CPE-FAS30

Smart Factory Training System

1st Testing
(CPE-FAS30C)

Vision Inspection Station
(CPE-FAS30B)

FEATURES

- Helps the user understand the functions and processes of smart factory system, as an essential part of Industry 4.0, tailored to perform monitoring of manufacturing processes by sensor and software, autonomous factory control and maintenance, as well as safety management of the workshop
- Designed to optimize the use of smart production processes through the fusion with IT, software and Internet-of-Things (IoT)
- Supports personalized hands-on practices toward product design, production and quality control by the adoption of advanced techniques such as IoT and factory simulation
- Two ways of system operation: integrated system control of the nine stations and standalone operation per station
- Ensures safety in every practice by the use of a station hard case for each process

EXPERIMENTAL CONTENTS

- Comprehensive smart factory experiments based on the advanced IoT and factory simulation techniques toward product design, production, and quality control
- Components of automation system such as cylinder, valve, relay and motor
- Understanding of the automation system
- Understanding and utilization of the machinery elements
- Network system communication among programmable logic controllers (PLC's)
- How to control analog signal and digital signal
- Programming language practices for PLC-based control and PC-based control

IoT Working
Materials
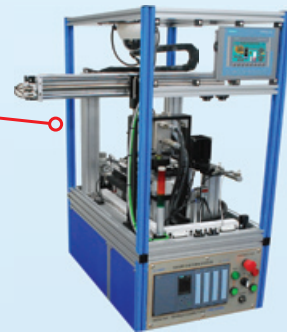
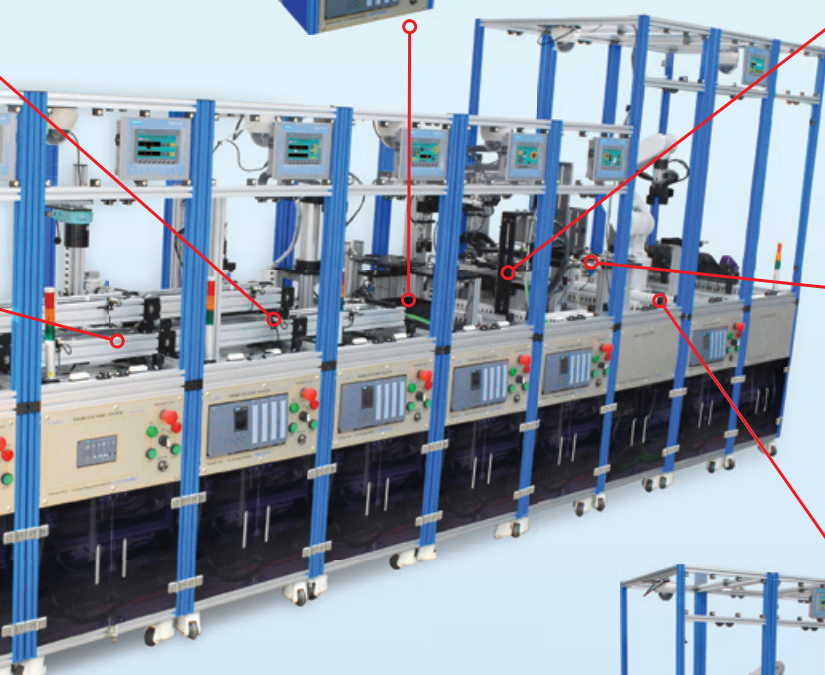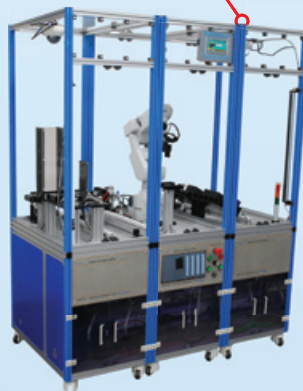Distribution Station
(CPE-FAS30A)

1st Sorting Station
(CPE-FAS30D)

2nd Test & Sorting Station
(CPE-FAS30E)

Handling & Assembly
Station (CPE-FAS30F)

Packaging, Arm Robot, RFID &
Warehousing Station
(CPE-FAS30 G, H, I)

CPE-FAS30

PRODUCT COMPOSITION

Distribution Station (CPE-FAS30A)

1) Palette feed cylinder
2) Palette transfer cylinder
3) Working materials transfer cylinder and clamping cylinder
4) Palette load & transfer cylinder
5) Palette transfer control unit
   - Controls the direction of a conveyor
   - Motor (DC 24V, 20 RPM)
6) Palette load & transfer control unit
   - Controls the direction of a conveyor
   - Motor (DC 24V, 20 RPM)
7) Solenoid valve
   - 5/2-way pneumatic double acting solenoid valve: 3ea
8) Pneumatic regulator: 1ea

9) Station hard case
   - Built-in SMPS (DC24V, 2A)
   - Rack for fixing the control panel
   - With aluminum door at the bottom
10) Control panel
    - Power switch
    - Selector switch [AUTO/MANUAL]
    - Push button: 2ea
    - Emergency stop switch
    - Pilot lamp: 2ea
    - Buzzer
11) PLC module
12) HMI module

Vision Inspection Station (CPE-FAS30B)

1) Vision system
   - Number of items for inspection: 5 items
2) Palette transfer cylinder: 4 sets
3) Palette transfer control unit: 2 sets
   - Controls the conveyor's direction
   - Motor (DC 24V, 20 RPM)
4) Solenoid Valve
   - 5/2-way pneumatic double acting solenoid valve: 4ea
5) Pneumatic regulator: 1ea
6) Station hard case
   - Built-in SMPS (DC24V, 2A)
   - Rack for fixing the control panel
   - With aluminum door at the bottom

7) Control panel
   - Power switch
   - Selector switch [AUTO/MANUAL]
   - Push button: 2ea
   - Emergency stop switch
   - Pilot lamp: 2ea
   - Buzzer
8) I/O-Link

1st Testing Station (CPE-FAS30C)

1) 1st testing & transfer cylinder : 2 sets
2) 1st testing & transfer control unit: 2 sets
   - Controls the conveyor's direction
   - Motor (DC 24V, 20 RPM)
3) Sensor data measurement
   - Good/bad quality judgment on analog output values
   - Good/bad quality judgment on digital output values
4) JIG tool
5) Solenoid valve
   - 5/2-way pneumatic single acting solenoid valves: 1ea
   - 5/2-way pneumatic double acting solenoid valves: 2ea
6) Pneumatic regulator: 1ea
7) Station hard case
   - Built-in SMPS (DC24V, 2A)
   - Rack for fixing the control panel
   - With aluminum door at the bottom
8) Control panel
   - Power switch
   - Selector switch [AUTO/MANUAL]
   - Push button: 2ea
   - Emergency stop switch
   - Pilot lamp: 2ea
   - Buzzer
9) PLC module
10) HMI module

1st Sorting Station (CPE-FAS30D)

1) Conveyor transfer cylinder
2) Conveyor transfer guide: 2 sets
3) Palette absorption cylinder (forward / backward)
4) Palette absorption cylinder (up / down)
5) Pad and holder: 2ea
6) Palette absorption & rotation cylinder
7) Palette transfer control unit
   - Controls the conveyor's direction
   - DC motor: DC 24V, 20RPM
8) Solenoid Valve
   - 5/2-way pneumatic single acting solenoid valves: 1ea
   - 5/2-way pneumatic double acting solenoid valves: 3ea
   - 3/2-way pneumatic single acting solenoid valves (N.C): 2ea
9) Pneumatic regulator: 1ea
10) Station hard case
   - Built-in SMPS (DC24V, 2A)
   - Rack for fixing the control panel
   - With aluminum door at the bottom
11) Control panel
   - Power switch
   - Selector switch [AUTO/MANUAL]
   - Push button: 2ea
   - Emergency stop switch
   - Pilot lamp: 2ea
   - Buzzer
12) PLC module
13) HMI module

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2nd Test & Sorting Station (CPE-FAS30E)

1. 1st Assembly & Sorting Station

1) Index Table
 - 4 positions
 - DC 24V motor
2) Lower product cover supply cylinder
3) Assembly & press cylinder
4) Solenoid valve
 - 5/2-way pneumatic single acting
   solenoid valve: 2ea
5) Pneumatic regulator: 1ea
6) Station hard case
 - Built-in SMPS (DC24V, 2A)
 - Rack for fixing the control panel
 - With aluminum door at the bottom

7) Control panel
 - Power switch
 - Selector switch [AUTO/MANUAL]
 - Push button: 2ea
 - Emergency stop switch
 - Pilot lamp: 2ea
 - Buzzer
8) PLC module
9) HMI module

Handling & Assembly Station (CPE-FAS30F)

2. 2nd Assembly & Sorting Station

1) Product transfer cylinder
2) Gripper
3) Gripper up/down cylinder
4) Upper product cover feed cylinder
5) Upper product cover absorption
   cylinder (up / down)
6) Upper product cover absorption
   cylinder (rotational)
7) Vacuum generator
 - Pad and holder
8) Product transfer cylinder
9) PCB ON/OFF switching cylinder
10) Hydraulic press cylinder
11) Hydraulic pump
12) Solenoid Valve
 - 4/2-way hydraulic double acting
   solenoid valves: 1ea
 - 5/2-way pneumatic single acting
   solenoid valves: 3ea
 - 5/2-way pneumatic double acting
   solenoid valves: 5ea
 - 3/2-way pneumatic single acting
   solenoid valves (N.C): 1ea

13) Pneumatic regulator: 1ea
14) Station hard case
 - Built-in SMPS (DC24V, 2A)
 - Rack for fixing the control panel
 - With aluminum door at the bottom
15) Control panel
 - Power switch
 - Selector switch [AUTO/MANUAL]
 - Push button: 2ea
 - Emergency stop switch
 - Pilot lamp: 2ea
 - Buzzer
16) PLC module
17) HMI module

Packaging Station (CPE-FAS30G)
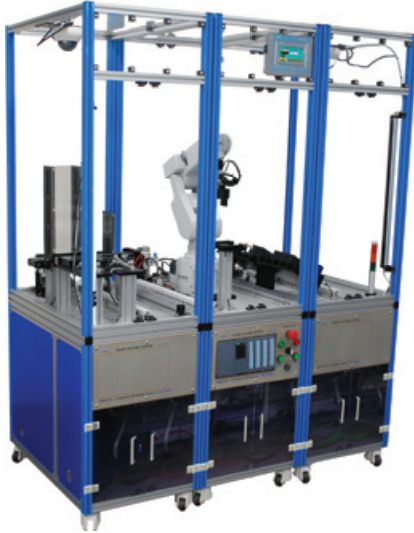
1) Inner box feed cylinder
2) Outer box feed cylinder
3) Tower-type storage rack for the
   working materials
4) Palette transfer control unit
   - Controls the conveyor's direction
   - DC motor: DC 24V, 20RPM
5) Solenoid Valve
   - 5/2-way pneumatic double acting
     solenoid valves: 2ea

6) Pneumatic regulator : 1ea
7) Station hard case
   - Equipped with an integrated area
     sensor package in the last three
     stations: 7th ~ 9th stations
   - Rack for fixing the control panel
   - With aluminum door at the bottom

Arm Robot Station (CPE-FAS30H)

1) Product packaging gripper
2) 6-axis arm robot
3) Robot controller
4) Solenoid valve
   - 5/2-way pneumatic single acting
     solenoid valve: 1ea
5) Pneumatic regulator: 1ea
6) Station hard case
   - Equipped with an integrated area
     sensor package in the last three
     stations: 7th ~ 9th stations
   - Rack for fixing the control panel
   - With aluminum door at the bottom
7) PLC module
8) HMI module

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RFID & Warehousing Station (CPE-FAS30I)

1) Warehouse module
 - Sensor slide for object detection: 2ea
2) RFID reader
3) Station hard case
 - Equipped with an integrated area sensor
   package in the last three stations:
   7th ~ 9th stations
 - Rack for fixing the control panel
 - With aluminum door at the bottom
4) Control panel
 - Power switch
 - Selector switch [AUTO/MANUAL]
 - Push button: 2ea
 - Emergency stop switch
 - Pilot lamp: 2ea
 - Buzzer

IoT working materials (CPE-FAS30J)

1) MCU : Cortex M3
2) ISP : USB
3) Power Charger : Micro USB
4) Buzzer
5) GPS
6) LED
7) BLE Internal Antenna

Monitoring simulation software
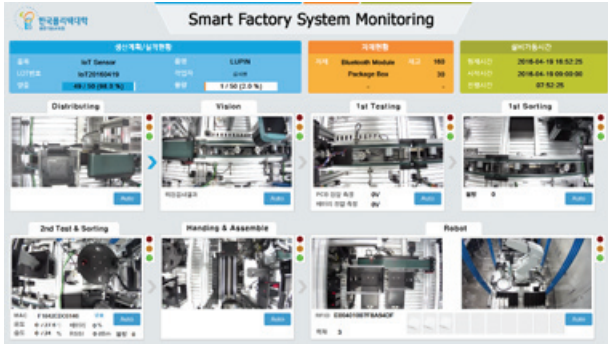
1) Monitoring Simulation Software
 * MES [Manufacturing Execution System Shop Floor]
   MES system hardware / Wireless Access Point / MES system operation
   software / MES middleware / MES database / MES management
2) MES Monitor system
 * MES Client (.NET Framework based C#) / MES Mobile (Android)

SPECIFICATIONS

Category	Description
Distribution Station	Palette supply cylinder: 1.0 Mpa
Vision Inspection Station	Full frame rate: 75fps
1st Testing Station	Motor: DC 24V, 20RPM
2nd Testing & Sorting Station	Conveyor transfer cylinder: 1.0 Mpa
Handling & Assembly Station	Motor: DC 24V
Packaging Station	Cylinder: 10~30V DC
Robot System Station	Robot payload: max. 2Kg
RFID & Warehousing Station	RFID Reader: 13.56 MHz (passive)
Station hard case	Built-in PLC training system, 3-color tower stack light, casters with a lock
Control panel	Power switch, selector switch (AUTO/MANUAL), push button switch, emergency stop switch, pilot lamp, buzzer
Programmable logic controller	I/O: 32 points (analog input and output)
Input voltage	AC220V, 50/60Hz

* Please select a PLC unit: LS / Mitsubishi / Omron / Allen Bradely / Siemens

STANDARD ACCESSORIES

• AC power cord: 1ea
• Connection cable: 1set
• PLC operating software CD: 1ea
• Download cable for PLC, robot and RFID reader: 1ea
• User's guide & experimental manual: 1ea

OPTIONS

• Integrated control simulation software (Automation Studio)
• Smart factory MES software (CPE-MES30)

INTEGRATED SYSTEM CONFIGURATION