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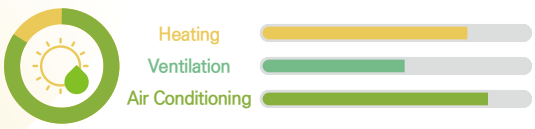
Artificial Intelligence
Internet of Things

SMART FARM

IoT-based soil or hydroponic cultivation platform
capable of actual cultivation



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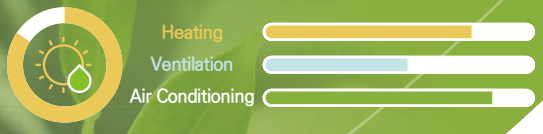


Option

Builds a pumping system to control the culture medium including nutrients

CO2 Generator Solenoid Valve
Nutrient Solution
PH Value Detection Sensor Detectable Concentration Range : PH0 ~ 14 Response Time: 〈=5S
TDS(Total Dissolved Solids) Sensor Measurement Range : 0 ~ 1000ppm TDS Probe
Peltier Thermoelectric Module 40mm Fan 12V/6A
Heater 12V/10A Heating Element : PTC
Power : 12V/29A

Product Features

Provides systems such as heating, ventilation, and air conditioning to monitor or control the light, temperature, and humidity required for plants

Builds a system that can determine the optimal conditions for temperature, luminosity, moisture and CO2 levels, etc.

Provides DC LED lighting for plant growth, water pump control function through moisture sensor

Provides intake and exhaust fans for ventilation systems

Window-type door system configuration using a motor

Real-time remote management and remote control of fans or door systems with a smartphone

Using IoT connectivity application training equipment based on Wireless Personal Area Network (WPAN) and Low-Power Wide Area Network (LPWAN)

Supports an open integrated development environment based on Visual Studio Code for professional application development

Provides Python-based learning contents

Software Specifications

List	Specifications
XNode Auto	MicroPython 3 (built in node)
	Soda IDE
	RGB LED, Light, Humidity, Temperature Library & Example
	Button Switch, LED, Relay, Servo Motor, TextLCD Display, Soil Moisture, Library & Example

Hardware Specifications

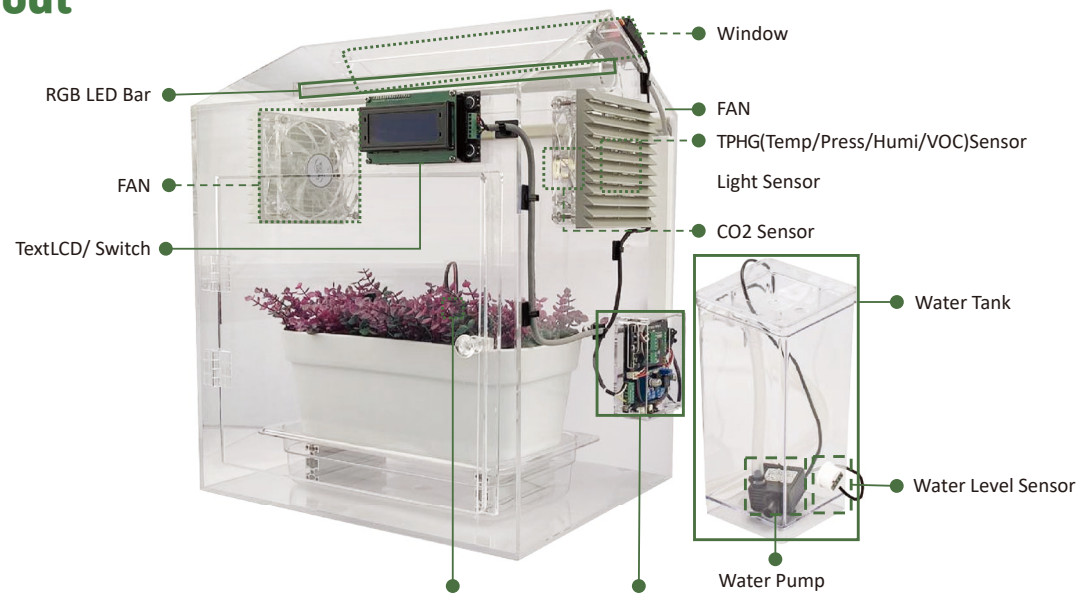
List	Specifications	
XNode Auto	Xtensa® Dual-Core 32-Bit LX6 Microprocessor(s), Up to 600 DMIPS	
	RAM: 4MB	
	Flash Memory: 8MB	
	Interface: UART, SPI, I²C, I²S, ADC, PWM, GPIO	
	Indicator: RGB LED	
	Wi-Fi	802.11b/g/n Data Rate: 1Mbps to 72Mbps Transmit Power: Up to +16dBm Receiver Sensitivity: -93 to -71 dBm
	Bluetooth	Bluetooth 4.2 BR/EDR BLE Range: 30M Data Rate: 1Mbps Sensitivity: -97dBm Output Power: 12dBm
	LoRa	Frequency: 868MHz Range: 10km Data Rate: 300kbps Sensitivity: -148dBm Output Power: 20dBm
	Light Sensor	Illuminance: 1 ~ 65535(lx) Interface: I²C
	Temperature/Humidity Sensor	Humidity Resolution: 12bit(0.04%RH), 8bit(0.7%RH) Humidity Accuracy: +-3%RH Temperature Resolution: 14bit(0.01C), 12bit(0.04C) Temperature Accuracy: +-4°C Interface: I²C
	Relay: 3ch	DC: 7A/28VDC AC: 7A/240VAC
	Motor Driver	Dual Full-Bridge Driver(4A/46V)
	Soil Moisture Sensor	Analog Output
	Ventilation	Vinyl Curtain: Step Motor Driver FAN 2EA: Relay Control Light Control: RGB LED Strip Power: 12V/3A Adaptor (DC Jack)
	Water Pump	Flow Rate: 3.5L/Minute 12V/3W(Relay Control) Mini Sprinkler 2EA
	Indoor Sensor	Light Sensor Temperature/Humidity Sensor Interface: I²C
	Carbon Dioxide(CO2) Gas Sensor	Measuring Range : 0 ~ 10000 ppm Accuracy : ±7% ±50ppm Response Time : 18 ~ 30 sec Interface: I²C
	Water Level Sensor	Output Voltage: (Low(0V), High(5V) Response Time: 500ms Sensitivity: 0 ~ 13mm Waterproof Performance: IP67
	Display	Character LCD Format Size: 16x2 Interface: I²C
	Size	Body: 400x300x500(mm) Flowerpot: 325x140x125(mm) Flowerpot Stand: 325x175x65(mm) Water Tank: 105x105x255(mm)

Training Contents

- **Smart Farm Configuration and Lab Environment Configuration**
  - Smart Farm Configuration
  - Development Environment
- **Smart Farm Control**
  - FAN
  - Water Pump
  - Soil Moisture Sensor
  - CO2 Sensor
  - Water Level Sensor
  - Light Sensor
  - Temperature/Humidity Sensor
  - RGB LED Bar
  - Window Control
  - TextLCD Display
  - Switch Input
  - Auto Control
- **Smart Farm Control using Blynk**
- **Smart Farm GUI Application**

GUI Program

Layout



Components

Smart Farm

Option

Platform USB
1EA

12V/3A Adaptor
1EA

Micro USB Cable
1EA

User Guide book
1EA