

Vorsprung durch Präzision und Kompetenz



# LUKA SYSTEM MANUAL

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## STRUCTURE AND APPLICATION

The LUKA Measuring System serves the purpose of recording temperature and humidity and is suitable for the usage in industry applications. By means of the Windows software, the system can be controlled and the measured data read as well as analyzed. The small current consumption enables long storage periods and several years of measurement operation.

***PRELIMINARY TO THE INSTALLATION AND APPLICATION, THE MANUAL SHOULD BE READ AND UNDERSTOOD IN FULL. THE DELTEC ELECTRONIC GMBH GLADLY ANSWERS ANY POTENTIAL QUERYS.***

## LUKA SYSTEM HARDWARE

The LUKA System consists of:

1. Housing
2. Electronics module
3. Battery module in the lid
4. Sensor pipe
5. USB port

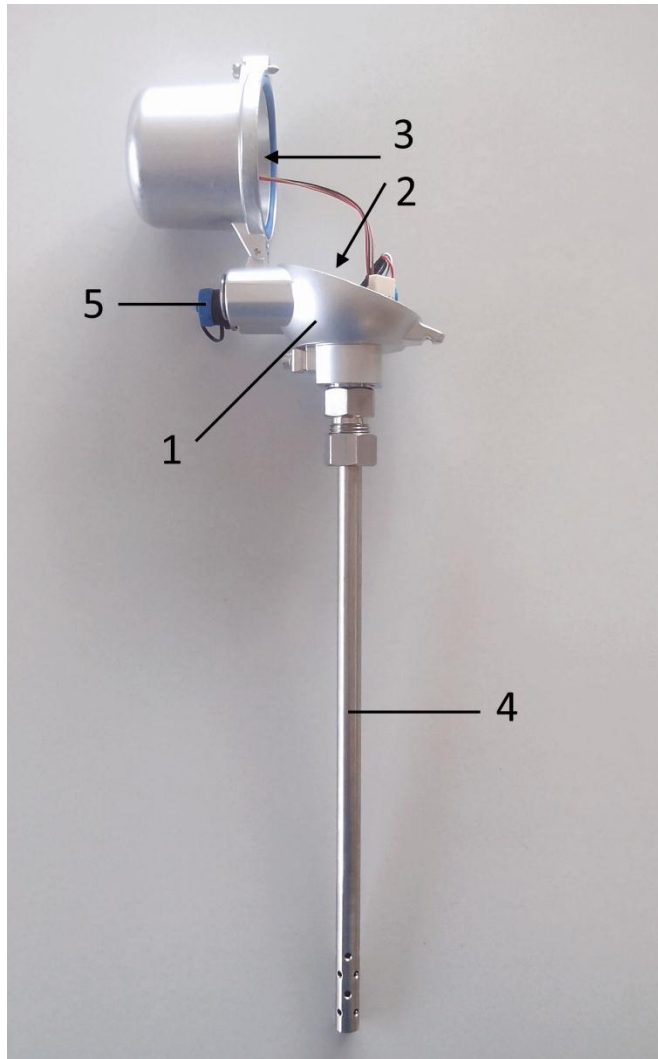


Figure 1: System components

The modular construction allows a fast and easy replacement of components. The sensor pipe is molded with the sensor at the pipe end and supplied ready for installation.

**ATTENTION:** The **battery connection cable** is detached upon delivery in order to not discharge the battery prior to the application. **For implementation, the cable has to be plugged into the port with the label *Bat.* on the circuit board.**

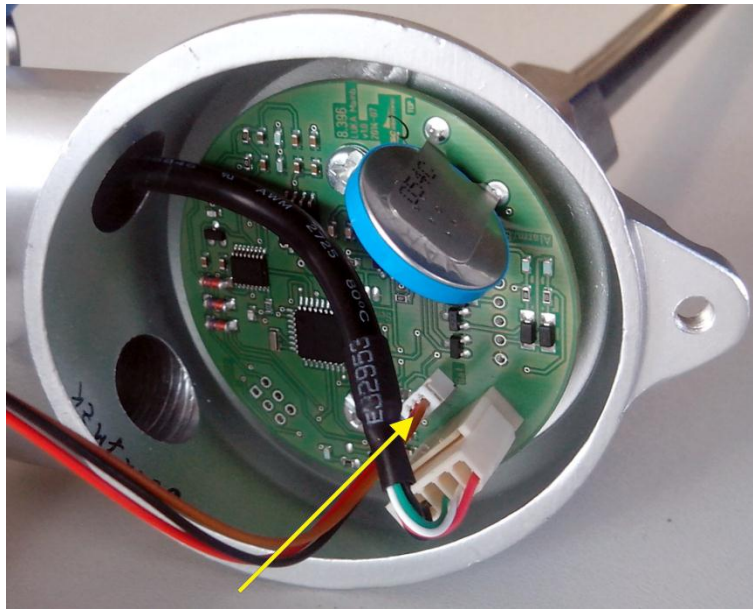


Figure 2: Connection of the battery for implementation

## INSTALLATION AND HANDLING

1. Installation of the software
  - 1.1. Download the software from <http://www.deltec.de/download/>
  - 1.2. Follow the instructions of the opened web page
  - 1.3. Unzip the file
  - 1.4. Start the setup.exe
2. Connection and Implementation of the device
  - 2.1. Insert the gauge head with sensor pipe into the port of the sensor
  - 2.2. Screw the gauge head tightly to the port
  - 2.3. Open the lid of the gauge head
  - 2.4. Link the battery connection cable with the port *Bat.* (the system is now activated)
  - 2.5. Close the lid
  - 2.6. Link the USB cable the USB port
  - 2.7. Link the USB cable with the computer  
(typically as of Windows 7, the device is automatically detected and relevant drivers are installed via Windows Update)
  - 2.8. After the successful installation, check the proper functioning of the gauge head by performing a live measurement with the software.

**If the device is not detected, there is a problem with the driver installation. In that case, anti-virus software might possibly block the correct installation. Please consult the FTDI driver installation manual in connection with the driver installation programs of FTDI concerning this problem.**

## Remarks on and hints for the application

- The points in time of a continuous measurement are determined on the basis of a real-time clock.
- The internal real-time clock of the device is synchronized with the PC time as soon as a measurement is started via the software. The user should check that the PC in turn is synchronized with a time server receiving the correct local time. Otherwise, the points in time of all future measurement data are wrong.
- When a new measurement is started, old data is no longer accessible.
- If the data storage is filled during a continuous measurement, the storage will be newly described from the oldest measurement onwards (circulation).
- In the case of longer storage periods, unplug the battery cable from the electronics module in order to avoid an unnecessary discharge due to standby current.
- The batteries have a maximum storage period of 7 years. They allow for continuous measurements for several years (4 years at measurement interval of 6 hours). However, this measurement time is strongly dependent on the adjusted measurement interval. By means of a constant control of the sensors, the crucial state of charge of the battery pack can be realized in time. Details can be found in the datasheet.
- If the software notifies you of drained batteries, please change these, or else the successful measurement recording cannot be guaranteed.
- In order to change the batteries, the gauge head has to be opened via the housing screw. After unloosening the battery cable and both screws at the battery module, the module can be extracted and replaced by a new one.
- New battery modules can be obtained from the company DELTEC electronic GmbH. The new battery module is installed analogous to the disassembly. After connecting, the battery cable, the gauge head has to be closed properly.
- If the sensor is damaged, the sensor pipe can only be replaced entirely because the sensor is molded with the pipe. A new sensor pipe can be obtained from the company DELTEC electronic GmbH.

- In order to exchange the sensor pipe, the gauge head has to be opened and the plugs for battery and USB removed. By unloosening both locating screws (store the insulating washers under the printed circuit board by all means), the printed circuit board can be vertically extracted by a few centimeters with caution. The plug at the bottom of the printed circuit board establishes a connection from the sensor to the board. This plug has to be removed. Subsequently, the screwing of the sensor pipe with the housing has to be unloosened. Now, rotate the sensor plug by approximately 90° and thread it through the lower opening of the housing by carefully pulling the pipe.  
The assembly of the new sensor pipe is carried out in reverse order to the disassembly.
- All connections of the sensor's printed circuit board are polarized and latching.



## PC SOFTWARE

The software contains the following range of functions:

- Detection of the devices
- Retrieves the battery and measuring status of the devices
- Display and change device name
- Adjustment of a starting point for the continuous measurement
- Selection of a measurement period for the continuous measurement
- Initiation of a continuous measurement (*Record*)
- Realization of a live measurement (*Start live*)
- Realization of a single measurement (*Single shot*)
- Download of measurement data from the device (*Load data*)
- Export/import of measurement data via XML files
- Storage of diagrams as PNG files
- Creation and print of a report
- Eject the unit (*Remove*)

The software starts with the interface displayed below. The menu and the buttons in the upper section are intended to operate and adjust the device. Below that, the diagrams for displaying the read data or live data are located.

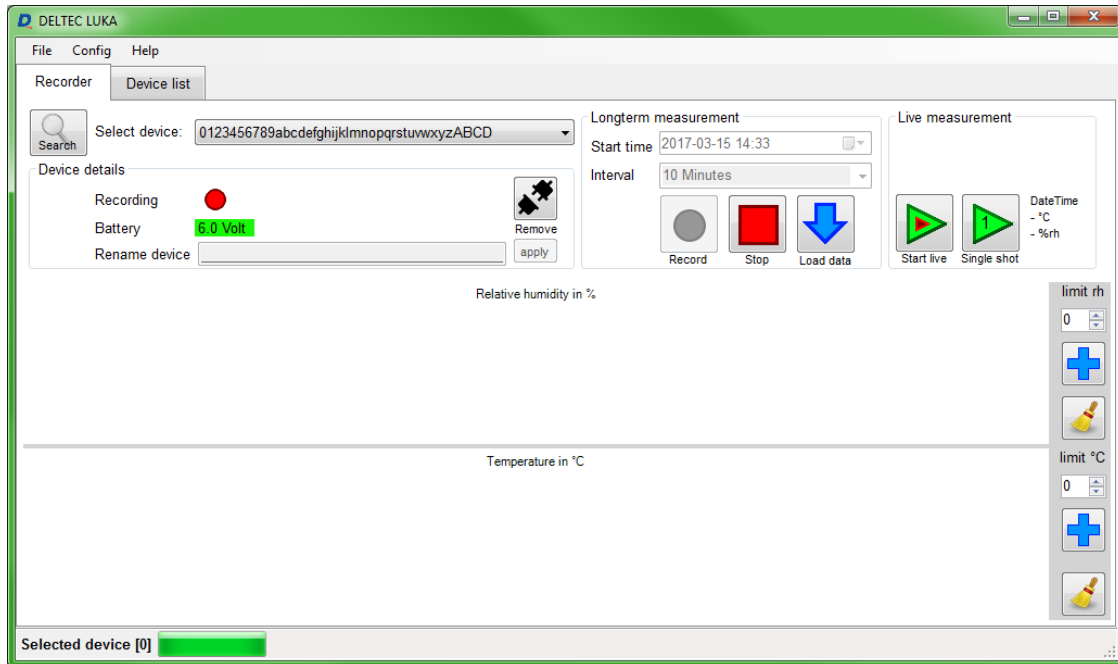


Figure 3: Software interface

In order to detect connected devices, the button *Search* must be pressed. Afterwards, all available devices currently connected to the PC are listed in the pick list top left. Here, the requested device is then selectable.

**ATTENTION:** If a device is already in application by using the dedicated COM ports, it cannot be detected and used!

**Hint:** By no means are two or more devices of the same name allowed to be connected to the PC and configured. Any attempt to do so will result in the malfunction of the software because the devices cannot be clearly distinguished.

If one device is selected from the list, its information are immediately retrieved and displayed on the interface. This information can be found in the *Device details* area.

In the input area *Rename device* under the pick list, a name for the selected device can be assigned. After pressing *apply*, this name is transferred to the device and will be permanently stored. The renamed device appears with the new name in the device pick list after redetecting the connected devices.

A live measurement can be performed, for example, in order to check the device. By pressing *Start live*, this measurement will start. In this mode, a measurement is performed every second. The results are immediately displayed in the diagrams. This data points are not stored in the device memory.



Figure 4: Activated live measurement

By configuring the area *Longterm measurement*, a continuous measurement can be adjusted. The starting point of the first measurement is determined by the date/time selection and the measurement interval by the pick list below.

Pressing *Record* starts the continuous measurement. After starting of a new measurement, data from a previous measurement can no longer be read out. Hence, it is very important to make sure that the required data were read and stored. Otherwise, irretrievable data loss impends.

By means of pressing *Stop*, a continuous measurement can be terminated. The storage will **not** be deleted but the stopped continuous measurement cannot be continued.

Data can be read out at any time by clicking on *Load data*. Loading data can take a while, especially for many data points. Please wait until loading finished.

## SYSTEM REQUIREMENTS

- x86 or x64 based computer
- Standard USB port 2.0
- Operating system: Microsoft Windows XP/Vista/7/8/8.1 (32Bit and 64Bit)
- .NET Framework 4.0
- Installed FTDI driver
- PDF Viewer (for example, Adobe Reader)

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