# UV6
# UV 254 Online Measurement of Organic Load

**Presented by:**

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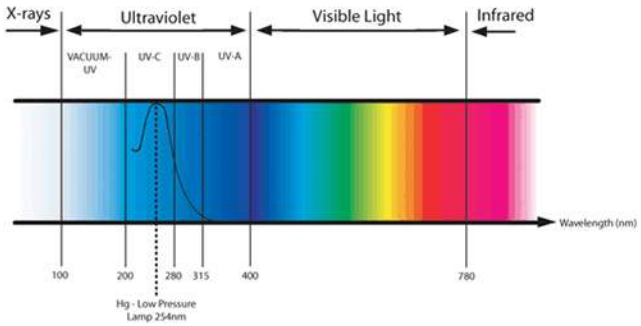
ELECTRO-CHEMICAL DEVICES

# Why choose the UV6 Analyzer?

- Simple
  - Easy Installation
  - Touch Screen Interface
  - User Friendly Menu Structure
  - Easy Process Configuration
- Reliable
  - Rugged Epoxy Powder Coated Cold rolled Steel Cabinet
  - Separate Liquid and Electronics compartments
  - Low Reagent and Loss of sample Alarms
- Cost Effective
  - Low Maintenance
  - Easily Adjustable cycle times to minimize reagent use.

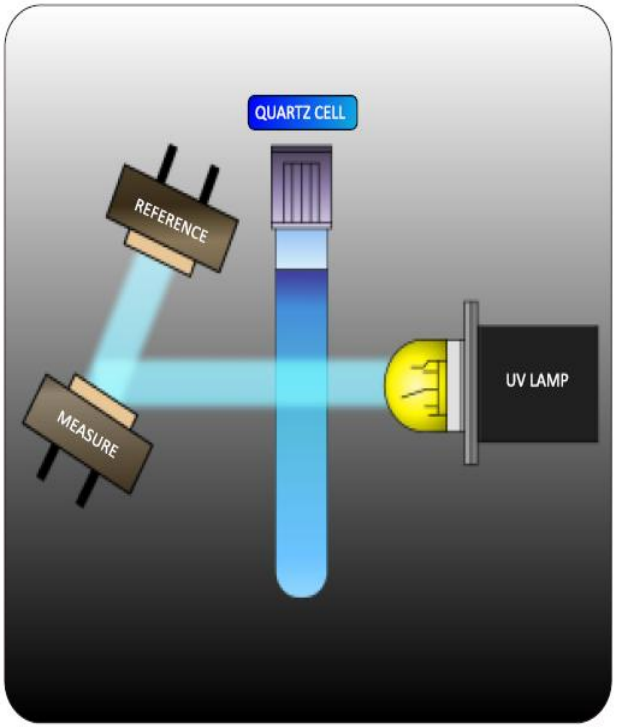
# What is the UV6 Analyzer?

- The analyzer provides real time monitoring of organics in water.
- The water, circulating in a quartz flow cell is illuminated with a UV source (xenon lamp).
- The quantity of light absorbed by dissolved organic matters is measured. This value depends on the concentration of absorbing species in the water. Most organics molecules in aqueous solution have spectral characteristics capable of absorbing a fraction of energy associated with a light beam to which it is exposed at a wavelenght of 254 nm. This characteristic is due to the presence of chromophore groups (aromatic bonds, double covalent bonds and triple bonds) which is typical of organic substances.
- Measurement of water COLOR by absorbance at 350nm expressed in Hazen scale or Platinum-Cobalt scale.



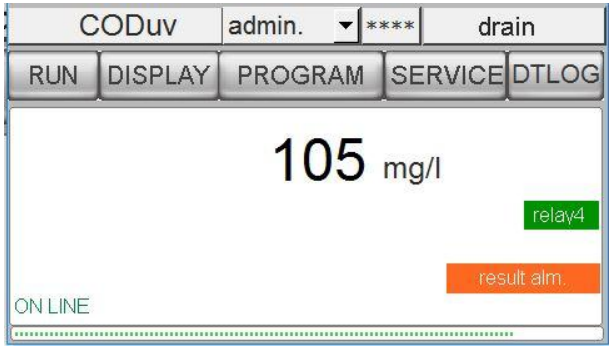
# What is the UV6 Analyzer?

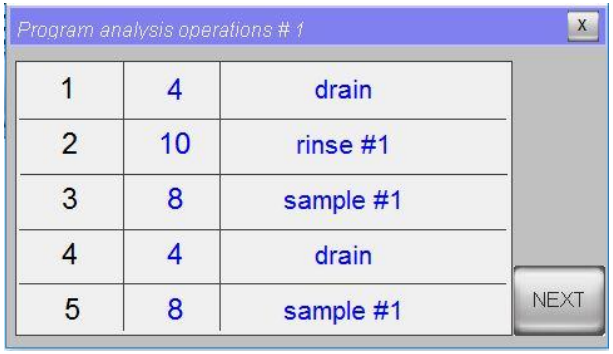
- Dual wavelenght technique
- The UV light radiation from the xenon lamp passes through the quartz cell containing the sample and is divided into two rays by partial reflection and directed to two photodiodes with filters (reference 590 nm – measurement 254 nm or 350nm for COLOR).
- Each absorbance measurement is calculated using the ratio of the two measurements, after a series of 21 flashes, to increase the reading stability, according to the Beer Lambert law.
- The UV absorbance can be converted to the SAC value using preset calibration curve or correlated to sum parameters concentration such as COD, DOC, TOC, BOD, Color, OIW, or Nitrate.



# What Does the UV6 Measure?

- Fast, reliable and low maintenance on line measuring system.
- Easy to use.
- Installation time: few minutes.
- Accurate detection without the cost of reagents.
- Few ongoing service or maintenance requirements.
- Automatic cleaning system.
- Automatic zero.
- Automatic calibration.
- Built-in sampling pump.
- Measurement within few seconds.
- Compact size.
- Built-in datalogger – USB data download.
- Color touchscreen display.



# How does it Work?

## About the method

The analyser is manufactured and delivered to measure the absorbance at a 254nm wavelength.

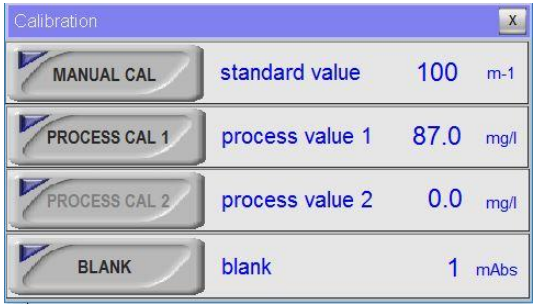
Therefore, at the end of the first measurement cycle, the value resulting from the calculation is expressed in Absorbance (ABS) measurement units of 1/m or m-1.

The machine is calibrated at the factory using an organic substance (Potassium Phthalate, KHP) in accordance with DIN 38404 C3 for SAC254 (Spectral Absorbance Coefficient @ 254nm) measurement.

However, many organic substances have spectral characteristics which are different from those of KHP, so a process calibration is required, especially when a value other than absorbance is required and correlated to cumulative measurements of organic matter, such as COD, TOC and BOD.

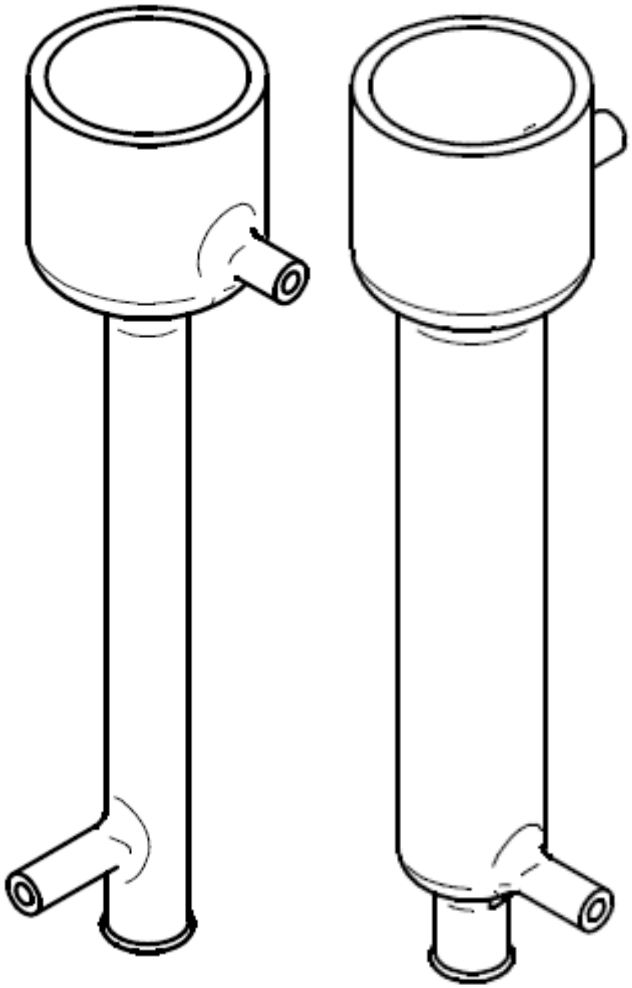
After defining a correlation ratio (process factor), you can see the CODuv, BODuv or TOCuv label, and set the unit of measurement in mg/l.

By setting the output signal range in accordance with the desired measurement, an analogue signal is expressed in the values of the same correlated parameter.



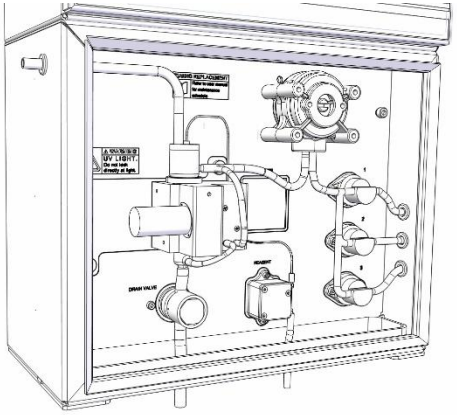
# How does it Work?

- Cell diameter 12 mm L – 0,01-100 1/m; equivalent to COD (KHP) 0-200 mg/L
- Cell diameter 6 mm H – 0,02-250 1/m; equivalent to COD (KHP) 0-500 mg/L
- Many substances have different correlation compared to the COD factory calibration performed with KHP, correlated ranges after process calibration may vary
- All derivated higher range using internal dilution module (2-40 times dilution).
- Color Cell diameter 12 mm L – 0,01-100 1/m; equivalent to Color 0-500 pt-co
- Color Cell diameter 6 mm L – 0,01-100 1/m; equivalent to Color 0-10,000 pt-co



# How does it Work?

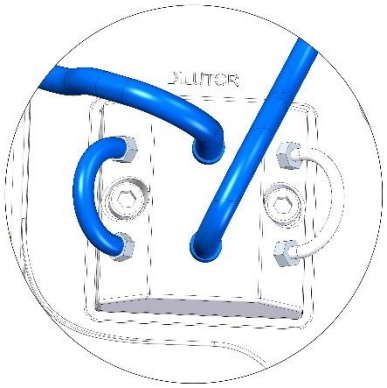
## Choosing hydraulic configuration – number of valves

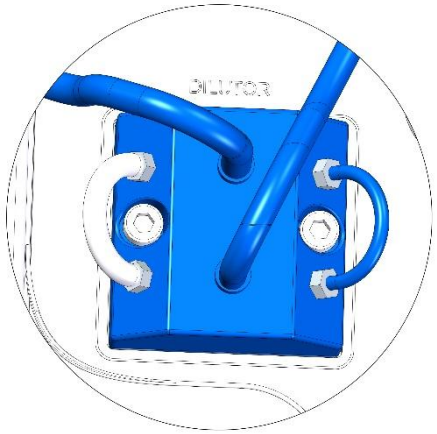


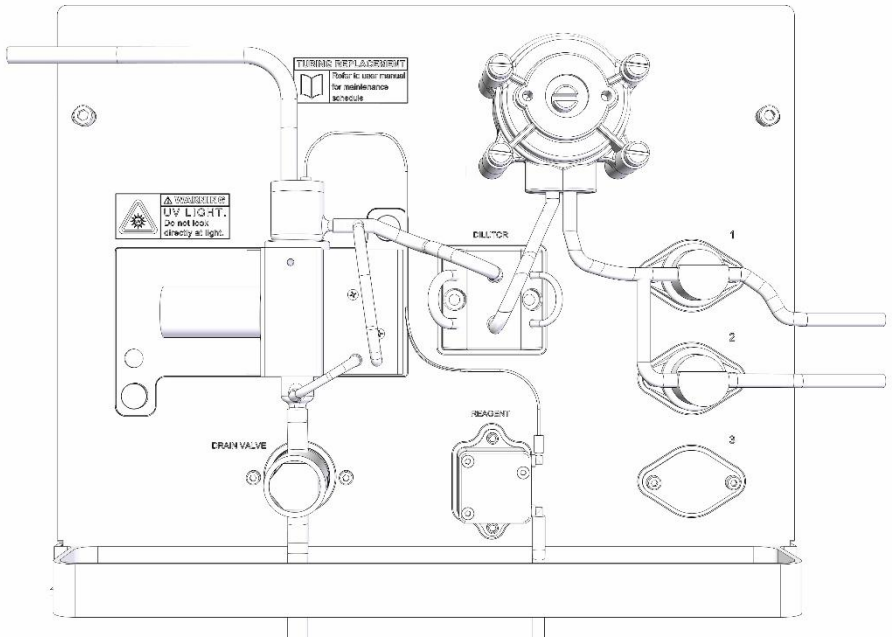
| CONFIGURATION | VALVES | CONNECTIONS |
|---|---|---|
| single channel without autocalibration or dilution | 0 | port 1 : sample |
| single channel with autocal(zero) or dilution | 2 | port 1 : sample<br>port 2 : zero water or dilution |
| dual channel without autocal or dilution | 2 | port 1: sample 1<br>port 2: sample2 |
| dual channel with autocal (zero) or dilution | 3 | port 1: sample 1<br>port 2: sample2<br>port 3: zero water or dilution |
| dual channel with autocal | 3 | port 1: sample 1<br>port 2: sample 2<br>port 3: standard solution |

# How does it Work?

## Choosing hydraulic configuration – internal dilution module



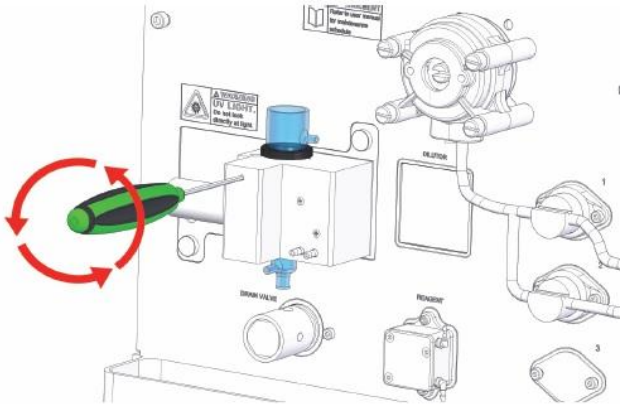



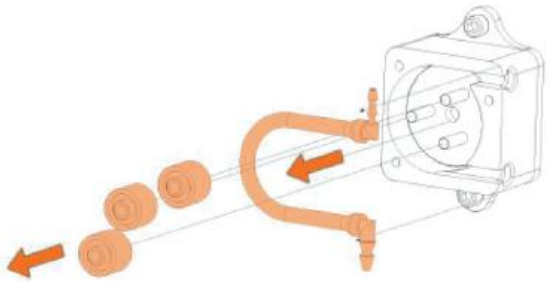




Dilution loop – up to 40 times internal dilution

# Advantages in comparison to immersion probes

- Integrated dual stream
- Automatic calibration, not possible with the submerged probes
- Automatic cleaning with a programmable cleaning cycle
- Grab sample
- Easier maintenance, no specific skills required (no o-ring for watertightness)
- High range measurement using internal dilution module





# Maintenance

- This analyser requires remarkably low maintenance.
- Essential maintenance is limited to the refilling of the 1-litre cleaning solution tank every 60-120 days with a 5% sulphuric acid solution ($H_2SO_4$ 5%).

- Visual check alarms
- Visual check hydraulic compartment (leakages)
- Cleaning solution's tank level check
- Zero check (automatic)
- Span value check (automatic)

- Pinch drain valve – tubing replacement – every 4 months
- Sample pump – tubing replacement – every 4 months
- Cleaning pump – tubing and rollers replacement – every 8-12 months
- Measure cell – accurate manual cleaning
- Valves (if present) – tubing replacement – every 4 months

# Regulations

**This method is in accordance with EPA 415.3 and DIN38404-C3 standards.**

**EPA METHOD 415.3**

Determination of Total Organic Carbon and Specific UV absorbance at 254 nm in source water and drinking water

**DIN38404-C3**

EU standard methods for the examination of water, waste water and sludge - Physical and physical-chemical parameters (group C) - Part 3: Determination of absorption in the range of the ultraviolet radiation, Spectral absorptions coefficient (C3)

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