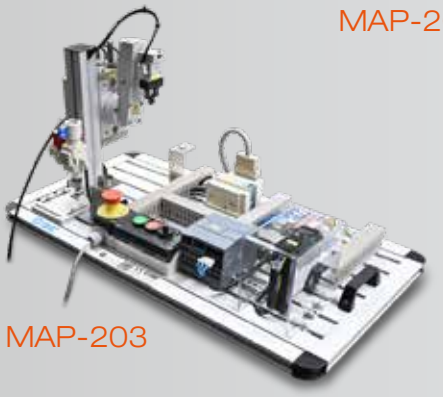
MAP-200

Handling systems

7 options to choose from to study different mechanical handling techniques

MAP-201

MAP-202

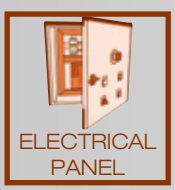


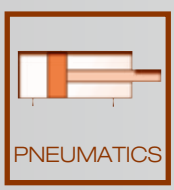
MAP-203

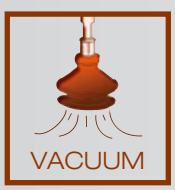
MAP-205

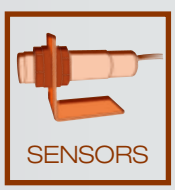
MAP-204

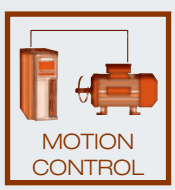
In the following TECHNOLOGIES...





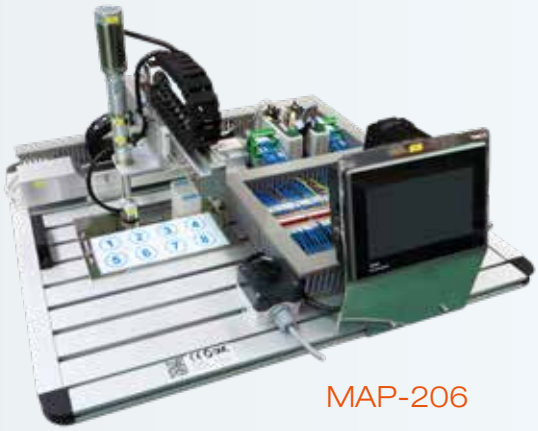






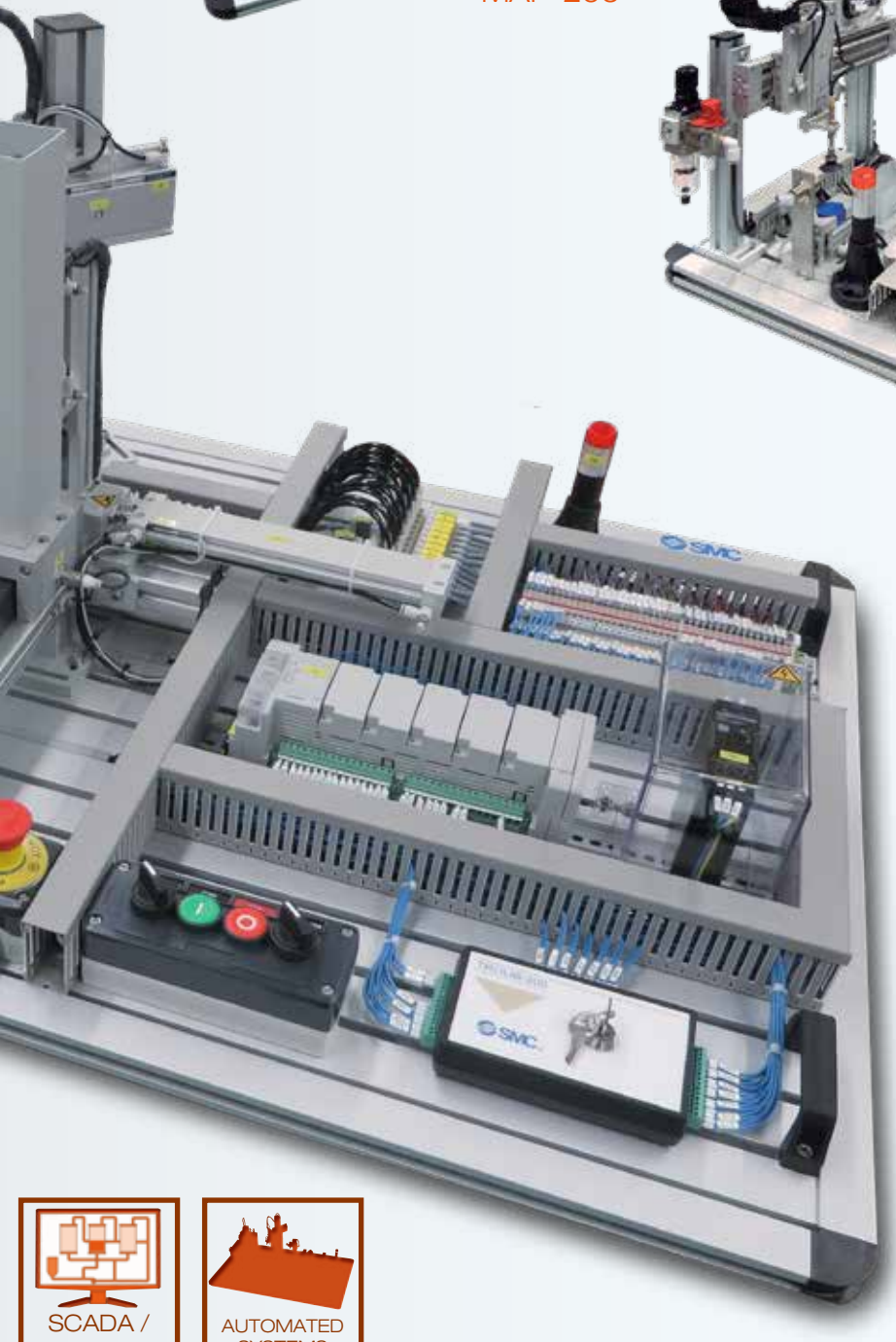
SMC
INTERNATIONAL TRAINING

Develop the SKILLS...



MAP-206

MAP-207

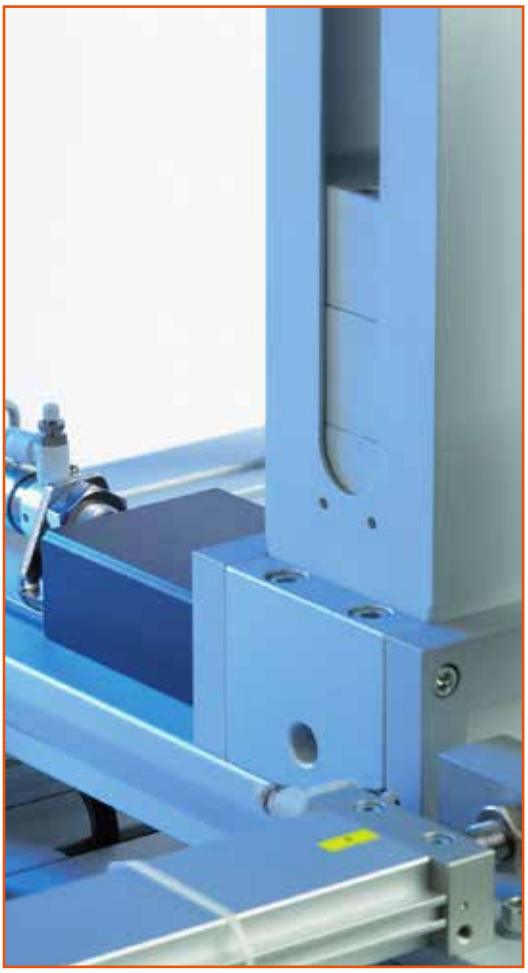


- ANALYSIS
- TROUBLESHOOTING
- DESIGNING
- TECH DOCUM. CREATION
- INSTALLATION AND ASSEMBLY
- TECH DOCUM. UNDERSTANDING
- OPERATION
- PROGRAMMING

- SCADA / HMI
- AUTOMATED SYSTEMS

MAP-200 - Handling systems

The MAP-200 series consists of seven independent and different training systems.



MAP-201, MAP-202, MAP-203 and MAP-204

Each of these carries out a simple assembly process by reproducing subsets of more complex processes found in industry. They can all incorporate the TROUB-200 trouble-shooting simulation system.

These four pieces of equipment are offered in three different versions to meet each client's different requirements:

- Without PLC: It comes assembled, adjusted and wired up. The PLC is not included.
- With PLC: It is supplied fully assembled, programmed and tested. We have a wide variety of PLC brands. Please consult availability.
- Assembly kit: The equipment is supplied as a complete kit with of parts. In addition to the practical activities normally available, the student can carry out assembly and equipment adjustment as well as pneumatic and electrical wiring. The assembly instructions and drawings provided in the documentation guide the student through the building and wiring tasks. This version does not include the PLC and power supply.

MAP-205

In just one system, all the functions of the four previous pieces of equipment form a complete assembly-dismantling process. MAP-205 incorporates the troubleshooting system TROUB-200, which generates up to 16 different breakdowns to be diagnosed by the user.

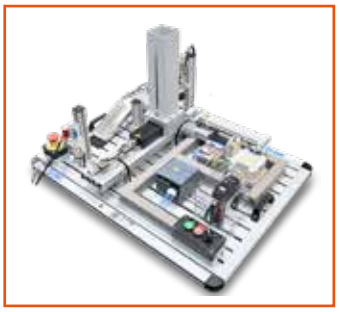
MAP-206

It is designed to develop electrical actuator skills.

MAP-207

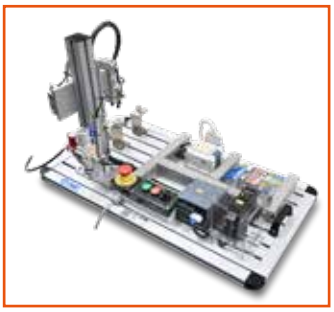
This is a part classification manipulator. It comes in two versions depending on its control system: an external PLC or a PC with autoSIM-200.

The seven machines in the MAP-200 family are described below.



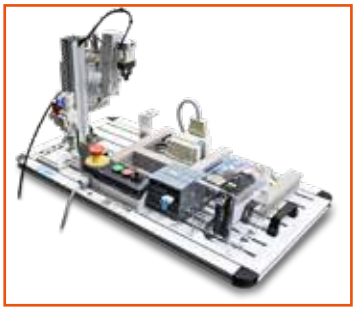
• MAP-201

Gravity feeds parts which are checked for orientation. If the part is incorrectly positioned, it is rejected.



• MAP-202

Performs a Pick & Place movement of a part using vacuum grippers.

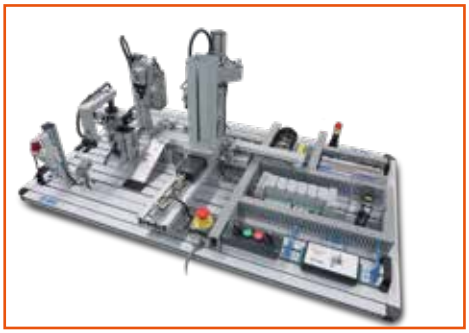


• MAP-203

Moves a part from one position to another using a rotating manipulator fitted with an inside gripper.

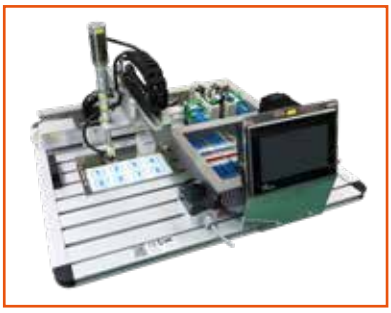
• MAP-204

Transfers a part from one position to another using a roto-linear manipulator fitted with an external gripper.



• MAP-205

Integrates the four systems: MAP-201, MAP-202, MAP-203, MAP-204, forming an assembly minicell. It carries out the complete assembly-disassembly process in four parts. It includes the troubleshooting simulation system.



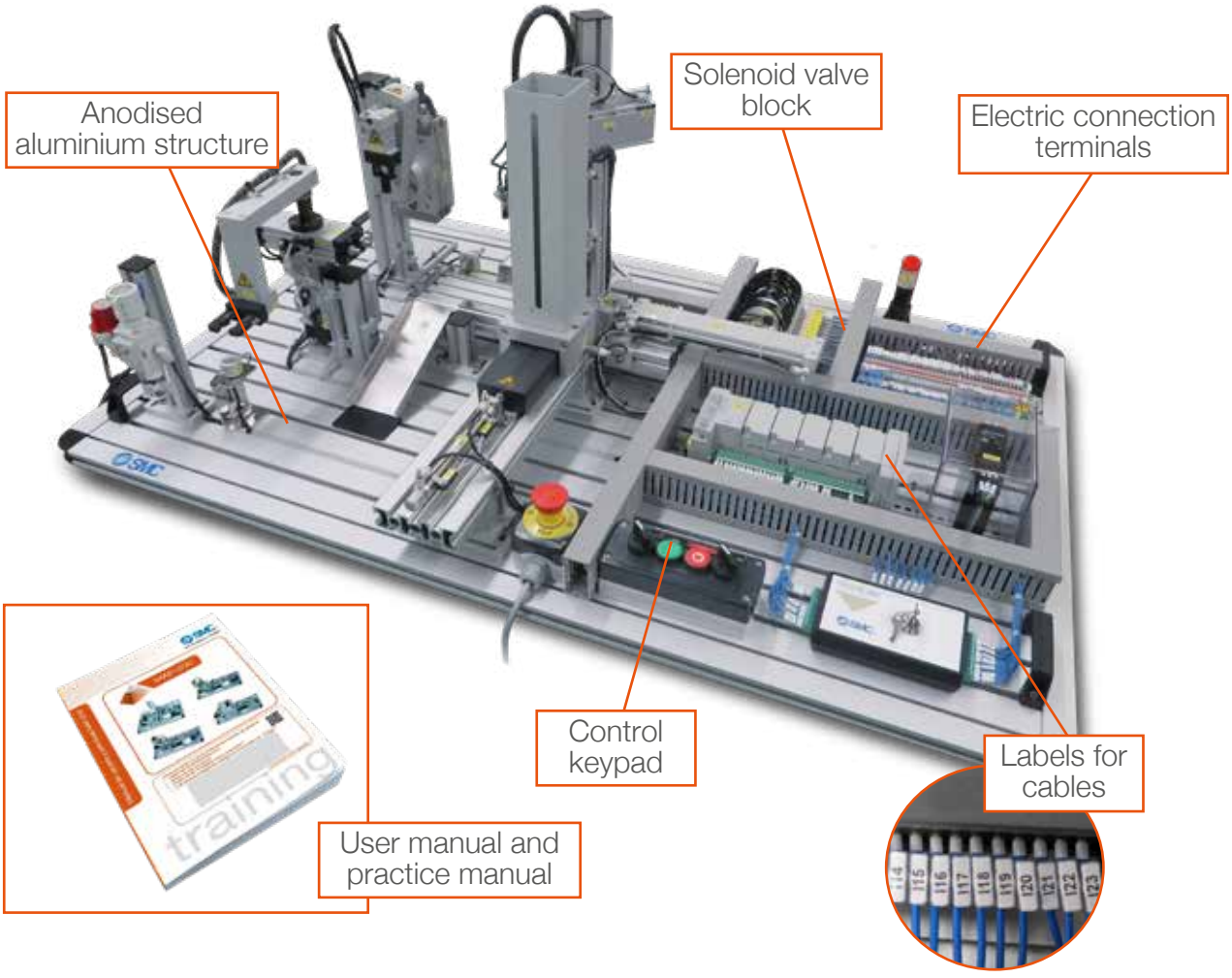
• MAP-206

It can perform different handling operations on metal parts using a system of 3 electrical Cartesian axes, two of them servo-controlled.

• MAP-207

It performs an automated process of classification and rejection of components made of various materials and sizes.

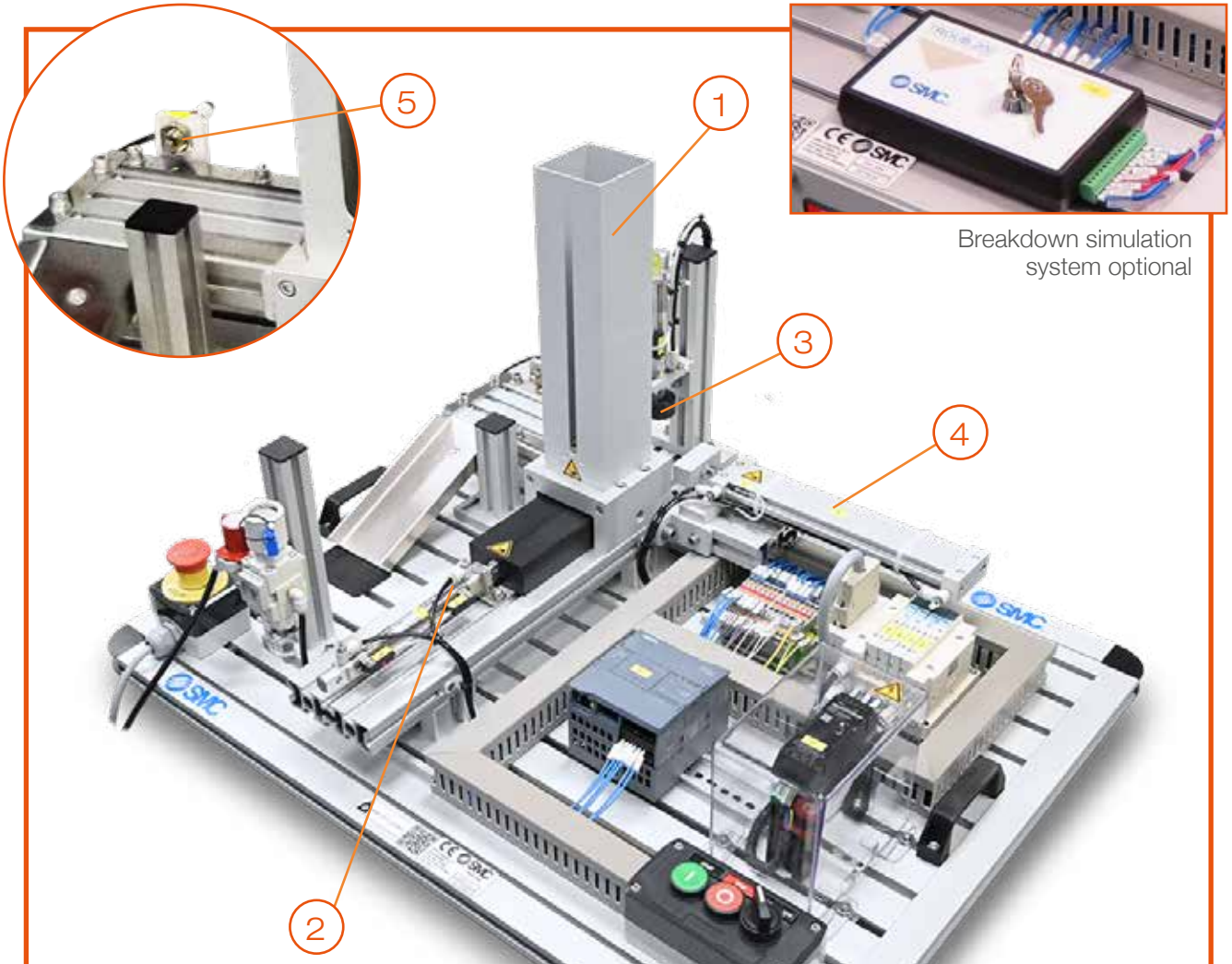
Common elements for all equipment.



MAP-201 - Part feeder with detector and ejector for incorrect parts

A gravity feeder houses the parts in a column (1). Each part has a non-symmetrical interior housing and is ejected by a pneumatic cylinder (2). The correct orientation of the part is verified using a cylinder with a plunger (3). After verification, an oval section pneumatic cylinder (4) moves the work-piece to the final position. Otherwise, a single acting cylinder (5) removes the part via the evacuation ramp.

The equipment is offered in three versions: with PLC, without PLC and as an assembly kit. Includes the option of integrating a trouble shooting box.



Breakdown simulation system optional

• SAI1001	MAP-201 Part feeder with detector and ejector for incorrect parts (without PLC)
• SAI1011	MAP-201 with Alpha PLC
• SAI1021	Assembly kit for MAP-201 manipulator
• SAI1111	MAP-201 with Siemens PLC
• SAI1211	MAP-201 with Omron PLC
• SAI1311	MAP-201 with Mitsubishi PLC
• SAI1411	MAP-201 with Allen-Bradley PLC
• SAI1511	MAP-201 with Schneider PLC

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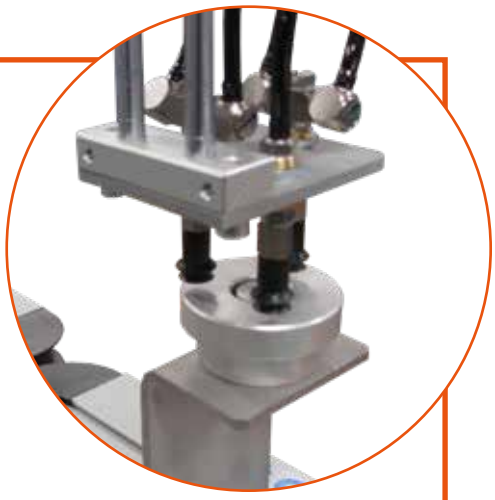
TECHNICAL DESCRIPTIONS

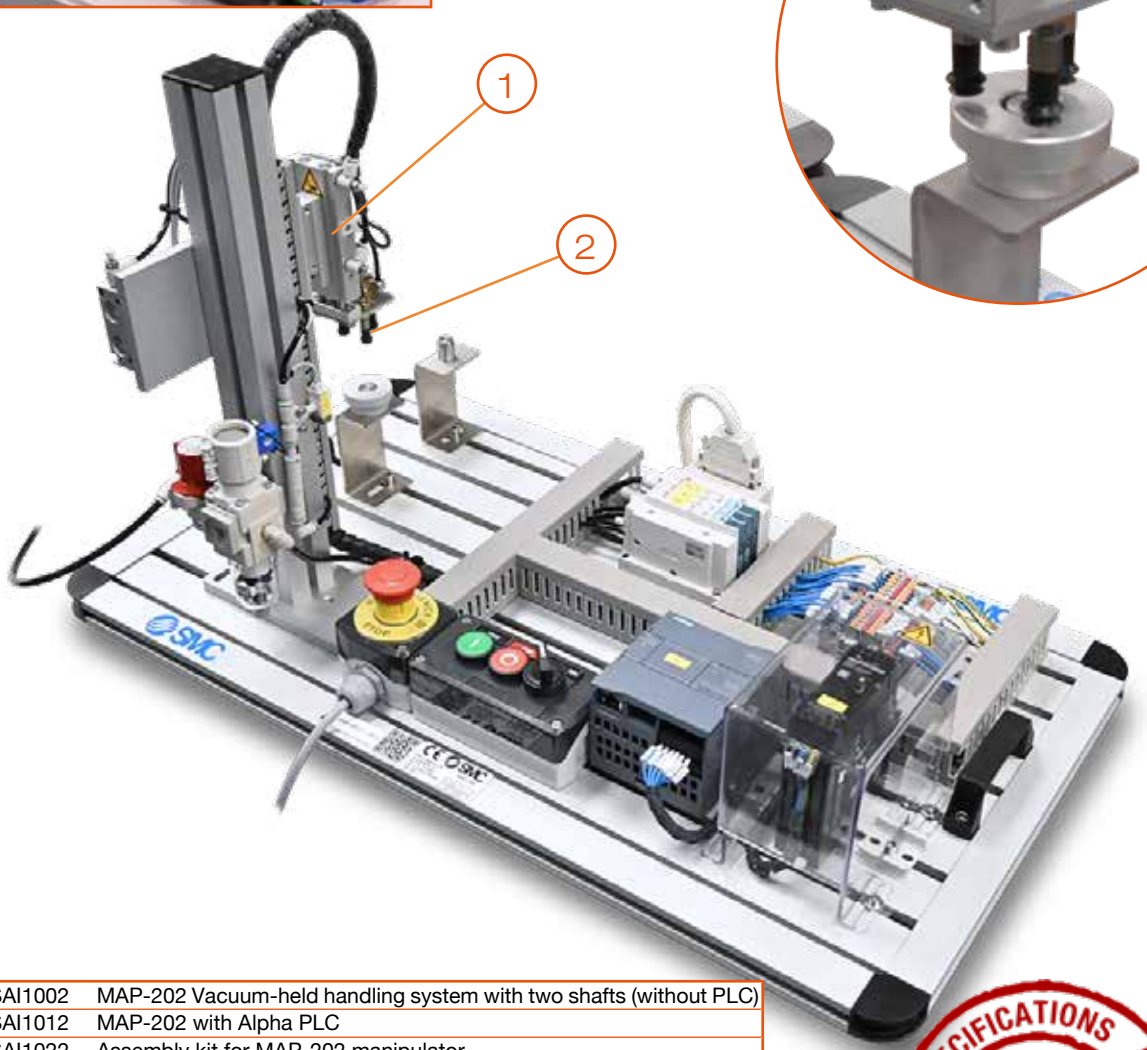
MAP-202 - Vacuum-held handling device with two shafts

This is a cartesian handling device with two shafts (1) which moves a part from one position to another, holding it with a set of three vacuum pads (2).

The equipment is offered in three versions: with PLC, without PLC and as an assembly kit. Includes the option of integrating a trouble shooting box.

Breakdown simulation system optional





• SAI1002	MAP-202 Vacuum-held handling system with two shafts (without PLC)
• SAI1012	MAP-202 with Alpha PLC
• SAI1022	Assembly kit for MAP-202 manipulator
• SAI1112	MAP-202 with Siemens PLC
• SAI1212	MAP-202 with Omron PLC
• SAI1312	MAP-202 with Mitsubishi PLC
• SAI1412	MAP-202 with Allen-Bradley PLC
• SAI1512	MAP-202 with Schneider PLC

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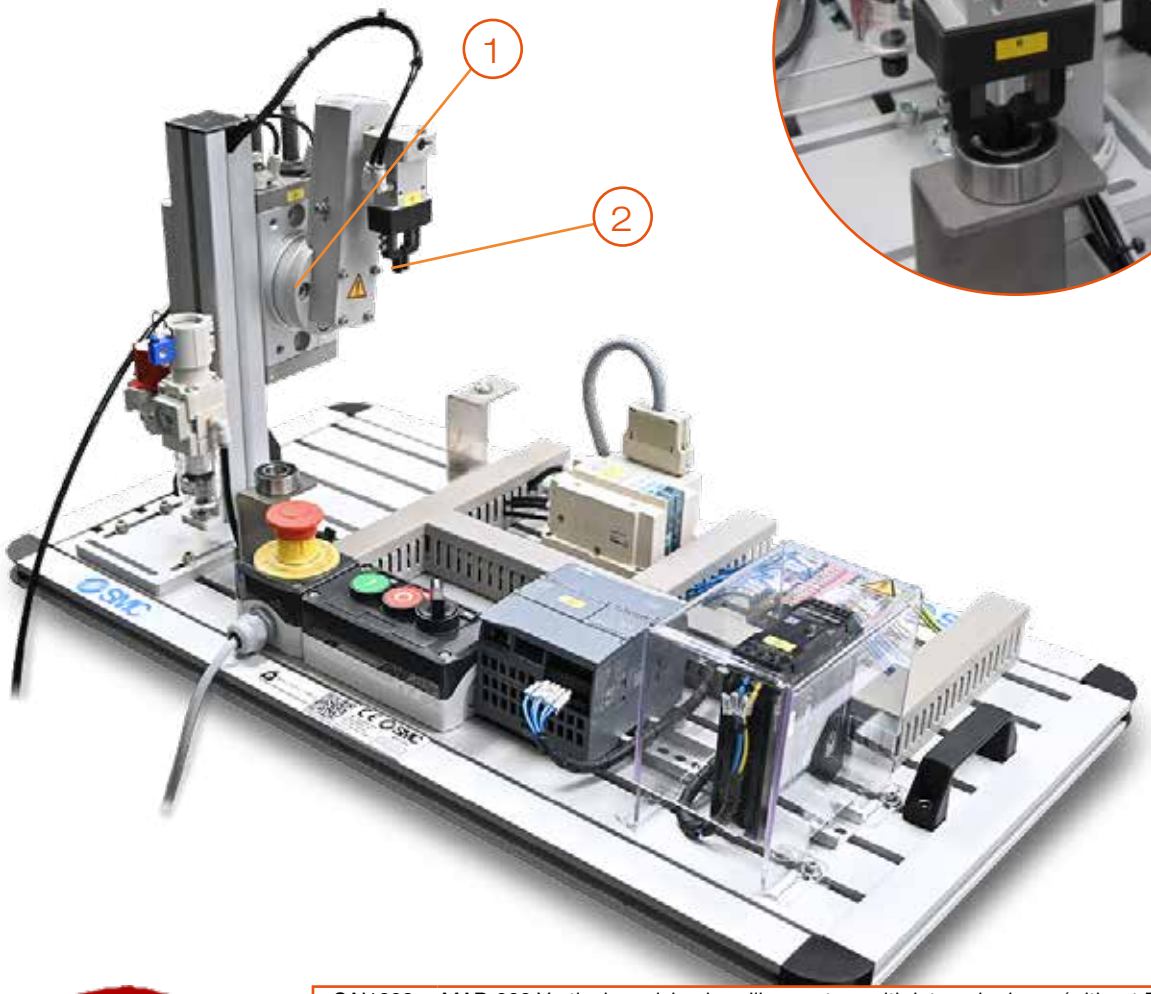
TECHNICAL DESCRIPTIONS

MAP-203 - Vertical revolving handling device with internal gripper

This module uses a revolving handling device (1) with an internal gripper (2) which moves the part from one position to another.

The equipment is offered in three versions: with PLC, without PLC and as an assembly kit. Includes the option of integrating a trouble shooting box.

Breakdown simulation system optional



• SAI1003	MAP-203 Vertical revolving handling system with internal gripper (without PLC)
• SAI1013	MAP-203 with Alpha PLC
• SAI1023	Assembly kit for MAP-203 manipulator
• SAI1113	MAP-203 with Siemens PLC
• SAI1213	MAP-203 with Omron PLC
• SAI1313	MAP-203 with Mitsubishi PLC
• SAI1413	MAP-203 with Allen-Bradley PLC
• SAI1513	MAP-203 with Schneider PLC

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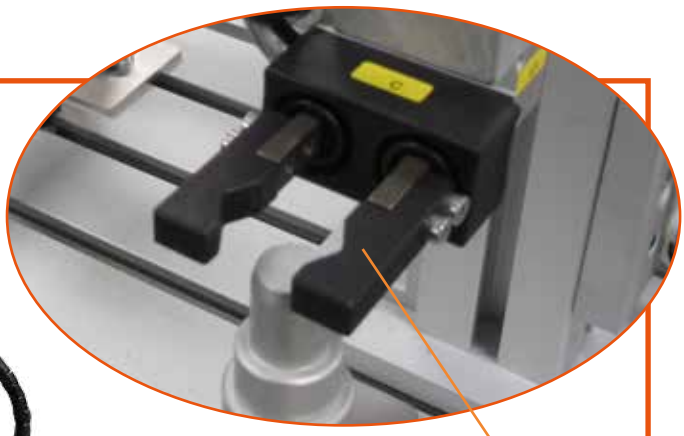
TECHNICAL DESCRIPTIONS

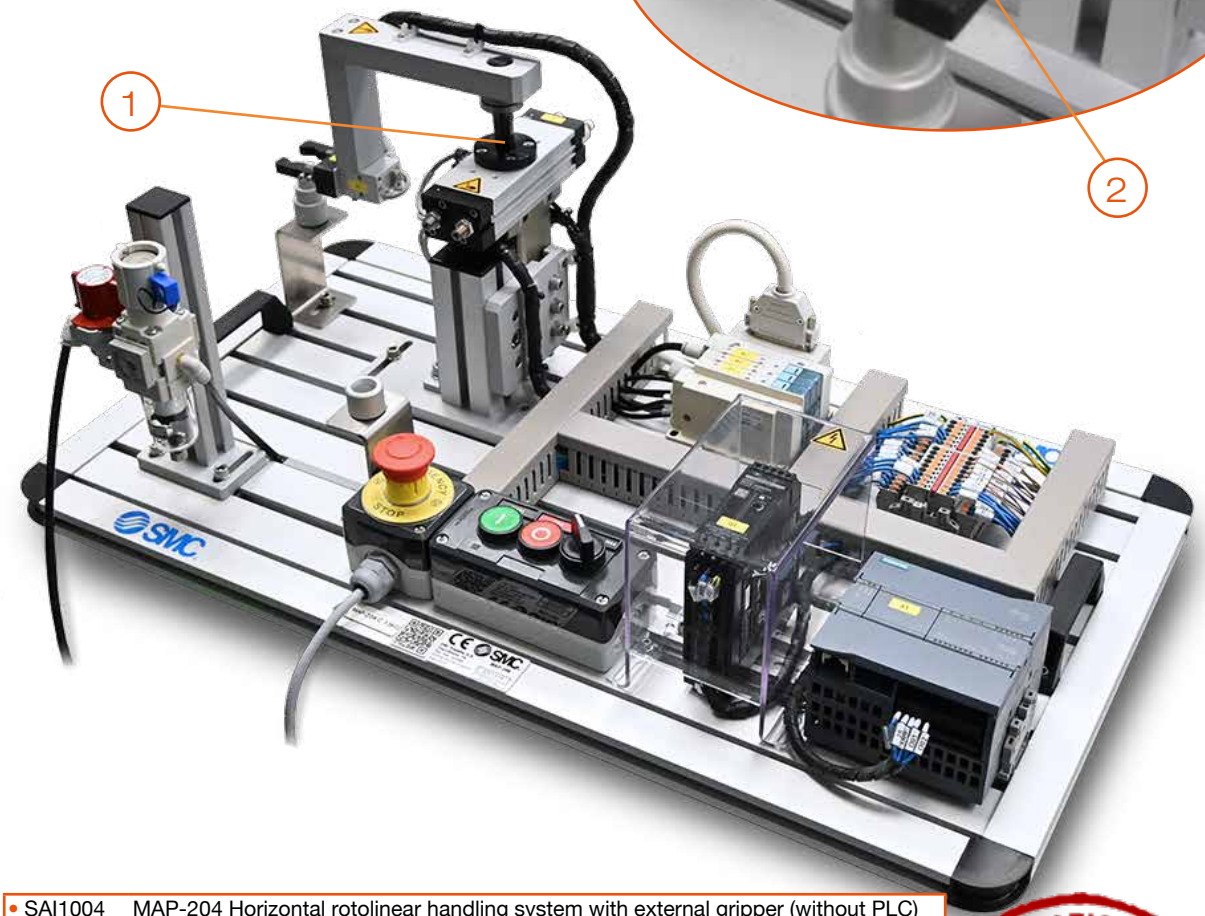
MAP-204 - Horizontal rotolinear handling device with external gripper

It consists of a roto-linear handling device (1) fitted with an external pneumatic gripper (2) which moves a part from one position to another.

The equipment is offered in three versions: with PLC, without PLC and as an assembly kit. Includes the option of integrating a trouble shooting box.

Breakdown simulation system optional





• SAI1004	MAP-204 Horizontal rotolinear handling system with external gripper (without PLC)
• SAI1014	MAP-204 with Alpha PLC
• SAI1024	Assembly kit for MAP-204 manipulator
• SAI1114	MAP-204 with Siemens PLC
• SAI1214	MAP-204 with Omron PLC
• SAI1314	MAP-204 with Mitsubishi PLC
• SAI1414	MAP-204 with Allen-Bradley PLC
• SAI1514	MAP-204 with Schneider PLC

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TECHNICAL DESCRIPTIONS

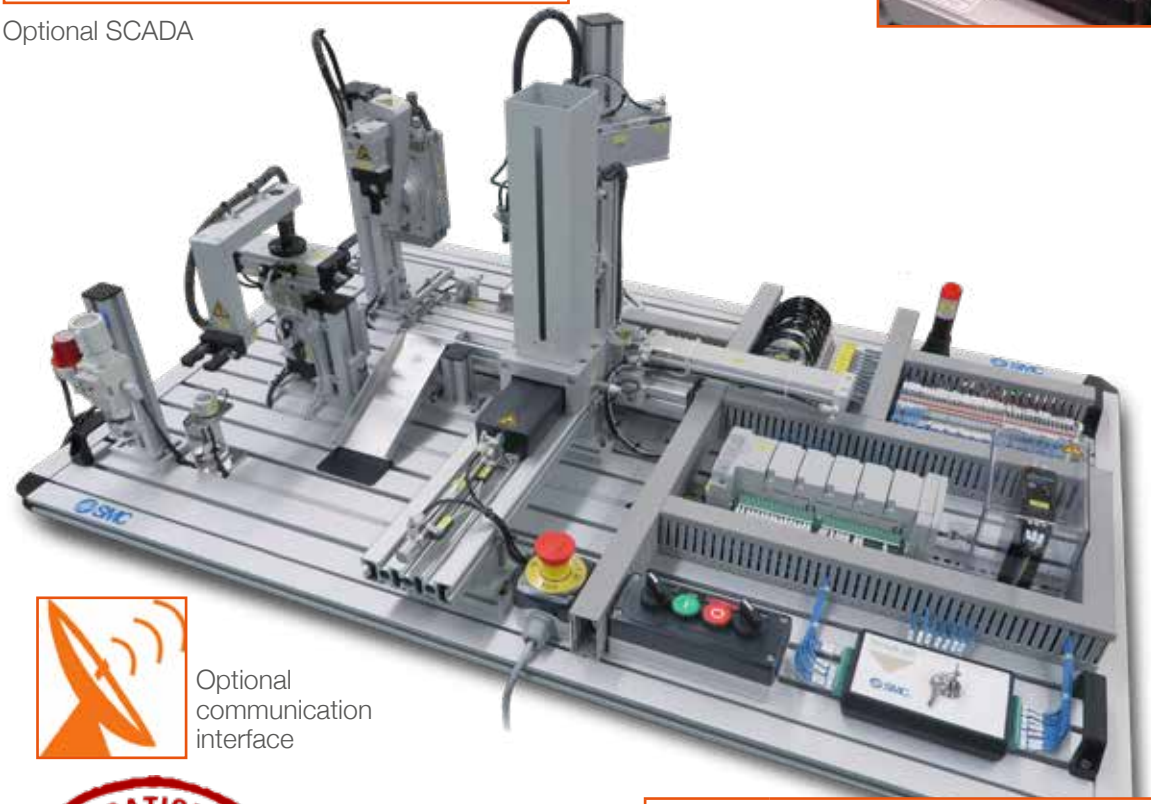
MAP-205 - The integrated solution: assembly minicell

MAP-205 integrates the four didactic handling systems, MAP-201, MAP-202, MAP-203 and MAP-204, into an assembly mini-cell. It carries out a complete assembly process of four parts.

The assembly process consists of feeding a base, checking whether it is in the correct position, inserting a bearing, then a shaft and finally a cover. The dismantling process can be performed in the same way.

The troubleshooting simulation system TROUB-200 is included, which generates up to 16 different breakdowns to be diagnosed by the user. Includes the option of integrating a communication interface that allows the user to access the PLC remotely and perform necessary remote maintenance tasks over the Internet.

Optional SCADA



Optional communication interface

•	SAI1005	MAP-205 Assembly minicell (without PLC)
•	SAI1125	MAP-205 with Siemens PLC
•	SAI1225	MAP-205 with Omron PLC
•	SAI1325	MAP-205 with Mitsubishi PLC
•	SAI1425	MAP-205 with Allen-Bradley PLC
•	SAI1525	MAP-205 with Schneider PLC

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TECHNICAL DESCRIPTIONS

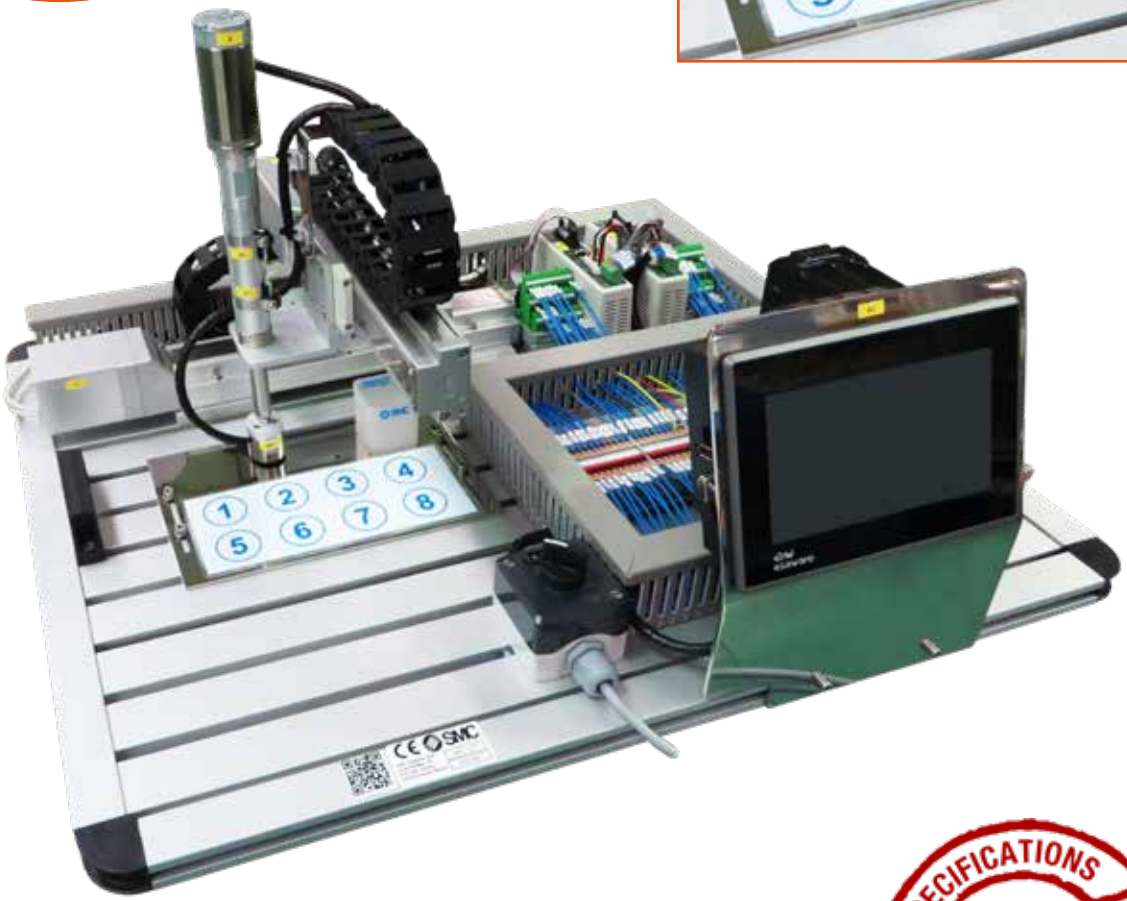
MAP-206 Handling device using electric actuators

MAP-206 is an ideal way of becoming familiar with the electric actuators. The operation carried out by the module consists of locating metal parts into one of its storage positions.

It has three electric axes, two of which are servo-controlled (X - Y), which allow the handling device to reach any part of the warehouse and the coin container. The other (Z) axis is comprised of an electric cylinder driven by a DC motor, which incorporates an electromagnet for handling the pieces.

MAP-206 includes a touchscreen HMI with a built-in PLC which gives access to controlling the system and the different operating modes.

Parts to be handled



• SAI1723 Electric actuator handling device with HMI

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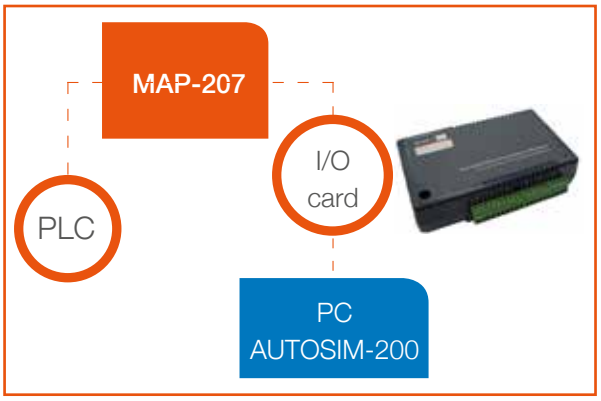
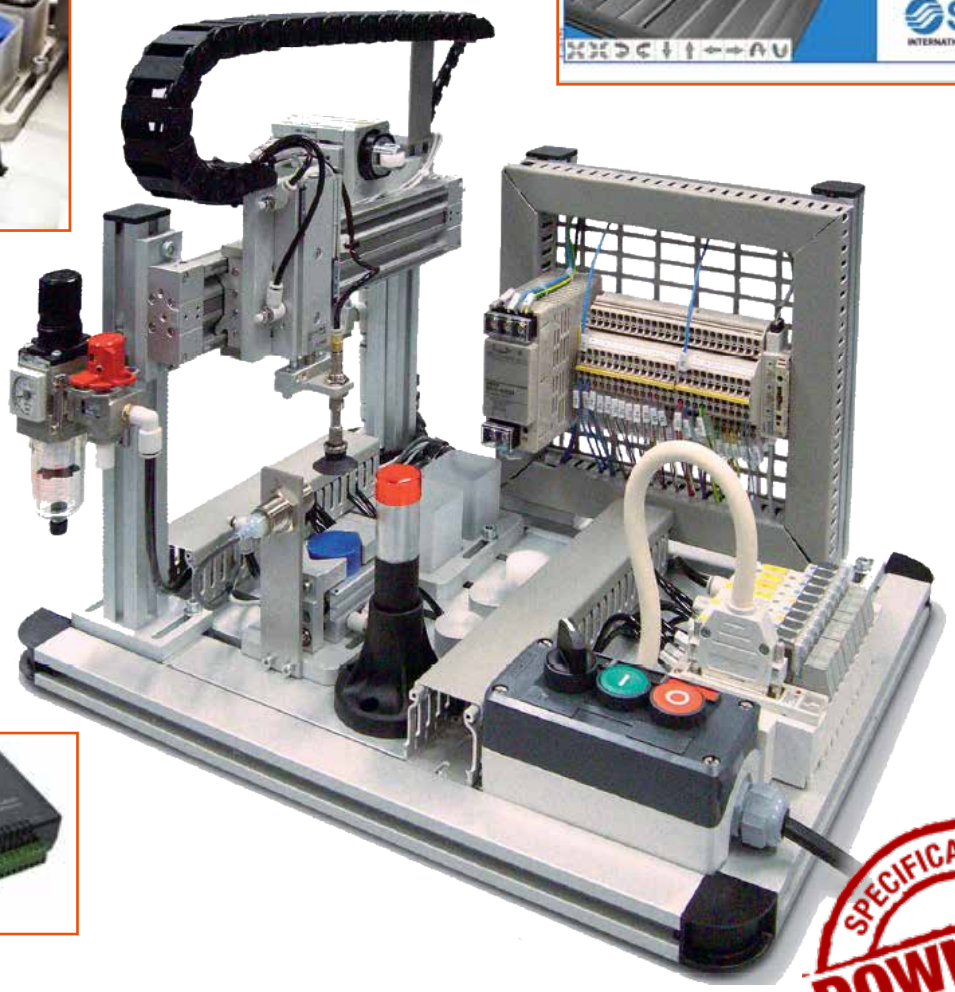
TECHNICAL DESCRIPTIONS

MAP-207 - Handling device for parts classification

MAP-207 performs an automated process of classification and rejection of components made of various materials and sizes (up to 6 different types of pieces). It classifies the largest into different containers and rejects the smallest.

It is compact and easy to transport. In addition, it is designed with components that are widely used in industry. Its design is flexible which allows control from a PC with autoSIM-200 or an external PLC.





Optional I/O card

• SAI1701 MAP-207 Parts classifier

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TECHNICAL DESCRIPTIONS

MAP-200 - With this system you could...

MAP-200 comes up with different practical activities targeting skills in the technologies featuring in the table (below).

TECHNOLOGIES

SKILLS

SKILLS \ TECHNOLOGIES	ELECTRICAL PANEL	PNEUMATICS	VACUUM	ELECTRIC MOTORS	SENSORS	PROGRAMM. CONTROLLERS	MANIPULATORS	MOTION CONTROL
ANALYSIS	■	■	■	■	■	■	■	■
TROUBLESHOOT.	■	■	■		■	■	■	■
DESIGNING	■	■	■	■	■	■	■	■
TECH DOCUM. CREATION	■	■	■	■	■	■	■	■
INSTALLATION AND ASSEMBLY	■	■	■		■	■	■	
TECH DOCUM. UNDERSTANDING	■	■	■	■	■	■	■	■
OPERATION	■	■		■		■	■	■
PROGRAMMING						■		■

■ This shows how the MAP-200 is suitable to develop skills in the specific technology.

■ This shows that MAP-200 can help develop skills in the specific technology even though there are other more appropriate products in the range.

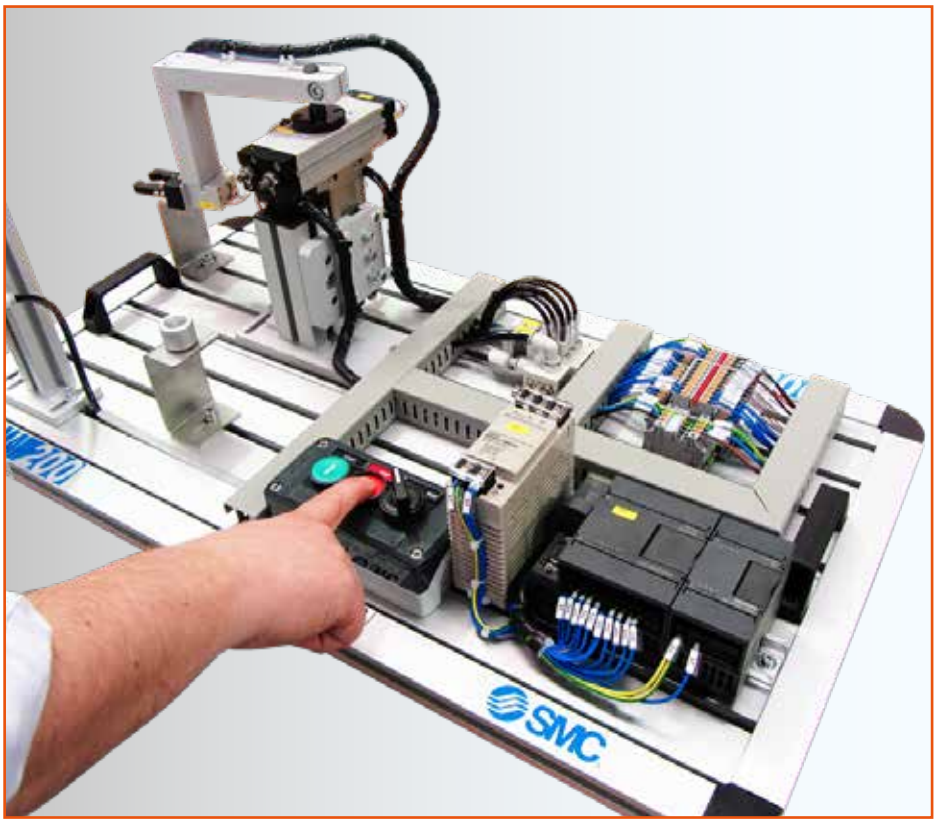
eLEARNING-200

Find out more about the theory behind the technologies developed in MAP-200 with our eLEARNING-200 courses.

SCADA/ HMI	AUTOMATED SYSTEMS
	●
	●
	●
	●
	●
	●
	●

RELATED eLEARNING-200 COURSES
Introduction to industrial automation (SMC-100)
Principles of pneumatics (SMC-101)
DC electricity (SMC-103)
Solid state (SMC-105)
Introduction to wiring (SMC-106)
Sensors technology (SMC-108)
Programmable controllers (SMC-109)

**See eLEARNING-200 chapter for more information*



○ Developing skills in technology applicable to MAP-205.
□ Developing skills in technology applicable to MAP-206.

MAP-200 - Options

MAP-200 has a series of optional extras.

• Support legs

Makes the system self-standing without needing a worktop or bench.

• SAI1897	MAP-201 LEGS KIT
• SAI1898	MAP-202,203,204 LEGS KIT
• SAI1896	MAP-205 LEGS KIT
• SAI1893	MAP-206 LEGS KIT
• SAI1894	MAP-207 LEGS KIT

• Programming tools

The programming tools comprise the appropriate programming software and cables for the chosen PLC.

*See Programming Tools chapter

• SCADA: Supervisory Control and Data Acquisition

This is a standard-use software application in industry, making it easier to supervise and control processes from the computer screen.

Options valid for MAP-205.

• SAI1029	SCADA application MAP-205

• Troubleshooting box

For the MAP-201, MAP-202, MAP-203 and MAP-204 equipment, it is possible to include the TROUB-200 troubleshooting simulation system that can generate up to 16 different dysfunctions to be detected by users.

• SAI1019	Troubleshooting box for MAP-201 / MAP-202 / MAP-203 / MAP-204

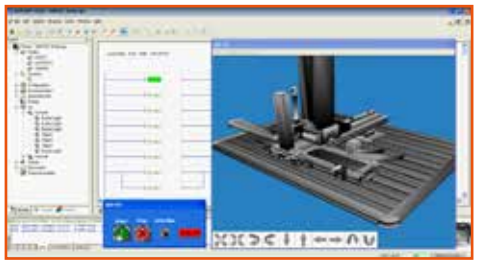
• I/O card

For the MAP-201, MAP-202, MAP-203, MAP-204 and MAP-207 modules, there is the option of including an input / output card. This card can control the equipment using a PC through autoSIM-200.

• SAI2443	USB - AUTOSIM-200 INTERFACE

• MAP-200 application for autoSIM-200

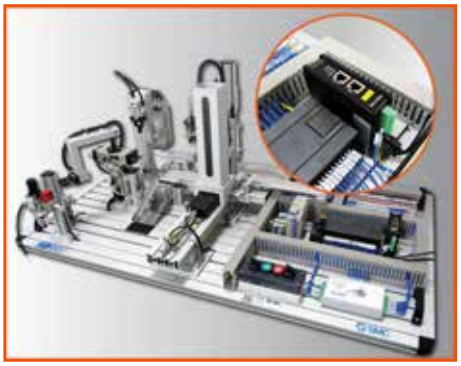
We have a 3D application where users can simulate, supervise and control MAP-200 from an autoSIM environment.



LICENCES	1 YEAR (Electronic dispatch)	PERMANENT (Electronic dispatch)	PERMANENT (Physical dispatch)
3D simulator for MAP-200, 1 licence	SAI1959-001	SAI1975-001	SAI2527
3D simulator for MAP-200, 8 licences	SAI1959-008	SAI1975-008	SAI2528
3D simulator for MAP-200, 16 licences	SAI1959-016	SAI1975-016	SAI2529

**autoSIM is required. See autoSIM-200 chapter*

• Remote communication interface



With this device, the user will be able to access the PLC remotely and perform necessary remote maintenance tasks over the Internet.

• SAI1020 Remote communication interface for MAP-205

■ MAP-200 - Configuration

Getting the right MAP-200 specification is as easy as:

• Steps to follow

1.- Select the finish level for the equipment (Kit, without PLC or with PLC).

2.- Choose the type of handling (the equipment).

3.- In the event of having selected equipment with PLC, pick the PLC.

4.- Add any optional extras.

MAP-200 - Technical features

MAP-201 **770x580x445mm**	Modules	Sensors (type & qty.)	Input / Output
	Part feeder Position verification Displacement Rejecting incorrect parts	Auto-switch, Reed type (x4)	Digital 7/4
	Other devices (quantity)	Actuators (type & quantity)	
	Air treatment unit (x1) Speed controllers (x6) Power supply source (x1)* Control PLC **	Pneumatic linear (x4)	
MAP-202 **740x400x445mm**	Modules	Sensors (type & qty.)	Input / Output
	Part diversion	Auto-switch,Reed type(x4) Vacuum pressure switch (X1)	Digital 8/4
	Other devices (quantity)	Actuators (type & quantity)	
	Air treatment unit (x1) Speed controllers (x4) Vacuum pad(x3)-Vacuum ejector(x1) Power supply source (x1)* Control PLC **	Pneumatic linear (x2)	
MAP-203 **740x400x345mm**	Modules	Sensors (type & qty.)	Input / Output
	Part diversion	Auto-switch, Reed type (x3)	Digital 6/3
	Other devices (quantity)	Actuators (type & quantity)	
	Air treatment unit (x1) Speed controllers (x2) Power supply source (x1)* Control PLC **	Pneumatic rotary actuator (x1) Pneumatic gripper (x1)	
MAP-204 **740x400x285mm**	Modules	Sensors (type & qty.)	Input / Output
	Part diversion	Auto-switch, Reed type (x4) Solid state (x2)	Digital 9/3
	Other devices (quantity)	Actuators (type & quantity)	
	Air treatment unit (x1) Speed controllers (x4) Power supply source (x1)* Control PLC **	Pneumatic rotolinear actuator (x1) Pneumatic gripper (x1)	

* Not included in kit version.
** Options: Without PLC, Siemens, Omron, Mitsubishi, Allen Bradley, Schneider. Not included in kit version.

MAP-205 **1200x762x445mm**	Modules	Sensors (type & qty.)	Input / Output
	Base feeder Position verification Displacement Rejecting an inverted base Bearing assembly Insertion shaft in the assembly Positioning of the lid	Auto-switch, Reed type (x15) Inductive detector (x1) Barrier type photocell (x2) Vacuum pressure switch(X1) Solid state (x2)	Digital 24/15
	Other devices (quantity)	Actuators (type & quantity)	
	Breakdown simulation box (x1) Air treatment unit (x1) Speed controllers (x17) Power supply source (x1) Control PLC **	Pneumatic linear (x6) Pneumatic rotary actuator (x1) Pneumatic roto-linear actuator (x1) Pneumatic gripper (x2)	
MAP-206 **750x590x400mm**	Modules	Sensors (type & qty.)	Input / Output
	Positioning axis Warehouse	Auto-switch, Reed type (x2) Encoder (x2)	Digital 10/15
	Other devices (quantity)	Actuators (type & quantity)	
	Touch HMI with built-in PLC (x1) HMI programming software (x1) HMI visualisation software from PC(x1) CC regulator (x1) Servo-driver (x2) Power supply source (x1)	24VDC electrical linear (x1) Servo-motor electrical linear (x2) Electromagnet (x1)	
MAP-207 **500x400x400mm**	Modules	Sensors (type & qty.)	Input / Output
	Feeding and detecting the parts Rejection manipulator Displacement manipulator Stopper	Auto-switch, Reed type (x7) Magnetic adjustment (x1) Vacuum pressure switch (X1) Inductive detector (x1)	Digital 13/10
	Other devices (quantity)	Actuators (type & quantity)	
	Air treatment unit (x1) Speed controllers (x9) Vacuum pad(x1)-Vacuum ejector(x1) Power supply source (x1) Three-colour indication light (x1) Magnetic adjustment amplifier (x1)	Pneumatic linear (x4) Pneumatic gripper (x1)	

* Not included in kit version.
** Options: Without PLC, Siemens, Omron, Mitsubishi, Allen Bradley, Schneider. Not included in kit version.