

# Jeti DC/DS-16 Update Version 2.00 (April 2013)

**Tip: ALWAYS backup your models and settings before performing any update. After each update you should verify the settings and throws of a model before your first flight.**

## New features:

1. **Device Explorer** using the very latest **EX Bus** protocol. (see notes).
2. **Accelerometer** settings and setup for DS-16 (see notes).
3. **RC-Switch** dedicated options available (see notes).
4. **Data Analyzer** for offline viewing of telemetry log files (see notes).
5. **Advanced digital trim settings** (see notes).
6. Switches can be used to flip pages on the main screen. Go to *Timers/Sensors* → *Main Screen* and assign two separate switches – the first one will always flip to previous page, the second switch will jump to the following page. You can also use any of the integrated accelerometer gestures (DS-16 only) to scroll through various telemetry screens.

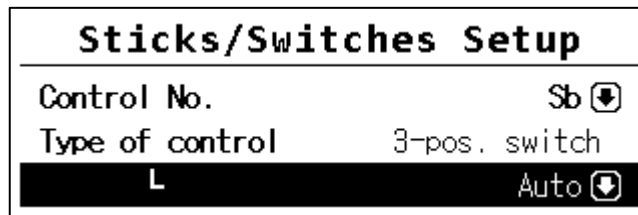


7. The structure of the basic menu has been modified to meet the requirements of the new software features.
  - Model
    - Select Model
    - New Model
    - Basic Properties
    - Functions Assignment
    - Servo Assignment
    - Servo Setup
    - **Device Explorer**
  - Fine Tuning
    - Flight Modes
    - Digital Trim
    - Flight Mode Trim
    - Dual Rate/Expo
    - Function Curves
    - Aileron Differential
    - Gyro Settings (Heli)
    - Throttle Limiter (Heli)
    - V-Tail, Delta Mix, Ailevator Mix (Aero)
    - Butterfly (Aero)
    - Snap Roll
    - Free Mixes
  - Advanced Properties
    - Other Model Options
    - Sticks/Switches Setup
    - Wireless Modes/Trainer
  - Logical Switches
  - Sound on Event
  - Sequencer
  - **Accelerometer (DS-16 only)**
  - Timers/Sensors
    - Timers
    - Alarms
    - Vario
    - Voice Output
    - Sensors/Logging Setup
    - Displayed Telemetry
    - **Main Screen**
  - **Applications**
    - **Data Analyzer**
    - Audio Player
    - Jetibox
    - Games (Snake, Tetris, Chess...)
  - System
    - Configuration
    - Servo & Range Test
    - View Inputs
    - Receiver Output
    - System Sound
    - Sound Volume
    - USB
    - Info

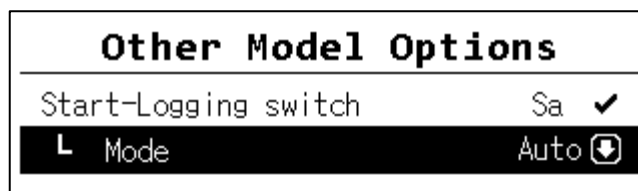
8. We have added the possibility to set **10ms frame rate**. In *System* → *Configuration* set the option “Transmit frequency” to 100Hz. Please note that if you really want to take advantage of the 10ms frame rate, you should check the receiver’s settings as well and confirm that the output period is set to “Auto” or “By Transmitter” and you are using only servo-groups **A** thru **C**. This should result in fast and very smooth reactions of your digital servos. The 10ms mode is available for all receivers, also with firmware version lesser than 3.10.

### Fixes:

1. On the main screen, the sensor names are displayed together with text description of their parameters.
2. Conversion of different units on the main screen was also fixed for maximum and minimum.
3. No more misleading “Receiver bound” signal which was activated in previous versions when another model was selected with no receiver connected.
4. It is now possible to overwrite any type of auto-detected switch with another defined type. In *Advanced Properties* → *Sticks/Switches Setup* you can see the attribute called *Type of control* which specifies the actual type. Possibilities are: “Auto” which keeps the auto-detection running, “None” that disables the particular input control, standard “Std. Switch”, “3-Pos. Switch”, “Button” and “Proportional”. Any value other than *Auto* will disable auto-detection for the specified control. Remember, these settings are global and are applied to all models. The only model-specific *Type of control* property applies to stick-switches **Sk** and **Sl**. This feature is useful for example if you want to have a standard switch that behaves like a spring loaded switch equipped with *button memory*.



5. Telemetry recording can now be started and stopped by flipping a single switch. Go to *Advanced Properties* → *Other Model Options* and set parameter “Mode” to “Start/Stop”. By default (*Auto* as shown in the picture), the telemetry starts recording after any timer is activated, *Start-logging switch* is flipped or *Start* button on the main screen is pressed. If the *Start/Stop* mode is selected, the status of recording is always controlled by the position of your selected *Start-logging switch*.



## Device Explorer (Model → Device Explorer)

The Device Explorer can be used to wirelessly configure remote devices, such as receivers, sensors and other configurable devices. The explorer utilizes the latest data/command protocol **EX Bus** and it is able to communicate only with such devices. You should check the label of your receiver/sensor to see if it supports this protocol. If the device is updatable, it is also possible to load the latest firmware that should be marked as **EX Bus** capable.

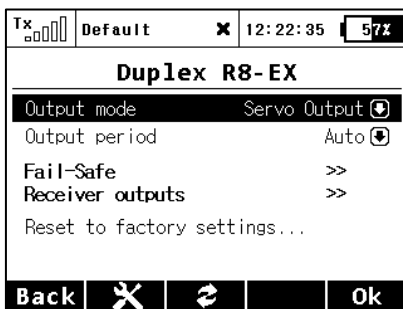
Basically, the Device Explorer replaces the integrated Jetibox emulation and brings new, more intelligent ways to communicate with your remote devices. The Jetibox emulation function remains, although in a reduced form. The main window of the Device Explorer shows a list of available devices. The recognized devices are labeled with their registered name, others are not



displayed or only displayed as a device ID. The check mark tells you that the device is ready and that you can configure it. By using **F(3)** “Refresh” button you can reset the displayed devices, forcing the auto-detection to explore all attached devices. Otherwise, the process of detecting remote sensors is always running in the background.

In the picture above, two receivers – R8 EX and R9 EX – have been detected and are recognized. When you press the rotary button, you are able to configure them in detail. The last row in the picture, *RC Switch*, is always displayed and will allow you to configure options related to this kind of device (see the article below). Please remember, the settings related to the RC Switch are stored in the transmitter and are model-specific. Note: This is different from all other device configurations, which are stored exclusively in the devices themselves.

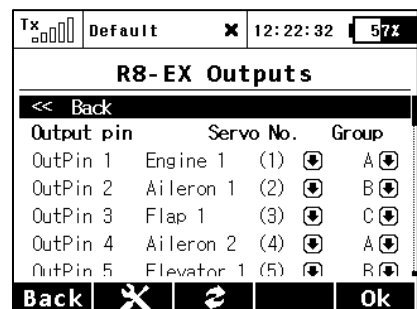
Here is the example how to use the Device Explorer to configure an “R8 EX” receiver:



a)



b)



c)

After all of the parameters have been downloaded from the receiver to the transmitter, you should be able to see the basic configuration of the receiver as shown in the picture a). Every modification that you make is automatically uploaded back to the receiver, so that you can immediately see results of the steps you are doing and there is no need to continuously “save” your changes. For your convenience, there is a **Refresh** button **F(3)**, which causes all of the data to be downloaded from the receiver once again. This is beneficial mainly if you are modifying the configuration by using the Jetibox device and the Device Explorer simultaneously.

The **F(2)** “Tools” button opens a special dialogue where you can import or export settings of your device. When you need to export the whole configuration of the device, just fill in the name of the resulting file. All files are then stored in an “Export” folder on the SD card.

Note: Before a device can be recognized, a special predefined configuration scheme must be present on SD card in folder /Devices. If the scheme doesn't match or doesn't exist, an error message "Unknown device" is displayed. If such an error occurs, please download the latest software for your DC/DS-16 which, by default, has all the definitions included, or contact the manufacturer of your device.

In the picture a) you can set the following parameters:

- Output mode – This determines the operational mode of the receiver. You can choose from these options:
  - *Servo Output* - the standard mode for direct servo control.
  - *PPM Positive, PPM Negative* – the servo signal is summed into a standard or inversed PPM signal.
  - *EX Bus* – tells the receiver that it should send all data onto a fast digital serial link for further processing. This is the recommended option if you are connecting the receiver to Central Box or another intelligent device.
- Output Period – determines how often the servo signal will be sent to the outputs of the receiver. You can select periods from 5ms to 30ms (in 5ms steps). Recommended option: Auto.
- Number of channels – if the output mode selected is either positive or negative PPM, you can set how many channels will show on the output.
- Fail-Safe – redirects you to the screen b).
- Receiver Outputs – redirects you to the screen c).
- Reset to factory settings... – After confirmation, the receiver's configuration will be restored to its factory state.

On the next page (picture b) there are parameters regarding the fail-safe function:

- Fail-Safe – this parameter tells the receiver, how to react when a signal loss event occurs. If you set *Enabled* then you will be able to set the behavior of every channel independently. The *Disabled* option says that if no signal is being received from the transmitter, no driving signal for the servos (or PPM) will be sent.
- Fail-Safe Delay – number of seconds that must elapse from the moment of losing signal until the fail-safe is activated. This option is available only if the Fail-Safe is *Enabled*.
- Each output of the receiver has three configurable parameters:
  - Mode (*Hold, Out OFF or Fail-Safe*) – dictates how the specific output behaves if a signal loss occurs. Using the *Hold* mode, the latest known servo position will be held. *Out Off* option means that there will be no signal to the particular servo channel. The last option, *Fail-Safe*, will set the servo to a (user) predefined position (column *Value*).
  - Value – position of the servo when the signal loss occurs. Available only when the *Fail-Safe* mode is selected. For convenience, you can press the **F(4)** "Apply" button while you are editing this column. The selected value will then appear directly on the servo output without the need to turn off the RF modules which would eventually activate the fail-safe and show the set position. The "Apply" function makes it faster to set your fail-safe positions.
  - Speed – This slows down the speed of servo movement while the output is moving from the normal position to the fail-safe position.

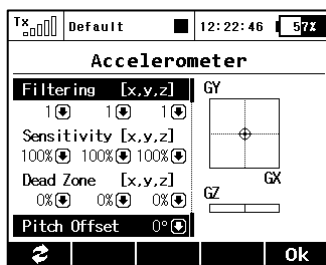
The last page (picture c) allows you to redirect your transmitter's channels to any output of the receiver. For convenience the transmitter's channel numbers are displayed together with the appropriate function names, making it is easier to adjust. In addition, you can also set the servo group for each channel. For more information please refer to your receiver manual.

## Accelerometer (DS-16 Only: Advanced Properties → Accelerometer)

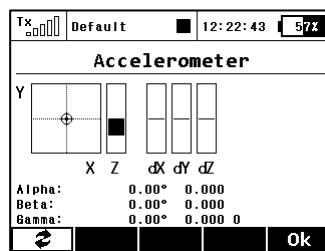
The DS-16 is equipped with an inertial unit that allows you to precisely determine the orientation of the device in space. This unit consists of a 3-axis gyroscope, 3-axis accelerometer and additional mathematic operations. You can freely use this inertial unit to control any function, trigger any voice announcements or you can simply flip pages on the main screen.

You can configure some of the inertial unit parameters in *Advanced Properties → Accelerometer*. In the picture a), the actual orientation of the transmitter is displayed. The axes GX, GY, GZ are defined as *roll*, *pitch* and *yaw* in the same order. The graph shows the final values after all corrections have been made. Within this menu, you can edit following parameters:

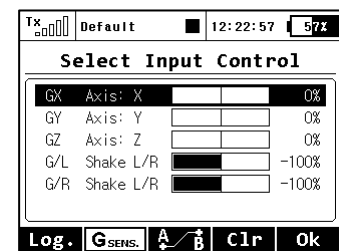
- **Filtering** – This increases smoothness of the movement for each axis separately. You can set values in range from 0 to 10. Zero value means no filtering and gives fast reactions. The higher the filtering setting, the movement becomes slower and smoother.
- **Sensitivity** – This influences the gain of the inertial unit for each axis separately. If you feel that the reactions of the controlled function are too small for the particular movement, you can simply increase the corresponding value of sensitivity, numerically up to 400%.
- **Dead Zone** – This parameter determines the area in the center (where the crosshair in the picture a) is located) which has zero response from the inertial unit. That means if you move the transmitter slightly around the middle position, the output of inertial unit will remain zero.
- **Pitch Offset** - This shifts the GY axis so that you don't have to hold or keep the transmitter in a completely horizontal plane all the time.



a)



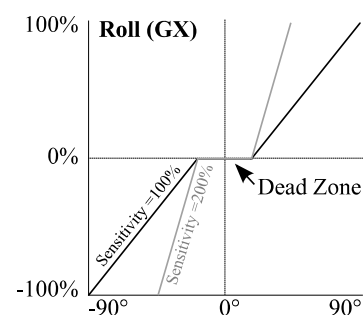
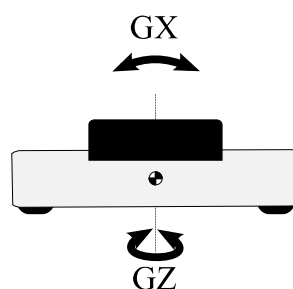
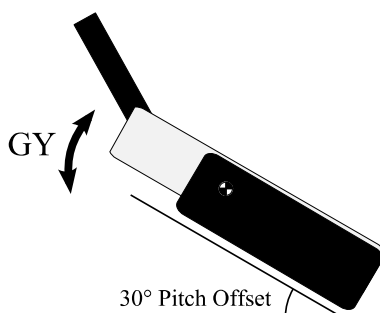
b)



c)

You can also view the raw data coming from accelerometer and gyroscope by pressing the **F(1)** button (see picture b). This might help you to fine tune your setup.

After you are finished setting the inertial unit itself, you can assign the resulting variables to any function using a standard input dialog (picture c). To see the variables of the inertial unit, you have to press the **F(2) Gsens.** button. The axes GX, GY, GZ correspond to the graph shown in the picture a). The last two parameters are called *Shake L/R* and present some kind of a motion gesture. If you quickly shift the transmitter to the left, *G/L switch* will be activated for a short time. Similarly, a single movement to the right activates *G/R switch*. You can use these gestures to trigger voice announcements, flip pages of the main screen etc.

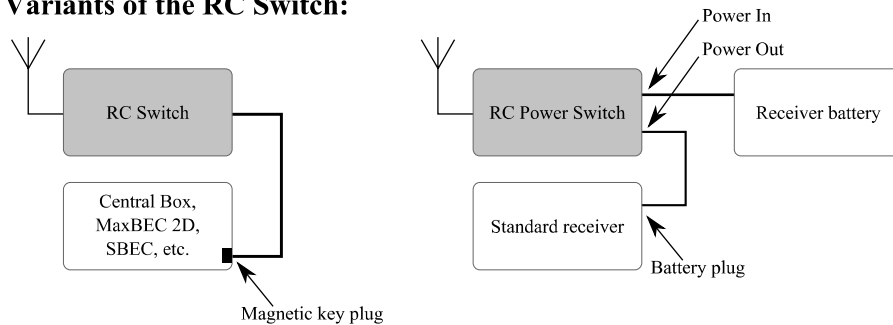


## RC-Switch *(Model → Device Explorer → RC-Switch)*

The RC switch is a special wireless device that allows you to remotely connect or disconnect the power supply of your model. There are currently two variants of the device: *RC Switch* and *RC Power Switch*. The difference is noticeable in the picture below. The simple RC Switch is suitable for applications where a Central Box, MaxBec2D or other intelligent electronic device is being used. It offers a single output pin that might be wirelessly driven high or low according to the situation.

When connected in place of a magnetic key, the RC Switch can turn the electronics in the model on and off.

### Variants of the RC Switch:



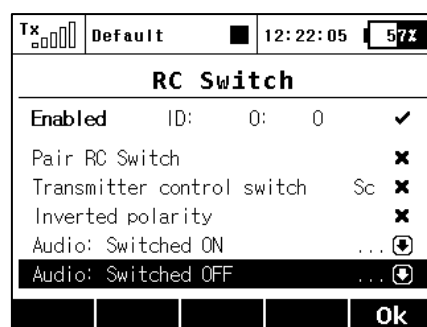
The second variant, the RC Power Switch, can fully replace a standard physical switch. It can directly drive servos and electronics since it includes a couple of low-resistance MOSFETS. Just plug the RC Power Switch between the battery and the receiver, configure the switch-related settings in your transmitter and bind it as a standard receiver.

The switch-related settings are located in *Model → Device Explorer → RC-Switch*. First, you have to enable the switch by pushing the rotary button with the first row highlighted. Then you should bind the RC Switch:

- Put the bind plug into RC Switch and then turn it on.
- Push the rotary button with the row *Pair RC Switch* highlighted.
- The ID of the switch is automatically saved.

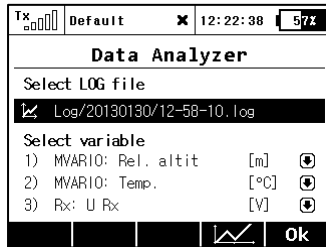
The *Transmitter control switch* function is a source of events: If you want to turn the model on, then flip the assigned control switch and confirm the question that appears. If you want to turn the model off, just flip the switch back and also confirm the question.

You can invert polarity of the switch (if high logical level doesn't turn the device on) and also set the audible signals that will be activated every time the status of RC Switch is changed (turned on or off).

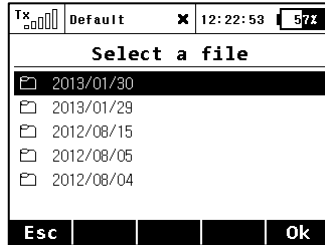


## Data Analyzer (Applications → Data Analyzer)

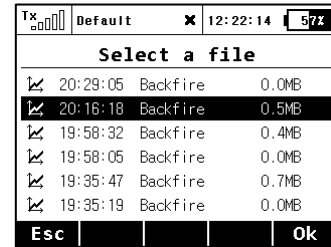
This function allows you to view telemetry log files after each flight. You don't have to take your PC to the airfield and download the data anymore. The analyzer is able to display up to three variables simultaneously in a graph with one variable displayed. The variables will alternate each time you press the **F(5) 1/2/3** button while the graph is displayed.



a)



b)



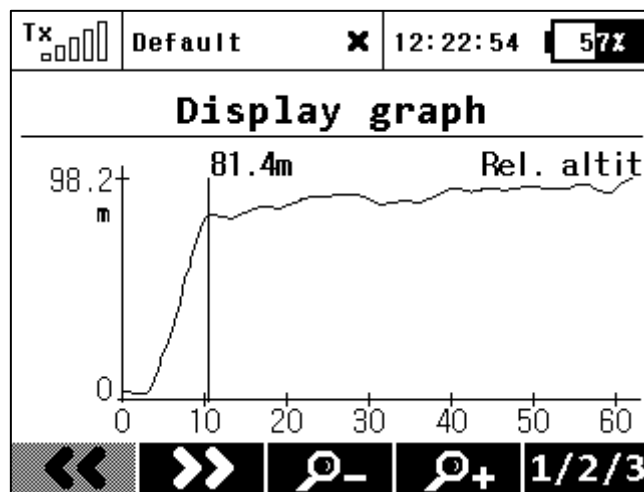
c)

To view any logged telemetry data, go to main window of the Data Analyzer which is located under Applications menu item (see picture a). Highlight a row beneath *Select LOG file* and press the rotary button. Browse through the contents of the SD card and locate the desired file (pictures b and c). All files are in order by date and time, so it is easy to find the latest record. After the appropriate file has been selected, you will be redirected back to the screen a). There you can select up to three variables that will be alternately displayed in the graph.

After pressing the button **F(4)**, resulting graph is displayed. The X axis presents time domain, starting always at zero seconds. The Y axis shows values of the measured parameter from its calculated minimum to maximum. The Y axis has a dynamic range according to the actual values.

For convenience here is the list of available controls:

- You can scroll through the timespan of the log file very fast using the **F(1)** and **F(2)** buttons.
- You can also view the timeline with the exactly measured value in that particular point – just turn the rotary button to the left or to the right to move the timeline. After pressing the **Menu** button (or the rotary button itself), the timeline will begin moving with larger steps.
- **F(3)** “Zoom In” and **F(4)** “Zoom Out” decreases or increases the timespan of the whole graph.
- Button **F(5)** “1/2/3” toggles between variables that have been selected on the screen a).



Note: You cannot display a log file which is currently being written to. To view the most recent file, you should stop logging and clear the flight using **F(5) Clr** button on the main screen. After that you can open the file in Data Analyzer.

## Advanced digital trim (Fine Tuning → Digital Trim)

The digital trim function in version 2.0 brings new features that have been requested by many users. Go to *Fine Tuning* → *Digital Trim* and check the available settings. Each pair of trim buttons is described by a graphical icon. In addition, there are two more incremental trims freely available. The optional incremental trims are designed mainly to be used in conjunction with an assigned spring-loaded 3-position centered switch, any other physical switch or even a logical switch (see below).

The trim dialogue has been divided into two screens a) and b), you can switch between each of them using the buttons **F(1) “Left”** and **F(2) “Right”**.

As you can see from the screen a), you can assign any function that will be influenced by that particular trim. It is also possible to deactivate the trim so that it doesn't influence any function (simply unselect the assigned function). This is mostly important for pilots of various multicopters or helicopters equipped with advanced stabilization electronics.

The operational modes of the trims have also been extended (see picture c). There are currently these options:

- Global – the specified trim will have equal settings for all flight modes.
- Separate – every flight mode has its own independent configuration of the trim.
- Flight-Mode Group (A/B) – if you are using several flight modes and you want to share trim settings among a few of them just set one of the groups  $F_A$  or  $F_B$  for the particular trim. Each group has its own settings which are then shared. Note: If you change from *Global* to any *Flight-Mode Group*, the trim mode in other flight modes than the current one will become *Separate*.

The rest of the parameters are described below:

- Value – shows the actual trim rate.
- Stored – shows the stored value of trim memory function.
- Mode – here you can specify a basic behavior of the trim:
  - Centered mode – by default, the trim affects only servo center, the endpoints remain untouched.
  - Linear – shifts the whole servo travel, including endpoints.
  - Thro-Low – affects servo low endpoint and the whole curve except the high endpoint.
  - Thr-L50% – affects servo low endpoint, doesn't affect range from midpoint to high endpoint.
  - Thro-High – affects servo high endpoint and the whole curve except low endpoint.
- Step – indicates, how much the value of trim changes each time the trim button is pressed.
- Rate (+,-) – determines maximum limits used for the trim.

Trim	Function	Value	Stored
⊗⊗	Ailerons	0%	0%
⊗⊗	Throttle	0%	0%
⊗⊗	Rudder	0%	0%
⊗⊗	Elevator	0%	0%
Se	Elevator	0%	0%

a)

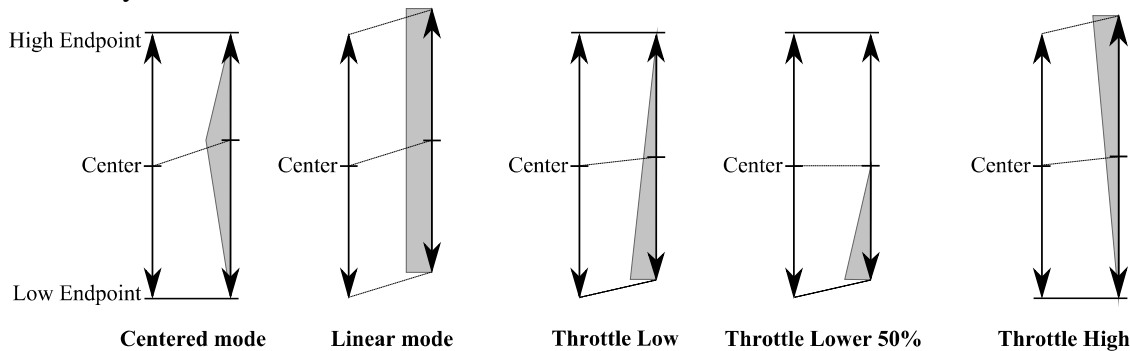
Trim	Mode	Step	Rate	+
⊗⊗	Centered	2%	100%	100%
⊗⊗	Thro-Low	2%	100%	100%
⊗⊗	Centered	2%	100%	100%
⊗⊗	Centered	2%	100%	100%
Se		2%	100%	100%

b)



In the picture below you can see how various trim modes influence the servo output (trimmed to ca 50% of range). However, you cannot use any trim mode at any time:

- V-Tail configuration: You can specify the trim mode only for the elevator function, not for rudder since these functions are linked together.
- Delta/Elevon configuration: You can specify the mode only for ailerons, not for elevator.
- Helicopter using CCPM mix: The mode can be specified only for collective function (pitch), not for roll/elevator functions.
- If you use two or more trims to adjust a single function, the resulting trim rate equals to a sum of all rates that are participating on this function. However, the transmitter uses always only a mode defined for the first trim.



Additional options will show when you press **F(4)** button, as shown in the picture d). You can store the currently highlighted trim (for example Ailerons in the picture) to trim memory, or you can apply the trim memory function to all trims. How it works: The actual rate of the highlighted trim (or all trims, respectively) is copied into a special register (picture a, the last column) and the trim rate itself is cleared. This applies always to all flight modes. The trim memory function is beneficial if you want your trims zeroed although some offsets have been set. When processing, the transmitter sums the actual trim rate and its stored value.



c)



d)

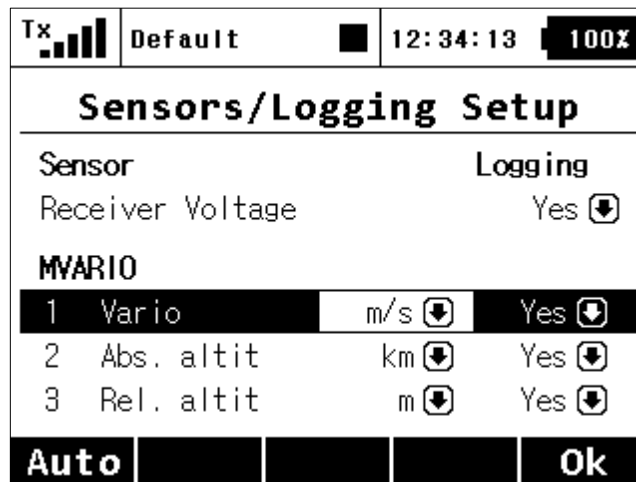
In the picture d), there are two last options available: *Clear highlighted trim* and *Clear all trims*. After confirmation, this option clears the actual trim value (or all trim values, respectively) and similarly zeroes the adequate stored values (trim memory). This always applies to all flight modes.

**Caution: The Autotrim feature, when active, always influences the model functions currently assigned to the particular trim buttons (except for throttle function which is never affected by this feature). The Autotrim function does not take effect on the auxiliary incremental trims. Please be very careful if you assign trim buttons to any function that is not controlled by a spring centered stick. It is advised to disable the Autotrim completely in such a case.**

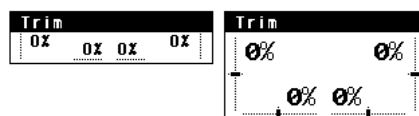
# Jeti DC-16 Update Version 1.07 (28<sup>th</sup> December 2012)

## New features:

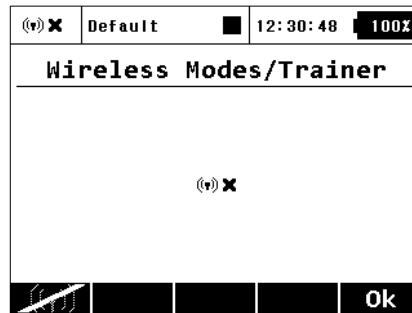
1. General purpose **sequencer** (see notes).
2. Dedicated **Snap Roll** options (see notes).
3. Proportional evaluation of Logical switches has been added (see notes).
4. The voice synthesized telemetry units can now be expressed in either metric or improved US units. It is now also possible to display the telemetry units on the main screen in either format as well. The temperature is automatically converted according to the option selected in the *Configuration* menu. Conversion of the other units is accessible through **Timers/Sensors** → **Sensors/Logging Setup**. You can choose from these units:
  - Metres (m), kilometres (km), feet (ft.), yards (yd.), miles (mi.).
  - Metres per second (m/s), kilometres per hour (km/h), feet per second (ft/s), miles per hour (mph) and knots (kt.).



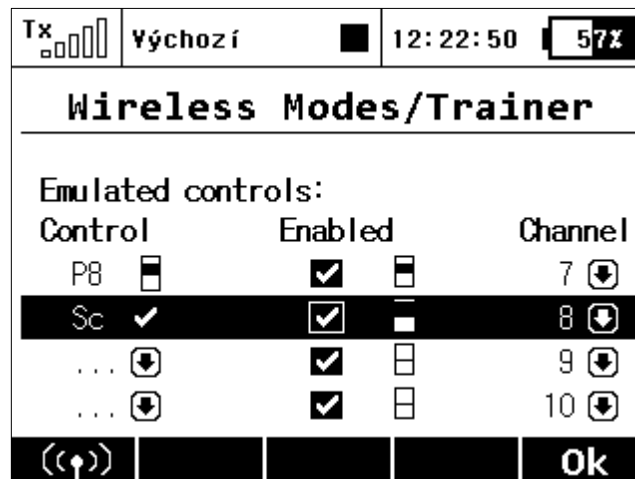
5. Automatic detection of the Wstech Link Vario has been added. The tone signal of the vario with this unit is slightly modified – when the airplane climbs, the tone is shorter with longer pauses between the tones.
6. A new option has been added to *System* → *Configuration*. The option is called *Rolling Menu (up&down)* and if this selection is set to **No**, the ability to scroll from the last item in the menu directly to the first one will be disabled (and vice versa from the first row to the last).
7. The position of the digital trims can now be displayed on the main screen if you wish. Note: When the trims are displayed on the main screen, the special *Trim Screen* doesn't appear when any trim button is pressed. This option can be set in *Timers/Sensors* → *Displayed Telemetry*.



8. You can manually disable the wireless transmission (*Advanced Properties* → *Wireless Modes/Trainer*, then press **F(1)** and confirm). The RF module turns Off automatically when the USB connection is activated. Caution: If you disable the transmission with a model attached you may cause a signal loss alarm.

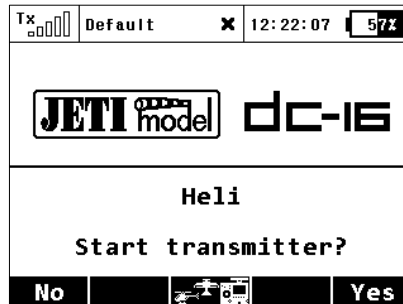


9. A new *Aileron Differential* option has been added to the *Free Mixes* menu. This option is displayed only after you create a mix from any function to Ailerons. When this option is activated, the output of the mix will be influenced by the aileron differential settings. If this option is deactivated, the output of the mix is transmitted directly to the servo without any modifications.
10. The Trainer Mode (*Advanced Properties* → *Wireless Modes/Trainer*) now allows you to directly assign an arbitrary control (switch, stick even a logical switch) which will be emulated for further use in the student's or teacher's transmitter. The list of emulated inputs is located at the bottom of the Function list. The behaviour depends on the mode setting of transmitter:
- a) **Student mode.** Here you can simply assign an arbitrary control which will directly output its position/value to a defined channel of the student's transmitter. In the picture, the proportional control P8 is assigned to the seventh channel. You can disable the output by un-checking the *Enabled* button.

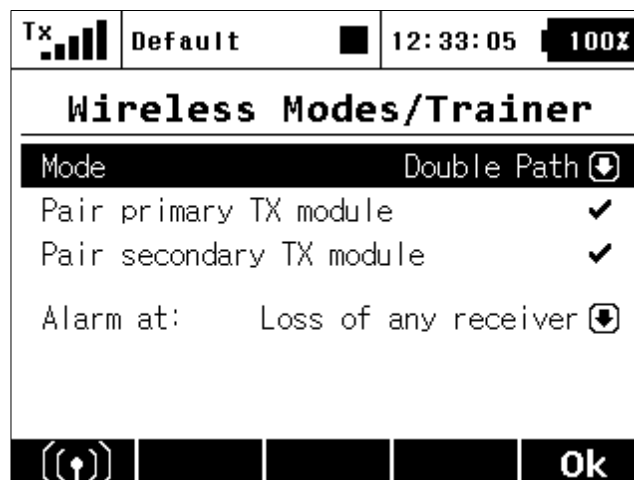


- b) **Teacher mode.** Here you can decide which controls will be emulated by any of the student's channels. At the moment the student takes control of the model, the values of these controls are fully overwritten by the values of the appropriate student's channel. In the picture you can see that channel seven emulates the proportional control P8 and thus all functions that rely on this control. With this option, the student may switch the flight modes, operate the Butterfly function directly etc.

11. The ability to create your own **screenshots** has been added (*System* → *Configuration* → *Screenshot capture switch*). After you activate the switch, a bitmap is created in the root folder of the SD card.
12. It is now possible to select a different model immediately after the Tx starts by pressing the **F(3)** button. To make this screen visible, in the Configuration Menu, you have to select “**No**” for the “*Disable startup question*” option.



13. The *Double Path* mode has been extended so that now it is possible to define a specific response from the transmitter after one or more receivers disconnect or lose signal. The options are:
  - Loss of any receiver – the alarm is activated every time any of the receivers loses a connection. This mode is sufficient for applications where two receivers control separate functions of the model. Both receivers must be connected for proper function.
  - Loss of receiver Rx1 – an alarm is triggered only if the primary Rx loses connection. This mode is intended for competition pilots who use the primary Rx in the model while the second receiver is acting as a reference for the judges. In this mode, the receivers are independent and you can control your model with only one receiver connected.
  - Loss of receiver Rx2 – an alarm is triggered only if the secondary Rx loses connection. The intended use and behaviour of this mode is similar to the previous mode.
  - Loss of both receivers – an alarm is triggered after the signal from both receivers is lost. You should use this option if you want to join servo signals redundantly using the Enlink plug or any other central control unit. Both receivers must be connected for proper function.



## **Fixes:**

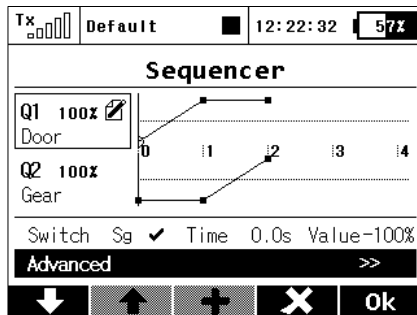
1. Proportional evaluation of logical switches has been modified so that now it considers both controls if they are different.
2. An additional trim for helicopter Swash Mix is now available (setting in *Model* → *Functions Assignment*).
3. The telemetry values shown on the main screen are being updated less often so that the values do not blink as quickly.
4. If you use a mix from rudder (or ailerons) to throttle, the curve of the mix is not reversed. **Please double check the curve and insure the correct movement in the *Free Mixes* menu.**
5. The voice announcement of English decimal numbers has been improved.
6. The proportional selection for the controls Sk, Sl have been added. If you go to *Advanced Properties* → *Stick/Switches Setup* you can now set the **Proportional** type to these stick controls. The standard parameters appear (switching points and the pre-flight position) and it is also possible to perform calibration (*System* → *View Inputs* → *Calib* button).
7. The voice announcement of the *Time* data type has been added. This data type is used by the MGPS and MUI sensors.
8. Additional sound files have been added to the *Audio* folder. These files could be used to indicate a change of flight modes. You can experiment with this in: *Advanced Properties* → *Sound on Event*.
9. Improved compatibility of played WAV files. The transmitter also now plays back files that previously ended up with a message “Invalid Factchunk ID”.
10. The graphic highlighting of active item in a row has been inverted so that this item now always has a black background.
11. Using the *Double Path* mode you are allowed to switch between emulated Jetiboxes from both Tx modules (or receivers). Go to menu *System* → *Jetibox* and then press the **F(5)** button (**JB 1** and **JB 2** will alternate).
12. The Jetibox emulator on the main screen can also now show data from both Tx modules and receivers. You can set a specific Jetibox window in *Timers/Sensors* → *Displayed Telemetry* and select one of **JB 1** or **JB 2**.

## **Update procedure:**

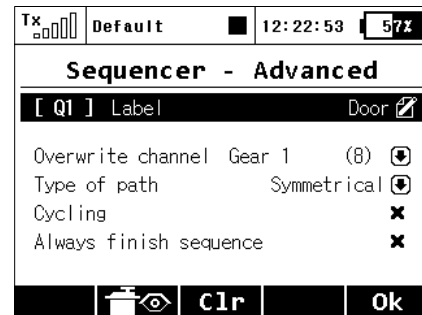
The process is the same as in version 1.06. In the version 1.07 the new voice samples were added (the files in */Voice/xx* folder are marked by an underscore character). The */Audio/xx* folder contains additional voice samples that introduce standard flight phases (files with a prefix “F\_”). The language files and firmware binary have been updated as well.

## Notes:

### Sequencer (Advanced properties → Sequencer)



a)



b)

While this function can be used for direct control of landing gear servos, its usage is almost limitless. Two independent sequences might be used when you turn the source switch on and off.

You can define up to 6 sequencers **Q1-Q6** and within each sequencer you can define up to 16 control points for each path. Switching between different sequencers is possible by pressing the **F(1) Down** and **F(2) Up** buttons.

To make a sequencer active, you should do the following steps:

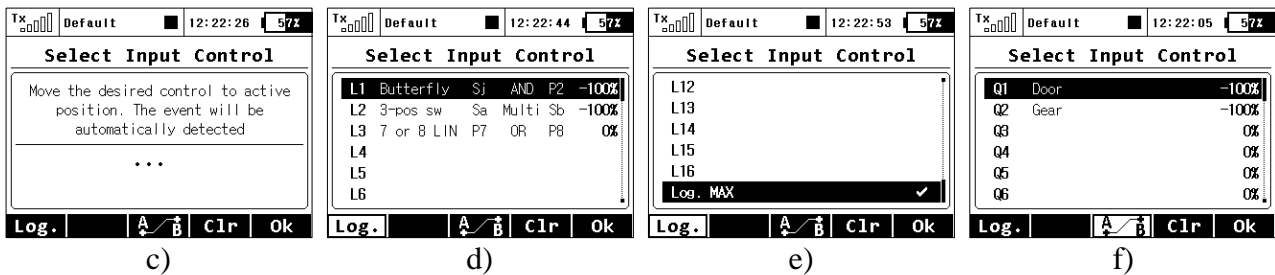
1. Assign a source switch. In the picture *a*, the **Sg** was selected. After this switch is activated, sequencer starts running. But first it has to know a path that consists of control points which are distributed over a period of time.
2. To add control points, you should move the timeline (edit "Time" column) so that it reaches the desired time. Then press the **F(3) Add** button. The newly created control point will be highlighted and you can change its value (edit the "Value" column). Generally said, the point located closest to the timeline is highlighted and made editable.
3. You cannot move the control points in a time domain but you are able to delete any point by pressing **F(4) Delete** button.
4. Now, when you activate the source switch, the timeline begins moving and the output of the sequencer is updated accordingly. If you deactivate the switch, the sequencer moves in the opposite way.

There are some additional options that you can now set in the *Advanced* menu:

- You can label the sequencer to simplify identification.
- The option to overwrite a specific channel. Example: If you have several gear servos installed in your model, here is where you can define which servo will be directly controlled by the sequencer. Any other operations (like mixing or DR/Expo) will not be applied to the output.
- Type of path (*Symmetrical / Asymmetrical*) – this option tells the sequencer that there is either one symmetrical path, or there are two independent paths – one path is used after you activate the switch and another one after the switch is turned off. If you choose the *Asymmetrical* option, the sequence will always start from the very beginning and it doesn't matter whether the previous sequence is completed or not. It is recommended to use this option in conjunction with the *Always finish sequence* option.

- Cycling – if you wish a cyclic behaviour for your beacons, turrets or radar assemblies just check this option.
- Always finish sequence – After checking this option, the sequencer will never be interrupted and always will travel from the beginning to the end of its path.
- The **F(3) Clr** button clears all data from the sequencer and resets it to the default state.

### Input Dialogue



The input dialogue has been modified so that in addition to the standard controls (picture *c*) and logical switches (picture *d*) you can also select an arbitrary sequencer as an input for any function (picture *f*). If you press the **F(3)** button, the list of available sequencers is displayed.

In this menu it is also possible to assign a permanent “On” value as a constant input for any control. Press **F(1) Log.** button and scroll down to the last row – **Log. MAX** (picture *e*). With this option selected, the resulting switch will be always turned on. This feature might be used for example if you want a single flight phase with fully deployed butterfly.

## Snap Roll (Aero, Fine Tuning → Snap Roll)

Tx		Default		12:22:51		57%	
Snap Roll							
Mode	Master	Switch	Sa		G		
Ailerons	100%	100%	-100%	-100%			
Elevator	-100%	100%	-100%	100%			
Rudder	100%	-100%	-100%	100%			
Switch	Sb	Sb	Sb	Sb	...		
Delay +	0.0s	0.0s	0.0s	0.0s			
Delay -	0.0s	0.0s	0.0s	0.0s			

Separate switches for every direction. The priority goes from *up/right* direction (highest) and continues until *down/left* (lowest).

The snap roll function is intended for aerobatic pilots who want an instant stunt controlled by a single switch. There are two modes of the snap roll function:

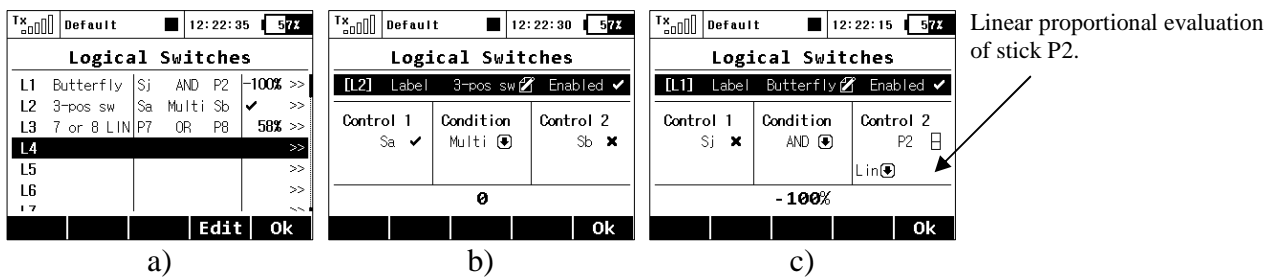
1. Master mode – the stunt itself is done by activating a *master switch* (Sa in this case). The other switches are taking care of the direction of the stunt.
2. Single mode – the stunt is done immediately after any *direction switch* is activated.

You may enter your desired properties for ailerons, elevator and rudder separately for every direction. There are four directions available (up/right, down/right, up/left and down/left), each one is controlled by a separate *direction switch*. Each element may store its own fade-in/fade-out ramp which is defined by the rows “Delay +” and “Delay -”.

All options may be either flight-mode-specific or global. You can see the current state of the snap roll function in the bottom left corner of the display. This function is not available for v-tails or delta wings.



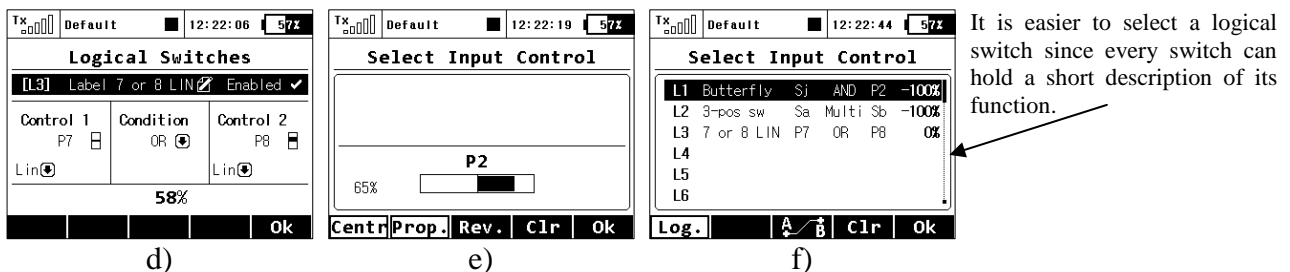
## Proportional logical switches (Advanced properties → Logical Switches)



The logical switches have been expanded, so that in the current version you can freely assign a *label* to the switch. This option provides an easier overview about your logical switches. In the pictures *b*, *c* you can see that the first two switches are called “3-pos sw” and “Butterfly”.

The logical switches also offer the option of a complete proportional evaluation that could be applied to both controls. Just select an input stick/slider, press the F(2) “**Prop.**” button in the same menu (picture *e*) and confirm. Then edit the selection box with options “X<”, “X>”, “Lin” and make sure that you select the “**Lin**” option (picture *c*). At this point, the logical switch starts to act as a proportional control. You can combine more controls using logical conditions:

- The **AND** condition: The resulting value of the switch is calculated as minimum value from both controls. If you have two sliders, the first one has +25% and the second one has -25%, the result returned by the logical switch will then be -25%.
- The **OR** Condition: The resulting value of the logical switch is calculated as maximum value from both controls. The higher value will be returned (picture *d*).
- The **Multi** condition: This option hasn't been modified from the previous versions and it still emulates a 3-position switch. The output values of the logical switch are then in range -100%, 0% and 100% (picture *b*).



### Example: How to enable or disable the Butterfly function using a switch.

Many people wanted to have the ability to turn the Butterfly function on and off independently from any flight mode. So here we show the way to do that (see picture *c*).

1. Select an arbitrary switch as *Control 1*. In the picture, **Sj** was chosen. This switch will overwrite the function of *Control 2*.
2. As a *Control 2* select a proportional unit that will operate the Butterfly function (**P2** in this example). Make sure it is evaluated proportionally (see picture *e*).
3. *Control 1* and *Control 2* are linked together using **AND** logical function. That means, if the switch **Sj** is deactivated, the operation of **P2** will be blocked. Otherwise, **P2** will function normally.
4. In menu *Fine Tuning* → *Butterfly* assign the newly created switch **L1** in the standard way and try its operation.

# Jeti DC-16 Update Version 1.06 (10<sup>th</sup> October 2012)

## **New features:**

1. Synthesized speech output for one specified timer and any number of telemetry variables. Supported languages: CZ, EN, DE, FR.
2. EX Alarms provide the ability to acoustically tell the actual value of a given sensor's variable. In the menu Timers/Sensors->Alarms->Edit just check the option "Announce current value by voice".
3. Default wave files for acoustic alarms recreated.

## **Fixes:**

1. Fixed incorrect acoustic signalling of non-EX vario sensors (using "JBP Alarm"). Modified Vario-tone for EX varios.
2. United default contents of SD card for all languages.
3. Fixed voice profile of a timer (Report type=*Voice* now provides a spoken countdown).
4. Modified meaning of user and system audio files. The files in the *Audio* folder are preferred as user files. The folder *Audio/xx* (where *xx*=cz/en/de/fr) contains all default system audio files.

## **Update Procedure:**

1. Select the appropriate zip file according to your language.
2. Copy the contents of this file to the root folder of the transmitter SD card. If you need the new system audio files to take an effect, it is advised to delete the default files in the Audio folder (but there is no need to change user files).
3. Restart the transmitter. The update will be done automatically.

## **Notes:**

### **Voice Output**

This powerful function makes it easier for all modellers who need to know their actual telemetry values often but they don't want to (or cannot) look at the display because it may be inconvenient or dangerous.

### **Voice output for a timer**

The first menu row represents settings for the voice output of a timer. The actual status of a single timer can be expressed by a synthesized voice. If you select the desired timer and a switch, every time the switch is activated, the actual time is stated aloud.

If the timer type equals "*Laps*" type, another menu row equipped with checkbox appears below. In this row, "Report previous lap" allows you to determine whether you want to hear the time of a current lap which is already running, or hear the time of the previous lap which has ended recently.

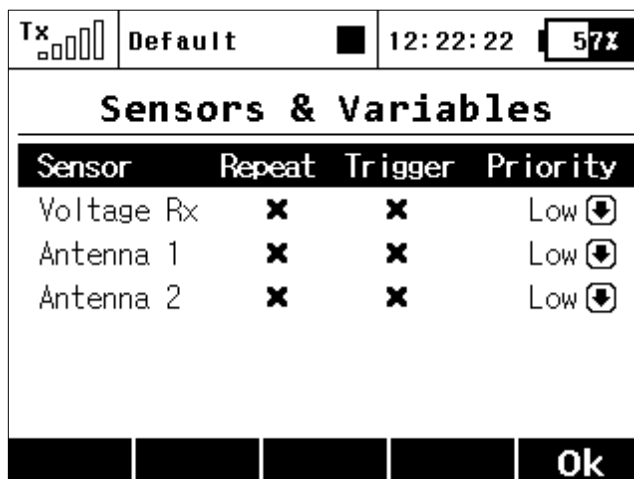
## Voice output for telemetry

There are two independent queues dedicated to output telemetry values. The first queue repeats its message every  $x$  seconds (number of seconds elapsed is displayed over the F(1) button). You can also assign a switch to enable or disable the repeating of the countdown. Every time this switch is activated, the appropriate variables are reported by voice and then the countdown starts a new round until a timeout is reached.

The second voice queue specifies which variables are reported only once, after a single press of a switch. You can select a *Trigger switch* and a list of variables that are reported when the switch is activated.



By selecting the pushing the “Sensors & Variables” option using the 3D rotary button, you are able to choose which variables will be expressed by a synthesized voice. The first column represents the name of the sensor or variable. The *Repeat* option provides an easy way to add a variable to the Repeat queue or to remove a variable from the Repeat queue. By selecting the *Trigger* option, the specified variable is added into the Trigger queue, so that every time the *Trigger switch* is activated, the items in the Trigger queue are expressed by synthesized voice.



You may change the priority of any variable. This will also change the order of the reported items. Possible choices for priority are: *Low*, *Medium* and *High*. The order, top to bottom, is from High priority to Low priority.

## Jeti DC-16 Update Version 1.05 (6<sup>th</sup> September 2012)

**Update version 1.05 changes the way that the “Switch delay” for switches that are assigned to enable or disable mixes is applied. Please carefully check all your mixes that have some programmed “Switch delay”.**

### ***New features:***

1. Added throttle limiter for helicopters (see notes).
2. Modified Butterfly menu: elevator compensation is available with an additional curve. Added options for aileron differential adjustment and butterfly offset. (see notes)
3. Jetibox display and controls are now available on the main screen. You first must enable the display for the Jetibox window on your desktop (telemetry display menu). With the Jetibox window shown, press the ESC button to use the F1-F4 buttons for Jetibox control.
4. Wireless modes are indicated on the main screen (Student, Teacher and Double Path).
5. In Sensors/Timers->Alarms added optional **Activation Switch** that enables or disables an appropriate alarm.

### ***Fixes:***

1. Modified the switch activation delay for mixes. Now the “Switch delay” describes the time elapsed from “Switch off” until full “Switch on”.
2. Fixed the Trainer mode so that the DC-16 operates as the teacher if the student transmitter is suddenly disconnected.
3. In the German language version, the word “Butterfly” was reintroduced in the Fine Tuning menu.
4. If the user presses Power button, the display shown automatically disappears after 5 seconds.
5. Modified the wizard that helps to create mixes. It is now possible to mix the throttle in a standard way -100%...100% (with deselected option “Throttle Asymmetric Mix”).
6. *Button checking* after start of the TX. None of the buttons have to be pressed before the TX starts properly. If the condition is not met, the notification screen is displayed.
7. If the user completely disables any telemetry, a little cross is shown in the upper panel of the display.
8. The Basic Properties graphics now include the numbering of aileron and flap servos.
9. Fixed situations when the transmitter wrongly detected unregistered Rx and questioned the user. Modified situations when *Receiver bound* was played inappropriately.
10. Butterfly can now be used as a source (master) for free mixes.
11. Maximum number of items shown in Sound on Event menu increased to 40.
12. It is now possible to store Rx voltage to the internal SD card. This option is available in Timers/Sensors->Sensors/Logging setup.
13. Ready for third party EX sensors created by users.
14. On-line detection of whether any of the sensors are accidentally disconnected from the receiver during flight. The disconnected sensors are marked with “-” value in their sensor

window.

## Update Procedure:

1. The same as version 1.04.

## Notes:

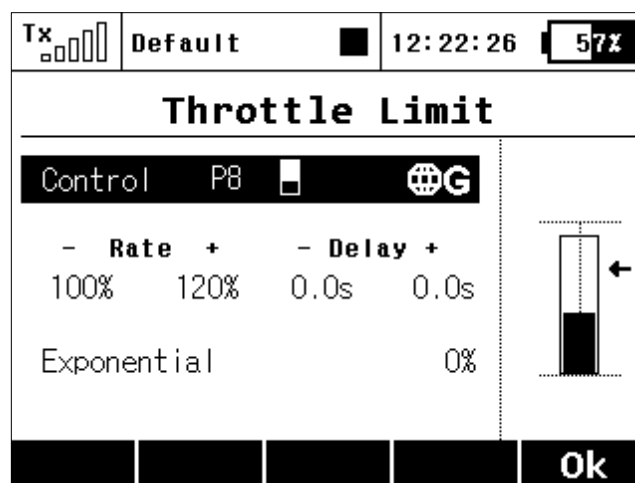
### Throttle Limiter (only Heli type, Fine Tuning->Throttle Limit)

If you have several flight modes and all of them have specific throttle curves, the Throttle Limiter might help you to get the motor's RPM safely from the lowest to the maximum RPM that is controlled by your throttle curve.

You are free to choose any control device (proportional or a switch) that will operate as a speed limiter. It doesn't allow the throttle to go any higher than the position that this control shows. The limiter operates within a specified range (negative and positive rate, "- Rate +"). Using the "-" rate you can set the lowest motor RPM you want to use. This is the point where the limiter begins its operation. The "+" rate represents the maximum possible output of your throttle channel. If your application needs full throttle, you should set the "+" rate to a value higher than 100% so that the full throttle output is not limited.

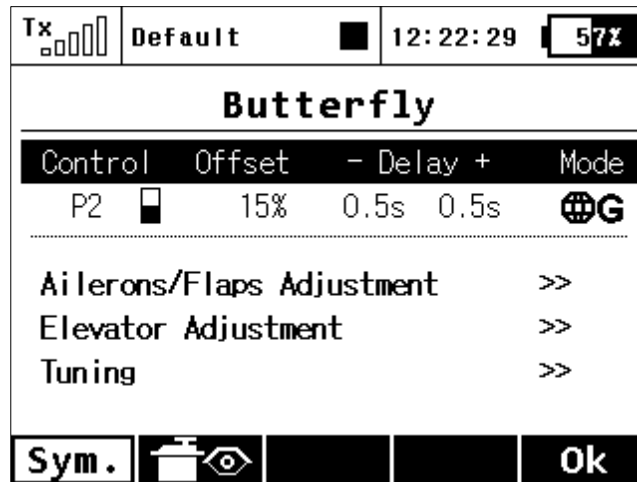
It is possible to set some delay for this control (if it is assigned to a switch) so that the motor goes smoothly from low to high RPM (and vice versa). Finally, the *Exponential* parameter enables you to fine-tune the output at lower RPM and the whole acceleration curve.

The throttle limiter also influences mixes where the throttle acts as the source. The trim function is not influenced by the throttle limiter. If a control device is not assigned, the throttle limiter function is disabled.



## Butterfly (Aero, Fine Tuning->Butterfly)

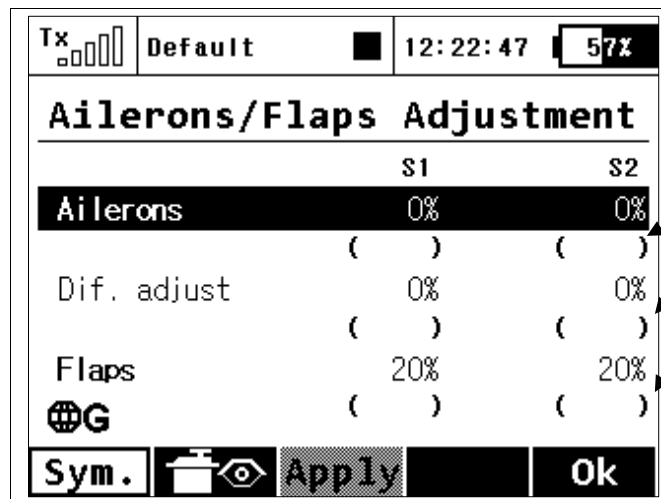
Due to the request of many sailplane pilots this function was updated. Now expanded to four



screens, there are several added options in this menu.

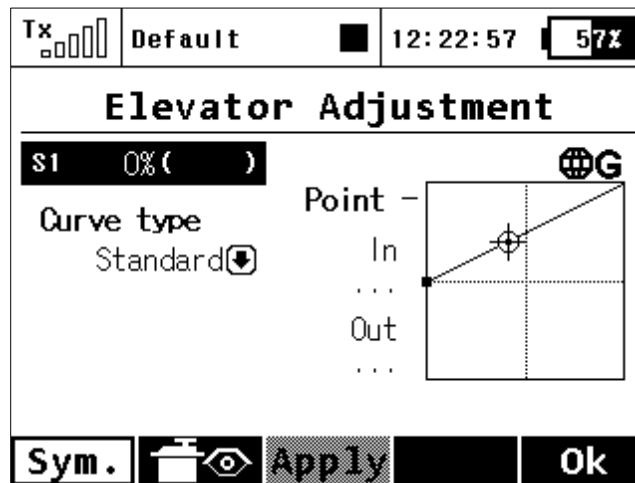
The first screen is similar to previous versions of software. Additionally, now you can set an offset to the butterfly control so that there will be a specified dead zone at the beginning of the control stick's travel.

The rest of the screens are accessible through this first screen. In the Ailerons/Flaps Adjustment menu you can set all the travel needed for butterfly braking (for the flaps and ailerons). Also, you can set a parameter called *Diff. adjust* which influences the aileron differential. Positive values increase the upper travel of the aileron servos, negative values increase the lower travel of the aileron servos.

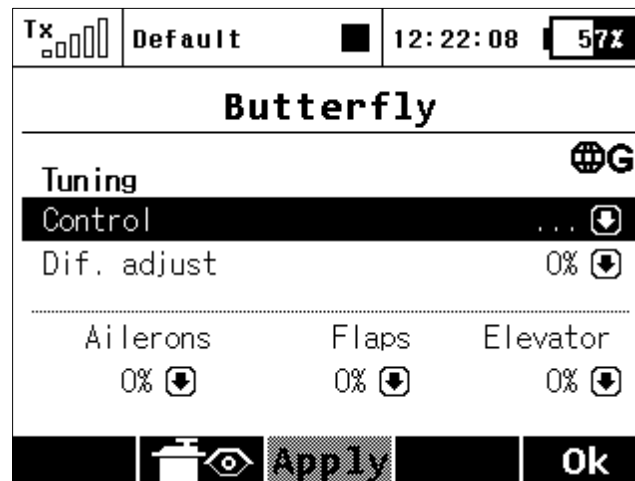


Actual values of airbrake rates. The values shown depend on adjustments made in Tuning menu (see below).

The third screen allows you to set a curve for the elevator compensation. The butterfly mixing is always from zero to the full stick position so the curve is a little bit modified to control the whole travel range. You can choose between a standard curve, constant and X-point curve types.



The last screen of the Butterfly menu allows you to fine tune all braking travels through one proportional control (stick, knob or switch). The values you set in this form are added/subtracted to the appropriate butterfly travels. The way these values influence servo deflections depends on the position of the butterfly's control stick and the position of the butterfly's *Tuning* control.



The **F(3)** *Apply* button operates similarly as in the Aileron Differential menu. If you press this button, the values set in the **Butterfly Tuning** menu are copied into the appropriate travels in the Butterfly Ailerons/Flaps/Elevator Adjustment menu. After that, all values in the **Butterfly Tuning** menu are initially set to zero (so that the tuning control no longer has an effect).

# Jeti DC-16 Update Version 1.04.2 (3<sup>rd</sup> August 2012)

## New features:

1. Added vario acoustic signalling (see notes).
2. Added menu **System->Sound Volume** (see notes).

## Fixes:

1. Fixed the algorithm for saving telemetry data into the SD card which previously might have caused the files to be unreadable by the Flight Monitor software.
2. PPM pin that outputs first 8 channels of the radio.
3. Solved instability issues while playing wav files with a specific sample rate (44100Hz).
4. Improved the speed of re-sampling and mixing algorithms dedicated to play audio files.

## Update Procedure:

1. Copy the contents of the **dc16v1.04.zip** file into the root folder of the transmitter's SD card (with any previous version of the firmware). Language files will be replaced with the updated ones and there will also appear a binary file "DC16.BIN" in the Update folder.
2. Restart the TX. The update is done automatically.

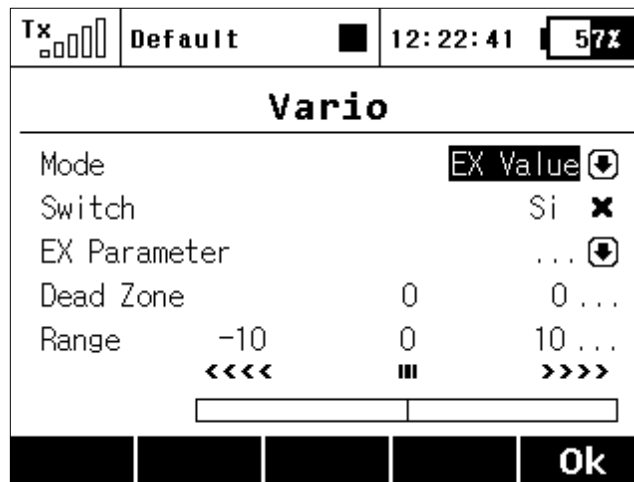
## Notes:

### Vario

Located in: **Menu->Timers/Sensors/Vario**. There are two types of acoustic signalling. The first one is controlled directly by the sensor's alarm. This is mainly useful if a non-EX MVARIO is installed inside the model. It is possible to assign a switch that enables or disables the sound. The slider at the bottom shows the actual value of climb/sink rate.





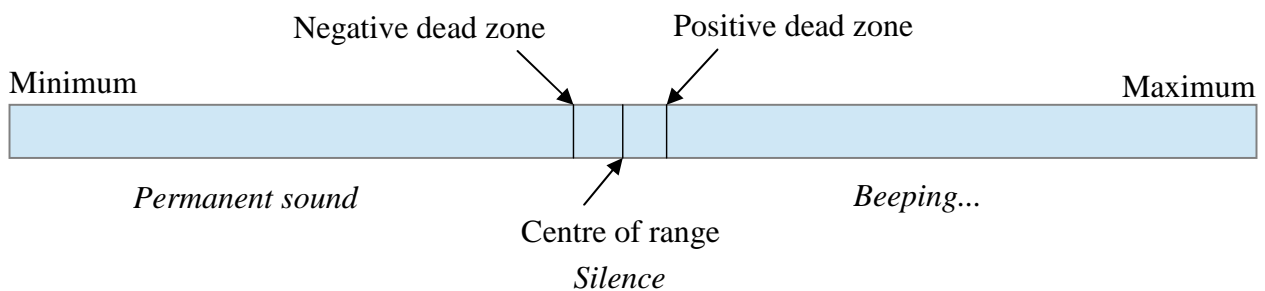


The second mode of the Vario is dedicated to EX sensors. The acoustic signalling varies directly depending on the actual numerical values sent by the sensor. It is also possible to assign a switch that enables the acoustic signal.

Other parameters displayed in this menu are:

- **EX Parameter.** Here you can select your sensor and its parameter which will act as a source for the Vario system. The Climb Rate is predefined by default (if the MVARIO EX is detected) but you are free to choose one of the other sensors and their parameters (for example: an RPM probe to indicate high revolutions).
- **Dead Zone (negative and positive).** This field sets an area around the centre of the range with no acoustic signal. Values are relative to the center.
- **Range (minimum, center and maximum).** Here you can define the full range of the sensor which will be indicated by the Vario system.

The actual value of the sensor and its appropriate Vario output are indicated at the bottom of the screen.

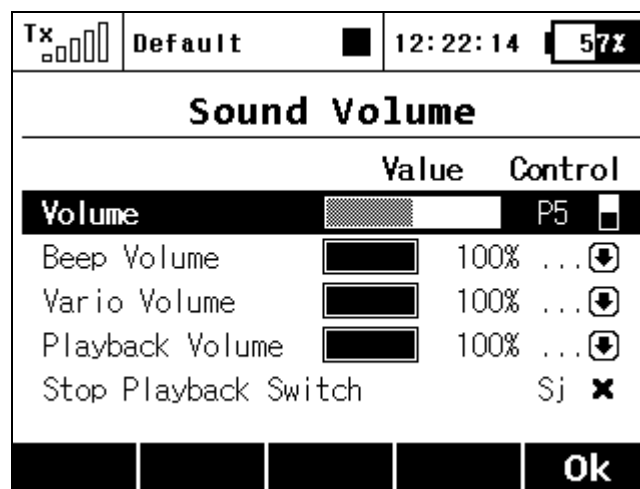


## Sound Volume

### Menu->System->Sound Volume

Here you may select volumes for each part of the audio system individually. You are also free to assign any proportional control (stick or knob) for adjustment. The first row represents a master volume for the transmitter. Other volumes are then derived relative to this value.

- Beep Volume – controls volume of beeping and trimming.
- Vario Volume – intensity of vario tone signalling.
- Playback Volume – volume of played WAV files (*Alarms, Audio Player* and *Sound on Event*).
- Stop Playback Switch – after activating the assigned switch (in the picture *Sj*), all currently played WAV files are being stopped. This doesn't influence any further playback.



## **Jeti DC-16 Update Version 1.03.2 (24<sup>th</sup> July 2012)**

In this update, the cooperation of dual TX modules is modified so that the output period from the receiver is never abnormally high. Previously, this could happen if you were using a receiver that operated in the mode "By Transmitter" and transmitter of version 1.03.

Currently the dual TX modules are operating in "Default" and "Student" mode by alternating each (master and slave) module every 20ms. This improves safety and operation angles.

# Jeti DC-16 Update Version 1.03 (17<sup>th</sup> July 2012)

## ***New features:***







1. Added possibility to reset timers after power up. Added model time (see notes).
2. Tuning of aileron differential (see notes).
3. While switching between flight modes, **the delay can be turned on or off** for each function (see notes).

## ***Fixes:***

1. Fixed signal strength in Range test, French Mode.
2. Fixed Trainer module/Double Path.
3. During pre-flight check the stick switches (**Sk, Sl**) are also highlighted.
4. Switches Sk, Sl are remembered as global but still individually configurable for each model.
5. Possibility to reverse vertical navigation via rotary button in the menu structures. Located in **System->Configuration->Reverse Menu Navigation**.
6. It is now possible to set threshold values for the controls P5 and P6 (previously only 75%) in menu Advanced Properties->Stick/Switches Setup.
7. Negative value for Throttle Idle Offset are also possible.
8. System->Servo/Range test shows signal intensity.
9. As a default, the threshold values for throttle stick are set to zero so that the throttle also acts like a two-position switch (start/stop timer).
10. Fixed bug. It was not possible to set a dual-direction mix when using the General Type model and to also have multiple engines as a slave function of the mix.
11. The screen **System->Receiver Output** also displays values for the student when student/trainer mode is active. In addition, it is possible to display channel/servo names.
12. Updated the language files and assigned default audio files/alarms for each language. When creating a new model, the sound files in the Morse Code Alarms menu will be assigned automatically.
13. Improved performance of the integrated Jetibox.
14. *Low-Signal alarm* triggers only if the signal is **lower** than the selected value in menu System->System Sounds.
15. Fixed indication of *Signal Lost alarm*.
16. Timestamp in log files determines time (in milliseconds) since the event of power up.
17. Screen System->Info shows versions of all processors.
18. Trim function has no influence to the throttle while a cut-off switch is active.

## Notes

### *Tuning of Aileron Differential*

Tx 		Default 	12:22:24	57%
<b>Aileron Differential</b>				
Control	Adjust	Mode		
P6 	20%	 G		
	S1	S2		
Up	100%	100%		
	(111)	(111)		
Down	100%	100%		
	( 89)	( 89)		
Sym. 		Apply	Ok	















You can now assign a proportional control and the adjustment rate. When moving the control, the differential rates are updated accordingly: up-rate is increased and the down-rate is decreased depending on the adjustment rate and position of the control. In the picture the real differential rates are enclosed in parenthesis.

The **F(3) Apply** button clears the adjustment rate and stores the real differential values into the editable fields so that the control no longer has any influence.

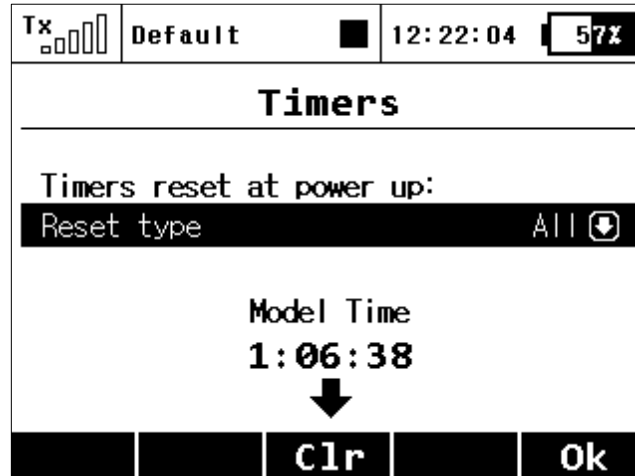
### *Flight Mode Delay Enable*

In the menu **Fine Tuning->Function Curves**, it is possible to activate/deactivate a delay for a specific function while switching between flight modes. Specifically, in the picture, it is the 5th column (FM. Delay) that allows this. The activation of a delay also might be flight-mode specific (i.e.: in first flight mode the delay is activated and in the second mode it is disabled). There are some specific conditions where setting this option for one function has an effect in another function.

- If V-Tail is selected, the option influences both rudder and elevator.
- If Delta wing is selected, the option influences both elevator and aileron.
- If electronic heli swashmix is selected, the option influences all functions of the swash plate (roll, pitch and elevator).

Tx 		Default 	12:22:06	57%
<b>Function Curves</b>				
Function	Curve	- Delay	+ FM.Delay	
Ailerons		0.0s	0.0s	<input checked="" type="checkbox"/>  G
Elevator		0.0s	0.0s	<input checked="" type="checkbox"/>  G
Rudder		0.0s	0.0s	<input checked="" type="checkbox"/>  G
Throttle		0.0s	0.0s	<input type="checkbox"/>  G
Flaps		0.0s	0.0s	<input checked="" type="checkbox"/>  G
				Ok

## Model Time/Reset Timers at Power Up



In the **Timers/Sensors** menu you can choose which timers will be reset after turning the TX ON or after selecting a model. By default, all timers specified with a Short Reset option are cleared. In addition, it is possible to have all timers cleared or none cleared. This option is model specific.

The model time runs incrementally during flight (after pressing the **F(4)Start** button on the main screen or after starting any timer).

The **F(3)** button clears the model time.

It is now possible to show the model time on the main screen (Timers/Sensors->Displayed Telemetry).