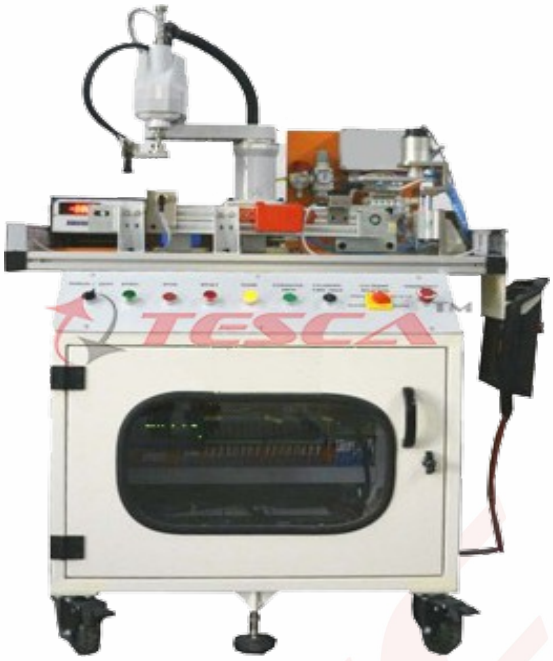
Order Code : 24258048.4 Automotive Manufacturing Simulation Production Line



The Intelligent Manufacturing System Training Kit is designed to simulate industrial production processes such as handling, assembly, welding, grinding, and warehousing, focusing on the automotive manufacturing industry. The system integrates advanced robotics, AI vision, and programmable components for a comprehensive learning experience in intelligent manufacturing systems. Its open and modular design supports flexible customization, enabling students and educators to experiment with various scenarios in robotics and automation.

Features

- Simulates industrial flexible production lines, restoring real-world automated processes.
- Multifunctional control box stores controlling codes, enabling easy modification and scene customization.
- Safe, open, and user-friendly platform for learning robot programming and system control.
- Compatible with popular programming tools such as Python, G-code, and Blockly.

System Components

1. **Six-Axis Manipulator Kit**: 5 units
2. **Bottom Plate**: 1 unit
3. **Six-Axis Manipulator with Vehicle Integration**: 2 units
4. **AI Vision Set**: 1 unit
5. **Conveyor Belts**: 2 units
6. **Car Models, Parts, and Accessories**
7. **Display Screen**: 1 unit
8. **Signaling Units**: 5 units
9. **Main Control Box (Arduino-Based)**: 1 unit

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

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10. **Warehousing Units**: 2 units
11. **Touchscreen Module**: 1 unit

Technical Specifications

Six-Axis Manipulator

- **Axle Number**: 6+1
- **Payload**: Standard: 250g; Max: 400g
- **Accuracy**: ±0.2mm
- **Motor Type**: High-accuracy stepper motor with a reducer
- **Communication Interfaces**: USB, WiFi, Bluetooth, PLC (RS485)
- **Power**: 12V/4A DC; Max 50W
- **Environment**: -10°C ~ 60°C
- **Material**: Aluminum alloy, ABS engineering plastics
- **Controller**: Arduino 2560

Motion Parameters:

Axis	Range	Max Speed (150g Load)
1	-100° to +100°	31°/s
2	-60° to +90°	65°/s
3	-180° to +50°	28°/s
4	-180° to +180°	110°/s
5	-180° to +40°	33°/s
6	-180° to +180°	66°/s

End-Effectors

- **Pen Holder**: Ø10mm
- **Suction Cup**: Ø10mm, -58Kpa
- **Gripper**: Opening size: 27.5mm, Pressure: 8N
- **3-Finger Soft Gripper**: Opening size: 27.5mm, Pressure: -58Kpa

Conveyor Belt Set

- **Payload**: 1kg
- **Effective Delivery Length**: 600mm
- **Max Speed**: 100mm/s
- **Material**: High-strength steel, aluminum alloy

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

AI Vision Set

- **Camera Module**: OpenMV 3 (3MP)
- **Coding Language**: Python
- **Features**: Visual calibration, integrated lighting with 8 LEDs

Software

- **Supported Tools**: Studio, Python, G-code, Blockly
- **Functions**:
  - Point teaching and reappearance
  - Cartesian coordinate control
  - Writing and drawing
  - Graphical and Python programming

Robotics: Planning, Control, and Applications

- Forward & inverse kinematics
- Robot dynamics and motion control
- Training cases aligned with educational chapters

Developing Robots with ROS

- ROS manipulator arm modeling and controls
- Motion planning and playback

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