

ENGINEERING DOCUMENTATION

Wide-Field Solid-State LiDAR

Dimensional & Integration Guide

DOCUMENT	REVISION / ISSUE	STATUS
DIG-ES-LD-C00-S001-V001	DRAFT-08 / 25 Aug 2026	Engineering Integration Reference

Integration Overview

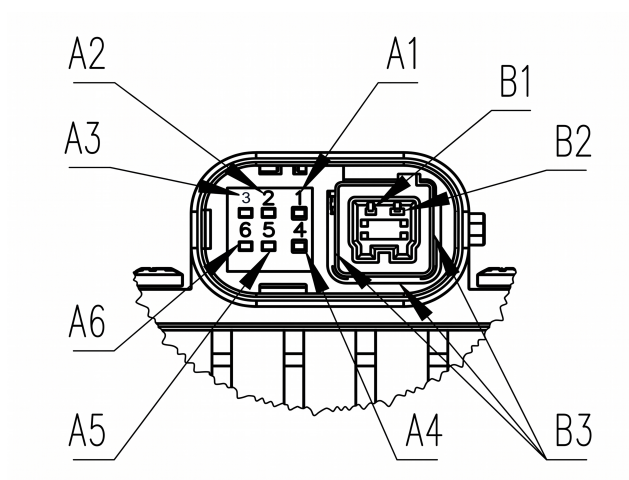
Wide-field solid-state LiDAR for perception and ranging integration. This guide supports optical keep-out planning, mounting structure, thermal management, power and network interfaces, time synchronization, environmental and commissioning for ES-LD-C00-S001-V001.

Key Integration Facts

INTEGRATION ITEM	PUBLISHED VALUE
Maximum Detection Range	75 m
Frame Rate	10 Hz
Horizontal Field of View	120° (-60.0°~+60.0°) °
Vertical Field of View	90° (-45°~+45°) °
Point Rate	260000 points/s
Blind Area	0.1m
Operating Voltage	9V - 16 V
Power Consumption	<10 W
Mass	330 g±20 g (only LiDAR) g
Operating Temperature	- 40 ~+ 85 °C
Ingress Protection Rating	IP67 / IP6K9K
Laser Safety Class	Class1 eye safe

Product Structure & Views

These views present the product enclosure, connector interfaces and relevant integration geometry for this SKU.



Mechanical View 1

Overall Dimensions and Mounting Envelope

PARAMETER	PUBLISHED VALUE	UNIT
Mass	330 g±20 g (only LiDAR)	g
Outer Contour Length	95	mm
Outer Contour Width	42.6	mm
Contour Length with Connector	95	mm
Contour Width with Connector	51.1	mm
Flat Window Dimensions	7×35×75 (mm)	mm

- Use published contour values for preliminary packaging only; Include the applicable product documentation in integration planning.
- Provide a rigid bracket that maintains the calibrated sensor pose under vibration, shock, thermal growth and service loads.
- Reserve connector insertion, cable bend, fastener access and removal clearances around the complete installation.

Optical Field of View and Keep-Out Envelope

PARAMETER	PUBLISHED VALUE	UNIT
Maximum Detection Range	75	m
Ranging Distance at 10% Reflectivity	30m @10% NIS, 100klux direct sunlight	m
Horizontal Field of View	120° (-60.0°~+60.0°)	°
Vertical Field of View	90° (-45°~+45°)	°
Blind Area	0.1	m
Horizontal Angular Resolution	average 0.625°2	°
Ranging Precision	±5cm@1 sigma	cm
Laser Safety Class	Class1 eye safe	

- Keep the complete horizontal and vertical optical envelope free from covers, body panels, brackets, fasteners and contamination.
- Validate range and precision with representative target reflectivity, sunlight, temperature, distance and channel behavior.
- Treat the blind area and near-field reflections as integration constraints; verify the final enclosure and vehicle surfaces.

Mounting Bracket and Structural Integration

PARAMETER	PUBLISHED VALUE	UNIT
Mass	330 g±20 g (only LiDAR)	g

- Verify bracket stiffness and strength using the actual random-vibration, mechanical-shock, acceleration and fastener load cases.
- Maintain stable relative pose between the LiDAR, host structure and other perception sensors throughout the operating environment.
- Do not enclose or preload the housing in a way that distorts the optical window or impedes heat flow.

Power, Connector and Network Integration

PARAMETER	PUBLISHED VALUE	UNIT
Operating Voltage	9V - 16	V
Power Consumption	<10	W
LiDAR-End Connector Model	TE 2397179-1	
Harness Connector Model	TE 2397144-1	
Connector Function	Power + Gigabit Ethernet	
Ethernet Transmission Rate	1000Base-T1 Gigabit Ethernet	
Time Synchronization	gPTP (IEEE-802.1AS) PTP E2E L2 (IEEE-1588)	

- Use the selected mating connector, pinout and harness construction for power, wake, ground, shield and Gigabit Ethernet.
- Verify supply transients, wake-up behavior, grounding, shielding, cable impedance and connector retention before normal operation.
- Configure time synchronization and network addressing against the host architecture, then verify timestamp continuity and packet integrity.

Thermal, Enclosure and Ingress Conditions

PARAMETER	PUBLISHED VALUE	UNIT
Operating Temperature	- 40 ~+ 85	°C
Storage Temperature	- 40 ~+ 105	°C
Power Consumption	<10	W
Ingress Protection Rating	IP67 / IP6K9K	

- Use the front and rear housing surfaces and mounting structure as planned heat-transfer paths; preserve airflow and peripheral clearance.
- Validate temperature under solar load, enclosure effects, airflow variation, power state and the complete operating cycle.
- Ingress ratings apply to the correctly assembled product and mating interface; validate cable entry, cover, drainage and complete host enclosure separately.

Commissioning, Coordinate System and Data Validation

PARAMETER	PUBLISHED VALUE	UNIT
Ranging Principle	Time of Flight	
Frame Rate	10	Hz
Point Rate	260000	points/s
Time Synchronization	gPTP (IEEE-802.1AS) PTP E2E L2 (IEEE-1588)	

- Establish the selected LiDAR coordinate system and transform it into the host frame using applicable datum and calibration data.
- Verify startup states, wake behavior, network link, frame rate, timestamps, field of view and representative range targets before motion.
- Record baseline temperature, packet loss, point distribution and alignment, then repeat checks after vibration, shock or service.

Handling, Cleaning and Maintenance

- Use shock- and moisture-protective packaging, prevent drops and inspect the product and packaging on receipt.
- Store indoors in a dry clean, dry environment and inspect stored units and packaging periodically.
- Clean the optical window only with the current approved method and materials; stop using damaged, contaminated or scratched units.

Integration Checklist

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|----|--|
| 01 | Confirm the exact SKU, published parameters, connector views and applicable product documentation request. |
| 02 | Verify housing contour, optical window, connector envelope, bracket clearance and service access. |
| 03 | Keep the full optical field of view and near-field keep-out volume unobstructed. |
| 04 | Validate bracket stiffness, fasteners, vibration, shock and calibrated sensor pose. |
| 05 | Confirm power, wake, ground, shield, mating connector and 1000Base-T1 cable architecture. |
| 06 | Configure and verify network link, timestamps, synchronization and packet integrity. |
| 07 | Validate range, precision, point distribution and blind area with representative targets and lighting. |
| 08 | Validate temperature, heat paths, airflow, solar load, ingress interfaces and enclosure conditions. |
| 09 | Perform careful handling, storage, cleaning and post-service verification. |
| 10 | Include specified 2D, STEP, pinout, thermal and calibration data in integration planning. |

[View SKU Product Datasheet](#)[Request controlled 2D drawing](#)[Request controlled STEP review](#)[Request a Quote](#)

Engineering Use and Verification Notice

01. This Dimensional & Integration Guide applies only to EmbodyStack SKU ES-LD-C00-S001-V001 and is intended for dimensional evaluation and preliminary integration. It is not a applicable manufacturing drawing, perception-performance approval, laser-safety assessment, integration planning, wiring final integration, calibration certificate, vehicle safety validation, machinery risk assessment or integration planning document. Before design freeze, assembly or commissioning, verify dimensions, optical field of view, blind area, target reflectivity conditions, bracket stiffness, shock and vibration, coordinate frame, calibration, power, wake-up, connectors, pinout, network, synchronization, thermal paths, enclosure, ingress, cleaning and fault handling against the applicable EmbodyStack engineering data for this exact SKU. Where this guide and applicable product documentation differ, the applicable product documentation governs. Validate the complete LiDAR, bracket, harness, network, perception stack, host structure and vehicle or machine under intended operating, fault, environmental and regulatory conditions.