JETI DC/DS Update Version 4.00 (December 2015)

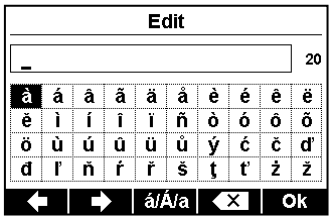
Tip: ALWAYS backup your models and settings before performing any update. After each update you should verify the settings and surface throws of a model before your first flight. Make sure that all of the controls are correctly calibrated.

Attention: In case you use a reversed servo throw for the throttle channel, please make sure that the digital throttle idle trim works correctly. In case it does not, please go to: *Fine Tuning → Digital trim* and set the trim mode to throttle low as it should be by default.

Warning: After updating to version 4.00 it is no longer possible to downgrade to an older firmware version than 3.02. Downgrade to 3.02 version is however still possible.

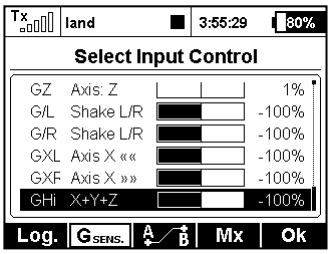
New Features:

1. The DC-16 and DS-16 now offer **24 Channels,** all of them are fully proportional and programmable (see notes).
2. New **Proportional Font** for better user experience.
3. New **Multicopter** model type (see notes).
4. Added **inactivity alarm** and **low-Q alarm** (see notes).
5. New feature of the Audio Player: **Pilot Voice Caller** using switches (see notes).
6. New feature of the telemetry alarms: **Preflight Check** (see notes).
7. Extended telemetry: More **Voice Outputs** for real-time telemetry and timers (see notes).
8. Internal text editor for names, labels and descriptions now supports special characters with **Diacritical Marks**. Allowed text size of labels and names has been increased where possible.



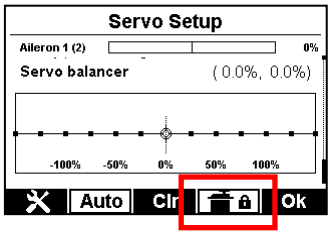
9. Latest EX Bus device definitions including support for MAlti EX, MBar EX, REX, Central Box 400, Spirit FBL.
10. Screenshots are now stored as 1-bit BMP file to save space on the SD card.
11. Units converter for pressure (kPa, hPa, Bar, PSI, atm), volume (ml, l, hl, fl. oz, gal) and flow (ml/min, l/min, oz/min, gpm).
12. Telemetry controls (Mx1 - Mx8) are now able to use the values of signal quality (A1, A2, Q) as their inputs.

13. DS-16, DS-14: Added discuss launch glider (F3K) detection based on large acceleration and gyroscope readings. That means, the transmitter is capable of detecting the launch of the DLG (F3K) model airplane. The “GHi” switch can be assigned to any function, sequencer or logical switch by simply pressing the **F(2) Gsens.** button in the selection dialogue and choosing the “GHi” option.



14. The transmitter now remembers the last position in the menu structure. If you press the MENU button you will be redirected to the main screen, the next pressing of the MENU button will highlight the previously visited menu option.

15. While editing the servo balancer (*Model → Servo Setup*), you can lock the function movement by pressing the **F(4)** button. So that you don’t have to hold the stick at the exact position.



16. New language: Portuguese.

Modifications:

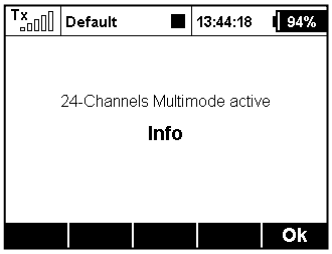
1. Voice announcement of French numbers has been modified (corrected spelling of hundreds and thousands).
2. Using Heli Wizard, opening the throttle curve editor doesn’t lead to reboot in case of non-existing throttle function.
3. The sizes of audio and log files are shown in units of KB for files smaller than 1 MB.
4. Solved an issue of 3-times repeated alarms that influenced the function of other alarms.
5. The numeric range of flight-mode trims has been increased to ±125%.

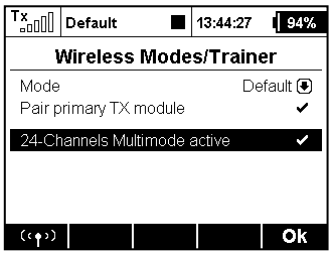
Notes

DC/DS-16: 24-Channels Multimode

The DC-16 and DS-16 now support up to 24 fully proportional and programmable channels. This expansion allows you to conveniently install multiple receivers or Central Boxes into a model without additional programming. By default, this feature is turned off. The transmitter enables it automatically as soon as any servo is assigned to any 17-24 channel (see the menu *Model → Servo Assignment).* You can see the "24-Channel Multimode" status in *Advanced Properties → Wireless Modes/Trainer.*

Note: The servo balancer function can be applied only to the basic sixteen channels.
Note: If you intend to use more than 16 channels, you need to update the receiving equipment in the model (satellite receivers and Central Box).

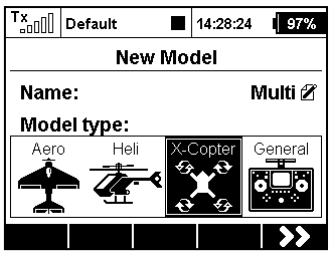


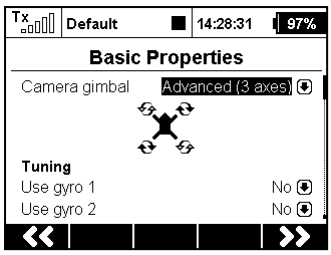


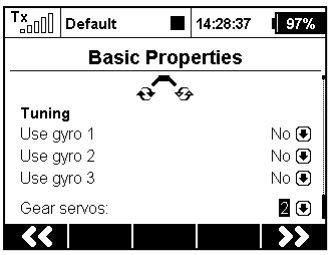
New Multicopter model type

A new wizard that allows you simple creation of multicopter models has been added. You can set several basic functions of the model:

- Camera gimbal can be set as either none (off), basic (2 axis) or advanced (3 axis).
- You can use up to 3 functions for in-flight gyro/stabilization tuning.
- You can specify how many gear servos will be used.



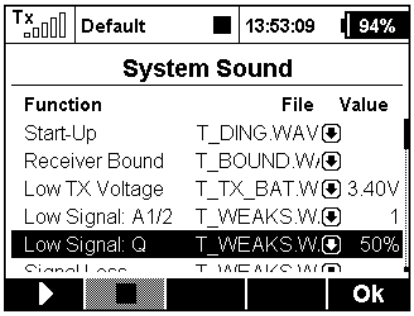


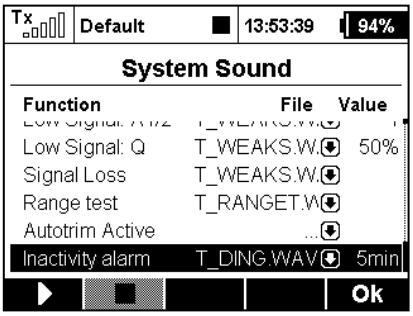


Inactivity & low-Q alarms

The menu *System* → *System Sound* now contains two additional freely configurable system alarms.

- **Low Signal: Q** – you can set an audio file and a threshold level for a low signal determined by the quality of the information. If the signal quality drops below the percent *value*, the assigned audio file will be played.
- **Inactivity alarm** - you can assign an audio file and time interval for inactivity warning. The alarm will be triggered repeatedly when there are no buttons being used and the sticks are holding their last positions for an extended period.

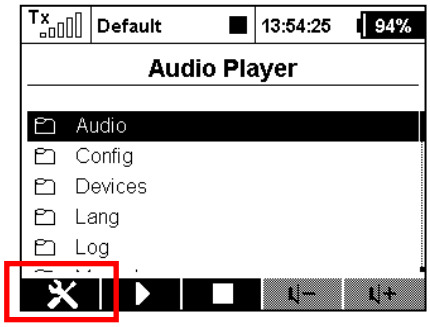




Audio Player: Pilot voice caller

The Audio Player application now offers a possibility to play audio files sequentially. This feature is useful if you practice an aerobatic routine - the transmitter will always tell you the name of the next figure. You can also use this feature just as a background music trigger. The music will not be interrupted by any incoming alarms or sounds on event.

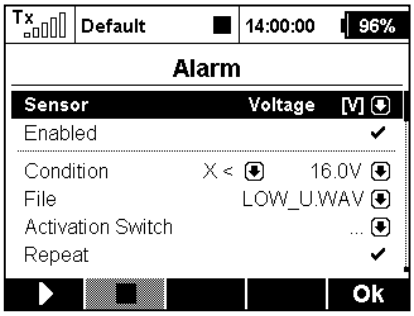
- In *Apps* → *Audio Player* press the **F(1) Tools** button.
- In the dialog menu you can select the audio file that will be always played as the first in the sequence. The file sequence is ordered alphabetically. Please rename the files if you wish a different playback order.
- Assign the switches called “Play next” and “Play previous”. We recommend using 3-position momentary switch to flip between audio files. Assigned switches will have multiple functions as well:
    - Short press of the “Play next” seeks the next audio file in the sequence.
    - Short press of the “Play previous” seeks to the beginning of the current audio file. Any subsequent press of this switch starts playback of the previous audio file in the sequence.
    - Long press of any of the switches leads to resetting of the sequence and playing the first audio file.
- Check the “Continue playback” option if you wish the transmitter to continue playback through the whole folder.

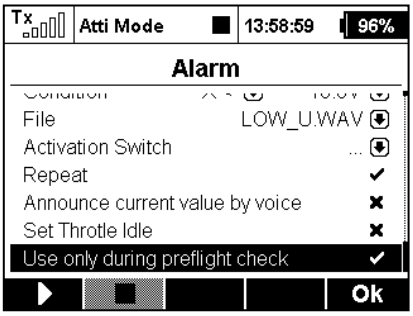


Alarms: Preflight check

Now you can use any alarm to be a part of a preflight control check. As an example, in the menu *Timers/Sensors → Alarms* create a new low-voltage alarm (a voltage sensor is required). If you use 4S Li-Pol battery, the alarm condition should be "X<16V" (less than 4V per cell). Enable the "Use only during preflight check" option. This alarm will activate only after the model is changed or the transmitter is turned ON.

From this moment on, you will always be notified when you plug in a partially discharged battery by mistake. An informative window will pop up over the main screen within a regular period. The alarm will sound until you either insert another, fully charged battery, or you press the **F(3) Cross** button in the informative window to cancel the preflight alarms entirely.

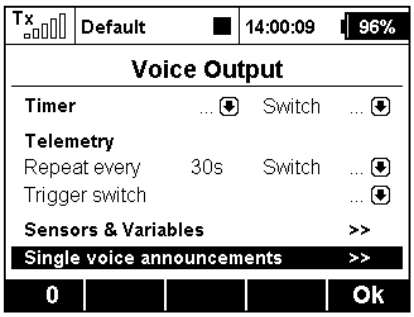


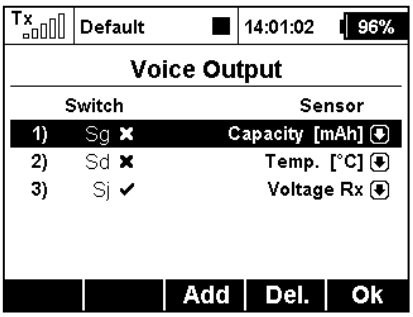


Extended voice outputs

In the *Timers/Sensors → Voice Output* menu you can create up to four independent telemetry variables that will be announced by voice using pre-assigned switches. Scroll down to “Single voice announcements” and open the menu. By pressing the **F(3) Add** button, a new telemetry report will be created. Select appropriate switch and a telemetry value that will be announced. Available options for voice announcements:

- All sensor values except GPS coordinates.
- Model timers.
- Receiver status (voltage, antenna level and signal quality).





JETI DC/DS-16 Update Version 3.02 (December 2014)

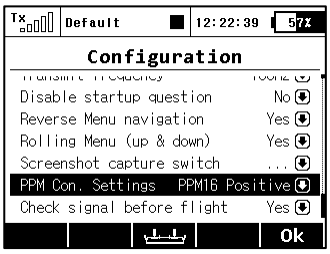
Tip: ALWAYS backup your models and settings before performing any update. After each update you should verify the settings and throws of a model before your first flight. Make sure that all of the controls are correctly calibrated.

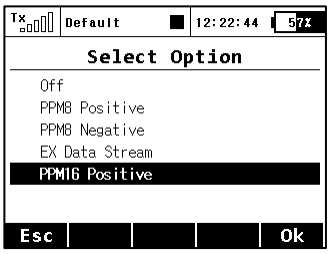
Attention: In case you use a reversed servo throw for the throttle channel, please make sure that the digital throttle idle trim works correctly. In case it doesn´t, please go to: *Fine Tuning → Digital trim* and set the trim mode to throttle low as it should be by default.

Warning: After updating to version 3.02 it is not possible to downgrade to an older firmware version.

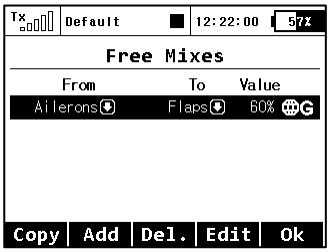
New features:

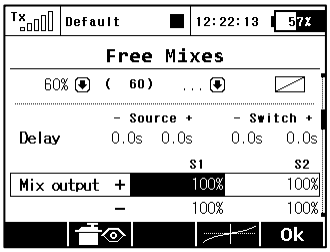
1) Possibility to set the output of the internal connector to 16-channel PPM format (see the menu *System→ Configuration*. Suitable for use with an external RF module.



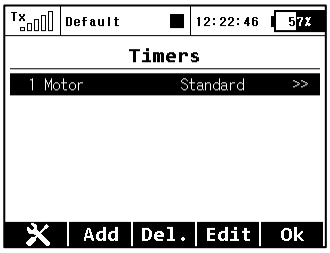


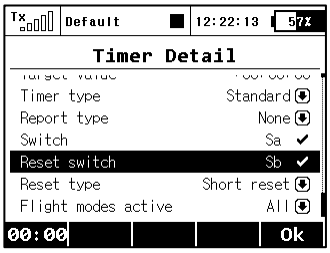
2) The possibility of asymmetric free mixes, e.g. mix output for each servo can be adjusted separately both for positive and negative throws. The *Mix output* parameter can be easily used to adjust the differentiation for the *ailerons to flaps* mix and others.





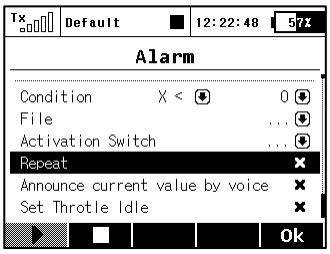
3) Ability to reset the selected timer using the transmitter control has been added (menu *Timers/Sensors → Timers*). From now on it is not necessary to activate the *Clr* button in the main screen. When pushing the *Reset switch*, the timer is immediately set to the initial value.

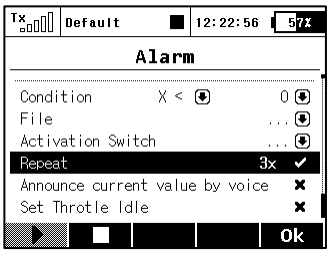




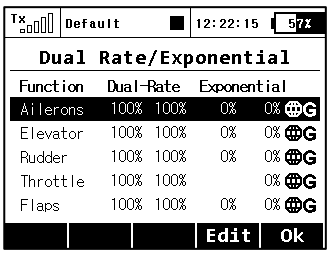
4) Now it is possible to set the threefold repetition of alarm messages from the sensor. In the *Timers/Sensors → Alarms* menu create a new alarm, highlight "Repeat" and press the 3D button twice. Successively the following options are displayed:

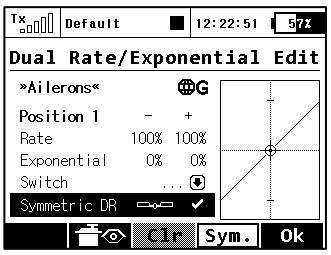
   a. Repetition banned (cross): The alarm is played just once when the set value is exceeded.
   b. Continuous repetition (tick): Alarm is repeated continuously.
   c. 3 times repetition: When the set value is exceeded, the alarm is repeated three times.





5) The editing form of dual and exponential rates has been improved – automatic selection of edited parameter depending on the position of the control has been added. Furthermore, the possibility of asymmetric rates for rudder and ailerons has been added. After highlighting and unchecking “Symmetric DR”, then pushing the **F(4) Sym.** button it will be possible to adjust the aileron rates to the right and left independently.





6) A new language: Spanish (currently without the voice output support).

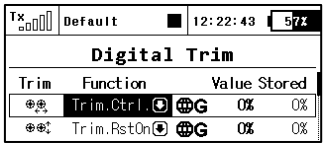
Modifications:

1) The data analysis from the SD card records reads correctly the records of all models regardless of the models´ names.
2) Correct display of the current free mix value when editing its properties.
3) The operation with the internal SD card has been improved.
4) The support for setting the MBar EX sensor via *Device Explorer* has been added.
5) Additional security question when selecting wrong model has been added.

JETI DC/DS-16 Update Version 3.00 (April 2014)

New features:

1. Adjustable software modules for all types of transmitters. Summary table with a list of all modules is available in the menu *System → Installed Modules* (see Notes).
2. The support for **telemetry controls** has been added. (see Notes).
3. **Acoustic notification of the position** of any proportional control (see Notes).



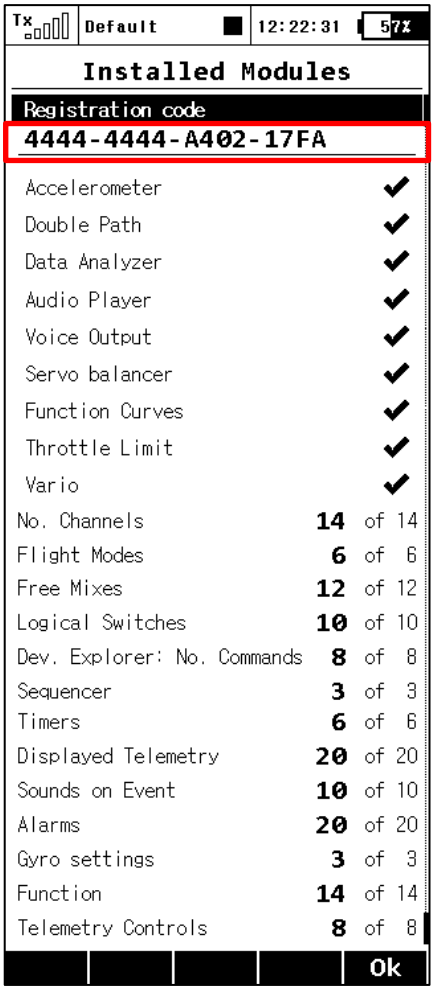
4. Digital trims can be used independently as controls for any function. In the menu *Fine Tuning → Digital Trim*, it is possible to assign the special functions *"Trim.Ctrl"* or *"Trim.RstOn" (Trim – Automatic reset)* to any digital trim.
   - *Trim.Ctrl (Trim control)* – enables using a specific trim independently on model functions. The transmitter remembers the trim value after shutdown. After pressing the trim button no superior functions are trimmed, only internal state of trim is incremented.
   - *Trim.RstOn (trim control with automatic reset)* – enables using the specific trim independently from model functions. The transmitter does not remember the value of trim after shutdown. After loading the model, the trim value is always 0%. In combination with the logical switches this option is suitable for a sequential switching between flight modes or playing sound sequences.

Modifications:

1. Configuration files updated in the Devices folder to support 3.20 version of receivers, MVario2, and 1.20 version of the Central Box 200.
2. Possibility to set the digital trim step value (*Fine Tuning → Digital Trim*) up to 100%. At this level the trim buttons operate in three steps (the trim values can be -100%, 0%, 100%).
3. The transmitter can process and display the level on digital inputs of receivers (3.20 version), MVario2, and the Central Box 200 with 1.20 firmware version.
4. The names of servos are generated from the function names. The exceptions are flap servos, aileron servos, and swash plate servos in helicopters, which are named after predefined schemes.
5. In *Timers/Sensors → Sensors/Logging Setup* now shows the number of detected telemetry parameters from sensors (above the **F(3)** function button) and it is possible to reset any unnecessary entry using the **F(4)** button. However, if the button whose parameter has been deleted is still connected, the parameter will later be re-loaded. The transmitters can detect up to 32 telemetry items.

Notes

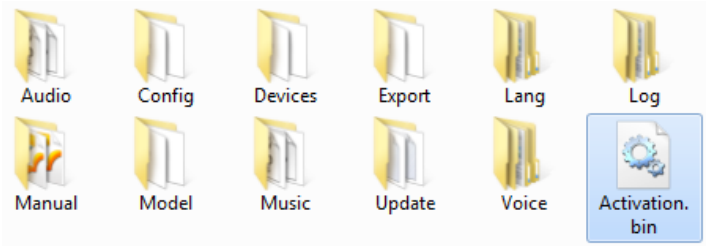
List of installed modules *(System → Installed Modules)*



This summary table is used for a quick view of all the modules available in the transmitter. It is possible to determine whether the feature is enabled or disabled (indicated with a tick, respectively with a cross). Also, you can find the number of elements available for active modules and also the maximum values that are available after purchasing relevant extending packs. Note: the DC-16 and DS-16 transmitters in their basic version have all the modules activated on maximum possible values. With the DS-14 transmitter it is possible to take advantage of the system that enables purchasing of the extended functions on swshop.jetimodel.com.

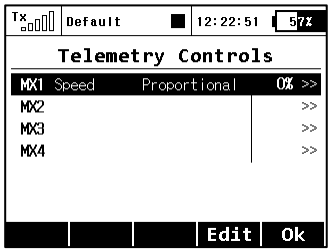
Activation method for software modules of JETI model

1. Make sure you have the most current firmware version in your transmitter.
2. Register on swshop.jetimodel.com.
3. After clicking on the „Register new product“ button you will be redirected to a form where you enter a **product type** (DS-14), followed by the **serial number** (to be found on the bottom of the transmitter under the screen) and then enter the 16 digit **registration code** (see the menu *System → Installed Modules* highlighted by the frame). After registering your transmitter, you can select individual function modules that you want to activate. Mark selected modules and proceed to checkout.
4. Then you will be asked to pay the relevant amount. After payment, a unique nontransferable file named “Activation.bin” will be generated. It will then be sent to your e-mail and will also be available in your user account to download.
6. Connect the DS-14 to your computer and enable USB mode.
7. Copy the “Activation.bin” file to the transmitter SD card into the root folder. The contents of the transmitter SD card can then look like this:

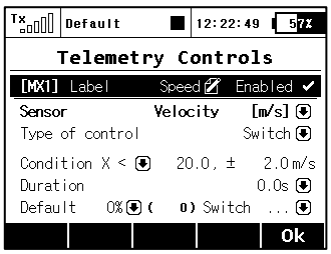


8. Disconnect the transmitter from the computer (Do not forget to confirm the safe hardware removal). Then confirm in your transmitter that you want to update and restart it.
9. If the activation is successful, an informative table with a list of modules appears immediately after switching on. Then it is possible to operate the transmitter as usual.

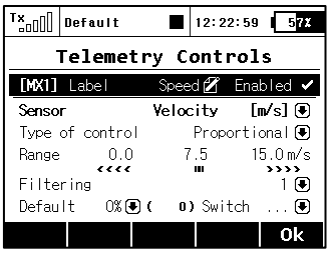
Telemetry Controls *(Advanced Properties → Telemetry Controls)*



Overview of telemetry controls



Switch mode



Proportional control mode

This feature takes the abilities of the Duplex telemetry system to the next level. Not only can you display telemetry data, record it to your SD card or have it voice announced, now it is possible to control specific model functions using sensor inputs. This way, some tasks that previously required manual adjustment via visual estimation or alarms can now be automated.

Up to 8 controls labeled **MX1 – MX8** are available, depending on the type of transmitter and equipment. Telemetry controls offer functionality in two modes:

- The *Switch* mode enables you to create a virtual two-position switch using the value of one telemetry parameter. This switch is always active based on the fulfillment of defined logical conditions.
- The *Proportional Control* mode enables you to transform a certain range of sensor values into a fully proportional control. It can automatically and smoothly control any kind of function using telemetry feedback.

Examples for the possible use of telemetry controls

- If the model speed is less than X m/s, flaps will be raised automatically.
- If the current is larger than X amperes, the motor run timer starts.
- If the motor temperature is higher than 80 °C, the maximum throttle will be limited by the mix.
- If the on-state of the limit switch is detected, the sequencer automatically starts. (eg after opening the landing gear doors, the main gear will be deployed).

Setting the parameters of telemetry controls

Description – Sensor name that will be displayed in the list for easier orientation.

Active – Tick to enable the telemetry control function.

Sensor – Here you can select a specific telemetry parameter.

Type of control – Select *Switch* or *Proportional control* according to the required functionality.

Condition (X<, X>, X=) – Select the condition under which you want the control to be active (ie switched on). In the same line, fill in the numerical value of the decision levels and the hysteresis value (prefixed with ±). Available in *Switch* mode.

- **Example 1:** The entry *"X < 20.0m/s ± 2.0m/s"* means that telemetry control switches precisely when the telemetry parameter value is less than 18 m/s (due to hysteresis of 2 m/s). The control then symmetrically switches off when the speed exceeds 22 m/s.
- **Example 2:** The entry *"X > 0 ± 0"* indicates a switch that is activated whenever the telemetry value is positive.

Duration – minimum time of being switched on. If an event takes a very short time, it is possible to extend the time of the telemetry control being switched on for the time specified by this parameter. Available in the *Switch* mode.

Range – Set the operating range of the sensor (minimum value, center value, and maximum value). This level will then be transformed into a proportional range of the control (-100%, 0%, 100%). Available in *Proportional control* mode.

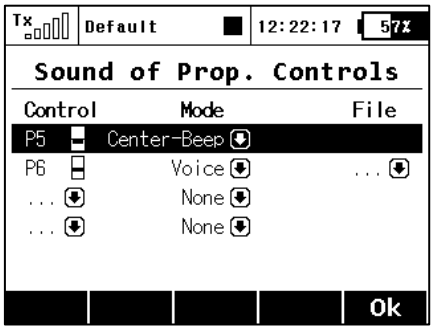
Filtering – Determines the level of received telemetry values smoothing (filtering). The higher the level of filtration, the smoother the course, but the response will be slower. Available in *Proportional control* mode.

Default – The default control value, if the sensor is not present in the model or the model is not turned on.

Switch – This parameter can specify any switch, which will activate or deactivate the operation of the telemetry control.

Announcement of proportional controls position

(Advanced Properties → Sound of Prop. Controls)



In this menu, you can set a sound notification for up to four independent controls. You can choose a basic beep in the middle control position (*Center-Beep* mode), but voice announcements of the current position is also available (*Voice* mode).

- *Center-Beep mode* – the transmitter beeps whenever the control goes to a central position (its deflection is thus 0%).
- *Voice mode* – the transmitter will vocally announce the numeric value of the current position of the control. The value is reported after every change of the control position and only after the movement is stopped. In this mode, you can also select an audio file that will alert you when changes in control positions are detected.
  Example: If you generate the *"CONTROL.WAV"* file and then assign it as the *File* parameter, the transmitter announces eg *"Control: twenty-five"*.

The setting is always valid for the current model.

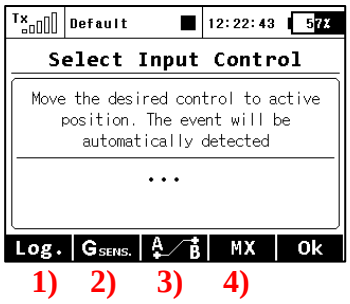
Dialog for selecting the control input

This dialogue is always displayed in case you need to assign a control, activation switch etc. to any function. The dialogue has been modified so that it reflects any newly created control inputs - eg trims as generally usable controls or telemetry values as controls.
Now these types of controls are available in the dialogue for selecting the control input:

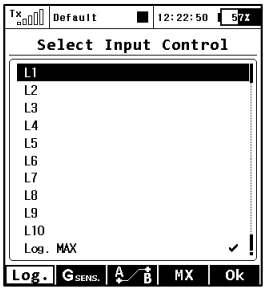
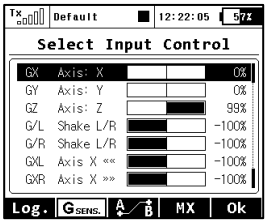
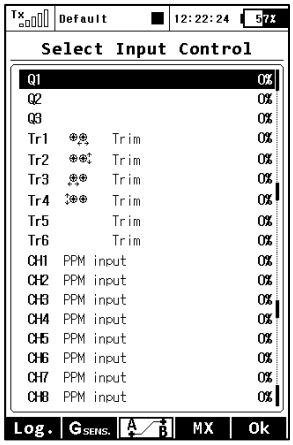
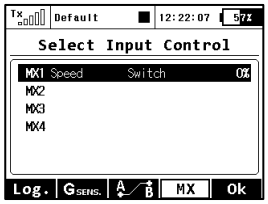
- **P1 – P8** Physical proportional sticks and proportional controls.
- **Sa – Sl** Physical configurable and replaceable switches [1)]
- **L1 – L16** Logical switches. [2)]
- **MAX** Logical maximum, can be configured as a switch that is always in an on-state.
- **GX, GY, GZ** Individual, independent axis of the built-in accelerometers (not available for DC-16). [2)]
- **G/L, G/R** Virtual controls switched on at the moment the transmitter is shifted to the left, or respectively to the right (not available for DC-16). [2)]
- **GXL, GXR** Virtual controls switched on at the transmitter tilt to the left, or resp. to the right (not available for DC-16). [2)]
- **Q1 – Q6** Individual sequencers. [2)]
- **Tr1 – Tr6** Digital trims as individual controls.
- **CH1 – CH8** Channel inputs of the PPM signal lead that is attached to the internal connector.
- **MX1 – MX8** Telemetry control inputs. [2)]

[1)] Configuration of the switches depends on the type of transmitter and also on which switches are installed.

[2)] Controls are available depending on the equipment of the transmitter.



Description of buttons

1) Redirects you to the selection of logical switches.
2) Redirects you to the selection of the input from the built-in accelerometer/gyro (not available for DC-16).
3) Redirects you to the selection of sequencers, channel PPM inputs, and trim controls.
4) Redirects you to the selection of telemetry inputs.

Preview of the individual screens of the dialogue for selecting control input