



EASYSENSE VISION user guide



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This manual contains a brief description of using VISION with the **EASYSense** software. Full information is available in the **EASYSense VISION** software guide D0234.

An updated version of this guide maybe available at www.data-harvest.co.uk.

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Document No: D0233 (3)

Upon receipt of your VISION logger:

Connect VISION to its mains power supply overnight to charge the battery before use.

If screen taps are not accurate recalibrate the stylus control by using VISION's screen calibration utility (see [page 8](#)).

Items included with VISION

EASYSense VISION fitted with a stylus



A power supply



Two long *Smart Q* sensor leads



A USB cable



Two short *Smart Q* sensor leads

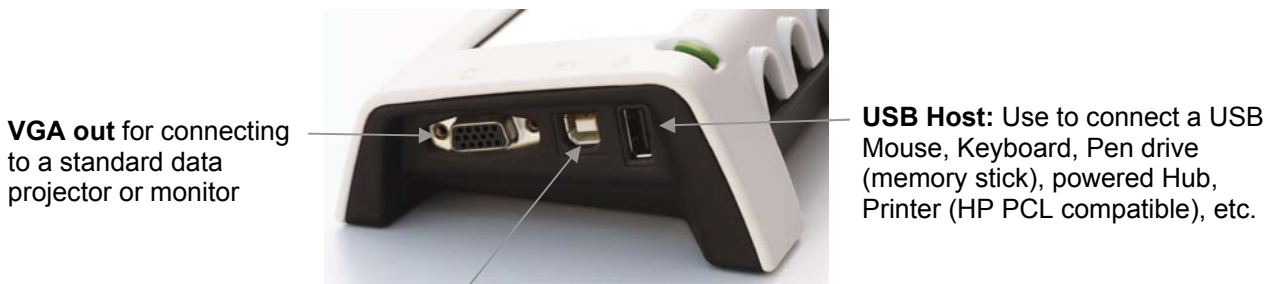
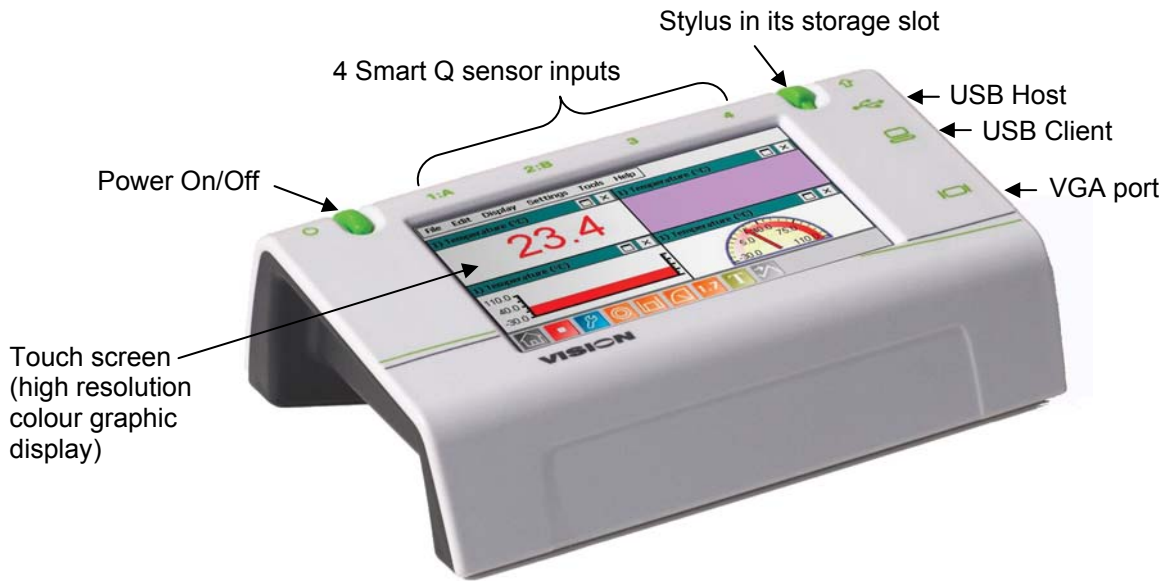
A spare stylus



VISION will operate with most standard USB accessories:

- Mouse – standard, mini, wired or wireless
- Keyboard
- USB Memory stick – FAT format (NTFS formatted drives are not suitable).
- USB powered Port Hub - V1.1 or V2

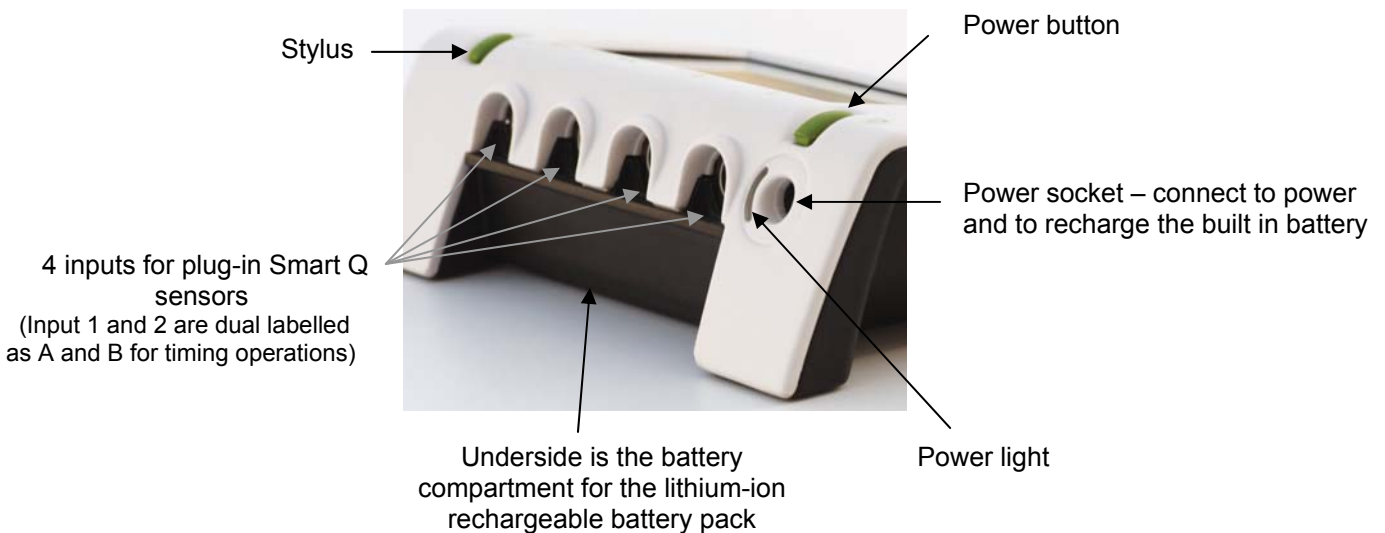
The VISION data logger



USB Client

Connect VISION to a host computer via a USB lead to:

- Transfer captured data from VISION to the PC
- Use VISION as an interface and capture data using the **EASYSense** PC software



The different ways to capture data using VISION

1. **Stand alone** – data collection and analysis is operated by a stylus, touch (finger tip) or a USB mouse.

Data is:

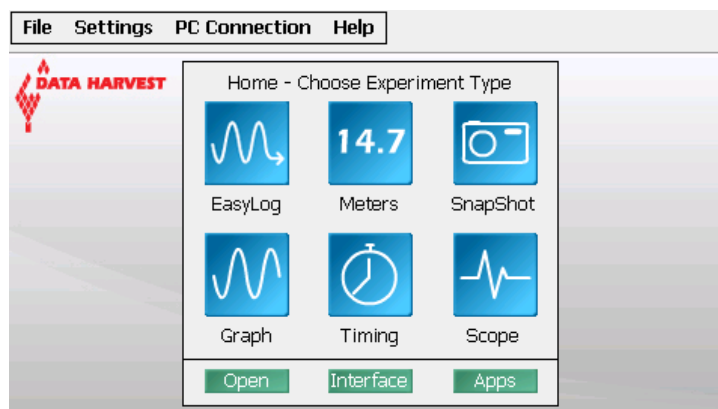
- a) Viewed on the graphical touch screen in Meter mode.
- b) Captured and analysed using one of the logging options i.e. EasyLog, SnapShot, Graph, Scope or Timing. The collected data can be saved and stored in user memory.
- c) Displayed to the whole class via a projector or monitor using the VGA out socket. See [page 8](#).

2. **PC connected**

- a) As an interface (controlled by the EasySense software on the PC computer). See [page 9](#).
- b) Data saved on VISION can be opened in the EasySense PC software. See [page 10](#) and [11](#).
- c) Workroom setup files can be transferred to and from VISION.
- d) Windows Explorer can be used to manage VISION's file storage area e.g. Delete, Copy, Rename, etc. See [page 10](#).

To capture data standalone

- Connect any *Smart Q* sensors to the inputs on VISION (see [page 7](#) for more information).
- Ensure VISION has sufficient battery power or connect to its power supply (see [page 12](#) for charging information).
- Short press the green power button (for a second) then release. If the screen remains blank VISION is powered down so press and hold down the power button until the starting screen appears.
- Select an experimental mode from the Home screen i.e. EasyLog, Graph, Meters, Scope, SnapShot or Timing.



The Home screen
(Level 2 & 3)

Automatic standby (sleep mode)

If **EASYSense VISION** is **battery** powered and left user idle (no screen taps, button press or mouse movement) for more than

- 60 seconds its screen will automatically **dim**. Touch or tap the screen to return to full brightness.
- 90 seconds or more the screen will go **blank** (sleep mode). VISION will continue to record (if logging). To resume operation, touch or tap the screen, short press the green power button or move the mouse (if attached).

If the interval between samples is 10 seconds or more VISION will automatically use sleep mode and will wake each time it needs to take a reading.

The EasySense software overview

Detailed information is available in the **EASYSense VISION** software guide (D0234) available on from the Resources tab at www.data-harvest.co.uk/vision.

Select a User level

The first time VISION is started a 'Select Program Level window may automatically open. Select a suitable user level - Level 1 is aimed at 'start' level (e.g. up to 9 years old), Level 2 is aimed at 'mid' level (e.g. 9 – 15 years old), Level 3 is aimed at 'exam' level (e.g. 15 years plus).

Note: The program level can be altered once a logging option has been opened.

The Home screen



Home is the main navigation window, which contains the icons for all the logging options. The options available and the complexity of the toolbars and functions are altered by the user level selected.



Meters


The Meters window gives an introduction to sensors and how they respond to change. Up to four section displays can be open at any one time and they can be any combination of sensors and displays.


The program will open with live data from one sensor in a Numeric window. Click on the appropriate picture icon on the Menu bar to open other section displays i.e. Numeric, Gauge, Colour Change or Bar. To alter the sensor displayed in a section, tap & hold (or right click with a mouse) in the individual section window and select the sensor from the list.

Click on the **Stop** icon  to stop logging.



EasyLog


EasyLog will open pre-set to record sensor values **continuously** as a line graph until stopped. Click on the **Start** icon  to start recording.

Logging will start with a time span of 30 seconds and when this has elapsed the time will double automatically. This will continue until the recording is stopped by clicking on the **Stop** icon. 



Snapshot


Snapshot will open pre-set to record sensor values on demand (**manual sampling**) with a bar graph display.


Click on the **Start** icon  to start recording. Click in the graph area to record the current value for each active sensor. Click on the **Stop**  icon to stop data being recorded.



Graph

Graph is pre-set to record sensor values against a **chosen time span** as a line graph display. The window opens with the logging wizard from which the time span, interval between samples, start condition and triggers for the recording can be chosen. (The options available will depend on the level you have selected to work at). When the selection has been made, click on Finish.

Click on the **Start** icon  and the recording will start when the start condition you have selected is met e.g. if None was the selected trigger then the recording will start as soon as the Start icon is clicked. The recording will stop when the selected time span has passed.

Note: If you want to stop a recording before it has run the full term, click on the **Stop**  icon.



Logging rates can be set from 50,000 samples per second (20 μ s interval) for capturing fast moving data) to 1 sample an hour (for long term experiments).



Scope

(User level 2 and 3 only)

The data from the sensor is redrawn continuously on the screen in a simple oscilloscope type display.

Click on the **Start** icon  to begin recording. In roll mode the graph trace will be redrawn continuously on the screen until you click on the **Stop** icon  when the trace will 'freeze'.

Note: Scope is not available when the User level is set to Level 1.




Timing

Timing is used to allow students to study Time, Velocity, Acceleration, Momentum and Kinetic Energy relationships using switch-type (digital) sensors such as Light gates.

Sensors **must** be connected to either input 1:A or inputs 1:A and 2:B.

A recording wizard will open with the options available to select before recording data. (The availability will depend on the level you have selected to work at). When the selection has been made, click on Finish.

Click on the **Start**  icon and a reading will be displayed when a change is detected in a signal from the digital sensors.



Open

Use to load a previously saved data file. Locate the correct EasySense file (.SSL) and select OK. See [page 11](#).



Interface

Use to connect VISION as an interface controlled by the EasySense software on the PC computer. See [page 9](#).



Apps

Use to open or manage other applications available on VISION e.g. the Periodic Table. See [page 14](#).

Smart Q Sensors

Smart Q Sensors are each equipped with a sophisticated microprocessor that greatly improves the sensor's accuracy, precision and consistency. The auto-identification circuitry simplifies set up procedures and allows for greater flexibility when logging data.

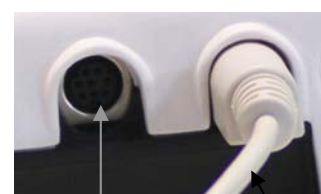
The four inputs on the top edge of VISION may be used with analogue and digital sensors. Both will be recorded side by side during logging operations.

Sensor inputs 1 and 2 are dual labelled as A and B. These inputs are for Timing operations when digital sensors must be connected to either input 1:A or input 1:A and 2:B.



Four sensor leads have been provided to connect Smart Q Sensors to the shaped input sockets on VISION.

Smart Q Sensors are available to purchase separately and are **not** supplied with VISION.



Input socket

Sensor cable

Sensors can be divided into two main types:

1. Analogue – used to measure physical quantities such as temperature, sound, light, pH, etc.
2. Digital switch-type sensors for measuring ON/OFF conditions e.g. Light gates and Timing mats to calculate time, speed and acceleration.



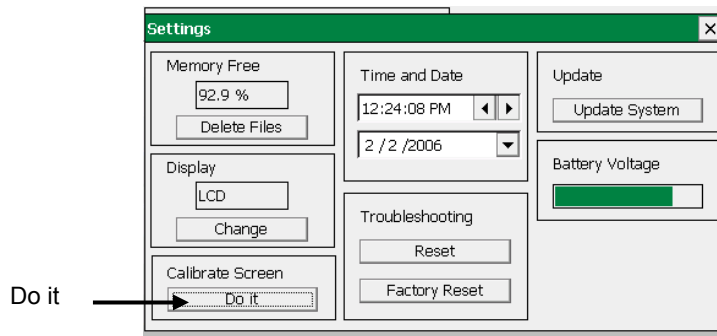
Please contact your supplier or the Data Harvest website (www.data-harvest.co.uk) for up-to-date information on Smart Q sensors.

Calibrating the screen

If screen taps are not accurate recalibrate the screen using VISION's screen calibration utility.

- From the **Settings** menu select **System Settings**.

TIP: If the inaccuracy of screen taps makes this selection difficult use a USB mouse.



- From the **Calibrate Screen** section select **Do it**.
- Enter **DHG2020** as the password.

Password = DHG2020

Note: The password is case sensitive, so make sure DHG is in capitals. This password cannot be changed by the user.

- Tap and hold the stylus on the centre of the target for about 4 seconds, when you release the tap the target will move (if not tap and hold firmly for longer). Repeat as the target moves around the screen (for the four corner positions).
- A message will indicate the new calibration settings have been measured, **tap anywhere** on the screen **to save the calibration** and exit.

Note: To cancel your attempt wait for 30 seconds without doing anything and the new settings won't be saved.

- Tap on to close System Settings.



Connecting VISION to a projector or monitor

As VISION's LCD screen will be off when used with a VGA display device, you will need to connect a **mouse** to control VISION.



It is best to connect VISION to its **mains power supply** to prevent it going to sleep.

Note: If battery powered, ensure VISION is awake when connecting the VGA lead and use a screen tap to wake VISION from sleep (the mouse will not respond).

- Connect a USB mouse to the USB host port  on VISION.
- Connect the VGA lead from a projector or monitor to the VGA port  on VISION.

The display device should automatically be detected by VISION and the display will switch from the LCD display to the VGA display device.

If VISION does not detect the VGA device, a manual switch must be made:


- From the **Settings** menu select **System Settings**.
- From the Display menu select **Change**.
- VISION will now switch to the VGA display device

Note: As a safety measure, VISION will now give you 15 seconds to click on OK to stay on the VGA device; otherwise it will automatically switch back to the LCD display.

When you have finished using the VGA display device, either go back into System Settings and click change again or switch VISION off and on (it will always default back to LCD at power up).

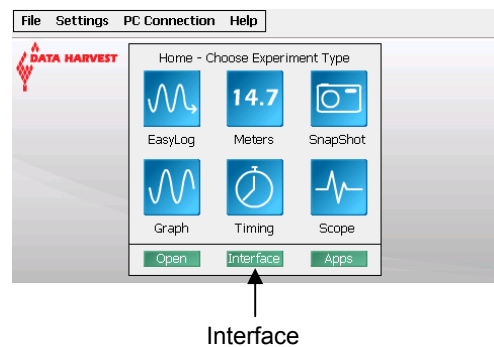
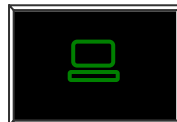
Using VISION as an interface (controlled by the EasySense software on a PC computer)

V3.0 or later of the EasySense PC software **must** be installed on the PC computer.

- Save any data you have on screen.
- Connect VISION to the PC using the USB cable supplied (connect the 'square' type B plug of the USB cable to the USB client port  on VISION and connect the 'flat' type A plug to a USB port on your computer).

- Select **Interface** either from VISION's Home screen or the PC Connection menu.

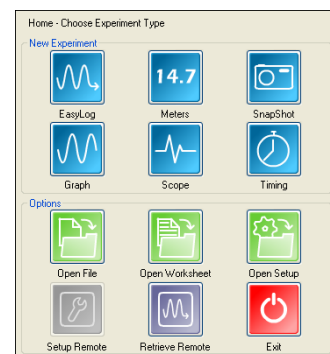
VISION's screen will alter to show its USB connected.



Note: If VISION does not find a connection with the PC within 10 seconds VISION's EasySense software will automatically restart.

- The first time VISION is connected allow the USB device drivers to install.
- Open the EasySense software on your PC computer e.g. Start ► Programs ► Data Harvest ► and double click on EasySense Software. Select a new experiment mode from the Home screen i.e. EasyLog, Graph, Meters, Scope, SnapShot or Timing.

Logging rates can be set from 50 samples per second (20 ms interval) for capturing real-time data.



When you've finished using VISION as an interface, disconnect VISION from the USB port and VISION's EasySense software will restart.

The first time the EasySense PC software is opened:

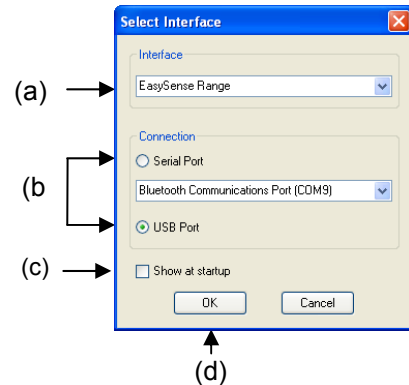
Step 1. A 'Select Program Level' window will automatically open. Select a suitable user level.

Note: Level 1 is aimed at 'start' level (e.g. up to 9 years old), Level 2 at 'mid' level (e.g. 9 – 15 years old) and Level 3 at 'exam' level (e.g. 15 years plus).

Step 2.

A 'Select Interface' window will automatically open to allow the correct interface and connection to be selected.

- (a) Select the **EasySense Range**.
- (b) Select the appropriate connection as **USB Port**.
- (c) If these settings will stay the same leave the 'Show at startup' box unticked.
- (d) Click on OK. The program will save the current selection.



Transferring files between VISION and a PC computer

Saved data files can either be transferred from VISION to your PC by using VISION in 'disc drive' mode or can be opened direct into the EasySense PC software by using the **Retrieve Remote** function while VISION is connected as an interface.

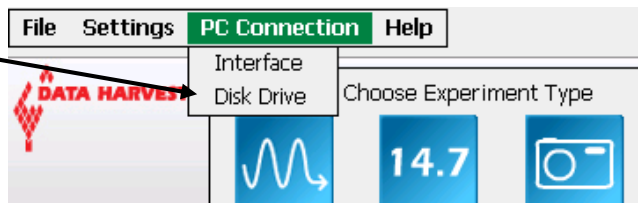
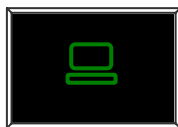
Saved setup and bitmap files can be transferred from VISION to your PC by using VISION in 'disc drive' mode.

- Save any data you have on screen.
- Connect VISION to the PC using the USB cable supplied (connect the 'square' type B plug of the USB cable to the USB client port  on VISION and connect the 'flat' type A plug to a USB port on your computer).

Using VISION in Disc Drive mode

- From the Home screen select **Disk Drive** from the **PC Connection** menu.

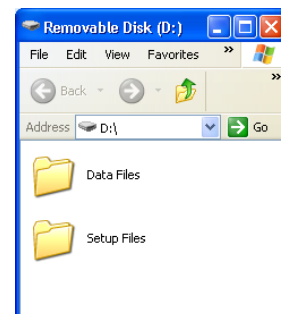
VISION's screen will alter to show it's USB connected.



- The first time VISION is connected allow the USB device drivers to install. VISION will appear as a removable storage device on the PC (no special drivers are required).

Windows Explorer can be used to drag and drop files between VISION and your PC (maximum file size for VISION is 5 MB).

Note: If no connection is made to the PC within 8 seconds then VISION's EasySense software will restart.

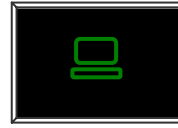


- When you've finished safely remove VISION from the PC e.g. by using the Safely Remove Hardware icon from the computer's taskbar and once safe to do so disconnect VISION from the USB port. VISION's EasySense software will restart.

With VISION connected as an Interface

- Select **Interface** either from VISION's Home screen or the PC Connection menu.

VISION's screen will alter to show it's USB connected.



- Open the EasySense software on your PC computer e.g. Start ► Programs ► Data Harvest ► and double click on EasySense Software.
- Select **Retrieve Remote** from the PC's Home screen.
- Select the data file from the list then Retrieve.



When you've finished using VISION as an interface, disconnect VISION from the USB port and Visions EasySense software will restart.

Opening and Saving files

Opening

If you are opening a file saved on a memory stick connect the USB memory stick to the USB host port on VISION **before** selecting Open.

- Select **Open** either from the Home screen or from the File menu.
- Locate the EasySense data file (.SSL) and OK.

Saving

If you are saving to a memory stick connect the USB memory stick to the USB host port on VISION **before** selecting Save As.


- From the File menu select **Save As**.
- A dialogue box will open to allow the captured data to be saved as an EasySense file. Select the destination of your choice.
- Type in a name for the file (saved by default as **.SSL** type).

Auto save

If the battery voltage level drops too low then VISION will auto-save data before shutting down. If this happens connect VISION to mains power and hold down the power button until the starting up screen appears. Select **Open** from the File menu – the data that had been collected will be saved in an .SSL file called **Auto-Saved Data** in the User Files\Data Files folder.

Printing

VISION will print to most Hewlett Packard PCL compatible printers.

Connect a compatible printer to the USB host port  on VISION (printer turned on). **Print Graph** or **Print Table*** is located in the File menu.

Note: VISION will only print greyscale with a HP Colour LaserJet printer (not in colour).


* Be aware that a table can use multiple pages to print.

System information

Powering EASYSense VISION

While VISION is connected to its mains power supply it will not use sleep mode and will **remain awake**.

Generally there is no need to power down (reset) VISION except to speed up a battery recharge or to restart VISION's EasySense software if a fault occurs. (Saved data will be safe, but any unsaved data will be lost).

- To power down VISION: press and hold down the green power button for about 4 seconds – a red warning symbol will appear , continue to hold until the screen goes blank.
- To power VISION back on: press and hold down the green power button until the 'Application loading' screen appears.

Mains power

Use VISION's mains power supply adapter to power and recharge its internal batteries. Connect the power adapter to the power socket on the back of VISION and its power indicator will light.

Power supply specifications: 5V DC mains adaptor, able to supply 1000 mA, with a positive centre and negative outer pin.



Recharging batteries

Connect VISION to its mains power supply adapter and leave to charge overnight.

Notes:

- Normally VISION will fully charge overnight but may take longer if its battery is totally flat.
- To ensure the fastest charging time unplug all sensors and peripherals (keyboards, mice, projectors, etc.).
- To divert all power to recharging VISION's batteries, power VISION down (press and hold down the power button for about 4 seconds until the screen goes blank).

Batteries

VISION is fitted with a rechargeable lithium ion battery pack.

Battery life will depend on the sensors connected. For example a fully charged battery in good condition can power VISION in EasyLog mode with a Light level sensor connected for up to 14 days. If a high current sensor such as the Rotary Motion sensor is used then this will be reduced to less than 2 days.

Even when turned off, VISION will use a small amount of current, and the battery will slowly discharge.

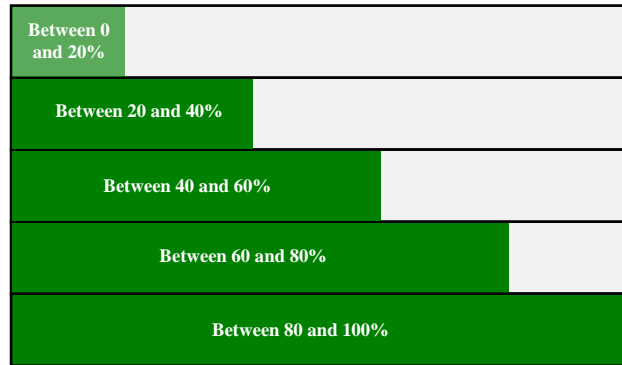
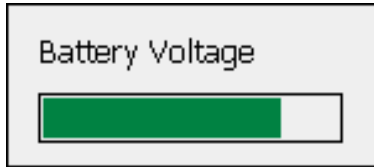
Lithium ion batteries are 'memory-free' and prefer a partial rather than a full discharge. Constant partial discharges with frequent recharges will not cause any harm. Frequent full discharges should be avoided whenever possible.

The speed at which a lithium ion battery will age is governed by both its storage temperature (preferably less than 40°C) and state-of-charge. Eventually the battery pack will no longer deliver the stored energy and will need to be replaced. A fully charged battery that loses its charge quickly will demonstrate the need for replacement. When this happens contact Data Harvest and request a battery replacement pack for VISION – Product No. 2036. *(Full instructions on how to replace the battery will be supplied with the replacement battery).*

Lithium batteries operate best at near room temperature (between 10 and 30°C) but can be used at any temperature between 5 to 50°C. If VISION has been left in the cold, let it warm to near room temperature before use.

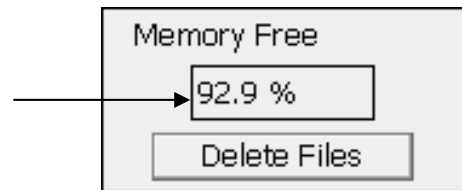
Battery voltage

- Select **System Settings** from the **Settings** menu.
- Battery Voltage will show an estimate of VISION's current battery voltage level.




Memory Free

This value indicates the percentage of free memory available for storing user data or setup files.



Deleting files

There are two methods of deleting saved files (to free more memory).


1. Select **System Settings** from the **Settings** menu. From the Memory Free section select **Delete Files**. Select the appropriate data file (.ssl) or user setup file (.sss) from the list, and select Delete. Tap on  to close System Settings.
2. Connect VISION to the PC in **Disc Drive mode** (see page 10). VISION will appear as a removable storage device on the PC; use Windows Explorer to delete files from VISION's file storage area.

Set date & time:

To set the date and time on VISION select **System Settings** from the **Settings** menu.

Time: Select any numbers that are not correct and use the left pointer ◀ to reduce its value or the right pointer ▶ to increase its value.

Date: Select the down pointer ▼ to open a calendar. Use the left or right pointers to scroll through the months and years and select the correct date.

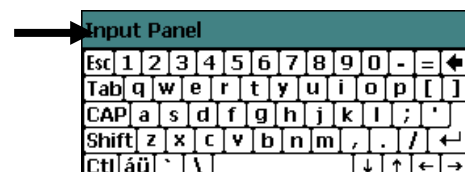
Tap on  to close System Settings.

Language

If your VISION has a choice of languages there will be a **Set Language** option available from the **Settings** menu. Select the appropriate language from the drop down menu and then OK. The software will restart using the selected language.

Keyboard

Tap on the coloured title bar and drag to move the keyboard to a different position on the screen.



Select Keyboard


Use Select Keyboard (Settings menu) to change your keyboard from a standard size to a larger keyboard. The keyboard will revert automatically to standard size if VISION is restarted.

Note: If a USB keyboard is attached to VISION then the on-screen keyboard will not appear.

Apps

Select **Apps** either from the **Home** screen or **File** menu to open or manage additional applications that have been installed on VISION e.g. the Periodic Table, Scientific Calculator.

To install a new App

- Download and **Save** the compressed application from the App Store at www.dataharvest.co.uk to your PC computer. 'Unzip' to extract the contents. Copy the application directory to the top level of a USB memory stick.
- Connect the USB memory stick to the USB host port  on VISION.
- Select **Apps** either from the **Home** screen or **File** menu.
- Select **Install/Update** from the **Settings** menu.
- Select the application to install from the list and OK.

To uninstall an App

- Select **Apps** either from the **Home** screen or **File** menu.
- Select the application you want to remove.
- Select **Remove** from the **Settings** menu.
- Enter **DHG2020** as the password (the password is case sensitive, so make sure DHG is in capitals) and OK.

Password = DHG2020

Technical specifications

- 4 *Smart Q* sensor inputs
- VGA Out
- USB Host (1.1)
- USB Client (1.1) for connection to host PC
- 4.3" LCD Touch Screen (approx. 55 mm high x 95 mm wide - 115 mm diagonal).
- Rechargeable battery pack: Lithium-ion 3.7 V, 4400 mAh
- Mains power supply: 5 V DC 1.0 A (Positive centre, negative outer pin)
- Maximum logging speed (per channel): 20 μ s between samples (50 kHz)
- Digital timing from A to B: 4 μ s resolution
- 12 bit analogue sampling resolution
- Firmware upgradeable
- External dimensions: Approx. 53 mm high x 160 mm wide x 115 mm deep
- VISION (logger only) weight: approx. 410 g

Care & maintenance

- VISION is designed to be operated on a desk or hand held.
- Wipe clean with a lint-free soft dry cloth e.g. a microfiber cloth that is specifically designed to clean glass.
- Do **not** use any liquid or cleaning agent.
- A standard SONY PSP LCD clear Screen Protector (not PSP Go) can be utilised to protect the screen from surface scratches.

- VISION is **not** water or shower proof. If it is to be used in an environment where it could get wet, precautions must be taken to ensure that liquid cannot enter the unit.

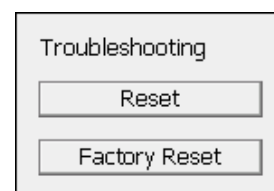
Note: If placed in a waterproof housing e.g. a plastic box, ensure that condensation does not make contact with VISION.

- VISION is suitable for use in temperature ranges of 5 to 50°C and 0 to 95% RH (non-condensing).
- If VISION has been left in the cold, let it warm to near room temperature before use.
- Do not subject to extreme heat or cold. Do not expose to direct sunlight for extended periods of time. Do not expose to temperatures greater than 60°C, e.g. near a heater or inside a car in hot weather.

Troubleshooting

Should VISION fail to respond or before reporting a fault please attempt a reset, which is available at two levels.

- **Reset** – to restart VISION – saved data will be safe, but any unsaved data will be lost.
 - **Factory Reset** – this will reset VISION to its factory settings. All user memory will be cleared (user created data and setup files will be erased).
1. Select **System Settings** from the **Settings** menu.
 2. From the **Troubleshooting** section select either Reset or Factory Reset and say Yes to the warning message.
 3. VISION will automatically reset and the start up screen will appear.



There are no serviceable parts inside VISION. If you are experiencing a problem, please contact Data Harvest.

Please provide details of:

- The type of unit being used i.e. VISION.
- A description of the problem being encountered.
- The VISION's software and firmware version numbers (available from **Help ► About**).
- If being used with a PC, the computer platform with which it is being used and the EasySense PC software's version number.

If the problem is encountered when in use with a PC, please telephone from a location where you can operate VISION and the PC.

Note: Dismantling VISION will invalidate the warranty and may render the unit un-repairable.

Battery replacement

When replacing the battery, only use a replacement battery pack supplied by Data Harvest (Product No. 2036). *(Full instructions on how to replace the battery will be supplied with the replacement battery pack).*

Updating EASYSense VISION's firmware

Occasionally Data Harvest may release updated firmware which will contain improvements or new features. Firmware updates and instructions on how to upgrade will be made available from the Resources tab at www.data-harvest.co.uk/vision.

To determine the version of firmware and software and release your VISION is currently using select **About** from the **Help** menu.

Warning: User data and setup files will be erased as part of the update process. Please ensure that you have transferred all user files stored on VISION to a memory stick or PC before updating.

Warranty

EASYSense VISION is warranted to be free from defects in materials and workmanship for a period of 12 months from the date of purchase provided it has been used in accordance with any instructions, under normal laboratory conditions. This warranty does not apply if the EASYSense VISION has been damaged by accident or misuse.

In the event of a fault developing within the 12-month warranty period, EASYSense VISION must be returned to Data Harvest for repair or replacement. Return postage costs are the responsibility of the customer.

Note: EASYSense VISION is designed for **educational** use and is not intended for use in industrial, medical or commercial applications.



WEEE (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.