COGNEX

3D-A1000 ITEM DETECTION SYSTEM

Detects and reports status of objects on logistics sorter trays

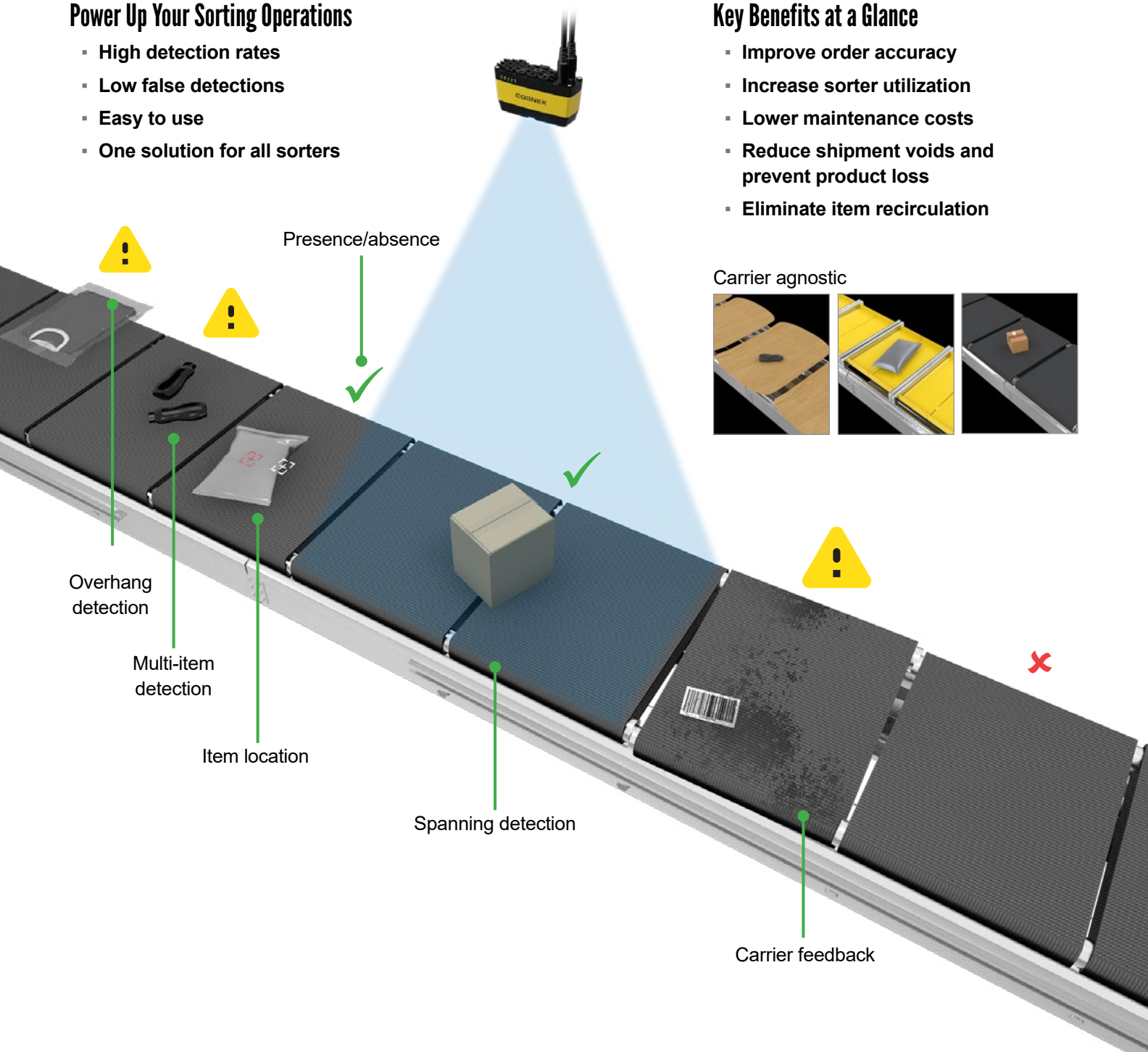
The 3D-A1000 Item Detection System is a compact and industrial 3D + 2D motion-capable smart camera used for identifying the presence or absence of objects on sorters. Patented 3D technology combined with 2D inspection capabilities accurately detects items, overhangs, empty trays, and debris on all types of carriers traveling at production line speeds. The 3D-A1000 delivers higher detection rates compared to conventional detection technologies, and outputs granular data to track system performance and health.

Power Up Your Sorting Operations

- **High detection rates**
- **Low false detections**
- **Easy to use**
- **One solution for all sorters**

Key Benefits at a Glance

- **Improve order accuracy**
- **Increase sorter utilization**
- **Lower maintenance costs**
- **Reduce shipment voids and prevent product loss**
- **Eliminate item recirculation**



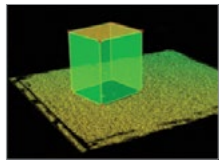
Carrier agnostic

3D + 2D technology provides functionality beyond presence/absence

Unlike conventional methods, the 3D-A1000 uses patented 3D Symbolic Light™ technology to freeze motion with a single image. The system gathers precise 3D and 2D information without the need for an encoder or complex calibrations. Embedded processing then uses Cognex vision tools to provide detailed inspections of carrier and production.



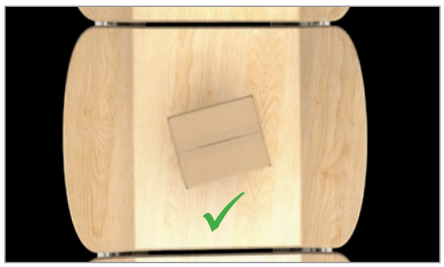
3D symbolic light



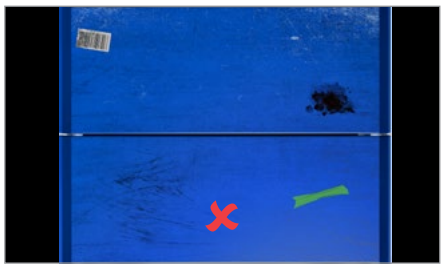
3D point cloud



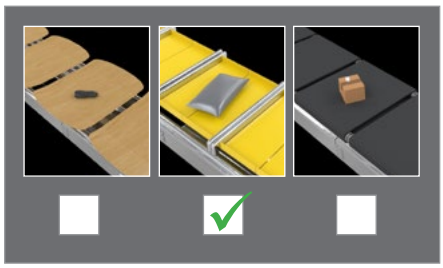
2D image



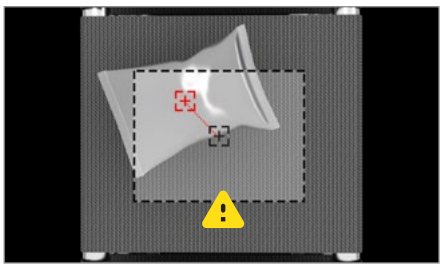
Achieve superior performance in low contrast environments



Minimize false detection due to hygiene problems



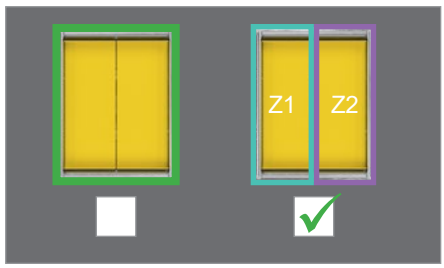
Deploy on any carrier using simple teach functions



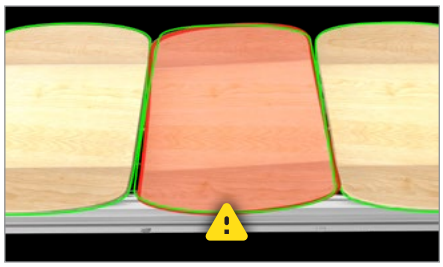
Optimize process automation by tracking item locations on sorter trays



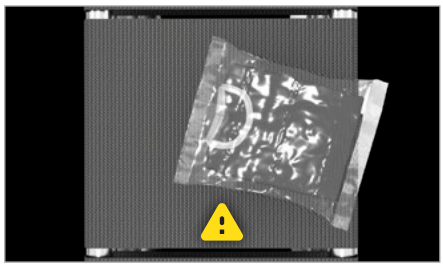
Detect small, clear, and reflective products using 3D + 2D technology



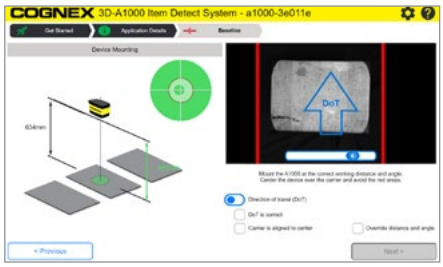
Split a carrier into two zones, with each zone having its own detection conditions and status output



Monitor system health using carrier feedback on tray deviations



Minimize product loss due to overhangs using item detection error states



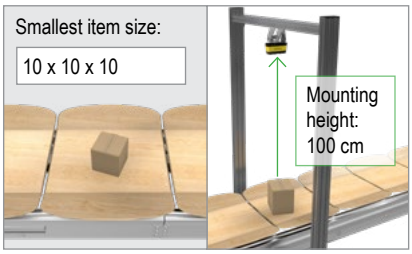
Receive application assistance and performance feedback

Out of the box ready with easy integration and maintenance

The 3D-A1000 is factory focused and calibrated, making system integration as simple as mounting. Unlike conventional systems requiring precise alignment, complex lighting, or difficult programming, the 3D-A1000 can be installed by anyone in under 15 minutes, using an intuitive setup wizard.



Step 1. Connect without the hassle of software downloads and installation procedures.



Step 2. Intuitive wizard simulates the installation environment to assist with mounting and optimization.



Step 3. In under 15 minutes, the system is ready to run and auto-certify.

3D-A1000



- One solution for all carriers
- Anyone can set up in **<15 minutes**
- Automated verification

Challenges of conventional 1D/2D/3D systems

- **1D** Provides limited feedback and lack of flexibility with different tray types and object sizes
- **2D** Sensitive to tray hygiene issues and requires on-site, time-consuming focusing and lighting
- **3D** Often requires custom programming and can exhibit poor behavior on reflective surfaces
- Time-consuming manual setup and testing that can be unreliable when compared to production

Powerful and compact turnkey system

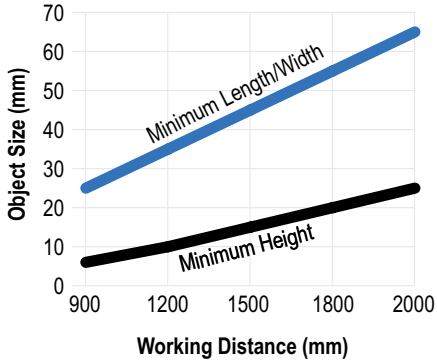


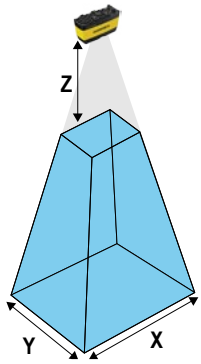
SPECIFICATIONS

Technologies	3D Symbolic Light
Acquisition Rate	Up to 3 Hz (acquisition and on-board processing)
Trigger	Trigger input voltage limits: 24 VDC Input ON: >10 VDC (>6 mA) Input OFF: <2 VDC (<1.5 mA)
Power	Voltage: +24 VDC (22–26 VDC) Current: 1A rms, 3A max; 5A max with HPIA
2D Vision	1280 x 960 resolution Modular external lighting & filter
Communication	GigE, TCP/IP, PROFINET, EtherNet/IP(TM), M/S
I/O	2 fixed inputs, 2 fixed outputs
Operating Temperature	0–40 °C (32–104 °F)
Storage Temperature	-10–60 °C (14–140 °F)
Operating Humidity	< 85% (non-condensing)
Weight	485 g (17.1 oz)
Protection	IP65
Certifications	CE, FCC, KCC, TUV SUD NRTL, RoHS

Working Distance (mm)	Carrier (mm)	Max Speed (m/s)
<900	600 x 400	<1.5
<1200	900 x 600	<2.1
<1500	1200 x 900	<2.5
<1800	1500 x 1200	<2.5

Minimum Detectable Objects vs Working Distance





**Additional advanced inspection features can allow the detection of high contrast objects that are below the minimum height specification with reduced outputs*

3D-A1000 Compared to Conventional 1D/2D/3D Systems

Technology	Carrier			Detection				System		
	Carrier Agnostic	Carrier Hygiene	Carrier Feedback	Small Item Detection	Shiny or Low Contrast Items	Item Position Feedback	Flat Items	Performance Analysis Tools	Simple Integration	Image Feedback
3D-A1000	✓	✓	✓	✓	✓	✓	✓	✓	✓	3D + 2D
1D PE Array	✗	✓	✗	✗	✓	✗	✗	✗	✗	✗
2D Vision	✗	✗	✗	✓	✗	✓	✓	✗	✓	2D
3D Sensor	✗	✓	✓	✓	✓	✓	✗	✗	✗	✗

COGNEX

Companies around the world rely on Cognex vision and barcode reading solutions to optimize quality, drive down costs and control traceability.

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