



PLB515

QUICKSTART

en

1 About this document

This document contains instructions and descriptions that support the basic setup of the PLB515 system, including basic image acquisition. This document is valid for the PLB515 S/M/L (Ensenso N36) system.

For more information on the PLB system, please refer to the Operating Instruction. The PLB Operating Instruction is included when downloading the PLB software from SICK Support Portal (supportportal.sick.com), see [section 6.1](#).

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2 Safety information

2.1 Intended use

PLB is a system for precise localization of parts stored in a defined search volume. The system may only be employed in accordance with its intended use.

The PLB system is intended to be used in industrial environments. The operator of the production facilities in which the PLB system is to be integrated must implement measures to ensure the safety of persons and equipment in accordance with statutory guidelines and regulations.

The relevant official and legal requirements must always be adhered to when operating the PLB system.

In the case of any other usage or in the event of any modifications to system components (e.g. by opening the camera housing or during the course of assembly and electrical installation) or to the SICK software, any warranty claims against SICK AG shall be null and void.

2.2 Operational safety and particular hazards

- Read the entire Quickstart before using the device.
- Connection, assembly, and settings must be performed by competent technicians.
- Do not use the device in areas with risk for explosion.
- Safe operation has a dependency on the LED class of the device. Carefully study the LED safety section and the safety instructions in the PLB Operating Instruction.

The product is fitted with LEDs in risk group 0. The accessible radiation from these LEDs does not pose a danger to the eyes or skin.

If the product is operated in conjunction with external illumination systems, the risks described here may be exceeded. This must be taken into consideration by users on a case-by-case basis. Please note the accompanying product documentation.

3 Product description

3.1 System overview

The PLB system is comprised of a 3D camera and the PLB software.

The 3D camera acquires a precise image of a bin and search volume's contents. The software uses the image to calculate a 3D point cloud. Geometrical shapes are identified in the point cloud and combined to form 3D objects. The camera is factory calibrated, and the image data is represented in millimetres in a coordinate system relative to the 3D camera. To achieve accurate positioning results in world or robot coordinates, the measurements must be aligned to that coordinate system.

The camera serves as a data streamer, from which the image data is transferred to a PC. The camera is configured, started and stopped by the PLB application running on the PC.

3.2 Dimensional drawing

PLB515 dimensional drawing (not true-to-scale), see Appendix: **A**

3.3 Volume of view

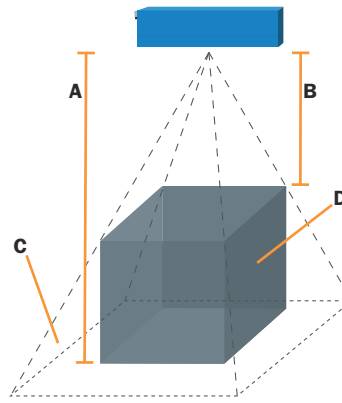


Figure 1: Example image volume of view

- A Maximum distance
- B Minimum distance
- C Volume of view
- D Search volume

Ensenso N36

Parameter	PLB515-S	PLB515-M	PLB515-L
Min. distance	300 mm	600 mm	1000 mm
Max. distance	400 mm	1000 mm	1500 mm
Field of view at min. distance ¹	300x200 mm	400x300 mm	600x500 mm
Field of view at max. distance ¹	400x250 mm	1100x700 mm	1200x750 mm
Example search volume ²	300x200x100 mm	400x300x400 mm	600x500x500 mm

1 Length x Width

2 Length x Width x Height

⚠ CAUTION

Ensure that the camera is unpowered during the mounting and electrical installation process.

4 Mounting

The camera is equipped with 5 mounting holes, use 3 of them in a triangular pattern when mounting. Use the supplied distance washers for additional robustness against deformation of the camera housing. This is especially important when pressing the camera against a planar surface.

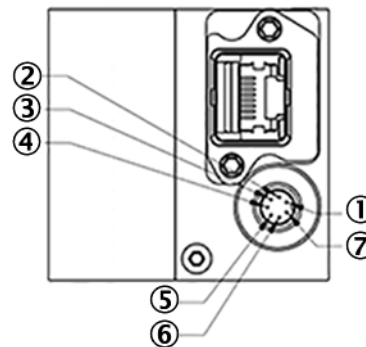
Mount the camera in respect to the preferred volume-of-view, see [section 3.3](#).

For dimensional drawing, see [section 3.2](#).

5 Electrical installation

5.1 Connector and pin assignments

The camera has a Binder 712, 7-pin male connector, and uses a RJ45 connector for ethernet and power supply. To supply the camera with power, connect the camera to a Power over Ethernet (PoE) power supply unit or injector, see [section 10.1](#).



Pin assignments for the Ensenso N36 power connector

Pin	Signal
1	Input +
2	Power (12 ... 24 V)
3	Shield
4	Ground (GND)
5	Output +
6	Output -
7	Input -

5.2 Connecting the device

Ensure that all LED safety requirements for the appropriate LED Risk Group are fulfilled (see [section 2.2](#) and PLB Operating Instruction).

1. Connect the Ethernet connector on the camera to a PoE power supply unit using a Gigabit Ethernet cable.
2. Connect the PoE power supply unit to a network connector on the PC using a Gigabit Ethernet cable.
 - PC running Windows 10 equipped with a Gigabit Ethernet network interface card.
3. Switch on the power supply.

For detailed installation instructions and recommended PC specifications, see the PLB Operating Instruction.

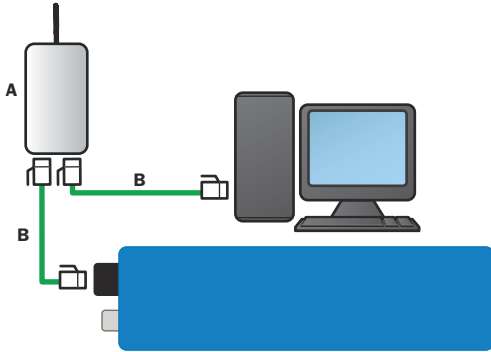


Figure 2: Example connection diagram for PLB515

- A PoE power supply unit (or injector)
B Gigabit Ethernet cable

6 Operation

This section provides the steps to acquire a basic image to see if the camera is mounted in the correct position. Further instructions can be found in the PLB Operating Instruction, which is included when downloading the PLB software in step 1.

1. Download the latest release of the PLB software (PLB X.X) and the corresponding PLB release of Ensenso software (PLB X.X Ensenso) from SICK Support Portal, supportportal.sick.com.
 - You must register a user account to access SICK Support Portal
 - You can access the latest release through the menu options: Systems/Robot Guidance/PLB/Downloads
2. Install the PLB software (PLB X.X) and the Ensenso software (uEye and Ensenso SDK)
3. Configure the PC Network interface card, enable Jumbo frames and maximize Receive buffers
4. In the PC Start menu, find and start the application PLB Engine, which opens PLB Studio

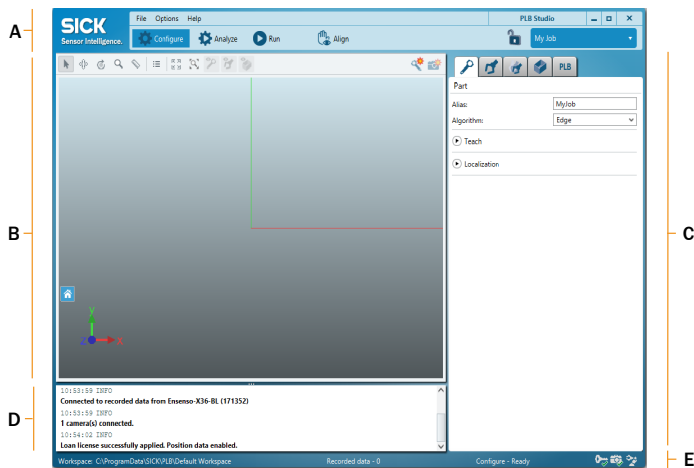


Figure 3: Overview of PLB Studio

- A Menu bar
B Visualization area
C Parameter editing area
D System log
E Status bar

5. In the menu bar, click **Configure**
6. In the parameter editing area, click **System settings**
7. In the settings for **Cameras**, click **Create new camera**
8. Select **N36**
9. Select if the camera is **Stationary** or **Robot** mounted, and click **OK**
10. Click and mark the camera **Enabled**
 - PLB will search for the camera on the network, and add the serial number and a default parameter file, if the camera is available.
- ✓ The status bar displays the camera icon with a green checkmark when connected
11. In the parameter editing area, click **Bin and search volume**
12. In the visualization area, click **Trigger image acquisition**

- ✓ An image is now triggered and shown in the visualization area.
13. Check the image if the camera is at an optimal position for the intended work.
 - The quality of the image can be improved by creating a modified parameter file with the Ensenso software and importing it to PLB Studio.
 14. In the parameter editing area, click **System settings**
 15. In the settings for **Cameras/Connection settings**, click **PLB** to enter the licence key for the camera
 - ✓ The status bar displays the license key with a green checkmark when accepted

The recommended workflow to complete the system for operation

- Robot integration and hand-eye alignment
- Job configuration for part, gripper, pick pose, bin and search volume
- Run mode, to acquire images for the job
- Analyze mode, to optimize the job configuration

7 Maintenance

The camera contains no user serviceable parts inside. The warranty of the device will be void if opened. The device must not be opened by other parties than SICK.

- Lenses, housings and glass windows should be cleaned with water, iso-propyl or ethyl alcohol under normal operating temperature conditions of the respective device. Make sure to not use abrasive cleaning equipment or substances. Use only optical quality tissue/cloth for glass windows and lenses.
- Check screw connections and connectors at regular intervals.
- If the system is aligned to a world or robot coordinate system, re-alignment may be necessary if the operating temperature is changed significantly.

In case of unit failure, please contact the local SICK representative or see [section 8](#), for further instructions.

8 Support

For more information about the PLB system, please refer to the PLB Operating Instruction.

For support issues, please visit the online support on: supportportal.sick.com
More product information is also available on: www.sick.com/PLB

9 Technical data

Technical data

	PLB 515 S/M/L
Part number	S: 1114997/PP 1136648/PL 1136649 M: 1114996/PP 1116954/PL 1116955 L: 1114995/PP 1129626/PL 1129627
Interfaces	Gigabit Ethernet
Host platform	PC, Windows 10
Supply voltage	12 ... 24 V DC
Current consumption	2A
House Dimensions (L x H x D)	175 mm x 52 mm x 50 mm
Weight	650 g
Enclosure rating	IP65/IP67
Shock load¹	80 g/1.9 ms, 25 g/6 ms
Vibration load¹	10 g, 30 ... 500 Hz
LED class	Exempt group (no risk)
LED wavelength	465 nm, blue light
Operating temperature	0 ... 40 °C, non-condensing
Storage temperature	0 ... 50 °C, non-condensing

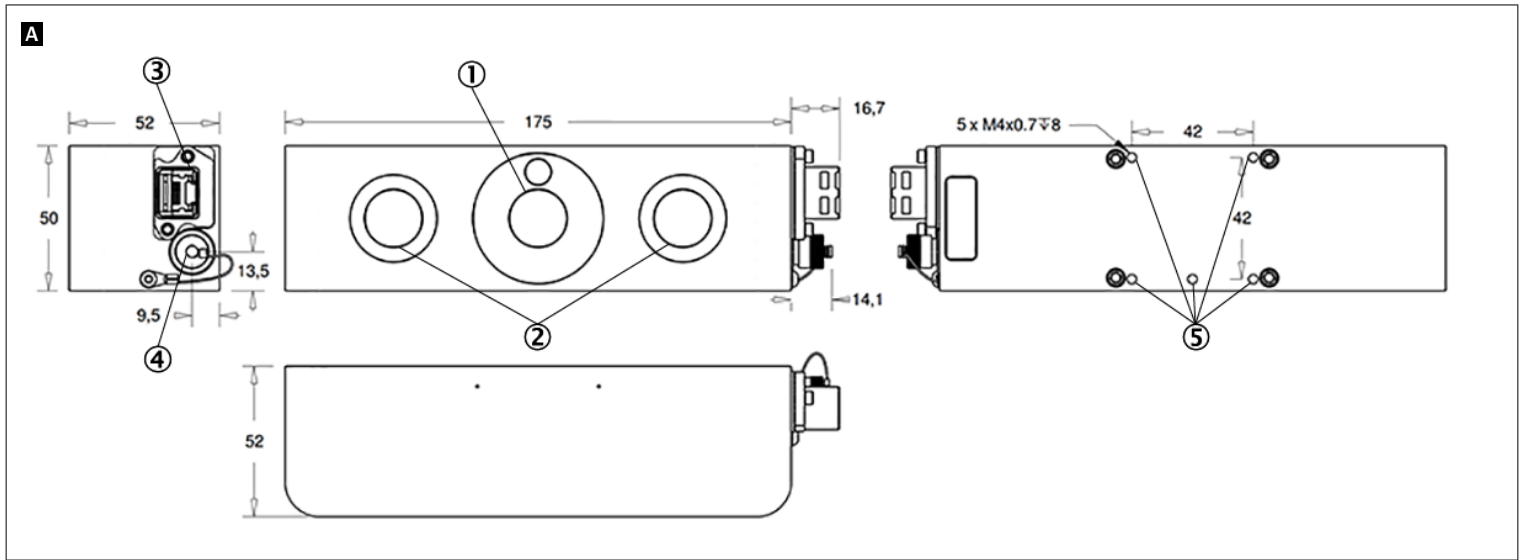
¹ Not during scanning

10 Accessories

Accessories

Accessories	Part no.
PoE (Dome) power supply unit	6055385
Power over Ethernet (PoE) injector	6075281
Gigabit Ethernet cable, RJ45 to RJ45, 10 m	6032322
Alignment target for PLB	2084680
PC	1133271
Calibration target	5338158

All accessories for the product can be found on: www.sick.com/PLB



- ① LED projection module
- ② Image sensors
- ③ Ethernet (RJ45)
- ④ Power and I/O (Binder 712, 7-pin)
- ⑤ Fastening threads (5x M4x0.7)