



PHOTO: MANUFACTURING & PACKAGING PROCESS STATION
(image for reference only, actual product may differ)

SYSTEM OVERVIEW

The **MANUFACTURING & PACKAGING PROCESS STATION** is an integrated smart-factory training system designed to simulate real industrial manufacturing and packaging operations. The system is configured to produce commercially usable products while ensuring robustness and stability suitable for advanced training environments.

The station integrates sensors, PLC control, smart vision inspection, IoT-based monitoring, conveyor transfer, and packaging mechanisms into a unified automation platform. All operational functions can be centrally managed through dedicated software, enabling real-time monitoring, production simulation, and process data storage.

The system supports supervision, maintenance, and workplace safety management while allowing performance upgrades. Using convergence technologies such as IT, automation software, IoT, and industrial communication, the station provides customized practice across supply, assembly, inspection, and packaging processes.

For safety and reliability, the system is fully enclosed in a protective case housing with

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



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organized routing of electrical wiring and pneumatic hoses via ducts and cable chains. All supplied components are brand-new and unused.

TECHNICAL SPECIFICATIONS

Sl. No.	Item Name	Technical Specifications	Qty
1	Lower Box Supply Cylinder Section	Tower storage rack for workpieces; supply cylinder bore ≥ 16 mm; stroke ≥ 125 mm; operating pressure 1.0 MPa; 2 flow control valves; optical sensor for workpiece confirmation; 2 magnetic sensors.	1 set
2	Upper Box Supply Cylinder Section	Tower storage rack; supply cylinder bore ≥ 16 mm; stroke ≥ 125 mm; operating pressure 1.0 MPa; 2 flow control valves; optical sensor; 2 magnetic sensors.	1 set
3	Product Transfer Conveyor	PVC belt $\geq 0.8 \times 86 \times 826$ mm; DC motor 24 V, 20 RPM; ≥ 4 ball bearings; motor mounting bracket; AL6061 pulley drive; drop prevention stoppers.	1 ea
4	5/2-Way Double Solenoid Valves	Aluminum anodized sub-base; operating pressure 0.05–1.0 MPa; flow rate 700 L/min (0.5 MPa); response ≤ 18 ms; spring & internal pilot return; coil 24 VDC $\pm 10\%$; LED and surge protection; manual push-button operation.	2 ea
5	Pneumatic Air Preparation Unit	Regulator, filter, lubricator, pressure 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; filtration 10 μ m.	1 ea
6	PLC Input/Output Modules	Mitsubishi MELSEC compatible or equivalent; input module 16 pt, photocoupler isolation, 24 VDC; output module 16 pt relay isolation, up to 240 VAC; common 16 pt; operating voltage 19.2–26.4 VDC.	1 set
7	GOT Touch Monitor	10.4" TFT LCD; 640 \times 480 resolution; 65,536 colors; LED backlight; resistive touch; memory 57 MB/128 MB; RS232, RS422/485, Ethernet, USB, SD; AC 100–240 V; SCADA monitoring and control.	1 ea
8	Electrical Design & Control Learning Module	3D component modeling library (~60 components); VR-based wiring simulation; selectable power inputs (1 ϕ 220 V, 3 ϕ 220 V, 3 ϕ 380 V); circuit breakers, relays, switches, motors; forward/reverse motor animation; EOCR load simulation.	1 ea
9	Device Operation Control Unit	Power switch; Auto/Manual selector; 2 push buttons; emergency stop; 2 pilot lamps; buzzer.	1 set
10	Real-Time Monitoring IP Camera	1/2.8" CMOS 2 MP; 3.8 mm lens; H.264/MJPEG; RJ45 & BNC; 1920 \times 1080; dual streaming; PoE support.	1 ea
11	Station Enclosure	800 \times 810 \times 1500 mm aluminum profile frame; transparent protective cover; double doors; blue-coated panels; 4 lockable casters; 3-color tower light; control shelf; built-in SMPS ≥ 24 VDC, ≥ 2 A; integrated area sensors.	1 ea
12	Vision Camera & Lighting	Smart vision camera with built-in processor; 1/3" CMOS color; M12 lens (6.2 mm auto-focus or 8 mm manual); 640 \times 480 &	1 ea

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		800×600 modes; LED ring illumination; inspection tools (pattern, edge, OCR, blob); protocols OPC UA, EtherNet/IP, PROFINET, Modbus TCP; IP65 housing; 24 VDC ±10%, 48 W max.	
13	Vision Emulation Tool	No-code spreadsheet interface; networking discovery; inspection tools; geometry/math/text functions; coordinate conversion; SDK (C#); Ethernet/serial communication; runtime data storage and analysis.	1 ea
14	Accessories	Power cable; communication cable set; system setup software; Ethernet cable; M12 PoE cable; emulation license certificate.	1 lot

RANGE OF EXPERIMENTS

- Automated manufacturing and packaging sequence
- Box supply and transfer automation
- Conveyor-based product movement
- PLC-based packaging control logic
- Vision inspection and quality verification
- SCADA monitoring and control
- IoT-based production monitoring
- Electrical circuit and motor wiring simulation
- VR-based electrical training exercises
- Integrated safety and emergency control systems

FEATURES

- Smart-factory compatible manufacturing and packaging station
- Integrated PLC, vision, IoT and conveyor automation
- VR-based electrical wiring training module
- Real-time monitoring through SCADA and mobile devices
- Smart vision inspection with industrial communication protocols
- Fully enclosed safety housing with cable duct routing
- Modular and upgradeable architecture
- Suitable for Industry 4.0 and advanced manufacturing education

SERVICES REQUIRED

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

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