



## Description and operating instructions

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## 1. Introduction

The UniLog 2 is the successor of our successful data logger the UniLog. All well known functions of the UniLog were carried forward with current technology of the latest type. Numerous new functions have been added so that practically nothing is left to wish for.

Telemetry over 2,4 GHz systems with a back channel is fully integrated and is now component of the UniLog 2.

In line with our philosophy to support as many systems as possible, the UniLog 2 also speaks via the telemetry:

### **Jeti Duplex EX**

### **Multiplex M-Link**

### **Graupner/SJ HoTT**

### **Robbe/Futaba FASSTest S.BUS2**

### **JR DMSS**

The UniLog 2 independatly recognizes the use of, the Jeti, Multiplex, and HoTT telemetry systems. When used with Futaba or JR the telemetry must be pre-specified in the settings.

Since an additional barometric (air pressure) altitude sensor with high resolution is also integrated, a Vario is realized in the UniLog 2 with the telemetry in use. Likewise extensive alarms are programmable, which are announced by telemetry over the respective transmitter.

When operating with Multiplex M-Link all data on the sensor bus is automatically logged by the UniLog 2 and also written to the memory card → MSB Data logger.

A micro SD memory card provides the UniLog 2 with practically unlimited memory. With up to 20 cycles per second recording rate, plus the micro SD memory card, arbitrarily long recordings with high resolution and detail are possible. Data exchange with the PC for evaluation is also very easy thereby: take the memory card from the UniLog 2 and with the card reader provided put it into a PC USB port. The measured values of the UniLog 2 are present as text files on the memory card. The presentation and evaluation of the data is then made with the well-known software LogView (è [www.logview.info](http://www.logview.info) ). With the internal real-time clock with battery, all readings are always stamped with date and time.

Also new is the possibility of single cell voltage measurement. A LiPo up to 6s can be attached directly via its balancer plug to the UniLog 2, and so the voltages are measured and recorded and naturally also transmitted by telemetry.

Via our UniDisplay all values measured by the UniLog 2 can be viewed live and also the data read from the memory card. Maximum and Minimum values can quickly be called up from the stored recordings. Naturally all settings and alarms can also be programmed easily by UniDisplay.

Whether sailplane, aerobatics plane, helicopter, HLG or Slowflyer, the UniLog 2 can be used in almost any sector due to its small weight and compact size. Naturally the UniLog 2 is not only suitable for the Model flying, it can also be used in RC-boats, RC-car etc.

## 2. What the UniLog 2 can do

- Complete measurement of electric drives with current, voltage, power, capacity, number of revolutions (rpm) ,and temperature measurement (current, rpm and temperature sensors are separately available in different variants)
- Micro SD memory card → almost unlimited recording and simple selection of data
- Full telemetry support for Jeti Duplex, Multiplex M-Link and Graupner HoTT, Futaba FASSTest S.Bus2, JR DMSS.
- Internal real-time clock (with battery for at least 10 years) → all measurements will be provide with real time stamp of date and time
- Memory rates of 1 measurement per second (1 Hz) to 20 measurements per second (20 Hz)
- All sensors of the UniLog can still be used
- Balancer connector for LiPo single cell measurement up to 6s
- Altitude with automatic zeroing after switching on
- Current measuring range depends upon sensor used up to 400 A, voltage up to 60 V
- Current and voltage sensor plugged in (so easily used as a small pure altimeters/Vario e.g. in a Sailplane)
- Connection for receiver signal (Rx) and signal output to the automatic controller (ESC)
- Universal connections for external rpm sensor and up to three temperature sensors
- Temperature measurement also with PT1000 sensors for an extended measuring range
- Connection for speed sensor (stock no. 2560) for measuring airspeeds
- Direct connection to the GPS Logger is possible for data capture in a file
- Recording of all data on the Multiplex Sensor Bus in operation with M-Link
- Recording of the receiver voltage
- Power supply automatically from receiver and/or motor battery
- Manual recording start by integrated button
- Start of the recording by different set conditions
- Current status is indicated by three LEDs
- Direct viewing of recorded or live values with our UniDisplay
- Parameter settings over PC, UniDisplay, or telemetry is possible
- Support by LogView software [www.logview.info](http://www.logview.info)  
LogView is a very comprehensive yet easy to use evaluation programme for the PC that supports a multiplicity of different measuring devices and battery chargers from the model construction field.
- Simple and clear evaluation of measurement with the aid of diagrams on the PC
- Free firmware updates possible via the memory card (the firmware file is available on the Internet at [www.sm-modellbau.de](http://www.sm-modellbau.de) in the menu option **Software & Updates**)
- Useable almost everywhere due to its compact size and low weight

### 3. Technical data

Data Rate	1 Hz, 2 Hz, 5 Hz, 10 Hz, 20 Hz adjustable.
Memory Type	Micro SD or micro SDHC card (supplied with 2 GB card)
Recording duration	with 20 Hz data rate and full extent of utilization approx. 240 kByte/minute storage requirement → nearly 6 days recording with 2 GB card with 20 Hz data rate → nearly 12 days with 2 GB card with 10 Hz data rate → nearly 4 months with 2 GB card with 1 Hz data rate
Current measuring range	Depending upon sensor 20 A, 40 A, 80 A, 150 A or 400 A, also negative currents.
Voltage measuring range:	0 to 60 V
Single cell measurement	Up to 6s LiPo, each connection max. 28 V
Altitude measuring range	0 to 8000 m NN, when switching on receiver altitude measurement is zeroed automatically
Receiver battery voltage range	0 V to 10 V
Current supply	from receiver supply over the telemetry connection “Link” (from 3,8 V to maximally 10 V) or directly over the current and voltage sensor from the motor battery ( <b>with more than 8s or 35 V the UniLog 2 must also be supplied from the receiver</b> )
Current consumption	approx. 44 mA
External connections	1 x combined current and voltage sensor 1x pin row for balancer connection to 6s LiPo 1x rpm sensor 3x universal analogue lines for temperature sensor, speed sensor etc. 1 x servo impulse input from the receiver (Rx) 1 x servo impulse output to the controller (ESC) GPN servo cable for current supply and/or telemetry COM connection for UniDisplay, GPS Logger, or PC Card location for micro SD card
Dimensions	42 x 25 x 10 mm
Mass	9 g without cables

## 4. Data Capture

The UniLog 2 can capture the following values. The majority of data items are written to the memory card and transmitted by telemetry. Only part of it may be available at the transmitter depending on the telemetry used.

Description	Unit	Content
Drive current	A	Current in amperes taken by the drive at up to 2 decimal places depending on telemetry system.
Drive voltage	V	Voltage of the drive battery in volts at up to 2 decimal places depending on telemetry system.
Capacity	mAh	Battery capacity consumed by the drive, with a fully charged battery is incremented from 0 mAh.
Energy	Wmin	Energy consumed by the drive in Watt minutes.
Power	W	Power taken by the drive in Watts.
Speed	rpm	speed of the brushless motor in revolutions per minute. A connection via a sensor to a motor phase is necessary. Can also be translated directly into propeller speed by using the input of the gear factor.
Cell voltages	V	Voltage of up to 6 individual cells via the balancer connector
Altitude	m	Height above the start point measured from the barometric sensor.
Climb rate	m/s	measured from the barometric sensor.
Height gain	m	Height change in the last 10 seconds, recalculated every second so the trend can be recognised when thermaling.
Receiver volts	V or VRx	Voltage at the power supply input of the UniLog 2
Servo impulse in	us	Measured servo pulse at the input Rx. Can optionally be used for switching between Min/Live/Max values or in Limiter operation.
Servo impulse out	us	Servo pulse issued from port "ESC", is used in Limiter operation.
Pressure	hPa	Measurement of barometric air pressure sensor
Temperature	°C	Temperature sensor connected to one of the inputs A1 to A3
Speed	km/h	Speed sensor connected to one of the inputs A1 to A3

## 5. Operation of the UniLog 2

### 5.1. Installation

Due to the low weight and the compact design, installation is unproblematic. Attention must be paid only to the fact that the start/stop key cannot be inadvertently pressed. Attachment with a Velcro strap on a board is sufficient and makes easy access possible to the memory card.

### 5.2. Memory cards

As memory card practically all commercial micro SD cards with FAT16 or FAT32 file system can be used. Also SDHC cards and memory capacities over 2 GB are supported. However not all cards are equally suitable, since some cards exhibit an unfavorable behavior with continuous storing of data. If an unsuitable card is used, the recording may run intermittently or even stop. We recommend the use only with the card provided or available as an accessory from us.

The card is inserted into the cut-out on the front and pushed in until it clicks and is flush. The UniLog 2 does not have an ejector for the memory card, the card is simply pulled out again with the fingers.



### 5.3. Meaning of the LED

The UniLog 2 has three coloured LEDs.

After switching on a run of the three LED indicates the internal initialization.

In the operation there are the following signals:

- green LED shines permanently → UniLog 2 ready
- green LED flashes at the set recording rate → UniLog 2 is recording data
- red LED flashes slowly → no memory card pushed in.

### 5.4 Basic Settings

The settings of the uniLog 2 can be made with a PC or laptop equipped with our software "SM UniLog 2 Tool", with our UniDisplay, or with the HoTT and Jeti telemetry.

The settings are always backed up in parallel on then UniLog 2 and saved on the memory card. When new settings are created using the PC software "SM UniLog 2 Tool" and have been saved on the card, they will be loaded by the device at the next start.

In this way it is possible to use different memory maps for different models and to automatically receive the correct settings.

The following settings are important so that the UniLog 2 can correctly measure:

- "Telemetrie Auswahl" specifies the telemetry used. Here, from firmware v1.09, must be specified, whether as previously Jeti / HoTT / Multiplex are searched automatically, or whether it is fixed and Futaba S.BUS2 or JR DMSS Telemetry is specified.
- "HoTT Modus" specifies the mode in which the data is transferred for HoTT telemetry. The UniLog 2 can be operated with HoTT as "General Module (GAM)", "Electric Air Module (EAM)" or "controller (ESC)".
- "Datenrate" selects the recording speed  
A reasonable value is 5 or 10 Hz here, so the files are not too big and yet all details are recorded.
- "Stromsensor" selects the connected current sensor.  
Here, the actual connected power sensor must be set so that the UniLog 2 can measure the current correctly.
- "A Modus" selects the sensor connected to these analog inputs.  
The selection must correspond to the actual sensors connected, or false readings may be displayed.
- " Propellerblätter " sets the number of propeller blades in the optical and the number of magnets in the fixed magnet speed measurement.
- Pole" sets the number of magnetic poles in the brushless speed measurement (typical inner rotor 2 poles External rotor 10 or 14 poles)  
When in doubt, this value must be obtained from the manufacturer, or the magnets counted. Propeller blades and poles are set together, there are no independent values.
- "Gertrieb" is the gear ratio for the speed measurement.  
When in direct drive or for the speed measurement on propeller or on the drive shaft "1.00:1" must be set here. Otherwise, the value of the subsequent transmission is specified.
- "Vario Schwelle" is the threshold for the vario signal via telemetry.  
Only when the climb / descent is greater than the threshold, is a Vario tone generated by telemetry.
- "Vario Ton" sets whether the Vario tone is active during climb / descent or both.  
The Vario tone can also be switched off completely Here.

- "Limiter modus" defines the competitive class for the limiter.  
Thus is selected a special operating mode for competition classes which require a power limiter. In normal operation, "Limit Mode" is set to "off".
- "Energie Limit" is the corresponding energy limit in Wmin.
- "Zeit" und "Datum" are used to set the internal clock.
- "Kapazität" sets the mode for the capacity measurement: continuous or always start at 0 mAh. (see below).
- "Stromoffset" specifies whether the when you connect the drive battery to UniLog 2 the actually flowing current should always calibrate to 0.  
Thus, the quiescent current of servos, etc. is hidden.

#### **Continued capacity measurement:**

With the UniLog 2 a battery can be flown empty in several flights. Here, the UniLog 2 notes the capacity (and energy) used and starts again with this value, unless a battery is connected at full voltage (i.e. fully charged)

#### **Manual reset of the counter capacity:**

Start UniLog 2 and during the LED run turn off again. → next start the counter is set to 0.

### **5.5. Telemetry Alarms**

These alarms are output via the telemetry connected to the transmitter. Depending on the system, a beep will sound and / or a warning by voice output. Please read the notes in the individual telemetry system manuals.

Once the model has landed the acoustic output stops automatically, so turn off the model and no more disturbing messages are issued.

"Strom" (current)

The alarm is active when the set current threshold is exceeded.

"Startspannung" (Start Voltage)

This alarm serves as a warning before the starting with an empty battery. For example if 12.4 V is set for a 3s LiPo, the alarm is only active if by mistake an already flown empty battery is connected. A full 3s has about 12.6 V, which is significantly above the threshold.

"Spannung" (Voltage)

The alarm is active when the set voltage threshold is dropped below.

"Kapazität" (capacity)

The alarm is activated when the consumed capacity exceeds the set value.

This is the most important alarm to conserve the LiPo. A max value of 80% of rated capacity should be set.



"Hohe" (Altitude)

The alarm is active when the set height level is exceeded. Well suited to towing a plane to a certain level.

"Rx Spannung" (Rx Voltage)

To monitor the receiver supply. The alarm is active when the set voltage threshold is dropped below.

"Zellenspannung" (Cell Voltage)

The alarm is active when at least one of a maximum of 6 cells connected to the balancer falls below the set voltage threshold.

"A1-A3"

Freely configurable alarms for measured values at the analog inputs A1 to A3. It can either be the alarm value and the direction set. Thus, for example an alarm can be triggered when a temperature is exceeded by a temperature sensor or a speed with a speed sensor drops below a set value.

### .5.6. Start and stop of the recording

The UniLog 2 has several possibilities for starting data recording. The appropriate options can be set over our software "SM UniLog 2 Tools", over the UniDisplay or over the Jeti and HoTT telemetry.

With an electric drive in order to automatically record every flight in a new file, we recommended starting by current threshold, e.g. with 3 A drive current and automatic stop of recording after landing.

The recording of the data can be started / stopped in the following way:

- **Manual start/stop with the button:**  
The recording is started and stopped by depressing the button on the UniLog 2.
- **Manual start via telemetry:**  
The recording is started and stopped in the Jeti Duplex or Graupner HoTT telemetry (text mode) by depressing a key at the transmitter.
- **Start with exceeding an adjustable current threshold:**  
The recording begins automatically, as soon as the measured current is larger than the threshold. In this way the recording can be started with the start of an electrical model.
- **Start at the end of an adjustable time:**  
If "Autostart time" is activated, the recording begins automatically as soon as the set time is completed after the start. So you do not have to worry about pressing the button, the recording starts itself.
- **Start/stop with remote control signal (servo impulse):**  
If the option "Rx start" is activated, the recording starts as soon as the impulse from the receiver exceeds the set threshold. If the impulse drops below this threshold then the recording will stop again.  
In this way the recording of the UniLog 2 can be controlled by the transmitter with a two position switch via a free channel. The switch must be defined in such a way that the free channel shifts up and down between -100% (recording stop) and +100% (recording start).

The value 1.5 ms corresponds to the central position of most current remote controls. For special applications the asynchronous operation threshold can be adjusted from 1.1 ms to 1.9 ms.

The value “Rx an” starts the recording, as soon as the UniLog 2 receives a valid receiver signal. In this way e.g. in competition models where the motor battery is connected previously, the recording starts as soon as the receiver is switched on.

- **Automatic stop after landing:**

With the option “Autostop landing” the recording ends automatically 30 seconds after the landing, that is if for 30 seconds the height is less than 10 m and the drive current less than 5 A.

All starting options can be active at the same time. In this way e.g. if the recording was started by current, the recording can be stopped again with the remote control signal. The switch at the transmitter must be moved only once from +100% to -100%.

With each start of recording the UniLog 2 begins a new file. The file names are sequentially numbered and have the following format:

**“2013-01-01 SM UniLog 2 Datei 0001.txt “**

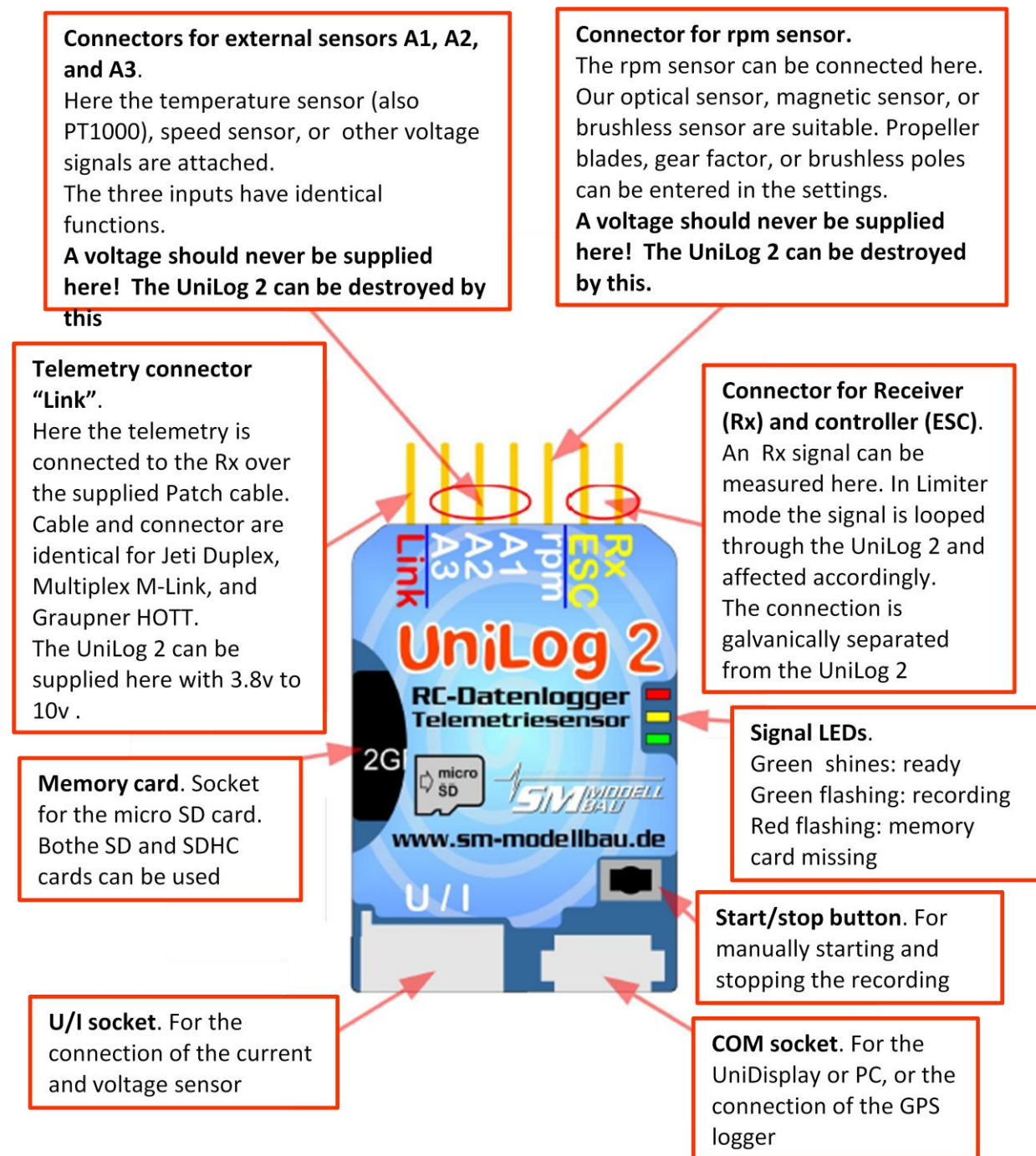
To distinguish between different firmware versions these files are always in a folder with this format:

**“SM UniLog 2 v1.09”**

In each case the recording should be stopped before disconnecting the UniLog 2, since only that way are the minimum and maximum values stored for use with the UniDisplay. The recording can also be terminated simply by interruption of the supply current. That is intended and OK, however the minimum and maximum values in the file are then missing.

## 6. Connections of the UniLog 2

### 6.1. Top side



## 6.2. Under side



### Balancer Connections

The balancer plug of a Lipo battery of up to 6s can be attached here to log the individual cell voltages.

It is important that the “Ground” or “-ve” connection is made to the right hand connector marked GND. The UnLog 2 is not powered over this connection. If only the cell voltages are being measured, it must also be connected to the receiver via the telemetry “Link” connection. The Lipo battery must also have a connection to the supply voltage.

## 6.3. Pin allocation on the pin row



The pins on the “pin row” are allocated as follows:

Top	Signal
Middle	Plus
Bottom	Minus

## 7. Connection examples

The UniLog 2 can be supplied with power either from the current sensor, or via the Telemetry connection “Link”, or from both at the same time.

### 7.1. Altitude only e.g. in the F3B/F3J Sailplaner or also HLG

For pure altitude it is only necessary to connect the UniLog 2 with the receiver lead provided. Like this the altitude logger weighs only 9 g plus leads. At the UniLog 2 the cable is attached to “Link”, and at the receiver either directly to the telemetry connection or, if no telemetry is present, with a free servo connection. In this way the UniLog 2 is supplied with power from the receiver.



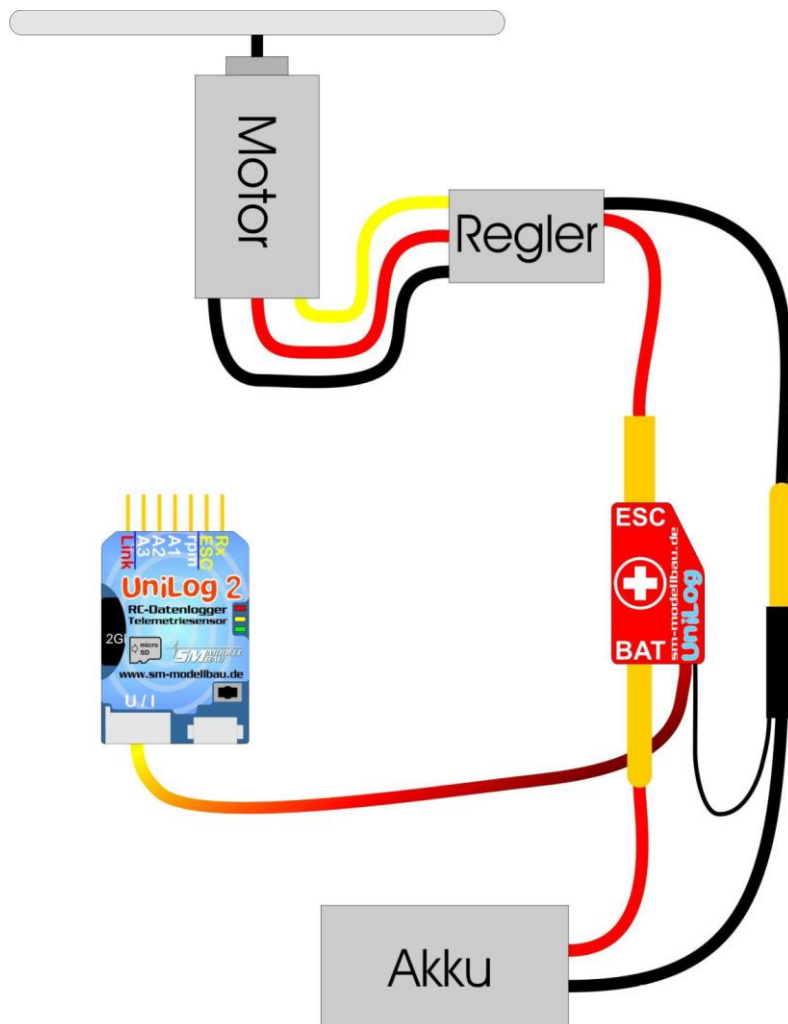
If the recording is to be started and stopped by the transmitter (with activated “Rx Start”) a second connection between the desired receiver channel and the Rx connector of the UniLog 2 is also necessary.

### 7.2. Electric drive measurement

For measurement of an electric drive a current and voltage sensor needs to be added to the UniLog 2. These sensors are available for different currents and with different plug systems:

Part number	plug system	max. Current	max. Voltage	Resistance	mass
2510/2530	2mm gold	-10A,+40A	60v	1 mOhm	7g
2511/2531	4mm gold	-10A,+80A	60v	1 mOhm	14g
2512	MPX green	-10A,+80A	60v	1 mOhm	11g
2532	Deans Ultra	-10A,+80A	60v	1 mOhm	12g
2513/2533	4mm gold	-20A,+150A	60v	0.5 mOhm	14g
2514/2534	5.5 mm gold	-20A,+150A	60v	0.5 mOhm	15g
2515/2535	3.5 mm gold	-10A,+80A	60v	1 mOhm	11g
2516/2536	6 mm gold LMT	-20A,+150A	60v	0.5 mOhm	15g
2517/2537	6 mm gold LMT	-50A,+400A	60v	0.2 mOhm	18g
2523	Receiver current sensor GPN/FUT	-5A,+20A	10v	4 mOhm	9g

If a battery with more than 8s Lipo or 35 V is attached to the current sensor, the UniLog 2 must also be supplied via the telemetry connection “Link”. Otherwise the voltage regulator in the current sensor is overheated and the UniLog 2 shut down. Thus with high drive voltages the UniLog 2 must be supplied with power by the current sensor AND receiver.



Connected like this, the UniLog 2 is supplied with power from the current sensor. The current sensor is simply attached with the 5 pole plug to the U/I connector.

The current sensor is looped in the plus and minus of the battery with its plugs.

The connection “BATT” must be connected to the battery, and the connection “ESC” connected with the automatic controller.

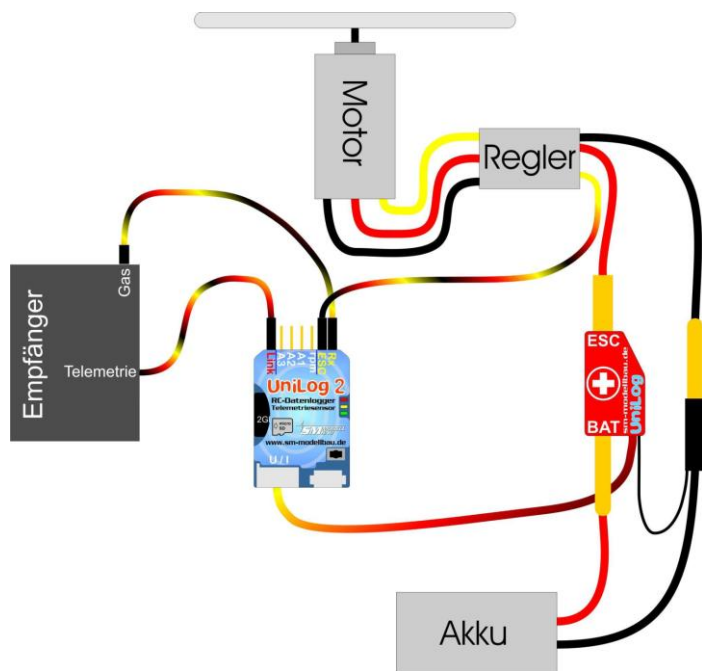
The battery polarity must never be reversed! The UniLog 2 could be destroyed by this!

The current sensors for 150 and 400 A have usually no plug on the single negative conductor. A small connector plug should be fitted, with which the connection to the negative pole of the battery can be made. Here 2 mm gold plugs work well.

When switching the UniLog 2 on the current zero point is also calibrated. The current flowing at that time is thus set as 0 value.

### 7.3. Limiter for F1Q/F5B/F5D/F5F

With use as a Limiter in the competition classes F1Q/F5B/F5D/F5F the drive is switched off by the unilog 2 after consumption of the set energy quantity. For this, the signal from receiver to controller must be looped through the UniLog 2. The signal is read, recorded, and sent on again from the UniLog 2 "ESC" output..



Since the UniLog 2 intervenes actively in the servo signal, only the motor control channel should be sent through the UniLog 2.

In addition it must be ensured that the motor controller is OFF with a servo impulse of 900 us = 0.9 ms.

Connection for F5J:

Here no current sensor is needed. To power the UniLog 2 still make the connection from "Link" to the telemetry port of the receiver. When no telemetry is used, a connection for the supply between "Link" and a free servo channel should be made, but here you have to break the impulse line, only plus and minus are connected.

#### 7.3.1. Characteristics as Limiter:

- The limit is freely adjustable over PC, UniDisplay and telemetry
- The mode is selectable for:
  - F1Q - Signaling the timer component of the model over A2 and A3
  - F5D - Release of the engine again after 10 s
  - F5B/F - Final shut down
- The Limiter mode shows for 2 seconds after the run of LEDs when switching on
  - F1Q - the orange LED and the red LED
  - F5D - the orange LED and the green LED
  - F5B/F - the orange LED
  - F5J – the red LED
- The energy counter is set to 0 when switching on and cannot be reset later
- The Limiter is independent of the data capture
- When the limit is reached the red LED flashes fast, a servo impulse of 900 us = 0.9 ms is sent
- With Limiter set the memory rate is always switched to 20 Hz
- Power levels under 25 Watts (e.g. BEC) are ignored during the energy counting when a limit of more than 400 Wmin is set.

- In F5J mode the UniDisplay after connection automatically shows a new screen with the measured F5J values according to the current F5J rules. In the second row are the Firmware version and serial number. In the middle is the Starting height of the last flight. At the bottom for checking are some current (live) values, such as height, the timer for the 30 + 10 second interval, and the measured servo pulse in and out.



#### 7.4. Connection of Analogue sensors at A1 to A3

On the UniLog 2 up to three analogue sensors can be attached at connector locations A1, A2, and A3, and be recorded.

All three connections are identical in function. The attached sensor needs only to be selected in the Setup of the UniLog 2. In this way up to three temperatures can be recorded at the same time, or two temperatures and speed with the speed sensor etc.

Settings options for A1, A2 and A3:

- Temperature sensor (part no. 2220 & 2221), measuring range of - 40 °C to + 125 °C
- Voltage in mV (measuring range is 0 to 3300 mV) for your own sensors
- Speed sensor to 250 km/h (stock no. 2560)
- Speed sensor to 450 km/h (stock no. 2560)
- Temperature sensor PT1000 (stock no. 2225), measuring range of - 50 °C to + 300 °C, with suitable PT1000 sensors also to + 800 °C

#### 7.5. Connection of an rpm sensor

As a “number of revolutions” sensor, optical sensor part no. 2210, magnetic sensor part no. 2211 or Brushless rpm sensor part no. 2213 can be used at the “RPM” connector.

In the setup of the UniLog 2 for rpm measurement the correct number of measuring impulses per revolution must be given. With the optical and magnetic sensor that is the number of the propeller blades and/or magnets. With the Brushless rpm sensor that is the number of engine poles. A classical in-runner like e.g. a Lehner or a Hacker has 2 poles. An out-runner often has 10 or 14 poles. The data sheet for the motor should specify the number of poles.

In addition the gear ratio can be specified. So if an in-runner with gearbox is measured with the Brushless rpm sensor the gear ratio can be factored in. In this way the actual propeller rpm is recorded.

If the rpm is measured directly at the propeller and/or output (optical sensor at the propeller or magnetic sensor on the shaft), the gear ratio can be set at 1,0:1.

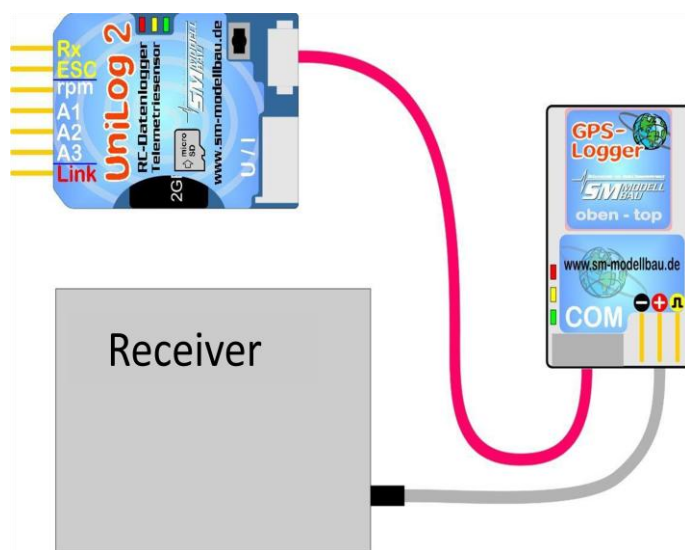


### Connection of the Brushless rpm sensor (part no. 2213):

The sensor is attached via the soldered on 2 mm gold plug to one of the three motor wires. Thus a connection to one of the three wires between the automatic controller and motor must be made. This can be for example the included 2 mm socket soldered directly with the ESC cable, or tapped in with a thin cable (no current flows here).

Brushless rpm measurement functions only if the UniLog 2 also has a bonding to the drive at the same time via the current sensor.

### 7.6. Connection to the GPS Logger



With the leads part no. 2720 or 2721 the UniLog 2 can be directly connected with the GPS Logger. The UniLog 2 is supplied with power via its current sensor, while the GPS Logger is connected directly to the receiver. In this way the GPS Logger also records automatically the data from the UniLog 2 on its memory card. Thus GPS data and the recorded values on the UniLog 2 are synchronised and can be evaluated together. The recording on the GPS Logger takes place with the GPS Logger memory rate i.e. 10 Hz max.

**Note: Only the three-core cable connections part no. 2720 and 2721 may be used! With the 4 core cable part no. 2401 the two internal voltages are connected which can lead to faults.**

## 8. Use of the UniDisplay

For connection of the UniLog 2 firmware v1.26 or higher must be used in the UniDisplay. An update for the UniDisplay can be downloaded free of charge from our homepage ([www.sm-modellbau.de](http://www.sm-modellbau.de)).

UniDisplay and UniLog 2 are connected with the cable provided with the display. The connector location is labelled “COM” on the UniLog 2. The cable connection can be made either way round, which end is used is irrelevant.

The display is powered by the UniLog 2 and turns on automatically as soon as the UniLog 2 is connected. The display can be attached at any time to the UniLog 2.



### Menu:

First the menu is activated. The menu options can be selected with the “plus” and “Minus” buttons, and the appropriate item selected with “Enter”

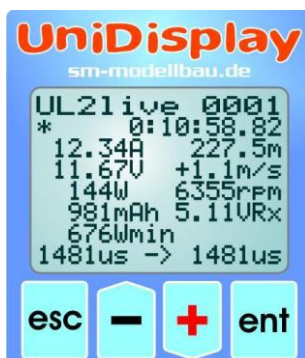
### Live data display screen 1:

Here all current readings are displayed. Most values are self-explanatory.

- “Plus” starts and stops the recording.
- “Minus” changes between Live/MIN/MAX values.
- “Enter” changes between the Live screens 1, 2 and 3.
- “Esc” changes back to the menu.

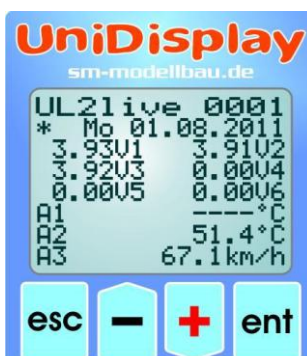
Top right is the current file number. Including changes in the past, time, date and time.

The last line shows the servo impulse measured at the Rx connection and then at the ESC output connection.



### Live data display screen 2:

On the second Live display screen are shown the 6 single cell voltages and the values of the ports A1 to A3.



### Live data display screen 3:

Here are shown the current air pressure measured by the barometric pressure sensor, and the internal temperature of the UniLog 2. Because of self-heating this temperature is always a little higher than the ambient temperature.





### Data display from the memory:

In the first screen the desired file is selected from the memory card. Scroll through the files with “plus” and “Minus”, and select the file with “Enter”.



The memory display is then almost identical to the Live Values: “Plus” and “Minus” to scroll through the readings every single value can be displayed. A long press accelerates the run. If available, the MAX and MIN values are displayed at the end of the file. A long press on “Enter” scrolls directly to the end of the file.



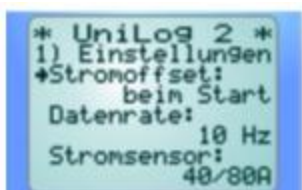
### Setup:

Here the menu for all settings of the UniLog 2 appears. In the second line is the firmware version of the UniLog 2 and also the serial number. Move through the menu options with “Plus” and “Minus”, and select the appropriate point with “Enter”.



### Settings screens 1: 8

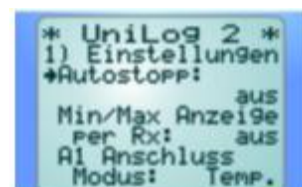
Here the settings of the UniLog 2 are summarized. Move through the menu options with “Plus” and “Minus”, and select the appropriate point with “Enter”. The Arrow then becomes a Dot and the selected value can be changed with “Plus” and “Minus”. A press on “Esc” or “Enter” stores the change.



- “Telemetrie”: setting for the telemetry used
- “HoTT Modus”: desired mode with HoTT
- “Kapaz.Messung” : enables or disables the continued capacity measurement
- “Stromoffset” : automatic zero point calibration on or off at startup
- “Datenrate” : selects the recording speed
- “Stromsensor” : selects the current sensor connected



- “Start durch Rx” : activates the recording start by receiver
- “Stromstart” : activates the recording start by motor current
- “Zeitstart” : activates the recording start after set time
- “Autostopp” : allows makes the automatic stop of the recording
- “Min/Max Anzeige per Rx” : allows the selection between



- “A Anschluss modus” : selects the sensor connected to these analogue ports
- “Propeller” : specifies the number of prop blades with optical and/or the number of fixed magnets with magnetic rpm measurement

```
* UniLog 2 *
1) Einstellungen
+A2 Anschluss
  Modus: Temp.
A3 Anschluss
  Modus: Temp.
Propeller/Pole:
  2 / 4
```

- “Pole”: specifies the number of motor poles for Brushless rpm measurement
- “Getriebefaktor” : is the gear ratio for rpm measurement
- “Vario Steigen” : indicates the positive threshold for the Vario signal
- “Vario Sinken” : indicates the negative threshold for the Vario signal
- “Varioton” : specifies whether the Vario is active during climbing/sinking
- “Limiter modus” : defines the competition class for the Limiter
- “Limit Wert” : is the corresponding energy limit in Wmin
- “Uhrzeit” and “Datum” are used for adjusting the internal clock

```
* UniLog 2 *
1) Einstellungen
+Getriebefaktor:
  1 : 1.00
Limiter-Modus:
  aus
Limit Wert:
  1000 Wmin
```

```
* UniLog 2 *
1) Einstellungen
+Varioton:
  Steigen/Sinken
Vario Steigen:
  ab +0.5 m/s
Vario Sinken:
  ab -1.0 m/s
```

```
* UniLog 2 *
1) Einstellungen
+Uhrzeit:
  16:11
Datum:
  01.08.2011
```

UniDisplay  
sm-modellbau.de

```
* UniLog 2 *
2) Alarme
+Strom 50.0A -
StartSP 12.3V +
Spann. 10.0V -
Kapaz 1800mAh +
Hoehe 200m -
RxSpann 4.70V -
```

esc - + ent

UniDisplay  
sm-modellbau.de

```
* UniLog 2 *
2) Alarme
+Zellen 3.40V -
```

esc - + ent

### Alarms

Alarms can be set here for all telemetry versions and are announced from the transmitter module and/or the transmitter. When the arrow is in the left column and the appropriate menu option activated with “Enter”, the value of the alarm can be set. After the arrow is moved right and the menu option activated with “Enter” the alarm can be activated (“+”) or deactivated (“-”) with “Plus” or “Minus”.

UniDisplay  
sm-modellbau.de

```
* UniLog 2 *
3) M-Link Address
+Spannung 02
Strom 03
Drehzahl --
Kapazitaet 04
Vario --
Hoehe 07
```

esc - + ent

UniDisplay  
sm-modellbau.de

```
* UniLog 2 *
3) M-Link Address
+A1 (Temp.) --
A2 (PT1000) --
A3 (250kph) --
Zelle 1 --
Zelle 2 --
Zelle 3 --
```

esc - + ent

### M-Link addresses:

For transfer of Unilog 2 measured values by M-Link, addresses can be assigned here for the display on Multiplex transmitter. Each address may only be assigned once to any attached M-Link sensor, including the M-Link receiver. The Bus system ceases to function with multiple assignments. If a value is not to be transmitted chose the address “—”. This value becomes the highest permissible Address 15.

## 9. Telemetry Operation

With the UniLog 2, the telemetry of Jeti Duplex (EX), Multiplex M-Link, Graupner HoTT, Robbe / Futaba FASSTest S.BUS2 and JR Propo DMSS is supported.

The telemetry operation is similar for all applicable remote control systems: live data is displayed at the transmitter or an external display, with Jeti Duplex and Hott, the UniLog 2 can also be operated from the transmitter. If the system has a voice, then this is also supported by the UniLog 2.

The alarm output depends on the telemetry. In some systems, the alarm is generated by the UniLog2, in others thresholds are set directly on the transmitter. Please follow the instructions below.

### 9.1. Jeti duplex

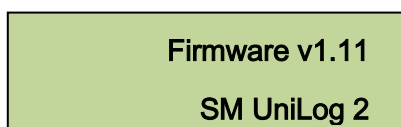
The UniLog 2 is a complete telemetry sensor for Jeti Duplex 2.4 GHz systems. All measured values can be transferred live to the ground and displayed on the JetiBox. The Jeti Expander E4 for the connection of up to 4 sensors is supported.

Connection direct to the Jeti Duplex receiver is made with the patch cable supplied between “Link” on the UniLog 2 and “ext” on the Jeti Duplex receiver.

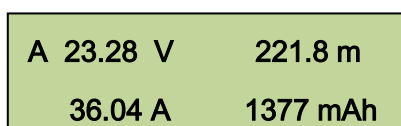
#### 9.1.1. Operation of the UniLog 2 with the JetiBox



After the start of transmission the JetiBox is changed to Mx for the attached sensors.



A press the on the ▼ key changes to the UniLog 2 initialisation screen then the measured data is displayed.



As soon as the first screen with measured data appears, the different data screens can be selected with presses of ◀ and ▶ keys. A pressure on the key ▲ starts the recording of data in the UniLog 2, which is indicated by an acoustic signal. A further pressure on ▲ terminates the recording.

A simultaneous long pressure on the keys ◀ and ▶ changes between the display of Live / MAX / MIN values.

In the top left of the screen there is an indicator of the current active data screen and/or the status of the UniLog 2:

- **A** first data screen, the following screens have B, C, etc.
- **\*** recording running
- **>** maximum values are indicated
- **<** minimum values are indicated

```
< Current Alarm >
( OFF ) 100A
```

A press of key ▼ changes to the settings. Again with the keys ◀ and ▶ the different screens and the desired point are selected.

```
< Current Alarm >
( ON ) < 49A >
```

After a further press of key ▼ the selected value can then be changed (keys ◀ and ▶). With a simultaneous pressure on ▲ and ▼ the alarm is switched on/off.

Changed settings are only stored with the move back to the selection level with ▲.

### 9.1.2. Display of measured values on the JetiBox

```
A 23.28 V      221.8 m
   36.04 A      1377 mAh
```

Top: Drive voltage, barometric altitude from starting point  
Bottom: Drive current, capacity used

```
B          1750.1 Wmin
2481 rpm    839 W
```

Top: energy used  
Bottom: rpm, drive power

```
C 5.01 VRx      221.8 m
>>>>> _      +12.1 m / s
```

Top: Rx voltage, barometric altitude from starting point  
Bottom: Graphical display of the Vario, Vario as numerical value

```
D 3.61  3.65  3.66
   3.65  0.00  0.00
```

Top: Single cells 1 - 3  
Bottom: Single cells 4 - 6

```
E A1      ---- °C
   A2      44.9 °C
```

Top: Sensor value at port A1  
Bottom: Sensor value at port A2

```
F A3      221.9 Km / h
1100 us  -> 1100 us
```

Top: Sensor value at port A3  
Bottom: Servo impulse at the Rx connection, servo impulse at the ESC connection

```
G          00:14:34.5
01.06.2011  14:55
```

Top: Recording time  
Bottom: current date alternating with the file number, current time

```
H  971.43 hPa
   internal 28.1 °C
```

Top: current air pressure  
Bottom: internal temperature of the UniLog 2.  
As a result of self-heating this temperature is always somewhat higher than the ambient temperature.

### 9.1.3. Alarms

When operating on the Jeti transmitter modules, with the display of data on the simple JetiBox, all alarms and also the Vario sounds are generated directly from UniLog 2. All settings are also made on the UniLog 2.

The Jetibox Profi and the Jeti transmitter can, in Jeti EX mode, generate alarms and Vario tones themselves. These are then preset in the Box or transmitter. Alarms that are set in UniLog 2 remain as additional output.

### 9.2. Multiplex M-Link

The UniLog 2 is also a full telemetry sensor for the Multiplex M-Link 2.4 GHz system. The measured values can be transferred live to the ground and be displayed directly on the Multiplex the Royal Pro or COCKPIT SX transmitter.

In order to display the correct rpm, the Royal Pro transmitter must have as a minimum firmware V3.46, and the external display at least v1.09.

The connection to the M-Link receiver is made with the Patch cable provided between the connection location "Link" on the UniLog 2 and "Sensor" on the M-Link receiver.



The settings for telemetry can be made either with the UniDisplay (also see chapter 8) or with our "SM UniLog 2 tools" software on a PC. The addresses for display on the Multiplex remote control (the line that the respective value is indicated in) can also be freely selected.

### 9.2.1. alarms

All alarms on M-link are produced directly from UniLog 2. All settings are also reset in the UniLog 2.

#### There is a peculiarity with the Vario settings:

Since the Multiplex transmitter itself produces the Vario tone, the UniLog 2 suppresses climb values which are smaller than “Vario threshold”. Thus this range is hidden from the transmitter tone.

Example: -

“Vario rising threshold” is set to 0,5 m/s “Vario sinking threshold” is set to -1 m/s

– „Vario tone is set to “on”

→ if the model rises faster than 0.5 m/s, the value is sent and the transmitters beeps

→ if the model rises or sinks more slowly, the value 0 sent and the transmitter remains silent

If the change is always required, “Vario threshold” must be adjusted to 0,1 m/s and “Vario tone” set to “up/down”.

As an additional feature the UniLog 2 writes all data continuously on the Multiplex M-Link bus system and stores it in parallel with its own data on the memory card. So you can expand your M-Link sensor system to a practically infinitely large Data logger!



### 9.3. Graupner HoTT

The UniLog 2 is also a full telemetry sensor for the Graupner HoTT 2.4 GHz system. The measured values can be transmitted live to the ground and displayed directly on either the Smart Box at the HoTT transmitter or directly in the display of the HoTT transmitter. The connection to the HoTT receiver is made with the Patch cable provided, between the connection “Link” on the UniLog 2 and “T” on the HoTT receiver.

As of firmware v1.07 the UniLog 2 can be operated with HoTT either as a "General Module (GAM)", "Electric Air Module (EAM) "or" controller (ESC) ". The desired type is specified in the settings of UniLog 2. On delivery GAM is the default. This allows, for example, several UniLog 2 to be operated together.

Very important is the proper selection of sensors connected in the transmitter telemetry menu. Since with the HoTT telemetry V4 multiple sensors can be operated in parallel you must specify exactly which sensors are actually connected to the receiver.

#### 9.3.1. Alarms

The UniLog 2 supports both the Text Mode” and the “Digital Mode” of the HoTT system. In both modes of operation all adjustable alarms on the UniLog 2 are indicated at the transmitter by beeps or speech output.

##### There is a peculiarity with the Vario settings:

Since the HoTT transmitter itself produces the Vario tone, the UniLog 2 suppresses climb values which are smaller than “Vario threshold”. Thus this range is hidden from the transmitter tone.

Example: -

“Vario rising threshold” is set to 0,5 m/s “Vario sinking threshold” is set to -1 m/s

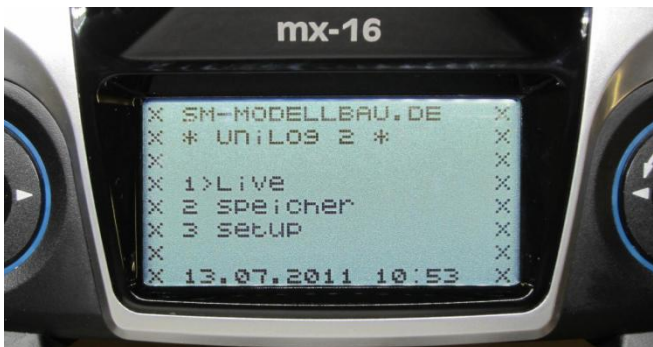
–„Vario tone is set to “on”

→ if the model rises faster than 0.5 m/s, the value is sent and the transmitters beeps (for transmitters without built-in speaker to listen to the vario sound like the voice output only with headphones)

→ if the model rises or sinks more slowly, the value 0 sent and the transmitter remains silent  
If the change is always required, “Vario threshold” must be adjusted to 0,1 m/s and “Vario tone” set to “up/down”.

### 9.3.1. Text Mode

For text mode you get there via Telemetry menu and "Settings view". The correct mode can be set using the "up" and "down" on left panel of the transmitter according to the HoTT mode set in the UniLog 2 .With one click, to the right go from the receiver data to the text display of the UniLog 2



This operation is done with the right touch pad on the transmitter.

Structure and contents are completely identical to the screens of the UniDisplay, (see chapter 8 for the UniDisplay). Here all alarms can be set, then indicated at the transmitter via beeps or speech output.

### 9.3.1. Digital Mode

From the default display of the transmitter using the "left" and "right" of the left touchpad digital mode is activated. The correct mode can be set using the "up" and "down" on left panel of the transmitter according to the HoTT mode set in the UniLog 2.

Use the "left" and "Right" of the left touchpad to switch between the different screens. Depending on the mode there are more screens with great display of measured values.

#### Display as GAM (General module):

Some values from the UniLog 2 are shown differently:

#### Fuel scale

Shows the remaining battery capacity in accordance with the set with alarm

**Temperature 1** shows the temperature of a sensor attached to A1-A3

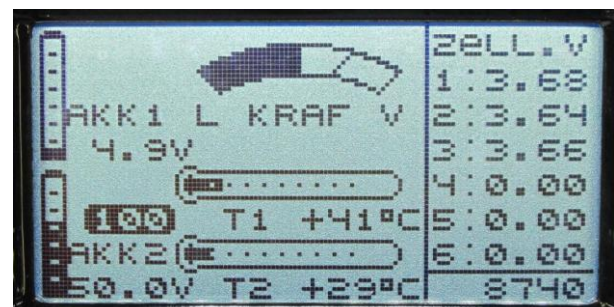
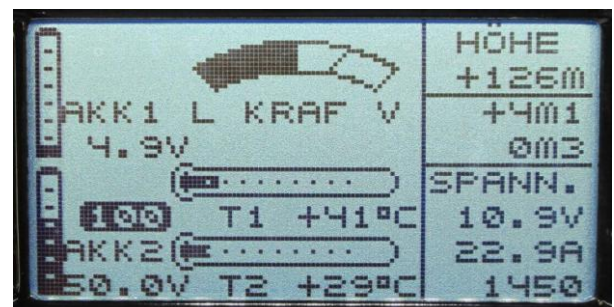
**Temperature 2** shows the internal temperature or temperature to A2 – A3 if at least 2 temperature sensors are connected

**Battery 1** shows the Receiver voltage

**Battery 2** indicates whether, by Rx control, minimum or maximum values are selected.

50.0V → indicates live values, 0.0V → minimum values, 99.9V → maximum values

**m3** shows the height gain of the last 10 seconds.



### Display as EAM (Electric Air Module):

These values are configured differently from UniLog 2:

**cell voltages:** cell 1 to 6 show as L and H the same values, Cell 7 is free.

#### **Fuel scale**

Shows the remaining battery capacity in accordance with the set with alarm

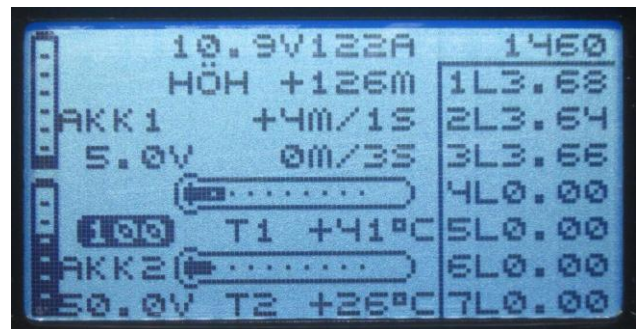
**Temperature 1** shows the temperature of a sensor attached to A1-A3

**Temperature 2** shows the internal temperature or temperature to A2 – A3 if at least 2 temperature sensors are connected

**Battery 1** shows the Receiver voltage

**Battery 2** indicates whether, by Rx control, minimum or maximum values are selected.  
50.0V → indicates live values, 0.0V → minimum values, 99.9V → maximum values

**m3** shows the height gain of the last 10 seconds.



### Display as ESC (Controler):

These values are configured differently from UniLog 2:

**Temperature:** the temperature fields show the four

In turn, the temperature sensors A1, A2, A3 (if available) and the internal temperature.

In this mode, cell voltages, altitude and Vario cannot be displayed.



#### 9.4. Futaba S.Bus2

As of firmware v1.09 the UniLog 2 can be used with the Robbe / Futaba telemetry FASSTest as an S.BUS2 sensor.

The telemetry in this case cannot be detected automatically and must be selected in advance in the settings of the UniLog 2.

The UniLog 2 is thereby connected like any other sensor to the S.BUS2 slot of the receiver.

Currently the UniLog 2 is not yet registered in the transmitters, so it uses already existing sensor protocols. We tested the integration with the T14SG firmware v2.0, the FX-32 firmware v1.1 and the T18MZ Firmware v2.4.0 on the receivers and R7008SB R7003SB. Older firmware versions support the integration but possibly incomplete.

With S.BUS2 Servo data sensor values can be connected to the same data line. But since the servo data is far more important than the sensor values we strongly recommend that you make a strict separation. All servos go to the S.BUS1 connection of the receiver, all the sensors on the S.BUS2. Thus, in the event of an error, a sensor can never interfere with the data for the servos.

If nevertheless the UniLog 2 is to be operated together with the servos on S.BUS2, is absolutely mandatory that a connection cable No. 9110 is used between UniLog 2 and S.BUS2! Thus the sensor is decoupled from the bus so far that any influence on the servo data is impossible.

##### 9.4.1. Registration on the Transmitter

Since firmware v1.11 the UniLog 2 uses the Robbe F1678 current sensor for the representation and display of the data. If the UniLog 2 was previously logged in, then the registration must be made again with v1.11.

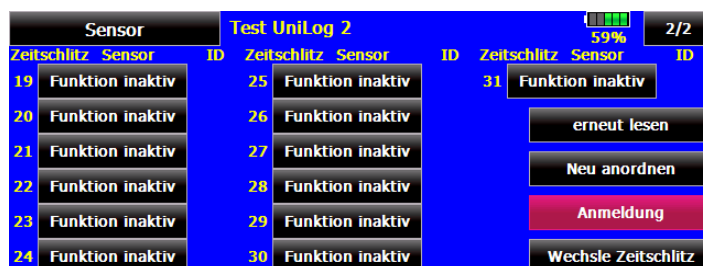
Since the sensor F1678 can only represent currents up to 160 A the UniLog 2 with a 400 A sensor connected sends the current sensor values / 10 , ie 400 A measured value will be shown on the display as 40.0 A .

To use the UniLog 2 with the S.BUS2, it must like all S.BUS2 sensors be first registered on the transmitter. Use the "Llink" connector on the UniLog 2 on a V cable with the "SI / F" connector on the transmitter and a receiver battery connected for the power supply . The UniLog 2 behaves like a Robbe / Futaba sensor and is thus closely integrated into the system. Please also refer to the transmitter instructions.

However, the UniLog 2 currently uses seven Robbe / Futaba sensor values to represent all measured values. Some values cannot be mapped to the correct unit. Here one must remember the assignment with the T14SG, in the T18MZ you can rename the sensors and thus the assignment is easier to understand.

The example of the T18MZ here follows the steps of the application:

If the UniLog 2 connected to the transmitter and is supplied with power, it is invoked in the sensor menu item "Login". In this way the sensor is registered in the transmitter and assigned free slots. The sensor and transmitter save this assignment.



To be able to represent all values the menu item "Login" on the transmitter must necessarily be called seven times. The message "OK" will appear seven times, at the eighth time the message is "sensor already exists".

When the application of all eight sensors is complete, the sensor list looks like this:

In T18MZ the sensors can then be renamed.







10 slots are occupied by the seven UniLog 2 sensors:

Sensor	Name	Slots	Original designation	In Unilog 2	Value examples
1	CUR-F1678	3	Current Volts Capacity	Strom Spannung Kapazität	141.7 A 37.1 V 2345 mAh
2	VARIO-1712	2	Height Vario	Hohe Vario	258 m 83.2 m/s
3	SBS 01RM / O	1	U/min	Drehzahl	8736 rpm
4	SBS-01T	1	Temperature	lowest cell voltage	3697 °C for °C, 3,697 V
5	SBS-01T	1	Temperature	alternating with the cell number Sensor A1	1 °C = cell 1 312 °C for °C,
6	SBS-01T	1	Temperature	Sensor A2	km/h or mV 41 °C for °C,
7	SBS-01T	1	Temperature	Sensor A3	km/h or mV 0 °C for °C, km/h or mV

Now connect the UniLog 2 to the receiver and call up the transmitter telemetry display.

Here again the T18MZ for example.


Telemetrie		Test UniLog 2			 24%	1/2
Empfänger	Extern	UniLog 2(Kapazität)	6. Drehzahl(Magnet.)			
<b>5.1V</b>	<b>0.0V</b>	<b>2345mAh</b>	<b>8736rpm</b>			
UniLog 2(Strom)	UniLog 2(Höhe)	min. Zelle				
<b>141.7A</b>	<b>258m</b>	<b>3697°C</b>				
UniLog 2(Spannung)	UniLog 2(Vario)	A1 Speed				
<b>37.1V</b>	<b>83.2m/s</b>	<b>312°C</b>				

Telemetrie		Test UniLog 2			 24%	2/2
A2 Temp. Akku		<b>41°C</b>				
A3 Temperatur		<b>0°C</b>				

See the same values in the T14SG as follows (here the names cannot be changed):

TELEMETRIE			1/3
Rx-BATT.	1 STROM		
5.1V	+141.6A		
EMPFÄNGR	CURR-1678		
EXT-VOLT	1 SPANNUNG		
0.0V	37.1V		
EMPFÄNGR	CURR-1678		

TELEMETRIE			2/3
1 KAPAZIT.	4 VARIO		
+2,345mAh	+83.2m/s		
CURR-1678	VARIO-1712		
4 HÖHE	6 U/min		
+258 m	8,736rpm		
VARIO-1712	SBS-01RM/O		

TELEMETRIE			3/3
7 TEMPERAT	9 TEMPERAT		
+3697°C	+41°C		
SBS-01T	SBS-01T		
8 TEMPERAT	10 TEMPERAT		
+312°C	+0°C		
SBS-01T	SBS-01T		

## 9.4. 2 Alarms

Since the UniLog 2 uses existing sensors for the display, there are a few features in the setting of alarms. In principle with S.BUS2 the alarms defined in the transmitter.

The UniLog 2 has no way to directly activate an alarm at the transmitter.

### Required settings:

- Alarm for altitude and vario → set inside the transmitter on HEIGHT and VARIO
- Alarm for current → set inside the transmitter on CURRENT
- Alarm for voltage → set inside the transmitter on VOLTAGE
- Alarm for starting voltage → set inside the transmitter on VOLTAGE and additional alarm. Enable start voltage in UniLog 2 and specify the desired value there → the UniLog 2 then transmits in case of alarm a constant from 0 to 50 volts continuous voltage value at VOLTAGE and gives the alarm.
- Alarm for capacity → two options:
1. only set inside the transmitter on CAPACITY
  2. in the transmitter at CAPACITY set an alarm for decreasing values of less than 0 (alarm with down arrow) and enable an additional capacity alarm in the UniLog 2 and specify the desired value there → the UniLog 2 then transmits a negative current value to trigger an alarm  
Advantage: the UniLog 2 can thus affect the alarm itself and deactivate automatically after 20 seconds and also at the landing.
- Alarm for individual cell voltage → in the transmitter at TEMPERATURE # 1 set an alarm for values less than 0 ° C. (Alarm with down arrow) and enable an additional cell voltage alarm in the UniLog 2 and specify the desired value there → the UniLog 2 then transmits -100 ° C to trigger an alarm and alternates with the current measured value.
- Alarm for A1, A2 and A3 → in the transmitter at TEMPERAT # 2/3/4 set an alarm value lower than 0 ° C (Alarm with down arrow) and enable an additional A1/A2/A3 alarm in the UniLog 2 and specify the desired value there → the UniLog 2 then transfers -100 ° C to trigger an alarm and the display alternates with the actual measured value.

## 9.5. JR Propo DMSS

As from firmware v1.09 the UniLog 2 can also be used with the JR Propo DMSS telemetry.

The telemetry in this case cannot be detected automatically and must be set in advance in the settings of the UniLog 2.

The UniLog 2 is thereby connected like any other sensor to the sensor slot of the receiver and transfers the following data:

- Rpm (sensor address 0x02 "rotation")
- air pressure, altitude, vario (sensor address 0x03 "Pressure / Altitude")
- Air speed (only with speed sensor) (sensor address 0x05 "Airspeed")
- voltage, current, capacity, watts,  
Single cells 1-6 (sensor address 0x08 "Power Pack")

No more sensors occupying the same addresses can be connected. For the free addresses, further sensors can easily be plugged into the receiver in parallel to UniLog 2 with a Y cable.

We tested the connection with the XG8 transmitter firmware version 0001-0012 and the RG831B receiver.

### 9.5.1. Presentation on the Transmitter



# 1	1:24	6.4V
HÖHE	F-AKKU U	
+155.2m	20.35V	
VARIO	F-AKKU A	
+13.2m/s	48.42A	
UPM	F-AKKU C	
9266UPM	1388mAh	

The values can be displayed directly and the sequence on the display is freely selectable. In the current station firmware 0001-0012 the displays for speed and single cells are still missing.

Special feature: The transmitter converts the battery capacity into a residual capacity. The measured value of the UniLog 2 is therefore deducted from the default setting

in the transmitter. In the example shown, there are still 1388 mAh in the battery.

### 9.5.2. Alarms

The alarms are defined in the transmitter in principle with JR DMSS. The UniLog 2 has no way to directly trigger an alarm on the transmitter. All alarm thresholds, and also the production of the Vario tone, are specified in the transmitter.

Required settings:

Alarm for current → is not currently supported

Alarm for starting voltage → voltage alarm set in the transmitter and in addition a Start Voltage alarm enabled in the UniLog 2 and the desired value specified there → the transmitter then displays in case of alarm a voltage value of 1:00 V and gives the alarm.

Alarm for capacity → Since the transmitter calculates the remaining battery capacity from the measured value of the UniLog 2, the actual battery size and the desired percent residual capacity is simply determined in the transmitter.



## 10. Data evaluation with LogView

The reading of data from the memory card is done with the well known software LogView. This software is the de-facto standard in data evaluation in the field of model construction. You can download LogView at [www.logview.info](http://www.logview.info) free of charge.

The UniLog 2 is integrated as a separate unit. Simply select the “UniLog 2” in device selection, then via “File” → “Import Device Data” you can import the desired file directly from the memory card of the UniLog 2.

The data can be displayed in graph form and also extensively processed in LogView. Also curve comparison, attaching notes, saving, etc. is possible. Please read the documentation for the program or get information on [www.logview.info](http://www.logview.info) and/or in their user forum.

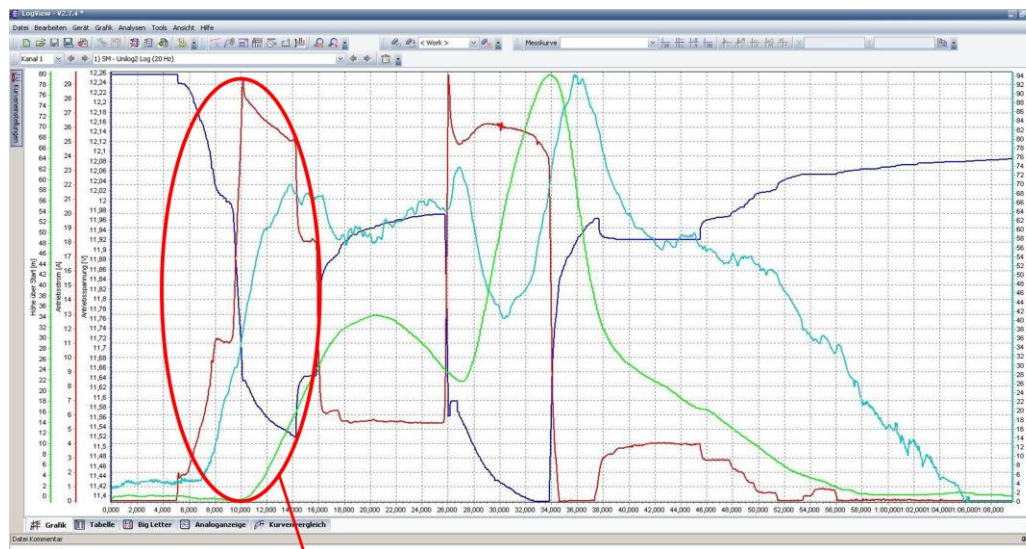


Illustration 1: A short flight with an electrical model including speed sensor

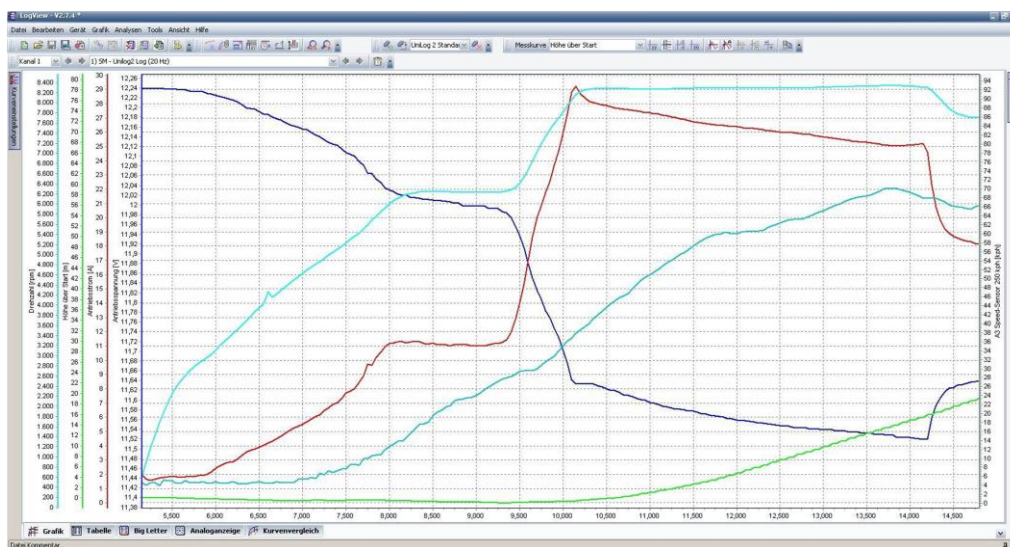


Illustration 2: marked range from above flight zoomed in - at 20 Hz data

rate

## 11. The software “SM UniLog 2 tools”

On our homepage you will find in [Software & Updates](#) the free software “SM UniLog 2 tools” with the following functions:

- Select and change UniLog 2 settings via the memory card
- Live data display over the USB interface (stock no. 2550) with a simulated UniDisplay
- automatic on-line search for new firmware for the UniLog 2 on our Internet site

If you move the mouse over the buttons, you will see short help texts for the operation.

### 11.1. Settings

The software opens with the “Settings” tab. Here the .ini file of the UniLog 2 memory card is read and the settings displayed. If a value is changed, the data must be written to the memory card with the “Sichern” (Save) button.

The screenshot shows the 'SM UniLog 2 Tool v1.0' settings window. The window is divided into several sections: 'Allgemein' (General), 'Autostart der Aufzeichnung' (Automatic recording start), 'M-Link Adressen' (M-Link addresses), and 'Telemetrie Alarmer' (Telemetry alarms). The 'Allgemein' section includes fields for 'Seriennummer' (9999), 'Firmware' (1.00), 'Datenrate' (10 Hz), 'Stromsensor' (40 / 80 A), and various modes (A1, A2, A3) set to 'Temperatur'. The 'Autostart der Aufzeichnung' section has checkboxes for 'Stromstart' (checked), 'RxStart', and 'Zeitstart', with corresponding numerical values and units. The 'M-Link Adressen' section lists sensor addresses for 'Spannung', 'Strom', 'Drehzahl', 'Kapazität', 'Vario', and 'Höhe', with dropdown menus for each. The 'Telemetrie Alarmer' section has checkboxes for 'Strom', 'Startspann.', 'Spannung', 'Kapazität', 'Höhe', 'Rx Spannung', and 'Zellenspann.', each with a numerical value and unit. At the bottom, there is a 'Einstellungendatei' section with three buttons: 'Voreinstellungen laden', 'Einstellungendatei laden', and 'Sichern'. A legend indicates that a green box means 'file opened', an orange box means 'no file', and a red box means 'no memory card'. Red arrows point from the callout boxes to the corresponding settings in the window.

UniLog 2 settings

UniLog 2 sensor addresses in the M-Link system

Automatic recording start

Telemetry alarms for all accepted telemetry interfaces

Green : file opened  
Orange: no file  
Red: no memory card

Get settings from the memory card / save or pre-load settings

Illustration 3: Settings tab

## 11.2. Live access to the UniLog 2

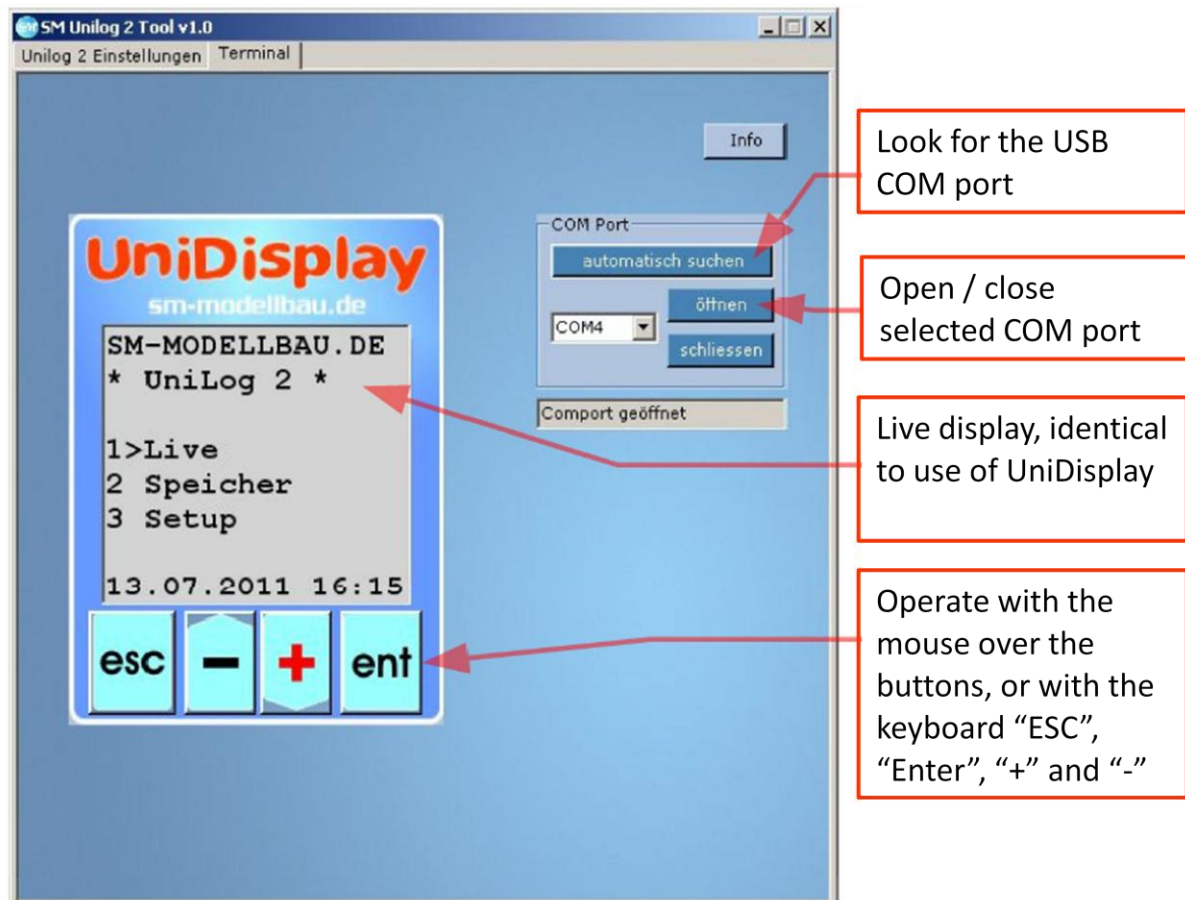


Illustration 4: Terminal tab

If the UniLog 2 is connected to a PC with the USB interface, it can be accessed via the Terminal Function of our software. The display is identical to the live operation of the UniDisplay. See also chapter 8.

But a download of the data from the memory card is not possible via the USB interface.

The USB interface is identical to the one used with the previous UniLog or with the GPS Logger, or with the JLog2. It can be ordered separately under the part no. 2550.

The UniLog 2 must be supplied with external power for connection to the PC!  
For example, via a current sensor, or use a 4 cell Receiver battery at the "Link" connector.

## 12. Firmware update of the UniLog 2

New firmware is simply up-loaded to the UniLog 2 via the micro SD memory card. On improvements to the firmware an appropriate file with the update can be downloaded free of charge from our homepage [www.sm-modellbau.de](http://www.sm-modellbau.de) in the menu item **Software & Updates**.

When the PC software “SM UniLog 2 Tools” is started, the program automatically searches for a newer firmware on our server. If a newer file is found this can, on request, be automatically loaded on to the memory card. In this way the UniLog 2 always remains up to date with the newest version.

The file has, for example, the following file name for the version v1.00: **UL2FW100.UPD**

**The file name of the firmware update must not be changed!  
The memory card must be formatted FAT16 for the update. That is the case for all memory cards up to 2 GB, the memory card provided is also FAT16.**

Procedure:

- The file is simply copied into the root directory of the memory card, directly into the main directory, not into a folder.
- At the next start of the UniLog 2 the red LED flashes during the update procedure.
- Then the UniLog 2 starts with the new firmware.
- The file must remain on the memory card, it is only loaded once.

## 13. Version history

Here you will find all firmware versions and the changes to the previous version.

You can find the current version of your UniLog 2 firmware with our software “SM UniLog 2 Tools” or the UniDisplay.

Version	Date	Comment
1.00	08-2011	First released version
1.01	10-2011	1 The battery capacity measurement can now be continued over several flights. If the same battery reconnected without charging the values from the last flight are used as starting capacity and energy. 2 In HoTT is now the value according to the settings for the Vario "Vario threshold" and "Vario Sound" modified, similar to the issue at M-Link. 3 In UniDisplay "Live" addition to the energy and the rpm per volt [kV] is displayed 4 Error on M-link recording fixed. 5 Error at startup "RX ein" fixed.
1.02	10-2011	1 The continued capacity measurement was at first use is not always correct initialized.
1.03	11-2011	1 The continued capacity measurement another error.

1.04	01-2012	<p>1 Support for Graupner HoTT telemetry V4 (V3 is no longer supported in this release)</p> <p>2 When the limiter is in operation, the capacity and energy is always reset at the start.</p> <p>3 M-Link addresses are now checked on double occupancy.</p> <p>4 Capacity alarm is cleared after 10 seconds, but then comes permanently once another 5% of the adjusted capacity were consumed.</p>
1.05	06-2012	<p>1 Integrated limiter for F5J</p> <p>2 Vario now has separate thresholds for rising and falling</p> <p>3 Jeti Duplex: EX installed telemetry</p> <p>4 HoTT: Speed from speed sensor is transmitted only in the intended value, not more than "ml"</p> <p>5 M-Link: cell voltages could not always be displayed, now as a "V" with a decimal point output, new value "cell min" for the lowest cell voltage</p> <p>6 Improved accuracy of the internal clock</p> <p>7 Installed alarms on the inputs A1 to A3</p>
1.06	10-2012	<p>1 Jeti Duplex : Varioton did not work on all systems</p> <p>2 HoTT : - negative current , capacitance and voltage values led to meaningless indicators on the transmitter - TMP1 and TMP 2 show now up to 2 external temperature sensors , first on TMP1 , second on TMP2 , without or with only one sensor is TMP2 the internal temperature</p> <p>3 Telemetry Alarms A1 to A3 could not be switched off</p> <p>4 Fixed issue with many files on the memory card : it could possibly be a new file created and the newly launched UniLog 2</p> <p>5 if only the balancer iand not a current sensor connected , the sum of the individual cells is used as battery voltage, the voltage alarms are active (this approach requires a separate ground connection to UniLog 2 )</p> <p>6 Recognition of the absence of ground connection for single cell measurement &gt; all the cells show 0</p> <p>7 Plugging in the drive battery can now also be done on the fly &gt; consumption data is checked each time</p> <p>8 capacity manual reset is now as when UniSens - E by switching off during the LED running light possible</p> <p>&gt; Current offset is set only for the first time</p>
1.07	11-2012	<p>1 Speed sensor was set at the start with v1.06 no longer to 0</p> <p>2 HoTT: UniLog 2 can now optionally as GAM (General module), EAM (Electric Air Module) or ESC (controller) that can be configured → together several UniLog 2 be operated on HoTT</p>
1.08	01-2013	<p>1 Jeti EX: Correction for Jeti Transmitter DC-16 firmware v1.07</p>
1.09	04-2013	<p>1 Futaba FASSTest added S.BUS2 telemetry</p> <p>2 JR DMSS Telemetry added</p> <p>3 continuous capacity measurement can be explicitly turned off and now</p> <p>4 Recalibration of the current zero point when switching can now be switched off and</p>

		<p>be (current offset option = never / always)</p> <p>5 new reading "height gain": change in height of the last 10 seconds, every second recalculated -&gt; with Jeti EX and M-Link as a new value in HoTT as m/3s</p> <p>6 while the battery detection speed measurement is suppressed here because otherwise incorrect values are measured by the beeping of the controller</p> <p>7 Alert Height listen now on after 20 seconds and only when new crossing Triggered threshold again</p> <p>8 HoTT: Log in ESC mode has been changed</p>
1.10	05-2013	<p>1 Jeti sensor name changed to "UniLg2": many texts fit better into the transmitter display</p> <p>2 at "current offset never" the battery has initialization does not work, so no speed measurement and no battery alarms.</p>
1.11	09-2013	<p>1 FASSTest: protocol of the current sensor 1678 installed → the UniLog 2 sends the data now in this format with V, A and mAh → the current display only goes up to 160 A, so the current / 10 is transmitted at 400 A Sensor: 400 A are on the display 40.0 A NOTE: The sensor must be removed from the transmitter and then re-registered!</p> <p>2 Speed sensor 600/1000 km / h built as a special version</p> <p>3 Speed sensor offset is set also subsequently 5 seconds after you connect the speed sensor</p> <p>4 Telemetry detection did not work when the drive was activated before the receiver battery supply</p> <p>5 Undervoltage alarm now triggers only after 2 seconds.</p>