

ElastiSense

Portable Test Kit - Operating and Service Instructions

Thank you for buying the ElastiSense Portable Test Kit that operates together with one or two of our robust and resilient Electro-Active Polymer (EAP) based displacement sensors of the EDS series

Connecting the parts of the kit

Up to two ElastiSense EDS sensors are supported by the Portable Test Kit when connected to the Data Acquisition Unit (DAU) by the connection cable DAU-EDS (for each EDS sensor that is ordered also one connection cable CMB-EDS (standard 3m) shall be ordered). Additional to that, the DAU must be connected to the 24 VDC power supply that is delivered as a part of the kit and to a **Control Panel** (=> any Windows PC with XP SP3 or higher) over a standard USB cable that also is shipped with the kit. A Software package that is used to control the DAU, extract measured data and to present and store recorded data to a .txt file is a part of the basic kit package as well. This control software comes with the kit on a USB stick.

In figure 1. the parts of the system are shown together with the connections between them in the maximal configuration with two sensors.



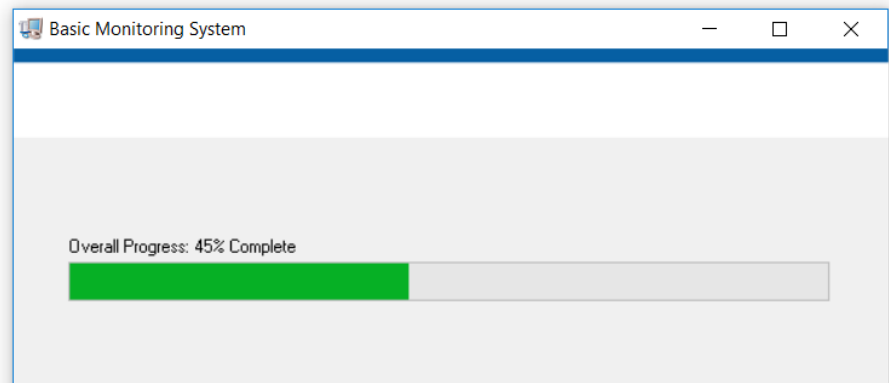
Figure 1. Components and Connections of the Portable Test Kit.

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Software Installation and Starting Measurements

When installing the Basic Monitoring System software on your control panel, please just follow the on-screen instructions after clicking at the **setup.exe** file found on the USB stick that came with the kit. When the software is being installed on the control panel, the first configuration screen will look like this:

| | | | |
|--------------|------------------|-----------------------|----------|
| bin | 13.12.2017 14:47 | Filmappe | |
| license | 13.12.2017 14:47 | Filmappe | |
| supportfiles | 13.12.2017 15:20 | Filmappe | |
| nidist.id | 13.12.2017 15:08 | ID-fil | 1 KB |
| setup | 09.05.2017 10:07 | Program | 1.393 KB |
| setup | 13.12.2017 15:08 | Konfigurationsinds... | 32 KB |



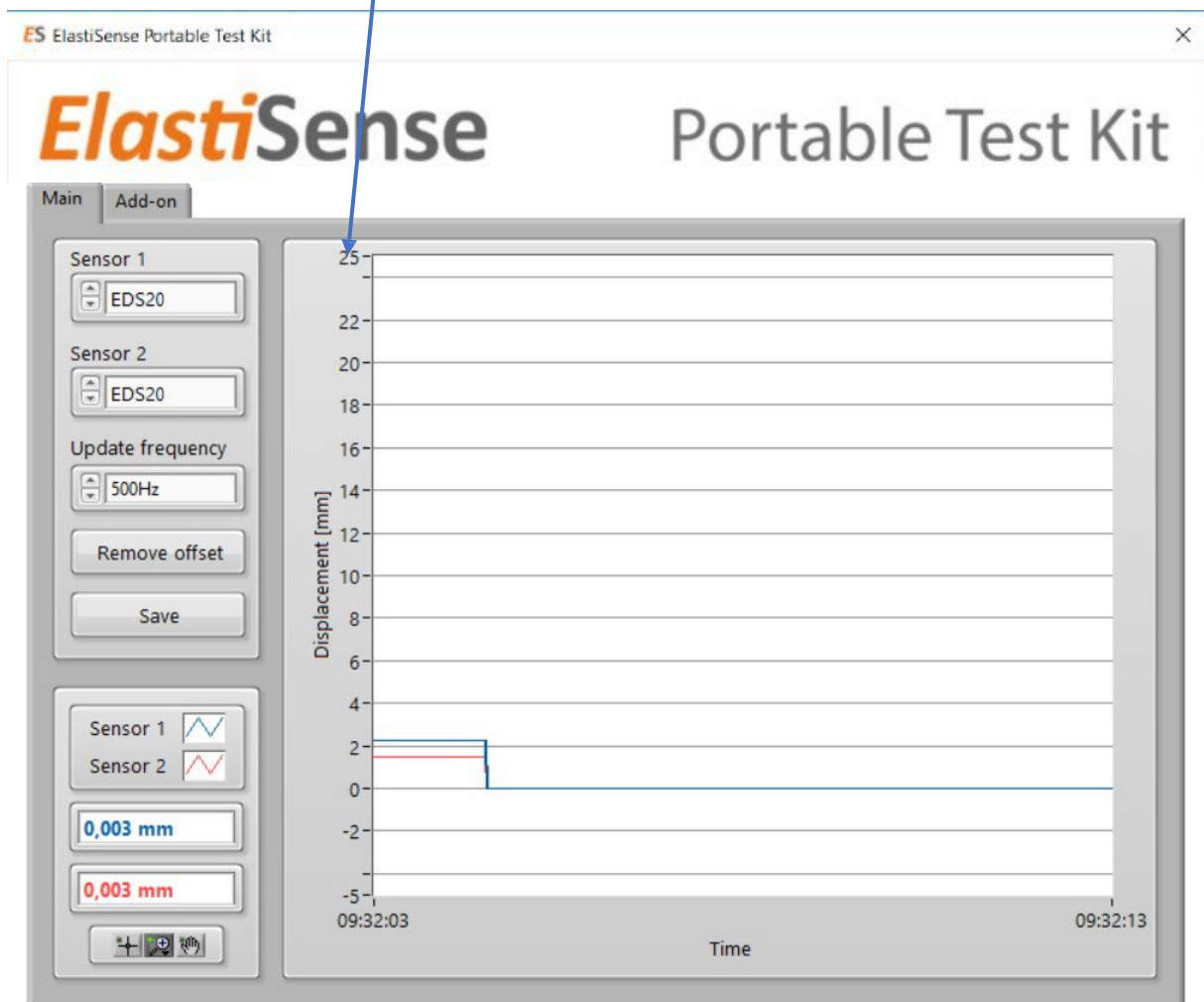
Once the installation is complete, you will have to restart the control panel and connect the parts of the Portable Test Kit as shown in figure 1 to start doing measurements.

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Start Up Screen Picture

Having installed the software and connected the Portable Test Kit USB cable to a free USB slot in the control panel, you will see a window similar to this one when starting the newly installed software:

Click here to change the size of the shown displacement scale



Robust sensors for your application

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Under the **first tab “Main”**, you will be asked to enter the **model number** of the sensor(s) applied (e.g. EDS20, indicating that you are working with displacement sensors with a measurement range of 20 mm) – this will also automatically optimise the display range showing the actual sensor measurement. In the actual example we use two EDS20 sensors (marked with “blue” and “red”).

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By pressing the “**Remove offset**” button both measured distance values are “zero’ed”, as you can see in the screenshot above at approximately 09:32.05. By clicking and marking the mm values for the Displacement axis with the cursor, you may also specify that only what is measured in a narrower band than full scale shall be displayed, which will give you a better optical resolution within the selected band. To do this, you simply replace the marked mm value through a value of your choice . Conversely you may also expand the shown value area by the same procedure, should this be needed for your optimal data presentation – in the example above, you can see, that the original top maximum of 20 mm has been changed to 25 mm in this way.

In the “Main” window you can also select the desired **update frequency** (update rate for sampling the actual displacement seen by the applied sensor(s)). It is recommended to choose the lowest necessary update frequency which provides the needed resolution in time, to delimit the size of the data file that you may be dumping logged data to as described below.

Moreover, there is a toggle-button for activation of data logging (the “**Save**” button, which text will turn into “Saving” in green as a status message, when activated), which will store the measured displacement data on the hard desk of the control panel at a location specified by the operator after activation. The measurement data from the last 10 seconds will be shown on the screen. If data logging hasn’t been activated, it will be lost after having been shown.

In the blue and read fields at the bottom to the left, the actually measured displacement data will additionally be shown real-time as values in mm.

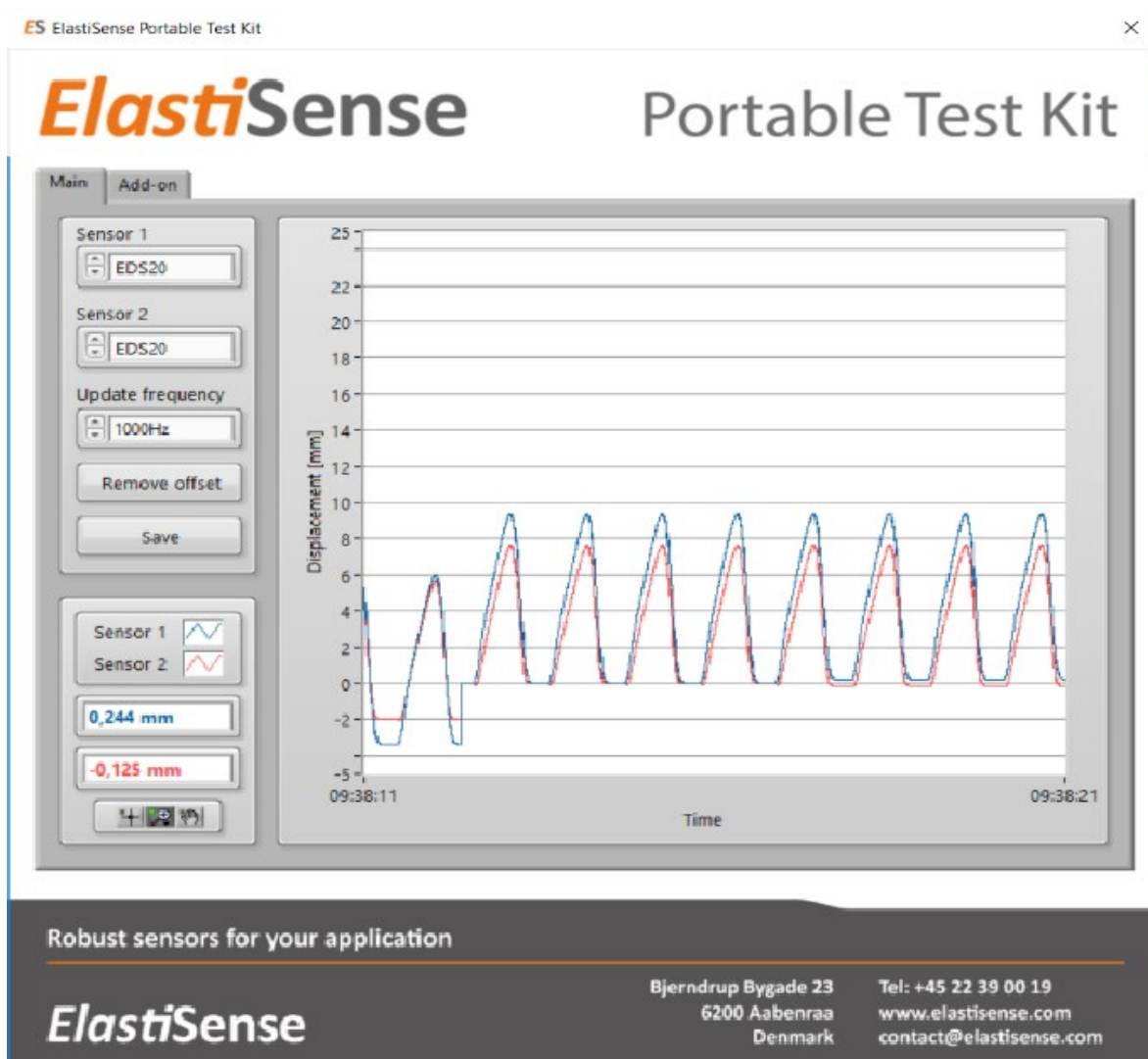
The second tab “Add on” will only be active when you have ordered an option. One “standard option” is the tool for finding peaks and valleys in a recorded signal cyclical, which will not be described in this standard manual, yet its tab “Add-on” is shown in the screenshots applied here.

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Main Tab – Example of a Standard Measurement, Cyclical Movement

After starting a measurement, you will e.g. see a screen like the one below here. It is showing the recording of the cyclic movement of two plates relative to each other, where the two displacement sensors are placed diagonally opposite to each other. Because the measured displacement is a cyclical one, the sensors must be “zero’ed” where the displacement is at its minimum prior to recording. In our case this is done approximately at 09:38:13 by pressing the “remove offset” button.

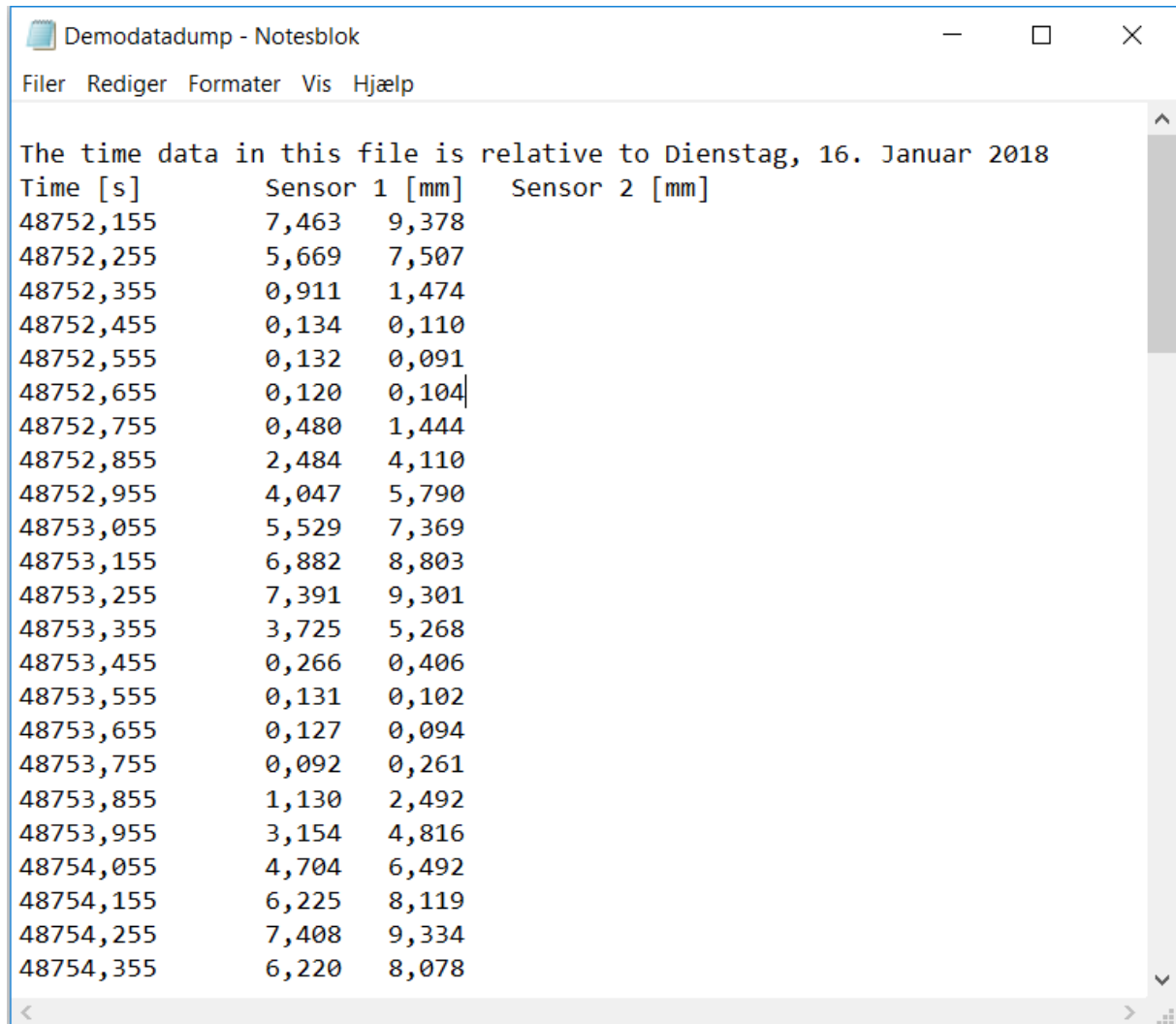
For the first four and a half cycles thereafter (approximately until 09:38:18) the bottom positions of the two sensors are fully aligned, thereafter an obstacle (two business cards) is inserted close to Sensor 1 – accordingly, it cannot reach 0 anymore and it is in addition to that seen on the signal from sensor 2 that the whole plate is tilted a bit due to the obstacle.



If you have activated **data logging** by pushing the “Save” button, all your measured sensor data will be saved to a document in .txt format. The data will be presented in the way shown below, when opening the document that you have dumped it to.

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You can see that data in this case (from another measurement than the former one) was collected 10 times per second on the date stated at the top of the excerpt.



| The time data in this file is relative to Dienstag, 16. Januar 2018 | | |
|---|---------------|---------------|
| Time [s] | Sensor 1 [mm] | Sensor 2 [mm] |
| 48752,155 | 7,463 | 9,378 |
| 48752,255 | 5,669 | 7,507 |
| 48752,355 | 0,911 | 1,474 |
| 48752,455 | 0,134 | 0,110 |
| 48752,555 | 0,132 | 0,091 |
| 48752,655 | 0,120 | 0,104 |
| 48752,755 | 0,480 | 1,444 |
| 48752,855 | 2,484 | 4,110 |
| 48752,955 | 4,047 | 5,790 |
| 48753,055 | 5,529 | 7,369 |
| 48753,155 | 6,882 | 8,803 |
| 48753,255 | 7,391 | 9,301 |
| 48753,355 | 3,725 | 5,268 |
| 48753,455 | 0,266 | 0,406 |
| 48753,555 | 0,131 | 0,102 |
| 48753,655 | 0,127 | 0,094 |
| 48753,755 | 0,092 | 0,261 |
| 48753,855 | 1,130 | 2,492 |
| 48753,955 | 3,154 | 4,816 |
| 48754,055 | 4,704 | 6,492 |
| 48754,155 | 6,225 | 8,119 |
| 48754,255 | 7,408 | 9,334 |
| 48754,355 | 6,220 | 8,078 |

When starting the recording, you will be advised to state the name and location of this data file. After recording the data may e.g. be copied and pasted into an Excel document for further treatment, presentation etc.

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Warranty and Service

ElastiSense ApS products are warranted against defects in materials or workmanship (for ElastiSense sensors used with the Basic Monitoring System, please confer with the specific warranty regulations covering these products). The warranty applies for two years. All faulty units must be shipped back to the manufacturer for all warranty claims.

Declaration of Conformities

We declare that this product has been tested for conformity with all relevant EU regulations. If you have specific issues related to this, you are very welcome to direct such requests to contact@elastisense.com

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