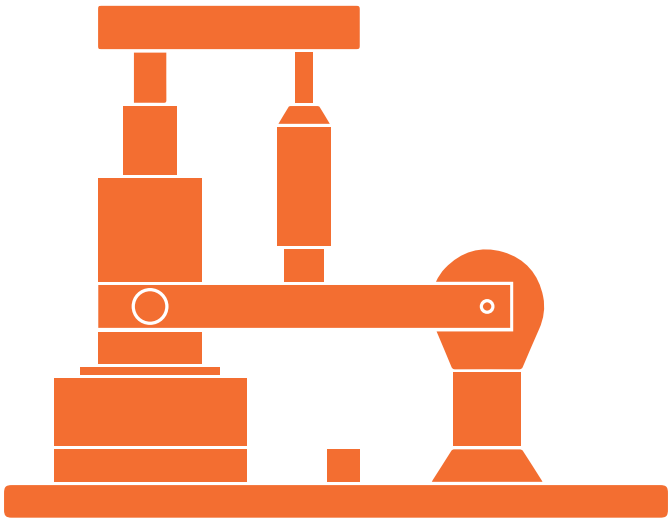
FESTECH
FESTECH



CHAPTER
07

SMART MODULE SYSTEM (SMS)

Introduction 215
Distribution station (FME-SMS-DIST) 216
Testing station (FME-SMS-TEST) 217
Processing station (FME-SMS-PROCE) 218
Indexing station (FME-SMS-INDEX) 219
Handling station (FME-SMS-HAND) 220
Buffer station (FME-SMS-BUFF) 221
Assembly station (FME-SMS-ASSEM) 222
Automated warehouse station (FME-SMS-WARE) 223
Sorting station (FME-SMS-SORT) 224
Additional components 225

Smart Module System (SMS)

01 Distribution station

02 Testing station

03 Processing station

04 Indexing station

05 Handling station

06 Buffer station

07 Assembly station

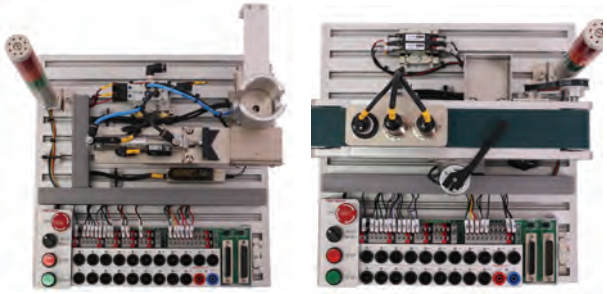
08 Automated warehouse station

09 Sorting station

Introduction

The SMS (Smart Module System) teaches many automation technologies as well as system design, assembly, installation, commissioning, and maintenance,. There is a focus on easy learning, easy training, and easy application to industry. SMS includes modules for Distribution, Testing, Processing, Indexing, Handling, Buffer, Assembly, Automated Warehouse, and Sorting Station. Each station can be used independently.

Each SMS module can be controlled by any type of PLC, and the PLC's do not have to be the same. To connect the PLC with each module, a one-touch IO-Link cable or direct wired 4mm socket can be used. SMS modules come delivered in storage boxes.

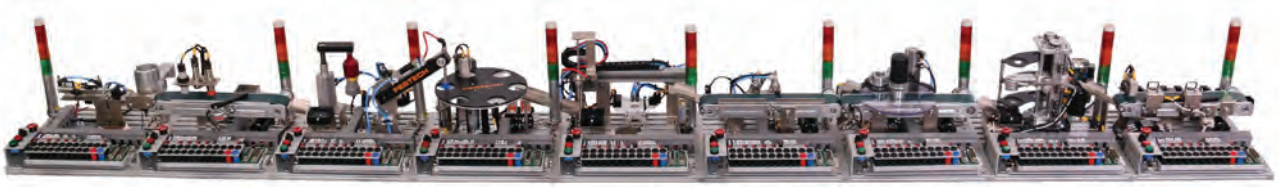


Compact size : 300(W) x 300(D) mm

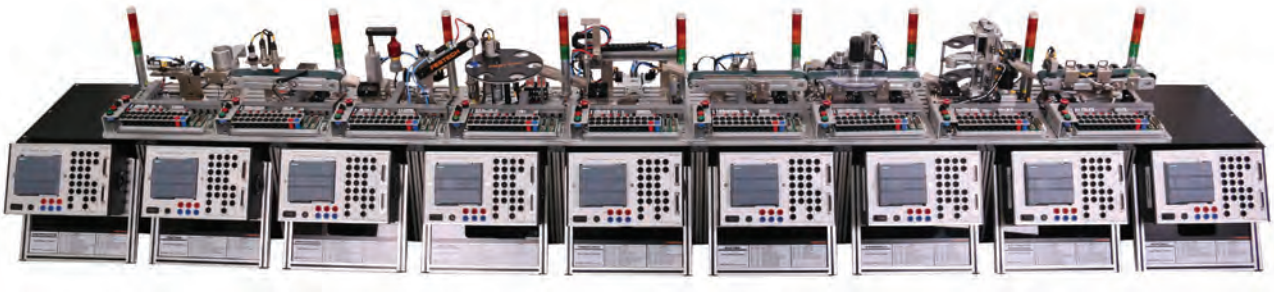
Easy installation

Storage case → Put out the SMS module → SMS module installation → PLC installation

Easy combination, Any combination
Flexible combination



Distribution Testing Processing Indexing Handling Buffer Assembly AS/RS Sorting



Distribution station (FME-SMS-DIST)

Order number : 31012

Function

- Distribution station stores and distributes work piece one by one.
- Workpieces are stored in the stack magazine and monitored by optical sensor.
- The distribution cylinder separates workpieces to feeding position.
- The feeding cylinder pushes workpieces to next station.
- Status of station can be displayed with tower lamp module.

Training contents

- Pneumatic cylinder function
- Cylinder speed control
- Solenoid valve control
- Magnetic proximity sensor technology
- Optical sensor application
- System composition and assembling / disassembling
- Electric wiring and pneumatic piping
- PLC program
- Fieldbus communication technology
- Commissioning and fault tracking
- System maintenance

Components

Component
• Stack magazine • Distributing unit • Feeding unit • Magnetic proximity sensor • One-way flow control valve • Solenoid valve unit – 5/2-Way single solenoid valve – 5/2-Way double solenoid valve • Optical fiber sensor • Aluminum profile panel : 300×300×15 mm • SMS Input /Output Terminal unit (4mm & sys link) – Input : 11, Output : 9 points with LED – D-sub connector : Input 25 pin, Output 25 pin – Sensor protection : short circuit proof type

Component
• Control switch module – START, STOP, AUTO(RESET), Emergency • Tower lamp module – Green / Yellow / Red • Size & weight – 300×300×260 mm, 3.8kg • IO-Link cable – Input cable, Output cable : D-sub 25 pin • Connector between stations • SMS module storage case – Size : 350×340×270 mm – Aluminum profile panel for PLC installation

Testing station (FME-SMS-TEST)

Order number : 31013

Function

- Testing station detects material of work piece. It ejects with solenoid actuator or transferred to next station.

Training contents

- Conveyor belt composition
- DC motor
- Motor control with relay
- Solenoid actuator application
- Sensor application : capacitive sensor, inductive sensor
- System composition and assembling/ disassembling
- Electric wiring and pneumatic piping
- PLC program
- FieldBus communication technology
- Commissioning and fault tracking
- System maintenance

07

Components

Component
• Conveyor belt unit – Size : 60×300 mm – Motor : DC24V geared motor – Timing belt drive • Capacitive sensor • Inductive sensor • Optical sensor • Sensor bracket for 3 sensors • Ejector unit – Rotary solenoid actuator – Work piece ejector • Ejecting case • Control relay : 2ea • Aluminum profile panel : 300×300×15 mm

Component
• SMS Input /Output Terminal unit (4mm & sys link) – Input : 11, Output : 9 points with LED – D-sub connector : Input 25 pin, Output 25 pin – Sensor protection : short circuit proof type • Control switch module – START, STOP, AUTO(RESET), Emergency • Tower lamp module – Green / Yellow / Red • Size & weight – 300×300×260 mm, 4.4kg • IO-Link cable : 2ea – Input cable, Output cable : D-sub 25 pin • Connector between stations • SMS module storage case – Size : 350×340×270 mm – Aluminum profile panel for PLC installation

Processing station (FME-SMS-PROCE)

Order number : 31014

Function

- Stamping station stamps on the work piece. It transfers next station using rotary cylinder and vacuum suction unit.

Training contents

- Characteristic or orthogonal rotary cylinder
- Rotary cylinder control
- Application of vacuum generator
- Solenoid valve control
- Magnetic proximity sensor technology
- Optical sensor application
- System composition and assembling/ disassembling
- Electric wiring and pneumatic piping
- PLC program
- FieldBus communication technology
- Commissioning and fault tracking
- System maintenance

Components

Component
• Work piece holding unit – Holding block – Slider : stainless steel • Optical sensor • Stamping unit – Stamping cylinder – Swivel angle : 90° • Rotary handling unit – Rotary cylinder (user can change angle) – Timing belt drive • Vacuum generator and suction unit • Magnetic proximity sensor • One-way flow control valve • Solenoid valve unit – 5/2-Way single solenoid valve – 5/2-Way double solenoid valve – 5/3-Way double solenoid valve

Component
• Aluminum profile panel : 300×300×15 mm • SMS Input /Output Terminal unit (4mm & sys link) – Input : 11, Output : 9 points with LED – D-sub connector : Input 25 pin, Output 25 pin – Sensor protection : short circuit proof type • Control switch module – START, STOP, AUTO(RESET), Emergency • Tower lamp module – Green / Yellow / Red • Size & weight – 300×300×260 mm, 4.6kg • IO-Link cable : 2ea – Input cable, Output cable : D-sub 25 pin • Connector between stations • SMS module storage case – Size : 350×340×270 mm – Aluminum profile panel for PLC installation

Indexing station (FME-SMS-INDEX)

Order number : 31015

Function

- When work piece is arrived, indexing station can store maximum 6 work pieces.

Training contents

- Rotary index table control
- DC motor control
- Relay
- Rotary position detecting sensor
- Work piece detecting using inductive sensor
- Optical sensor application
- System composition and assembling/ disassembling
- Electric wiring and pneumatic piping
- PLC program
- FieldBus communication technology
- Commissioning and fault tracking
- System maintenance

Components

Component
• Index table module – Indexing: 6 positions – DC24V geared motor • Position detection sensor • Work piece detector – Optical sensor • Inspection unit – Inductive sensor : metal / non-metal – Photo electric sensor : (color) stamping quality • Control relay – DC motor control for CW/CCW • Slider unit • Aluminum profile panel : 300×300×15 mm • SMS Input /Output Terminal unit (4mm & sys link) – Input : 11, Output : 9 points with LED – D-sub connector : Input 25 pin, Output 25 pin – Sensor protection : short circuit proof type

Component
• Control switch module – START, STOP, AUTO(RESET), Emergency • Tower lamp module – Green / Yellow / Red • Size & weight – 300×300×260 mm, 3.8kg • IO-Link cable : 2ea – Input cable, Output cable :D-sub 25 pin • Connector between stations • SMS module storage case – Size : 350×340×270 mm – Aluminum profile panel for PLC installation

Handling station (FME-SMS-HAND)

Order number : 31016

Function

- Carry work piece using pneumatic rodless cylinder and vacuum suction handling unit.

Training contents

- Pneumatic cylinder characteristic
- Pneumatic rodless cylinder control
- Vacuum generator application
- Magnetic proximity sensor technology
- System composition and assembling/ disassembling
- Electric wiring and pneumatic piping
- PLC program
- Fieldbus communication technology
- Commissioning and fault tracking
- System maintenance

Components

Component	Component
• Work piece holding unit – Holding block – Slider : Stainless steel • Optical fiber sensor • Handling unit (X-axis) – Rodless cylinder • Magnetic proximity sensor • One-way flow control valve • Handling unit (Z-axis) – Double-acting cylinder • Vacuum generator and pad • Solenoid valve unit – 5/2-Way single solenoid valve – 5/2-Way double solenoid valve – 5/3-way double solenoid valve • Slider unit • Aluminum profile panel : 300×300×15 mm	• SMS Input /Output Terminal unit (4mm & sys link) – Input : 11, Output : 9 points with LED – D-sub connector : Input 25 pin, Output 25 pin – Sensor protection : short circuit proof type • Control switch module – START, STOP, AUTO(RESET), Emergency • Tower lamp module – Green / Yellow / Red • Size & weight – 300×300×260 mm, 3.8kg • IO-Link cable : 2ea – Input cable, Output cable : D-sub 25 pin • Connector between stations • SMS module storage case – Size : 350×340×270 mm – Aluminum profile panel for PLC installation

Buffer station (FME-SMS-BUFF)

Order number : 31017

Function

- Buffer station can be used to combine intermediate stations.
- The work piece is transferred to next station after finish.

Training contents

- Usage of Conveyor belt unit
- DC motor control with relay
- Pneumatic cylinder control
- Optical sensor application
- System composition and assembling / disassembling
- Electric wiring and pneumatic piping
- PLC program
- Fieldbus communication technology
- Commissioning and fault tracking
- System maintenance

Components

Component
• Conveyor belt unit – Size : 60×300 mm – Motor : DC24V geared motor – Timing belt drive • Control relay – DC motor control for conveyor belt • Buffer unit 1, 2 – Buffer cylinder • Magnetic proximity sensor • Optical fiber sensor 1, 2 – Work piece detect – Buffer position • Conveyor belt guide • Solenoid valve unit – 5/2-Way single solenoid valve • Aluminum profile panel : 300×300×15 mm

Component
• SMS Input /Output Terminal unit (4mm & sys link) – Input : 11, Output : 9 points with LED – D-sub connector : Input 25 pin, Output 25 pin – Sensor protection : short circuit proof type • Control switch module – START, STOP, AUTO(RESET), Emergency • Tower lamp module – Green / Yellow / Red • Size & weight – 300×300×260 mm, 3.8kg • IO-Link cable : 2ea – Input cable, Output cable : D-sub 25 pin • Connector between stations • SMS module storage case – Size : 350×340×270 mm – Aluminum profile panel for PLC installation

Assembly station (FME-SMS-ASSEM)

Order number : 31018

Function

- Assembly station is provided work piece by a rotation disc unit and assemble the work piece using a press unit. Assembled work piece is transferred to next station by a conveyor belt.

Training contents

- Usage of conveyor belt unit
- DC Motor control with relay
- Positioning with Rotation Disc unit
- Assembling with Press unit
- System composition and assembling / disassembling
- Electric wiring and pneumatic piping
- PLC program
- Fieldbus communication technology
- Commissioning and fault tracking
- System maintenance

Components

Component
• Conveyor belt unit – Size : 60×300 mm – Motor : DC24V geared motor – Timing belt drive • Assembling table • Press unit – Press cylinder • Magnetic proximity sensor • One-way flow control valve • Stack magazine unit for assembling work piece • Optical fiber sensor : detecting input work piece • Origin position sensor • Rotation disc unit – 6 positions – Motor : DC24V geared motor • Control relay : 2ea – DC motor control for conveyor belt – DC motor control for rotation disc unit

Component
• Solenoid valve unit – 5/2-Way single solenoid valve • Aluminum profile panel : 300×300×15 mm • SMS Input /Output Terminal unit (4mm & sys link) – Input : 11, Output : 9 points with LED – D-sub connector : Input 25 pin, Output 25 pin – Sensor protection : short circuit proof type • Control switch module – START, STOP, AUTO(RESET), Emergency • Tower lamp module – Green / Yellow / Red • Size & weight – 300×300×260 mm, 3.8kg • IO-Link cable : 2ea – Input cable, Output cable : D-sub 25 pin • Connector between stations • SMS module storage case – Size : 350×340×270 mm – Aluminum profile panel for PLC installation

Automated warehouse station (FME-SMS-WARE)

Order number : 31019

Function

- Automated warehouse station can store and release a work piece. It is composed of 3 floors warehouse and stacker crane.

Training contents

- Understanding of Automated warehouse
- Control of motor with motor drive
- Orientation of AS/RS
- Spindle drive unit
- System composition and assembling / disassembling
- Electric wiring and pneumatic piping
- PLC program
- Fieldbus communication technology
- Commissioning and fault tracking
- System maintenance

07

Components

Component
• Work piece holding unit – Holding block – Slider : Stainless steel • Optical sensor • Geneva gear drive unit – DC Motor : DC24V geared motor – 8 positions • Photo coupler • Spindle drive unit – Z-axis drive : up & down • Origin position detector • Pulse encoder • Safety limit sensor • Electro magnet holding unit • Motor controller 2CH – Safety limit protection – CW, CCW function • Slider unit • Warehouse unit – 3 floors and 2 rows

Component
• Aluminum profile panel : 300×300×15 mm • SMS Input /Output Terminal unit (4mm & sys link) – Input : 11, Output : 9 points with LED – D-sub connector : Input 25 pin, Output 25 pin – Sensor protection : short circuit proof type • Control switch module – START, STOP, AUTO(RESET), Emergency • Tower lamp module – Green / Yellow / Red • Size & weight – 300×300×260 mm, 3.8kg • IO-Link cable : 2ea – Input cable, Output cable : D-sub 25 pin • Connector between stations • SMS module storage case – Size : 350×340×270 mm – Aluminum profile panel for PLC installation

Sorting station (FME-SMS-SORT)

Order number : 31020

Function

- Classify work piece as 3 types according to sort of work piece. The work piece on a conveyor belt is stacked on work piece storage through a sorting slider by a sorting actuator unit.

Training contents

- Usage of conveyor belt unit
- DC Motor control with relay
- Solenoid actuator application
- Sorting slide
- System composition and assembling / disassembling
- Electric wiring and pneumatic piping
- PLC program
- Fieldbus communication technology
- Commissioning and fault tracking
- System maintenance

Components

Component
• Conveyor belt unit – Size : 60×300 mm – Motor : DC24V geared motor – Timing belt drive • Inductive sensor • Optical sensor • Sorting actuator unit – Rotary solenoid actuator – Rotation angle : 45° • Sorting slider & work piece storage • Control relay – DC motor control for conveyor belt – DC solenoid control for sorting actuator • Sorting end bracket • Aluminum profile panel : 300×300×15 mm

Component
• SMS Input /Output Terminal unit (4mm & sys link) – Input : 11, Output : 9 points with LED – D-sub connector : Input 25 pin, Output 25 pin – Sensor protection : short circuit proof type • Control switch module – START, STOP, AUTO(RESET), Emergency • Tower lamp module – Green / Yellow / Red • Size & weight – 300×300×260 mm, 3.8kg • IO-Link cable : 2ea – Input cable, Output cable : D-sub 25 pin • Connector between stations • SMS module storage case – Size : 350×340×270 mm – Aluminum profile panel for PLC installation

Additional components

Controller (option)

Order number : 23151

- SIEMENS PLC : STEP 7-1200
- Digital input : 14
- Digital output : 10
- Socket type IO terminal required
- Software excluded
- Analog input : 2
- Analog output : 1

Teachware

Order number : 42042

- Manual and work book

Work piece (basic)

Order number : 31031

- Round work piece
- Material : metal, plastic
- 3 color

Work piece (Assembly)

Order number : 31032

- Round work piece
- Material : metal, plastic
- 3 color

Touch panel (Optional)

Order number : 27456

- Display : 7" , LCD Color
- Power : DC24V
- Resolution : 600*480
- Communication : USB, RS-232, Ethernet
- Aluminum case and one-touch mounting

Smart I/O (Profibus)

Order number : 13090

- Fieldbus option: Devicenet, InterBus, CC-Link, Ethernet
- 4mm socket terminal (option)