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**LEAP
Electronics
Wireless
Sensor**

Elastisense LEAP Electronics Wireless Sensor User Manual

Contents

Elastisense LEAP Electronics Wireless Sensor

Specifications

- Software Compatibility: Windows XP SP3 or later
- Connection: Micro USB
- Function Indicators: 5V Supply & Data Connection, On/Off Switch, Sensor Connections

Product Usage Instructions

Software Installation

1. Download the software from www.elastisense.com.
2. Install the sensor electronics program and the application for communication via USB port.
3. Follow on-screen instructions, restart your computer when prompted.

Hardware Connection
Connect the sensor electronics to your PC via the Micro USB port. Ensure the On/Off switch is in the correct position.

Getting Started

1. Open the software and navigate to the setup tab.
2. Adjust max and min values in the capacitance fields according to your requirements.

Setup Tab
The setup tab displays settings for each of the 4 channels. Make necessary configurations here after connecting your electronics.

Measurements Tab
View and monitor sensor channel data in this tab. Each channel has four fields displayed.

Graphs Tab
Visualize sensor outputs over time in the graph section. Adjust settings on the left for customization.

Calibration Tab
Calibrate sensor channels by specifying the relationship between sensor capacitance and the measured parameter. Configure this tab accordingly.

Further Use
The software can log data, save data, and calibrate sensors for conversion to desired parameters. Contact for information on using third-party sensors.

User Manual – Wireless Sensor Electronics
This document describes the installation and use of the sensor electronics and associated software. Please find a download link on www.elastisense.com for the software.

System requirements
The software of the sensor kit is designed for a Windows PC with Windows XP SP3 or later version of operating system.

Software installation
Before using your sensor electronics, two pieces of software will be installed on your PC through one installation process.

1. The sensor electronics program, which displays the output of the sensors on a computer.
2. A small application that allows your computer to communicate with the sensor electronics through a USB port via serial communication.

Click on the link to the web location, run the setup.exe file and follow the instructions on screen, restarting the computer when prompted and when finished. The software is now ready to use. The program called "EST" will appear in your start menu with all your other applications. For convenience, a shortcut to EST.exe can be placed on your desktop.

Hardware connection

- Connect a sensor to one of the Micro USB sensor connection ports.
- Turn on the electronic with the On/off switch (power and Bluetooth indicators will light if battery is charged)
- If necessary, connect the supplied cable to a USB socket on your computer (this will allow you to charge the device during use).
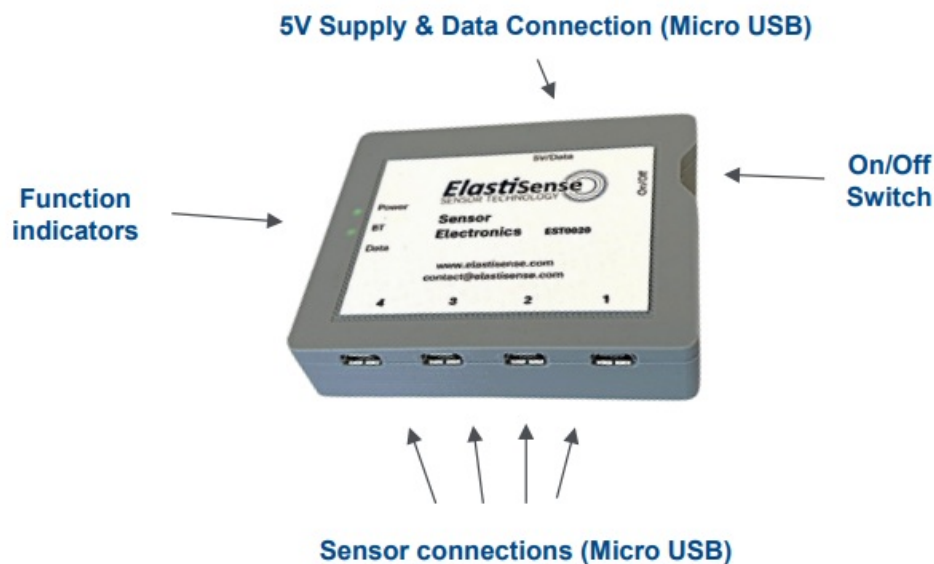

Using the Bluetooth connection

- Before first use, the device should be paired manually with the computer with the following steps;
    - From the Start menu select Settings>Devices>Bluetooth,
    - Turn on Bluetooth>select the device (ESTXXXX)>click Pair,
    - Follow the instructions.
- Launch the application from start menu or your desktop shortcut

OBS: Please be aware that On Windows 11 computers, the TSL RFID Reader does not appear in the list of pairable Bluetooth Devices, so you need to follow these steps to connect with Bluetooth:

1. Right-click on the Windows 11 logo in the taskbar & choose 'Settings'
2. Click on 'Bluetooth & devices'
3. Click on 'View more devices'
4. Scroll down to the 'Device settings' area

5. Use the drop-down list to change 'Bluetooth devices discovery' from 'Default' to 'Advanced
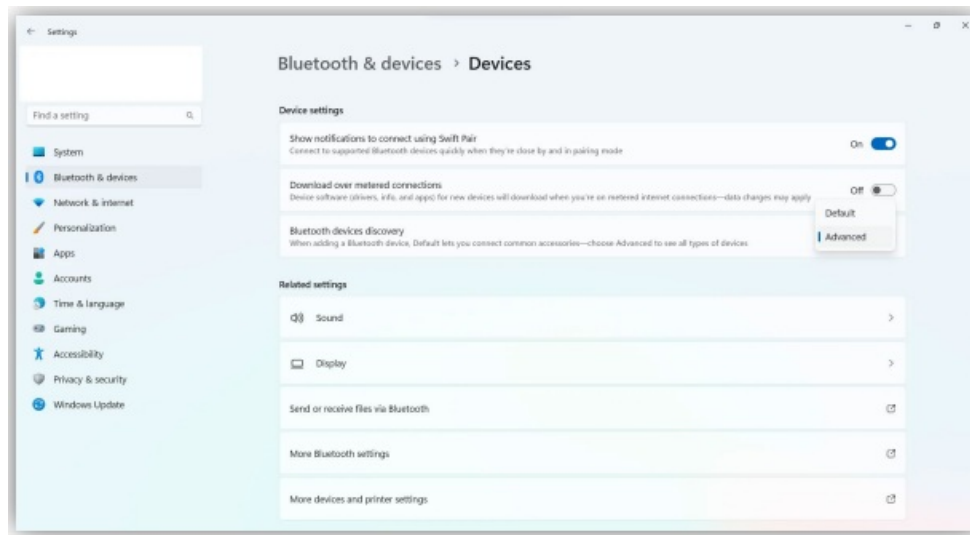
Getting started – On opening the software, you will see a largely blank "setup" tab and a panel to the right side of the application which is always present, no matter which tab is selected. To begin using the device:

- Click the "Connect device" button and choose one of the two (Bluetooth or USB) connection options.
- Once the device is connected to your PC, the "Device connected" indicator on the application will turn green, and the electronics has started sending sensor data to the application. The name on the "connect device" button will also change to "disconnect device".
- Clicking the "Graphs" tab at the top will show the current sensor output on screen
    - Note that max and min values are automatically set to 0 and 5000 respectively, but the range can be adjusted according to your use by changing the values in the max and min capacitance fields
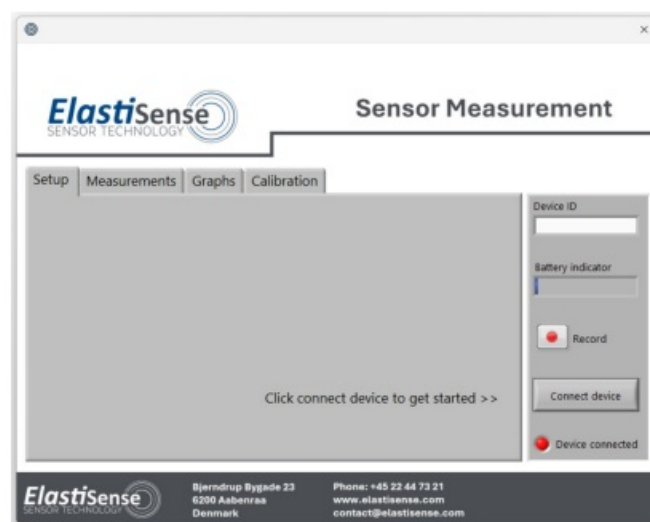

Setup Tab
Once connected to your electronics, the software will display a number of settings in the setup tab. Each of the 4 channels has two settings

- **Capacitance range** – You can choose from 4 settings, each representing the highest value reliably measurable. Choose this based on the highest expected capacitance of the sensor. The current value is displayed on the measurements tab.

- **Filter length** – The number of measurements used in a "rolling average" used by the measurements tab and the graphs tab. Filtered data is also saved to file.

**Underneath each of the 4 channels, there are two further settings:**

- **Update frequency** – The number of new data points displayed or recorded per second
- **Sava data folder –** Allows you to define the name of the file used and where data will be saved.
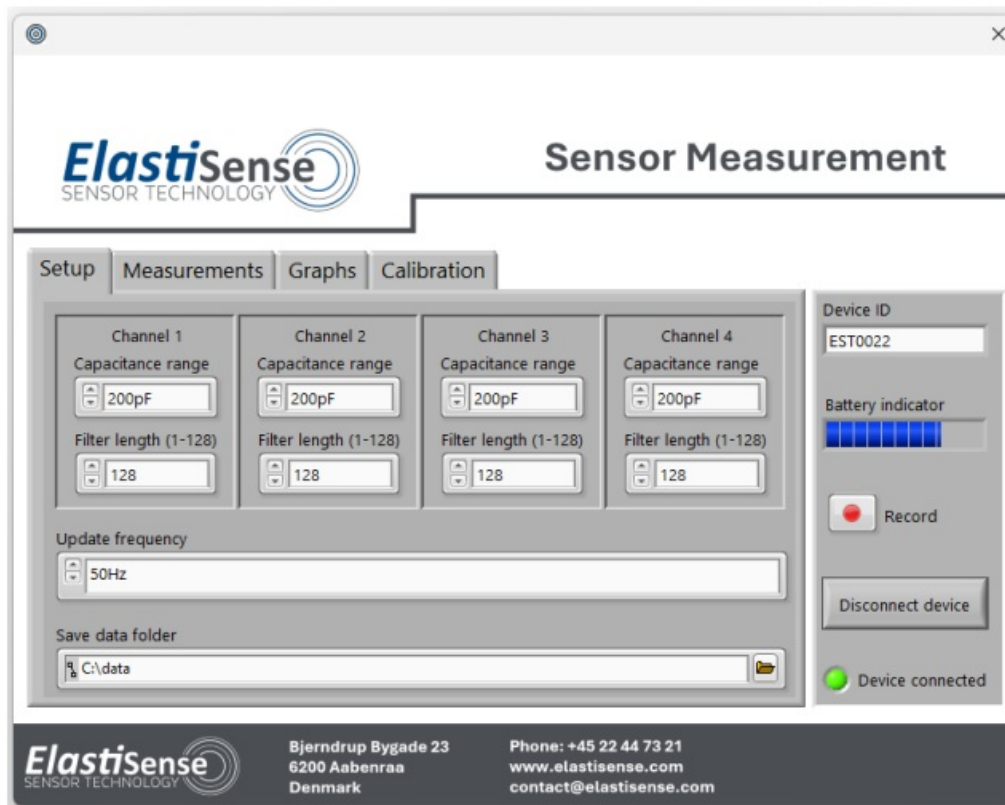
Measurements Tab
This displays four fields for each sensor channel

- **Channel –** The number of the channel
- **Capacitance (pF)** – The (capacitive) value of the sensor plugged into the port. Note that unusually high numbers will be displayed if a sensor is not connected.
- **Parameter** – This field can be defined through the calibration tab to describe the data being recorded (example: Distance, Force)
- **Unit –** The units chosen with which the parameter is measured (example: mm, N)
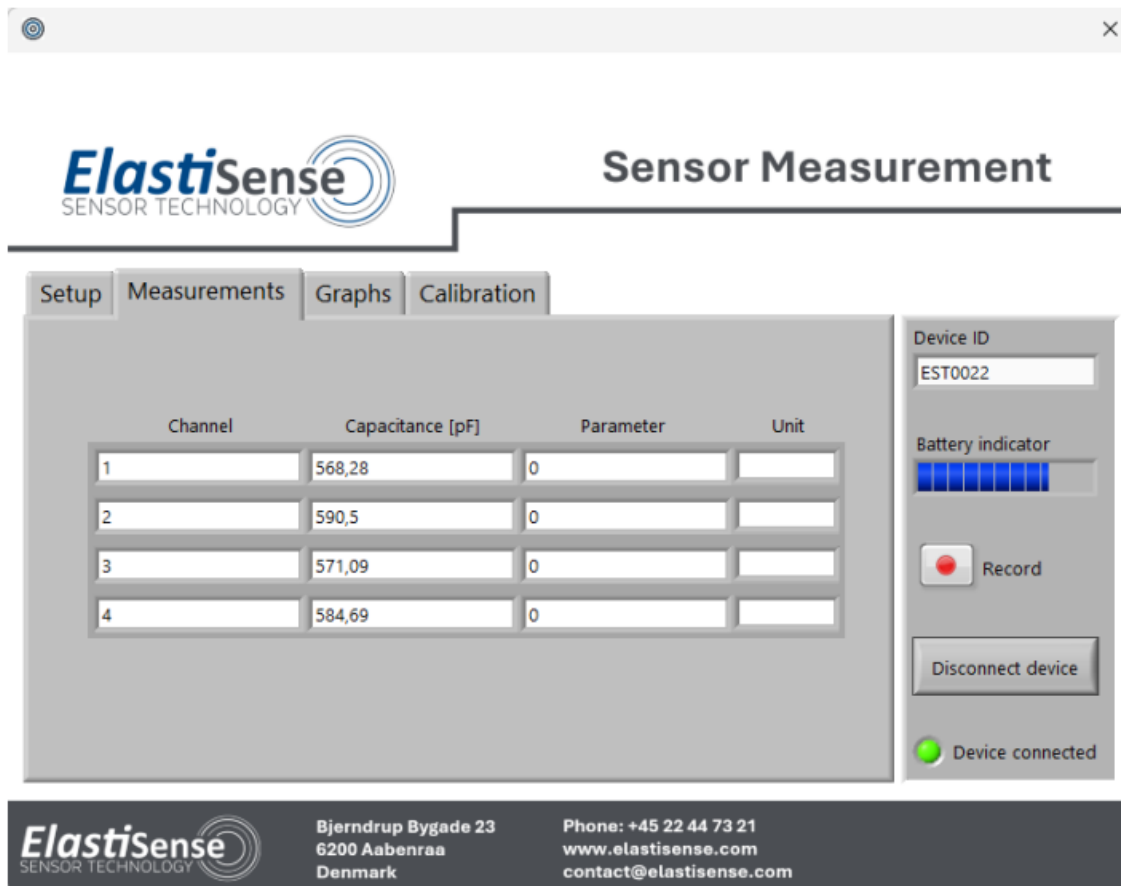
Graphs Tab

The main part of this tab is the graph showing the current sensor outputs with respect to time. There are a number of settings on the left, to change what is visualised in the window:

- **Show graph for** – Clicking the "capacitance" button will allow the y axis to be switched to a parameter defined through the calibration tab

- **Time Scale** – The amount of time spanned on the x axis

- **Max capacitance** – The highest capacitance (or parameter if chosen) on the y axis of the graph.

- **Min capacitance –** The lowest capacitance (or parameter if chosen) on the y axis of the graph

- **Channel colour indicators –** Show which sensor port is which colour.
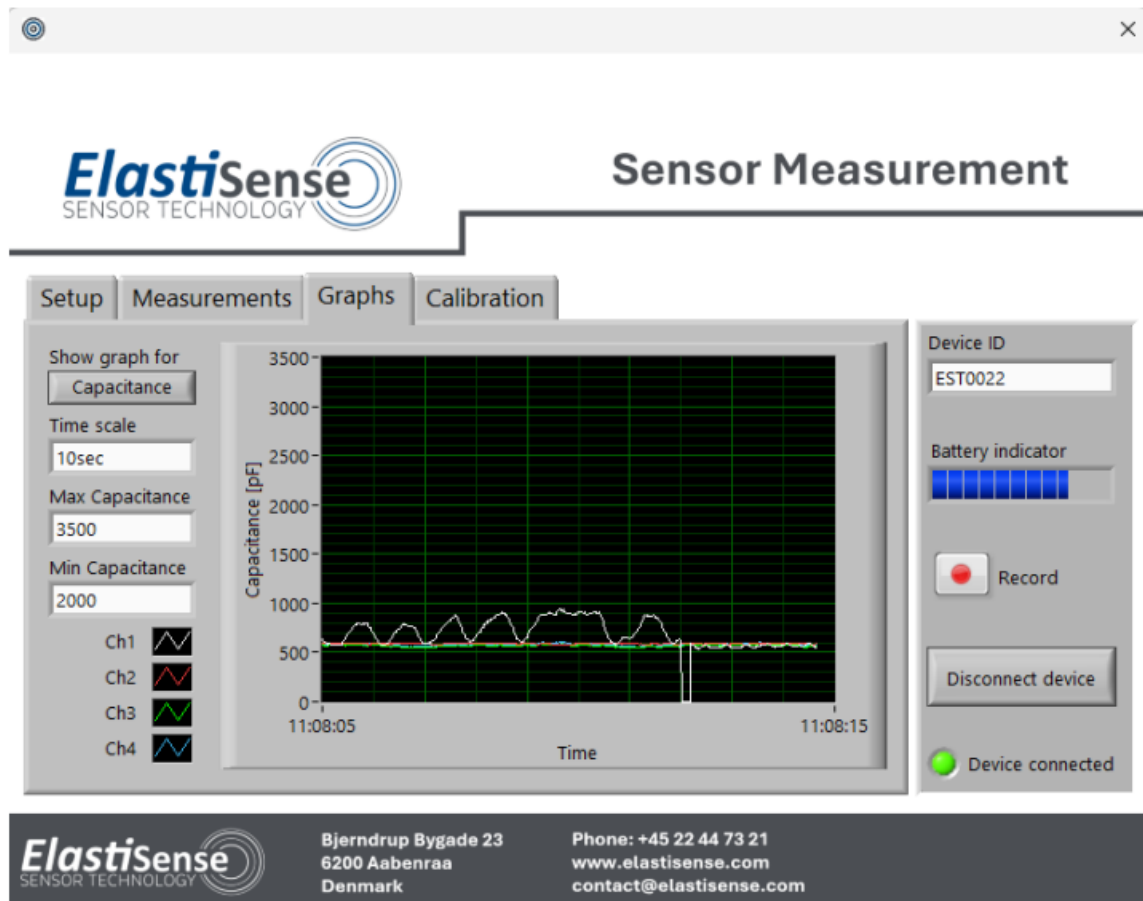
Calibration tab

Each of the sensor channels can be calibrated through clicking the "Configure" tab. This functionality allows you to specify a relationship between the sensor capacitance and the unit/magnitude of what you are using the sensor to measure. Initially, most of the fields on this tab will be blank.
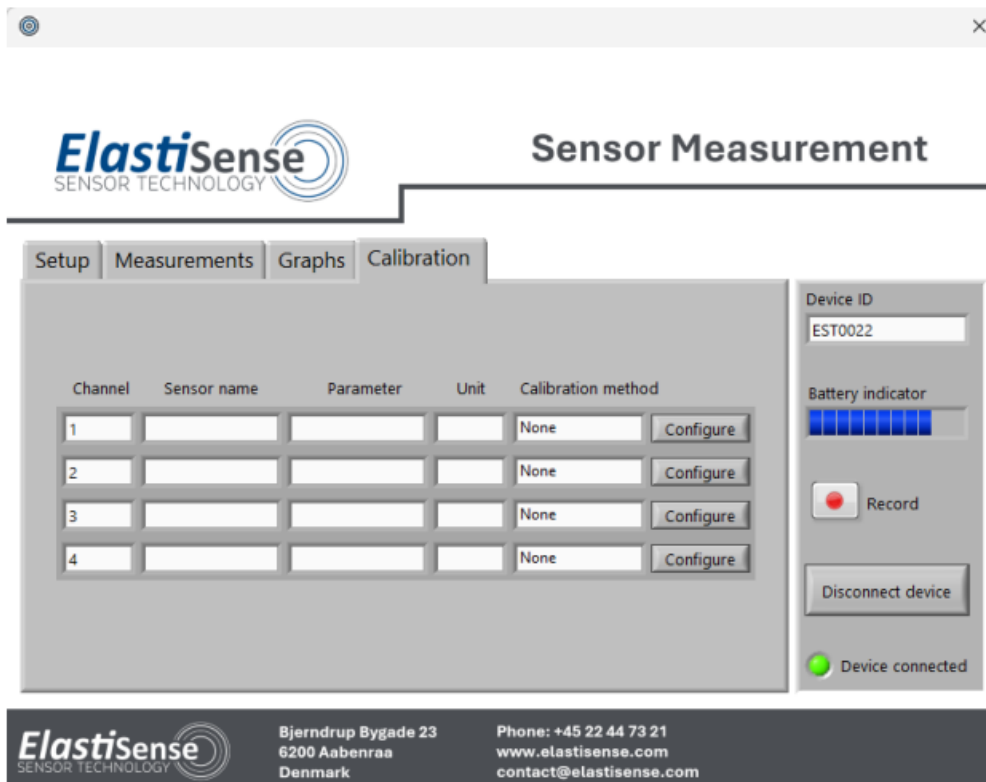
- When calibration data has been taken, it is recorded in a calibration file on your computer. Click the "configure" button to open the window below, which has three options:
- Select calibration file – Allows you to retrieve a previously saved calibration file for a given sensor.

- Create calibration file from existing data – Allows you to enter data that you already have, to create a calibration file. Create manual sensor calibration file – Creates a calibration file with the sensor connected
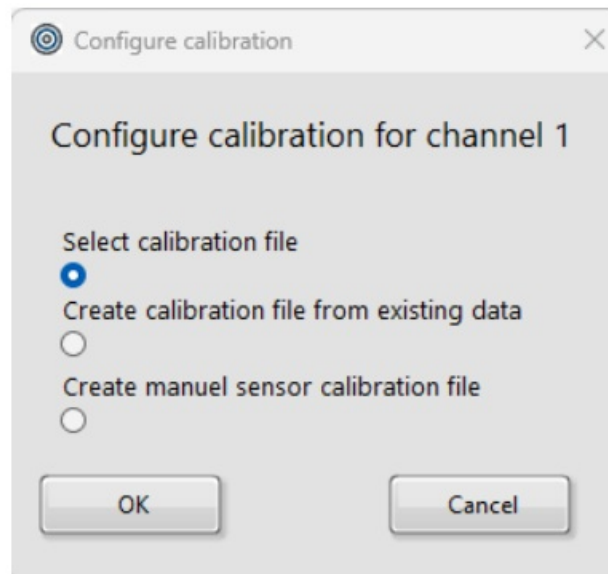
Once your file has been retrieved or created by the calibration process, the corresponding fields in the Measurements and Calibration tabs will be populated. The data recording function will also save the calibrated data as well as the capacitance values. Changing from "Capacitance" to "Parameter" on the Graphs tab will result in the traces being displayed at their calibrated values. This may not be desirable if for example, you have one sensor reading mm of displacement and another reading m of displacement, as the values would likely be very different from each other. Recording calibrated values is useful, especially if you wish to use the values from one channel to compensate for environmental effects (temperature for example).

Troubleshooting

- If using the wired USB connection and a lot of noise is visible on screen, first try using the Bluetooth connection. If this is not possible, please contact ElastiSense Sensor Technology
- If using the Bluetooth connection results in an error message "No device has been found.", try to remove (unpair) the device from the PC Bluetooth list, and pair the device again based on the instruction provided in the "Using the Bluetooth connection" section above. If the problem remains, please contact ElastiSense Sensor Technology.
- Reset the hardware and restart the software in the unlikely case you see other error messages

Further use
This software can also log and save data and has a calibration routine to enable conversion from raw sensor signal to a parameter of your choice. It can also measure other capacitive sensors including 3rd party sensors given their values are with the measurement range of the electronics. (please contact us for more information).

FAQs

Q: Can I use the software with sensors other than those provided?
A: Yes, you can use third-party sensors within the measurement range of the electronics. Contact us for more information.

Documents / Resources

Elastisense LEAP Electronics Wireless Sensor [pdf] User Manual
LEAP Electronics Wireless Sensor, LEAP, Electronics Wireless Sensor, Wireless Sensor, Sensor

References

- ↻ **One moment, please...**
- **User Manual**