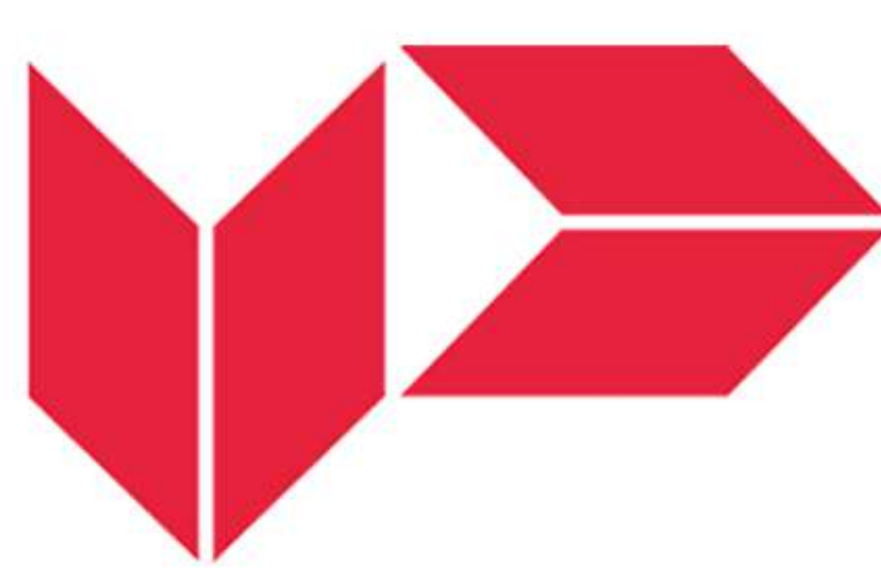




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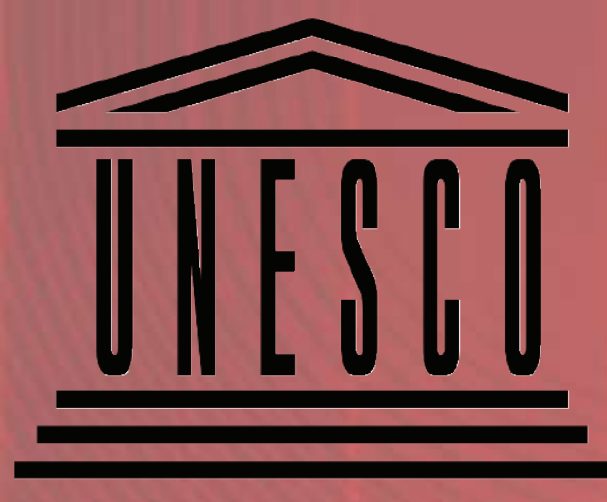
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Smart Pot – Automatic microclimate support system for growing plants based on stm32

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INTRODUCTION

Today the problem of creating and maintaining climatic conditions, their control and automation of watering in the care of plants and microgreens for homes, cafes, greenhouses and mini-farms is relevant.

Growing houseplants has long been part of people's lives. It is known that houseplants need not only regular watering, but also constant monitoring of soil moisture and temperature. Various microgreens are used not only as healthy food, but also as a visual and taste component in restaurants.

HYPOTHESIS

The use of automation of plant care and cultivation, namely the automation of irrigation and soil moisture control, as well as the further commercialization of development is important today and will make the care and cultivation of plants more efficient and easier.

PROJECT AIM

The aim of the project is to develop a scheme of the device and build a device that will automatically control and measure soil moisture without human intervention and perform automatic watering, thus creating and maintaining a microclimate for growing houseplants and microgreens indoors.

METHODOLOGY

analysis, comparison, observation, experiment.

TASKS SOLVED

1. Review and analysis of the advantages and disadvantages of existing solutions;
2. Analysis of hardware functionality, advantages and disadvantages of different board models;
3. Justification of the choice of board, humidity sensor, water valve for the device;
4. Development of the schematic diagram of the device;
5. Development of the device operation algorithm;
6. Development of a program for a microcontroller;
7. Creation of automated watering;
8. Analysis of the device operation and adjustment of soil moisture sensor parameters.

RESULTS

Existing information on the topik was reviewed and critically analyzed. On the basis of the stm32f103rb board, a soil moisture control system was built, which helps to solve the problem of watering houseplants and microgreens.

HOW DOES IT WORK

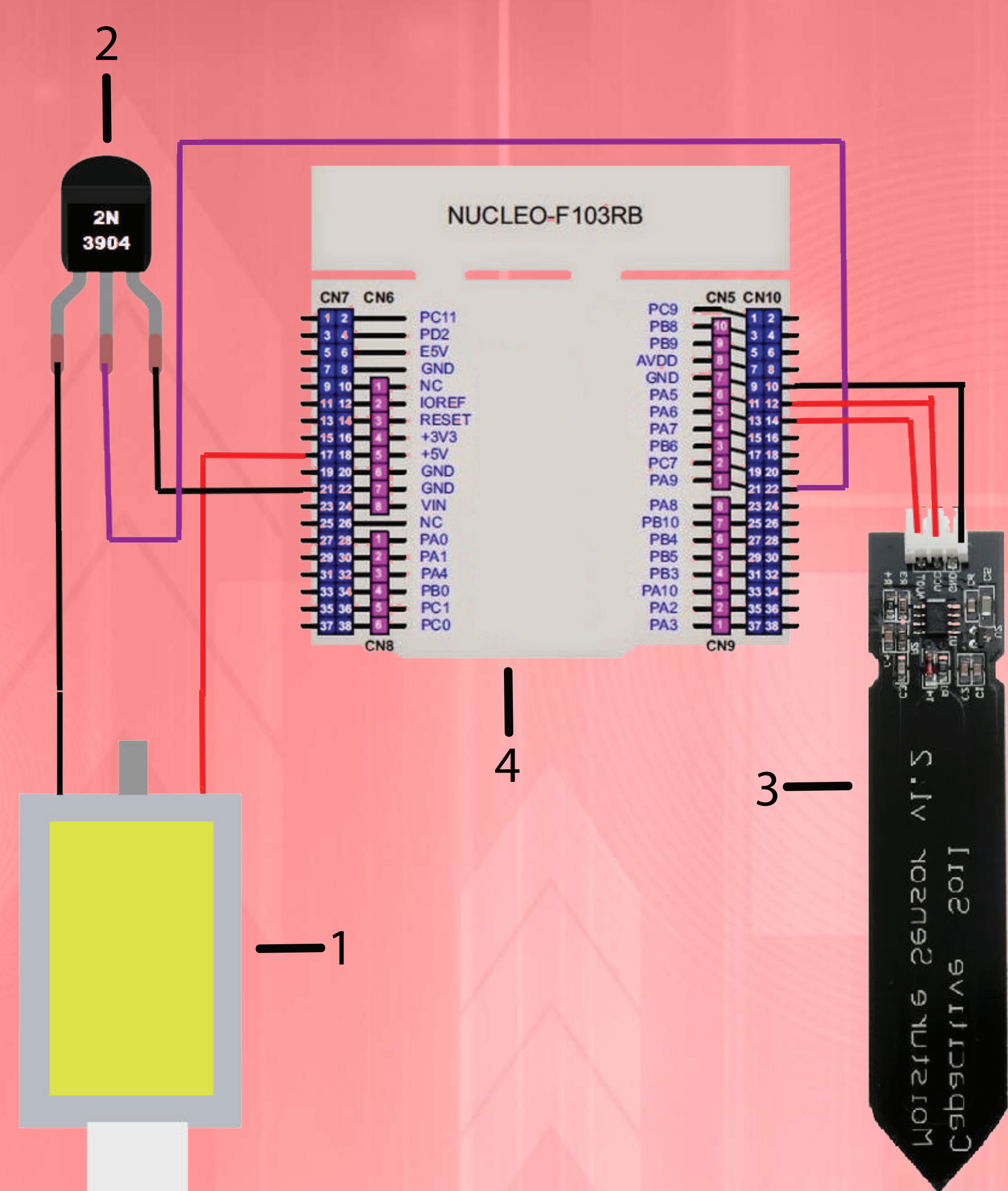


Fig.1 Diagram of the device (1 - valve, 2 - 2N3904 transistor, 3 - humidity sensor, 4 - STM32F103RB board)



Fig.2 Photo of the device

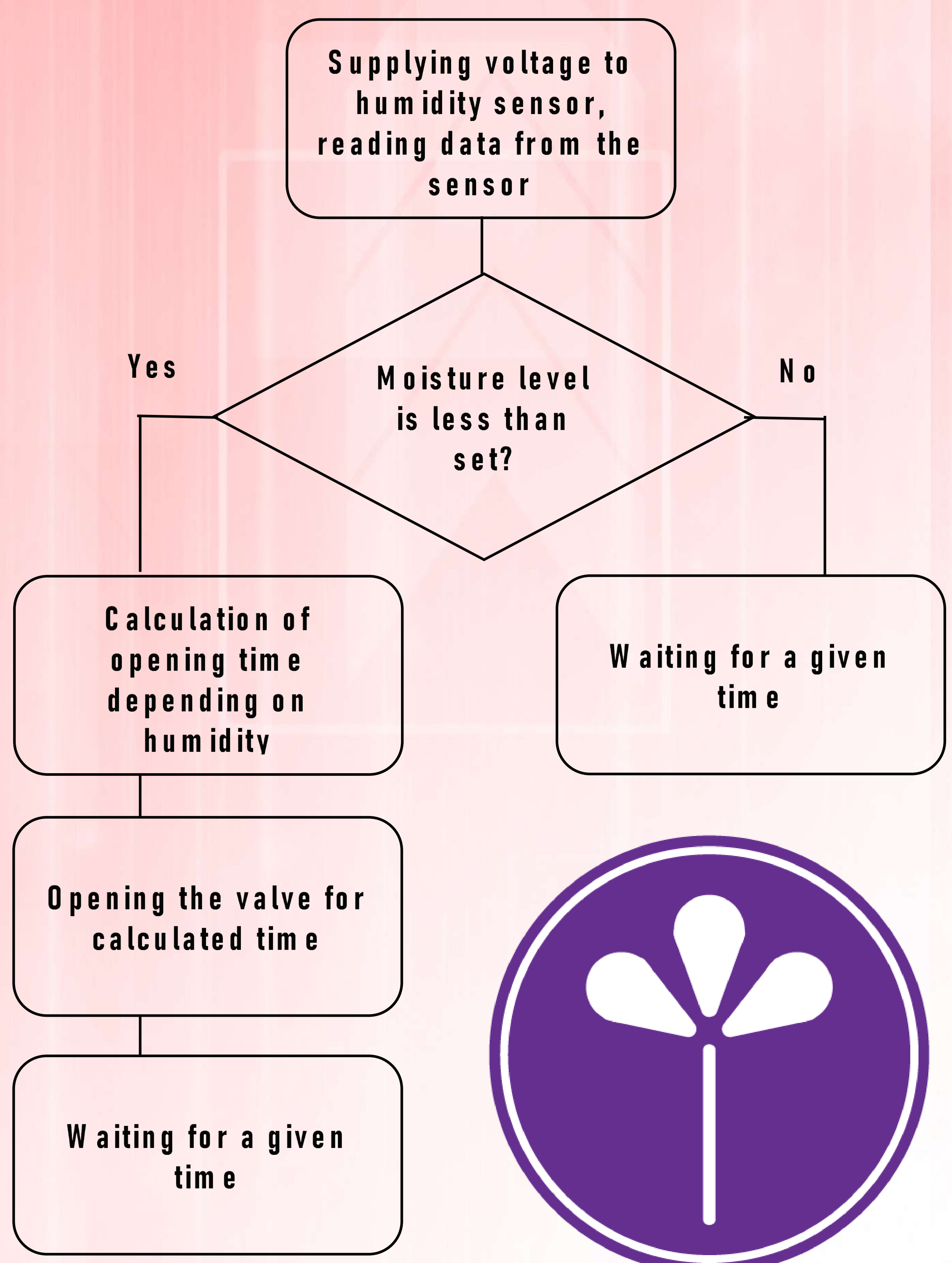


Fig.3 Structural scheme of the program algorithm; Fig.4 Device logo