**pH-W218**

Research papers?

Protocol?

description: <https://www.tvcmall.com/details/ph-w218-8-in-1-ph-ec-salt-orp-tds-s-g-temp-cf-monitor-wifi-water-quality-tester-eu-plug-skuc0015246b.html>

datasets: <https://www.kaggle.com/datasets/adityakadiwal/water-potability/data>

k-means clustering algorithm <[research paper](https://www.microsoft.com/en-us/research/uploads/prod/2006/01/Bishop-Pattern-Recognition-and-Machine-Learning-2006.pdf)>

[KMeanClustering](https://colab.research.google.com/drive/1erbYYJE07cYVroKDOOXY2fJe5cDsawUQ" \l "scrollTo=d81cab1d-b5bf-491f-8536-8387e3401002)

* Elbow method

<[Machine Learning Tutorial Python - 13: K Means Clustering Algorithm](https://youtu.be/EItlUEPCIzM?si=FAXRNi074URafui4)>

* SSE - Sum of Squared Errors

<[C++ Machine Learning Tutorial Part 3: K-Means Clustering Unsupervised Learning](https://youtu.be/knXGdIUExBY?si=5-k-o5dsLw94k2Wt)>

(k nearest neighbors’ algorithm) [KNN](https://youtu.be/oCF8QwJ_1-A?si=BbUakaxKW421L1vK)

7/6/2024

Fresh Drinking Water

14/6/2024

3:00 pm - Normal Tap Water

6:00 pm - start prep for ph 6.86

6:30 pm - ph 6.86 & 500rpm-

7:00 pm - reading start

7:25 pm - ph 4 & 500rpm+

8:00 pm - reading start

20/6/2024

4:30 pm - start prep for ph 9.18

5:05 pm - ph 9.18

5:35 pm - reading start

\*Around 500 rpm

## [Acquiring API Keys](https://tuyaapi.github.io/cloud/apikeys/)

# [API Explorer](https://developer.tuya.com/en/docs/iot/api-debugging?id=Ka6yniaizeiiu)

live website to monitor water quality by a ph-w218 sensor

[Water Quality Monitoring Systems in India](https://www.krinstruments.com/water-quality-monitoring-system/)

HA – Home Automation

In HA, what matters the most is to get the status measures as automations and alarms can be set in HA itself.

<<https://github.com/make-all/tuya-local/issues/580>>

[Water Quality Prediction using ML techniques | Python | Data Science | Machine Learning](https://www.youtube.com/watch?v=a9wMKnkobsg&ab_channel=DataScienceTutorial)

[Kaggle Project- Water Quality Prediction using Machine Learning !! Drinking water potability](https://www.youtube.com/watch?v=MWLUtTlHxpw&ab_channel=DeveloperAshish)

“Practical engineering ground water” – Rajesh bhaiya

Temperature - Current Temperature (℃/°F)

The best temperature range for water to be absorbed and rehydrate effectively is between [10-22 ℃ (50 - 72 °F)](https://www.brita.co.uk/news-stories/dispenser/what-is-the-best-temperature-for-drinking-water#:~:text=The%20best%20temperature%20range%20for,50%20%2D%2072%20degrees%20Fahrenheit).)

<[wisewell.ae](https://wisewell.ae/blogs/news/which-water-temperature-is-best-for-drinking#:~:text=Most%20desired%20temperature%20range%20for%20drinking%20water&text=In%20general%2C%20however%2C%20water%20that,absorb%20the%20water%20and%20rehydrate.)>, <[www.bisleri.com](https://www.bisleri.com/blog-detail/understanding-tds-and-its-role-in-drinking-water)>

pH - pH value (pH)

The pH of most drinking-water lies within the range [6.5–8.5](https://cdn.who.int/media/docs/default-source/wash-documents/wash-chemicals/ph.pdf?sfvrsn=16b10656_4#:~:text=The%20pH%20of%20most%20drinking,higher%20pH%20in%20limestone%20areas.&text=The%20pH%20of%20an%20aqueous,electrometrically%20with%20a%20glass%20electrode.). Natural waters can be of lower pH, as a result of, for example, acid rain or higher pH in limestone areas.

ORP - ORP value (mV)

Safe drinking water, for example, is an oxidizing agent with an ORP range [between +200 and +600 mV](https://blog.jencoi.com/orps-role-in-water-contamination#:~:text=Safe%20drinking%20water%2C%20for%20example,%2B650%20and%20%2B750%20mV.). Chlorinated pool water, on the other hand, should have a much higher ORP between +650 and +750 mV.

EC - EC value(µs/cm)

Electrical conductivity is a measure of the “total salts” concentration in the nutrient solution (drip, slab or drain). It is expressed in milliSiemens per linear centimeter (mS/cm) or microSiemens per linear centimeter (mS/cm) where 1mS = 1000µS.

|  |  |
| --- | --- |
| **Types of water** | **Conductivity Value** |
| Pure distilled and Deionized water | 0.05 µS/cm |
| Seawater | 50 mS/cm |
| Drinking water | [200 to 800 µS/cm.](https://byjus.com/physics/conductivity-of-water/) |
| Rain or Snow water | 2 to 100 µS/cm |

TDS - TDS value (ppm) <Total dissolved solids>

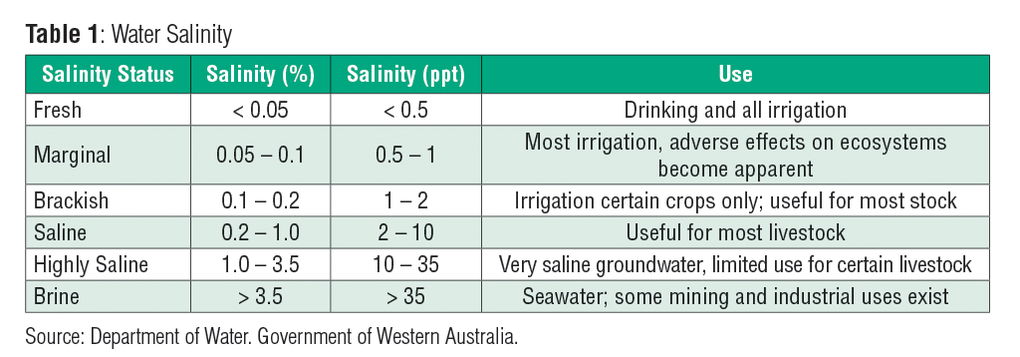
According to the BIS, the permissible limit for TDS in drinking water is 500 mg/L. However, the World Health Organization recommends a TDS level of less than 300 mg/L for drinking water. Minimum TDS of drinking water should not go below 50 ppm.

### Drinking Water TDS Chart

|  |  |  |
| --- | --- | --- |
| **TDS Level (mg/L)** | **Water Quality** | **Health Implications** |
| 50-300 | Excellent | Safe for drinking |
| 300-600 | Good | Safe for drinking |
| 600-900 | Fair | Safe for drinking |
| 900-1200 | Poor | May cause laxative effect in some people |
| 1200-2000 | Very Poor | Not suitable for drinking on a regular basis |
| Above 2000 | Unacceptable | Not suitable for drinking |

( [www.livpuresmart.com](https://www.livpuresmart.com/blog/tds-of-drinking-water-in-india/#:~:text=According%20to%20the%20Bureau%20of,not%20go%20below%2050%20ppm.) )

Salts - Salinity value (ppm)



( [www.horiba.com/ind/water-quality](https://www.horiba.com/ind/water-quality/applications/water-wastewater/measuring-salinity-of-water/) )

SG - Proportion value (S.G) <specific gravity>

the specific gravity of water at about 4°C is 1.000.

CF - CF(CF) <Conductivity Factor>

The conductivity factor of dissolved salts in a given solution is a measurement of conductivity. Using the electrical conductivity between two electrodes in a water solution, the level of dissolved solids in that solution can be measured. ( [en.wikipedia.org/wiki/Conductivity\_factor](https://en.wikipedia.org/wiki/Conductivity_factor#:~:text=The%20conductivity%20factor%20(CF)%20of,that%20solution%20can%20be%20measured.) )

[researchgate.net/What-are-GMP-for-drinking-water-and-its-bottles.pdf](https://www.researchgate.net/profile/Prateek-Goyal-2/post/What-are-GMP-for-drinking-water-and-its-bottles/attachment/59d61fa179197b807797e136/AS%3A285871606648832%401445168510385/download/spec.pdf)

<https://www.intechopen.com/chapters/69568>

A Raspberry Pi-based smart sensing platform for drinking-water quality monitoring system has been developed using a Python framework approach. The system utilizes multi-sensor arrays for monitoring water quality parameters such as pH, electrical conductivity, dissolved oxygen, oxidation reduction potential, and temperature. The Python programming language was used for developing a graphical user interface (GUI), data acquisition, and data analysis. Fuzzy computing techniques were applied for decision-making to categorize water quality into classes like "bad," "poor," "satisfactory," "good," and "excellent."

To summarize the development of the system:

1. A multi-sensor array (MSA) was designed that includes commercially available individual sensors for water quality parameters based on CPCB guidelines.
2. The hardware platform was based on the Raspberry Pi board, and a graphical user interface (GUI) was developed for human-machine interface (HMI) using Python.
3. Fuzzy inference system (FIS) was used for defining water quality based on calculated parameters, and a Mamdani implication model was implemented in Python to determine water quality from the inputs provided by the sensors.

The system aims to provide real-time monitoring of water quality in drinking applications, addressing the issues related to drinking-water quality for various natural resources.

**Sources: <[app.daily.dev](https://app.daily.dev/search?provider=chat&id=11220406-271e-11ef-bbe5-42010a007e1c)>**

[Raspberry Pi-based smart sensing platform for drinking-water quality monitoring system: a Python framework approach](https://dwes.copernicus.org/articles/12/31/2019/)

[Build Your Own Water Quality Monitoring Station with 5 Water Quality Sensors](https://www.seeedstudio.com/blog/2020/07/06/build-your-own-water-quality-monitoring-station-with-5-water-quality-sensors-m/)

[How to Connect a pH Sensor to a Raspberry Pi | Atlas Scientific](https://atlas-scientific.com/blog/ph-sensor-raspberry-pi/)

[RASPBERRY PI WATER QUALITY MONITORING SYSTEM WITH SENSORS | IOT | PYTHON](https://www.youtube.com/watch?v=V_KAL4eYNoU)

* Raspberry Pi (2, 3, or 4)
* Micro SD Card
* Power Supply
* Atlas Scientific pH sensor kit
* Breadboard
* Jumper Wires
* Adafruit T-Cobbler Plus (Optional)
* Raspberry Pi Case (Optional)

Manufacturer on [amazon](https://www.amazon.in/Wedinard-Wireless-Monitoring-Automatic-Multifunction/dp/B0CDWHWHJX) – **Wedinard**

[**www.aliexpress.com**](https://www.aliexpress.com/item/1005004890635562.html?src=google&aff_fcid=2fdfd31c18984242b3a26cb658eabd0e-1718021547542-00814-UneMJZVf&aff_fsk=UneMJZVf&aff_platform=aaf&sk=UneMJZVf&aff_trace_key=2fdfd31c18984242b3a26cb658eabd0e-1718021547542-00814-UneMJZVf&terminal_id=f36a3767f975424f9b8d0a839c96e980&afSmartRedirect=y)

Brand Name

JUANJUAN

Origin

Mainland China

Is there a way to authorize mobile application to access user data when I am in controll of the application and the OAuth server? Should I create a separate end-point? Should I pass it device ID and/or any other information?

<[stackoverflow.com/questions/storing-api-key-on-mobile-device](https://stackoverflow.com/questions/17753640/storing-api-key-on-mobile-device)>