

ADVANTAGE 182 FIXED-MOUNT VISION SYSTEM

Automate diagnostic tasks
with edge learning technology

The Advantage™ 182 is the next-generation vision system that may be applied by original equipment manufacturers (OEMs) in the life sciences industry. Embedded with edge learning tools, Advantage 182 is the first vision system of its kind to utilize artificial intelligence to enable OEMs to automate complex tasks and generate highly accurate results, directly on the device. The Advantage 182 may be integrated into large automated systems to perform visual inspections and code reading, including locating, classifying and inspecting objects and features.



Edge learning tools for complex applications



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No GPU needed



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Other features

- Hardware and software revision control
- Backwards compatibility with Cognex Advantage engine products
- Robust 1D and 2D barcode reading and rapid image acquisition
- Flexible development software, no coding required
- Modular, compact design
- 2MP grayscale and color models
- Different back ends (RJ45 and USB-C) for flexible communication options



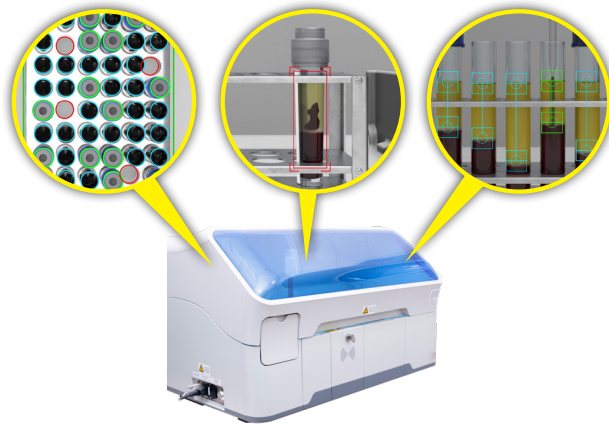
Automate any task with all-in-one vision system

The Advantage 182 includes advanced machine vision, barcode reading, and edge learning capabilities to automate a variety of tasks—from simple presence/absence to high-precision alignment, and complex color inspections. Within the same programming interface, OEMs can run AI- and rule-based models together, allowing them to leverage the unique competencies of each toolset. The AI-powered edge learning tools are ideal for tasks that introduce significant variation, while the traditional vision and ID tools are intended for more deterministic tasks.

Customize hardware or select from standard configurations

The Advantage 182 provides OEMs with the ultimate flexibility in building custom solutions. Scalable hardware, including multiple optics and illumination options, allows users to quickly integrate the solution into their existing operations. All hardware components offer revision control, which protects investments over the long term and eliminates duplicate activity by giving users the ability to repurpose previous work.

In addition to customization, Advantage 182 offers the convenience of standard configurations. These pre-qualified hardware options can speed up the prototyping and productization process. Based on working distance and field of view specifications, you can quickly find the optimal configuration for your application.

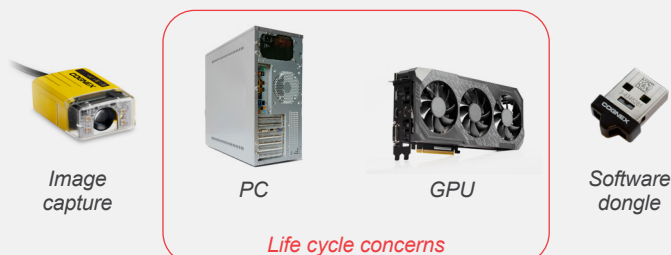


Speed up development with easy-to-use edge learning tools

Advantage 182 is embedded with innovative edge learning tools that leverage AI-based technology to automate and scale challenging inspection tasks. Using a pre-trained set of algorithms and as few as five to ten training images, industry experts can quickly configure the tools to solve complex applications in minutes. Due to their inherent flexibility, users can also reconfigure the tools to address new applications as needs change. Processing takes place on-device, which eliminates the need for a PC, simplifying application deployment and bringing the power of AI to non-programmers.

Streamline lab automation and in vitro diagnostics

Current deep learning solution (multiple components)



Edge learning with Advantage 182 (fully embedded solution)



Extensive industry experience and worldwide support network

Cognex serves a global OEM base through a network of in-house engineers located across the Americas, Europe, and Asia. From feasibility to deployment, OEMs rely on Cognex to design, build, and implement high-performance, vision-enabled equipment—with no non-recurring engineering fees. Through industry-proven solutions and strong investments in research and development, Cognex enables the life sciences industry to meet current and future lab automation challenges.



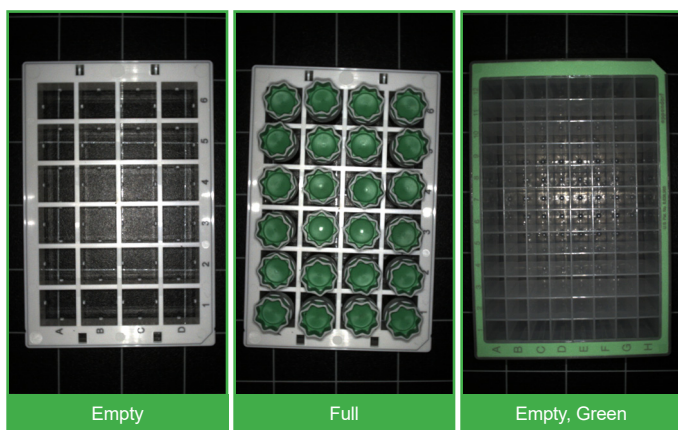
No Cognex system is a medical device or accessory to a medical device nor is intended for diagnosis or treatment purposes and has not been cleared or approved for use by the Food & Drug Administration. Cognex provides untrained deep learning vision systems to customers. Once the systems are trained by users or clinicians, they may produce results like these shown here.

Application examples

Whether reading 1D and 2D codes on vials, running deck inspections, or performing buffy coat segmentation, the Advantage 182 offers an easy-to-implement, fully embedded solution that can be deployed by OEMs across the life sciences industry. With fast, reliable output, users can interpret the results generated by the system and make decisions based on pass/fail thresholds and other application criteria.

Feature location and verification

Plate Detection and Classification



Classify and detect the orientation of tube and microtiter plates, and other racks on an IVD deck to properly process samples.

Defect detection and segmentation

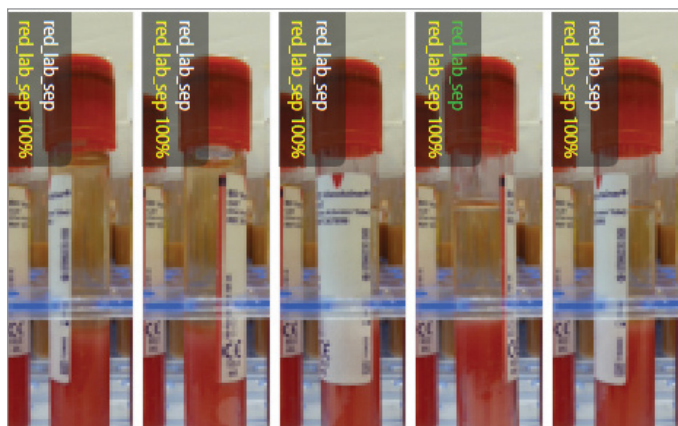
Buffy Coat Segmentation



Measure the different levels of the separated phases of centrifuged blood and the thickness of the buffy coat to ensure integrity of the test result.

Object and scene classification

HIL Inspection



Confirm whether centrifuged blood has been separated into distinct phases (plasma, buffy coat, and red blood cells) and classify samples for users to interpret based on pass/fail criteria.

Text and character reading

Pathology Sample Identification



Read barcodes and text on microscope slides to identify biological samples under examination.

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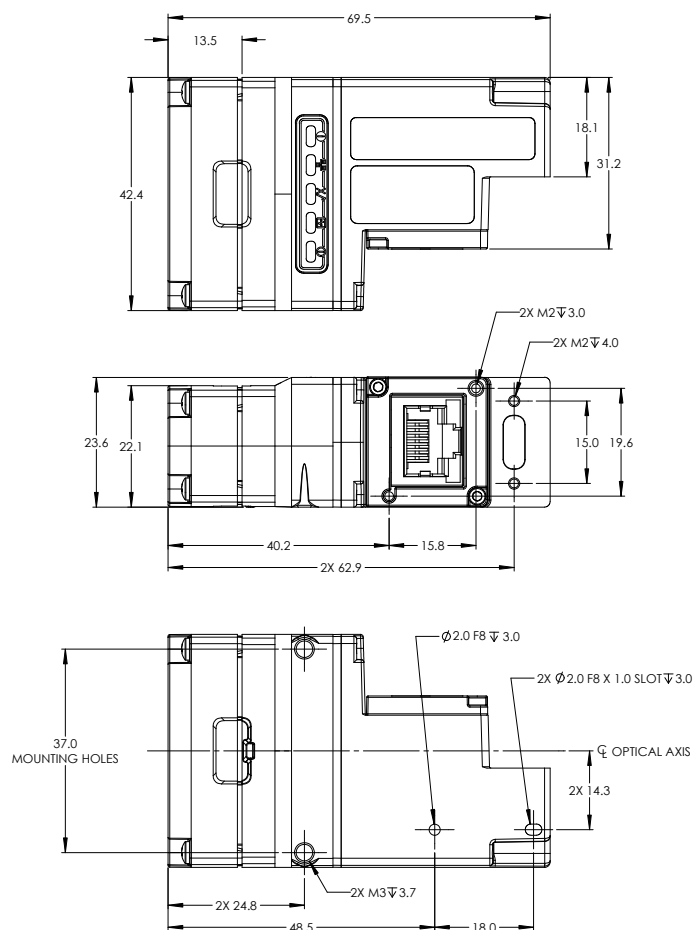
SPECIFICATIONS

	Advantage 182 (RJ45)	Advantage 182 (USB-C)
Image Sensor	1/3" CMOS (Monochrome, Color)	
Image Sensor Properties	Diagonal 6.168 mm, 2.8 μ m square pixels	
Image Resolution	1920 x 1080 pixels	
Image Sensor Acquisition	Up to 45 Hz	
Centroid Tolerance	< $\pm 5\%$ in X, < $\pm 8\%$ in Y	
Lens Options	4.5 mm, 6.2 mm	
I/O Ports	1 input and 1 output (with Cognex Serial IO cable)	1 input and 1 output (with Cognex Serial IO cable), Trigger button
Status Outputs	5 status LEDs	
Lighting	Modular/field configurable lighting: 4 independently controlled high powered LEDs (red, white, blue, IR), band pass filters and polarization filters available	
HDR	Yes (Monochrome)	
Connector Options	USB-C and RJ45 Ethernet port	USB-C (using Ethernet over USB protocol)
Communication Protocols	TCP/IP, SFTP, FTP, Serial (with Cognex Serial IO cable), Java Scripting enabled for custom protocols	
Power	5.5 – 24V +10% (with Cognex Serial IO cable) 4.75 – 5.25V (with off-the-shelf USB-C cable)	
Material	Zinc alloy/aluminum	
Weight	125g (with 6.2 mm lens) 130g (with 4.5 mm lens)	70g (with 6.2 mm lens) 85g (with 4.5 mm lens)
Dimensions	42.4 x 69.5 x 23.6 mm	42.4 x 40.9 x 23.6 mm
Operating Temperature	0–40 °C (32–104 °F)	
Storage Temperature	-10–60 °C (14–140 °F)	
Operating and Storage Humidity	<95% non-condensing	
Protection	IP40	IP67
RoHS Certified	Yes	
Approvals	EU CE, US FCC, TUV CB NRTL IEC 61010	

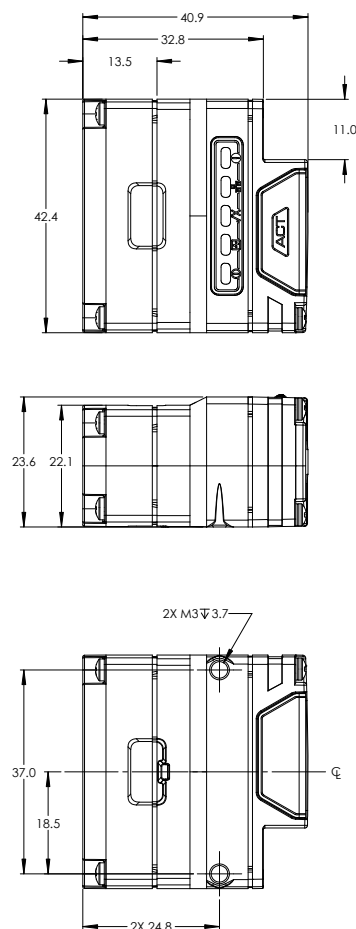
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Advantage 182 Models

Advantage 182 (RJ45)



Advantage 182 (USB-C)



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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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