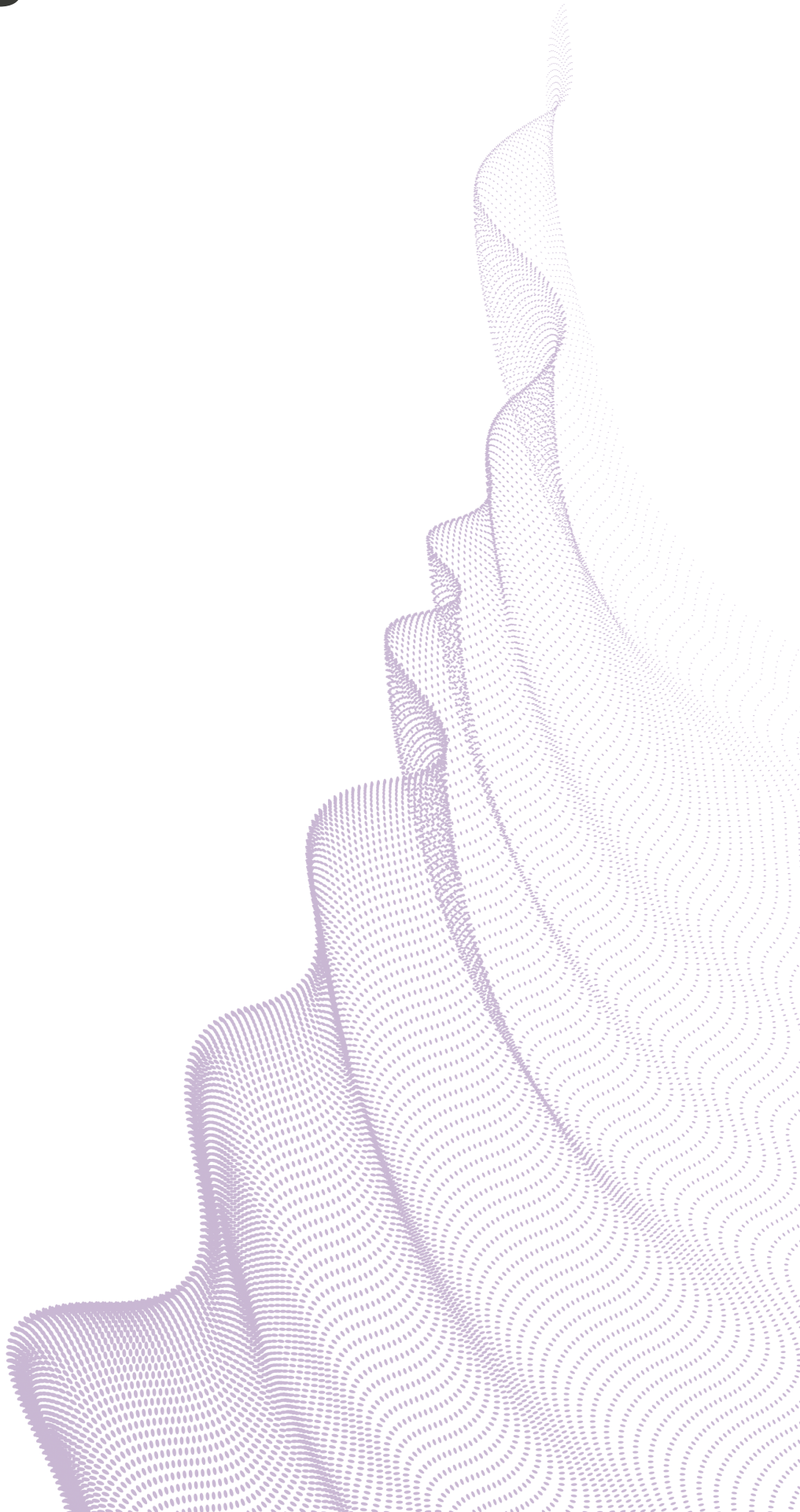


TRAINING SYSTEMS

# ***SENSORICS***



**HRE**  
Automation

**HRE Automation** takes advantage of its industrial experience of more than 40 years in industrial automation and fluids, using it as a technological base to create equipment and educational systems that are perfectly suited to the demands of today's industrial market.

In the continuous search for excellence in teaching equipment, we are a company specialized in providing means for optimal training in the field of automation.

Offers:

- PRACTICE EQUIPMENT
- PEDAGOGICAL SUPPORT (TEACH WARE)
- PERSONALIZED ATTENTION

The teacher will be able to impart with ease and clarity, a quality theoretical-practical teaching. At the same time, it contributes to rapid learning by students, using equipment that will later be used in the work environment.

**HRE**  
*Automation*

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**SENSORICS TRAINING SYSTEMS**

Sensorics Level 1 .....1  
 Sensorics Level 2 .....2  
 Sensorics Level 3 .....2  
 Sensorics Level 4 .....4  
 Sensorics Level 5 .....5

**TRAINING EQUIPMENT IN SENSORICS**

Training equipment for the theoretical-practical study of sensorics structured at different levels. The "Work Suitcase" is supplied with the first level on which all the practical assemblies of the later levels are carried out. (except of level 4 that does not need physical support to assemble), at the same time that it allows to store under the die-cut cover all the elements of level 1 as well as some higher level items that are permanently affixed (potentiometers, interface boards,...)



## Sensorics Level 1

Ref. 53953576

### Proximity sensors

Formed by:

- Inductive Sensor M12
- Inductive Sensor M18
- Capacitive Sensor M18
- Optic sensor / object reflection
- Optic Sensor / mirror reflection
- Reflector / Mirror
- Optic fiber sensor
- Optic fiber barreer
- Optic fiber / object reflection
- Magnetic Sensor
- Arbor linear guide, 300mm stroke
- Wheel, manual rotating mechanism with position reading for guide
- Set of 12 plates of different materials and features to be detected.
- Set of 14 connecting cables (red and blue)
- Graduated fixtures for fixing detectors and objects to be detected.
- Manuals: Proximity sensors (theory), Practical activities Student/Teacher
- Portable case, 600x400x200, including:
  - Power supply unit 220vac/24vdc/5Amp, Emergency button, 2 indicator lamps and 1 buzzer, +/- distribution female connectors and 1 relay.
  - Groved aluminum plate for making practices.
  - Shaped foam with transparent cover to contain and keep components



*Tactil screen (optional)*

### **OPTIONAL:**

#### **TACTIL SCREEN**

Ref. 53953577

Tactic screen with different functions:

- Visualize analog signals (0-10 V, 4-20 mA). To scale and visualize pressure, speed, position, force, etc
- Ammeter and voltaje meter
- Guide for making practices, levels 1 & 2

### Sensorics Level 2

Ref. 53953578

#### Analog position and speed sensors

- Linear potentiometer (position transducer)  
Assembled on the extreme of the linear guide (level1)
- Analog ultrasonic sensor
- Foam object for testing
- 24 Vdc motor + reducer + coupling
- Rotating speed sensor: Tachodymanic
- 2 limit switches
- Linearization module for analog signals
- Motor speed and direction control module
- Manuals: Position and speed sensors (theory), Practical activities Student/Teacher
- Portable case with shaped foam for keeping Level II and III components (see picture below)

### Sensorics Level 3

Ref. 53953579

2

#### Digital position and speed sensors

- Incremental encoder
- Teeth wheel for pulse counting
- Multifunctional Display Module:  
Visualization of position and speed signals, includes:
  - Pulse counter
  - Frequency reader
  - Different settings and working modes.
- Manuals: Position and speed digital sensors (theory), Practical activities Student/Teacher
- Portable case with shaped foam for keeping Level II and III components (see picture below)



*Levels 2 and 3: Both levels in an only suitcase*

**Each component has been assembled in the level 1 suitcase**

Level 2 and 3 electrical modules assembled in level 1 suitcase

*Suitcase level 1 + Tactil screen + Level 2+ Level 3*



*Linear potentiometer (level 2)*

*Motor control module (level 2)*

*Linearization module for analog signals(level 2)*

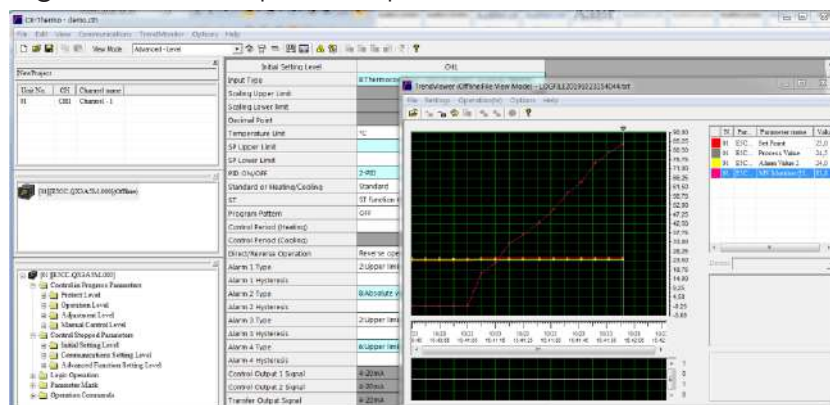
*Tactil screen (optional for level 1)*

*Multifunctional display module (level 3)*

### Temperature testing and control equipment

- Metal box including PTC heating resistor, cooling fan and J reference thermocouple
- Manual / Automatic modes
- Temperature probe 1 – Thermo resistance RTD PT100  $(-50...250^{\circ}\text{C})$
- Temperature probe 2 – Thermo couple Type J  $(0 \dots 400^{\circ}\text{C})$
- Temperature probe 3 – Thermo resistance PTC  $(-20 \dots 80^{\circ}\text{C})$
- Temperature probe 4 – Thermo resistance NTC  $(-20... 80^{\circ}\text{C})$
- Signal converter / linearizer for thermo-resistance PTC100. Output 4-20mA. Temperature range selectable by software.
- PID industrial temperature controller:
  - ON/OFF control
  - 2PID control
- Control with output warm/cold fan alarm
- Alarm control, three alarms available.
- Auto-tunne option: automatic setting of the PID parameters
- CX Thermo software for parameterization and implementation of temperature control for the entire family of Omron controllers.
- Trend Viewer software for PC data capture and plotting/monitoring of the temperature process
- Manuals: "Temperature measurement and control" (theory), Practical activities Student/Teacher
- One CD with a temperature course is included

The equipment works with an industrial PID controller, which requires adjustment and parameterization. This adjustment can be done manually or through a PC thanks to the Cx One that includes the "Cx-Thermo" software with the "Trend Viewer" graphing and data acquisition option.



Level 4: Digital temperature controller

### Pressure and force testing equipment

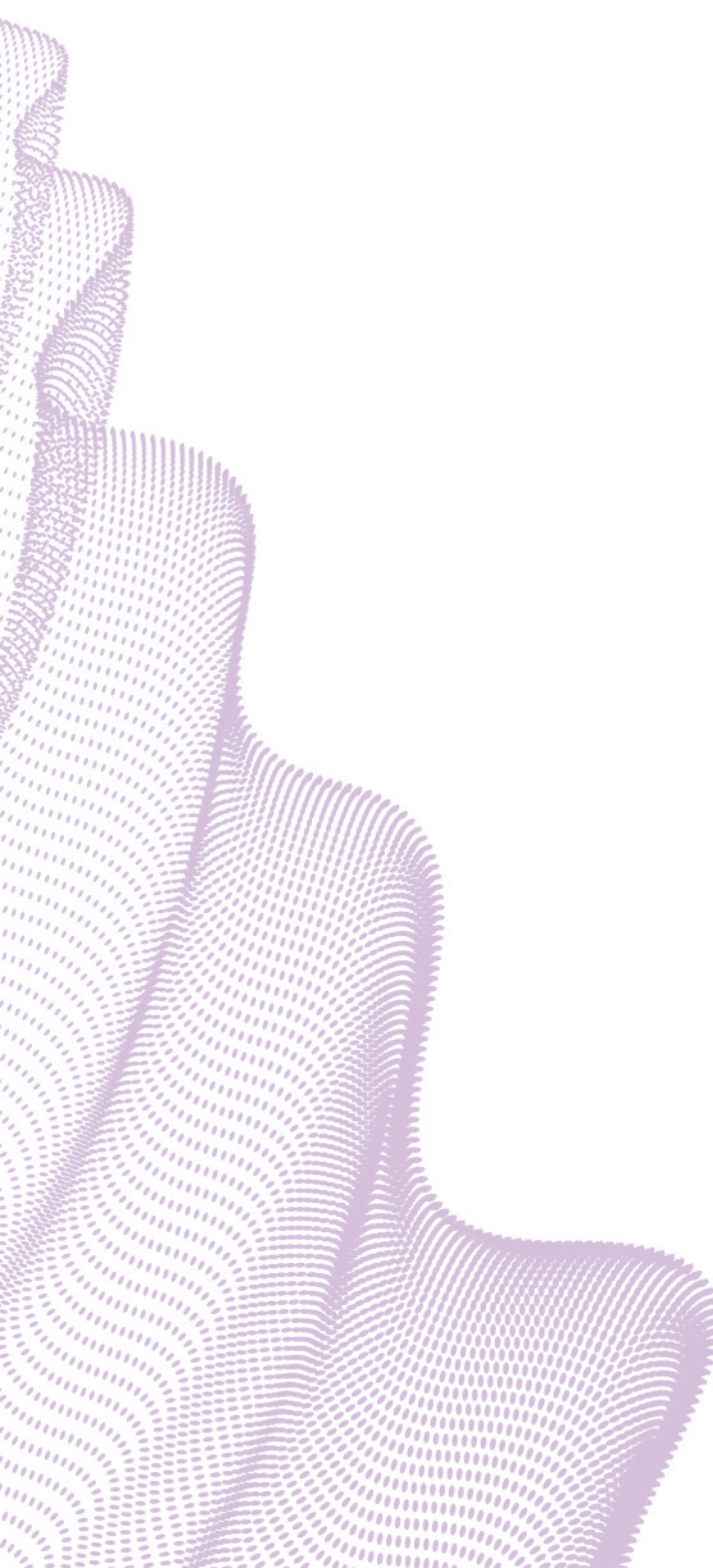
- Pneumatic cylinder / load cell set: Single acting pneumatic cylinder with compression load cell, 10 Vdc feeding and 2mv/v output
- Load cell signal adapter. Output 0-10 V.
- Control module: 3/2 normally closed valve, pressure regulator, pressure gauge and 4 way divider block
- Pressure set: Pressure switch normally open / normally closed selectable, analog pressure transducer 4-20 mA from 0 to 10 Kg/cm<sup>2</sup>
- Vacuum set: ventury vacuum valve, vacuum switch, vacuum gauge and flow regulator.
- Manuals: "Pressure and force sensors" (theory), Practical activities Student/Teacher



*Level 5: Pressure and force measurement*

**Every component to be assembled onto level 1 suitcase**





**HRE**  
**40 Years**

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