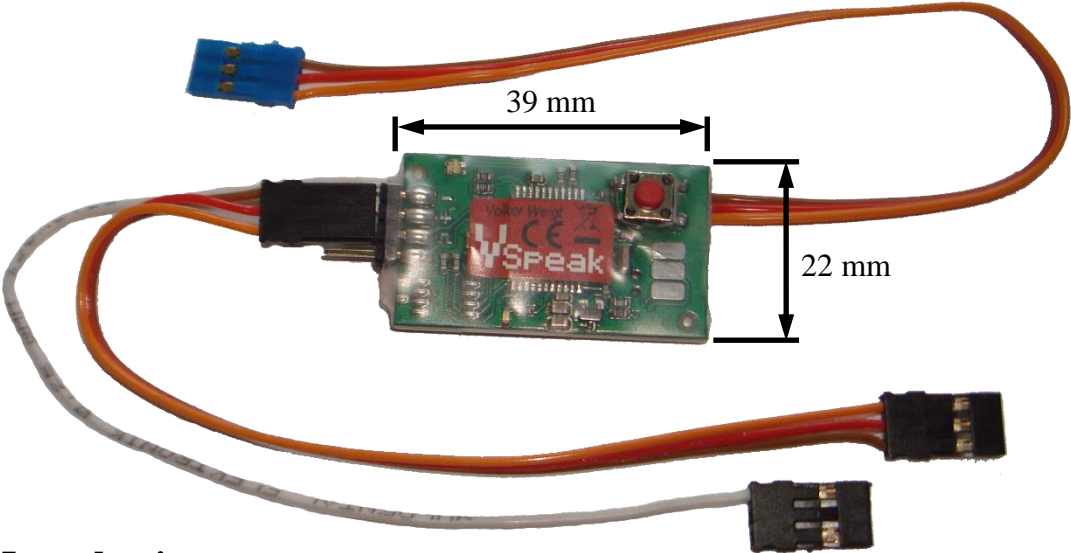




# ECU Konverter Swiwin

## Manual Version 1.1



### Introduction

The VSpeak ECU Converter provides the data of the Swiwin ECU on the telemetry system of your remote control system.

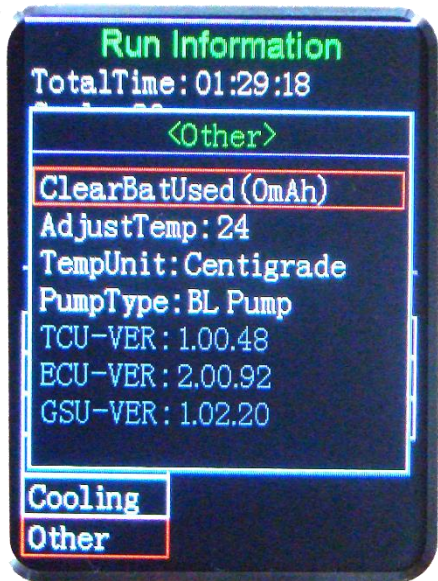
The ECU Converter calculates the fuel consumption and also transmits it to the respective transmitter of the model pilot.

Settings of the VSpeak converter can be made directly from the transmitter for Jeti, HoTT and PowerBox, for all other RC systems with the aid of a Micro SD card.

Always follow the settings for Failsafe (section 1.1 Connection diagram / Failsafe).

The VSpeak ECU Converter can be software-updated by the user.

Supported ECU, Software version:



Testet with:



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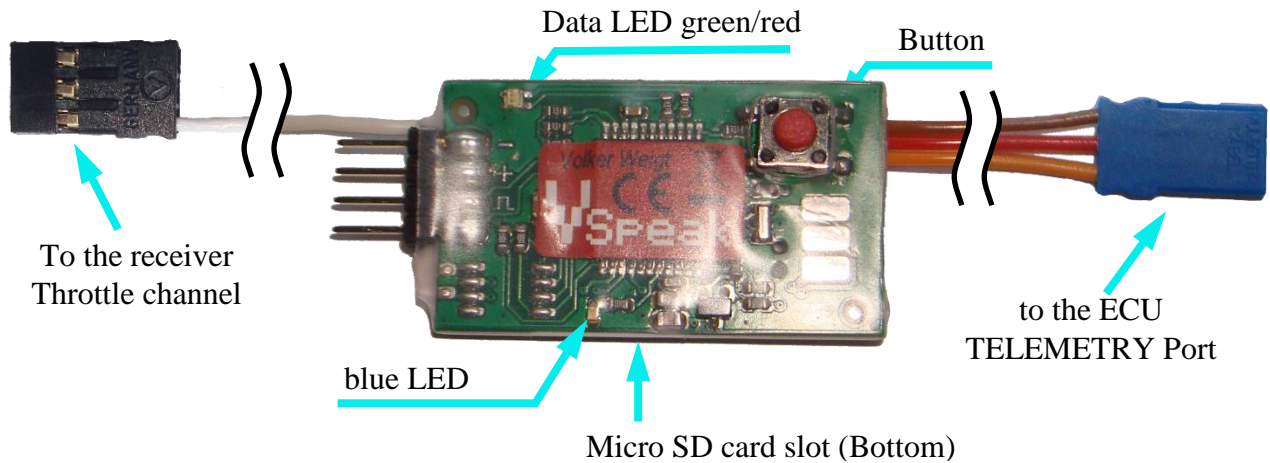
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# 1 Hardware

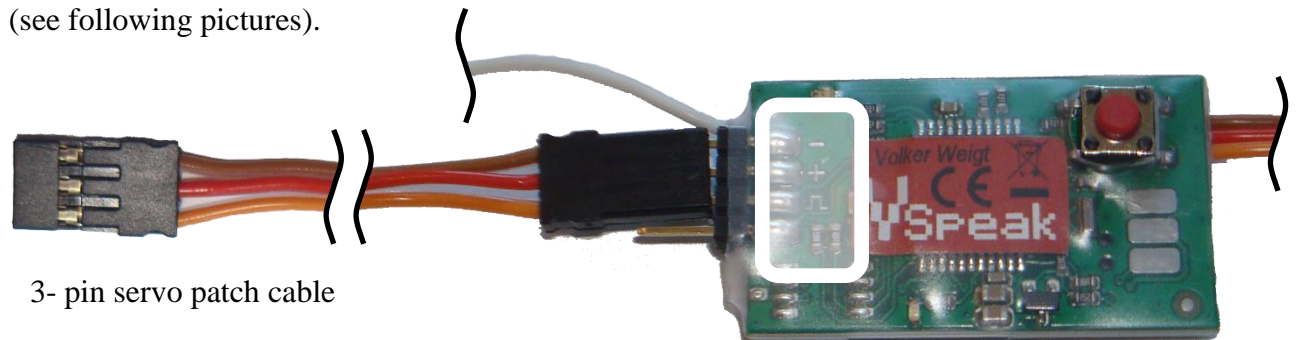
Data LED: green (flashing) → receiving data from the Swiwin ECU **and** data transfer to the receiver (at Jeti Sensor only then, if JetiBox buttons are activated)  
red (flashing) → no data from ECU– but the connection to the telemetry System is well

The blue LED is blinking every second to signal the normal function of the ECU Converter.

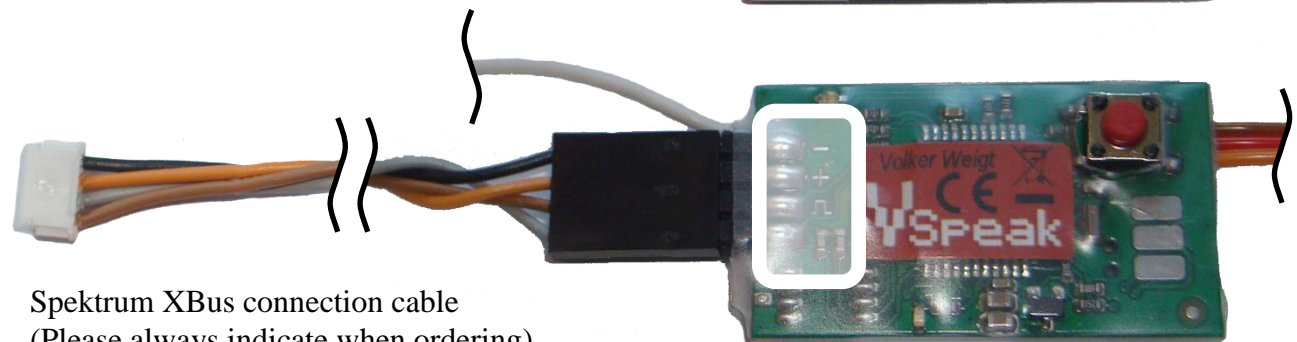


Use the **blue** UNI servo plug to connect to the Swiwin ECU pin header labeled **TELEMETRY**. The **black** single-pole UNI servo plug is plugged into the receiver on the throttle channel. With the Futaba S.Bus2, Jeti EX Bus and Powerbox P2Bus the connection has no function, the throttle value is transmitted via the respective telemetry bus.

The connection between the VSpeak ECU converter and the remote control system is made with the 3-pin servo patch cable except in the case of Spektrum, there with the special cable (see following pictures).



3- pin servo patch cable



Spektrum XBus connection cable  
(Please always indicate when ordering)

The attachment of the VSpeak ECU converter in the model can be done with velcro tape, double sided tape or cable ties.



## 1.1 Connection diagram / Failsafe

```

Run Information
TotalTime: 01:29:18
<Study RC (997)>
Max: 1960
Idle: 1100
Min: 990
FailSafeTime: 1.0
[BUS]ThrottleCha: 3
[BUS]SwitchCha: Invalid
TelemetryMode: 1/1
    
```

As can be seen in the following graphics, the VSpeak ECU converter must be connected between the receiver and the Swiwin ECU. The throttle signal from the receiver and the telemetry data are transmitted via the 3-pin servo cable with the **blue** UNI servo plug. Set on the ECU:

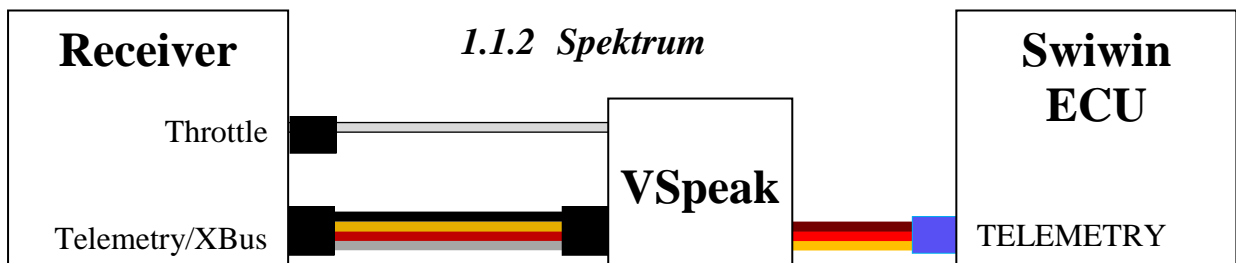
- [BUS]ThrottleCha: 3
  - TelemetryMode: 1/1
- ... and the required time for
- **FailSafeTime:**

### 1.1.1 Jeti Duplex Sensor, Multiplex, HoTT, FrSKY and JR PROPO



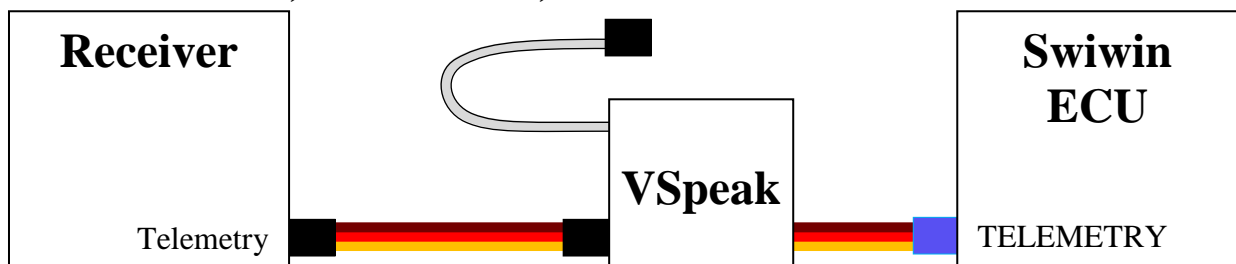
For the receiver throttle output Failsafe must be set to **no signal**. The time until failsafe should be set to 0 in the remote control system; the **FailSafeTime** that can be set in the ECU then applies.

If it is not possible to set "no signal" for FailSafe, then at least Throttle Min should be output for FailSafe, i.e. -> Turbine Stop (here, of course, set the time until Failsafe in the remote control system accordingly).



The only difference with Spektrum is the special 4-pin telemetry cable instead of the 3-pin UNI patch cable - the same applies to FailSafe as described under 1.0.1.

### 1.1.3 Jeti EX-Bus, Futaba S.Bus2, Powerbox P2Bus



With these systems, the throttle signal is transmitted via the respective telemetry bus, so that the 1-pin Throttle cable of the VSpeak has no function and is not connected.

Failsafe is transmitted from the telemetry bus to the ECU converter, any settings in the remote control system have no effect here - only the **FailSafeTime** in the ECU is effective.

## 2 Telemetry

The voltage for the VSpeak ECU Converter is supplied by the receiver.

The Button of the ECU Converter can be used to switch between the systems Jeti Duplex, Multiplex, HoTT, Futaba, FrSky, JR PROPO, PowerBox and Spektrum X\_Bus or SRXL2, s. section 2.0.

### 2.0 Selection of the telemetry system / Parameter file "SWIWIN.TXT"

When you turn on the Telemetry System is signaled by a LED for a period of 3 seconds. While the blue LED flickers, the STATUS LED shows the chosen telemetry system:

- |                 |              |                   |                    |
|-----------------|--------------|-------------------|--------------------|
| • green         |              | Jeti Duplex EX    | (s. section 2.1)   |
| • red           |              | Multiplex         | (s. section 2.2)   |
| • green         | (flickering) | HoTT              | (s. section 2.3)   |
| • red           | (flickering) | Futaba S.BUS2     | (s. section 2.4)   |
| • red           | (flashing)   | Futaba S.BUS2 V10 | (s. section 2.5)   |
| • green         | (flashing)   | FrSky S.Port      | (s. section 2.6)   |
| • red/green     | (flashing)   | JR PROPO          | (s. section 2.7)   |
| • red/red/green | (flashing)   | PowerBox          | (s. section 2.8)   |
| • red           |              | Spektrum X-Bus    | } (s. section 2.9) |
| • red           | (flashing)   | Spektrum SRXL2    |                    |

**Double-click** on the **Button** (similar to the double click of a computer mouse), the telemetry system can be switched.

To preserve safety during the selection of the telemetry system, the ECU Converter does not transmit any information until a restart.

The setting is saved.

### Parameter file „SWIWIN.TXT“

With the remote control systems Jeti Duplex, HoTT and PowerBox the parameterization can be done directly at the transmitter, for all other systems the parameter change can be made via the file „SWIWIN.TXT“.

By inserting an SD card (without file "SWIWIN.TXT") into the Micro SD card slot of the ECU converter and switching on the converter, the converter recreates the file "SWIWIN.TXT" with the parameters currently set in the converter. Now you can look at the parameters in the "set value" column of the "SWIWIN.TXT" file using an editor (Windows Accessories / Editor) and change the values. The parameters are largely self-explanatory, the permissible value range is in the "value range" specified. To change the parameters in the ECU converter, the modified "SWIWIN.TXT" file is now reinserted into the SD card slot and the converter is switched on.

The Data LED green/red signals the status of the Read/Write process of the SD card:

- red flashing: Card not readable by the ECU converter
- green flashing: Writing / reading the parameter file "SWIWIN.TXT" -> **OK**
- green/red flashing: Parameter transfer of "SWIWIN.TXT" incorrect

With green / red flashing, not all parameter changes have been accepted in the ECU converter, e.g. because of invalid characters or values outside the range "value range". The ECU converter then re-created the "SWIWIN.TXT" file with the data currently stored in the converter. You should look at it again in the editor and compare it with the parameter changes you have in mind.

```

=====
**** settings Vspeak ECU converter Swiwin ****
=====
set value|value range |unit |description
=====
general
-----
167 |50...600 |ml/min |FuelFlow @ 2.5 V
404 |100...1000 |ml/min |FuelFlow @ 4.0 V
3000 |500...20000 |ml |Fuel tanksize
1 |1,5,10 |ml |FUEL rounded
OFF |OFF,ON | |Taxi Tank
0 |0...30 |% |Throttle offset
1 |1 10 100 1000 | |RPM factor
3 |1...16 |Servo |Throttle->ECU

alarms
-----
800 |OFF,50...2500 |ml |FUEL low
6.0 |6.0...12.0 |V |BATTERY low
OFF |OFF,200...600 |x100rpm |RPM low
1100 |500...1100 |°C |EGT high

Multiplex Mlink MSB address
-----
2 |OFF,0...15 | |ECU status
3 |OFF,0...15 | |FUEL level
4 |OFF,0...15 | |BATTERY
5 |OFF,0...15 | |RPM
6 |OFF,0...15 | |EGT
7 |OFF,0...15 | |THROTTLE
8 |OFF,0...15 | |PUMP
9 |OFF,0...15 | |FUELFLOW
10 |OFF,0...15 | |CURRENT
11 |OFF,0...15 | |CAPACITY

Futaba - S.BUS2 setting
-----
3 |1...16 |Servo |Throttle channel

Futaba (using multiple sensors)
-----
2000 |2000...2100 step10 | |Start ID
24 |OFF,1...29 |StBatFl |Slot CURF1678
27 |OFF,1...31 |RPM |Slot SBS01RMO
28 |OFF,1...30 |PumpThr |Slot SBS01V
30 |OFF,1...31 |FuelFlow |Slot SBS01T
31 |OFF,1...31 |EGT |Slot SBS01T
OFF |OFF,ON |EGT/10 |divided by 10

Futaba (using JetCat V10 sensor)
-----
2200 |2200...2300 step10 | |Start ID
8 |1...18 | |Slot JetCat V10
Status |Curr., Status|A |Current Value

FrSKY S.Port
-----
28 |1...28 | |Physical ID
1 |1...16 | |Group Number
FUEL% |FUEL%,THROTTLE | |as Fuel in %

JR PROPO
-----
ON |OFF,ON | |Sensor F-Pack
Status |Curr., Status|A |F-Pack >A<
FUEL |Capa., FUEL |mAh,ml |F-Pack >C<
Battery |Pump, Battery|V |F-Pack >V<
THROTTLE |THRO, F-Flow |%,ml/min |F-Pack >W<
ON |OFF,ON | |Sensor TEMP
ON |OFF,ON | |Sensor RPM

Spektrum
-----
OFF |OFF,Curr.,Fuel%,EGT/10|Ampere-Display

0x31 |0x31, 0x40, 0x41, 0x60|SRXL2 address
|0x61, 0x70, 0x71, 0x81|
YES |YES,NO | |wait for other

=====
version 1.1
selected RC system: Jeti Duplex EX
=====

```

The values in the areas "general" and "alarms" are applicable for all remote control systems:

-> global parameters (see next page).

The other sections in the file "SWIWIN.TXT" are related to the particular remote control system and have their meaning only there.

### Note Parameter change:

Do not delete lines and do not add any lines.

Override the parameters instead of inserting characters.

Only the area "set value" is authoritative.

Version display

## Global parameters

### general

#### FuelFlow @2.5V/@4.0V Fuel tanksize

The VSpeak ECU converter can calculate the current FuelFlow and the fuel consumption on the basis of the ECU pump voltage. The necessary parameters can be adjusted here, as flow values in ml / min at each 2.5V and 4.0V pump voltage.

Tips for determining the fuel flow rate can be found in the appendix of these operating instructions.

Fuel tanksize is the capacity of the main tank in ml.

#### FUEL rounded

The display accuracy of FUEL (ml) can be set here.

Rounding the display makes sense, when using speech to reduce the announcement syllables.

#### Taxi Tank

For models where a taxi tank is plugged into the main tank until the model is lifted off, set "Taxi Tank = ON". If the turbine is in the "Running" status, then when THROTTLE = 80% is exceeded for the **second time**, the FUEL will "reset", ie the displayed FUEL is only once set to "full" (the value set at "Fuel tanksize") again at this time.

#### Throttle Offset

The Throttle Offset is used to adapt the throttle display to the RC display on the Swiwin GSU.

When delivered, this is set to 0%, the entire throttle range is displayed, ...

- starting with 0% Min (Stick Min, Trim Low)
- over ~10% Idle (Stick Min, Trim Max)
- up till 100% Max (Stick Max, Trim Max)

Set the throttle value here as an offset that is displayed when you are idle.

From now on the Min ... Idle area is "hidden", 0 ... 100% then corresponds to Idle ... Max.

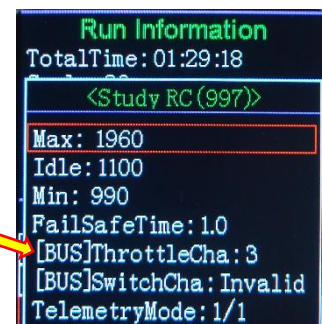
#### RPM factor

The actual turbine speed is the displayed value multiplied by the parameter RPM factor.

#### Throttle->ECU

Here you can set the servo channel via which the throttle signal is transmitted from the VSpeak converter to the ECU.

Throttle->ECU and [BUS]ThrottleCha must match.



### alarms

The parameters are largely self-explanatory, lower values as "low" thresholds and exceeding of the "high" thresholds trigger alarms, with "OFF" the respective alarm is deactivated.

The "low..." alarms are activated after at first exceeding the "Low ..." alarm threshold. The low RPM alarm ends at PUMP = 0.000V, which means that these alarm is suitable for signaling a **turbine flameout**.

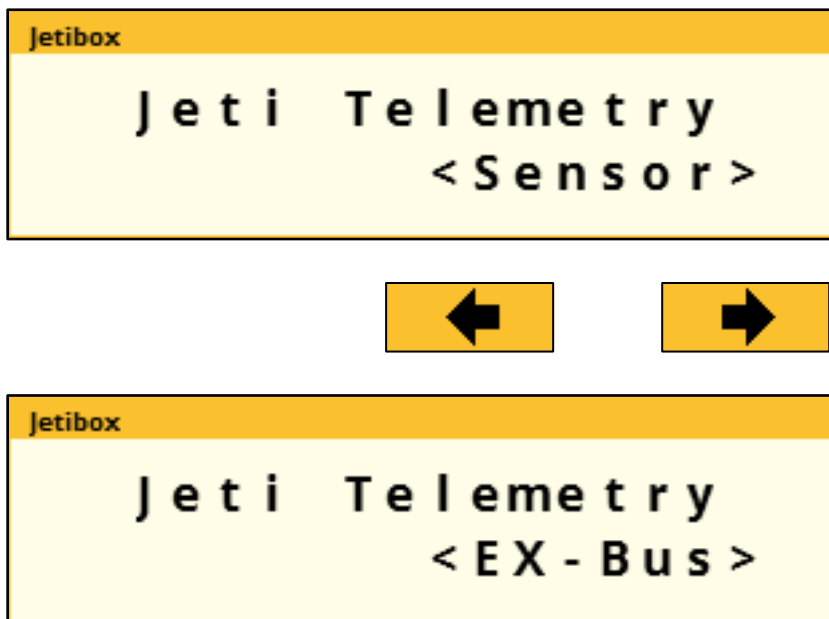


## 2.1 Jeti Duplex EX

The VSpeak ECU converter supports the two Jeti telemetry protocols **Jeti EX Sensor** and **Jeti EX Bus**.

In the delivery condition and after every change of the telemetry system (see section 2.0) the Jeti EX Sensor is always activated. This means that the VSpeak ECU converter can work with every Jeti receivers can be connected to the Ext port (this receiver port is always set to JETIBOX/Sensor on delivery) - otherwise the relevant port would have to be set to JETIBOX/Sensor or Telemetry Input.

Using the Jetibox (... - emulation in the Jeti DC/DS transmitter) the protocol in the VSpeak ECU converter can be switched to **Jeti EX Bus**. The change of the telemetry protocol is only effective after restarting the VSpeak ECU converter. The **EX Bus** must also be set on the relevant Jeti receiver port.



The main differences in the use of the two Jeti protocols are (see section 1.1.3),

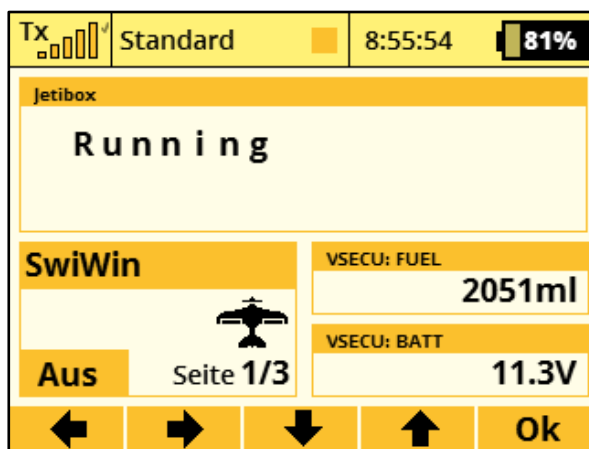
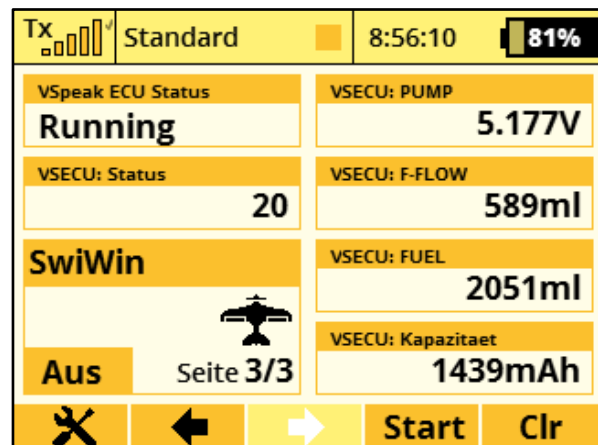
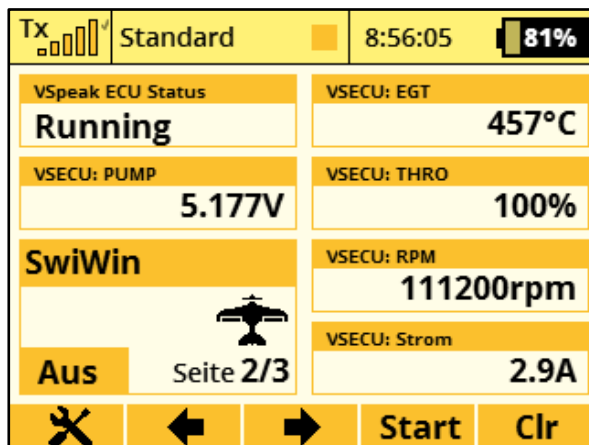
- that with **Jeti EX Bus** the throttle channel is also transmitted via EX Bus,
- the black, single-pole UNI servo plug (throttle channel) is therefore without function, and
- no special Failsafe settings need to be made for the receiver throttle channel

With the **Jeti EX Sensor**, the connection and the setting of Failsafe are accordingly section 1.1.1.

The following chapters apply equally to both protocols.

### 2.1.1 EX-Daten DC/DS-Sender

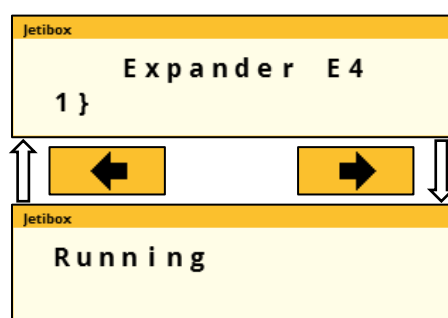
(VSECU ... VSpeak ECU Converter):



### 2.1.2 Jetibox


- left-button: long pushed return to expander menu (if ECU converter is shared with other sensors are connected via an expander)
- down-button: Setup ECU converter (s. section 2.1.2.2)
- left/right-button: switch between Status/Alarms <-> Sensor values




#### 2.1.2.1 Expandermenu





If the VSpeak ECU Converter is connected to an Expander or Centralbox and the ECU Converter display is activated with the [→] Right button, the only way back to the expander menu is pressing the [←] Left button (more than 3 sec).

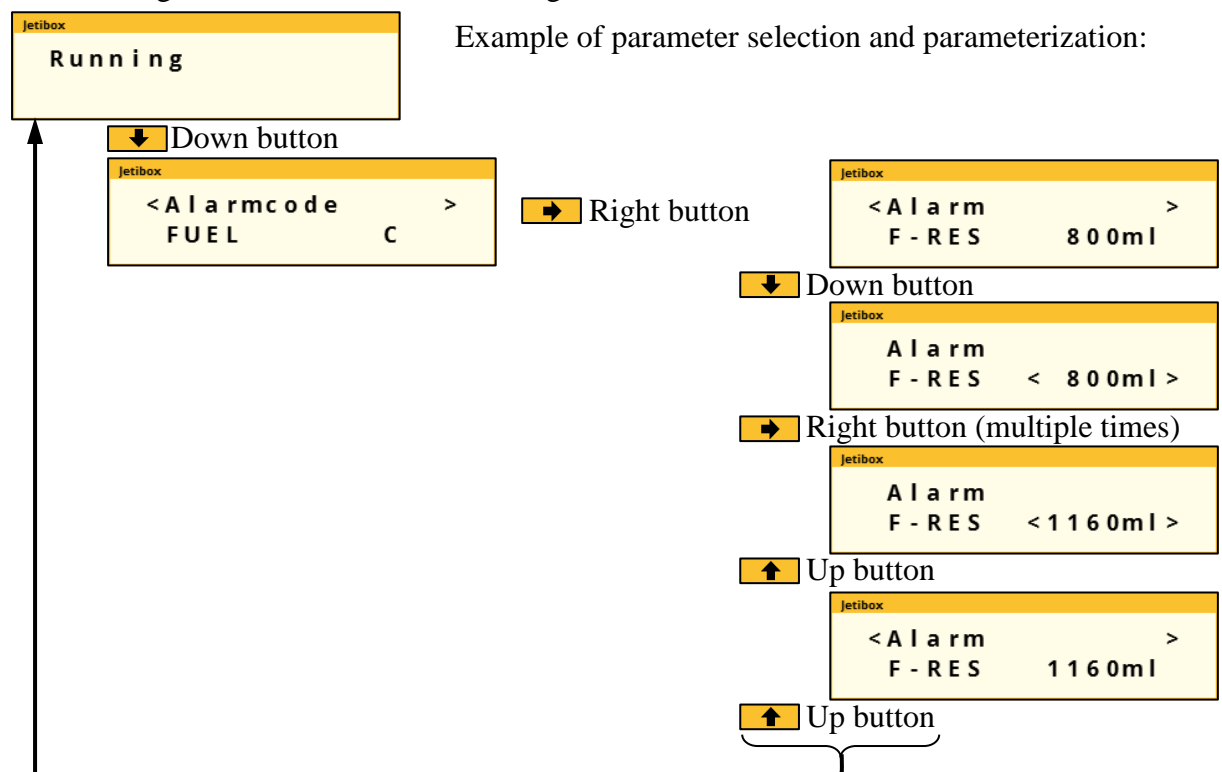
### 2.1.2.2 Alarms / Parameterization

From the ECU data display, the parameter display can be accessed by pressing the  Down button.

With the  Up button the parameter display will left (..to ECU data display). Within the parameter display you can scroll with the  Right button - or -  Left button between the parameter groups "Alarm", "Alarmcode", ... and "ECU-EX-Name".

When the desired parameter group is selected, the parameter can be changed by using  Down and  Up button.

Value changes are made with the  Right button – or-  Left button.



Parameter-group	Parameter	Value range	Step size	Set-Value (Default)
Alarm	F-RES	OFF, 50 ... 2500 ml	10 ml	800 ml
	BATT	6.0 ... 12.0 V	0.1 V	6.0 V
	RPM	OFF, 20.000 ... 60.000 rpm	100 rpm	OFF
	EGT	500 ... 1100 °C	5 °C	1100 °C
Alarmcode	FUEL	A, B, C, ..., X, Y, Z		C
	BATT			U
	RPM			L
	EGT			T
F-Flow / Pump-V	@ 2.5 V	50 ... 600 ml/min	1 ml/min	167 ml/min
	@ 4.0 V	100 ... 1000 ml/min	1 ml/min	404 ml/min
FUEL Tank Size		500 ... 20.000 ml	20 ml	3.000 ml
FUEL rounded		1, 5, 10 ml		1 ml
Taxi Tank		OFF, ON		OFF
Throttle	Offset	0 ... 30 %	1 %	0 %
	Servo	1 ... 24	1	1
RPM Factor		1, 10, 100, 1000		1
Jeti Telemetry		Sensor / EX-Bus		Sensor
Jeti-Sensor	EX Name	VSECU, L-ECU, R-ECU, 1LECU, 2RECU		VSECU

\*

## Alarms

Irrespective of the possibility to program alarm thresholds for the "EX" values in Jeti transmitters the VSpeak ECU Converter has the ability to set alarms (by using alarm codes) that are ECU status depending. These alarms can also be announced by the Profibox as voice messages.

As can be seen in the table, the alarms for F-RES and RPM can be switched OFF, if no alarm is to be given at BATT and EGT, the alarm thresholds can be set to "inaccessible" values.

Permanently pending alarms, e.g. FUEL or BATT, max. 3 times repeated.

- **FUEL**  
The alarm Fuel is signaled when the fuel rest is lower than the F-RES set value.
- **BATT**  
The alarm BATT is signaled when the battery voltage is lower than the BATT set value.
- **RPM (turbine)**  
The alarm RPM is signaled when the turbine rotation speed is lower than the RPM threshold value.  
The speed monitoring is started after at first exceeding RPM alarm threshold and ends with Pump = 0.000V  
The RPM alarm is suitable for signaling a "turbine flameout".
- **EGT**  
The alarm EGT is signaled if the temperature exceeds the value set at EGT.

## F-Flow / Pump-V @ 2.5V respectively 4.0V

FUEL-Flow are the two parameters for the current fuel flow at 2.5V or 4.0V pump voltage.

The two parameters can be determined with the help of a flow meter - or, if you don't have one at hand, in the following way: You can run the turbine with 2.5 or 4.0V pump voltage for a period of 1 minute and measure it fuel used. A more precise result can be obtained by carrying out the measurement over several minutes and dividing the amount of fuel consumed by the number of minutes (see appendix).

## FUEL Tank Size

Volume of the main tank in ml.

## FUEL rounded

The display accuracy of FUEL (ml) can be set here.

Rounding the display makes sense, when using speech to reduce the announcement syllables.

## Taxi Tank

For models where a taxi tank is plugged into the main tank until the model is lifted off, activate "Taxi Tank ". With "Tank Size" the tank volume of the main tank has to be set. If the turbine is in the "Running" status, then when THROTTLE = 80% is exceeded for the **second time**, the FUEL will "reset", i.e. the displayed FUEL is only once set to "full" (the value set at "Tank Size") again at this time.

## Throttle

- **Offset**

The Throttle Offset is used to adapt the throttle display to the RC display on the Swiwin GSU.

When delivered, this is set to 0%, the entire throttle range is displayed, ...

- starting with 0% Min (Stick Min, Trim Low)
- over ~10% Idle (Stick Min, Trim Max)
- up till 100% Max (Stick Max, Trim Max)

Set the throttle value here as an offset that is displayed when you are idle.

From now on the Min ... Idle area is "hidden", 0 ... 100% then corresponds to Idle ... Max.

- **Servo \*** (...only Jeti Telemetry "EX-Bus" )

Selection of the Jeti-Servo channel via which the throttle signal is transmitted to the VSpeak ECU converter via the Jeti EX-Bus.

## RPM Factor

The actual turbine speed is the displayed value multiplied by the parameter RPM factor.

## Jeti Telemetry

Selection of the Jeti Telemetry protocoll.

## Jeti-EX-Sensor-Name

In a 2-turbine model 2 VSpeak ECU converter can be used on Jeti Systems via an expander or CentralBox. The EX names are:

"**1**LECU" for **L**eft turbine ECU on input **1** and


"**2**RECU" for **R**ight turbine ECU at the expander input **2**.



### 2.1.2.3 Turbine status / Alarms – numerical Values

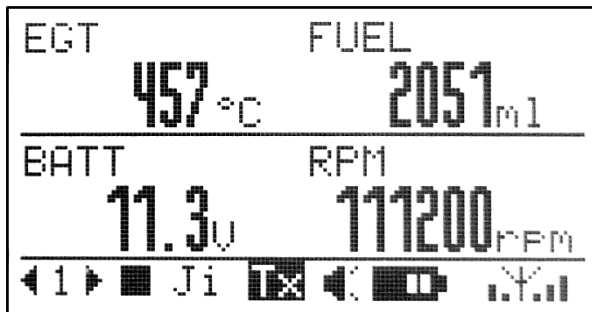
The turbines status messages are also displayed numerical values. The assignment is given in the table.

These status values can be used in Jeti radios, e.g. in logical links, or in LUA-supported radios for LUA scripts.

 Status	Description
21	Restart
20	Running
13	Fuelramp
12	Preheat
11	Ignition
10	Ready
9	TestStarter
8	TestPump
7	TestGasValve
6	TestFuelValve
5	TestGlowPlug
1	Cooling
0	Stop
-1	Time Out
-2	Low Battery
-3	GlowPlug Bad
-4	Pump Anomaly
-5	Starter failure
-6	RPM Low
-7	RPM Instability
-8	High Temp
-9	Low Temp
-10	TempSensorfail
-11	Gas Valve Bad
-12	Fuel Valve Bad
-13	Lost Signal
-14	StarterTemp High
-15	Pump Temp High
-16	Clutch failure
-17	Current overload
-18	Engine Offline
-30	no data

### 2.1.3 Profibox - autonomous telemetry system for Swiwin-ECU


Using a Jeti Profibox incl. RSat receiver and the VSpeak ECU converter the telemetry data from a Swiwin ECU can be transferred completely self-sufficient to the pilot. Not only the settings using the Profibox can be made, as was shown in the previous chapters - all EX-data and the important alarms are displayed: EGT, FUEL, ECU battery voltage . . . are given as voice messages again



## 2.2 Multiplex MLink (MSB)

### 2.2.1 Address-Assignment / Alarms

The VSpeak ECU Converter at delivery uses following addresses:

Swiwin	 Adresse	Description
ECU Status Alarm	<b>2</b>	ECU status/alarm message
FUEL Alarm	<b>3</b>	Fuel Level in ml
BATT Alarm	<b>4</b>	Battery voltage in V
RPM Alarm	<b>5</b>	Turbine RPM
EGT Alarm	<b>6</b>	Exhaust Gas Temperature in °C
THROTTLE	<b>7</b>	Throttle Value in %
PUMP	<b>8</b>	Pump voltage in V
FUELFLOW	<b>9</b>	Fuelflow in ml/min
CURRENT	<b>10</b>	Turbine current in A
CAPACITY	<b>11</b>	Capacity of turbine battery in mAh

For the values indicated in the above table with "Alarm", alarm thresholds can be set with the aid of a Micro SD card and the parameter file "SWIWIN.TXT". Furthermore, the MSB addresses can be set as desired - a double address assignment within the ECU converter is excluded.

### 2.2.2 Parameter „SWIWIN.TXT“ (excerpt)

```

***** settings Vspeak ECU converter Swiwin *****
=====
set value|value range |unit      |description
=====
general
-----
167      |50...600      |ml/min   |FuelFlow @ 2.5 V
404      |100...1000    |ml/min   |FuelFlow @ 4.0 V
3000     |500...20000  |ml       |Fuel tanksize
1        |1,5,10        |ml       |FUEL rounded
OFF      |OFF,ON        |         |Taxi Tank
0        |0...30        |%        |Throttle offset
1        |1 10 100 1000|         |RPM factor
3        |1...16        |Servo    |Throttle->ECU

alarms
-----
800      |OFF,50...2500|ml       |FUEL low
6.0      |6.0...12.0   |V        |BATTERY low
OFF      |OFF,200...600|x100rpm  |RPM low
1100     |500...1100   |°C       |EGT high

Multiplex Mlink MSB address
-----
2        |OFF,0...15    |         |ECU status
3        |OFF,0...15    |         |FUEL level
4        |OFF,0...15    |         |BATTERY
5        |OFF,0...15    |         |RPM
6        |OFF,0...15    |         |EGT
7        |OFF,0...15    |         |THROTTLE
8        |OFF,0...15    |         |PUMP
9        |OFF,0...15    |         |FUELFLOW
10       |OFF,0...15    |         |CURRENT
11       |OFF,0...15    |         |CAPACITY


```

### 2.2.3 Turbine status

To display the turbine status, texts are stored in the multiplex transmitters as well as in the "gooseneck" telemetry display.

These do not 1 : 1 correspond to the status messages of the Swiwin ECU.

The assignment is shown in the adjacent table:

<b>Swiwin ECU</b>	
Status Text	
Restart	RUN...
Running	RUN (reg.)
Fuelramp	acceler.
Preheat	PreHeat1
Ignition	Ignite...
Ready	Stby/START
TestStarter	Manual
TestPump	Manual
TestGasValve	Manual
TestFuelValve	Manual
TestGlowPlug	Manual
Cooling	Cooling
Stop	-OFF-
Time Out	IgnTimOut
Low Battery	BattryLow
GlowPlug Bad	GlowPlug!
Pump Anomaly	WrongPmp
Starter failure	Low-Rpm
RPM Low	Low-Rpm
RPM Instability	Over-Rpm
High Temp	OverTemp
Low Temp	LowTemp
TempSensorfail	TempFail
Gas Valve Bad	FuelFail
Fuel Valve Bad	FuelFail
Lost Signal	FailSafe
StarterTemp High	Low-Rpm
Pump Temp High	WrongPmp
Clutch failure	Acc. Slow
Current overload	PowerFail
Engine Offline	Disabled
no data	-OFF-

## 2.3 Graupner HoTT

Using the HoTT System there are 2 ways to transmit telemetry data, on the one hand as "text" and on the other hand only the pure values.

Using text mode it is possible to establish a bi-directional data transfer, meaning you can use the keys of the radio or the Smartbox in order to change/enter values in the sensor. Using speech output is not possible in this mode.

In data-mode the values are only transmitted in a fixed format in one direction. The format is defined by the sensor type. In this mode it is possible to have speech output for the sensor values.

### 2.3.1 Sensortype

The VSpeak ECU Converter for HoTT is a GAM (General Air Modul), a ESC (Electronic Speed Controller) – or a VAR (Vario). Please select this sensor-type on your radio or Smartbox.

### 2.3.2 Textdisplay

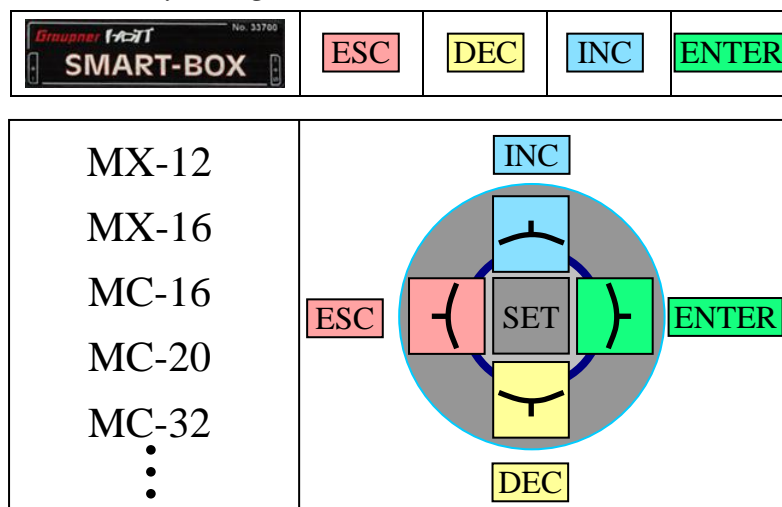
Using the text-display you can see the current ECU data and you can also change parameters of the ECU converter.

```

< RUNNING >
FUEL : 2051 ML
BATT : 11.3 V
RPM : 111200 RPM
EGT : 457 °C
CAPA : 1439 MAh
T:100% : PUMP:5.17V
C: 2.9A:FLOW: 589ML
    
```

Change to input Alarms / parameters of the ECU converter (see section 2.3.4)

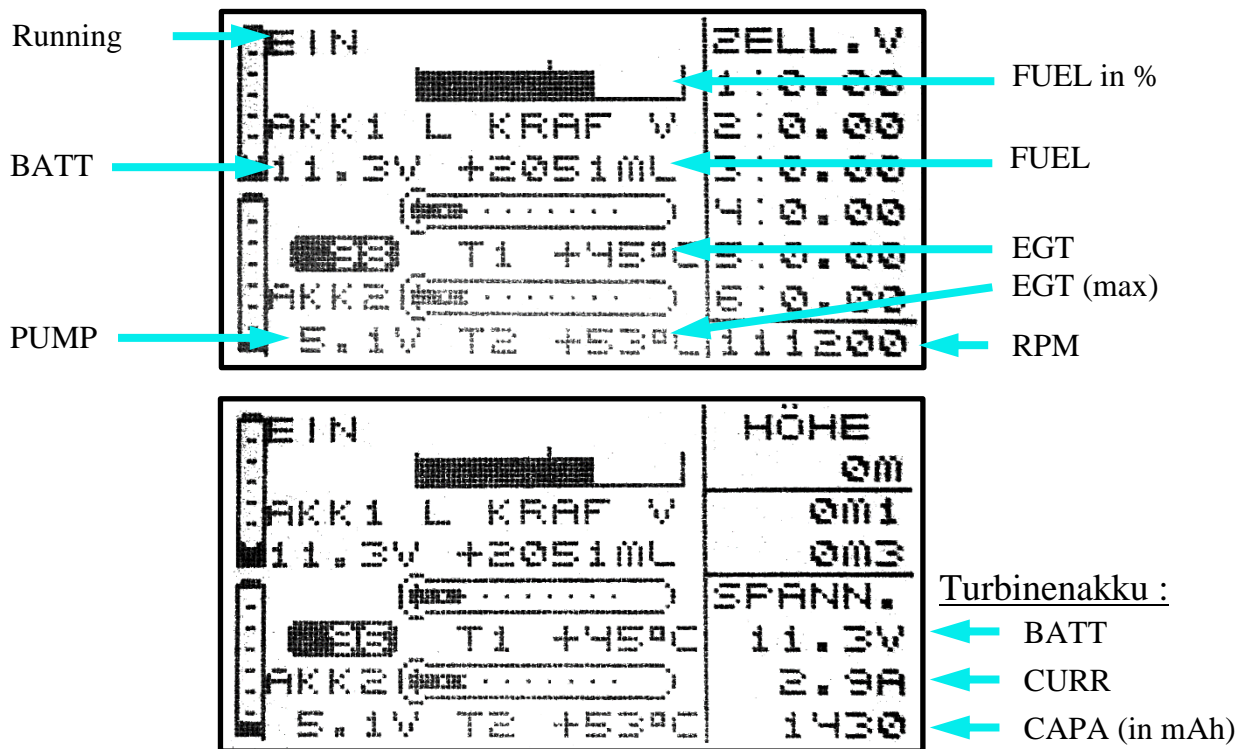
#### 2.3.2.1 Key assignment





### 2.3.3 Data-Display/Speech

#### 2.3.3.1 GAM - General Air Modul

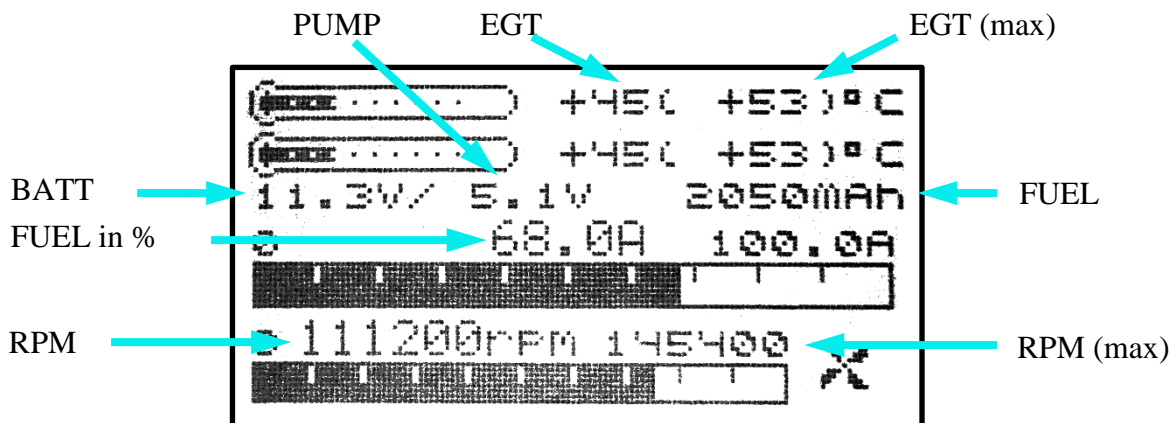


"EIN" indicates that the turbine is in the "Running" status.

Since the GAM can only display temperatures up to 235°C, the temperature is divided by 10. If you see a value of 45°C on the display, you have a "real" temperature of 450 - 459°C.

The fuel level is shown as gauge in % and as numbers in ml. To calculate the percentage of tank volume value FUEL-Size is 100% fully set when turned on.

#### 2.3.3.2 ESC - Electronic Speed Control



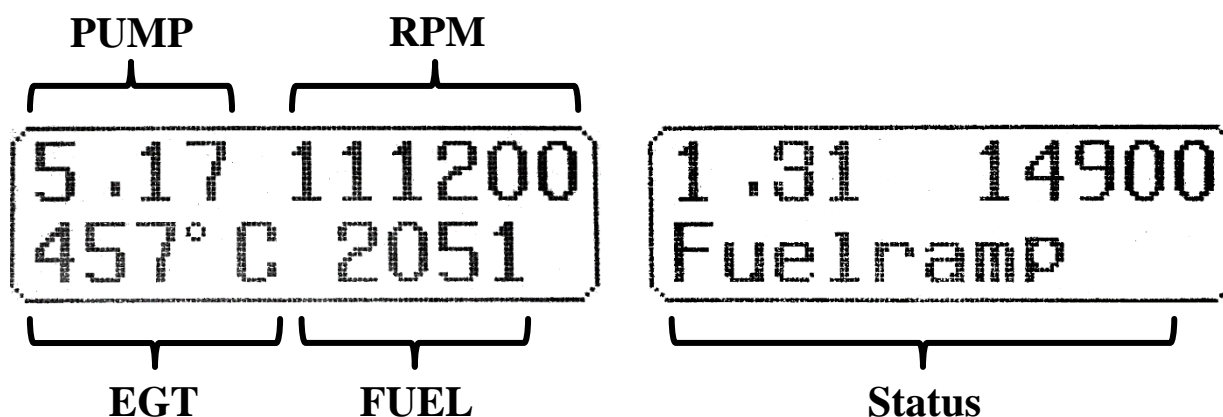
The ESC temperature display is limited to 235 ° C, so the turbine jet temperature is shown divided by 10, or the other way around: 45 ° C in the display corresponds to 450 ... 459 ° C.

The fuel consumption is displayed on the display as capacity value, ie, 2050mAh are 2050ml. On the other hand, the percentage tank level is displayed as the current, ie, 68.0A correspond

to 68.0% tank level. The tank level is thus easy to read via the associated bar display. To calculate the percentage of tank volume value FUEL-Size is 100% fully set when turned on.

### 2.3.3.3 VAR – Variometer

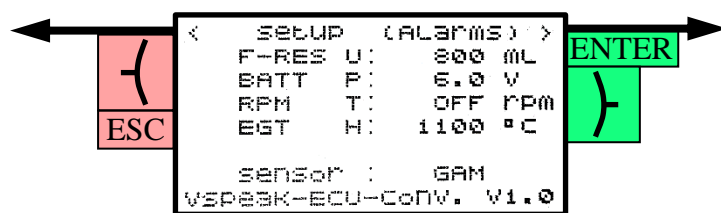
The HoTT Vario offers the possibility to display texts, in the example two lines with an MC20. The bottom line shows the turbine status or error messages. If the turbine is in the "Running" status, the lower line shows the EGT and the remaining fuel in ml.



The tank level is converted in a percentage and displayed as altitude, e.g. 68m corresponds to 68% tank level (can be used for the speech output). To calculate the percentage of tank volume value FUEL-Size is 100% fully set when turned on.

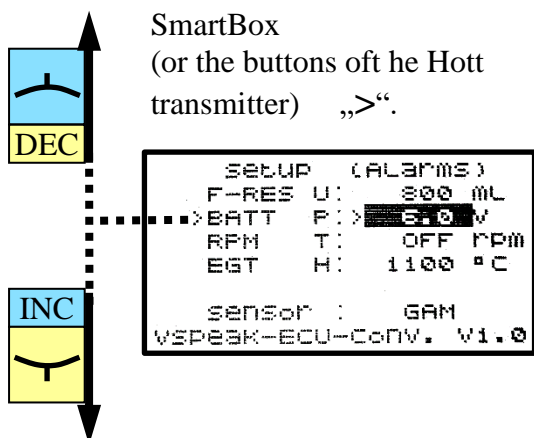
Furthermore, the alarms according to section 2.3.4. are also effective here.

### 2.3.4 Parameterization



The change of sides takes place with Enter and ESC button of the SmartBox or with the appropriate buttons on the HoTT transmitter.

The parameter is selected with the INC- and DEC-buttons of the SmartBox (or the buttons of the Hott transmitter) „>“.



With **DEC + INC** or **SET** the value of the selected parameter is enabled for change (inverted).

With **INC** the value can be increased,

with **DEC** it can be reduced.

Stored is after **DEC + INC** or **SET**

### 2.3.4.1 Alarms

The screenshot shows the following settings in the VESPEAK-ECU-CONV V1.0 menu:

- F-RES U: 300 ml
- BATT P: 6.0 V
- RPM T: OFF rpm
- EGT H: 1100 °C
- SENSOR: GAM

The Settings table below details the ranges and signal tones for these parameters:

Settings		
Value range	Step size	Signal tone
OFF, 50 ... 2500 ml	50 ml	U
6.0 ... 12.0 V	0.1 V	P
OFF, 20.0 ... 60.0 x 1000rpm	100 rpm	T
500 ... 1100 °C	5 °C	H

At the bottom of the screenshot, the sensor type is set to GAM/ESC/VAR.

Upon delivery, the warning thresholds are set as shown in the picture.

- **F-RES**  
The alarm Fuel Reserve is signaled if the remaining fuel is lower than set at F - RES.
- **BATT**  
The alarm BATT is signaled when the battery voltage is lower than the BATT set value.
- **RPM**  
The alarm RPM is signaled when the turbine rotation speed is lower than the RPM threshold value.  
The speed monitoring is started after at first exceeding RPM alarm threshold and ends with Pump = 0.0V.  
The RPM alarm is suitable for signaling a "turbine flameout".
- **EGT**  
The alarm EGT is signaled if the temperature exceeds the value set at EGT.

In **Sensor** the sensor type can be GAM, ESC or VAR. The change of the sensor type will only take effect after restarting the ECU converter.

### 2.3.4.2 FUEL consumption

The VSpeak ECU Converter can calculate the current fuel flow rate (F-FLOW) and the fuel consumption (FUEL) based on the PUMP voltage

The two parameters required for this (**Flow/2.5V** respectively **/4.0V**) can be determined with the help of a flow meter - or, if you don't have one at hand, in the following way: You can run the turbine with 2.5 or 4.0V pump voltage for a period of 1 minute and measure it fuel used. A more precise result can be obtained by carrying out the measurement over several minutes and dividing the amount of fuel consumed by the number of minutes (see appendix).

**FUEL-Size** is the capacity of the main tank in ml. The tank size is required for the calculation of the alarm for the fuel consumption (see above alarms: F RES).

Settings	
Value range	Step size
500 ... 20000ml	50 ml
1, 5, 10	
50 ... 600ml	1 ml
100 ... 1000ml	1 ml
OFF, ON	
0 ... 30%	1 %

<pre> &lt;  SETUP (FUEL)   FUEL-SIZE: 3000 ML   F-Rounded:  1 ML   FLOW/2.5V: 167 ML   FLOW/4.0V: 404 ML   TAXI TANK:  OFF   THR.OFFS.:  0 %   VSPEAK-ECU-CONV. V1.0           </pre>
---

Upon delivery, the warning thresholds are set as shown in the picture.

The display accuracy of FUEL (ml) can be set at **F-rounded**.

Rounding the display makes sense, when using speech to reduce the announcement syllables.

For models where a taxi tank is plugged into the main tank until the model is lifted off, set "**Taxi Tank** = ON". If the turbine is in the "Running" status, then when THROTTLE = 80% is exceeded for the **second time**, the FUEL will "reset", ie the displayed FUEL is only once set to "full" (the value set at "Fuel Tank Size") again at this time.

**Thr.Offs.** = Throttle Offset

The Throttle Offset is used to adapt the throttle display to the RC display on the Swiwin GSU. When delivered, this is set to 0%, the entire throttle range is displayed, ...

- starting with 0% Min (Stick Min, Trim Low)
- over ~10% Idle (Stick Min, Trim Max)
- up till 100% Max (Stick Max, Trim Max)

Set the throttle value here as an offset that is displayed when you are idle.

From now on the Min ... Idle area is "hidden", 0 ... 100% then corresponds to Idle ... Max.

## 2.4 Futaba S.BUS2

The VSpeak ECU converter is fully compatible with S.BUS2. Registration and connection are established as with any other S.BUS2 sensor

### **Caution:**

We generally recommend a strict separation between sensor values and servo data. Although the S: BUS 2 can transmit servo data, the S.BUS2 should exclusively be used for the transmission of sensor data and only the S.BUS1 should be used for the servos. In this way, the servo data are excluded from influencing on failure of a sensor.

### **2.4.1 Registration at the transmitter**

The VSpeak ECU converter must be registered on the transmitter like any S.BUS2 sensor. The slot allocation is required only once, this can be done manually or by the transmitter.

#### **Manual Slot Allocation:**

1. Select the desired sensor at free slot addresses on the transmitter (see Table Assignment Sensor - ECU Values).
2. Transfer the slot addresses set on the transmitter to the parameter file "SWIWIN.TXT" (see section 2.4.3).

#### **Slot allocation by the transmitter:**

To do this, the orange contact must be pulled out of the 3-pin UNI servo plug of the VSpeak connection cable and replaced with the white telemetry contact (also previously removed from the servo plug).

Connect the ECU converter with the modified UNI servo plug to the "S.I / F" socket of the transmitter.

Now you can register the VSpeak ECU Converter - please refer to the instructions of the respective transmitter. For transmitters without supply voltage at the "S.I / F" socket, a receiver battery must also be connected via V-cable.

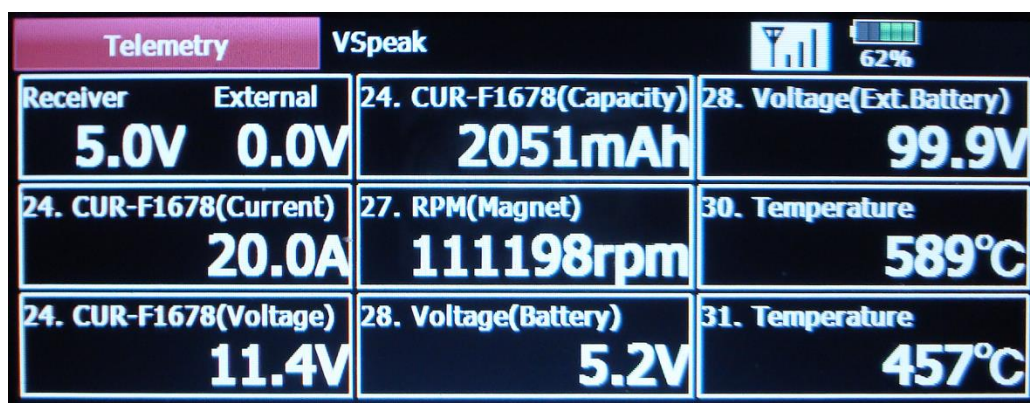
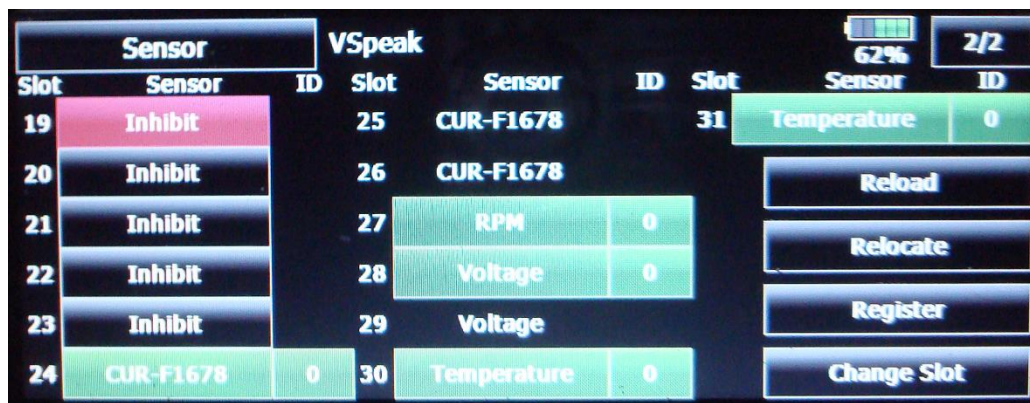
Since the VSpeak ECU converter displays its data using a total of 5 sensors, the registry has also been done 5 times.

#### **Assignment sensor - ECU values**

No	Sensor name	Slots	Start (default)	original Sensor value	ECU value
1	CUR-F1678	3	24	CURRENT	Turbine status (s. section 2.4.2)
				VOLTAGE	BATT in V
				CAPACITY	FUEL in ml
2	SBS-01RM/O	1	27	R.P.M	RPM in rpm
3	SBS-01V	2	28	BATTERY	PUMP in V
				EXT-VOLT	THROTTLE in %
4	SBS-01T	1	30	TEMP	F-FLOW in ml/min
5	SBS-01T	1	31	TEMP	EGT in °C



E.g. using a T18MZ transmitter: The sensors are displayed after registration as seen below:



#### 2.4.2 Turbine status – numerical "Current"-Values

<b>Futaba</b> CUR-F1678 CURRENT	Swiwin Status Text
0.0 A	Stop
1.0 A	Cooling
5.0 A	TestGlowPlug
6.0 A	TestFuelValve
7.0 A	TestGasValve
8.0 A	TestPump
9.0 A	TestStarter
10.0 A	Ready
11.0 A	Ignition
12.0 A	Preheat
13.0 A	Fuelramp
20.0 A	Running
21.0 A	Restart
-10.0 A	ERROR
-20.0 A	like -10.0A, but only once for 2 seconds

The turbines status messages are displayed numerically as current values. Please refer to the table.

As "Error" and thus current value "-10.0A" all others errors, not listed in the table are interpreted messages, which are errors that

can lead to a shutdown of the turbine or not even allow it to start.

If an alarm of lower MINUS 15.0A is programmed in the transmitter, all error messages of the ECU are signaled as a current alarm in the transmitter for a duration of 2 seconds

## 2.4.3 Parameter „SWIWIN.TXT“ (excerpt)

```

=====
***** settings Vspeak ECU converter Swiwin ****
=====
set value|value range |unit   |description
=====
general
-----
167      |50...600    |ml/min|FuelFlow @ 2.5 V
404      |100...1000  |ml/min|FuelFlow @ 4.0 V
3000     |500...20000|ml     |Fuel tanksize
1        |1,5,10      |ml     |FUEL rounded
OFF      |OFF,ON      |       |Taxi Tank
0        |0...30      |%      |Throttle offset
1        |1 10 100 1000|RPM    |RPM factor
3        |1...16      |Servo  |Throttle->ECU

alarms
-----
800      |OFF,50...2500|ml     |FUEL low
6.0      |6.0...12.0   |V      |BATTERY low
OFF      |OFF,200...600|x100rpm|RPM low
1100     |500...1100  |°C     |EGT high
.
.
Futaba - S.BUS2 setting
-----
3        |1...16      |Servo  |Throttle channel

Futaba (using multiple sensors) -----
-----
2000     |2000...2100 step10|Start ID
24       |OFF,1...29   |StBatFl|Slot CURF1678
27       |OFF,1...31   |RPM    |Slot SBS01RMO
28       |OFF,1...30   |PumpThr|Slot SBS01V
30       |OFF,1...31   |FuelFlow|Slot SBS01T
31       |OFF,1...31   |EGT    |Slot SBS01T
OFF      |OFF,ON      |EGT/10|divided by 10

```

Not relevant for Futaba

This is where the servo channel is set, via which the throttle signal is output to the VSpeak ECU converter via S.BUS2

### Start-ID:

Here, the sensor ID will be set at which the sensors of VSpeak ECU converter are registered at Futaba system.

The ID is valid for CUR-F1678, SBS-01RM / O, SBS 01V and the first temperature sensor SBS-01T (Fuelflow).

The second temperature sensor SBS-01T (EGT), has the sensor ID +1.

A change in the sensor ID can still take place if further SBUS sensors are registered on the transmitter with randomly the same sensor ID - or even another VSpeak ECU converter, for example, in a 2- rayed Jet.

### Slot ...:

Here, the StartSlot of each individual sensor can also be set manually: in the transmitter, the assigned sensor is also to be set manually at the corresponding slot address.

The corresponding sensor is deactivated with slot "OFF" - is thus also deactivated for transmitter registry.

### divided by 10:

Since the adjustable temperature alarm threshold in futaba transmitters is only possible for max. 200 ° C, here is the possibility to transfer the temperature value divided by 10.

## 2.4.4 Alarms

In the Futaba system alarms can be generated according to the set alarm thresholds for each value in the transmitter or the Telemetry Box. In the sensors itself no alarms can be set. This is for most sensor data also sufficient, such as an alarm for monitoring the EGT temperature.

But for alerting the fuel consumption and the speed monitoring the VSpeak ECU converter for Futaba offers the following options:

### 2.4.4.1 FUEL low

#### 1. Setting value = OFF

Fuel is transferred 1 : 1.

However, if an alarm threshold of e.g. <800 is programmed, then, after the tank level is lower, the alarm is also triggered - but the alarm only stops, if the transmitter is switched off.

That's why:

#### 2. Setting value = 800ml (as example)

After lowering the tank reserve, the current value 3 x is transferred alternately for 5 seconds as a negative value, followed by 10 seconds as normal positive value.

### 2.4.4.2 Rotation speed monitoring / RPM low

***Thus, the speed is displayed correctly, you have to set the speed display to type: magnet and gear ratio 1.***

#### 1. Setting value = OFF

The current speed is transfer 1 : 1.

If an alert threshold of for example <35,000 rpm is programmed in the transmitter, then the alarm is already active at the switching on of the turbine and the receiving system. That's why:

#### 2. Setting value = 350 (x100rpm =35.000 as an example)

The speed is transferred to the transmitter divided by a factor of 10. Only in the alarm case, speeds less than the setting value are transferred 1 : 1. The alarm is active AFTER exceeding the set value.

In the example, the speed monitoring is only activated after exceeding 35,000 rpm. The actual 40.000rpm are displayed on the transmitter as 4.000rpm, 35,100 as 3.510rpm. If speed decreases further then 35.000rpm speed transfer is 1 : 1. Has the transmitter an alarm threshold set to > 15.000rpm, the alarm starts. If turbine speed falls below 15.000rpm - for example, turbine was switched off, then the alarm stops because speed is now less than the alarm threshold value.

The RPM alarm is suitable for signaling a "turbine flameout".

## 2.5 Futaba S.BUS2 V10

The VSpeak ECU converter is fully compatible with S.BUS2. Registration and connection are established as with any other S.BUS2 sensor

### Caution:

We generally recommend a strict separation between sensor values and servo data. Although the S: BUS 2 can transmit servo data, the S.BUS2 should exclusively be used for the transmission of sensor data and only the S.BUS1 should be used for the servos. In this way, the servo data are excluded from influencing on failure of a sensor.

### 2.5.1 Registration at the transmitter

The VSpeak ECU converter must be registered on the transmitter like any S.BUS2 sensor. The slot allocation is required only once, this can be done manually or by the transmitter.

#### Manual Slot Allocation:

1. Select the desired sensor **Jetcat V10** at a free slot address on the transmitter.
2. Transfer the slot address set on the transmitter to the parameter file "SWIWIN.TXT" (see section 2.5.4).

#### Slot allocation by the transmitter:

To do this, the orange contact must be pulled out of the 3-pin UNI servo plug of the VSpeak connection cable and replaced with the white telemetry contact (also previously removed from the servo plug).

Connect the ECU converter with the modified UNI servo plug to the "S.I / F" socket of the transmitter.

Now you can register the VSpeak ECU Converter - please refer to the instructions of the respective transmitter. For transmitters without supply voltage at the "S.I / F" socket, a receiver battery must also be connected via V-cable.

In contrast to the 5 standard sensors in chapter 2.4, here the slots of the special sensor **JetCat V10** are used to display the data (not every Futaba transmitter supports the sensor JetCat V10).

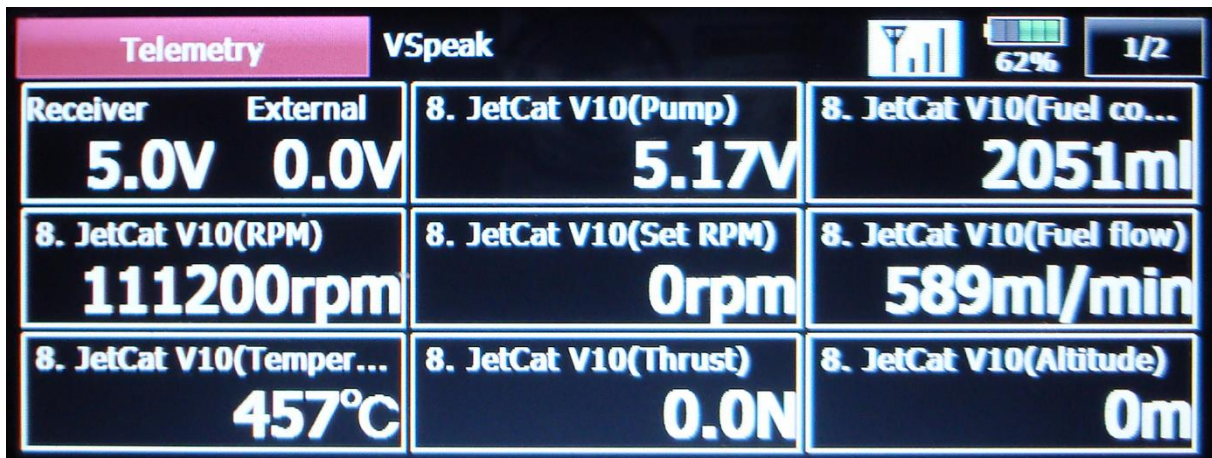
Slot	Sensor	ID	Slot	Sensor	ID	Slot	Sensor	ID
1	Inhibit		7	Inhibit	13	13	JetCat V10	
2	Inhibit		8	JetCat V10	0	14	JetCat V10	
3	Inhibit		9	JetCat V10		15	JetCat V10	
4	Inhibit		10	JetCat V10		16	JetCat V10	
5	Inhibit		11	JetCat V10		17	JetCat V10	
6	Inhibit		12	JetCat V10		18	JetCat V10	



## 2.5.2 Assignment JetCat V10 - ECU Values

JetCat V10 sensor occupies 14 slots, the assignment is as follows:

Nr.	JetCat V10	Swiwin
1	RPM	RPM
2	Temperature	EGT
3	Pump	PUMP
4	Set RPM	-
5	Thrust	-
6	Fuel	FUEL
7	Fuel flow	FuelFlow
8	Altitude	-
9	Fuel quality	THROTTLE
10	Battery	BATT
11	Current	Turbine current . . . or . . . ECU-status as numerical current value (s. section 2.5.3)
12	Speed	-
13	State	-
14	Second Shaft	-



### 2.5.3 Turbine status – numerical "Current"-Values

Swiwin	<b>Futaba</b>	<b>Futaba</b>
Status Text	CURRENT	Status JetCat V10
Stop	0.0 A	OFF
Cooling	1.0 A	OFF
TestGlowPlug	5.0 A	OFF
TestFuelValve	6.0 A	OFF
TestGasValve	7.0 A	OFF
TestPump	8.0 A	OFF
TestStarter	9.0 A	OFF
Ready	10.0 A	OFF
Ignition	11.0 A	Starting
Preheat	12.0 A	Starting
Fuelramp	13.0 A	Starting
Running	20.0 A	Running
Restart	21.0 A	Starting
Time Out	49.0 A	Ignition timeout
Low Battery	49.0 A	Low Battery
GlowPlug Bad	49.0 A	Glow Plug defective
Pump Anomaly	49.0 A	Pump error
Starter failure	49.0 A	Low rpm Off
RPM Low	49.0 A	Low rpm Off
RPM Instability	49.0 A	Over rpm
High Temp	49.0 A	Over temperature
Low Temp	49.0 A	Low temperature Off
TempSensorfail	49.0 A	EGT Sensor fail
Gas Valve Bad	49.0 A	Fuel fail
Fuel Valve Bad	49.0 A	Fuel fail
Lost Signal	49.0 A	Fail Safe Off
StarterTemp High	49.0 A	Low rpm Off
Pump Temp High	49.0 A	Pump error
Clutch failure	49.0 A	Acceleration too slow
Current overload	49.0 A	Power fail
Engine Offline	49.0 A	GSU Off
	55.0 A	

As "Error" and thus current value "49.0A" all ECU errors displayed, which can lead to a shutdown of the turbine or not even allow it to start.

The current value "55.0 A" is signaled once for 2 seconds as a "total alarm" for all error messages with the current value "49.0 A".

## 2.5.4 Parameter „SWIWIN.TXT“ (excerpt)

```

=====
**** settings Vspeak ECU converter Swiwin ****
=====
set value|value range |unit |description
=====
general
-----
167      |50...600      |ml/min |FuelFlow @ 2.5 V
404      |100...1000    |ml/min |FuelFlow @ 4.0 V
3000     |500...20000   |ml     |Fuel tanksize
1        |1,5,10        |ml     |FUEL rounded
OFF      |OFF,ON        |       |Taxi Tank
0        |0...30        |%      |Throttle offset
1        |1 10 100 1000|       |RPM factor
3        |1...16        |Servo  |Throttle->ECU

alarms
-----
800      |OFF,50...2500|ml     |FUEL low
6.0      |6.0...12.0   |V      |BATTERY low
OFF      |OFF,200...600|x100rpm|RPM low
1100     |500...1100   |°C     |EGT high
.
.
.
Futaba - S.BUS2 setting
-----
3        |1...16        |Servo  |Throttle channel
.
.
.
Futaba (using JetCat V10 sensor)
-----
2200     |2200...2300 step10 |Start ID
8        |1...18        |Slot JetCat V10
Status   |Curr., Status|A      |Current Value

```

Not relevant for Futaba

This is where the servo channel is set, via which the throttle signal is output to the VSpeak ECU converter via S.BUS2

**Start-ID:** Here, the sensor ID will be set at which the sensors of VSpeak ECU converter are registered at Futaba system. A change in the sensor ID can still take place if further SBUS sensors are registered on the transmitter with randomly the same sensor ID - or even another VSpeak ECU converter, for example, in a 2- rayed Jet.

**Slot ...:** Here, the StartSlot can also be set manually: in the transmitter, the "JetCat V10" sensor is also to be set manually at the corresponding slot address.

**Current Value:** Selection of whether the current turbine current or the turbine status (see section 2.5.3) is shown as current in the JetCatV10 display

## 2.5.5 Alarms

In the Futaba system alarms can be generated according to the set alarm thresholds for each value in the transmitter. In the sensors itself no alarms can be set. This is for most sensor data also sufficient, such as an alarm for monitoring the EGT temperature.

But for alerting the speed monitoring the VSpeak ECU converter for Futaba offers the following option:



### 2.5.5.1 Rotation speed monitoring / RPM low

Thus, the speed is displayed correctly, you have to set the speed display to type: magnet and gear ratio 1.

#### 1. Setting value = OFF

The current speed is transfer 1 : 1.

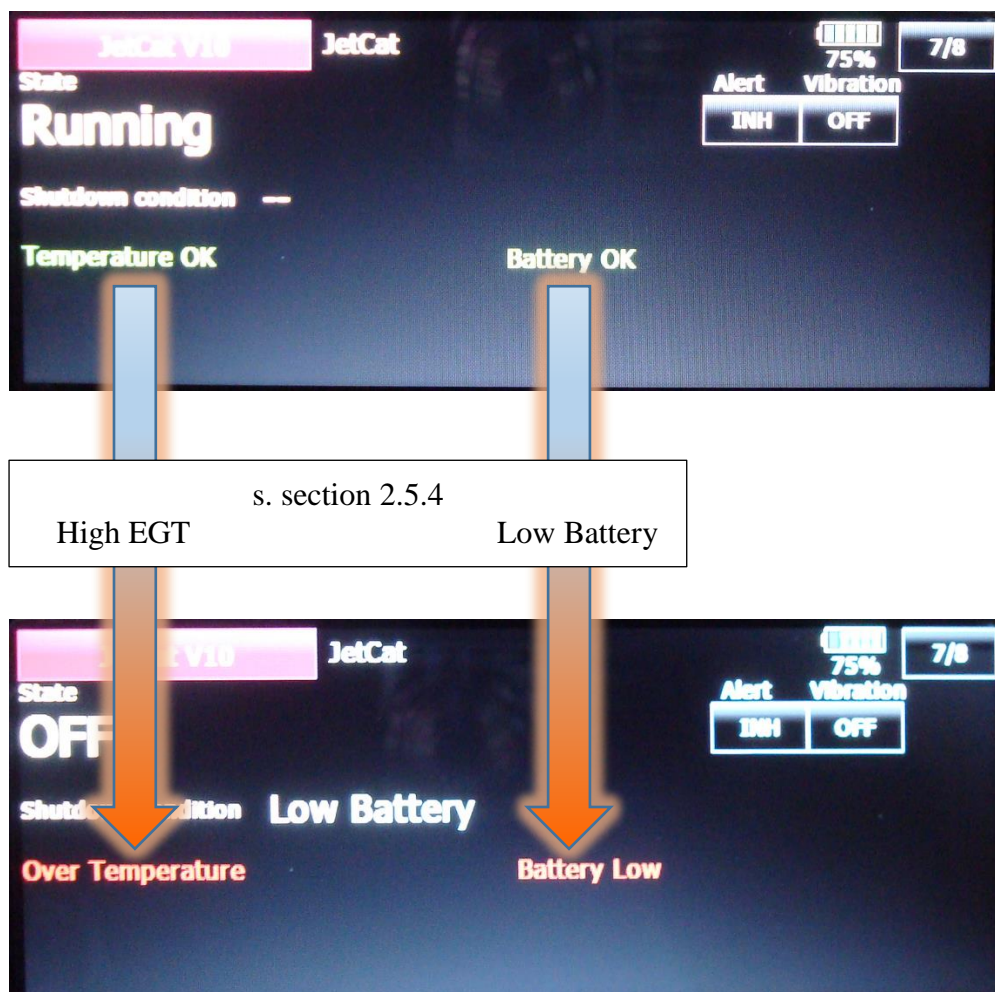
If an alert threshold of for example <35,000 rpm is programmed in the transmitter, then the alarm is already active at the switching on of the turbine and the receiving system. That's why:

#### 2. Setting value = 350 (x100rpm =35.000 as an example)

The speed is transferred to the transmitter divided by a factor of 10. Only in the alarm case, speeds less than the setting value are transferred 1 : 1. The alarm is active AFTER exceeding the set value.

In the example, the speed monitoring is only activated after exceeding 35,000 rpm. The actual 40.000rpm are displayed on the transmitter as 4.000rpm, 35,100 as 3.510rpm. If speed decreases further then 35.000rpm speed transfer is 1 : 1. Has the transmitter an alarm threshold set to > 15.000rpm, the alarm starts. If turbine speed falls below 15.000rpm - for example, turbine was switched off, then the alarm stops because speed is now less than the alarm threshold value.

### 2.5.5.2 Battery low / EGT high



## 2.6 FrSKY S.Port

The data of the VSpeak ECU converter is available on the FrSky Smart Port as follows:

FrSky ECU data	Swiwin
A3	BATT in V
A4	PUMP in V
Fuel	FUEL in ml
RPM	RPM
<b>Thro</b> (...vorher Fuel)	THROTTLE in % (previously fuel tank level in %)
Tmp1	EGT in °C
Tmp2	ECU status as temperature (s. section 2.6.3)


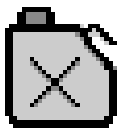


For the provided LUA scripts on the website of VSpeak exactly this spelling is necessary, otherwise the LUA script does not work correctly.

The second "Fuel" value with the unit% has been renamed "**Thro**".

For "Fuel" the PREZISION should be changed from 0.00 to 0.- - ml, and for A3 (BATT) from 0.00 to 0.0 V.







### 2.6.1 LUA script for Taranis

(X9D and X9E)

 RPM x1000 <b>98.8</b>	 FUEL (ml) <b>1440</b>	THROTTLE <b>100%</b>
 EGT <b>466</b>	Status / Alarm <b>Running</b>	 11.8 V PUMP 5.75 V


On the website of VSpeak you can download the packed file [VS Taranis LUA.zip](#) for free, a [Readme.pdf](#) file is included.

### 2.6.2 LUA script for Horus (openTX)

Demo			 18 Oct 11:12
 RPM x1000 <b>98.8</b>	 FUEL (ml) <b>1440</b>	Throttle <b>100%</b>	
 EGT <b>466</b>	Status / Alarm <b>Running</b>	 11.8 V PUMP 5.75 V	
<b>Swiwin</b>			

On the website of VSpeak you can download the packed file [VS Horus LUA.zip](#) for free, a [Readme.pdf](#) file is included.

### 2.6.3 Turbine status – numerical „Temperature“-Values

 Tmp2	Description
21	Restart
20	Running
13	Fuelramp
12	Preheat
11	Ignition
10	Ready
9	TestStarter
8	TestPump
7	TestGasValve
6	TestFuelValve
5	TestGlowPlug
1	Cooling
0	Stop
-1	Time Out
-2	Low Battery
-3	GlowPlug Bad
-4	Pump Anomaly
-5	Starter failure
-6	RPM Low
-7	RPM Instability
-8	High Temp
-9	Low Temp
-10	TempSensorfail
-11	Gas Valve Bad
-12	Fuel Valve Bad
-13	Lost Signal
-14	StarterTemp High
-15	Pump Temp High
-16	Clutch failure
-17	Current overload
-18	Engine Offline
-30	no data

The turbine status messages are displayed numerically as temperature values. The assignment is given in the table.

## 2.6.4 S.Port ID

On delivery, the ID of the VSpeak ECU converter is set to 28.

With the help of the FrSky DASHBOARD the converter can be set to IDs from 1 ... 28. This is useful if another sensor with the same ID is already connected to the S.Port bus, or a model is equipped with several turbines.



For this purpose, the UNI-servo plug of the VSpeak ECU converter must be connected with a V cable and a receiver battery to the FrSky DASHBOARD.

## 2.6.5 Parameter „SWIWIN.TXT“ (excerpt)

```

=====
**** settings Vspeak ECU converter Swiwin ****
=====
set value|value range |unit |description
=====
general
-----
167      |50...600      |ml/min |FuelFlow @ 2.5 V
404      |100...1000    |ml/min |FuelFlow @ 4.0 V
3000     |500...20000  |ml     |Fuel tanksize
1        |1,5,10        |ml     |FUEL rounded
OFF      |OFF,ON        |       |Taxi Tank
0        |0...30        |%      |Throttle offset
1        |1 10 100 1000|       |RPM factor
3        |1...16        |Servo  |Throttle->ECU

alarms
.
.
.
FrSKY S.Port
-----
28      |1...28        |       |Physical ID
1       |1...16        |       |Group Number
FUEL%   |FUEL%,THROTTLE|       |as Fuel in %

```

Not relevant for FrSKY

} s. section 2.6.4

**as Fuel in %:** Here you can set whether the decreasing fuel tank level in % (FUEL%) or the THROTTLE value in % is transmitted and displayed at the telemetry value "Fuel%".

## 2.7 JR PROPO

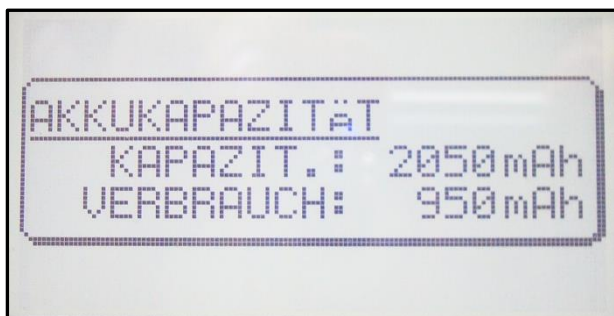
The displays are described below using the example of an XG8.



JR Display (Ex. XG8)	Swiwin
F-AKKU	OFF / ON
F-PACK A	ECU status as current or turbine current (s. section 2.7.1)
F-PACK C	FUEL in ml or capacity of turbine battery (s. section 2.7.2)
F-PACK V	Battery or PUMP (s. section 2.7.2)
F-PACK W	Throttle (%) or FuelFlow (ml/min) (s. section 2.7.2)
TEMP.	OFF / ON
RPM	OFF / ON (s. section 2.7.2)

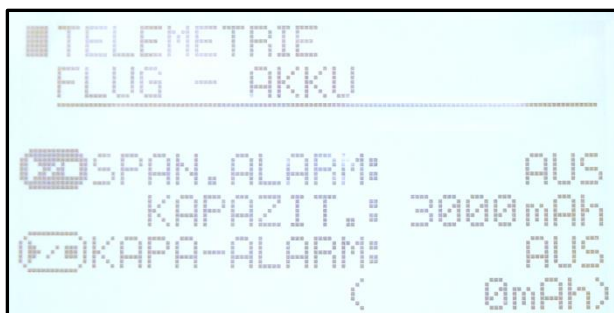
In order to display the rotation speed correctly, the parameters for RPM must be set to: GEAR RATIO , PROPELLER and MAGNET POLE to INH.

The parameter type (MAGNETIC , OPTICAL or MOTOR) does not matter.



The ECU converter transmits the consumed FUEL (950ml) – but on the radio the remaining fuel is displayed.


This means that the actual tank size must be parameterized in ml in the settings in the radio, here in the example the main tank has 3000 ml volume, which is set as capacity 3000mAh.





### 2.7.1 Turbine status – numerical "Current"-Values

The turbines status messages are displayed numerically as current values. The assignment is given in the following table.

 F-AKKU A	Swiwin Status Text
0.0 A	Stop
1.0 A	Cooling
5.0 A	TestGlowPlug
6.0 A	TestFuelValve
7.0 A	TestGasValve
8.0 A	TestPump
9.0 A	TestStarter
10.0 A	Ready
11.0 A	Ignition
12.0 A	Preheat
13.0 A	Fuelramp
20.0 A	Running
21.0 A	Restart
100.0 A	ERROR
111.0 A	like 100.0A, but only once for 2 seconds

As "Error" and thus current value "100.00A" **all others** errors, not listed in the table are interpreted messages, which are errors that can lead to a shutdown of the turbine or not even allow it to start.

If an alarm of > 105.00A is programmed in the transmitter, all error messages of the ECU are signaled as a current alarm in the transmitter for a duration of 2 seconds.

## 2.7.2 Parameter „SWIWIN.TXT“ (excerpt)

```

=====
***** settings Vspeak ECU converter Swiwin ****
=====
set value|value range |unit |description
=====
general
-----
167      |50...600      |ml/min |FuelFlow @ 2.5 V
404      |100...1000    |ml/min |FuelFlow @ 4.0 V
3000     |500...20000  |ml     |Fuel tanksize
1        |1,5,10        |ml     |FUEL rounded
OFF      |OFF,ON        |       |Taxi Tank
0        |0...30        |%      |Throttle offset
1        |1 10 100 1000|       |RPM factor
3        |1...16        |Servo  |Throttle->ECU

alarms
.
.
.
JR PROPO
-----
ON       |OFF,ON        |       |Sensor F-Pack
Status  |Curr., Status|A      |F-Pack >A<
FUEL    |Capa., FUEL  |mAh,ml |F-Pack >C<
Battery |Pump, Battery|V      |F-Pack >V<
THROTTLE|THRO, F-Flow|%, ml  |F-Pack >W<
ON      |OFF,ON        |       |Sensor TEMP
ON      |OFF,ON        |       |Sensor RPM

```

Not relevant for JR PROPO

**Sensor**...: With "ON" / "OFF" you can set whether the relevant sensor is used for data transmission from the ECU converter.

**F-Pack >A<**: Select whether turbine current or ECU status (s. section 2.7.1) as current is displayed on **F-PACK A**.

**F-Pack >C<**: Select whether capacity of turbine battery in mAh or FUEL in ml is displayed on **F-PACK C**.

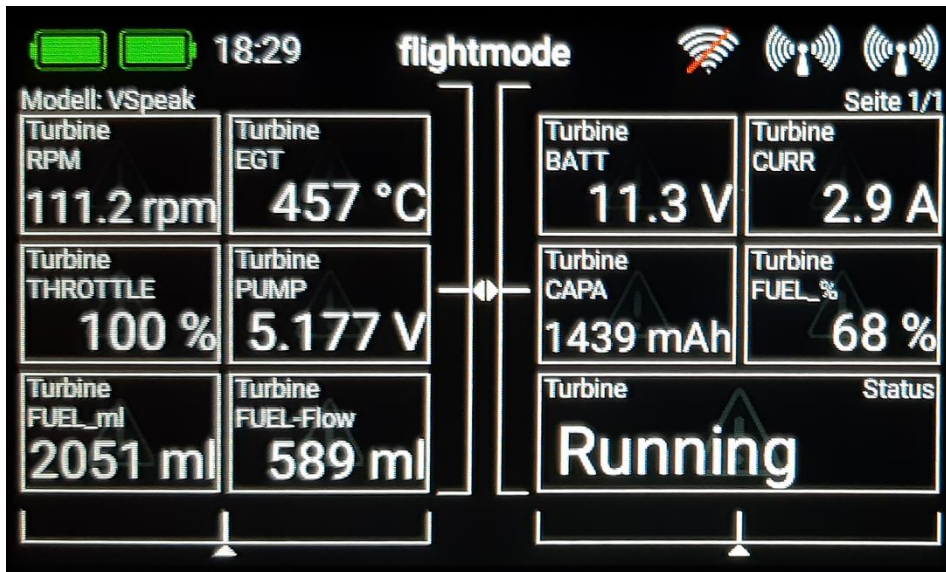
**F-Pack >V<**: Select whether pump voltage or turbine battery voltage is displayed on **F-PACK V**.

**F-Pack >W<**: Select whether Throttle position is displayed in% or FuelFlow in ml/min on **F-PACK W**.



## 2.8 PowerBox (P<sup>2</sup>Bus)

On the P<sup>2</sup>Bus the turbine data are transmitted as shown in the following picture:



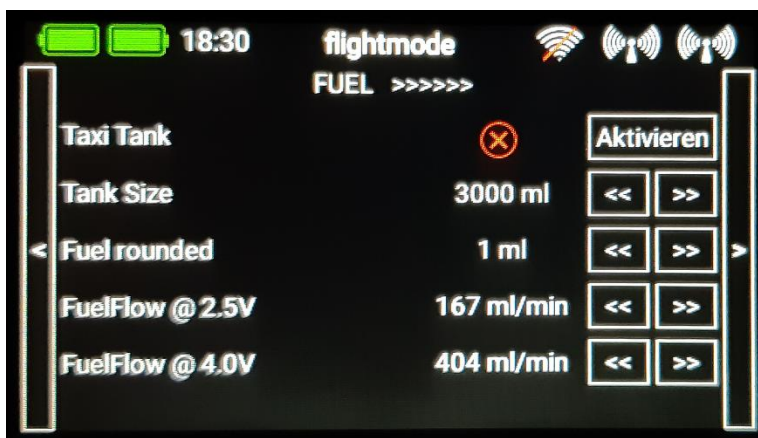
In the case of turbine malfunctions, the respective "Alarm" message is additionally provided with an alarm.

### 2.8.1 Setup

All relevant settings can be made directly from the PowerBox transmitter.

Changes to the parameters marked with a **yellow background** are only effective after a sensor rescan.

#### 2.8.1.1 FUEL



#### Taxi Tank

For models where a taxi tank is plugged into the main tank until the model is lifted off, activate "Taxi Tank ". With "Tank Size" the tank volume of the main tank has to be set. If the turbine is in the "Running" status, then when THROTTLE = 80% is exceeded for the **second time**, the FUEL will "reset", ie the displayed FUEL is only once set to "full" (the value set at "Tank Size") again at this time.

#### Tank Size

Volume of the main tank in ml.

## FUEL rounded

The display accuracy of FUEL (ml) can be set here.

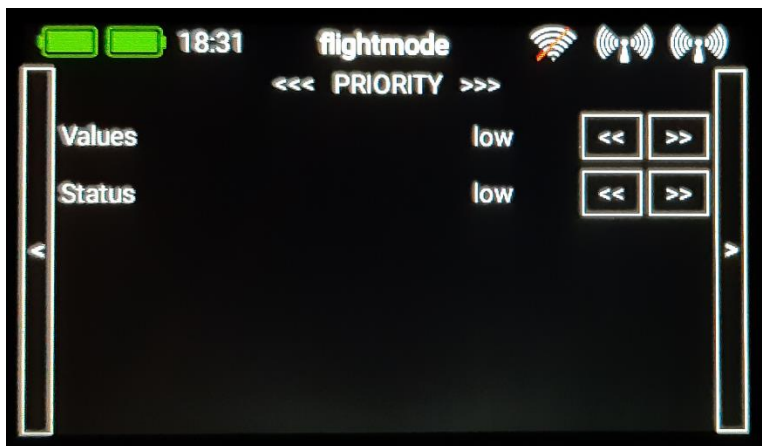
Rounding the display makes sense, when using speech to reduce the announcement syllables.

## FuelFlow @ 2.0V resp. 4.0V

FUEL-Flow are the two parameters for the current fuel flow at 2.0V or 4.0V pump voltage.

The two parameters can be determined with the help of a flow meter - or, if you don't have one at hand, in the following way: You can run the turbine with 2.0 or 4.0V pump voltage for a period of 1 minute and measure it fuel used. A more precise result can be obtained by carrying out the measurement over several minutes and dividing the amount of fuel consumed by the number of minutes (s. appendix).

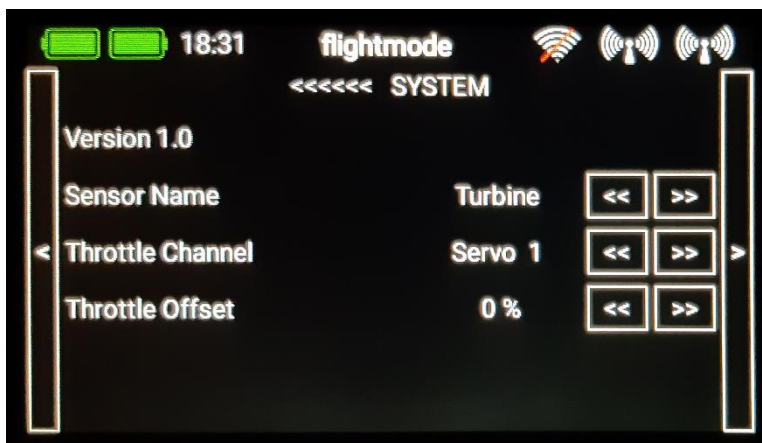
### 2.8.1.2 PRIORITY



Here you can set the prioritization of the data request for the ECU **Values** and the **Status**, you can choose between:

low / high / higher / at highest - whereby low is sufficient.

### 2.8.1.3 SYSTEM



#### Version ##

Current software version.

## Sensor Name

It can be connected simultaneously several VSpeak ECU converter at P<sup>2</sup>Bus, for example, in multi-beam models. The assignment of the sensor address manages the PowerBox transmitter - please read this in the manual of your PowerBox transmitter.

To distinguish between several simultaneously active ECU converters, different names can be selected for Sensor Name, for example:

Turbine     Turbine [1] [2] [3] [4] [A] [B] [C] [D] [L] [M] [R] ...

## Throttle Channel

Selection of the Powerbox -Servo channel via which the throttle signal is transmitted to the VSpeak ECU converter via the P<sup>2</sup>Bus.

## Throttle Offset

The Throttle Offset is used to adapt the throttle display to the RC display on the Swiwin GSU.

When delivered, this is set to 0%, the entire throttle range is displayed, ...

- starting with     0%     Min (Stick Min, Trim Low)
- over                ~10%     Idle (Stick Min, Trim Max)
- up till             100%     Max (Stick Max, Trim Max)

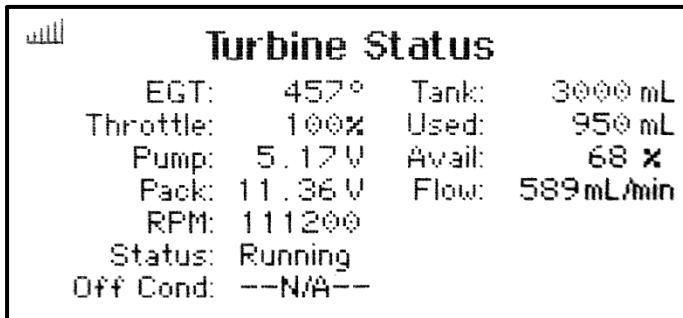
Set the throttle value here as an offset that is displayed when you are idle.

From now on the Min ... Idle area is "hidden", 0 ... 100% then corresponds to Idle ... Max.

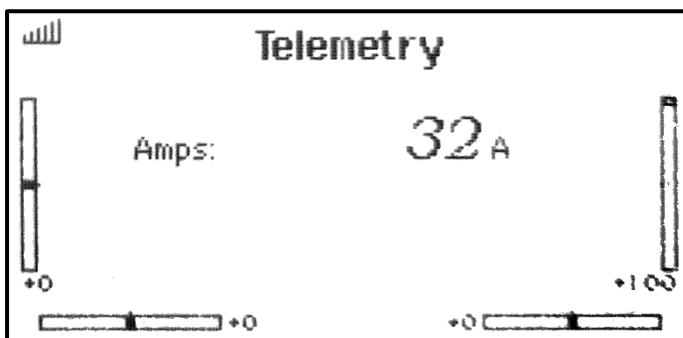
## 2.9 Spektrum X-Bus / SRXL2

You need at least a DX9, DX10T, DX18... in order to view ECU Telemetry. DX6, DX7s and DX8 do not support this sensor.

### 2.9.1 Telemetry display



Fuel consumption and EGT can also be displayed as a "current" value.



Used fuel in %. 32A means 32% fuel consumed. You can set an alarm, if you set threshold to 80A you get an alarm if 80% fuel is consumed

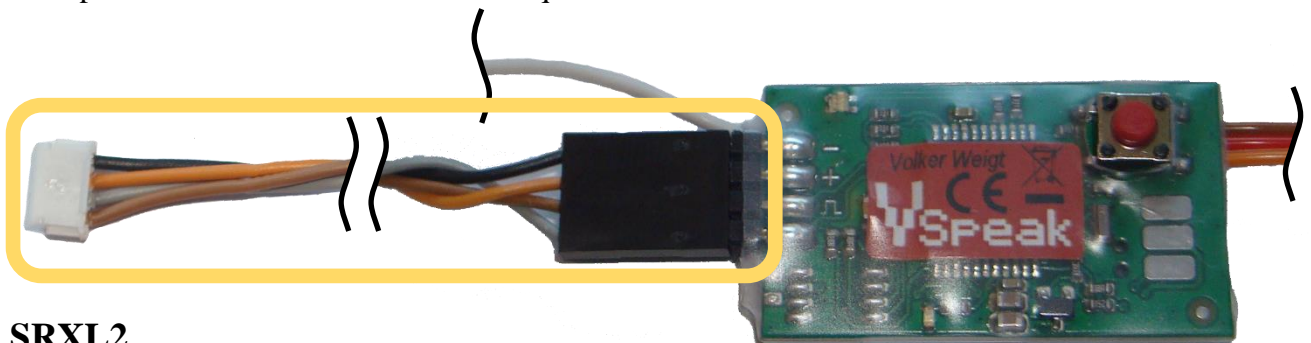
Display EGT in ° C divided by 10 as current, 32A = 320 ... 329 ° C ( Current alarm to 75A would be active when exceeding 750 ° C)

### 2.9.2 Connection X-Bus / SRXL2

Even if the sockets for X-Bus and SRXL2 on the Spektrum receivers looks the same, they are based on completely different hardware - which also requires a different connection on the ECU converter.

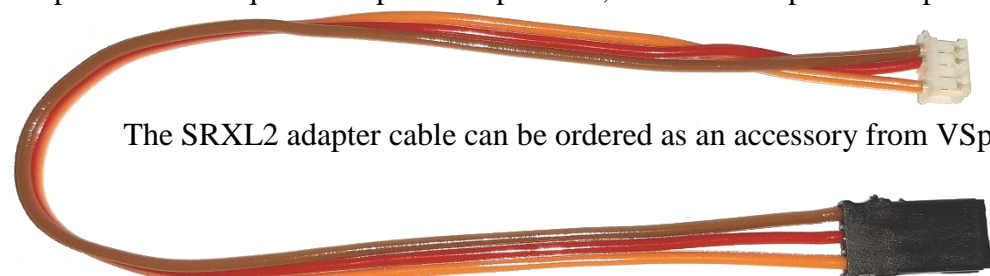
#### X-Bus

The special X-Bus connection cable is required for the X-Bus.



#### SRXL2

The X-Bus connection cable can also be used to connect to the SRXL2 – however, an SRXL2 adapter cable is required for parallel operation, like for example with a power box.



The SRXL2 adapter cable can be ordered as an accessory from VSpeak.

### 2.9.3 Parameter „SWIWIN.TXT“ (excerpt)

```

=====
**** settings Vspeak ECU converter Swiwin ****
=====
set value|value range |unit |description
=====
general
-----
167      |50...600    |ml/min |FuelFlow @ 2.5 V
404      |100...1000  |ml/min |FuelFlow @ 4.0 V
3000     |500...20000 |ml     |Fuel tanksize
1        |1,5,10     |ml     |FUEL rounded
OFF      |OFF,ON     |       |Taxi Tank
0        |0...30     |%      |Throttle offset
1        |1 10 100 1000 |RPM factor
3        |1...16     |Servo  |Throttle->ECU

alarms
.
.
.
Spektrum
-----
OFF      |OFF,Curr.,Fuel%,EGT/10|Ampere-Display
-----
0x31     |0x31, 0x40, 0x41, 0x60|SRXL2 address
         |0x61, 0x70, 0x71, 0x81|
YES      |YES,NO     |wait for other

```

Not relevant for Spektrum

} only for Spektrum SRXL2

**Ampere-Display:** Optionally, the fuel or current consumption in% or the jet temperature EGT (divided by 10) can be displayed as Amps value.

OFF: Amps display from the ECU Converter unused

CURR: ... turbine current

Fuel%: 0...100A = 0...100% consumed FUEL

EGT/10: example: 46A=460...469°C

SRXL2 address: Address with which the VSpeak converter is registered on the SRXL2 bus.

0x31: suitable address for parallel operation with Powerbox Royal SR2, Competition SR2, Pioneer ...

wait for other: waiting for other sensors connected in parallel to the SRXL2 bus.

YES: in parallel operation with Powerbox Royal SR2, Competition SR2, Pioneer ...

### 3 Technical data

Power supply	3,5 ... max. 15V from receiver	
Current consumption	~20 mA (at 7,4V)	
Dimensions	39 x 22 x 9 mm	
Weight	~10 g (incl. connection cables)	
Connections	UNI Servo plug <b>blue</b>	Swiwin ECU – TELEMETRY Port (cable length ~ 15 cm)
	UNI Servo plug <b>black</b>	single pole, Throttle Port Receiver (cable length ~ 15 cm)
	<u>RC system:</u>	
	• Jeti / Hott / Multiplex / Futaba / JR PROPO / FrSky / PowerBox P2B	
	UNI Servo patch cable	(cable length ~ 15 cm)
	• Spektrum	
	X-Bus- Plug / 4pol. Socket	(cable length ~ 15 cm)

### 4 EG- Declaration of Conformity

*Manufacturer*

VSpeak-Modellbau (Volker Weigt)  
Priestewitz



*We hereby declare that the product*

VSpeak ECU Converter

*complies with the following European directives:*

2004/108/EC	EMC Directive
2006/95/EC	Low Voltage Directive (LVD)
2011/65/EC	Restriction of Hazardous Substances (RoHS)

*The presumption of conformity is taken by applying the following harmonized standards:*

EN60065	Audio-, video- and similar electronic apparatus - Safety requirements
EN60332	Tests on electric and optical fibre cables under fire conditions
EN60950	Information technology equipment - Safety
EN61000-6-1	Electromagnetic compatibility (EMC)
EN61000-6-3	
EN55022	Information technology equipment - Radio disturbance characteristics

Priestewitz, 2020/11/01

.....  
Signature  
Volker Weigt  
Managing Director

## 5 Update

The processor on the ECU Converter contains a SD bootloader with a version counter.

If firmware updates are available they will be sent via mail. The data-files attached to the e-mail have to be copied to the Micro SD card (formatted FAT, FAT16 or FAT32), this card has to be inserted into the ECU Converter and the power has to be switched on. The boot loader will recognize the new software version and will install it (blue LED "flickers") and is then *up to date*.

## 6 Instructions for disposal



Equipment marked with the symbol should not be disposed of within household waste.

## 7 Version history

Vers.	Date	Comment
1.0	11.2020	first retail version
1.1	03.2022	FrSky: fuel% adjustable, FUEL in % or THROTTLE in % Spektrum: SRXL2 is supported

## 8 Contact

Volker Weigt

[www.VSpeak-Modell.de](http://www.VSpeak-Modell.de)

mail: [volker.weigt@vspeak-modell.de](mailto:volker.weigt@vspeak-modell.de)



# Flow determination F-FLOW

To determine the relationship between pump voltage and flow rate of the pump the following methods can be done:

## 1. Ask your manufacturer or supplier

Unless shown in the technical documentation, the flow rate of the fuel pump to the engine for a voltage at 2.500V and 4.000V could be requested from the manufacturer.

## 2. Measurement with flowmeter

If present, a flow meter can be connected into the line between the pump and turbine. Read the flow rate at running turbine. Adjust the throttle value so that the GSU-terminal displays voltages of the pump of 2.500V and 4.000V.

## 3. "gauging"

This requires an appropriate "measurement vessel". Suitable means that you can attach labels to them as closely as possible. Later it will be necessary to refill up to this label. Furthermore, stopwatch and graduated cylinder / measuring cups, etc. are required.

The GSU-terminal is connected to the ECU. The display for the pump voltage is selected. The pump delivers from the "Measuring Cup".

Procedure: 1. Start the engine.

2. Use the throttle so that the pump voltage levels off at 2.500V and 4.000V.

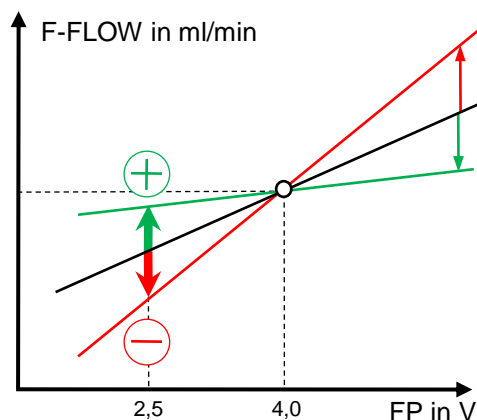
3. Install the first mark on the "measuring cup", start stopwatch.

4. Stop the engine after a minute – **the results are more accurate when measured over several minutes.**

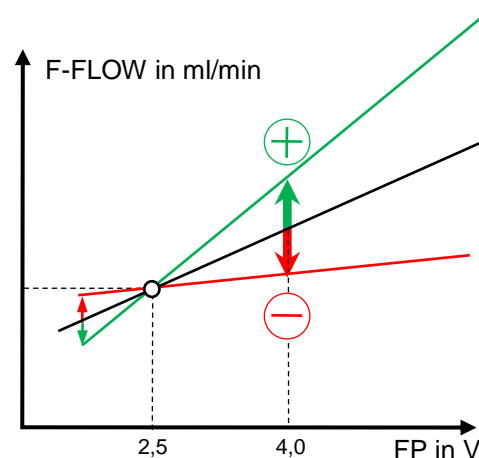
5. Refill fuel by means of a measuring cylinder (ml scale) back up to the mark. The amount of the filled fuel divided by the number of minutes over which the measurement was made, is the consumption in ml / min.

## 4. „trial an error“ - or fine adjustment

By trial and error you can also grope one's way towards an "appropriate" setting or adjust the factory setting on the model conditions. The two charts below are intended to illustrate how a value change takes effect:



change F-FLOW at pump voltage @2.5V



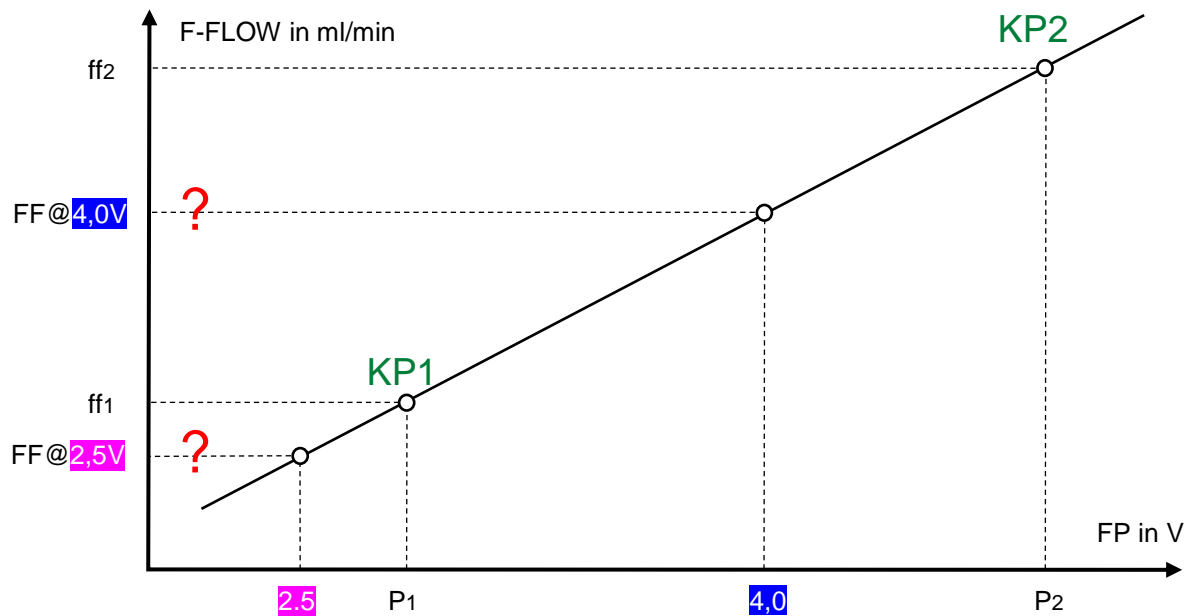
change F-FLOW at pump voltage @4.0V

## 5. Internet

In many internet forums the topic is certainly treated.

## Determination of flow rates and pump voltage 2.5 and 4.0V from other, already known characteristic points

To determine a flow rate based on the pump voltage, 2 characteristic points are absolutely necessary. If this can not be determined for 2.50V and 4.00V, but possibly other points are known, the flow values can be calculated from these points as follows:



There are the characteristic points P1 KP1 and KP2 and FF1 and FF2 with P2.

The flow F-FLOW @ 2.5V is then calculated as follows:

$$FF@2,5V = \frac{1}{P_2 - P_1} \left( (ff_2 - ff_1) 2,5V + ff_1 P_2 - ff_2 P_1 \right)$$

The flow F-FLOW @ 3.0V is then calculated as follows:

$$FF@4,0V = \frac{1}{P_2 - P_1} \left( (ff_2 - ff_1) 4,0V + ff_1 P_2 - ff_2 P_1 \right)$$

### Example:

Are known: **KP1**: with  $P_1 = 2,8V$  and  $ff_1 = 180ml/min$   
as well as: **KP2**: with  $P_2 = 5,1V$  and  $ff_2 = 540ml/min$

Using the above-mentioned Conversion formulas follows:

$$F-FLOW@2,5V = 133,0 \text{ ml/min} \quad \sim \quad \mathbf{133 \text{ ml/min}}$$

and

$$F-FLOW@4,0V = 367,8 \text{ ml/min} \quad \sim \quad \mathbf{368 \text{ ml/min}}$$