

EASYSENSE V-Log User Guide



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What's supplied?



Getting to know your V-Log data logger

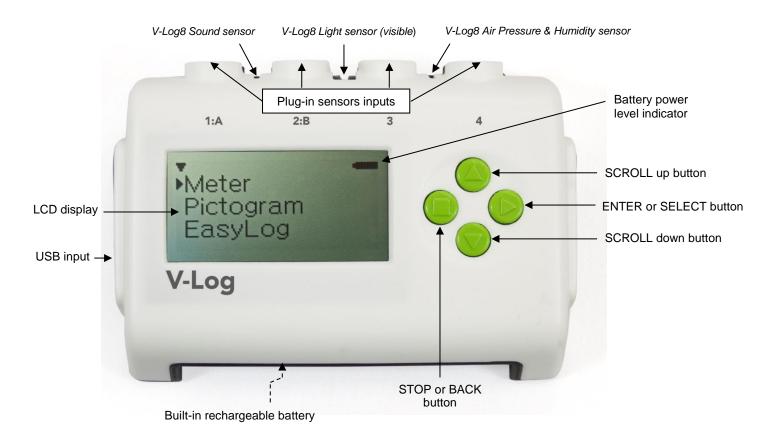
Charge EASYSENSE V-Log fully before first use

Connect V-Log directly to a USB port on your computer*, or a powered USB hub, or a USB mains charger that outputs 5 V at 1 A or more, using the USB cable supplied. A full charge can take up to 8 hours.

A battery charging symbol will be displayed on V-Log's screen while the logger is charging.

*Your computer must be turned on and not in sleep or standby mode; otherwise the battery may drain instead of charge.

The V-Log data logger



V-Log buttons

- The ENTER button is used to start data collection, progress to the next screen, confirm a choice or take a sample.
- The square STOP button is used to stop data being recorded or return to the previous screen.
- The SCROLL buttons are used to scroll through menus on the LCD screen or to browse measurements during data logging.

Sensors

The plug-in sensors

Plug the sensors into the sockets on the top of the V-Log logger.

When a sensor is connected it will automatically be detected and displayed on the LCD display.

V-Log 8's built-in sensors

The V-Log 8 has 4 built-in sensors – Sound, Light, Humidity and Air Pressure.

	Built-in Sensor	Ranges
•	Sound	40 to 110 dBA ±2000 mV
**	Light level	Indoor (Slow) 1 k lx (0 to 1,000 lx) Indoor (Fast) 1 k lx (0 to 1,000 lx) In/Out 10 k lx (0 to 10,000 lx) Outdoor 100 k lx (0 to 100,000 lx)
	Humidity	0 to 100% RH
	Air Pressure	85 to 110 kPa 850 to 1100 mbar 23 to 33 inHg -200 to 1,000 m -500 to 5,000 m -500 to 10,000 m

Changing a sensors range and turning a sensor on or off

- Use & V to scroll the list until the pointer is pointing at Meter and select .
- Select again.
- Use ▲ & ▼ to scroll until the pointer is pointing at the appropriate sensor and select ►.
- Use & V to scroll until the pointer is pointing at the appropriate option i.e. Set range or Turn Off, and select .

Note: If a sensor only has one range then only Turn Off will be available.

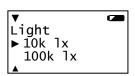
Set range

The pointer will indicate the current range selected.

Use & vto scroll until the pointer is pointing at the required range.

Select to choose that range.

Select to exit the sensor option window, then again to return to the Meters window.

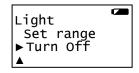


Turning a sensor ON or OFF the display

The built-in sensors can be switched On or Off the display.

With the pointer pointing at Turn Off / On press to alter from Off to On or vice versa.

Select to return to the Meters window.



Ways to capture data with V-Log

There are different ways that V-Log can be used to collect data.

- 1. **As a stand-alone instrument:** V-Log is used to display, collect and store data while disconnected from the computer i.e.
 - a. Display readings on its LCD screen (but not stored) using Meter mode.
 - b. Display, collect and store data using V-Log's logging menu options e.g. **Pictogram**, **EasyLog**, **Snapshot**, **Timing** and **Counting**.

The data collected is stored in V-Log's memory to either be reviewed on V-Log's screen or retrieved to the EasySense software on a computer.

Up to 255 sets of data can be stored in V-Log's memory.

2. **As an interface connected to a computer:** V-Log is entirely driven by the software on the host computer. The data from the sensors is transmitted immediately to the computer and displayed on the computers screen using the options in the EasySense software. This method of collection is useful for many classroom-based experiments.

Using V-Log standalone (without a computer)

To switch V-Log on, press any button on the panel.

Notes:

- If V-Log is operating on battery power and is idle, it will automatically switch itself off after 2 minutes. Press any button to resume operation.
- V-Log does not auto switch off while powered from a USB port.

V-Log has a menu of different options available, which are displayed on the built-in LCD screen. There are six working modes, which can be used to collect data without being connected to the computer. These are **Meter**, **Pictogram**, **Easy Log**, **Snapshot**, **Timing** and **Counting** modes.

A menu option is selected by using \bigvee & \bigwedge to move the pointer up or down until it is pointing at the required option then press \triangleright to select.

Meter
Pictogram
EasyLog
Snapshot
Timing
Counting
Review
System

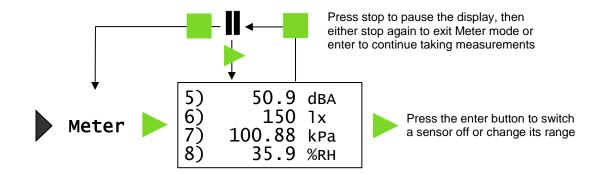
If using plug-in sensors they should be connected before entering a logging mode (except for Meters when they will automatically be detected and then display readings).

Meter

In Meter mode V-Log will display measurements from the sensors (plug-in or built-in sensors) on the LCD screen but will not store any data.

While in Meter mode is used to check or change the sensors range or to switch a sensor off.

is used to temporarily halt updates to the sensors readings. Two lines ■ (bottom right) indicate that the display is paused.



The size of the text in Meter mode can be altered. From the **System** menu select **Meter Text** then either **Single Height** or **Double Height**.

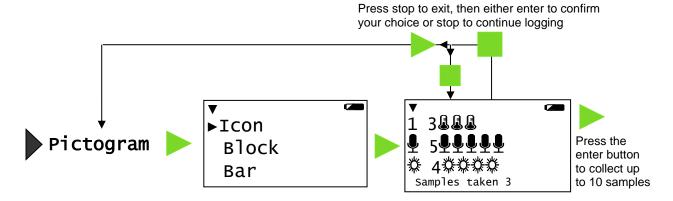
- With double height selected data from up to 4 sensors is visible on the screen (scroll to see more).
- If single height is selected then the data from up to 8 sensors is visible.

1) 23.9°C 2) 20.5°C 3) 24.1°C 4) 15.6°C 5) 50.9 dBA 6) 150 lx 7) 100.88 kPa 8) 35.9 %RH

Pictogram

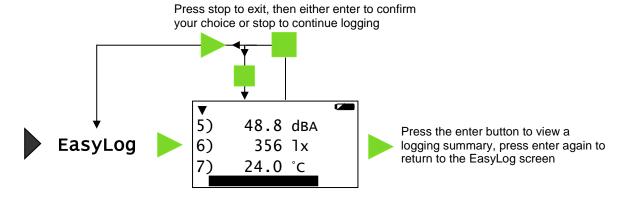
Pictogram uses an image, block or bar to represent the data. Each segment represents a 10th of a total range (or span) of the sensor and displays the number proportional to the reading.

Sensor readings are captured every time is pressed, rather than at regular time intervals. Up to 10 samples can be stored in each set of data.



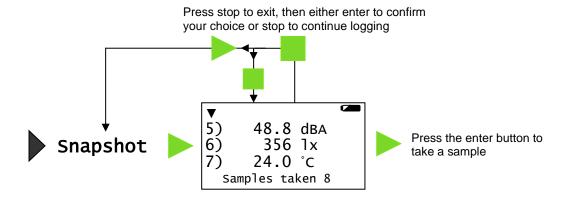
EasyLog

Select EasyLog to begin logging continuously until stopped. The bottom line of the LCD display is a visual indicator of logging as it takes place, each time the line completes the logged samples are compressed and the sample rate alters.



Snapshot

Snapshot mode enables you to capture sensor readings every time > is pressed, rather than at regular time intervals.



Timing

Timing is used to set up and store simple time and speed measurements using digital switch type sensors. Connect either one sensor to Input 1:A or two to Input 1:A and 2:B before selecting Timing. The options available will depend on whether one or two sensors are connected.

For V-Log to be able to calculate speed or acceleration you will need to enter a measurement of the apparatus used in the experiment e.g.

- For Speed A to B this is the distance between the sensor connected to input A and the sensor connected to input B (0.10 m to 6.00 m in steps of 0.10 m).
- For Speed at A, using a single interrupt card, select the width of the card that will pass through the Light gate (30 mm to 120 mm).

Upon completion of a timing event the measurement will be displayed on the LCD display.

Speed menu

Timing options are:

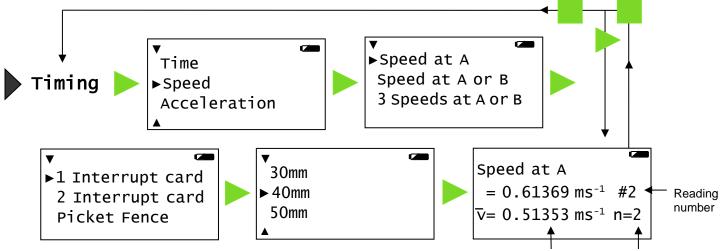
Time menu
Time at A
Time at A or B
Time from A to B
Period at A
Stopwatch A to A

Speed at A using: • Double Interrupt card • Picket fence • Spoked pulley Speed at A or B using: • Single Interrupt card 3 Speeds at A or B using: • Single Interrupt card Speed from A to B using • Distance A to B Speed at A then B using: • Single Interrupt card	Speca mena
 Single Interrupt card Speeds at A or B using: Single Interrupt card Speed from A to B using Distance A to B Speed at A then B using: 	Double Interrupt cardPicket fence
 Single Interrupt card Speed from A to B using Distance A to B Speed at A then B using: 	,
• Distance A to B Speed at A then B using:	,
•	

Acceleration menu Acceleration at A using: • Double Interrupt card Picket fence

- Acceleration A to B using:
- Single Interrupt card

Spoked pulley

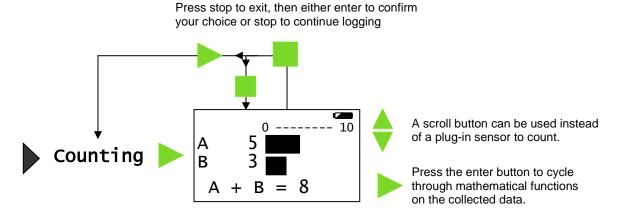


Average measurement over this number of readings

Counting

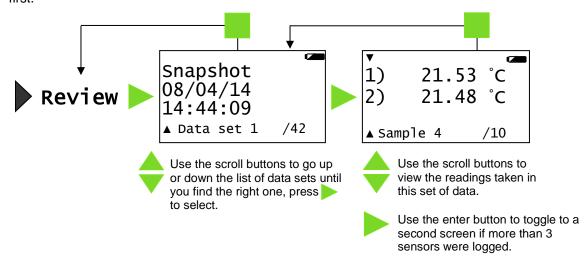
Counting is used to count events by using digital switch type sensors connected to either Input A, or both A and B or the buttons on V-Log.

Press \triangleright to cycle through simple mathematical functions on the A and B data (A + B, A – B, B – A, Difference).

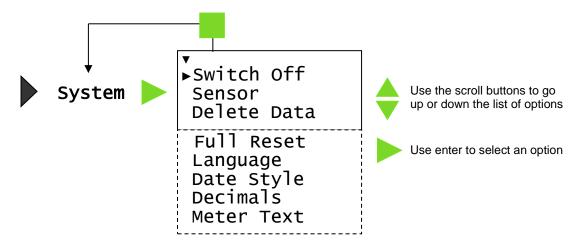


Review

You can use Review to view the readings stored in a data set. The most recently stored data is shown first.



System



Switch Off

Used to send V-Log directly into low power (sleep mode), even when connected to a USB port.

Note: V-Log automatically goes to sleep after a period of inactivity.

Sensor

Use to change the range of a sensor or switch the built-in sensors On or Off the display. This option is also available by pressing whilst in Meter mode.

Delete Data

Select whether to 'Delete all' data sets or to choose individual sets (use the scroll buttons to find a data set and then to delete).

Full Reset

Use to reset V-Log back to its factory default conditions. Please note this will erase all data. Any WiFi settings will not be altered (see page 14 for resetting WiFi).

Language

Use to alter the selected language choice.

Date Style

Use to alter the format of the date display i.e. from a European to USA date format.

Note: The actual time and date is set automatically when the logger is connected to the EasySense software.

Decimals

Use to switch decimals off and on, or to change the decimal format from a full stop to a comma.

Meter Text

Use to choose whether the text height should be double or single height whilst in Meter mode.

Using V-Log connected via USB to Windows PC for the first time

Step 1:

Install the EasySense software, if it is not already on your computer. For details of how to install and operate this program, please refer to the instructions provided with the EasySense software.

V-Log requires **version 3.5** or above of the EasySense PC Windows software. (The version number can be verified in About from the Help menu).

Step 2:

Connect V-Log to the computer's USB port using the USB cable supplied. Windows will automatically detect a new device and install the drivers.

Step 3:

 Check that the LCD display on V-Log is displaying the main menu (EasyLog, Snapshot, Timing, Counting, Review, and System).

Note: In most circumstances V-log will **not** communicate with the PC if it is taking samples. If the LCD screen shows samples being taken, press the stop ■ button to finish recording.

Open the EasySense software program.



Step 4:

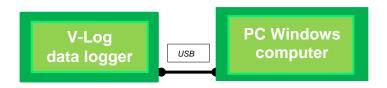
The first time the EasySense program is opened a 'Select Program Level' window will automatically open. Select a suitable user's level.

- 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).

Step 5:

An Interface option window will open.

1) If connecting an interface direct to a PC Windows computer select:



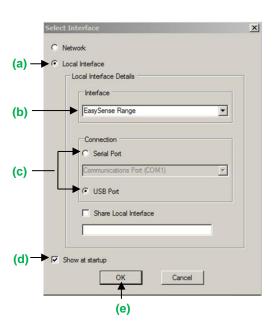
- (a) Local Interface
- (b) Interface: EasySense Range
- (c) Select USB port as the connection.
- (d) If these settings will stay the same leave the 'Show at startup' box unticked.

If the box is ticked (enabled) the 'Select Interface' window will automatically open when you next start EasySense, so you can check the selected method of connection is correct

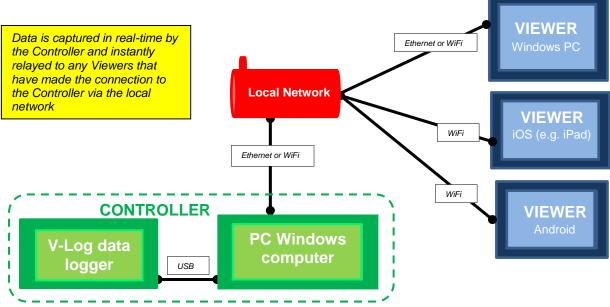
(e) Click on OK. The program will save the selection.

The text at the top right of the EasySense window will indicate that a Local Interface connection has been established.





2) If simultaneously sharing data with other network users.



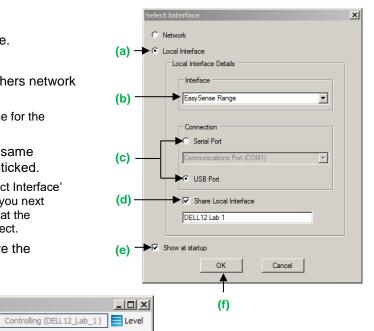
On the Windows computer acting as the Controller (interface connected to the computer) select

- (a) Local Interface
- (b) EasySense Range as the interface.
- (c) USB Port as the connection.
- (d) Share Local Interface to allow others network user's to connect as Viewers.

Note: Type in a more appropriate name for the controller computer if preferred.

- (e) If the settings will always stay the same leave the 'Show at startup' box unticked.
 - If the box is ticked (enabled) the 'Select Interface' window will automatically open when you next start EasySense, so you can check that the selected method of connection is correct.
- (f) Click on OK. The program will save the current selection.

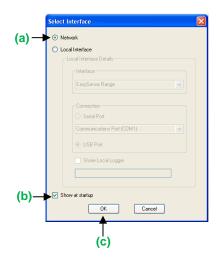
The text top right of the EasySense window will indicate that connection as the Controlling system has been established.



On a **Windows computer** that will be acting as a **Viewer** select

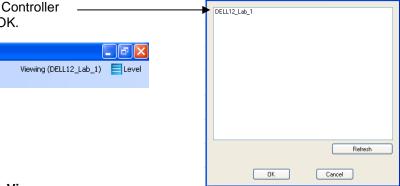
- (a) Network
- (b) If the 'Show at startup' box is ticked (enabled) this window will automatically open when you next start EasySense, so you can check the selected method of connection is correct
- (c) Click on OK. The program will save the current selection.
- (d) Click on the Not connected text in the top right of the EasySense window.





Select the computer acting as the Controller from the list of available devices, OK.

The text on the top right of the EasySense window will indicate that connection as a Viewer has been established.



Available Device

On an iPad that will be acting as a Viewer:

- (a) From Settings set Wi-Fi to the same network that the 'Controller' PC is connected to.
- (b) Open the EasySense iPad software, select the 'Not Connected' text at the bottom right of the screen and select the 'name' of the computer acting as the Controller from the list of devices.
- (c) The text will change to indicate that connection as a Viewer is established

On an Android that will be acting as a Viewer:

- (a) From Settings set WiFi to the same network that the 'Controller' PC is connected to.
- (b) Open the EasySense Android software, select the Connect icon (top right of screen) and select the 'name' of the computer acting as the Controller from the list of devices.
- (c) The text bottom right of screen will change to indicate that connection as a Viewer has been established

Step 6:

The Home screen will open. Select one of the experiment modes e.g. EasyLog, Pictogram, Meters, Snapshot, Counting or Timing.

V-Log in WiFi mode



If V-Log has a WiFi board fitted it can be used in WiFi mode. It is recommended that V-Log is connected to USB power when used in this mode as the power requirements are high, and will drain the battery quickly.

Connecting V-Log WiFi to a network

V-Log WiFi can operate in two different modes:

1. Connected to its own local network (Access Point)

V-Log WiFi is set to Access Point by default. In this mode the iPad connects to a network created by V-Log. This connection is typically used when not in range or able to access the school's network (perhaps on a field trip). While connected to V-Log in Access Point mode, the iPad will NOT be connected to any other school network resources, and therefore unable to access other items such as web pages, email, cloud storage, etc.

It is possible to have multiple V-Log WiFi loggers each creating their own separate network.

2. Connecting to an existing school's network (Infrastructure)

In this mode V-Log WiFi and the iPad connect to the same existing network. It has the advantage of allowing the iPad to remain connected to other resources delivered by the school network, such as web access, email, printing and cloud storage facilities, etc.

Note:

V-Log WiFi loggers produced prior to April 2016 use 802.11b, ensure the WiFi network is <u>b</u> mode compatible.

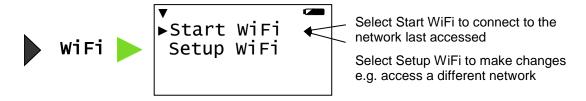


If a **b** mode module is fitted the logger's WiFi label will just show WiFi and when you reset the logger it will flash 'with WiFi'

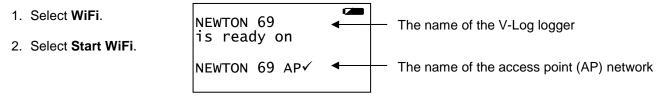
 V-Log WiFi loggers produced after April 2016 use 802.11n, ensure the WiFi network is n_mode compatible.



If an **n** mode module is fitted the logger's WiFi label will show WiFin and when you reset the logger it will flash up 'with WiFi-n'



V-Log Access Point connection using the default settings



- 3. Connect the iPad or Android to the V-Log's Access Point network:
 - Select Settings.
 - Select the Wi-Fi link. Ensure Wi-Fi is ON.
 - Choose the V-Log AP network from the list of available networks. Wait for confirmation that the network has been joined e.g. a tick or it shows as Connected.
- 4. Start the **EasySense** App.
- 5. On an iPad tap on the status button 'Not Connected' (bottom right of the screen), on an Android tap on the connection icon (top right of the screen). Select the V-Log's name from the list.
- 6. The status will change to show that it is 'Controlling V-Log xx or Viewing V-Log xx'.

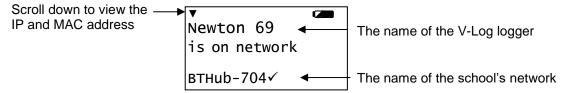
To exit V-Log from WiFi mode select and then to confirm.

Connecting V-Log to a school's network (Infrastructure)

- 1. Select WiFi.
- 2. Select Setup WiFi.
- 3. Select Scan for Networks.
- 4. Once the scan has finished select the school's network from the list that appears and .

Scan for Networks
Create a Network
Advanced Setup

5. If required enter the Key (the school network's password), scroll to ✓ (bottom row right) then V-Log will show as connected to the school's network.



- 6. Connect the iPad to the school's network. Start the EasySense App.
- 7. On an iPad tap on the status button 'Not Connected' (bottom right of the screen), on an Android tap on the connection icon (top right of the screen). Select the V-Log's name from the list.

To exit V-Log from WiFi mode select and then to confirm.

When you next V-Log in WiFi mode it will be set to connect to the school's network so just select **WiFi** then **Start WiFi**.

It is possible to connect a number of V-Log WiFi loggers to the school network simultaneously, each with its own unique name. From the iPad select the required V-Log by choosing it from the list in the EasySense iPad software.

To connect back to an Access Point network

- Select WiFi, then Setup WiFi.
- Select Create a Network.
- To create/connect the Access Point network without making any changes select Start a Network.

Start a Network
Network Name
Set Password

Open the EasySense App. On an iPad tap on the status button 'Not Connected' (bottom right of the screen), on an Android tap on the connection icon (top right of the screen). Select the V-Log's name from the list.

To change the name of the Access Point network

- Select WiFi, Setup WiFi.
- Select Create a Network.
- Select Network Name.
- Use to delete any characters from the existing name and enter the characters for the new name. Scroll to ✓ (bottom row right) then enter.

Start a Network
Network Name
Set Password

To encrypt the Access Point network

- Select WiFi, Setup WiFi.
- Select Create a Network.
- Select Set Password.
- Enter a suitable password. Scroll to ✓ (bottom row right) then enter.

To make V-Log forget a known WiFi network

- Select WiFi, Setup WiFi.
- Select Advanced Setup and enter DHG2020 as the password.
- Select Forget a Network.
- Select the network from the list, enter and confirm your choice.

►Forget a Network Logger Name Reset WiFi

Start a Network

Network Name ▶Set Password

To change V-Log's name

- Select WiFi, Setup WiFi.
- Select Advanced Setup and enter DHG2020 as the password.
- Select Logger Name.
- Use to delete any characters from the existing name and enter the characters for the new name. Scroll to ✓ (bottom row right) then enter.

To reset WiFi to its default settings

- Select WiFi, Setup WiFi.
- Select Advanced Setup and enter DHG2020 as the password.
- Select **Reset WiFi**, enter and confirm your choice.

Forget a Network ▶Logger Name Reset WiFi

Forget a Network Logger Name ▶Reset WiFi

Using the on-screen keypad

Enter Password:
DHG2020
abcdefghijklmnopqrstu
vwxyzABCDEFGHIJKLMNOP
QRSTUVWXYZ0123456789
+-^%\$@!:\/?<=>.[] < ×

- Use & buttons to go forward or back through the alphabet / numbers / symbols on the keyboard.
- Use to select / accept the symbol under the dark cursor.
- Use to delete a character.
- Move the cursor to the 'tick' ✓ symbol and press
 to accept the entered password.
- Move the cursor to the 'cross' × symbol and press > to leave this screen with any characters entered to be rejected and ignored.

Connecting a group of iPads/Androids to a V-Log

It is possible for a group of devices to connect to one V-Log WiFi simultaneously to allow students to work collaboratively on a single experiment.

Note: Performance maybe impacted if lots of devices are connected to the same logger.

When connecting to V-Log, the first iPad/Android/Windows PC to connect is given 'control' of the logger and will therefore be able to setup, start and stop the experiment. All subsequent devices that connect to the logger are given 'Viewer' status, they will see the set up changes made by the controller, and as data is captured it will appear in real time.

When recording stops, all iPads/Androids automatically save the captured data into their internal memory. One iPad/Android cannot change or delete the data held on another iPad/Android.

To leave a group, simply tap on the connection status button to disconnect (iPad users this is bottom right of the screen, Android users top right of the screen).

When the controlling iPad/Android disconnects this will disconnect all the others. A new controlling iPad/Android is chosen by ensuring that it is the first to re-connect.

WiFi Specifications

V-Log WiFi is a wireless enabled data logger. It is classed as a mobile device and has a usable transmission range of 0.2 m to 10 m in open air.

V-Log WiFi loggers produced prior to April 2016 are compatible with IEEE 802.11b.
 V-Log WiFi loggers produced after April 2016 are compatible with IEEE 802.11n.



- Supports WPA-Personal (TKIP) and WPA2-Personal (AES) Security (802.11i)*
- Frequency Range: 2412-2462 MHz
- Channels supported: 1 to 11

*V-Log WiFi will automatically detect and use the required security protocol.

Hereby, Data Harvest Group Ltd., declares that V-Log WiFi is in compliance with the essential requirements and other relevant provisions of Directive 2014/53/EU.

A full copy of the Declaration of Conformity can be obtained by writing to the following address: Data Harvest Group Ltd., 1 Eden Court, Leighton Buzzard, Bedfordshire, LU7 4FY, UK.

V-Log in Bluetooth mode



If V-Log has a Bluetooth board fitted it can be used in Bluetooth mode. If using V-Log battery powered in this mode, fully charge the battery before use e.g. leave to charge overnight for use in lessons the next day. When the battery is in good condition and fully charged it will power a Bluetooth connected V-Log for about 8 hours.

Note: V-Log stays awake while Bluetooth is turned on. Disconnect after use as the battery will continue to drain if V-Log is stored with Bluetooth still selected.

Ensure the firmware of V-Log is at least V1.9 or higher.

Do **NOT** pair the devices (when paired V-Log will not be made available to the EasySense software).

When connecting to a Windows computer

V3.10 or later of the EasySense Windows software **must** be installed on the computer. An operating system of Windows 7 or above is required.

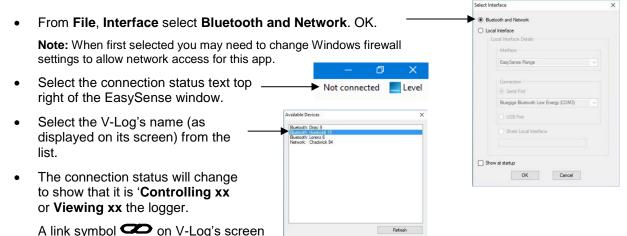
 Connect a 2070 or 2071 Bluetooth Smart USB adaptor to the USB port on the Windows computer. The adaptor is a plug and play device whose drivers should install automatically*.



- On V-Log scroll until the cursor points to Bluetooth then to select.
 The screen will show the name of the logger.
- Open the EasySense software on the PC

will indicate connection to a computer.





When you've finished select the connection status icon in the EasySense software to disconnect then press then to confirm on V-Log.

OK

Cancel

* If auto install fails, download and unzip the drivers for the Bluetooth USB adaptor (Product 2070 or 2071) from the Data Harvest website. Open Device Manager, right click on the entry for the dongle (typically listed under Other devices) and select Update drivers. Select to 'Browse my computer' (install manually), locate and select the BLED112 directory. When installed the adaptor will be listed under the Ports (COM & LPT) section.

When connecting to a iPad or Android device

An iPad will need to support Bluetooth Low Energy (BLE) also known as Smart or 4 (iPad 3 or later or any iPad Mini). **V1.15** or later of the EasySense iPad software **must** be installed.

An Android will need to support Bluetooth Low Energy (BLE) / Smart – OS 4.4 or later. **V1.09** or later of the EasySense Android software **must** be installed.

Do NOT pair the devices (when paired V-Log will not be made available to the EasySense software).

- Check in **Settings** on the device that Bluetooth is On.
- Select Bluetooth on V-Log.
- Start the EasySense software.
- On an iPad tap on the 'Not Connected' text bottom right of the screen.
 On the Android select the connect icon , top right of the screen
- Select the V-Log's name from the list.

The status will change to show that it is 'Controlling xx or Viewing xx'.

When you've finished select the connection status icon in the EasySense software to disconnect, then press then to confirm on V-Log.

Bluetooth specifications

Bluetooth 4.2 low energy radio, single mode compliant

Transmit (TX) power: 0 dBm

Receiver (RX) sensitivity: - 90 dBm

Usable transmission range: up to 10 m in open air Frequency Range: 2.402 to 2.480 GHz operation

Hard Reset

If V-Log fails to respond to the computer or a button press, carry out a hard reset.



- 1. If necessary attach V-Log to USB power.

If the hard reset has been done correctly, the LCD will display EASYSENSE V-Log and the version number of its operating system before returning to the main menu. If V-Log still fails to respond, please contact Data Harvest.

Note: A Hard Reset does **not** erase any stored data sets but if a recording is interrupted by a reset, then the data being captured will not be stored.

Limited warranty

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

Note: Data Harvest products are designed for **educational** use and are 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.

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.

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