



*PHOTO: Vision / ICT Inspection & Sorting Process Station
(image for reference only, actual product may differ)*

SYSTEM OVERVIEW

The **Vision / ICT Inspection & Sorting Process Station** is an advanced smart-factory training system designed to simulate real industrial inspection and automated sorting processes. The station integrates machine vision inspection, ICT (In-Circuit Test) measurement, IoT-based device sorting, PLC control, SCADA visualization, and MES/OPC-based data management into a unified manufacturing platform.

The system enables integrated monitoring, control, data acquisition, and performance analysis of inspection processes. Vision and ICT inspection results are managed via OPC server and MES systems, supporting real-time monitoring and database construction.

The station is constructed using convergence technologies including IT, automation, software, IoT, and industrial networking. All devices are newly manufactured and assembled into a robust enclosure with structured cable routing using ducts and cable chains for electrical and pneumatic lines.

The system supports mobile-based monitoring, intelligent process optimization, and customized training across supply, inspection, and sorting processes. Operators can perform individual part verification using the vision inspection system.

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



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TECHNICAL SPECIFICATIONS

Sl. No.	Item Name	Technical Specifications	Qty
1	Vision Cameras & Lighting	Smart vision camera with embedded processor; 1/3" CMOS color sensor; S-Mount/M12 lens (6.2 mm liquid autofocus or 8 mm manual); image modes 640×480 & 800×600; diffused LED ring illumination (R/B/IR); up to 40 fps mono / 24 fps color; inspection tools (pattern, edge, circle, pixel count, brightness/contrast, OCR, blob, filters); outputs pass/fail & numeric data; protocols TCP/IP, UDP, FTP, Telnet, RS232C; industrial protocols OPC UA, EtherNet/IP, PROFINET Class B, Modbus TCP, SLMP, CC-Link IE; M12 Ethernet & I/O; IP65 aluminum housing; supply 24 VDC ±10%, max 48 W.	2 ea
2	Vision Inspection Transfer/Return Conveyor	Dual-layer PVC conveyor; belt approx. 0.8 × 12 × 1039 mm; 24 VDC motor 20 RPM; ≥4 ball bearings; AL6061 pulley drive; 3 optical sensors (10–30 VDC, 50 mm); drop stoppers; position cylinders: 2 × Ø16 mm stroke 10 mm (vision) and 1 × Ø16 mm stroke 10 mm (ICT), pressure 1.0 MPa, 2 flow controls and magnetic sensors each.	1 set
3	ICT Test Up/Down Cylinder	Bore ≈16 mm; stroke ≈10 mm; max pressure 1.0 MPa; 2 flow-control valves; 2 magnetic sensors.	1 ea
4	ICT Test Jig Tool	Contact-type ICT test pins; analog measurement output via PLC/OPC/MES for pass/fail judgment.	1 ea
5	IoT Sorting – Forward/Reverse Cylinder	Bore ≥20 mm; stroke ≥150 mm; max pressure 1.0 MPa; 2 flow-control valves; 2 magnetic sensors.	1 ea
6	IoT Sorting – Up/Down Cylinder	Bore ≥20 mm; stroke ≥50 mm; max pressure 1.0 MPa; magnetic sensors (NO, LED, 12–27 V DC/AC); 2 flow-control valves.	1 ea
7	IoT Sorting – Rotary Cylinder	Internal volume ≥51 cm ³ ; rotation 90°; max pressure 1.0 MPa; 2 flow controls; magnetic sensors (NO, LED, 12–27 V DC/AC).	1 ea
8	Pneumatic Solenoid Valves	5/2 single solenoid (1), 5/2 double solenoid (4), 3/2 single solenoid NC (3); anodized aluminum base; pressure 0.05–1.0 MPa; flow 700 L/min; response ≤18 ms; supply 24 VDC ±10%; LED indicator & surge protection; manual override.	8 ea
9	Pneumatic Air Preparation Unit	Regulator, filter, lubricator, gauge, hand valve; proof pressure 1.5 MPa; operating 0–1.0 MPa; set range 0.05–0.85 MPa; rated flow 800 L/min @0.6 MPa; filtration 10 μm.	1 ea
10	PLC Control System	Mitsubishi MELSEC compatible PLC; supply 100–240 VAC; outputs 5 VDC & 24 VDC; 5-slot base; cyclic CPU; ladder/SFC/ST/function/list; USB & Ethernet; program 30k steps; I/O devices 8192; I/O points 4096; internal relays 9216; input modules 2×16 pt; output module 16 pt; analog input ≥2 CH (0–5/0–10 V).	1 set
11	GOT Touch Monitor (HMI)	8.4" TFT LCD; 640×480; 65,536 colors; LED backlight; resistive touch; memory 57 MB/128 MB; RS232, RS422/485, Ethernet, USB, SD; supply AC 100–240 V.	1 ea

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12	Device Operation Control Section	Power switch; Auto/Manual selector; 2 push buttons; emergency stop; 2 pilot lamps; buzzer.	1 set
13	Real-Time Monitoring IP Camera	1/2.8" CMOS ~2 MP; 3.8 mm lens; H.264/MJPEG; RJ45 & BNC; resolution 1920×1080; 10/100Base-T; dual stream; PoE.	1 ea
14	Station Enclosure	800×810×1500 mm aluminum profile frame; double doors; safety cover; lockable casters; tower light; control shelf; built-in SMPS ≥24 VDC, ≥2 A.	1 ea
15	Emulation Tools	Spreadsheet interface; networking discovery; vision tools; geometry/math/text/coordinate functions; SDK (C#); Ethernet/serial I/O; runtime monitoring; data storage & validation tools.	2 ea
16	Accessories	Power & communication cables; system software; Ethernet (M12-RJ45) & PoE cables; emulation licenses.	1 lot

RANGE OF EXPERIMENTS

- Vision-based industrial part inspection
- ICT (In-Circuit Test) functional PCB verification
- PLC-controlled inspection and sorting logic
- OPC & MES data communication and monitoring
- IoT-based smart sorting operations
- Conveyor automation and positioning control
- Pneumatic actuator sequencing and sensor integration
- SCADA-based real-time visualization
- Vision measurement, OCR, blob detection and pattern analysis
- Industrial protocol communication and networking

FEATURES

- Integrated Vision + ICT + PLC + IoT training platform
- OPC and MES based inspection result management
- Embedded smart vision system (no external PC required)
- Industrial communication protocol compatibility
- Dual-layer conveyor with automated inspection positioning
- ICT jig with analog data analysis capability
- Smart sorting cylinders including rotary actuation
- SCADA-based monitoring and mobile access capability
- Safety enclosure with structured cable management

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- Suitable for Industry 4.0 and smart manufacturing education

SERVICES REQUIRED

- Standard **230 V AC** power supply
- Proper earthing/grounding required

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