Overview

The Machine Vision Training Device is designed to provide hands-on learning for industrial vision systems used in **smart factories, logistics, semiconductors, and pharmaceutical production**. The system enables real-time image acquisition, inspection, and processing of objects using an integrated vision platform. It also supports **Arduino and PLC interfacing** with industrial communication protocols, offering a complete training setup for automation, AI vision, and control integration.

The equipment incorporates a **camera, lens, light, and built-in image processor** capable of standalone operation without a PC connection. It offers inspection functions such as pattern recognition, edge and pixel analysis, OCR, blob detection, and measurement tools. Learners can develop C#-based dashboards, simulate inspection through emulation tools, and control robotic devices like the included **snake-bot** via smartphone or SCADA interface for Industry 4.0 demonstrations.

Features

- Enables practical training in **image acquisition, processing, and analysis** for smart manufacturing environments.

- Integrated **industrial Arduino control board** for automation programming practice.

Note: Specifications are subject to change, Photos shown above are Indicative, Actual Product can Vary.

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- **Built-in image processor** with camera, lens, and light—operates independently without a PC.

- **Conveyor-based inspection** with shooter and optical sensors for pass/fail classification.

- Comprehensive industrial inspection tools: pattern, edge, pixel count, brightness, contrast, distance, angle, OCR, blob, and image filter.

- User-friendly **Easy Builder interface** for intuitive inspection setup.

- **C# SDK support** for developing custom inspection dashboards and applications.

- Includes **emulation tool** for inspection setup practice without a physical camera.

- Supports **general and industrial communication protocols** (TCP/IP, Modbus, PROFINET, OPC UA, EtherNet/IP, etc.).

- Integrated **SCADA-based data collection and monitoring** for real-time control.

- Includes **Snake-bot** motion robot for additional control and automation learning.

- Equipped with **AI-based inspection capability** and **user-configurable dashboards**.

Technical Specifications

Main Body

Parameter	Specification
Size	Approx. D500 × W400 × H500 mm (table-mounted)
Input Voltage	100–240 VAC, 50/60 Hz
Allowable Voltage	85–264 VAC, 50/60 Hz; 120–370 VDC
Output Voltage	24 VDC
Output Current	2.5 A
Output Power	60 W
Switch	1A1B × 3
Signal Tower	24 V LED × 3
Relay	24 VDC, 4P × 2

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Inspection Station

Parameter	Specification
Size	D200 × W100 × H230 mm Approx
Conveyor Type	Belt type with tension controller
Belt Color	Black
Motor	24 VDC with gear speed reducer
Sensor	Optical fiber sensor × 1

Shooter Assembly

Parameter	Specification
Size	D120 × W150 × H150 mm Approx
Material	Aluminum, 2T
Electronic Valve	24 VDC × 1
Sensor	Optical fiber sensor × 1
Accessories	Fall prevention guide

Industrial Arduino Control Board

Parameter	Specification
Rated Voltage	24 VDC
Power Consumption	5 W
Digital Input	16 points (DC24V, NPN)
Relay Output	16 points (5A/point, 15A/COM)
Analog Input	4 points (DC 0–5V)
Pulse Input	1 point (DC5V, 32-bit)
Pulse Output	6 points (DC5V, 16-bit)
External I/O	8/8 one-touch attach/detach (Pitch 3 mm)

Smart Machine Vision Unit

Parameter	Specification
Image Processor	Built-in (no PC required)
Image Sensor	1/3" CMOS (color)
Lens	S-Mount/M12 lens (liquid lens 6.2 mm or manual 8

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Parameter	Specification
	mm)
Resolution	640×480 (standard), 800×600 (2× magnification)
Light Source	Circular LED (R/B/IR optional, with filter/polarized cover)
Frame Rate	40 fps (mono), 24 fps (color)
Inspection Tools	Pattern, Edge, Pixel Count, Brightness, Contrast, OCR, Blob
Measurement Tools	Distance, Angle, Diameter, Type, Edge
Communication	TCP/IP, UDP, FTP, RS-232C, OPC UA, EtherNet/IP, PROFINET, Modbus, CC-Link
Connectors	Industrial M12 Ethernet, M12 Power/I/O
Protection	IP65 aluminum housing
Power	24 VDC ±10%, 48 W
Dimensions	Inline: 92×60×52 mm / Vertical: 61×60×52 mm

Emulation Tool

- Four-step configuration: Start → Tool Installation → Configuration → Completion
- **Spreadsheet-based programming** (no coding required)
- Includes tools for image detection, pattern matching, OCR, color/edge/fault inspection, histogram analysis
- Supports **distance and geometry calculations**, **logic and math functions**, and **communication setup**
- **Data logging**, **runtime visualization**, and **JavaScript-based scripting support (In-Sight Script)**
- **C# SDK** support for advanced software development

Snake-Bot Module

Parameter	Specification
Composition	Head (1EA), Body (8EA), Tail (1EA)
Motion	Wave propagation-based, controlled by RC servos
Control	Smartphone app (Bluetooth HC-06)

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Parameter	Specification
Power	RC Servo 7.4V; Communication 3.7V
Size	55(W) × 71(H) × 960(L) mm
Battery	18650 pack × 3 (with USB charger)
Accessories	Assembly tool set included

Accessories

- Ethernet Cable – 1 EA
- M12 PoE Cable – 1 EA
- USB Download Cable – 1 EA
- Emulation License – 1 EA
- Power Cable – 1 EA

Additional Information

- All components supplied match the listed specifications.
- Operating software and courseware provided on USB.
- Meets or exceeds equivalent industrial training standards.

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