DATA HARVEST

EASYSENSE 3Link user manual

CONTENTS

Document No: DO229 (Issue 3)

What is supplied in the case?

The **EASY**SENSE 3Link interface

The **EASY**SENSE software

Three *Smart Q* sensor leads (2 long and 1 short)

A standard A to standard B USB cable

What else is required?

***Smart Q* Sensors** for capturing data.

Please visit our website (www.data-harvest.co.uk) or contact your supplier for an up-to-date list of *Smart Q* Sensors.

Using EASYSENSE 3Link for the first time

EASYSENSE 3Link is used connected to the USB port on a computer. The data from any *Smart Q* Sensor connected to 3Link will be transmitted immediately to the computer and displayed on the computer's screen using the applications in the EasySense software.

Note: Do **not** connect 3Link to the USB port until after the EasySense software has been installed.

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 software.

Make sure 3Link is **not** connected to the USB port during this installation.

3Link requires **version 2.8** or above of the EasySense software. (The version number can be verified in About from the Help menu).

Step 2:
Install the 3Link USB drivers.

- Connect the 'square' USB plug of the USB cable to the USB input on the back of 3Link.
- Connect the 'flat'' USB plug to a USB port on your computer.
- Windows will automatically detect a new device and install the drivers.

Step 3:
Connect the *Smart Q* Sensors being used to the sensor inputs on 3Link.

Note: If digital sensors are to be used for Timing operations they must be connected to the inputs labelled 1:A and 2:B.

Step 4:
Open the EasySense program. 

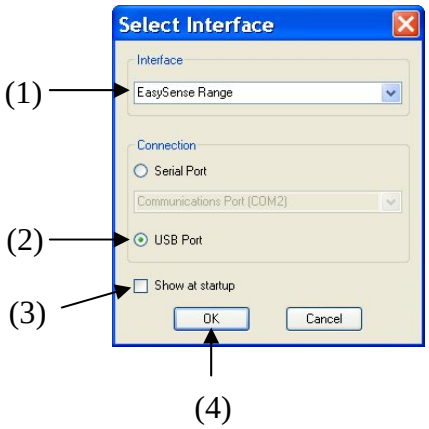
The first time EasySense opens a 'Select Program Level' window will automatically open. Select a suitable user's level.

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

Note: The program level can be altered at anytime using the Level icon once a logging option has been opened. 

Step 5:
An Interface option window will open.

1. Select the Interface as **EasySense Range**.
2. Select the method of connection as **USB port**.
3. If you use different interfaces or methods of connection, tick the 'Show at startup' option so you can check your current selection and make any adjustments as necessary each time EasySense opens.
4. Click on OK. The program will save your selection so it will be automatically configured when next used.



When a connection is established the Home screen will open. Select one of the experiment modes i.e. EasyLog, Graph, Meters, Scope, SnapShot or Timing.

Using 3Link with the computer after the initial setup

- Connect 3Link to the computer using the USB cable.
- Connect the *Smart Q* sensors being used to the sensor inputs.
- Open the EasySense program.
- Select one of the recording modes e.g. EasyLog from the Home screen. The sensors connected will automatically be recognised and calibrated.

Note: It is best to connect 3Link to the USB port on the computer (so it is powered) before connecting a sensor (especially when connecting high current sensors such as Motion or CO_2).

The EasySense software overview

Home is the main navigation screen; it has the icons for all of 3Link's logging options. The experiment options and the complexity of toolbars and functions are altered by the user level selected.

Note: Setup Remote and Retrieve Remote will not be available as 3Link will only operate while connected to the computer.

EasyLog

EasyLog will open pre-set to record sensor values **continuously** as a line graph until stopped.

Click on the **Start**/Stop icon  to begin 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 Start/**Stop** icon. 

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 tool bar to open other section displays i.e. Numeric, Gauge, Colour Change or Bar. To alter the sensor displayed in a section, **right** click in the individual section window and select the sensor from the list.

Click on the Start/**Stop** icon to stop recording.

Pictogram (Level 1 only)

The value from the sensors can be displayed as pictures or an abstract colour block or bar chart. Each picture represents a 10^{th} of the range (or span) of the sensor and is also displayed as a number from zero to ten.

The program will open with live data from the sensors displayed as pictures on a horizontal chart. The graph type can be changed to an abstract colour blocks, a bar chart or oriented vertically.

The sensor readings are captured every time the Store icon is selected. Click on the Start/**Stop** icon to stop recording.

Snapshot

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

Click on the **Start**/Stop icon to begin recording. Click in the graph area to collect a sample for each active sensor. Click on the Start/**Stop** icon to stop data being recorded.

Graph (Level 2 and 3 only)

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 fastest interval (with one sensor connected) is 20 μs. (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**/Stop 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/Stop 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 Start/**Stop** icon.

Scope (Level 3 only)

Scope has a simple oscilloscope type display.

Select the Timebase (from panel on the right). The fastest interval (with one sensor connected) is 20 μs.

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

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 connected to connected to inputs 1:A or 1:A & 2:B.

A wizard will open with the recording options available (these will depend on the user level selected). When the selection has been made, click on Finish.

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

Click on the Start/**Stop** icon to stop data being recorded.

Counting **(Level 1 and 2 only)**

Use to count events by using switch-type (digital) sensors connected to input 1:A or 1:A and 2:B. The program will open pre-set to display a count as a number and horizontal bar graph.

Click on the **Start**/Stop icon, each time the state of a sensor is changed to On e.g. by pressing a push switch, the number of counts will advanced by one.

Click on the Start/**Stop** icon to stop data being recorded.

Using Smart Q Sensors

The Sensor leads

There are three sensors leads supplied with 3Link, two long and one short. These are used to connect *Smart Q* Sensors to the inputs on 3Link.

Smart Q Sensors

Data Harvest manufactures a wide range of *Smart Q* sensors for use with the **EASY**SENSE range of loggers. Each *Smart Q* sensor incorporates a microprocessor that stores the calibration and auto-identification data. This dramatically simplifies set up procedures and allows for greater flexibility when logging data.

Smart Q sensors can be divided into two main types:

1. Analogue sensors, which can be connected to any of the three inputs on 3Link. They will measure physical changes such as light level, temperature and sound. The physical value is converted into an electrical signal, which is measured by 3Link and communicated to the computer.

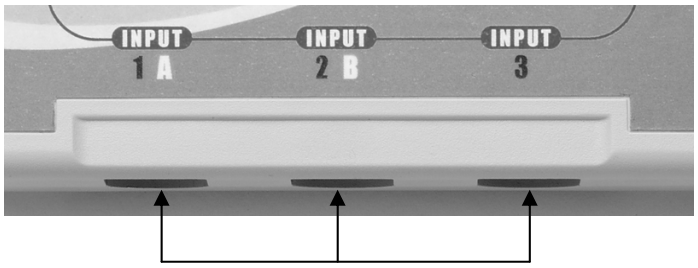
Smart Q Sound Level sensor

2. Digital switch-type Sensors, which are capable of measuring ON/OFF conditions.

   Typical digital sensors include Light gates and Timing mats. When used for timing investigations e.g. time, velocity and acceleration relationships, these Sensors must be connected to either Input 1:A or Input 1:A and 2:B.

   Note: If used for analogue recording (e.g. using Graph), digital sensors can be connected to any of the three inputs on 3Link.

Smart Q Light Gate

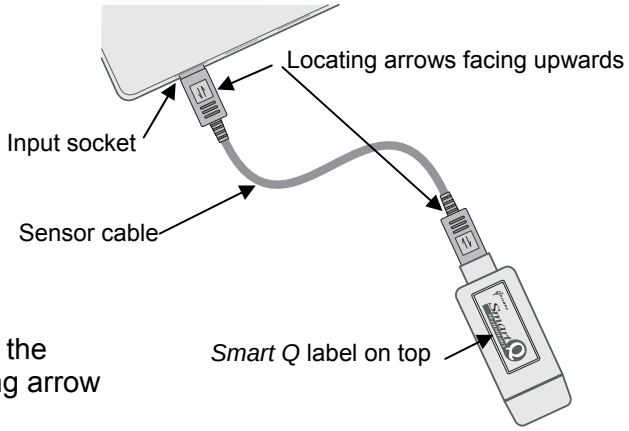


Sensor inputs 1 to 3
(No 1 and 2 are dual labelled as A and B for timing applications)

The housing for most *Smart Q* sensors is fitted with a mini DIN socket. The sensor leads supplied are used to connect a *Smart Q* sensor to 3Link. For specific instructions see the sensor's user manual.

For the majority of *Smart Q* sensors:

- Hold the sensor housing with the *Smart Q* label showing on the top.
- Push one end of the sensor cable into the shaped socket on the sensor housing with the locating arrow on the cable facing upwards.
- Connect the other end of the cable to the input socket on 3Link (with the locating arrow facing upwards).



All *Smart Q* sensors are automatically calibrated but some also have multiple ranges. If the sensor has more than one range and the currently selected range is not suitable for your investigation:

- Start the **EASY**SENSE program and select one of the logging modes from the Home screen e.g. EasyLog, Meters, Graph or SnapShot.

  The simplest way to change a sensor's range to one suitable for an experiment is:

- Select the New recording wizard icon 

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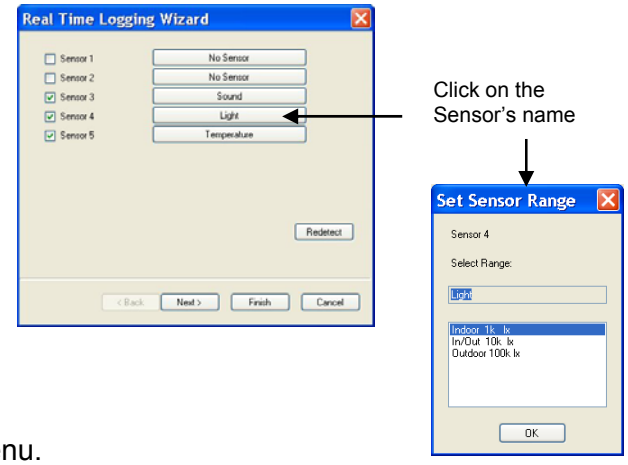
- Click on the sensor's name (it will be listed using its current range).
- A set sensor range window will open; the current range will be highlighted.

  Note: If the sensor only has one range this window won't open.

- Select the required range, then OK. Select Finish to exit the wizard.



Or

- Select **Sensor Config** from the **Settings** menu.
- Select the sensor from the list and click on the **Change Range** button.

- The current range will be highlighted. Select the required range and click on OK.
- Close Sensor Config. Click on New 

and then Finish for the change in range to be detected.

The range setting will be retained until changed by the user.

Technical information

Powering

3Link is powered by the USB port whilst connected to a computer.

Note: 3Link can only be connected directly to a computer's USB port or by using a **powered** USB hub. It will not work with an unpowered hub (3Link requires an output current of 500mA).

Specifications

USB compatible communication V1.1 – full speed
12 bit sampling resolution
Fastest sampling speed (per channel) = 20 µs (50,000 samples per second)
Digital timing from A to B: accurate to 4 µs
Sensor inputs: 3
Operating range: 0 - 40°C and 0 to 95% RH (non-condensing)

Care and maintenance

- Clean with a damp cloth, do not immerse in water or detergent.
- 3Link is suitable for use in an operating range of 0 - 40°C and 0 to 95% RH (non-condensing).
- Do not subject to extreme heat or cold or leave in a location where it will get wet. 3Link is **not** waterproof.
- There are no user serviceable parts inside 3Link.

Trouble shooting

If 3Link fails to respond to the computer, disconnect any sensors and the USB cable. Re-connect the USB cable, then the sensors, and then try again.

If the product still fails to respond, please contact the Technical Support department at Data Harvest.

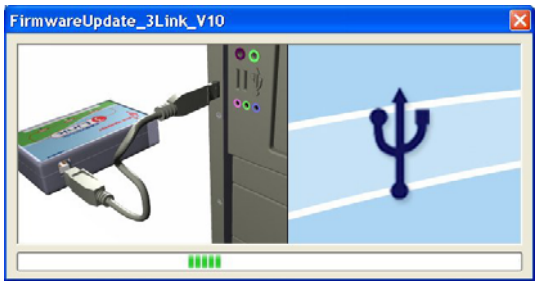
Please provide details of:

- The computer platform it is being used with
- The software and its version number
- A description of the problem being encountered

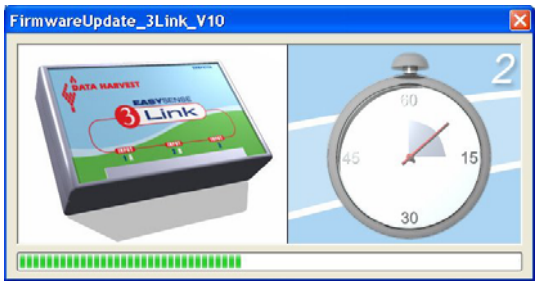
If possible, telephone from a location where you can operate 3Link with the computer.

Updating 3Links firmware

Occasionally Data Harvest may release updated firmware which will contain improvements or new features. Updates will be made available from the Data Harvest website. To update the firmware of 3Link:



Step 1. Copy the English Firmware Update for 5540 **EASY**SENSE 3Link onto the hard disc of your computer and run the .exe.



Step 2. Connect 3Link to the computer using the USB cable.
A progress bar will indicate 3Link is being programmed.

WARNING: Do not disconnect 3Link during this re-programming stage or it may be seriously damaged.

A **tick** will indicate if the process was successful.

To repeat the process, connect another 3Link and click on the update window.

A **cross** will indicate that an error occurred. Click in the update window to try again.

Step 3. Disconnect 3Link and exit the program.

Warranty

EASYSENSE 3Link 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 3Link has been damaged by accident or misuse.

In the event of a fault developing within the 12 month period, 3Link must be returned to Data Harvest for repair or replacement at no expense to the user other than postal charges.

Note: Data Harvest products are designed for **educational** use and are not intended for use in industrial, medical or commercial applications.

WEEE (**W**aste **E**lectrical and **E**lectronic **E**quipment) 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.

Data Harvest Group Ltd., 1 Eden Court, Leighton Buzzard, Bedfordshire LU7 4FY
Tel: +44 (0)1525 373666, Fax: +44 (0)1525 851638
e-mail: sales@data-harvest.co.uk, support@data-harvest.co.uk
Website: www.data-harvest.co.uk

