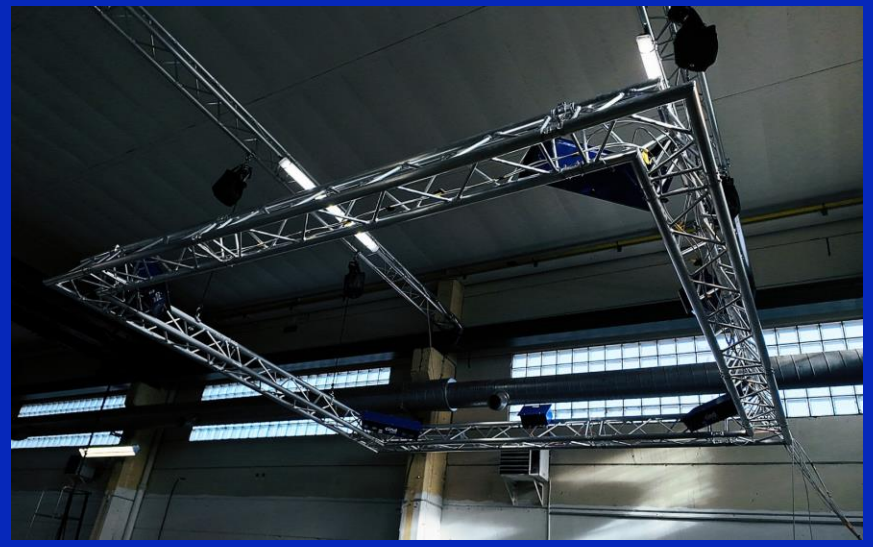


CIND Dimensioner – Static

Train the Trainer

Agenda

- Introduction to the Product
- Standard Process
- Dimensions and System Performance Data
- How the System Works: Features and Applications
- Stackability - Label Detection
- Stackability - Geometrically
- User Screen / User Interface
- Training Activities / Exercises
- Re-calibration of the System
- Data Dashboard (QuickSight)
- CIND Support

Introduction to the Product

Hardware

- **Stereo cameras (4)** - Precise 3D measurement
- **Text/NSP cameras (4)** - Automatic label detection
- **Processing Unit** - Monitoring, operation & reporting
- **Computer Cabinet** - Houses the processing units, network switches, and related equipment.
- **Power supply** - The system operates from a single main power connection.
- **Manual Hand Scanner** - used to scan the barcode sheet (details presented later)
- **Truss** - The structural frame that supports and holds the system components in place.
- **Network Connectivity** - Connects the system through either a modem or a fixed internet connection.
- **User Screen (1)** - Allows operators to monitor and follow the process.

Certification

- MID certified and approved for legal for trade use

Documentation

- Images captured from 4 angles per passage
- Supports deviation handling, customer dialogue & quality control

Introduction to the Product

Capabilities
- Handles cargo types within defined specifications
- Reliable on black plastic and reflective surfaces
- Support rotating pallets

Key Operational Notes
- Always monitor the process using the user screen
- Keep the lighting on at all times to ensure accurate measurements
- The manual hand scanner is used to enter data into the system during operation.

Calibration and System Sensitivity
- Auto Check Calibration Mode continuously monitors calibration during operation, as long as calibration remains intact.
- The system is sensitive to movement, avoid maintenance unless advised by CIND.
- Proper protection of the system is essential for reliable operation.

Standard Process

The standard process is as follows:

- Place the pallet in the measurement zone from any direction.
- Scan the barcode.
- During the messurement no activity should occur in the messurement, only the pallet that is to be messured in the zone.
- Within a few seconds, dimensions, barcodes and text labels are automatically captured.

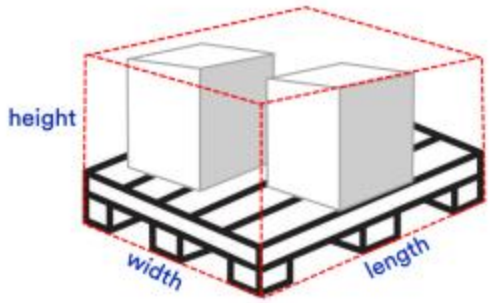
The system captures:

- Dimentions
- Text on labels (e.g., “Do not stack”)
- Stackability and any non-standard characteristics

Dimensions and System Performance Data

The system uses stereo vision (3D cameras) to capture objects within its measurement zone. It calculates the cargo dimensions (length, width, and height) with an accuracy of ±2 cm. Only what is visible is measured, any exposed plastic, packaging, or other material extending beyond the pallet is included in the final dimensions.

Feature	Value
Max size of object	W 240cm, L 240 cm, H 254 cm
Min size of object	W 20 cm, L 20 cm, H 20 cm
Temperature limits	+5 - +40 degrees Celsius
Accuracy	+- 2 cm as per MID requirement
Supported barcodes	As agreed with costumer



How the System Works: Features and Applications

Static Operation
- Ensure the pallet is correctly placed inside the measurement zone before scanning.
- The system measures the pallet while it remains completely stationary.

Stackability Checks:
- Stackable (GEO): Determined using the point cloud.
- Stackable (TEXT): Determined via text and label information.

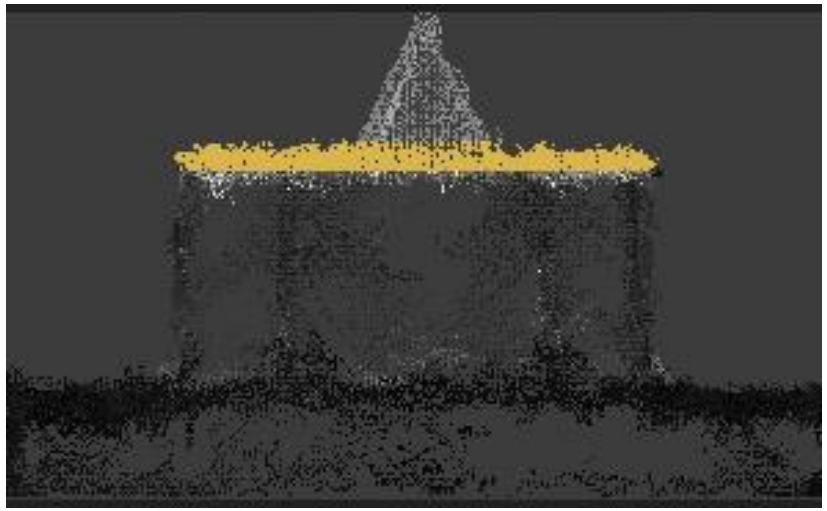
Results and User Feedback
- MID Screen: Legal-for-trade verified results.

Stackability - Label Detection

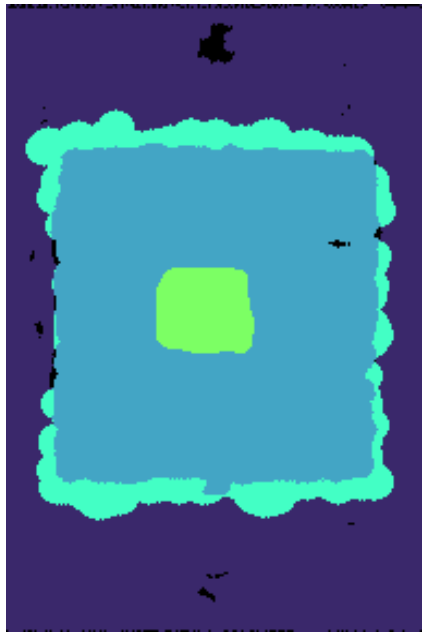
The Dimensioner Static identifies text-based labels on non-stackable pallets (NSPs), such as labels reading “DO NOT STACK.” These labels are detected using the barcode cameras, and the text to detect is configurable.
The system supports all letters in the Latin alphabet, enabling reliable detection of labels written with standard Latin characters. Detected label information is included in the data output.

Stackability - Geometrically

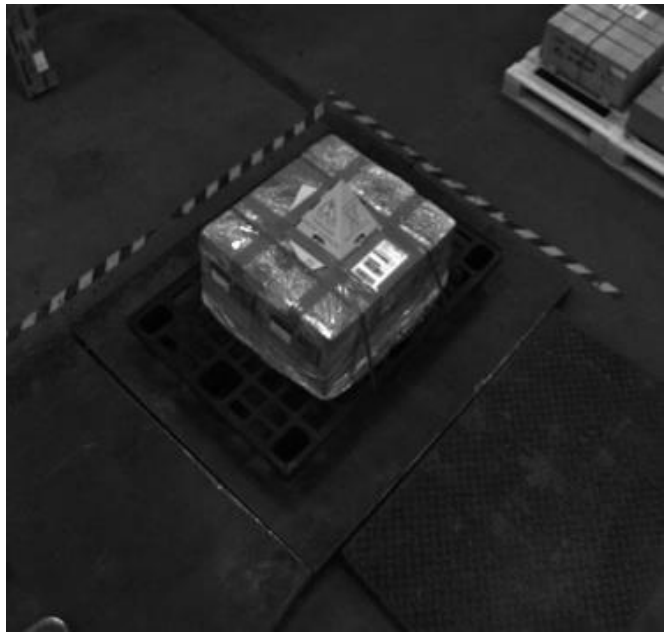
The Dimensioner Static can perform geometric analysis of the goods. It evaluates several geometric parameters to determine whether a pallet is stackable. The results of this analysis are included in the data output.



Point cloud used for geometric surface and edge detection.



Top-view segmentation identifying load distribution and support areas.

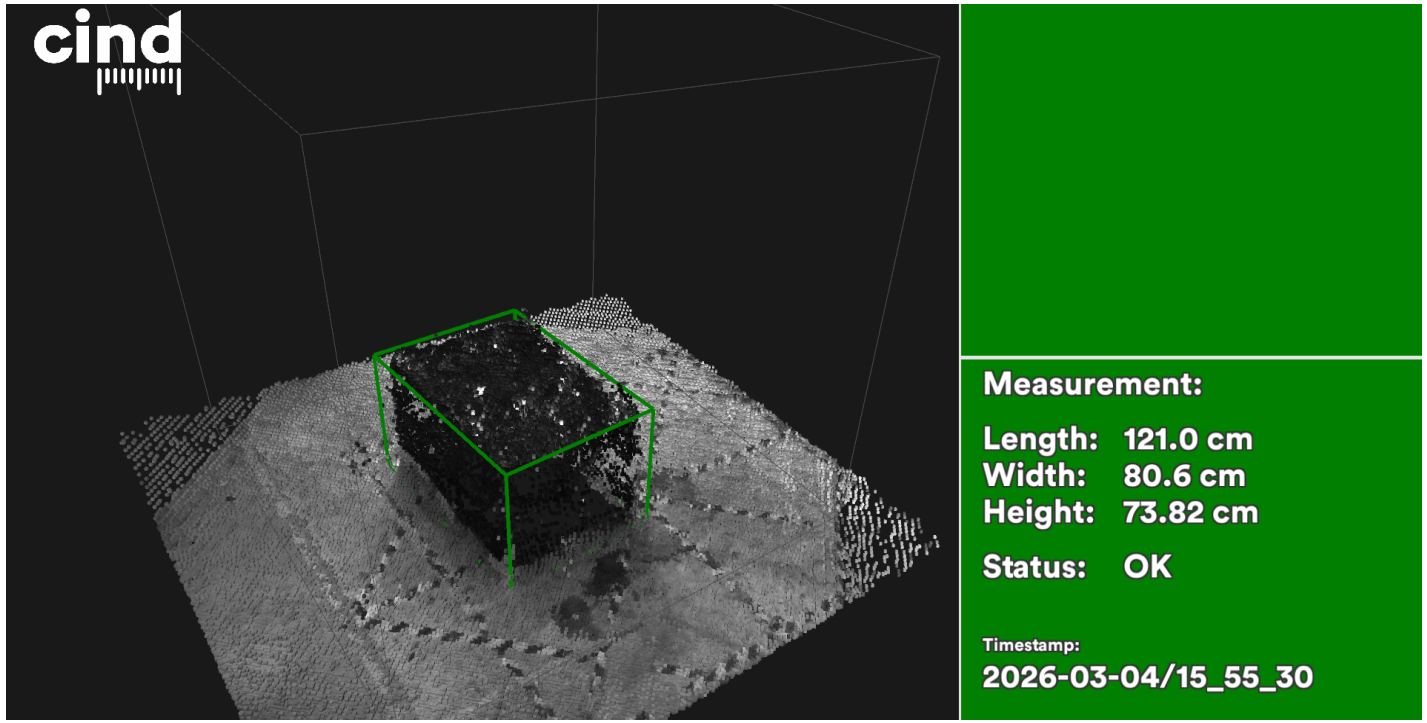


Camera view displaying the live image feed.

User Screen / User Interface

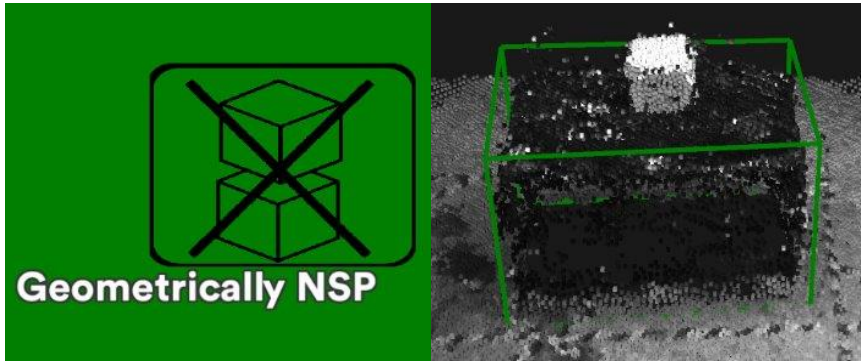
The user interface displays the measured dimensions, including length, width, and height. The status field indicates whether the scanning process was successful.

If any object violates the measurement zone during the scanning process, the user interface will highlight the affected zone in red



User Screen / User Interface

Example illustrating how the icons on the user interface are displayed, indicating whether a pallet is stackable or non-stackable.



Example illustrating how geometrically non-stackable pallets are displayed on the user interface, clearly indicating whether a pallet is stackable or non-stackable.

Training Activities / Exercises

Practical Exercises

- Technicians will participate in structured, hands-on exercises with the team.
- Exercises will cover operating the system, scanning pallets, checking stackability, and interpreting results.
- The goal is to ensure the team is comfortable and confident using the system.
- Questions and discussion to clarify procedures and reinforce understanding.

Re-calibration of the System

To ensure system accuracy, please follow these calibration hardware guidelines.

Calibration Boards

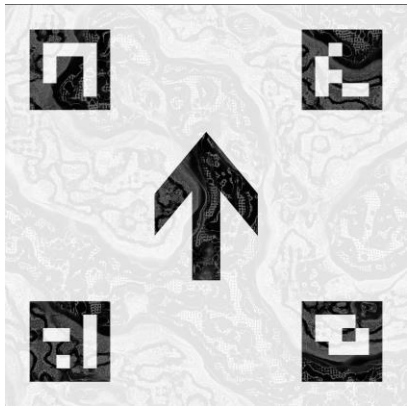
- System Calibration board
- Three ArUco boards (0, 1, 2, 160)

Handling & Storage

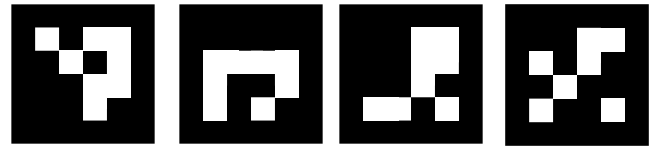
These boards are precision instruments. To ensure accurate measurements:

- Storage: Must be stored indoors.
- Handling: Highly sensitive to bending and scratches.

Support: Always contact CIND before taking any action if you encounter issues or technical difficulties. If calibration is required, the screen will display: "**Camera calibration problem: Contact CIND!**"



System Calibration Board



ArUco Boards 0, 1, 2, 160

System Calibration

ArUco board placement

- Position ArUco boards 0, 1, 2, 160, and the System Calibration Board as illustrated, approximately 1 meter above the ground. The sequence of the ArUco boards is not important at this stage.
- Place the System Calibration Board at the center of the measurement zone.
- Arrange ArUco boards 0, 1, 2, and 160 along the edges of the measurement zone.

System Processing

- After the setup is complete, CIND will perform actions.
- Wait until CIND finishes these actions before proceeding.

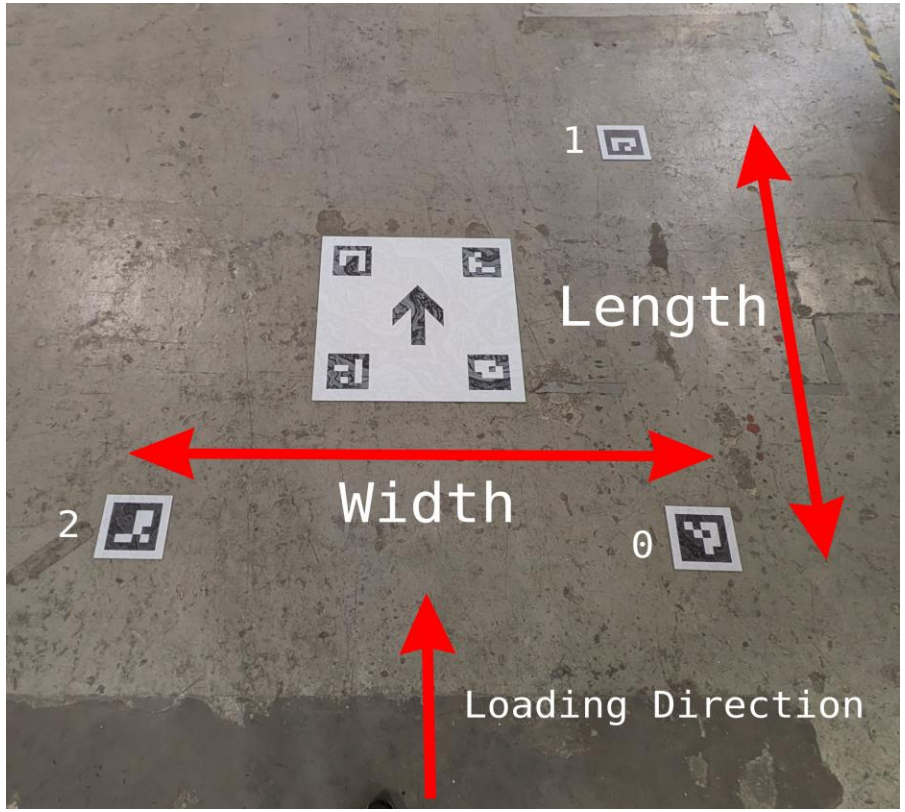
Ground Calibration

ArUco board placement

- Position ArUco boards 0, 1, and 2 on the ground at the edges of the measurement zone, as shown in the illustration.
- Place the System Calibration Board in the center of the measurement zone.
- The placement of the ArUco boards is critical at this stage.

System Processing

- After the setup is complete, CIND will perform actions.
- Wait until CIND finishes these actions before proceeding.



Data Dashboard (QuickSight)

User Access & Management
- Login Verification – confirm system access.
- User Permissions – assign role-based, read-only access.

Data Verification
- Data Transfer Check – confirm all measurement and scan data is sent to QuickSight.
- CSV Export – show how to export data for external analysis.

Data Overview
- QuickSight Data Inputs – overview of captured data:
  - Measurements
  - Barcode / AWB details
  - Stackability results (GEO & TEXT): SP (Stackable Pallet) or NSP (Non-Stackable Pallet)
  - Timestamps and operational data

CIND Support

A support ticket is automatically created when you send an email to support@cind.se.
When submitting a ticket, please include the following information:

- Company name and station (terminal)
- Name and contact details
- Timestamp of the incident (and barcode information, if applicable)
- Description of the issue/problem
- Which system is affected

Helpdesk opening hours:
Monday–Friday, 08:00–17:00 CET

Contact details:

- Email: support@cind.se (Helpdesk ticket)
- Phone: +46 36 19 20 30

Please scan for User Manual & Declaration of Conformity

24/7/365 Hotline Support:
Available as an additional service upon request and not included in the standard service solution.