



SIEMENS

Ingenuity for life



Hardware requirements

Siemens Mechatronic Systems
Certification Program (SMSCP)

siemens.com/sitrain-smscp



Systems meeting the SMSCP hardware requirements

1. Amatrol Mechatronic System
2. Encon-Koester Mechatronic System
3. Festo Modular Production System (MPS 203) I4.0

SMSCP partner schools must have a modularized mechatronic system, which includes the following components:

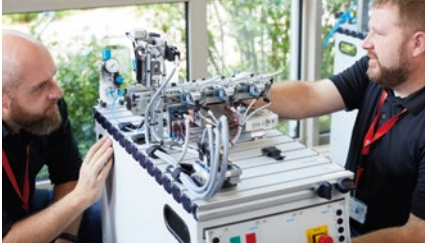
Level 1 – requirements

Basic electrical components

- Conductors, wires, and terminal blocks
- Electrical power supplies (including transformer, rectifier, filter, voltage regulator)
- Basic electrical components (e.g. resistors, potentiometers, capacitors, inductors, diodes, and transistors)
- Relays, contactors and solenoids
- Overcurrent protection devices (fuses and circuit breakers)
- Sensors (inductive and capacitive sensors/photoelectric sensors/proximity and limit switches (mechanical, reed))
- Measuring devices (multimeters, oscilloscopes)
- DC motors and control circuits (direction control/speed control)

Basic mechanical components

- Chain, belt, and gear drives
- Bushings, bearings, and gearboxes
- Clutches and brakes
- Conveyor belts, lifts, chutes, and component storage
- Grippers, jaws, and pivot devices
- Fasteners, supports, and springs



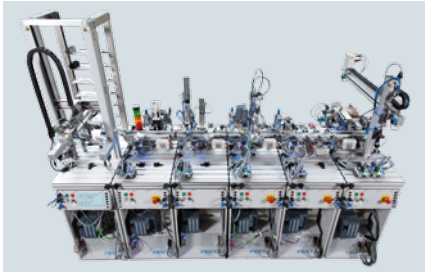
Pneumatic/hydraulic components

- General components (pressure source (compressor/pump)/ pressure regulation valve with filter and gauge/shut-off valve)
- Pneumatic actuators/cylinders
- Pneumatic gating, valves, and flow control (different DCV designs (e.g. 2/2-, 3/2-, 4/2-, 5/2-, 5/3-way)/flow control valves)

PLC components

PLC components must be SIMATIC S7-1500 with Industrial Ethernet PROFINET interface (legacy systems SIMATIC S7-300 are acceptable if the hardware already exists at your educational institution)

- Personal computer with PLC engineering software (e.g. SIMATIC S7 in TIA Portal, SIMATIC STEP 7 Professional)
Digital input and output modules for the SIMATIC PLC/control panel with (illuminated) Siemens SIRIUS ACT pushbuttons, switches (n.o./n.c.) and indicators



Level 2 – additional requirements

Electrical components

- Analog sensors such as ultrasonic- or hall-effect sensors

Electrical machines

- Step motors
- Single-phase and three-phase AC motors
- Direction control
- Speed control – variable frequency drives (SINAMICS G120)

Guards and mechanical safety devices

PLC-related

- Simulation software (SIMIT Simulation Platform Software V10.1 or higher)
- Analog input and output modules for the SIMATIC PLC or optional analog input and output modules with SIMATIC ET 200SP PROFINET remote IO system
- SCALANCE XC208 manageable layer 2 IE switch

SIMATIC TP700 Comfort Panel with HMI panel engineering software (e.g. TIA Portal SIMATIC WinCC Advanced)



Industrie 4.0 – requirements

- SIMATIC RF200 RFID system PROFINET OR IO link
- SCALANCE S615 LAN router; for protection of devices/networks
- NX with Mechatronics Concept Designer (MCD)

Published by
Siemens AG

Digital Industries
Customer Services
P.O. Box 31 80
91050 Erlangen, Germany

For the U.S. published by
Siemens Industry Inc.
100 Technology Drive
Alpharetta, GA 30005,
United States

Article No. DICS-B10020-00-7600
Fb 8498 SB 0919 PDF

© Siemens 2019

Subject to changes and errors.