# 1220 - Wireless Colorimeter and Turbidity Sensor

Revision: 0 | DS171

# Table of contents

# Introduction

Thank you for purchasing the Smart Wireless Colorimeter and Turbidity Sensor.

We pride ourselves on producing high quality products that meet with the demands of the busy classroom environment.

If you have any problems using this sensor, please read this documentation in full before contacting the Data Harvest support team.


# Overview

The Smart Wireless Colorimeter and Turbidity Sensor is a compact colorimeter and turbidity meter.

This colorimeter is an excellent unit for introducing students, at all levels, to enzyme dynamics, quantitative, and kinetic chemistry. The turbidity facility is user-friendly, yet intuitive, for investigating sample purity, environmental quality assurance, and chemical reaction involving solution deposition.

The sample chamber can accommodate vials (23mm and 16 mm), test tubes (16mm) and a 4ml square cuvette (12 mm) by deploying the supplied adaptors (shown above and detailed in Operational Overview).

This unit has six spectrally well-distributed LEDs (430 nm, 470 nm, 520 nm, 575 nm, 625 nm, NIR for turbidity). It does not use optical filters - to maximise the light budget available and to provide maximum utility for the operator.

Controlled entirely through EasySense software, calibration to standards is realised by a simple interface.

Turbidity measurements are easily facilitated by the supplied 100 NTU standard, but the capacity to calibrate with user-supplied references, across two ranges (0 to 200 and 0 to 500 NTU), is available.

The unit has been designed to be rugged enough to be field-deployable.

The unit has a resolution of 0.1% in transmission range and 0.001 on the absorbance scale.

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## Pack Contents

This product is supplied with the following items:

- 1 x Wireless Colorimeter and Turbidity Sensor
- 1 x USB Connecting Lead
- 1 x Large Adaptor (23 mm)
- 1 x Medium Adaptor (16 mm)
- 1 x Small Adaptor (12 mm)
- 5 x Cuvette (with cap)
- 1 x Light Seal Cap

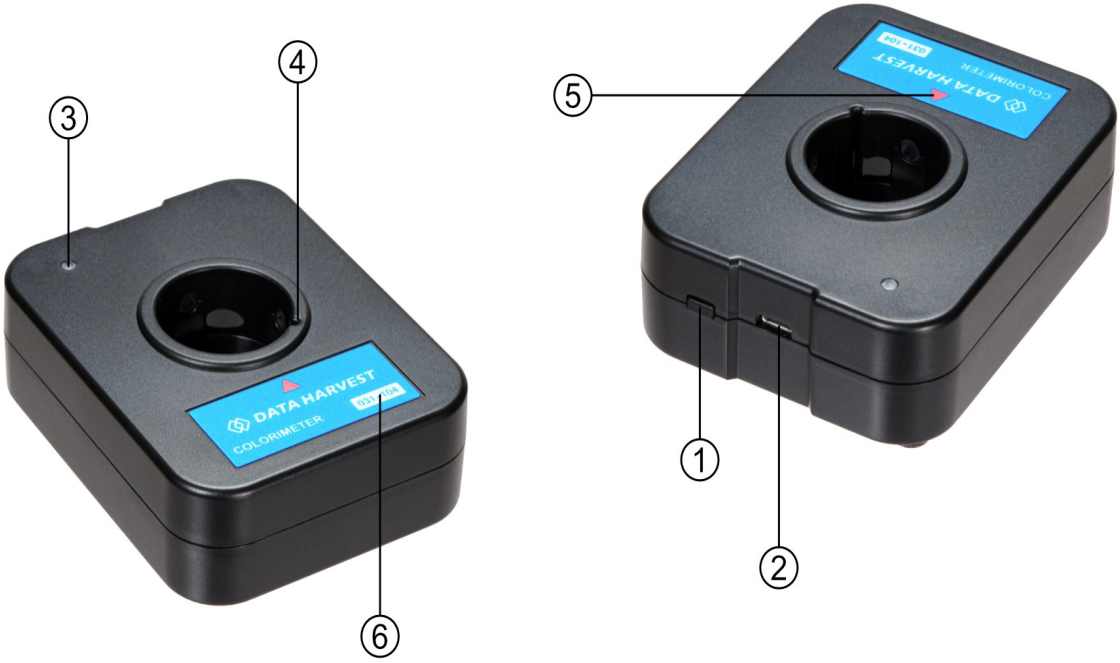
Optional extra (ACC-26) Turbidity Pack contains…

- 1 x Formazin Reference Sample (100 NTU)
- 4 x Empty Bottles

For more details, please visit…
*Data Harvest - Turbidity Pack (data-harvest.co.uk)*

# Operational Overview

The diagram below shows the specific parts of Main Unit. Please read further to explore the functionality of each part of the sensor.




1. On/Off Switch
2. USB Port
3. Status Indicator
4. Adaptor Port / Location Guide Channel
5. Orientation Arrow
6. Unique ID Number

## On/Off Switch (1)

The sensor's on/off switch allows you to turn the sensor on, off or perform a "hard reset".

### *To switch the sensor off*

- Press and hold down the On/Off switch until the white light shows, then release.
- If not communicating with the EasySense app, the sensor will turn off after a period of one hour of inactivity.

### *Hard resetting the sensor*

- If necessary, attach the sensor to power.
- Press and hold down the On/Off button for at least 8 seconds until the status LED gives a flash of blue

light, then release.

- If the sensor fails to respond, contact Product Support at Data Harvest. Please provide details of:
  - The computer platform it is being used with and the EasySense app's version number.
  - A description of the problem being encountered.

## USB Port (2)

Use to connect to a computer or a charging unit.

For specific USB or Bluetooth connectivity instructions, please see the 'Connectivity' section of this documentation.

For instructions on charging your device, see the section on 'Charging the Sensor'.

## Status Indicator (3)

The sensor features a single status indicator that changes colour and flashes. See the table below for further information.

| Status Light | | Indicates |
|---|---|---|
| No light |  | Sensor is Off. Short press the On/Off switch |
| Blue flashing |  | Sensor is On and Bluetooth advertising |
| White flashing |  | Charging via USB mains charger or USB port, Sensor is On and Bluetooth advertising |
| Red, Green, Blue Flashing |  | Charging via USB mains charger or USB port, Sensor is Off |
| Green flashing |  | Communication with the EasySense app (via USB or Bluetooth) has been established |
| Solid Green |  | Fully charged |
| Orange flashing |  | Recording data, a fast pulse indicates awaiting trigger in Remote Mode |
| Red flashing |  | Battery is low |

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## Adaptor Port / Location Guide Channel (4)

This port will accept several dedicated Sample Adaptors (below) for use with test tube, vial, and cuvette. It has a Location Guide Channel arrangement to set the adaptor orientation.

Turbidity measurements are conducted in test tubes or vials; there is an Orientation Arrow for the Near Infrared (NIR) probing beam, located on the Unique ID Number Label (6). This arrow gives a guide point to rotationally align previously defined vial and test tubes.

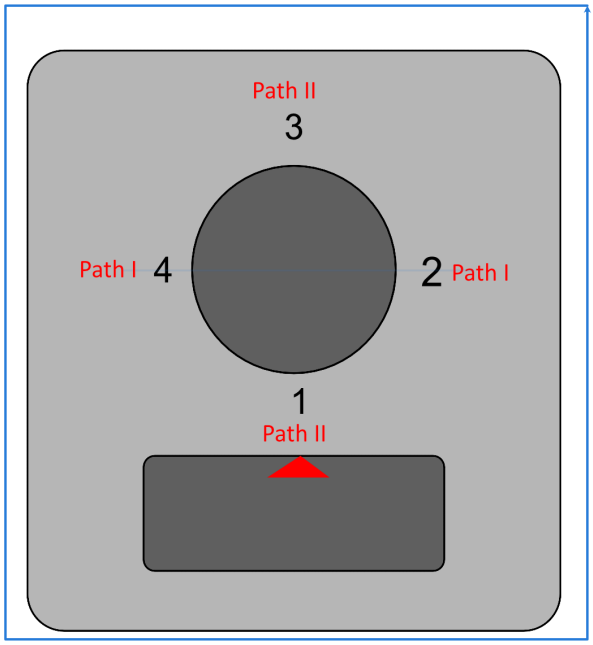
## Orientation Arrow (5)

This provides a reference point for vial orientation when turbidity measurements are needed. It also acts as reference for the origin of Light Path II, see below.

## Light Path Orientation

| Light Path Orientation (Cuvette and Small Adaptor) | |
|---|---|
| Alignment Path **I** | Blue (**I**) (470 nm), Green (**I**) (520 nm), Red (**I**) (625 nm) |
| Alignment Path **II** | Indigo (**II**) (430 nm), Yellow (**II**) (575 nm), NIR (850 nm) |

*NB: If you are unsure, you may use EasySense's "Devices" to activate a particular wavelength and look carefully (from above) at the direction from which the light is being emitted. This will provide the direction to which the cuvette arrow should be directed.*




**Guide to Light Paths and Wavelengths**

Please look at the Small Adaptor to see the Path at the base of the mount.

Path **I**

*Port 2 > 4*

Blue (470 nm)

Green (520 nm)

Red (625 nm)

Path **II**

*Port 1 > 3*

Indigo (430 nm)

Yellow (575 nm)

*Turbidity*

Near Infrared (850 nm)

## Unique ID Number (6)

All Smart Wireless Sensors are labelled with a unique ID number. This number is used in the EasySense app, so that you can identify each sensor when making a connection wirelessly.

The red alignment arrow on this label provides a sample orientation reference point, for turbidity only.

# Sample Containment Adaptors


These adaptors are inserted into the main unit in accordance with the Location Guide Channel (4).

### Small Adaptor (A)

This has been developed to accommodate a 12mm square cuvette in the Main Unit. Please direct the arrow on the cuvette toward the appropriate alignment markings on this Small Adapter, in accord with the diagram and the orientation path given.

### Large Adaptor (B)

For the usage of 23 mm vials in the Main Unit.

### Medium Adaptor (C)

Used to facilitate 16 mm test tubes and vials.

## Other Accessories

### Cuvette

The supplied 12mm square cuvette - please note the alignment arrow which should face the input light (requirements detailed above).

### Light Seal Cap

This flexible cap has an internal diameter of 27 mm. This should be used in all experiments and is placed on top of the sample container (test tube, vial): its function is to reduce stray light and has high utility in turbidity measurements.

## Formazin Standard Sample, 100 NTU (Nephelometric Turbidity Unit)

The optional (ACC-26) Turbidity Pack is supplied with a standard 100 NTU (Nephelometric Turbidity Unit, formazin) sample, pictured centre below.

It has a typical "useable" lifetime of 6 months.

Please do not open. Store in a cool, dry place.

Please note the hazard warning labels that have been supplied.

Dispose of after its useful lifetime, according to all legal guidance.


## The Sensor and EasySense

Please make sure that you use the latest release of the EasySense series of software. Both collection and analysis of data is available here, on a variety of operating systems.

**Direct Data Logging**

The sensor is designed to work directly with EasySense (as an installed application or PWA). A full compliment of experiments can be run by using the sensor through Bluetooth™ or USB. EasySense will support direct logging and data storage when connected as above.

**Remote Data Logging**

The ability to capture data independently (free of a capture station) is done through EasySense's Remote Mode.

This facility may be found in EasySense, under Setup. Once the conditions for data collection have been established, the sensor can be set to initiate collection for example, using a rapid press of the power button. Initiation of the experimental data collection by the software is followed by remote detachment; collection is then on the sensor.

Data gathering is realised by using Setup once again.

Details are given in the latest EasySense User Guide.

# Connectivity

The sensor is both USB and Bluetooth compatible. Install the EasySense app, if it is not already on your device. For details of how to operate the EasySense app, please refer to the EasySense documentation.

## USB Connectivity

### Quick Steps

1. Connect the sensor to the computer's USB port using the USB cable supplied.
2. The computer will automatically detect a new device and depending on your operating system, will install any applicable device drivers.
3. Start EasySense app.
4. Within the EasySense app, the Devices icon will change to green to show that the sensor is connected, and the status light on the sensor will also turn green.
5. Begin your practical investigations.

## Bluetooth Connectivity

Using Bluetooth, the sensor can wirelessly connect to mobile devices such tablets and mobile phones, as well as desktop or laptop computers, giving students the ability to run experiments independently without being tethered to a device.

See the EasySense app user manual system requirements for further details.

### Quick Notes on Bluetooth Connectivity

Only use with the EasySense app, you do not need to pair the device. If paired, the sensor will not be available to the EasySense app.

Computers or devices will need to support Bluetooth Low Energy (BLE). For further information refer to the instructions provided for the EasySense app.

### Quick Steps

1. Short press the on/off switch to turn the sensor on, blue LED will flash.
2. Open the EasySense app.
3. Select the Devices icon.
4. Select your sensor from the list of available sensors to connect to the device. Your sensor is identified by its unique ID in the list.
5. Click on connect at the side of your sensor in the list.
6. The Devices icon will change to green and the status light on the sensor will flash green to indicate a connection has been established.
7. Begin your practical investigations.

## Charging the Sensor

The Smart Wireless sensors are fitted with a rechargeable lithium-ion battery and can be charged via the USB port. Use the supplied USB lead to connect the sensor either directly to a USB port on your computer, a powered USB hub or a USB mains charger that outputs 5 V at 500 mA or more.

A full charge can take up to four hours.

## Additional Information

Whenever the sensor is connected to the USB port on the computer or to a USB mains charger (output 5 V at 500 mA or more), it will automatically recharge the battery (LED status flashing white).

When connected to a computer, the computer should be turned on and not in sleep or standby mode, as the battery may drain instead of charge.

The sensor will stay awake for five minutes when Bluetooth advertising (LED status flashing blue).

Lithium-ion batteries are ‘memory-free’ and prefer a partial rather than a full discharge. Constant partial discharges with frequent recharges will not cause any harm. Frequent full discharges should be avoided whenever possible. Ideally the sensor should be stored at about 40% or more charge.

The speed at which a lithium-ion battery will age is governed by both its storage temperature (preferably less than 40℃) and state-of-charge.

## Firmware Updates

Occasionally Data Harvest may release updated firmware which will contain improvements or new features.

Updates will take place when you connect your sensor to the EasySense app. You will be given the option to decline an update.

Updates can be performed over USB or Bluetooth and will typically take less than one minute. Updating firmware over USB will be quicker than Bluetooth.

Do not disconnect the sensor, or power off during the update.

If you have a wireless connection to the EasySense app, the sensor will have to be reconnected after performing the update.

# Usage Information

## Colorimeter

Colorimetry is used to quantify the amount, and changes in, the "light properties" of a sample.

Prior to any usage, please decide which sample containment you are going to need. Adaptors of 23 mm (large), 16 mm (medium) and 12mm (small) are provided that will allow usage of respectively, vial, test tube and cuvette.

The Small Adaptor is for 4ml cuvettes, but please note the orientation required within it, depending on the studies' wavelength used. A "directional arrow" is a feature of the supplied cuvette. This should be aligned toward the light source (Path **I** or **II**), detailed in the Operational Overview. Plastic cuvettes are considered to be optically acceptable with first use; as they age though, they may become scratched and start to optically vary. Cuvettes typically have two clear and two opaque (or ribbed) sides and so are inappropriate for turbidity measurements.

Glass test tubes and vials may have variable wall thicknesses, which might change the transmission values observed, as they are rotated. Make a mark on this type of sample container to ensure consistent alignment is attained between any calibration and subsequent measurement sets. If you wish to use multiple test tubes, vials, or cuvettes in a single data set, you may have to consider types that are in close optical agreement with each other or mark them for "best transmission" and edit results allowing for any such variation. It is worth running a trial with your sample containment, to see how the "maximum transmission" varies with total *in situ* rotation.

Select the colour (wavelength) that you are going to use for your measurements. Close consideration should be paid to the colour chosen. In absorbance studies, the wavelength that is most likely to be affected by change should be used (different to the starting colour!). For example, with a copper sulphate solution, 625 nm would be an excellent choice.

Make sure the sample containment used is compatible with the samples being studied. For example, plastic solvents should not be used with plastic-based cuvettes!

Please use the Light Seal Cap provided to minimise the effects of stray light in your data.

Unlike many colorimeters, this unit does not require a "warm up" period prior to use. There is no significant signal drift with time. As soon as you turn it on it will be available for use.

## Turbidity

Turbidity is a measure of the light scattering properties of a sample. It is affected by the particle size, shape, and by the wavelength used to probe the sample's properties. Near infrared (NIR) is used as it will, in general, be subject to the scatter processes alone. Turbidity is measured here at 90 degrees to the incident beam rather than another possibility at 180 degrees. The Nephelometric Turbidity Unit, NTU, is used to express turbidity. There are several derivatives available other than formazin for such measurements. Formazin provides a convenient and accepted measurement platform for a wide range of samples.

Prior to any usage, please decide what sample containment (tube/vial) you are going to need and how that will correspond to the reference samples used for calibration. This unit is designed to exploit test tubes (Medium Adaptor) and vials (Large and Medium Adaptor): Data Harvest's Formazin Reference Sample (100 NTU) is intended for use in the Large Adaptor and provided in a high-quality glass vial.

Care needs to be taken so that nothing will alter unduly the intensity of the detected scattered light. The optical characteristics of the sample vials must be as high as possible; any surface imperfections might

influence the data. Consistent rotational placement and alignment of all vials used is recommended. There is a red alignment arrow provided on the instrument's label - and this should be used for referencing all samples. Poor positioning of the sample vials and calibration standard(s) will not give less accurate results; a small rotation of the test vial can change the readings!

Wipe any optical surface used to make sure it is dry. Wipe this surface again with an exceptionally light oil (silicon), using a soft cloth. The oil must be of the same optical characteristic as the container used (glass n = 1.5); the function of this is to negate any small surface imperfections.

The test standard is based upon formazin. As it starts to age, its reported turbidity value will decline. The standards will require changing periodically. The turbidity standard supplied in the optional (ACC-26) Turbidity Pack (100 NTU) can be used to calibrate the turbidity's usable range. By quickly comparing the sample to be evaluated with this Formazin Reference Sample, an approximate gauge as to what range might be used for calibration can be attained. If you can see your test liquid is very cloudy, it may be out of range of the sensor!

This unit does not store turbidity calibrations for subsequent field usage. Consequently, EasySense must be available for all studies to take place.

Please use the Light Seal Cap provided to minimise the effects of stray light in your data!

## Building An Experiment

## Colorimetry

Data Harvest's EasySense software is used to gather all experimental findings.

Start the EasySense software and select an experiment type from the "What type of experiment do you want to run?", if prompted.

Using the Devices icon connect to the colorimeter. The Devices icon will turn green signifying that a connection has been successful.

Once connected, engage the "colorimeter slider", and then decide whether you will need Transmission or Absorbance.

Activate the LED colour required for the study.

Make sure that the correct sample insert has been chosen, inserted, and you are confident which way the sample is to be oriented within it.

Place a control sample into the unit (usually water, note the orientation used for the sample's containment).

Place the Light Seal Cap on the sample container.

Use the Calibrate button (the "!" symbol means calibration required); run this procedure to achieve 100% transmission or zero absorbance.

Close the Calibration dialogue.

***Following calibration***

Verify which type of experiment (Continuous or Snapshot) you wish to execute - using the Setup icon. Snapshot measurements are used for singular data points in a series. Should you need Continuous data acquisition mode (sample in situ but is changing with time), set an expected sample Interval that is appropriate (e.g., 1s).

Insert the sample into the colorimeter, make note of the orientation.

Place the Light Seal Cap on the sample container.

Click Start to initiate collection, Stop to complete.

Analysis of the data is possible within the EasySense software. If deeper analysis is required, export the data as a CSV and import into a spreadsheet or specialist software.

After use make sure no liquid remains in the sample chamber and wipe the surface to remove any traces of chemical that may have been spilt.

## Turbidity

Start the EasySense software and select an experiment type from the "What type of experiment do you want to run?", if prompted.

Select the Devices icon and connect to the colorimeter. The Devices icon will turn green signifying that a connection has been successful.

Once connected, engage the "Turbidity slider" (Colorimeter will disengage).

Choose a measurement range to match your needs (200 or 500 NTU) most closely: an approximate gauge can be made by quickly comparing this to the Formazin Reference Sample.

Prepare the Formazin Reference Sample control vial, by gently rocking the vial back and forth: the aim is to place in suspension the formazin but not to introduce any air or bubbles.

Wipe the Formazin Reference Sample's surface clean with a soft cloth with a small amount of appropriate oil (n=1.5).

Place the Formazin Reference Sample in the unit using an appropriate adaptor.

Make a note of the orientation.

Use the Light Seal Cap on the sample container.

Click on the Calibrate button to generate this calibration point (Point 1).

The second control (Point 2, notionally 0.318 NTU for distilled water) is now put into the unit, and the vial surface prepared for measurement as above.

Make a note of the orientation.

Use the Light Seal Cap on the sample container.

Click on Calibrate to generate this lower calibration point.

Close the Calibration dialogue.

***Following calibration***

Verify which type of experiment (Continuous or Snapshot) that you wish to execute - using the Setup icon. Snapshot measurements are used for singular data points in a series. Should you need Continuous data acquisition mode (sample in situ but is changing with time), set an expected sample Interval appropriate (e.g., 1s).

Prepare the sample by gently rocking the sealed vial/ test tube back and forth: re-suspend the solution's particles but do not to introduce any air or bubbles.

Wipe the vial/test tube with a soft cloth and appropriate light oil.

Insert the sample.

Make a note of the orientation.

Use the Light Seal Cap.

Click Start to initiate this collection, Stop to complete.

Analysis of the data is possible within the EasySense software. If deeper analysis is required, export the data as a CSV file and import this into a spreadsheet or other specialist software.

After use, make sure no liquid remains in the sample chamber and wipe the surfaces to remove any traces of chemical that may have been spilt.

## Maintenance

The measurement chamber is not fully resistant to ingress of liquids. Care must be taken to wipe dry any cuvette, tube, or vial being used.

Please do not use the instrument without the adaptors detailed in this manual.

If material is being added to the reaction chamber (for example a catalyst to start the reaction being studied), care must be taken to not introduce any liquid to the sample chamber.

When cleaning the inside of the chamber, please make sure not to damage the optical windows! Plastic solvents and harmful agents (e.g., acetone) should not be used.

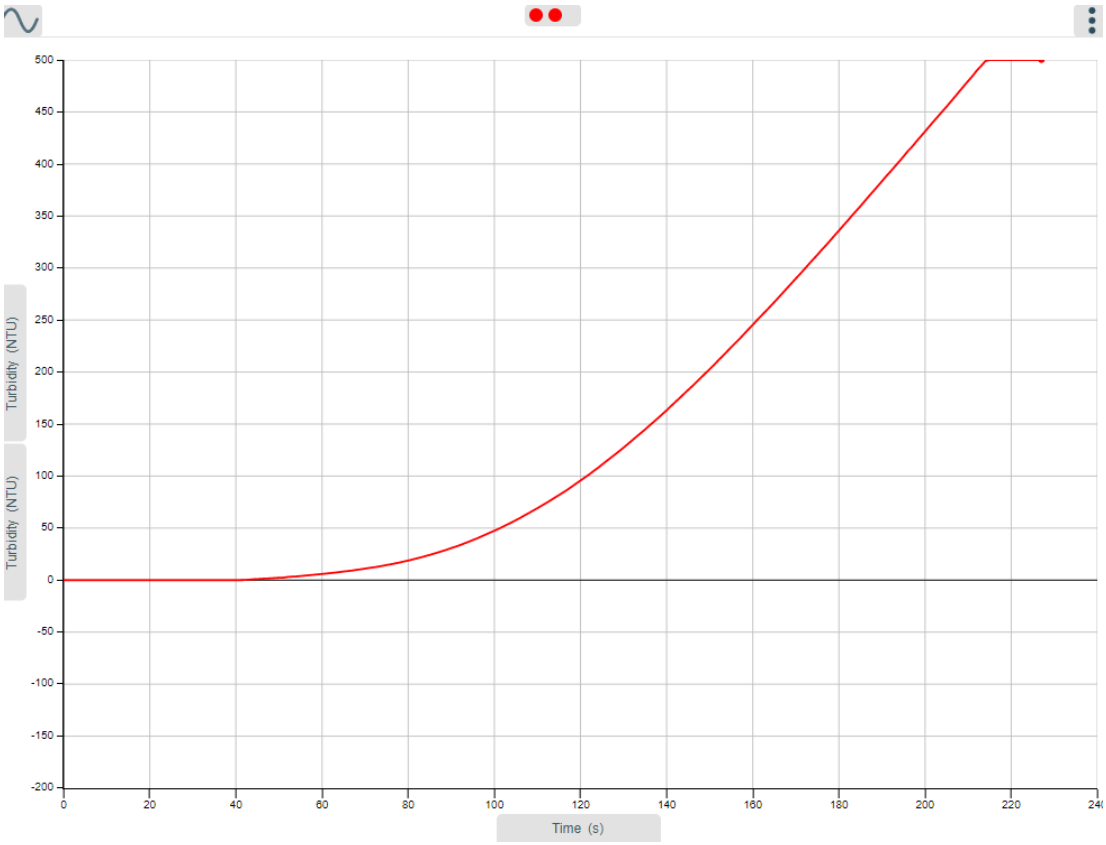
# Practical Investigations

The Smart Wireless Colorimeter and Turbidity Sensor can be used to investigate a range of diverse scientific experiments:

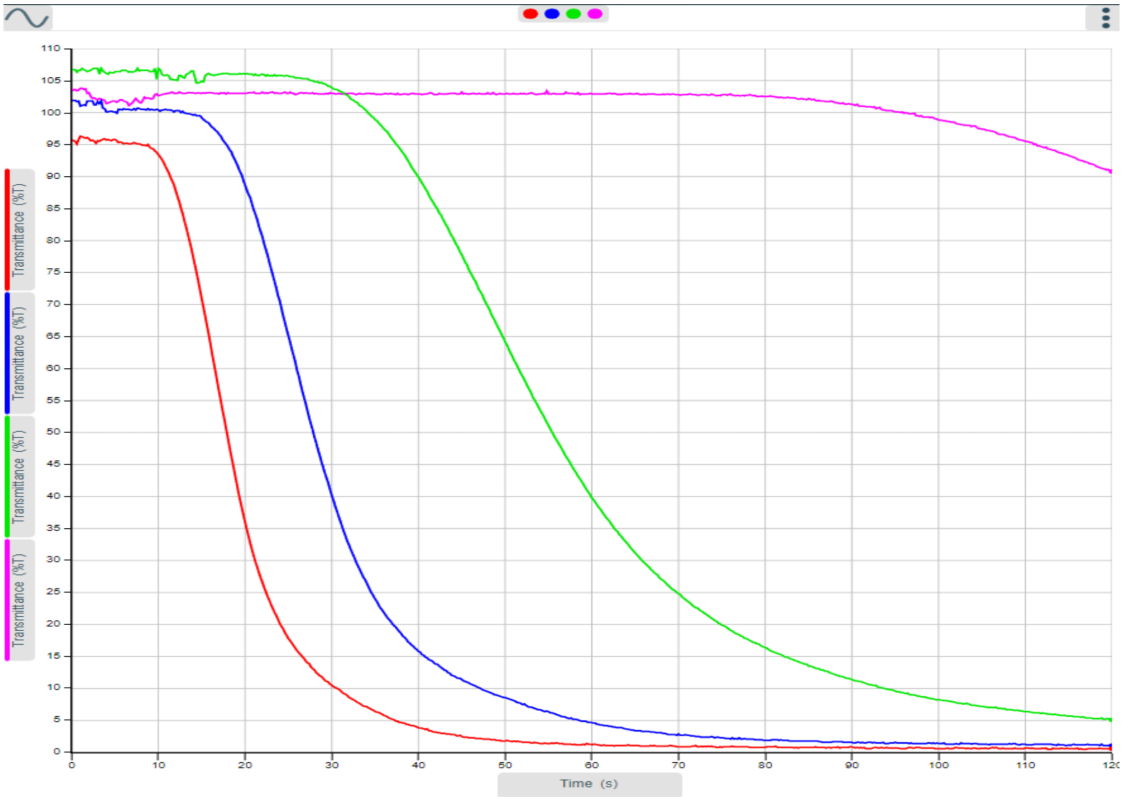
- Rates of chemical reactions: determination of the rate and order
- Finding the value of an unknown concentration by the Lambert-Beer Law
- Investigations with enzymes: effects of temperature pH, inhibitors, enzyme kinetics
- Quantitative determination of biological molecules – sugars, protein, vitamins
- Quantitative determination of inorganic ions – nitrate, phosphate, chlorine, bromine
- Population growth of micro-organisms
- Cleanliness measurements of water
- Dosing biomass growth
- Algae bloom
- Phytoplankton development
- Sediment erosion
- Mud and silk deposition post storm activity

**Example Data:**

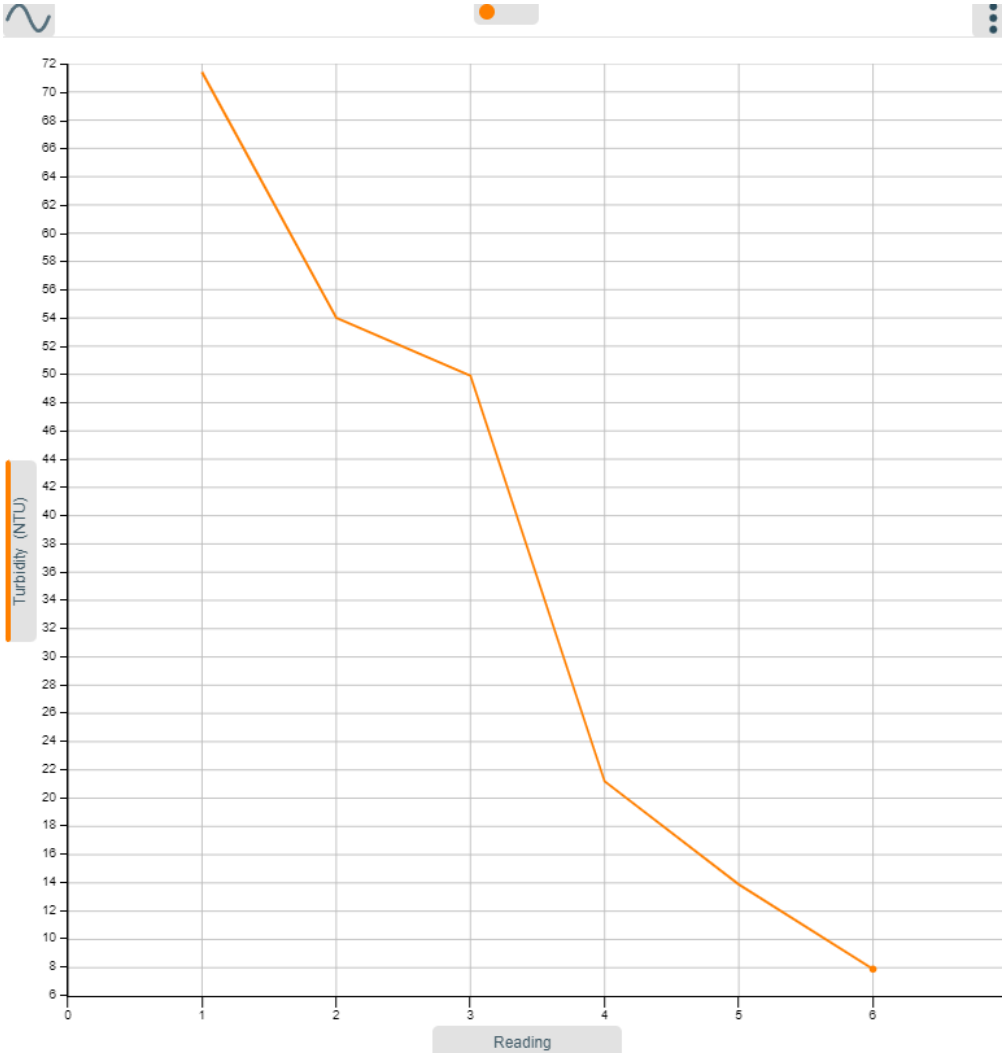
*1. Demonstrating Turbidity Development:* Sodium thiosulphate and hydrochloric acid, monitored using the turbidity function. The reaction produces a deposit that develops in time.




*2. Demonstrating Reaction Rates:* Sodium thiosulphate (variable) and hydrochloric acid Reaction, monitored using the colorimeter.




*3. Storm surge turbidity measured days following the event.*




## Online Videos

Learn how to use data logging in the classroom with our Secondary Science Academy demonstration videos, which will walk you through using the new EasySense app and show you how to get hands-on with the latest Bluetooth wireless sensors. The video experiments will show you how to get the best out of your science lessons.

New online content is being continuously uploaded onto our YouTube channel, including practical worksheets as well as videos.

See our website for further information and links.


### Explore Bluetooth Sensors

Are you looking to make the jump to our smart wireless sensors? Or have you recently purchased them and want to know more about how they work?

View video playlist


## Explore EasySense

The core of our science platform is our EasySense app. In these videos you will learn everything from the basics of our software to the most in-depth features.

View video playlist


## Explore Science Practicals

See our Smart Wireless Sensors in action with a range of practical experiments. This is the best way to get started with the new Bluetooth sensors!

View video playlist

## Sensor Specifications

Please read the following table for sensor specifications.

| Feature | Detail |
|---|---|
| Measurement Ranges | 0 to 100% Transmittance, 0 to 2.5 Absorbance |
| Resolution (Colorimeter) | 0.1% Transmittance, 0.001 Absorbance |
| Resolution (Turbidity meter) | 2% in 500 NTU, full range |
| Fastest logging speed | 1 sample per second |
| Connectivity | Wired via USB<br>Wireless via Bluetooth |
| Bluetooth Specifications | Bluetooth 4.2 low energy radio, single mode compliant<br>Transmit (TX) power: 0 dBm<br>Receiver (RX) sensitivity: -90 dBm<br>Usable transmission range: up to 10 m in open air<br>Frequency Range: 2.402 to 2.480 GHz operation |
| Internal Battery | Rechargeable internal lithium-ion 3.7 V |
| Physical Specifications | Weight: approx. 80 g<br>External dimensions: approx. height 26 mm x width 70 mm x length 90 mm |
| Small Adaptor | Height above top of sensor unit: 20 mm<br>Internal Width: 12 mm<br>Suitable for standard glass or plastic square cuvettes |
| Medium Adaptor | Height above top of sensor unit: 20 mm<br>Internal Diameter: 16 mm<br>Suitable for 16 mm test tubes and vials |
| Large Adaptor | Height above top of sensor unit: 30 mm<br>Internal Diameter: 23 mm<br>Suitable for 23 mm vials. |

# Limited Warranty

For information about the terms of the product warranty, see the Data Harvest website at: https://data-harvest.co.uk/warranty

## Product Repairs

When returning goods to Data Harvest, please download and complete the repair returnform to ensure you have sent us all the information we require, and send it to us alongside the item to be repaired. The second page of this form includes a return address label.

If you have purchased a Data Harvest manufactured product via a different company, please also supply proof of purchase.

### Postage Charges

- In the event of a fault developing, the product must be returned in suitable packaging to Data Harvest for repair or replacement at no expense to the user other than postal charges.
- There will be no postal charge for the return of repaired goods to any mainland UK address (for other areas, additional shipping charges may apply).

### Out of Warranty Repairs

Please visit https://data-harvest.co.uk/repairs for the most up to date charges for out of warranty repairs.

### Warranty on Repaired Items

Once an item has been serviced and repaired, the product will have 1 year warranty against further failure of the component repaired.

### International Returns

Please contact the authorised Data Harvest representative in your country for assistance in returning equipment for repair.

# Compliance

This product complies to the following standards:

## Waste Electrical and Electronic Equipment Legislation

Data Harvest Group Ltd is fully compliant with WEEE legislation and is pleased to provide a disposal service for any of our products when their life expires. Simply return them to us clearly identified as 'life expired' and we will dispose of them for you.

## FCC Details

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions: (1) this device may not cause harmful interference, and (2) this device must accept any interference received, including interference that may cause undesired operation.

## CE

This product conforms to the CE specification. It has been assessed and deemed to meet EU safety, health and environmental protection requirements as required for products manufactured anywhere in the world that are then marketed within the EU.

## UKCA

This product conforms to the UKCA specifications.

# Troubleshooting

If you experience any problems with your product, please try the following troubleshooting tips before contacting the Data Harvest support team.

| Feature | Detail |
|---|---|
| Loss of Bluetooth Connectivity | **If the sensor loses Bluetooth connection and will not reconnect try:**<br>Closing and reopening the EasySense app.<br><br>Switching the sensor Off and then On again.<br><br>If you are using a Bluetooth Smart USB Adaptor on your computer, unplug the adaptor, plug back in again and try to reconnect.<br><br>Hard reset the sensor and then try to reconnect. |

# Notices

Please read the following notices with regards to using your sensor

1. The sensor is much smarter than traditional Bluetooth sensors and you are not required to pair the device. If paired, the sensor will not be available to the EasySense 2 app.
2. When the sensor is connected to a computer, the computer should be turned on and not in sleep or standby mode or the battery may drain instead of charge.
3. Data Harvest products are designed for educational use and are not intended for use in industrial, medical or commercial applications.
4. The sensor is not waterproof.
5. Plastic parts may fade or discolour over time if exposed to UV light. This is normal and will not affect the operation of the sensor.

# Contact Information

To contact Data Harvest directly, please use any of the following channels:

## Traditional Communications

Data Harvest Group Ltd.
1 Eden Court, Eden Way,
Leighton Buzzard,
Bedfordshire,
LU7 4FY
United Kingdom

**Tel:** +44 (0) 1525 373666
**Fax:** +44 (0) 1525 851638
**Sales email**: sales@data-harvest.co.uk
**Support email**: support@data-harvest.co.uk

## Online Communications

We have active social media support channels using the following platforms

- Facebook
- X
- YouTube

## Office Opening Hours

Monday to Thursday - 08:30 to 16:45
Friday - 08:30 to 13:30
Saturday & Sunday & UK Bank Holidays - Closed

## PDF Translations