. Final ordered revision and acceptance values: TBD.	1.1
Document version	ROGERSENSE document version 1.1 is independent of original manual and firmware versions. The V1.1 change record identifies product-owner corrections; original documents remain historical references.	1.1
Installation drawings	Use the complete dimension leaders and datums in the reproduced source mechanical views. Unmarked geometry and product changes require a controlled drawing.	1.1
Revision history - V1.1 21 October 2026	Minimum range revised from 0.1 m to 0.05 m (5 cm). Clarified strongest / farthest selection for standard single-return output; simultaneous dual return requires customization. Added repetitive-scan description and updated P60 ranging parameters: 70-80 m detection, >35 m at 100 klx sunlight, 150 m instrument range. Standard output remains 960,000 points/s; field of view and operating temperature are unchanged. Packet layout follows the delivered firmware.	1.1

Reference information from the existing ROGERSENSE specification. Use the approved hardware, firmware, harness and calibration revision; unlisted implementation details remain TBD.