Gravity: KnowFlow Basic Kit - A DIY Water Monitoring Basic Kit

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monitor 2 parameters with a basic kit: pH and Electronic conductivities. The kit is based on Arduino, easy to change, and add more sensors and modules. Currently, it stores the data on a micro-SD card, also the data can be viewed on your smartphone via Bluetooth communication.

KnowFlow AWM (Automatic Water Monitor) is the first kit for Open-Source Science in the KnowFlow team. KnowFlow team comes from the **NGO GreenSeed Organization**. We are going to build a low-cost water monitor for the people who join the course. Then we found that a lot of people need the water monitor, so we release all the things to help people make themselves water monitors.

Using the water monitor, you can find the water quality in real-time, also you can store the data into the TF card, analyze the data. It can be used on environmental study, pollution sourcing, and teaching, etc.

KnowFlow team focuses on the solution of environmental and agriculture problems. We can provide the best tool by using hardware, software, courses, and cloud technology. We can support scientists, students, citizens, and environmentalists to using Digital Technology for application in the environment and agriculture. We want to promote the development of Open Science and Open innovation through these efforts.

KnowFlow Kits is using the DFRobot Gravity Sensor series. Gravity Sensor series are easy to use and high compatibility. If you do not care about the code, you can just upload the sketch into the Bluno board without any coding job. After that, you can find that the data is storing in the TF card.

KnowFlow can be powered by a power bank or Li-po battery. For the advanced function, you may add an ORP sensor, and Dissolve Oxygen sensor in your kit.

You can find the course video which is made by GreenSeed and MushroomCloud maker space.

Attention

As a **basic** version of KnowFlow, this Kit is just **INCLUDE** pH and EC sensors. You may check Gravity: Waterproof DS18B20 Sensor Kit to enable temperature measuring function.

We will recommend using a 200mmx150mmx75mm waterproof case and an acrylic plate to mount KnowFlow sensors. You can find the dwg in GitHub.

Features

- pH, EC auto record
- Micro-SD Local storage
- Extensible design
- plug and play
- Bluetooth built-in

Specification

- Bluno Microcontroller:

*On-board BLE chip: TI CC2540

- Wireless Programming via BLE
- Support AT command to config the BLE
- Transparent communication through Serial
- Upgrade BLE firmware easily
- DC Supply: USB Powered or External 7V~12V DC
- Microcontroller: Atmega328p
- Bootloader: Arduino Uno (disconnect any BLE device before uploading a new sketch)
- Compatible with the Arduino Uno pin mapping
- Size: 60mm * 53mm (2.36"*2.08")
- Weight: 30g
- pH sensor:
- Module Power: 5.00V
- Module Size: 43 x 32mm (1.69x1.26")
- Measuring Range:0 - 14PH
- Accuracy: ± 0.1pH (25 ℃)
- Response Time: ≤ 1min
- pH Sensor with BNC Connector
- pH2.0 interface (3 foot patch)
- Gain Adjustment Potentiometer
- Power Indicator LED
- EC sensor
- Operating Voltage: +5.00 V
- PCB Size: 45 × 32mm(1.77x1.26")
- Measuring Range: 1ms/cm -- 20ms/cm
- Operating Temperature: 5 - 40 ℃
- Accuracy: ±10% F.S (using Arduino 10 bits ADC)
- PH2.0 interface (3-pin SMD)
- Power Indicator LED
- Conductivity Electrode (Electrode Constant K = 1,BNC connector)
- Cable Length of the Electrode: about 60cm(23.62")
- Power Indicator
- Analog Signal Isolator
- Operating Voltage: 5.0V
- Response Time: 4 seconds (Typ)
- Analog Error (both ends): ± 20mV (Typ)
- Interface Type: PH2.0-3P
- No load Current: 75mA
- Dimension: 42 * 32mm / 1.65 * 1.26 inch
- Non-isolated Terminal (Arduino Side)
- Supply Voltage: 5.0 ± 0.1V
- Analog Output: 0 ~ 5.0V
- Isolated Terminal (Sensor Side)
- Output Voltage: 5.0 ± 0.2V
- Analog Input: 0 ~ 5.0V

Documents

- Github
- tutorial
- GreenSeed online courses
- application: Water Quality Investigation on African Tea Garden
- application: Willow Creek Water Quality Monitoring
- pH wiki
- EC wiki
- RTC wiki
- Analog Signal Isolator
- Schematic
- Layout
- Datasheet

Shipping List

- Bluno (DFR0267) x1
- Gravity: Analog pH Sensor / Meter Kit For Arduino (SEN0161-V2) x1
- Gravity: Analog Electrical Conductivity Sensor / Meter For Arduino (DFR0300) x1
- Gravity: IO Expansion Shield for Arduino V7.1 (DFR0265) x1
- Gravity: I2C SD2405 RTC Module (DFR0469) x1
- MicroSD card module for Arduino (DFR0229) x1
- Gravity: Analog Signal Isolator (DFR0504) x1
- SD/MicroSD Memory Card (16GB Class10 SDHC with Adapter) (FIT0394) x1
- Analog sensor cable x2
- Digital sensor cable x1

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