Observer User Manual and operating guide

Contents

What is Observer and what does it do?

Observer is the very latest Data logger from the makers of LogIT.

It is a highly advanced logger which is easy to use and reliable, allowing data to be recorded remotely, using a computer or using an iPad.

It uses the Microsense Din sockets and is compatible with most LogIT Microsense sensors both old and new.

Connectivity is either USB for PC and MAC or Low Energy Bluetooth for iPad Tablets. (iPad 3+ or iPad mini)

There will be occasions when you may wish to use Observer away from a computer or iPad. This may be outside on a field trip, monitoring a greenhouse or pond etc.

To achieve this functionality, Observer has the ability to automatically record data with a push of a button setting its own log rate and stopped when you decide.
Alternatively you can set the log rate and experiment duration yourself.

For example, you may wish to record every minute over 2 days and then stop.
Alternatively you can simply start logging and stop when required such as over a weekend or a summer break.

Getting started

Fitting the batteries

Observer is a very low power device and uses 2 x AA Alkaline batteries. These should give an expected life of many months when used for a good few hours a week and will always be ready for use.

To fit the batteries:-

1. Turn Observer over and remove the four screws in the base
2. If replacing batteries, carefully remove the old set and install a new set of Alkaline AA batteries noting the correct polarity
3. Replace the cover, insert the screws and gently tighten.

Using external power

Observer has the ability to use power from a USB cable connected either to a computer, or to a power adapter commonly used to charge phones or tablets.

If you are using the Observer for an extended period of time, say over a few weeks, then you may want to connect an external power supply to preserve the internal batteries. Since Observer uses such a small amount of its battery power, this is not always required but sometimes desired if using more than two sensors. If using Light Gates for an extended period then an external power supply is advised.

When using with a computer, simply connect the USB cable to the computer, the other end to the Observer and it will draw its power from the computer saving the internal batteries.

Finding your way round menus and screens

By using the Red, Green and Blue surrounded buttons located below the screen, all of the Observer's on board functions can be controlled. (For naming the Observer see page ??)

The Observer has on screen information to help navigate its features with each displayed directly above each button on the current page.

When you first switch on Observer (by pressing any button) the home screen is shown. If no sensors are connected, then you have the option to use Observer as a lab timer by pressing the Green button. (To use Observer as a lab timer, see page ??)

If Observer is left on without logging, it will power off automatically, or you can press the Blue button. To setup further functions then the Red <Menu> button will let you enter these.

Switching Observer off

When you have finished using Observer and are no longer recording data, Observer will automatically power off.
If you wish to power off manually, Press the Blue <Off> button on the home screen.

Note: Whilst Observer is recording data remotely or computer via its USB cable, it will not power off. If connected to an iPad via Bluetooth and not logging, it will also power off after the iPad has gone to sleep.

Setting up Observer

Setting the Time and Date on Observer

Switch on Observer using any button.
Press the Red <Menu> button
Press the Red <Down arrow> button to highlight 'Files/Settings'
Press the Green <Select> button
Press the Red <Down arrow> button to highlight 'Time and Date' option
Press the Green <Select> button
Set using the Red <accross arrow> and Green <+> buttons to change eachn parameter
With 'Set' underlined press the Green <Save> button to store the new Time & Date

Naming Observer (Requires PC or MAC)

This function allows the Observer to be named.
This name is identified when searching via Bluetooth on an iPad, or when used with the SensorLab software on a PC/MAC.

Start the 'SensorLab' software on your PC/MAC.
Connect Observer to the computer using a USB cable.
Wait for Observer to connect with the software. (On Windows, this may take some time depending on the version in use)
Select 'File'
Select 'Administrator'
Select 'Set Loggers Security Stamp'
Enter the new name for Observer in the top line only (The second line is used for other LogIT loggers)
Enter the password: Zaphod
The name for Observer should now be changed

Setting the back Light level

To alter the brightness of the back light on Observer:

Switch on Observer using any button
Press the Red <Menu> button
Press the Red <Down arrow> button to highlight 'Files/Settings'
Press the Green <Select> button
Press the Red <Down arrow> button to highlight 'Backlight' option
Press the Green <Select> button until the desired amount of back light is reached

Note: The brightness bar will scroll to the far right and then jump to the far left which is the lowest setting for the back light. Because Observer is a very low powered device, you do not need to worry about reducing the back light to save battery life.

Switching Bluetooth On or Off

Switch on Observer using any button
Press the Red <Menu> button
Press the Red <Down arrow> button to highlight 'Files and Settings'
Press the Green <Select> button to select
Press the Red <Down arrow> button to highlight 'Bluetooth is On'
Press the Green <Select> button to toggle the Bluetooth On or Off as desired

Note: Switching Bluetooth On or Off is only really required if another iPad is seeing multiple Observers and you wish to remove an Observer from the list. In most cases Bluetooth will switch On or Off automatically depending on how Observer is being used.

Using Observer

Using Observer on its own (remote logging)

Automatic logging

Automatic logging allows the user to simply plug in the desired sensors and with a touch of a button start recording data. No setup required, the logger automatically sets log rate and the user decides the duration by simply stopping the recording of data when required.

To start logging:
Switch on Observer using any button
Insert desired sensors into sockets
Press the Green <Start> button

Observer will now start recording data from each channel and will automatically adjust the log rate to suit the length of time that Observer is left logging.

To stop logging:
Press the Red <Stop> button – Observer will now save the data readings in its memory and display the recorded data as a graph.

Notes: Observer starts recording data extremely quickly for the first 8 seconds, after which it will reduce the number of readings taken as the experiment progresses. When you stop logging the data is automatically saved. This can seem like a long time but depending on the log rate and duration, Observer may be saving up to 8000 data points per channel.

The saved file is safely stored in one of the eight memory slots in Observer. To view the data and to look at the different sensor readings (if more than one is being used) see page ??

Snapshot logging

Snapshot logging can be though of like taking a photo. When the logger is set to Snapshot mode, readings are only recorded when a button is pushed. This function allows individual data to be recorded when the user requires. An example of use might be if using a light sensor to measure how different materials allow different levels of light to pass through As each material is placed over the end of the sensor, a button is pushed to take a reading.

Switch on Observer using any button
Insert desired sensors into sockets
Press the Red <Menu> button
Press the Red <Down arrow> button to 'Snapshot' function
Press the Green <Select> button to select snapshot mode
Press the Green <Store> button to take a reading and use the Blue <Delete> button to delete a reading
Press the Red <Stop> button to exit the logging function and save the data

Note: You can delete as many readings as you need by repeatedly pressing the Blue <Delete> button whilst logging.

Setting Duration/Log rate

Observer allows the duration of the experiment and the rate each reading is taken to be set before logging takes place. If for example you needed to take a reading every 2 seconds for 10minutes, you would do that with this mode.

Switch on Observer using any button
Insert desired sensors into sockets
Press the Red <Menu> button
Press the Green <Select> button to select 'Logging Setup'
Press the Red <Down arrow> button to cycle through selecting and setting the Sample rate and the total duration of the experiment followed by 'Start' when ready

Note: Observer will advise of the total number of readings your selected log rate and duration will produce. Too many readings or a combination resulting in no readings will be stated at the bottom of the screen. In this instance, change your selected rate and or duration. An example of an incorrect setup might be to take a reading every 30 minutes for 10 seconds.

Using Observer with an iPad (Bluetooth)

Connecting with Observer
Observer uses low energy Bluetooth and will only function on iPad mini or iPad 3 and above. For a full list of supported devices, see the compatibility chart on iTunes.
If not already installed, download and install the latest version of SensorLab from iTunes.

To connect to Observer:

Start the SensorLab app on your iPad
Switch on Observer noting the name shown at the bottom of the startup screen
On the APP's home screen, select 'Select Logger'
If the Observer is not shown in the list, toggle 'Scan for new loggers' and press 'Clear loggers list'
Once the named Observer appears, press to select it and then press 'Select' at the top of the Window
The Home screen should now show the selected logger.

Note: If the iPad fails to find Observer, switching it off and back on will make sure the Bluetooth is on as after a while, Observer will switch it off to save power.
Once Observer has connected with the iPad, provided a different Observer is not used in the meantime the two will stay connected.
For more information, see the help files contained within the app.

Logging with Observer
Once you have connected with Observer, you can now select 'Logging' from the Home screen
Once the sensors are displayed, from here you can use 'Setup' to select which type of logging you wish to do, use 'Tools' to select the type of display you want along with the ability to draw a prediction graph.
Finally 'Start' will start recording readings from Observer when you are ready.

Note: For more information, see the help files contained within the app.

Fetching stored experiments from Observer
Fetching from Observer involves downloading experimental data from the Observer's memory. Observer can store 8 experiments each containing up to 32000 readings (4000 per channel).

To fetch from Observer once the connection has been made, select 'Fetch from logger' on the home screen.
After a short time, all of the experiment files contained on the connected Observer should appear.
Select the file you wish to retrieve and select 'Fetch' at the top of the window.
Once the data has been retrieved you may save, edit etc the data as if you had recorded it directly from Observer.

Note: For more information, see the help files contained within the app.

Using Observer with a PC or MAC

Connecting with Observer

Observer uses standard USB cables (the type used by printers) to connect to your PC or MAC.

If not already installed, download and install the latest version of SensorLab for your computer from www.logitworld.com/software

To connect to Observer:

Start the SensorLab software on your computer
Connect the USB cable to Observer
Connect the USB cable to your computer
After a while, Observer should appear and if any sensors are plugged in, these will be displayed on the home screen of SensorLab.

Note: Whilst the USB cable is connected to Observer, 'USB' will be displayed on the top line of the Observer's screen and you will not be able to use Observer remotely.
For more information, see the help files contained within Sensorlab or download SensorLab user manual from www.logitworld.com/software

Logging with Observer

Once you have connected with Observer, you can now select 'Start' to begin logging, 'Autolog' or 'Snapshot', Oscilloscope mode (sensor permitting) or 'Setup' for more advanced options on the right of the Home screen.
If you have previously saved experiments, you can use the 'Open' icon to look at your previously saved experiments.

Note: For more information, see the help files contained within Sensorlab or download SensorLab user manual from www.logitworld.com/software

Fetching stored experiments from Observer

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To fetch from Observer once the connection has been made, select 'Fetch' on the home screen.
After a short time, all of the experiment files contained on the connected Observer should appear.
Select the file you wish to retrieve and select 'OK' at the bottom of the window.
Once the data has been retrieved you may save, edit etc the data as if you had recorded it directly from Observer.

Note: For more information, see the help files contained within Sensorlab or download SensorLab user manual from www.logitworld.com/software

Triggered Logging

Triggered logging is the means to allow very fast events to be recorded automatically. For example, an experiment which may last a few milliseconds, such as sound waves travelling over a short distance or magnetic induced current in a coil, can have its data stored without the need to press 'Start' buttons that would ultimately result in the experiment missing the important event.

When triggered logging is selected and started, Observer will record data continuously (so as not to miss any data) but will only store the data when a predetermined threshold level is reached on the input sensor plugged into channel 1.

Observer also records a second channel of data on channel 2 (see below)

As an example, we will record a hand clap sound waveform using a single Microsense Sound Wave sensor plugged into channel 1.

Procedure:-

    Plug the Sound Wave sensor into channel 1
    Switch on Observer using any button and then press the Red <Menu> button
    Using the Red <down arrow> button, select 'Triggered logging'
    Observer will now wait for a level on channel 1 to change by approximately 10% of the sensor range
    Clap your hands in front of the Sound Wave sensor
    Observer will record the remaining data points and plot the graph
    To change the Time Base (time along the bottom), press the Green </DIV> button (range from 500μS per Division to 100ms)
    To repeat the experiment, press the Red <Reset> button and repeat the procedure
    To save the data press the Green <Save> button or to exit without saving data press the Blue <Home> button

Note: Use the /DIV option if your trigger is either too short or too long to capture enough data.

Observer also allows the recording of a second channel of fast data at the same time. This feature allows experiments such as the Speed of Sound in Air or a Solid to be performed easily.

The example below shows how you can record the Speed of Sound in Air using 2 Sound Wave sensors.

Procedure:-

    Plug a Sound Wave sensor in each of channel 1 and channel 2 using a sensor extension lead
    Align the sensors a known distance apart (over 1 metre is recommended but you may need to experiment with different distances depending on the room's characteristics as reflected sound waves can affect the results)
    Switch on Observer using any button and then press the Red <Menu> button
    Using the Red <down arrow> button, select 'Triggered logging'
    Observer will now wait for a level on channel 1 to change by approximately 10% of the sensor range
    Clap your hands in front of the Sound Wave sensor
    Observer will record the remaining data points and plot the graph of both channel 1 and channel 2
    Save the data and download the data onto your iPad or computer (Fetching stored data)
    With both wave forms on the screen, using 'Difference' allows you to find the time taken for the sound to travel from the first peak on channel 1 to the second peak on channel 2
    Knowing the Time and Distance, the Speed of Sound can be derived

Note: When using Triggered logging, Observer will record 2 channels at a sampling rate of 40kHz. For 50kHz sampling, see 'Using Observer as an Oscilloscope'

Opening and viewing saved experiments

When you save an experiment on Observer, you can at any time recall the experiment and view the graph on the LCD screen.
If you have multiple channels of data, each channel can be viewed individually.

To view a saved experiment:-

Switch on Observer using any button
Press the Red <Menu> button
Press the Red <Down arrow> button to 'Files and Settings' function
Press the Green <Select> button
Press the Green <Select> button to select 'View Files' option
By using the Red <Numbered> button, you can cycle through the stored experiments
Press the Green <Open> button to select the experiment you wish to examine
You can now use the Red <View> button to cycle through multiple channels of data and the Green <Arrow> button to examine individual reading (a vertical line indicates where specific data is being read from)
Press the Blue <Home> button to exit

Note: If an experiment has more than one channel of data, all the channels data will be displayed on a preview screen. Once an experiment is selected, each channel will be displayed individually.

Using Observer as an Oscilloscope

Observer has a powerful twin channel Scope mode that allows it to function as an Oscilloscope. This mode requires fast sensors to be used and will produce traces from channel 1 and channel 2. Fast sensors include the Sound Wave sensor & Smart Eye but will also work with Voltage sensors such as the mV sensor .

To use the scope mode:-

Switch on Observer using any button
Connect a suitable sensor into channel 1 (eg Sound Wave)
Connect a suitable sensor into channel 2 if required (eg Sound Wave)
Press the Red <Menu> button
Press the Red <Down arrow> button to 'Scope function'
Press the Green <Select> button
The Scope should now display on the screen

To change the time display division (see below), Press the Green </DIV> button to cycle through the Time base divisons starting at 200 microseconds until you have the required trace.

Note: The Time Base is for both channels with channel 1 being the trigger.

To capture the displayed scope date, Press the Red <Hold> button
From here you can restart the scope by pressing the Red <Run> button, Save the recorded trace using the
Green <Save> button or exit without saving any data using the Blue <Home> button

Note: When you select 'Save', the scope data will be saved in exactly the same way as standard remote data
capture. You can then view it or download to an iPad or computer (see 'Opening and viewing saved experiments)

Scope mode records on channel 1 & 2 at a sampling rate of 50kHz.

The time base division button allows different time intervals indicated by the points along the top of the display. These time divisions are cycled through starting at 200 microseconds through to 100 milliseconds.

An example of using 2 channels to show how Phase and Amplitude of a sound wave changes:

- Connect a Sound Wave sensor to each of channel 1 & 2 using an extension cable
- Start the Oscilloscope function as detailed above
- Hold both Sound Wave sensors side by side and whistle into the end
- Adjust the /DIV until you obtain a nice wave form
- Now move one of the Sound Wave sensors away whilst keeping the other in the same place
- Now move the sensor you have moved to the left or right

As you move one of the sensors away, the Amplitude of the waveform reduces.
As you move the sensor to the left or right, the Phase of the waveform will change. By doing this you can make both waveforms be out of phase when you see both and in Phase when they overlap each other.

Using Observer for Timing experiments

Observer can be used to perform time related tasks easily in a quick, intuitive way with or without a computer or iPad. This manual will deal with using Observer without a computer, for further details on timing with SensorLab software on a PC/Mac or iPad see the SensorLab manual available to download at www.logitworld.com/software

Observer will time events by using the LogIT light gates, pressure mats or Smart Eye sensor.

The examples in this manual will use the Light gates. For information on using other LogIT sensors for timing see www.logitworld.com

Note: If using the Smart Eye sensor with Observer for timing, a torch or other bright light should be shone into the sensor to make the light gate for the object to travel through.

Which interrupt card to use.
Whether to use a single interrupt or a double interrupt card is largely dependant on what is being timed. The following is a description of the time that each interrupt will allow Observer to measure.
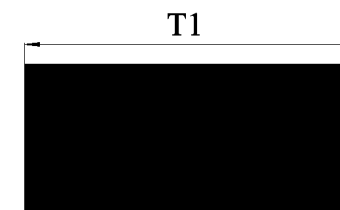

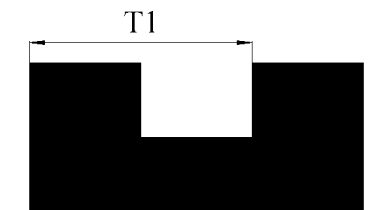*Fig 1.* Single interrupt producing 1 time result.

Fig 2. Double interrupt, 1 time result but more accurate than the single.
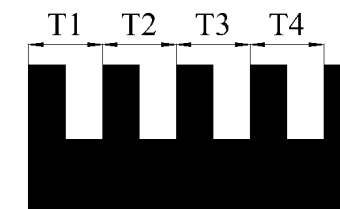

Fig 3. 5 bar picket fence, 4 time results.

When measuring 'Time' & 'Simple Harmonic Motion', the size of the interrupt is not important. For 'Speed' a single interrupt requires to be 60mm long and a double interrupt needs each bar to be 30mm with the gap between each bar also being 30mm. Observer will time a double interrupt from leading edge to leading edge making a distance traveled of 60mm. This can produce more accurate results than the single interrupt card.
A picket fence used with Observer should have 5 bars with each bar measuring 20mm and the gap between them also being 20mm. This will result in 4 measurements as Observer times again from leading edge to leading edge.

How to connect
Observer uses only channels 1 & 2 for all timing events and so if you intend to time using 2 light gates (or similar Microsense sensor) connect to these channels only. For a single light gate connect to channel 1.

Channels 3 & 4 are ignored by Observer when timing.

When timing from one sensor to another, Observer will assume that the Light gate in channel 1 is the first that the interrupt will pass through and channel 2 will be the second. This is important when timing specific events such as acceleration of an object.

If you are recording the time at any sensor, then the order in which the light gates are passed through is not important as Observer will record each individually.

The use of A and B to denote the timing options has been traditionally used and to avoid confusion on the Observer, it is referenced to here. Basically channel 1 is 'A' and channel 2 is 'B'

Timing events

This section shows how you can use Observer to time events. Options include being able to time the object at one single point, two individual points, from one point to another or time at each point & then the time from one point to another. You can also specify whether to use a single, double or picket fence interrupt depending on the options selected.

To use Timing on Observer, connect one or two light gates to channel 1 & 2 respectively.
Switch on Observer using any button
Press the Red <Menu> button
Press the Red <Down arrow> button to 'Timing' function
Press the Green <Select> button to select 'Time' option

On this screen you can select where to time and what interrupt you intend to use. When ready the Green button will become the 'Start' button and timing can begin.

The following is a guide on what to use for the 'Where to Time' option:

Time at A
Produces the time taken for a single object to pass through the light gate connected to channel 1(A)

A single interrupt will produce the time from the leading to trailing edge of the object.

A double interrupt will produce the time from the leading edge of the first bar to the leading edge of the second bar.

A picket fence will produce 4 times from each bars leading edge to trailing edge.

Whether to use a single, double or picket fence in this mode depends on the ability to a certain extent of the user. With the single and double interrupts only a single time reading is displayed. The double interrupt producing slightly more accurate readings than the single. The picket fence however will produce 4 times and the average of all 4 will produce the final time of the complete object passing through the light gate.
In most cases the double interrupt is a good choice.

Time at A and B
Produces the time taken for a single object to pass through either light gate connected to channel 1(A) and channel 2(B)

In this mode you can only use a single or double interrupt card which produce a single time each pass through of the light gate.

Time from A to B
Produces the time taken for a single interrupt to pass from the first light gate to the second.

When using this mode its important to setup the experiment so that the interrupt passes through the light gate connected to channel 1(A) first and the light gate connected to channel 2(B) second.

Since the timing starts as soon as the first light gate is passed through, there is no need to use anything other than a single interrupt. For additional setup options you may consider using Observer connected to an iPad or PC/Mac.

Time at A, A to B, B
Produces the time taken for a single or double interrupt to pass through the first light gate at channel 1(A) followed by the time taken to travel from channel 1(A) to channel 2(B) followed finally by the time to pass through channel 2(B).

This mode can be used with a single or double interrupt card.

This timing mode is very useful for advanced work in Physics. Since the size of the object is known, the acceleration of the object can be derived by using the three timings obtained. This mode may be preferable for advanced students over 'Acceleration' mode as the acceleration is not simply given and requires additional calculations.

Speed events

This section shows how you can use Observer to calculate the Speed of an object. Options include being able to measure the object at one single point, two individual points or from one point to another. You can also specify wether to use a single or double interupt card.

To use Speed on Observer, connect one or two light gates to channel 1 & 2 respectively.
Switch on Observer using any button
Press the Red <Menu> button
Press the Red <Down arrow> button to 'Timing' function
Press the Green <Select> button
Press the Green <Select> button to select 'Speed' option

On this screen you can select where to time and what interrupt you intend to use. When ready the Green button will become the 'Start' button and timing can begin.

The following is a guide on what to use for different Speed events:

Speed at A
Produces the Speed for a single object passing through the light gate connected to channel 1(A)

A single interrupt will produce the Speed from the leading to trailing edge of the object using the length of the interupt as the distance travelled. Observer uses 60mm as this interupt.

A double interrupt will produce the time from the leading edge of the first bar to the leading edge of the second bar.

The screen allows two experiments to be performed. If you then wish to record another two, press the Green <Reset> button to start again.

With both Speed readings an average of the two can be taken.

Speed at A and B
Produces the Speed for a single object to pass through either light gate connected to channel 1(A) and channel 2(B)

In this mode you can only use a single or double interrupt card which produce a single Speed for each pass through the light gate.

The screen will display a Sped for A and B.

Speed from A to B
Produces the Speed of an object, 1 metre apart from the first light gate to the second.

The interupt is only a single and can be any size as the timing is performed from leading edge to leading edge. The calculation is made over 1 metre.

When using this mode its important to setup the experiment so that the interrupt passes through the light gate connected to channel 1(A) first and the light gate connected to channel 2(B) second.

Since the timing starts as soon as the first light gate is passed through, there is no need to use anything other than a single interrupt. For additional setup options you may consider using Observer connected to an iPad or PC/Mac.

Note: When setting up or performing a timing experiment, you can use the Red <Back> button to change parameters if required. The Blue <Home> button will take you to the home page of Observer.

Acceleration
This section shows how you can use Observer to calculate the Acceleration of an object using a five bar Picket Fence.

The Acceleration option on Observer is for use with a five bar picket fence. It is fixed at a bar width of 20mm and a gap between each bar of 20mm.

Observer will calculate the Acceleration automatically, displaying the result at the bottom of the screen.

Note: If you wish users to derive Acceleration using motion laws or equivalent, use the 'Time at A, A to B, B' option detailed in the 'Time' section of this manual and use a single or two bar interrupt card.

To use Acceleration on Observer, connect one light gate to channel 1(A)
Switch on Observer using any button
Press the Red <Menu> button
Press the Red <Down arrow> button to 'Timing' function
Press the Green <Select> button
Press the Green <Select> button to select 'Acceleration' option

The screen will now display the t1 .....t4 times and 'Ready' will be at the bottom of the screen.
Drop the picket fence through the light gate and the result will be displayed at the bottom.

Press the Green <Reset> button to time again
Press the Red <Back> button to select another mode
Press the Blue <Home> button to return to Observer's home page
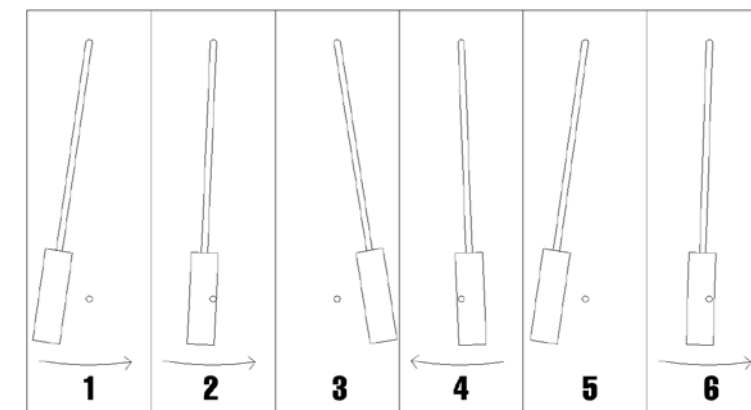
Simple Harmonic Motion
This section shows how to use Observer to measure the Simple Harmonic Motion/Time Period of a object mounted on a pendulum or an object mounted on a spring

To use Simple Harmonic Motion on Observer, connect one light gate to channel 1(A)
Switch on Observer using any button
Press the Red <Menu> button
Press the Red <Down arrow> button to 'Timing' function
Press the Green <Select> button
Press the Green <Select> button to select 'Simple Harmonic Motion' option

The screen will now display time period t1 to t10 and will wait until the object passes through the light gate for the first time.

Once the pendulum is swinging, all 10 times will be recorded and displayed. An average can then be found if required.

Press the Green <Reset> button to time again
Press the Red <Back> button to select another mode
Press the Blue <Home> button to return to Observer's home page

The diagram above shows how Observer measures Simple Harmonic Motion/Time Period:-

1. Pull back the pendulum around 5 degrees to the vertical and let go.
2. The pendulum passes through the beam and Observer starts timing.
3. The pendulum stops and starts the return swing.
4. Observer ignores the return swing of the pendulum.
5. The pendulum stops and starts the return swing.
6. Observer records the time and starts timing the next time period of the pendulum.

Using Observer as a stopwatch/class timer

If Observer is switched on with no sensors plugged in, the Green <Timer> button can be used to select a useful stopwatch/class timer.

To use the timer:-

Remove any sensors connected to Observer
Switch on Observer using any button
Press the Green <Timer> button

The Timer screen should be displayed

Press the Green <Start> button to start the timer
Press the Green <Stop> button again to stop the timer

You can restart the timer from this point by pressing the Grenn <Start> button again

To reset the timer to zero at any time press the Red <Reset> button
Press the Blue <Home> button to exit the timer and return to the Home screen

Observer Specification

Timing Accuracy	> 1 microsecond
Stored files	8 (4 channels of upto 8000** readings per experiment)
Analogue sampling rate	50kHz
Remote Log Duration	250 Days
Oscilloscope performance	2 channels at 50kHz
Triggered log rate	2 channels at 40kHz
Connectivity	USB, Bluetooth low energy
Battery life*	1 year approximately
Display Type	Graphical/Digits LCD

Battery life is an approximation based on 45 minutes use a day over the course of a school year. Bear in mind that battery life is also dependent on temperature and storage conditions. Please only use Alkaline batteries with Observer.

** The exact number of readings will depend when the logging is stopped in automatic mode.*

LogIT
world

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Waste electrical and electronic products must not be
disposed of with household waste.
Please recycle where facilities exist.
Check with your Local Authority or Retailer for recycling
advice.