



Mechatronics Pick and Place Workstation

Category: Mechatronics · Model reference: MZM-2001



SPECIFICATIONS

DESCRIPTON :

Hands-on Industrial Practice:

Experience learned from this station is more than 3 traditional mechatronics control stations can provide. An excellent value based on the cost. Sensors come with indicator lamps for faulting and troubleshooting functions.

Covered Training Elements:

Pneumatic Actuator, Electro-pneumatic valves, PLC, AC Solenoid, Power supply, Conveyor belt, Pick and Place Arm with gripper, Material hopper, Sensors (proximity, optical, inductive/reductive, micro switch), Control interface devices (Electro-magnetic relays, solid-state relays), faulting, and Troubleshooting

The overall operation of this comprehensive mechatronics workstation performs the following tasks:

- Material hopper provides a workpiece from a magazine
- Sensor issues an error signal if no part is present
- Pick and place arm moves into position to grab workpiece
- Gripper fingers grab workpiece
- Arm lifts workpiece from the material hopper
- Arm rotary Cylinder
- Arm places workpiece over conveyor belt
- Gripper fingers release workpiece on to belt
- Conveyor belt moves workpiece
- Sensor determines if the workpiece is of plastic or metal material
- Sensor determines the color of the workpiece
- Workpieces are sorted by material type and color
- One type is diverted off the conveyor belt into the slide #1
- Second type is diverted off the conveyor into the slide #2
- The other type runs to the end of belt and drops into the end bin

A. Specifications

Control Unit:

- CP1E PLC Control-
- Main Unit I/O control points
- 8K words memory (extensible to 16K words)
- RS-232 Serial Cable
- 2 "25-pin D-Shaped" communication connectors for I/O between PLC and mechanism
- Power Unit (input : 220VAC , output: 24VDC), emergency break and fuse protection, emergency break and fuse protection

Control Buttons:

- Start (Green)
- Stop (Red)
- Reset (Yellow)
- 3 Control Modes: Auto and Manual

B. Mechanism:

1. Distribution:

- A magazine.
- Aluminum magazine base has a separate type fiber optical sensor installed at the bottom
- A double-acting pneumatic cylinder
- The cylinder comes with 2 speed control valves and 2 reed switches.

- A micro switch

- 6 pieces of a work piece made out of plastic and aluminum
- 3 different colors

2. Pick & Place Arm:

- A Vertical 2-rod cylinder control valves
- Driven by a Rotary Cylinder
- Gripper powered by pneumatics

3. Conveyor Belt:

- 24VDC Motor
- One conveyor belt
- An inductive proximity switch
- A reductive proximity switch)
- 2 Set Double Acting Cylinder for control selection parts
- A separate type photo-electric sensor
- Two fixed-focus reflective photo-electric sensors
- A diffuse reflective fiber optical sensor

4. 3-point Assembly:

- Air filter: 40 m, f 1/4" connector Pressure regulator, 0 ~ 10 kgs/cm², 15 kgs/cm²(Max.)
- Air pressure input sliding switch

5. Electro-Pneumatic Valves:

- DC 24 V, 0.55 W, indicator lights, voltage overload protection circuit

- An electronic, 5 ported, 2-way, single-acting valve
- An electronic, 5 ported, 2-way, double-acting valve
- An electronic, 5 ported, 3-way, center closed valve
- 3-in-1 valve housing

6. Aluminum Platform:

- Size: 34" x 30" (86cm x 76 cm)
- T shaped slots 30 mm apart, bolt can sustain up to 150 kgs/ cm²
- Weight: 88 lbs (40Kgs)

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