# Display App DS12 and DS/DC24 for all sensors

## for JETI transmitters



# Instruction manual

Version 3.0.0

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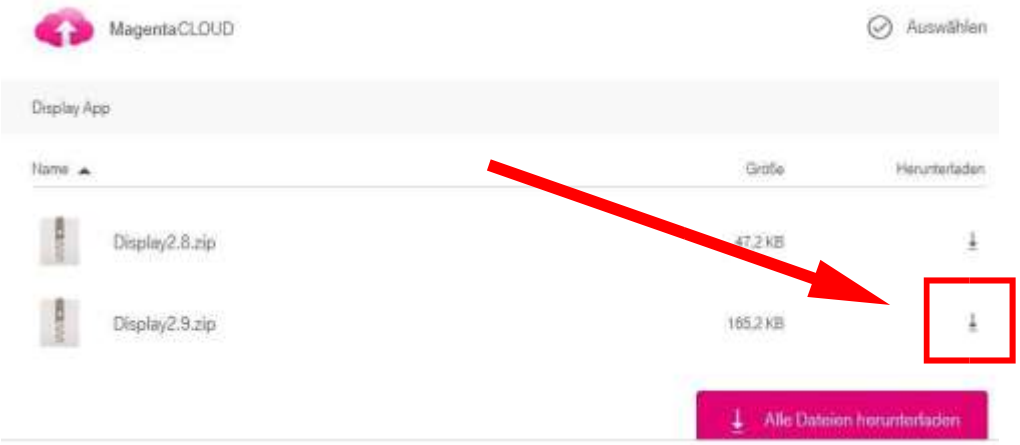
# LUA App „Thorn Display“ for JETI transmitters

With the LUA-App "Thorn Display" you can display the telemetry values of all common sensors more condensed on one or two display pages. In addition, telemetry values from a total of 2 sensors can be displayed simultaneously.

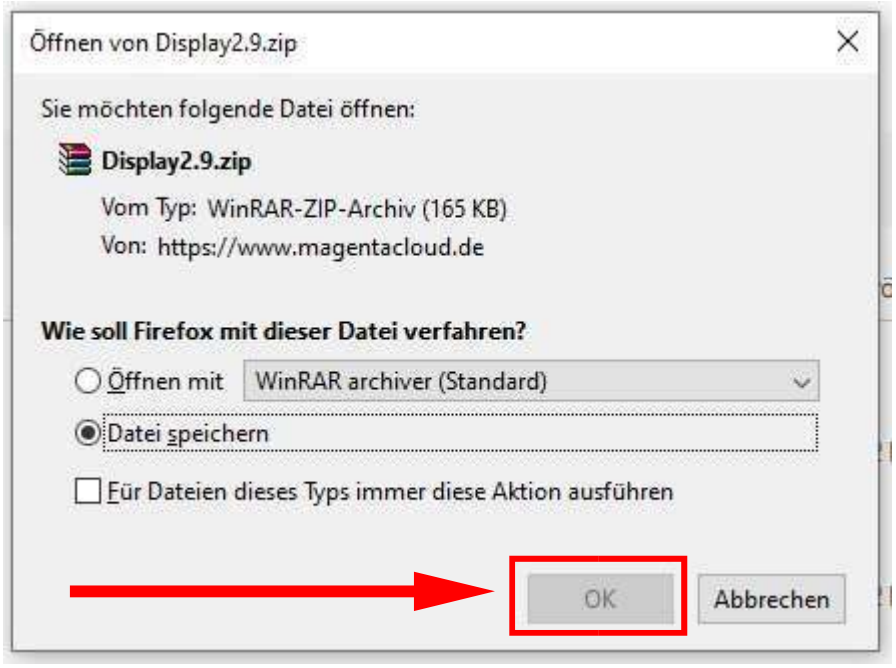
A first impression of the structure and the functionality can be seen on Youtube in this video: https://www.youtube.com/watch?time_continue=7&v=4r9VI6PRkKs

## 1. Download the app files

The app can be downloaded from the following location www.magentacloud.de/share/6u6mk7kz62#$/ . Select the arrow of the desired / newest version.

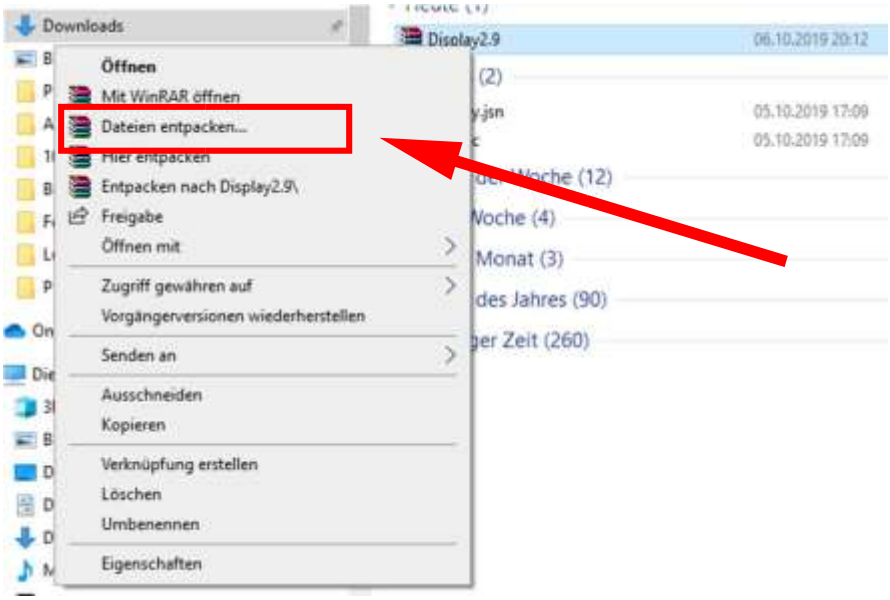


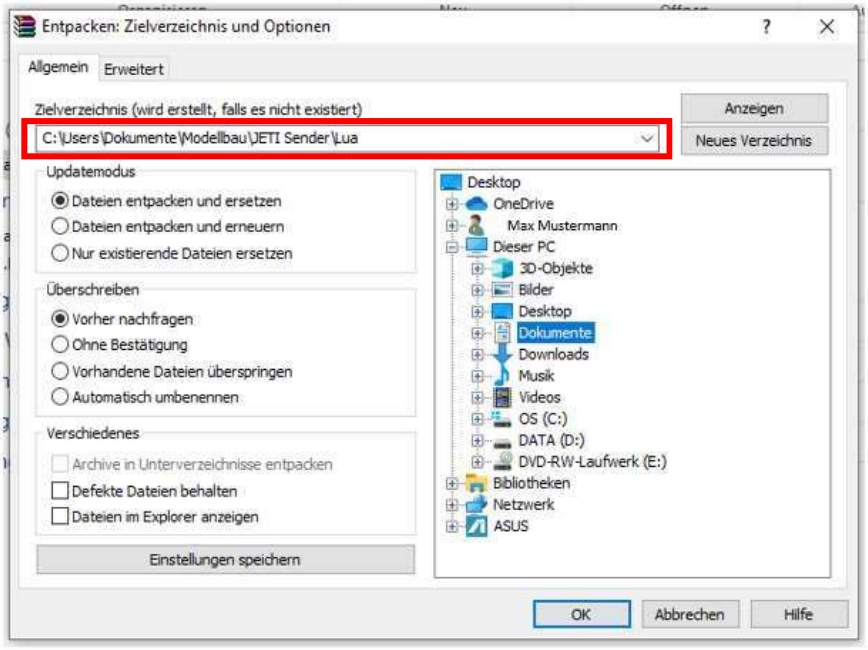
You will then be prompted to save the file to your hard drive. Please confirm with "OK".




You can find the file on your PC in the Download directory.


Then the file needs to be unpacked. Click on the file with the right mouse button.
Then the Popup Menu will open. There are several ways to save. For those who do not have any experience with WinRAR I recommend "Extract file". Because with this selection you will be prompted where to store the file and you can create a new one, if it doesn't already exist (see example below).



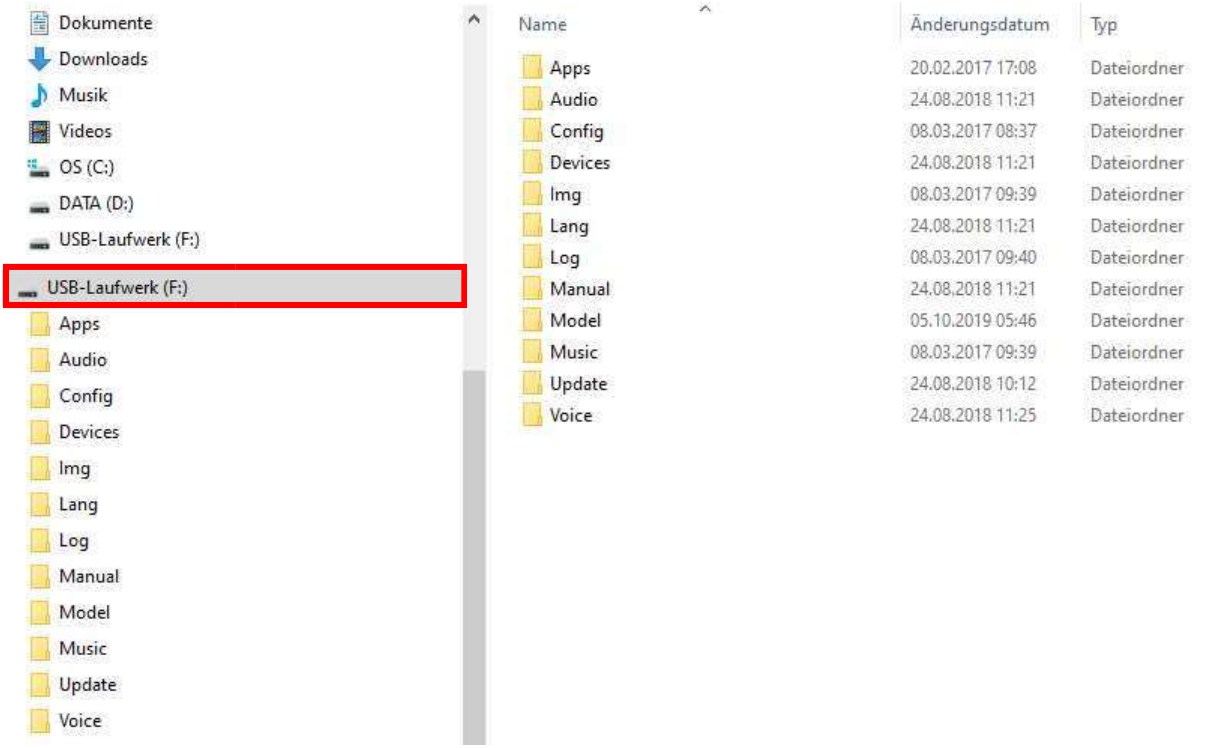




## 2. Installation of the app files in the transmitter

This section describes only the latest released version. The current version is Display 3.0.

After unpacking, the following files are saved or stored for version 3.0.

Now you connect your JETI transmitter to your PC / laptop via USB cable. Then switch on the JETI transmitter and confirm the USB connection as shown in the transmitter display. After confirming, the JETI transmitter appears in your Windows Explorer as a separate directory (of for Mac in Finder). In the example described, the USB drive (F:) is the following




The Lua App "Thorn Display" consists of the file "Display.lc" and the file "Display.jsn". The two files needs to be moved into the directory structure of the transmitter as described below.

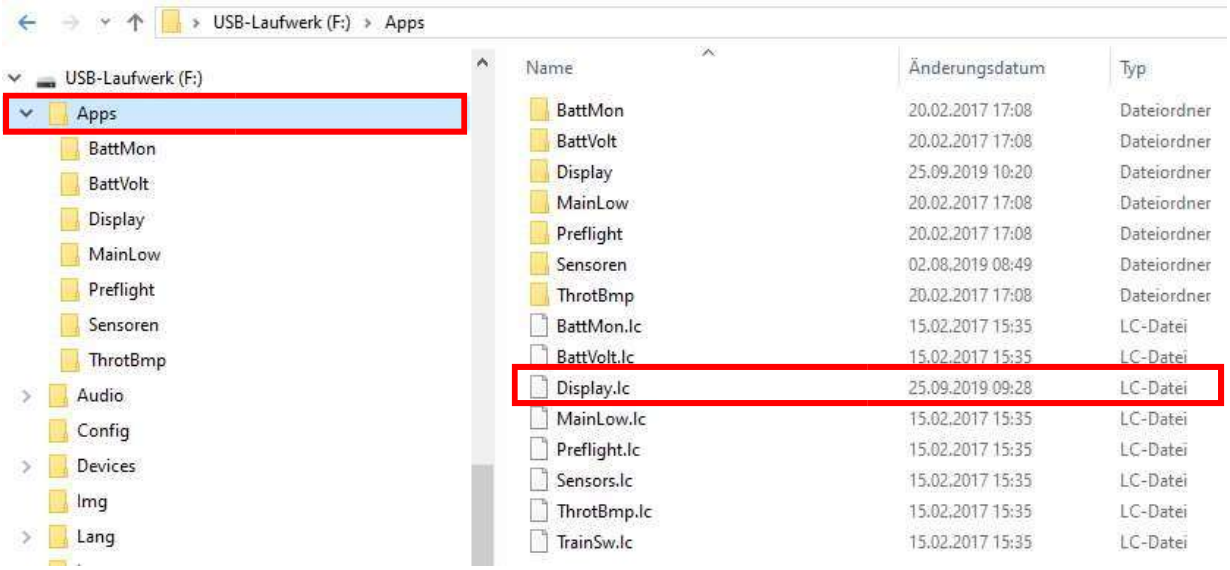
1. the file "Display.lc" has to be placed in the directory Apps.

2. the file "Display.jsn" has to be placed in the subdirectory Apps / Display

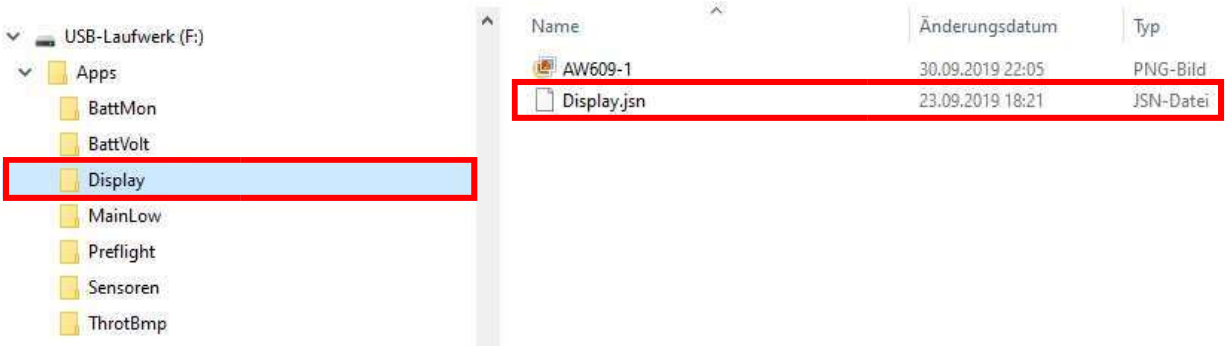
Hint:

If this directory does not yet exist, please create it via the Windows Explorer on the JETI transmitter.

1. Display.lc




2. Display.jsn




From now on, all *.txt files and the image files of the models needs to be saved in the Display directory..

## 3. Functionalities of the LUA App

For the settings of the max. 2 display pages, a total of 5 pages (each of which can be reached via its own pushbutton) of the LUA App are available:

Page 1 = Basic settings
Page 2 = Select the desired sensor values
Page 3 = Assignment numbers for the main sensor
Page 4 = Assignment numbers for the extension sensor (°)
Page 5 = Assignment of the MTAG (RFID) sensors of the batteries

Hint:

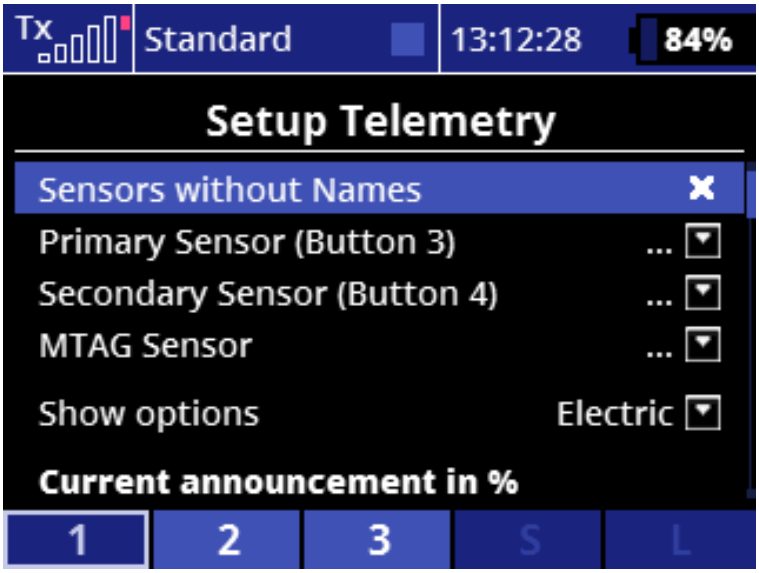
(°) pages 4 and 5 appear only after selecting page 2 or 3.

Watch out !

Only enter the data for the main and secondary sensors at the top of page 1 at the end after entering all other values. Otherwise the app could not create a correct connection to the sensor due to missing assignments. The app software would have to be restarted afterwards. If nothing is entered for the value "battery capacity or tank quantity", no battery or tank symbol appears.

## 3.1 Settings options for telemetry (page 1)

On the first page (page 1) of the app, the following setting options are offered, which are explained and described in more detail below. Data from a total of 3 sensors can be displayed.




Telemetry settings

| | |
|---|---|
| - Sensors without names | x / ✓ (this causes the display of the Main sensors displayed differently) |
| - Main sensor (Seite 3) | … (automatic proposal) |
| - Secondary sensor (Seite 4) | … (automatic proposal) |
| - MTAG-Sensor | … (automatic proposal) |
| - Show options | Electric / Gas / Everything |
| Current announcement in %% | |
| - Akkuschalter (Option Elektro / Alles) | … (desired input control in position ON) |
| - Tankschalter (Option Verbrenner / Alles) | … (desired input control in position ON) |

| | | |
|---|---|---|
| - timer switch | … (desired input control in position ON) | |
| Alarm settings Battery display | | |
| - Battery capacity (mAh) | 0 - 99.999 (*) | (free selectable) |
| - Battery alarm at (%) | 0 - 100 | (free selectable) |
| - Battery Alarm announcement | (Select Sound File) | |
| - Repeat 3 times | x / ✓ | |
| For different battery sizes | | |
| - Battery capacity switch | … (desired input control in position ON) | |
| - Battery capacity 2 (mAh) | 0 - 99.999 (*) | (free selectable) |
| - Battery capacity 3 (mAh) | 0 - 99.999 (*) | (free selectable) |
| - Number of batteries (MTAG) | 0 - 20 | (free selectable) |
| Fuel gauge | | |
| - High-counting sensor | x / ✓ | |
| - Tank alarm (ml) | 0 - 99.999 (*) | (free selectable) |
| - Tank alarm at (%) | 0 - 100 | (free selectable) |
| - Tank alarm announcement | (Select sound file) | |
| - Motor monitoring | … (desired input control in position ON) | |
| - Sound Motor monitoring. | (Select sound file) | |
| - Switch for Timer | … (desired input control in position ON) | |
| - Vibration Motor Überwachung | x / ✓ | |
| - Vibration Counter, Akku % & Tank% | x / ✓ | |
| - Switch position (Assist) | … ((desired input control in position ON, 3-step switch is recommended) | |
| Timer | | |
| - Countdown Min : Sek | 0 - 99 (min) / 0 - 59 (sec) | |
| - Start switch | (desired input control in position ON, the sound file with the name "Timer Start.wav" in the directory "Audio" will be linked automatically) | |
| - Change colors | x / ✓ | |
| Start flight time / engine | | |
| - P2 / P4 Proportional | … (desired input control in position ON) | |
| - Shift p. Time / motor | from -100 bis +100 | |
| - Reset Timer | … (desired input control in position ON) | |

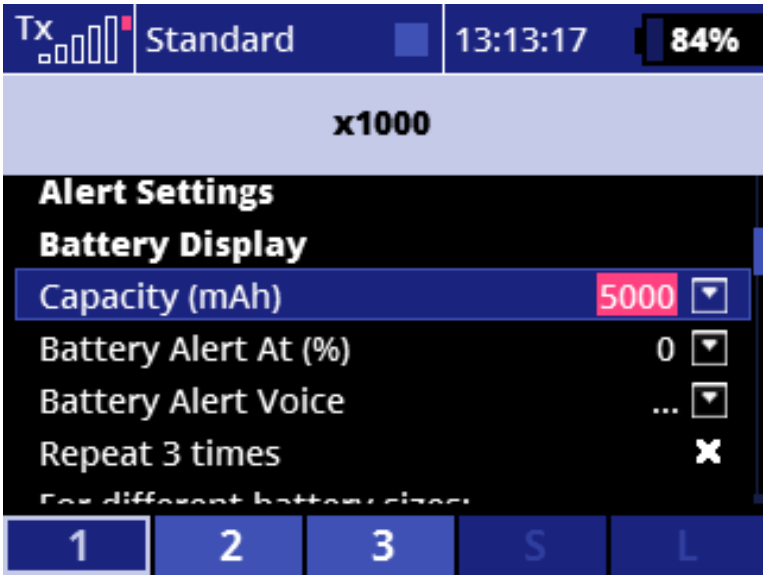
| | |
|---|---|
| - Reset short or long | x / ✓ |
| - Reset A1 / A2 & Q value | … (desired input control in position ON) |
| - Reset telemetry | … (desired input control in position ON) |
| - Reset number of flights | 0 - 999 / (desired input control in position ON) |
| - Switch for number of flights | … (desired input control in position ON) |
| - Sensor triggering | … (desired input control in position ON) |
| - Sensor time | 1 - 60 (free selectable) |
| - Sensor name | … (automatic proposal) |
| - Modell image | Select the file from the "Display" directory |
| - Logo in the middle | Select the file from the "Display" directory |

Save / Load

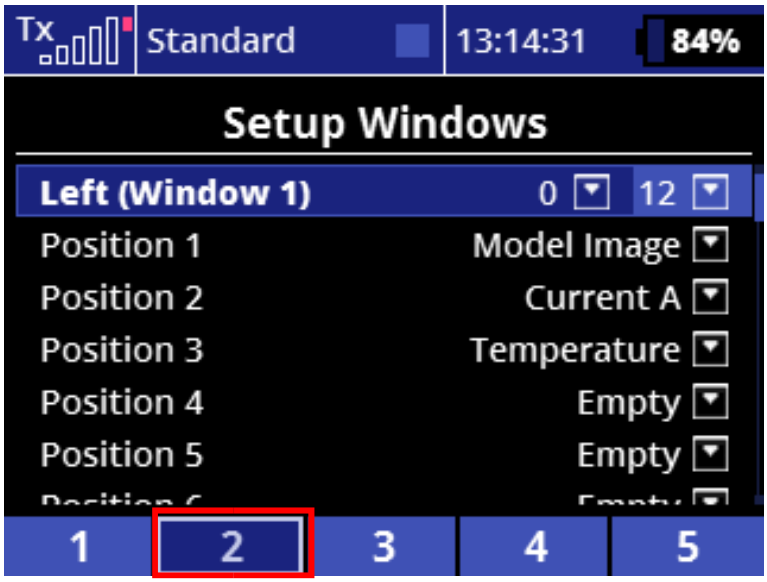
| | |
|---|---|
| - Name (save) | Name freely selectable |
| - Name (load) | Select the file from the "Display" directory |

Hint:

(*) These values can be set in steps of 10 / 100 / 1,000. To do this, press the "menu" button next to the navigation wheel on the JETI transmitter. The display briefly shows the set size.




## 3.2 Customize windows / tiles (page 2)




On page 2 of the LUA App the individual tiles can be selected in the display. With the selection options offered, telemetry data can be selected in a very compact way on a total of two display pages. These display pages are marked with (window 1) and (window 2). The values for "Left1 and Right1" are shown on the first display page and the values for "Left2 and Right2" are shown on the second display page.

Each window is divided into 3 columns (Left / Right / Middle). A maximum of 6 telemetry values (positions 1 - 6) can be selected and displayed per column.

Watch out:

Not all 6 values can be set at the same time, as they have different sizes due to the display.
The tiles are displayed prioritized, the rest that no longer fits on the display will be hidden.

If you want to change the value already assigned under a position, the cursor jumps automatically to the previously selected value. This value is shown in bold for better readability.

With "Center 1 and 2" the values for fuel tank ( volume ) or battery ( capacity ) in % can be graphically displayed as symbol can be activated. The displays for battery capacity and tank level can be selected independently of the type of drive. This means that the fuel gauge can also be used for an electric model and vice versa.

If the capacity falls below the set alarm value, the tile with the % value is coloured red and starts flashing. When the battery is displayed, the light-ground colour changes increasingly to dark green the more capacity is removed from the battery.

If you do not want to use the battery capacity indicator or the tank content indicator, it is also possible to use individualised pictures or logos.

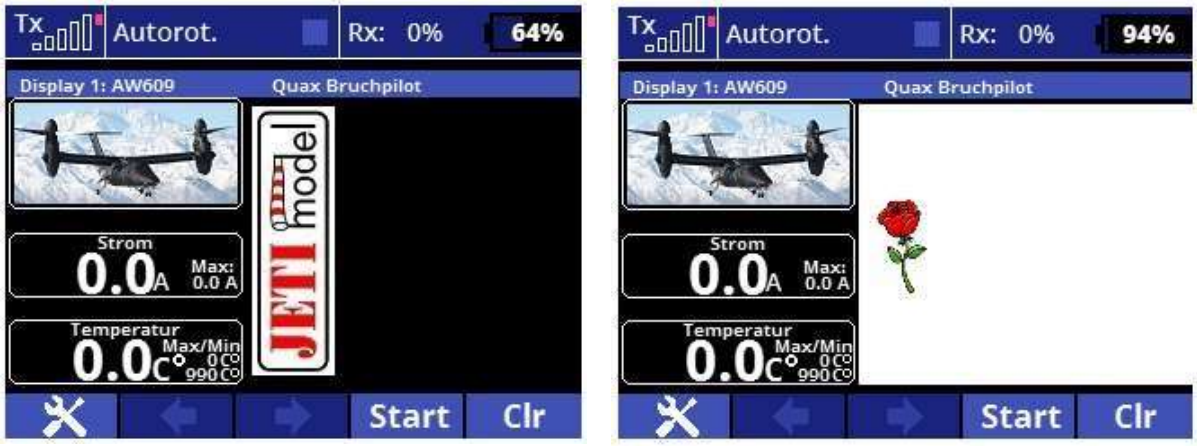
Hint:

The symbol for the battery capacity indicator / tank content indicator appears only after the battery capacity or a filling quantity has been specified. A mere selection of the position in the middle window is not sufficient to display the field. The green colour only appears when the corresponding sensor on the motor is activated.

Of course it is also possible, instead of the battery indicator or the tank indicator to display individual graphics or logos. A preselection has to be made under "Telemetry settings" under "Middle logo". Then select the option "Middle Logo" on page 2 in the desired window, e.g. "Middle (Window 1)".

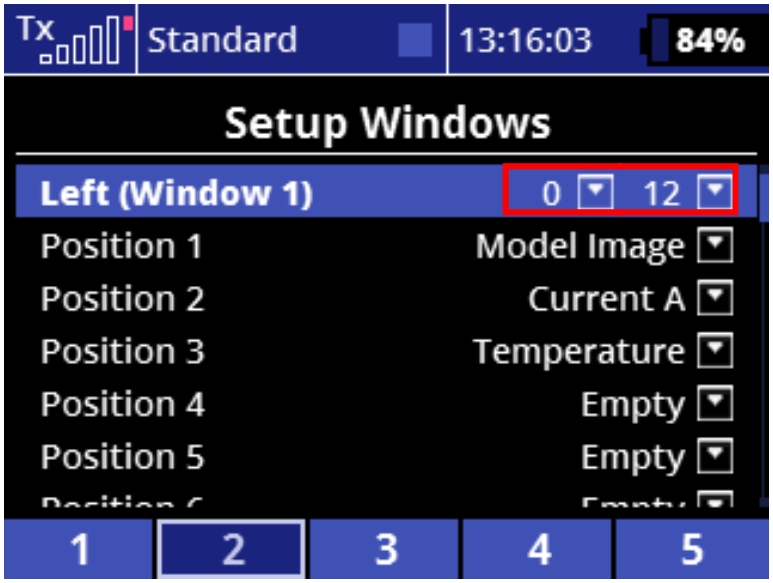

The size of the middle logo is 52 x 153 pixels and can be created or converted as when creating a model image (see 3.6.1).

Some examples of other possible logos in the middle of the display:

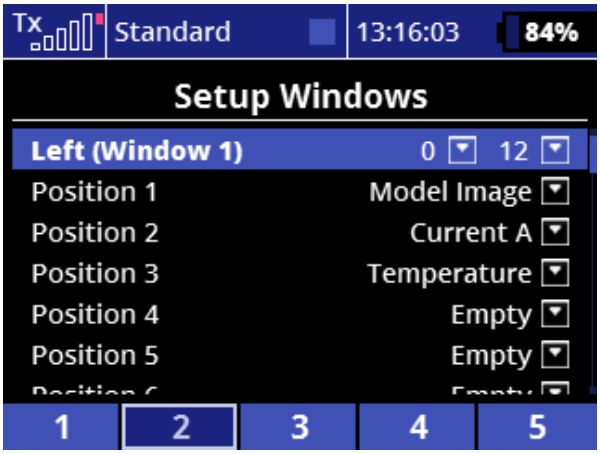



The size of the tiles is fixed and can not be changed. However, it is possible to move the displayed tiles according to their position in the corresponding column (left / right / center).

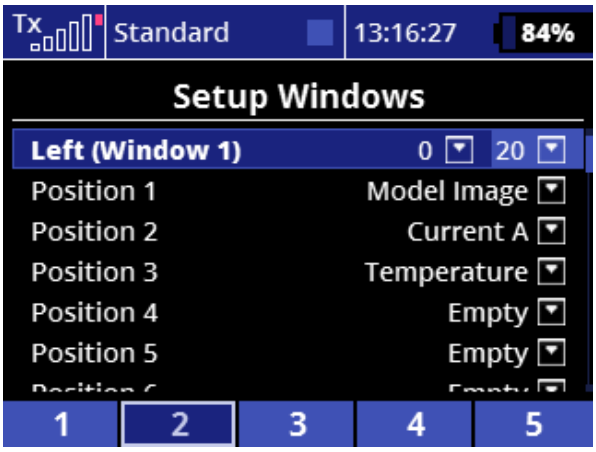
The left value (distance 1st tile from top) can be set from 0 - 160 (*) and the right value (distance between tiles) from 0 - 160 (*).




For this the distances of the upper tile to the upper display edge as well as the space between the next tiles can be selected as desired in order to achieve a symmetrical tile arrangement in the respective column. An example is shown on the next page.





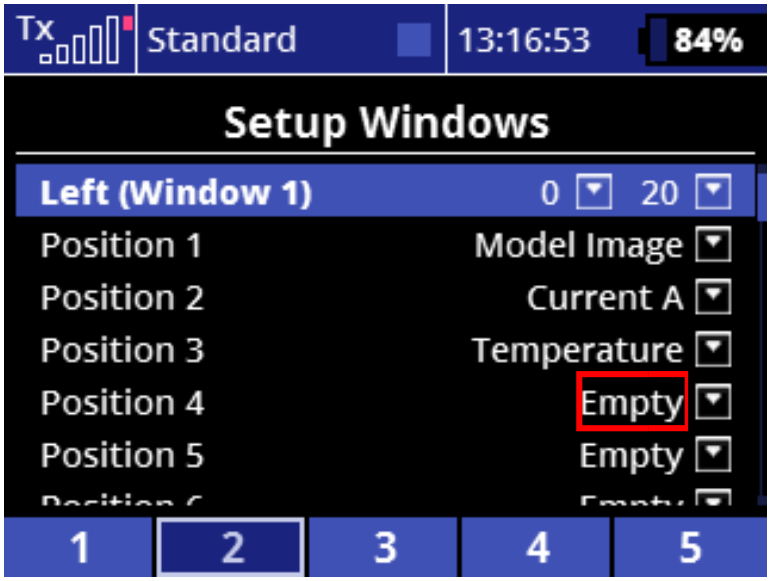




Hint:

(*) These values can be set in steps of 10 / 100. To do this, press the "menu" button next to the navigation wheel. The display briefly shows the set size.

Under each individual position, different preset names can be selected. These are listed in the following overview.




Overview of the preset values for the "Position x

| | |
|---|---|
| Leer<br>1. Battery percen<br>2. Tank percent<br>3. Battery<br>4. Tank<br>5. Current A<br>6. Capacity increase. mAh<br>7. Model picture<br>8. Prim. RX<br>9. Prim. RX Mini<br>10. Altitude<br>11. Temperature<br>12. Vario<br>13. RPM<br>14. Watts<br>15. Motor time<br>16. Battery voltage. V<br>17. Muli<br>18. GPS km/h<br>19. Temperatur 1<br>20. Temperature<br>21. Turbine Pu. V<br>22. Turbine ECU V<br>23. G-Force<br>24. Motor on/off<br>25. Vibration<br>26. Flighttime<br>27. PWM<br>28. Modell Name<br>29. Battery1 V<br>30. Battery2 V<br>31. Battery1 capacity. mAh<br>32. Battery2 capacity. mAh<br>33. Battery1 currentA<br>34. Battery2 currentA<br>35. GPS (m/s)<br>36. Mot. an/aus klein | 37. whole distance<br>38. whole distance D<br>39. Countdown Timer<br>40. Logo in the middle<br>41. Weak cell<br>42. SensorTrigger<br>43. Number of flight<br>44. Absolute altitude<br>45. Switch position (Assist)<br>46. Battery % large<br>47. Tank % large<br>48. Capacity usage.mAh large<br>49. Tank capacity large<br>50. MTAG battery data<br>51. Sek.RX<br>52. Sek.RX Mini<br>53. 900MHZ Backup<br>54. 900MHZ Backup Mini<br>55. C Rate value/percent<br>56. Battery Name<br>57. calculation of KW<br>58. controller opening |

## 3.3 Motor monitoring

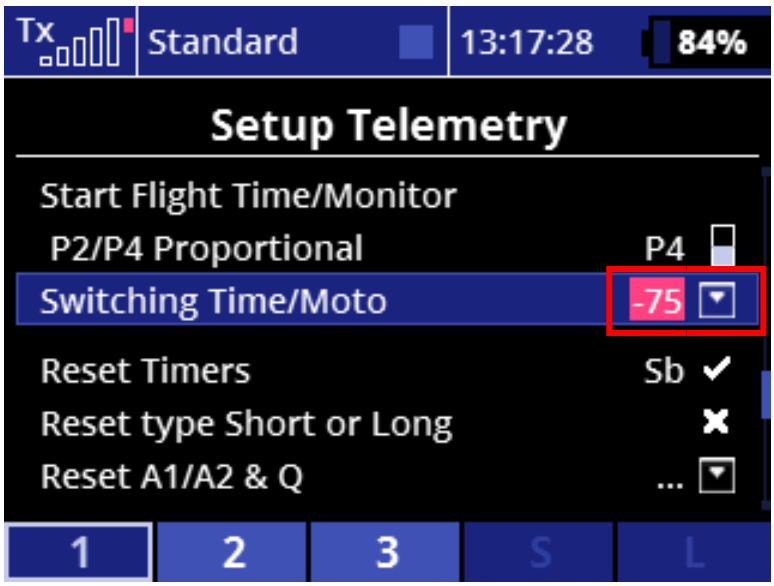
The motor off / motor on switch is entered here. The app monitors the position of the gas stick in relation to the motor off/on switch.

If the motor off / motor on switch is set to OFF and the throttle stick is not in starting position, the border of all telemetry tiles flashes red. In addition, a sound file can be linked as an alarm. This actively indicates the

resetting of the throttle to prevent the engine from starting unplanned when operating the engine off/on switch.

### 3.4 Start flight time / motor - switching position time / motor

With the help of the motor throttle stick the clocks for the flight time and the engine running time can be started. The value for the switching point time / engine should be entered as low as possible in order not to trigger an unintentional alarm due to the set / activated threshold of the engine monitoring.




### 3.5 3.5 Reset A1 / A2 & Q value

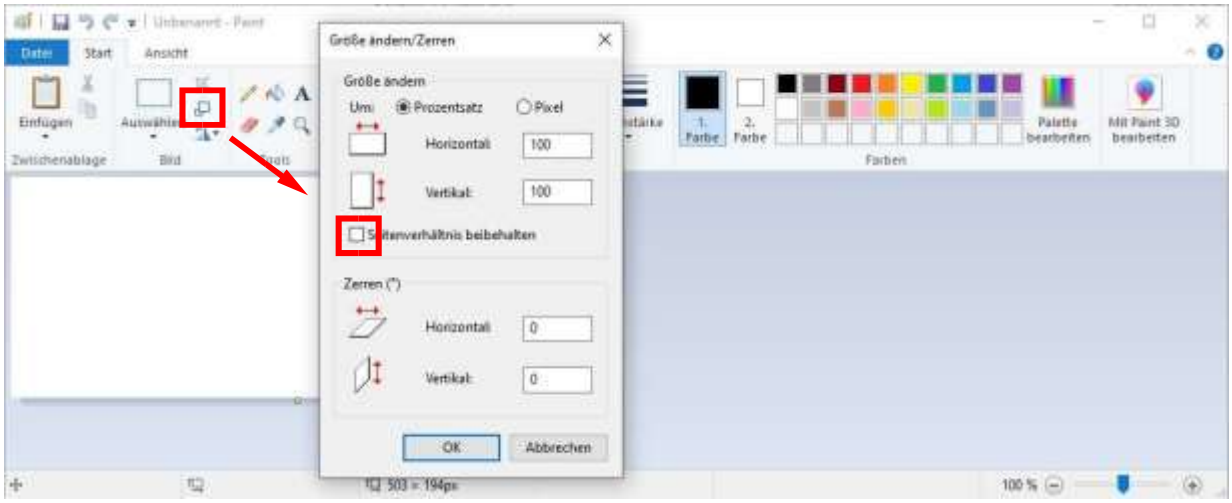
When the telemetry value RX is activated, the current values for the antennas A1 and A2 and the Q value are also displayed. In addition, the lowest values are also stored. With the reset switch selected here, the stored values can be reset again.

## 3.6 Model Images

### 3.6.1 Create and save model images

The selected model image should ideally be reduced to a pixel size of 124 : 56. The Windows software Paint is recommended for this. You can find it if you enter "Paint" in the search window (of your Windows software) at the bottom left.


Now insert the image, edit it if necessary and adjust it to the above mentioned aspect ratio. The check box for the aspect ratio must not be selected. Then save the picture to your transmitter: Save App / Display.



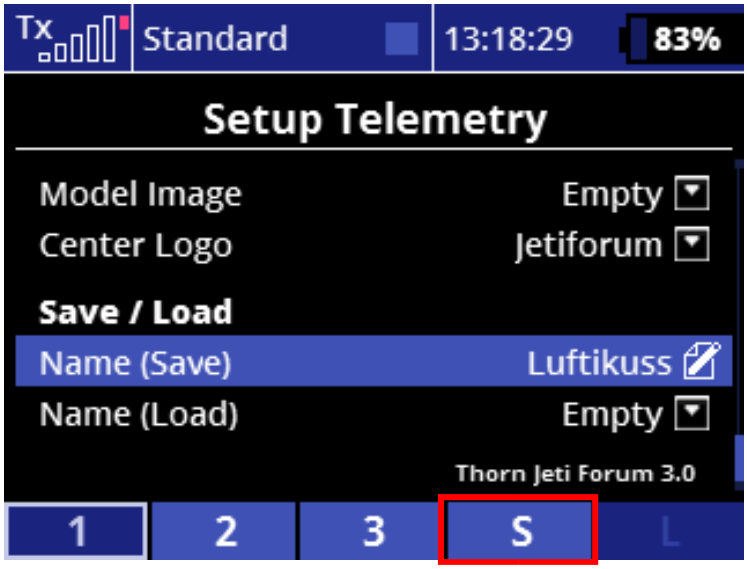

### 3.6.2 Load model pictures

With the selection list offered here, the images for the app can be called up and loaded again.

## 3.7 LUA App save / load

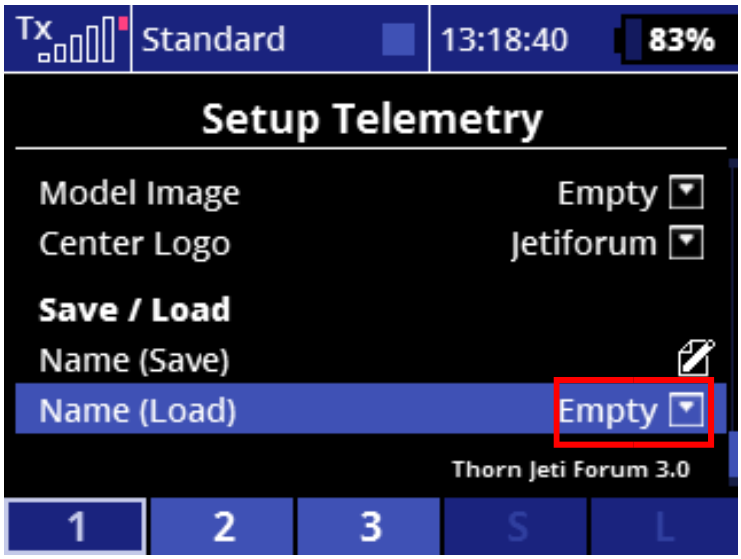
### 3.7.1 Name (save)

Here (e.g. under the sensor name, the model name, ...) the entered values can be saved with the "S" key. When the data has been saved, a white border appears on the display.

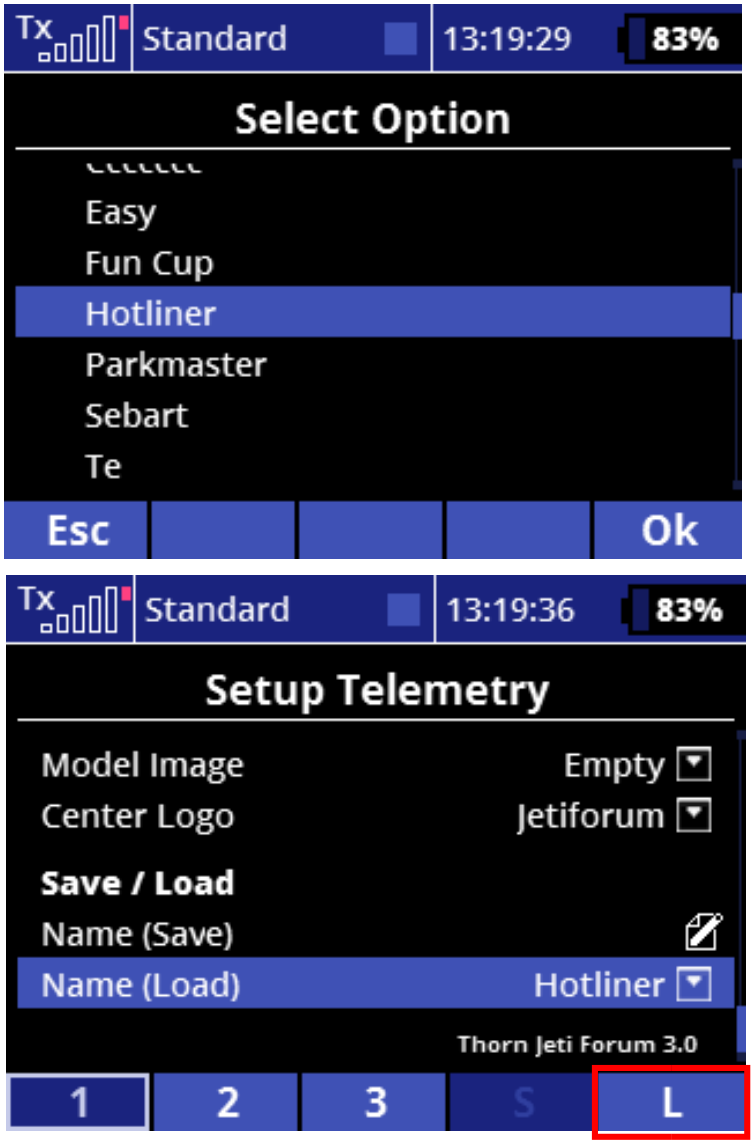



### 3.7.2 Name (load)

If a new model is created, the programmed pages 2 - 4 can be called up and stored in the model. However, page 1 must be re-entered adapted to the model. The files can be accessed by pressing the "L" key.




If different telemetry profiles have already been saved, the saved files are offered for selection. If no profiles are available, the overview only shows "Empty".



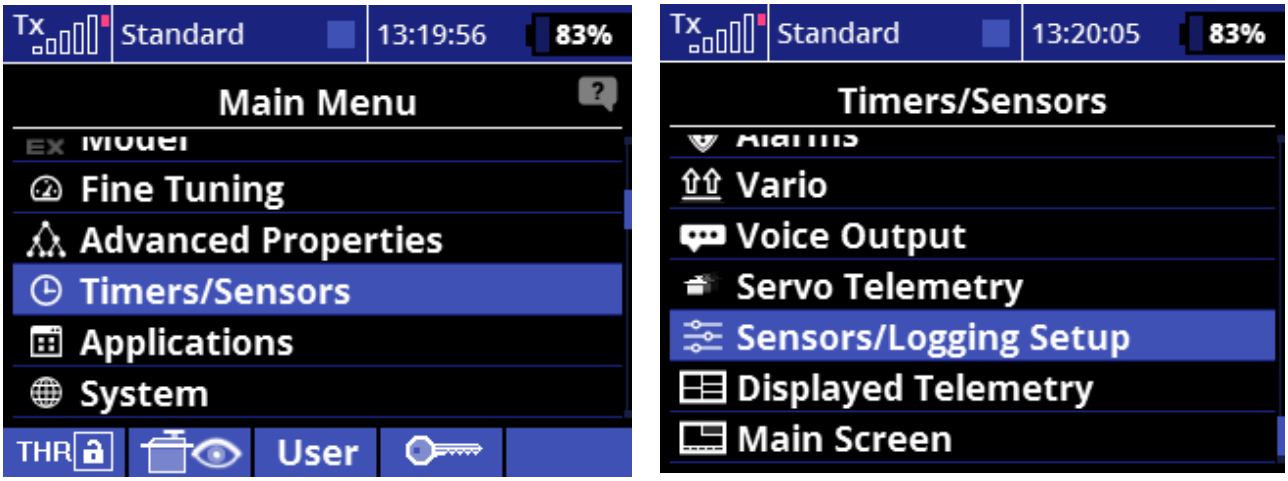

## 3.8 Assign main sensors (page 3)

On this page the assignment numbers of the desired telemetry values must be entered. On page 3 the data for the main sensors are entered, on page 4 (see below) the secondary sensors.

The telemetry values can be displayed independently of their type (main sensor / secondary sensor) on one screen.

The required assignment numbers are not freely selectable but are specified by the connected sensor.

The assignment numbers can be found in the JETI transmitter under the main menu item "Stopwatch/Sensors --- Sensors / Recording" or from the table under 4.0.




## 3.9 Assign secondary sensors (page 4)

On this page the assignment numbers of the desired telemetry values must be entered. On page 4 the data for the secondary sensors are entered, on page 3 (see above) the main sensors.

The telemetry values can be displayed independently of their type (main sensor / secondary sensor) on one screen.

The required assignment numbers are not freely selectable but are specified by the connected sensor.

The assignment numbers can be found in the JETI transmitter under the main menu item "Stopwatch/Sensors --- Sensors / Recording" or from the table in 4.0.

## 3.10 Overview of possible values for main and secondary sensors (page 3/4)

| | | |
|---|---|---|
| Battery voltage | 0 - 30 | (free selectable) |
| Current | 0 - 30 | (free selectable) |
| Capacity usage | 0 - 30 | (free selectable) |
| Total distance | 0 - 30 | (free selectable) |
| Altitude | 0 - 30 | (free selectable) |
| Vario | 0 - 30 | (free selectable) |
| Temperature | 0 - 30 | (free selectable) |
| RPM | 0 - 30 | (free selectable) |
| Wattage | 0 - 30 | (free selectable) |
| Cell 1 | 0 - 30 | (free selectable) |
| Cell 2 | 0 - 30 | (free selectable) |
| Cell 3 | 0 - 30 | (free selectable) |
| Cell 4 | 0 - 30 | (free selectable) |
| Cell 5 | 0 - 30 | (free selectable) |
| Cell 6 | 0 - 30 | (free selectable) |
| Weakest cell | 0 - 30 | (free selectable) |

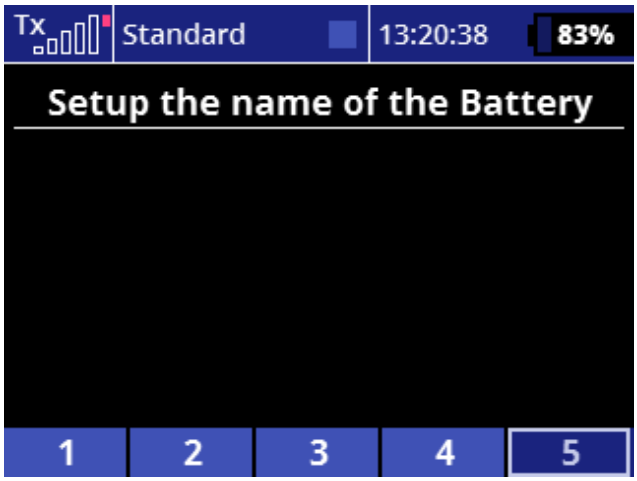
| | | |
|---|---|---|
| Speed | 0 - 30 | (free selectable) |
| Satellites | 0 - 30 | (free selectable) |
| Temperature 1 | 0 - 30 | (free selectable) |
| Guel gauge | 0 - 30 | (free selectable) |
| Turbine Pump | 0 - 30 | (free selectable) |
| Turbine ECU | 0 - 30 | (free selectable) |
| G-force | 0 - 30 | (free selectable) |
| Vibration | 0 - 30 | (free selectable) |
| PWM | 0 - 30 | (free selectable) |
| Battery 1 Voltage | 0 - 30 | (free selectable) |
| Battery 2 Voltage | 0 - 30 | (free selectable) |
| Battery 1 Capacity | 0 - 30 | (free selectable) |
| Battery 2 Capacity | 0 - 30 | (free selectable) |
| Battery 1 Current | 0 - 30 | (free selectable) |
| Battery 2 Current | 0 - 30 | (free selectable) |
| Absolute altitude | 0 - 30 | (free selectable) |
| Power in % | 0 - 30 | (free selectable) |

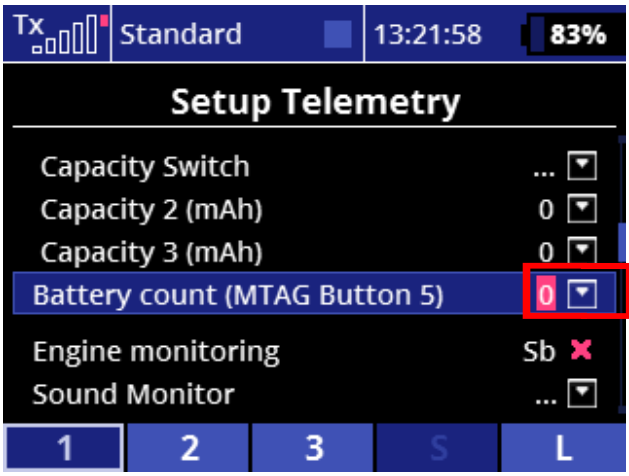
### 3.11 Set up battery name (page 5)

With the help of this page single passive chips (MTAG / RFID) of the different batteries can be used. These passive memories can store and manage the various characteristics and data of the batteries. With a reader the stored data of the batteries can be read directly into the transmitter and displayed via the telemetry data of the app..

And that's how it works:

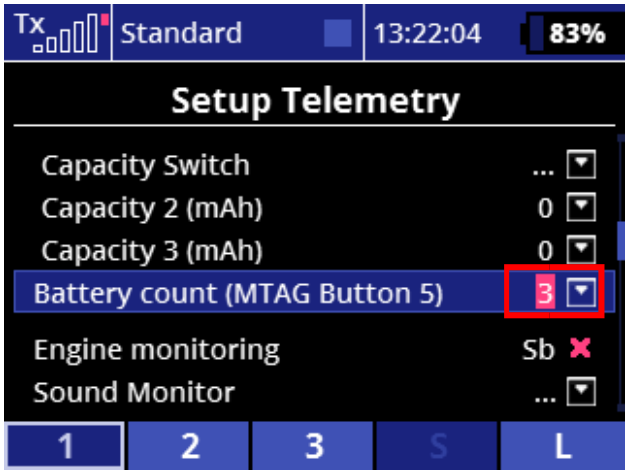
- from pages 2 / 3 and 4 you can also reach page 5 (key 5)
- select page 5, but if that's all you see, you've still set the "Number of batteries (MTAG)" on page 1 to zero.



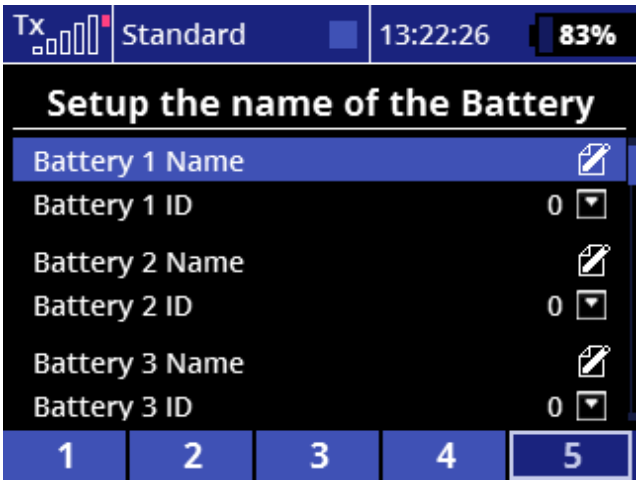



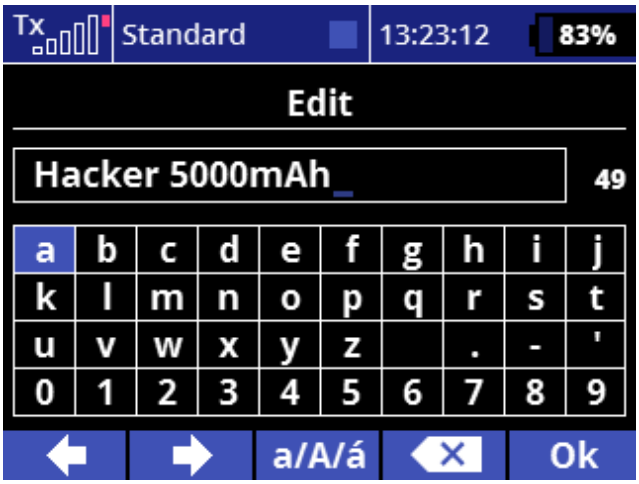

-

In this case you need to set the desired number of batteries to manage on page 1. In the example below, 3 batteries have been selected.




With this setting, the possible settings on page 5 will be visible. The battery name can be set individually via the editor. The battery ID is also freely selectable from 0 - 999.




# 4. Examples for assignment numbers of sensors

## 4.1 UniS-E

1 Voltage (V)
2 Current (A)
3 Capacity (mAh)
4 $R_X$ Voltage (V)
5 Altitude (m)
6 Vario (m/s)
7 Rotation speed (rpm)
8 -
9 Wattage (W)
10 -
11 -
12 Temperature (°C)

## 4.2 MUI

1 Voltage (V)
2 Current (A)
3 Capacity (mAh)

## 4.3 Vario

1 Altitude (m)
2 Vario (m/s)

## 4.4 GPS

5 SAT
8 Speed

## 4.5 MEZON PRO

1 U Battery voltage (V)
2 I Current (A)
3 Capacity (mAh)
4 RPM
5 Temperature (°C)
6 Running time (s)
7 PWM (%)
8 Power (W)
9 Energy (Wmi)
10 Temp. BEC (°C)

## 4.6 MULI

1 Voltage cell 1 (V)
2 Voltage cell 2 (V)
3 Voltage cell 3 (V)
4 Voltage cell 4 (V)
5 Voltage cell 5 (V)
6 Voltage cell 6 (V)
7 lowest voltage cell (V)

## 4.7 VSE CU - Hornet

1 EGT (°C)
2 RPM
3 THRO
4 Pump voltage (V)
5 Battery voltage (V)
6 Fuel (ml)

## 4.8 ASSIST

18 G-force (G)

## 4.9 Kontronik Jive 80 Pro TelMe

1 Version
2 V Battery (V)
3 I Battery (A)
4 I Motor (A)
5 Capacity (mAh)
6 RPM (rpm)

7 PWM (%)
8 TempESC (°C) 9 TempBEC (°C)
10 V BEC (V)
11 -
12 Timing (°)
13 Throttle (%)

## 5. Activating the LUA App

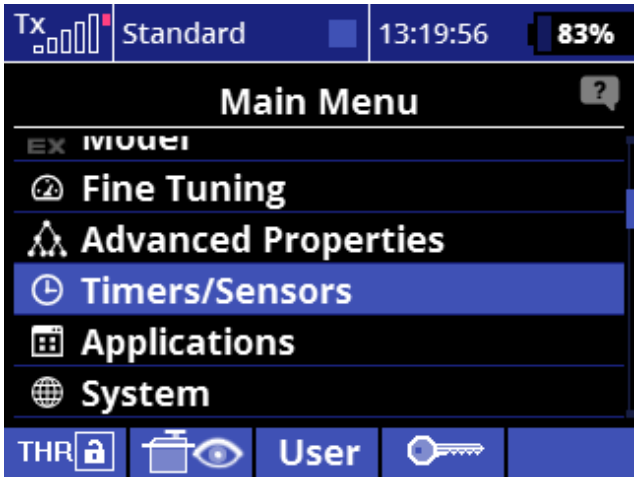
After all adjustment work has been completed, the main sensor (1st sensor) and / or the secondary sensor (2nd sensor) can be selected and activated.

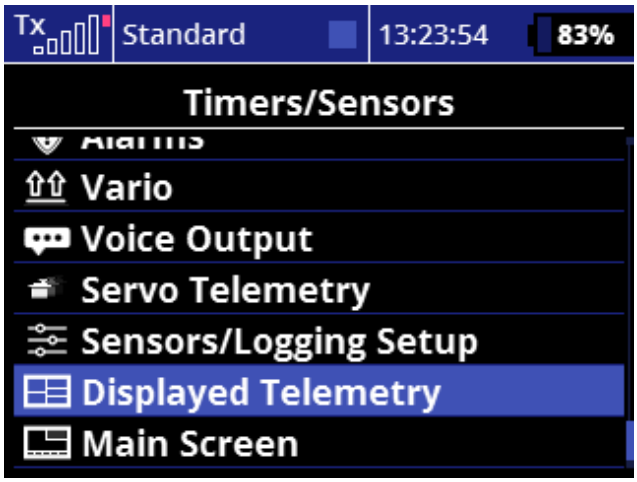
For the selection of the FBL system Spirire a check mark must be set behind the spiritsensor. Afterwards any value can be selected under the main sensor.

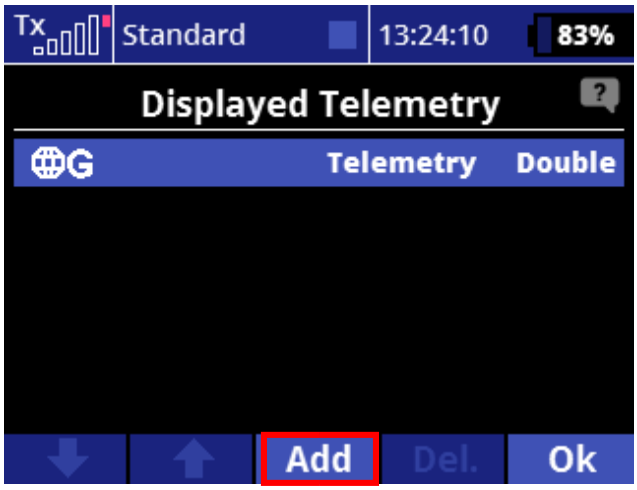
Hint:

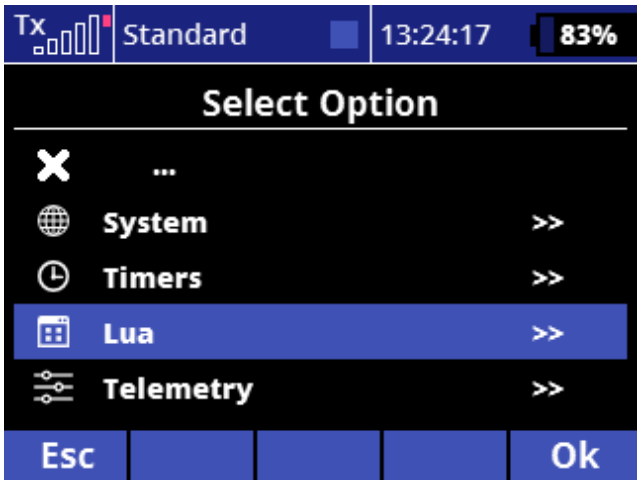
To get the Lua App shown on the display, the telemetry data must be set / activated as follows. Otherwise the preset values of the JETI transmitter will still be shown on the display.

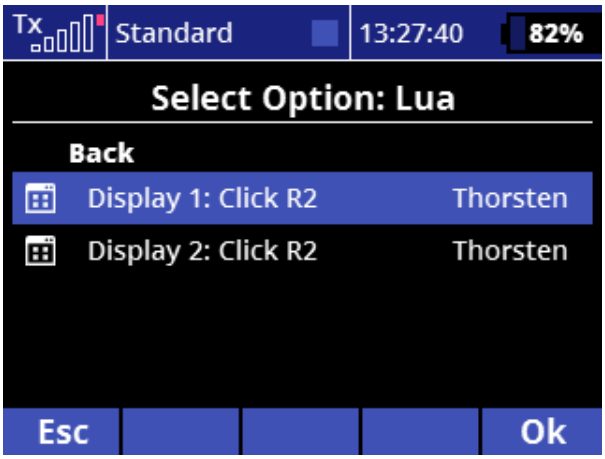
First press the push "menu" button above the dial. Then proceed as follows:

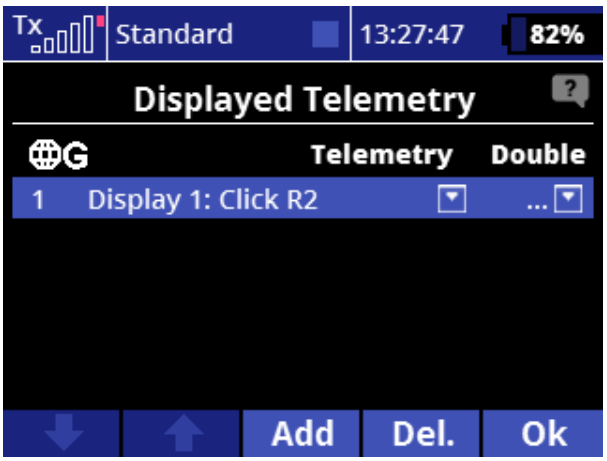

Tx
Standard
13:19:56
83%
Main Menu
Fine Tuning
Advanced Properties
Timers/Sensors
Applications
System
THR
User


Tx
Standard
13:23:54
83%
Timers/Sensors
Vario
Voice Output
Servo Telemetry
Sensors/Logging Setup
Displayed Telemetry
Main Screen


Tx
Standard
13:24:10
83%
Displayed Telemetry
Telemetry
Double
Add
Del.
Ok


Tx
Standard
13:24:17
83%
Select Option
...
System >>
Timers >>
Lua >>
Telemetry >>
Esc
Ok

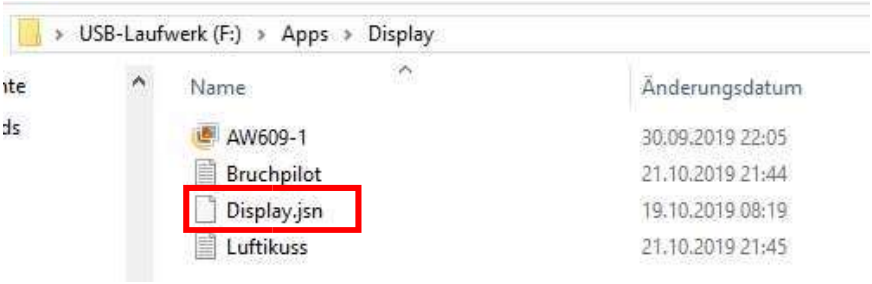

Tx
Standard
13:27:40
82%
Select Option: Lua
Back
Display 1: Click R2
Thorsten
Display 2: Click R2
Thorsten
Esc
Ok


Tx
Standard
13:27:47
82%
Displayed Telemetry
Telemetry
Double
1
Display 1: Click R2
...
Add
Del.
Ok

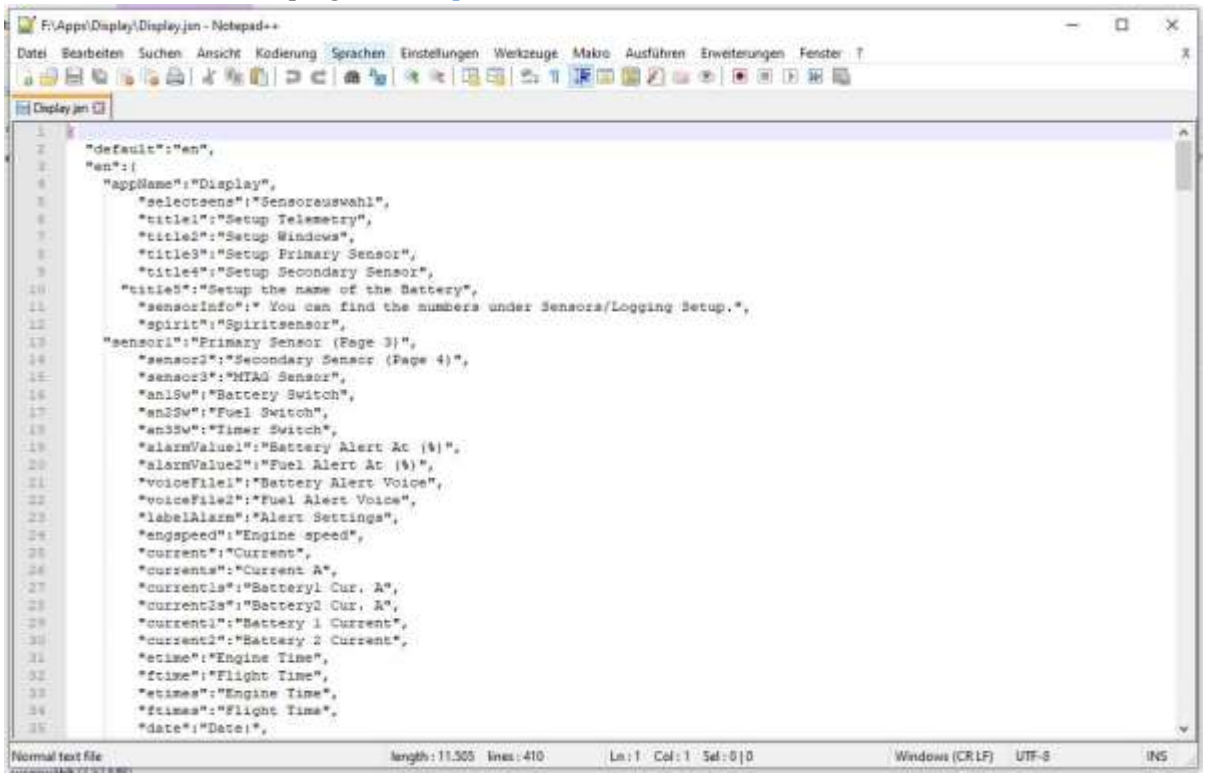
# 6. Naming / renaming of tile names / names

Anyone who heavily uses and experiments with telemetry data comes to the point where you would like to name the tiles individually. This is also possible with this app..

You can change the predefined names by editing the Display.jsn file..




To make a changes to the *.jsn file you have to install a dedicated software to be able to edit this file. Possible programs are e.g: JETI Modeler, Wordpad, Libre Office Writer, ... However, it is recommended to use the program [Notepad ++]



# 7. Examples of display design


# 8. Disclaimer

I wish you a lot of fun with the LUA App. Change requests, objective criticism and also praise can be made in the JETI Forum. You can find me as "Thorn".

Even if I am sure that you will handle the app and the possibilities of the trasmitter responsibly, I would like to point out that I do not take over any liability or guarantee for the app and its use.

If you do not agree, please do not install or use my app.