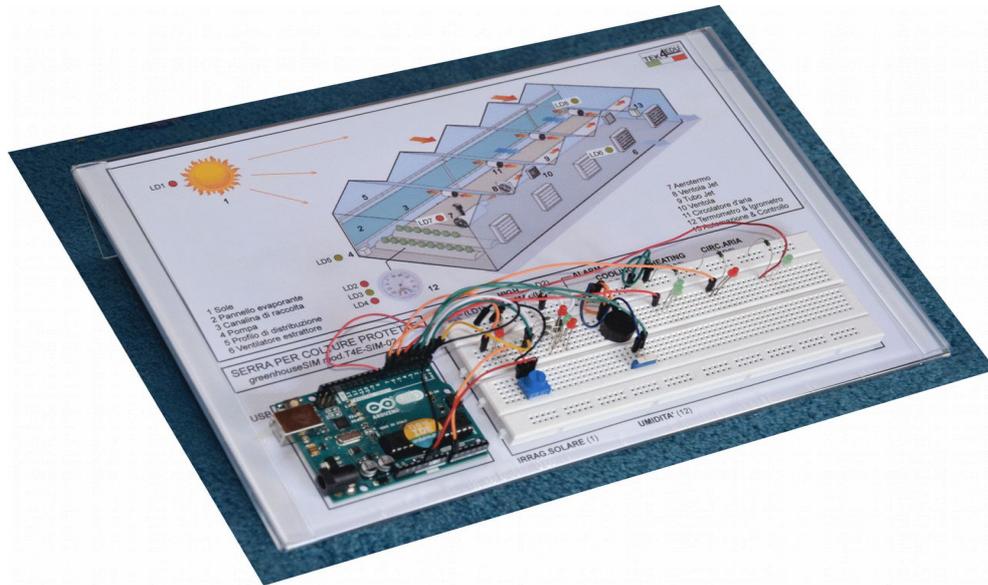


# greenhouseSIM MOD. T4E-SIM-02



**greenhouseSIM mod.T4E-SIM-02** is a compact simulator that shows the operation of a Greenhouse for protected cultivation using an **Arduino UNO** board.

The unit is designed to allow the learning of basic electronics, the use of electronic components and **Arduino UNO** board, and the code programming (**sketch**).

It allows the study and understanding of the functioning of a climatized greenhouse complete of:

- technology for air heating
- technology for the air cooling
- measurement and control of temperature
- measurement and control humidity
- technology to eliminate heat stratified, humidity and stagnant air

It consists of:

- a transparent and ergonomic base which contains the block diagram of the system with all main components
  - an **Arduino UNO** board and
  - the breadboard with electronic components to be mounted
- The unit is powered by PC through the Arduino UNO board.

## COURSE PROGRAM

- Installation of the simulator by placing the Arduino UNO board and the breadboard
- Reading of electrical diagram attached, identification of electronic components supplied and construction of the electrical circuit on the breadboard
- Check that the circuit is made consistent with the electrical diagram
- Connecting the Arduino UNO board to the PC with the USB cable and start the PC
- Installation of the **Arduino Software IDE** and open the file with the **code (Sketch) included**
- Selection of input commands (potentiometer, switch) and observation of the unit state by the output (leds, buzzer)
- Analysis of the operating logic of the simulator
- Performing electrical measurements with Tester (**option, not included**)
- Code analysis to observe the similarities between the operating logic of the simulator and the development of the code itself: it is supplied the **flow-chart** of the code
- Changing the code, load from your PC to Arduino UNO board and verification of the effects

## TECHNICAL SPECIFICATIONS

The Block diagram contains the following components:

- Sun, evaporative panel, collecting pipe, pump, distribution pipe, extractor fan, heater, fan jet, jet tube, circulation fan, thermometer, hygrometer, automation and control equipment

Nr.1 Arduino UNO board

Nr.1 Breadboard

Electronic components:

- leds, buzzer, potentiometer, resistors, switch

Wiring:

- flexible jumper cable
- mix color and length
- male to male

User controls:

- solar irradiation: continuously adjustable

- humidity: normal, excessive

Light indicators:

- temperature: high, normal, low
- pump of cooling system: on, off
- heater: on, off
- extractor fan: on, off
- circulation fan: on, off

Sound indicator:

- alarm: excessive humidity

Simulator is ready-to-use:

- Arduino UNO board is already programmed with its code

Accessories included:

- Student manual: contains exercises that describe how to use the unit and the code (sketch)

Power supply:

- by USB port of Arduino UNO board connected to a **Personal Computer or Power bank (not included)**
- by external power supply (**not included, option suggested T4E-MOD-01**)

Dimensions and weight:

- 310x210x70 mm
- Total weight: 1kg