Note: We will keep improving the instruction manual. Any ambiguities or mistakes please contact us:

frsky@frsky-rc.com

Any technical problems please contact:

sales4tech@gmail.com

More information please refer to FrSky website:

www.frsky-rc.com

FrSky HORUS X10/X10S
Manual

V1.0.0

FrSky Electronic Co., Ltd.

www.frsky-rc.com

INTRODUCTION

Thank you for purchasing the FrSky HORUS X10/X10S digital radio control telemetry system (*ACCST system). This device has a wide range of functions and is developed for beginners as well as advanced users. To ensure optimal use of the transmitter and maximize flight safety, we recommend that you read the manual carefully and thoroughly before use. If you encounter difficulties during use please check the manual, consult the FAQ (Frequently Asked Questions) online at http://www.frsky-rc.com/, contact a local dealer or FrSky technical support.

*ACCST: Advanced Continuous Channel Shifting Technology

USER'S MANUAL AND TECHNICAL SUPPORT

Our goal is to assist the user by thoroughly preparing and maintaining this manual. For any ambiguities or mistakes, please inform us so we can take corrective action. In the event of unforeseeable program changes and/or upgrades to the product, the information contained herein is subject to change(s) without a timely notice. Your understanding and feedback is greatly appreciated.

RESTRICTIONS ON SALES AND TERRITORY

If you have any questions or service request, please contact your local FrSky dealer(s). It should be noted that all information and technical support provided in the manual only pertains to the devices sold within your region, and may be different from devices purchased in other regions. Please contact your local FrSky dealers for help.

PROVISIONS ON USE, EXPORT AND QUALITY GUARANTEE

1. This product is intended to be used for control of aerial models, ships and land machines such as vehicles and robots within the designated radio frequency range. It cannot be used for purposes other than remote control of models for hobby and/or entertainment.

2. Provisions on export:

(a) If the product is sold from the country of production to abroad, it has been tested to meet the relevant regulations of radio transmission frequency required in the importing country. Provided that the product is further exported to other countries, it shall also meet the relevant regulations of similar devices being sold in those other countries, which may require approval from the local regulatory departments. If you have purchased our product(s) from a foreign dealer, meaning that the sale was not from the regular distributor in your country, please contact an official dealer immediately to confirm whether it complies with your local regulations.

(c) Using this product for purposes other than remote control will be restricted by *Export and Trade Control Regulations* and application must be submitted for export permission.

3. Repair, adjustment and replacement of parts. FrSky cannot be held responsible for any unauthorized repair, adjustment and/or replacement of parts. All modifications to the product other than those undertaken by an approved dealer will render the warranty void.

CHARGE TRANSMITTER BATTERY BEFORE USE

The X10/X10S is equipped with a 2s 2600mAh Li-ion battery pack. Before using the system, charge the battery in the transmitter until the green light on the transmitter turns off during the automatic charge cycle. The power indicator (LED in the middle of the radio) will turn green. When the LED goes out, the transmitter is fully charged.

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2 USER SAFETY NOTES

Please read the following thoroughly for your own safety.

2.1 MEANING OF SYMBOLS

Contents marked with one of the following symbols in the manual require immediate attention:

DANGER: *This action can lead to death or serious injury to the user and/or others.*

WARNING: *This action might lead to death or serious injury to the user and/or others. High risk of minor injury and/or damages to the product.*

CAUTION: *Although such operation has a low risk of serious injury to the user and/or others, personal injuries and/or damage to the product can still occur.*

NOTE: *Steps, Tips or information.*

2.2 FLIGHT SAFETY PRECAUTIONS

Please read the following section thoroughly for your own and/or the safety of others.

WARNING: *Avoid flying when a low battery (red) icon is displayed in the top right side of the screen. Do not rely on the low battery alarm function of the transmitter to tell you when to land. Check the battery voltage of the transmitter and of the model battery before each flight.*

CAUTION: *Maintain the transmitter properly to ensure correct operation. The data of HORUS X10/X10S is saved on the IC and* microSD *during each power off operation. The data will be lost if you run out of the battery while the transmitter is power on. Always follow the prompts when turning off the radio via the power switch. We suggest a complete inspection and if needed preventive maintenance service for the device at least annually to ensure safe operation.*

2.3 WHERE TO USE

We recommend you only use the transmitter at certified club sites for RC models. You can enquire at a local dealer to find model clubs and fields near your location.

NOTE: *Please pay close attention to the relevant regulations at the flying field, position of the spectators, wind direction, obstacles inside the flying field, civil/military aviation and the local wild life.*

2.4 AT THE FLYING FIELD

WARNING: *In order to remain in full control of the airplane, it is crucial to keep the plane well within the limits of your eyesight. We do not recommend you to fly behind large objects such as trees and buildings, which may cause a reduction of signal quality received by the model's receiver or even result in losing field of vision.*

WARNING: *Don't block the internal antenna located on the top the transmitter screen, or the optional external antenna during use, this can significantly reduce the range of the transmitted radio signal.*

WARNING: *Never use the transmitter unprotected in the rain. Rain and/or moisture can enter the transmitter through the openings, which may cause erratic model behaviour and even a runaway. If the use of the system during damp conditions is inevitable (during competitions etc.), please be sure to cover the transmitter with a plastic bag or waterproof cloth. Flight is prohibited when lightning occurs.*

CAUTION: *When it is necessary to put the transmitter down on the ground or flight bench it is best and safest to place the transmitter on its back so that it rests as designed on the handle. If circumstances require that you must place the transmitter standing upright on the ground before taking off, make sure it cannot be accidently tipped over. If the transmitter is flipped on its front side, the throttle stick may rotate and lead to a sudden increase of the engines' RPM. The tip-over might also do damage to the transmitter.*

CAUTION: *Never point the antenna directly at the model. If you encounter a low signal warning or lose the connection during flight, check orientation and, if needed, move the antenna to the recommended angle relative to the model.*

2.5 SAFE USE AND HANDLING OF THE LI-ION BATTERIES

The user should only use power adapters with/without FCX10 supplied by FrSky or those that are approved by FrSky to charge the battery inside the HORUS X10/X10S transmitter. It is important to be aware about the characteristics of the Li-ion battery. If you do not follow

the instructions, there is a high chance of inflicting terminal damage to the battery or transmitter and can even lead to fire.

NOTE*: There are two type of charge systems of Horus X10/X10S. To charge the transmitter, plug the FrSky -provided power adapter cable connector into the transmitter charging port and the power adapter into an AC electrical outlet.*

Or connect the power adapter to FCX10 separately provided and then connect it to the battery inside the radio through USB type C interface.

Important notes

DANGER: *A small increase in temperature can be observed during normal charging and discharging of a Li-ion battery. However, if the charger and/or battery is overheating, the charge/discharge operation must be aborted immediately. If you suspect that the battery has been damaged, we recommend to stop using it, and request you to discard it in an appropriate way (please recycle).*

WARNING: *We do not recommend charging the transmitter with the power on. The inbuilt charging circuit struggles to detect battery charge state due to fluctuating amperage draw during use. When it is power on and keeps working, the LED will turn LIGHT BLUE.*

WARNING: *Never store batteries near an open flame and/or in other high temperature conditions. We recommend to store them at normal temperature.*

When charging the Li-ion batteries outside the transmitter, we advise to charge them in a fire-proof container. Do not charge Li-ion batteries near flammable products and/or liquids. It is good practice to install a fire alarm in close proximity of the charging area.

CAUTION: *When Li-ION batteries indicate full charge in a cold environment, they might not be fully charged. The low temperature has a negative effect on the total battery capacity, this can result in an unreliable charge indication.*

CAUTION: *Li-ION batteries must be kept at a safe location and out of reach of young children.*

2.6 MICROSD HANDLING RECOMMENDATIONS

Please read the following thoroughly to insure correct operation.

WARNING: *While transferring data onto the microSD card, do not turn off the transmitter and/or extract the microSD card. Loss and/or corruption of the data can occur.*

CAUTION: *Keep microSD card clean, avoid direct sunlight, and stay from moisture/water and/or any other type of potentially corrosive liquids.*

WARNING: *Never store the microSD card in an environment subjected to strong electromagnetism.*

NOTE: *Always check the orientation of the microSD card before inserting to ensure correct installation.*

NOTE: *Make sure the transmitter is turned off during removal and installation of the microSD card, failing to do so can corrupt unsaved data.*

CAUTION: *The microSD card is a delicate component, never use excessive force when inserting or removing the Micro SD card.*

3 TRANSMITTER HARDWARE

Please read the following notes thoroughly to get acquainted with the hardware.

3.1 SUMMARY OF FEATURES OF THE HORUS X10/X10S

- Industrial High Resolution TFT screen readable outdoor
- All CNC 10 ball bearings gimbals with hall-effect sensor, PWM gimbal output supported (installed in default in X10S)
- 6 position encoder for easy selection of flight mode
- Internal and external antennas selectable for internal RF module
- Safe power switch, trap base
- Antenna detection (SWR) and warning
- Audio Speech outputs (speaker and earphone) and haptic feedback
- Wireless trainer system, Freelink App supported for telemetry
- External RF module bay
- Six trim operating buttons
  Six three position, one two position and one momentary switch
- FrSky FrTX operation system installed and open source system (openTX) supported
- Flight simulator (PC) compatible
- Logic switch programming
- Full telemetry and real-time telemetry data logging
- Programmable Fail Safe functions
- Pre-programmed support for different model types, aeroplane, helicopter, flying wing, V-Tail, glider, multicopter and custom (user-defined).
- 2S 2600mAh Li-ION battery pack
- extendable stick ends supported
- Internal 16MB Flash storage and external microSD card

3.2 RECEIVER TYPES

Internal RF (iXJT) compatibility:
D16, D8 (Non-EU version only), LR12 series receivers.

External RF (XJT, R9M, DJT and other modules) compatibility:
D16(X series and R9 series), D8 (Non-EU version only), LR12, PPM+, PPM-.

NOTE: *Obsolete V8 series receivers are not compatible with the internal RF module, but can still be used in combination with an external DJT module.*

NOTE: *The internal RF module of the EU (LBT) version HORUS X10/X10S EU (LBT) is only compatible with FrSky D16 and LR12 Modes.*

3.3 DISPLAY

Industrial high resolution TFT screen (480x272), outdoors readable.

3.4 STICKS

CNC milled aluminium gimbal rotating parts and frame, equipped with ten ball bearings in a single unit combined with Hall Effect angle sensors, for a superior quality feel, precision and durability.

NOTE: *The X10S is equipped with FrSky newly developed MC12 Plus gimbal with more precisely PWM output which X10 can be upgraded to install as well.*

3.5 HAPTIC FEEDBACK

A programmable feature notifies the operator by vibrating the transmitter, it can be selected for a wide variety of functions.

3.6 ANTENNA DETECTION (SWR)

The SWR function monitors the efficiency of the transmitter antenna. If the value is above the selected ones, an alarm can be generated by the system.

3.7 RECEIVE SIGNAL STRENGTH INDICATOR (RSSI)

Telemetry data is used for real-time monitoring of the received signal quality. RSSI can be used to give the user a low signal strength warning. If the value is below the selected value, an alarm can be generated by the system.

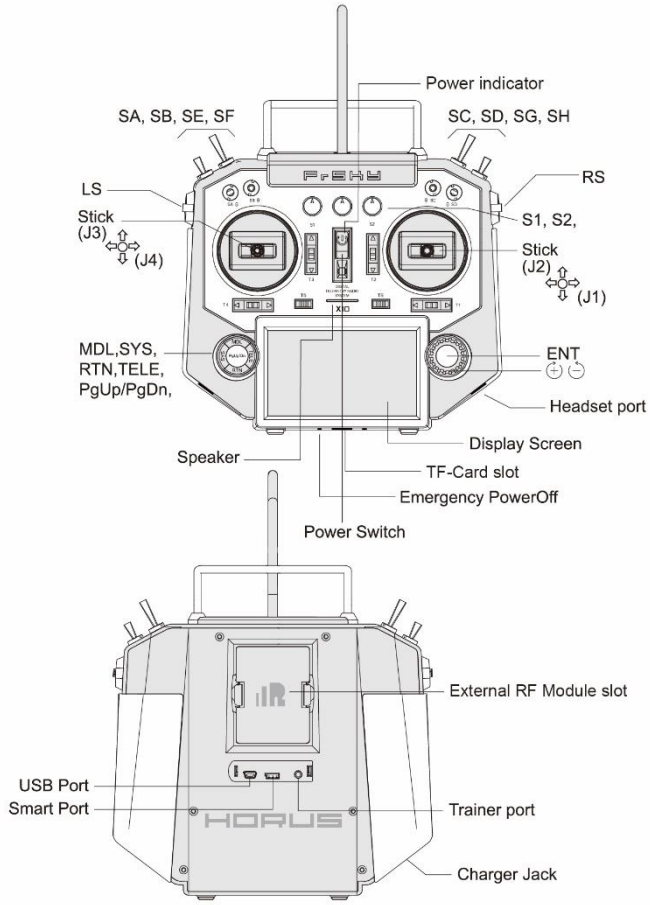
3.8 WIRELESS TRAINER SYSTEM

Up to 8 channels can be shared between two HORUS transmitters through the wireless connection. Two different cable options can also be used for connecting to other transmitters.

3.9 APPS SUPPORTED FOR TELEMETRY

Support FrSky Free Link App for telemetry (download address: http://www.frsky-rc.com/app/).

3.10 LAYOUT



Overview

(Switch Default Settings)

- SA: 3 positions, Short Lever
- SB: 3 positions, Long Lever
- SC: 3 positions, Long Lever
- SD: 3 positions, Short Lever
- SE: 3 positions, Short Lever
- SF: 2 positions, Long Lever
- SG: 3 positions, Short lever
- SH: 2 positions, Momentary; Long Lever

You can choose the Switch and define its positions in the Input and Output Map screen.

3.11 The storage system

There is an internal flash IC installed in the radio and a microSD slot is provided in the rear of the radio.

3.11.1 INTERNAL FLASH

The transmitter provided an internal flash chip (16MB) that is used to store default files that are required by the system.

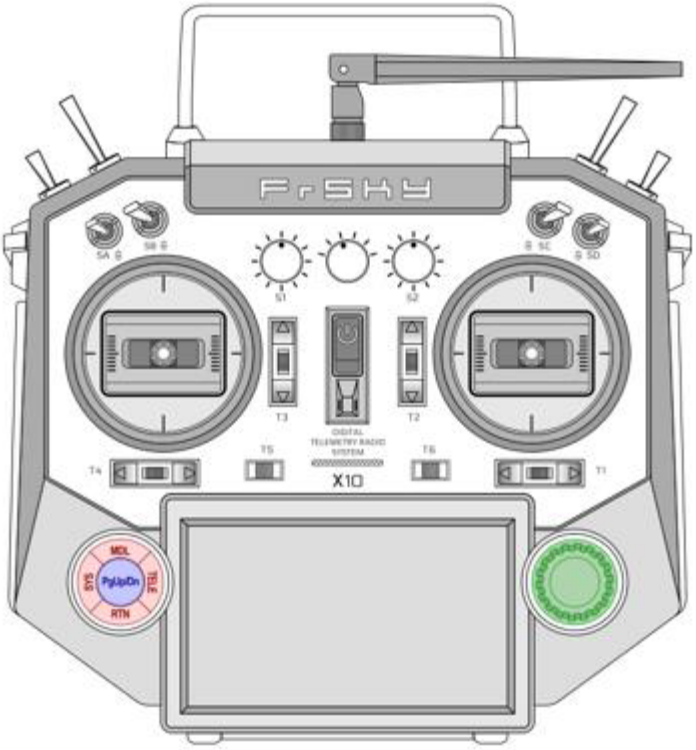
3.11.2 MICRO SD CARD (SECURE DIGITAL MEMORY CARD)

The transmitters' microSD Slot supports microSD and Micro SDHC type cards. When installed correctly a microSD card icon will be displayed in the top right corner of the screen. There are certain files that require to be stored on the microSD Card such as: telemetry log and update files.

NOTE: *More information please check chapter. 8. DATA STORAGE.*

4 NAVIGATE THE MENU

4.1 HOW TO NAVIGATE THE MENUS



To navigate the menus, the transmitters of the HORUS series have the following elements:

- 4 buttons (in red on the drawing):
  - **SYS** – For direct access to the SYSTEM menu
  - **MDL** – For direct access to the MODEL menu
  - **TELE** – For direct access to the TELEMETRY menu
  - **RTN** – Allow to exit the current item or menu (RTN =Return)
- 1 or 2 buttons : **PgUP/PgDN** (in blue on the drawing)

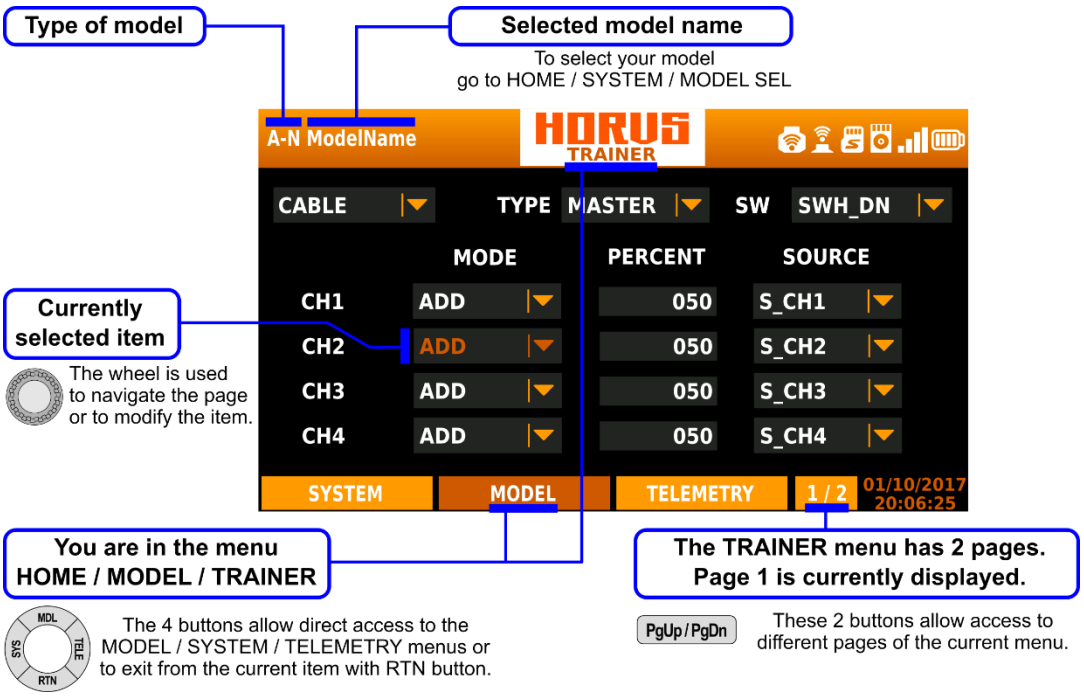
  A menu can have multiple pages because sometimes not all information can be displayed on one page. These buttons allow on the same menu to move from one page to another.
- a wheel and its central validation button (in green on the drawing)

  It allows you :
  - to navigate from item to item on the current menu page, the button allows you to enter edit mode on the selected item.
  - to edit the value of the current item, the central button allows you to validate the value of the current item and return to navigation mode.

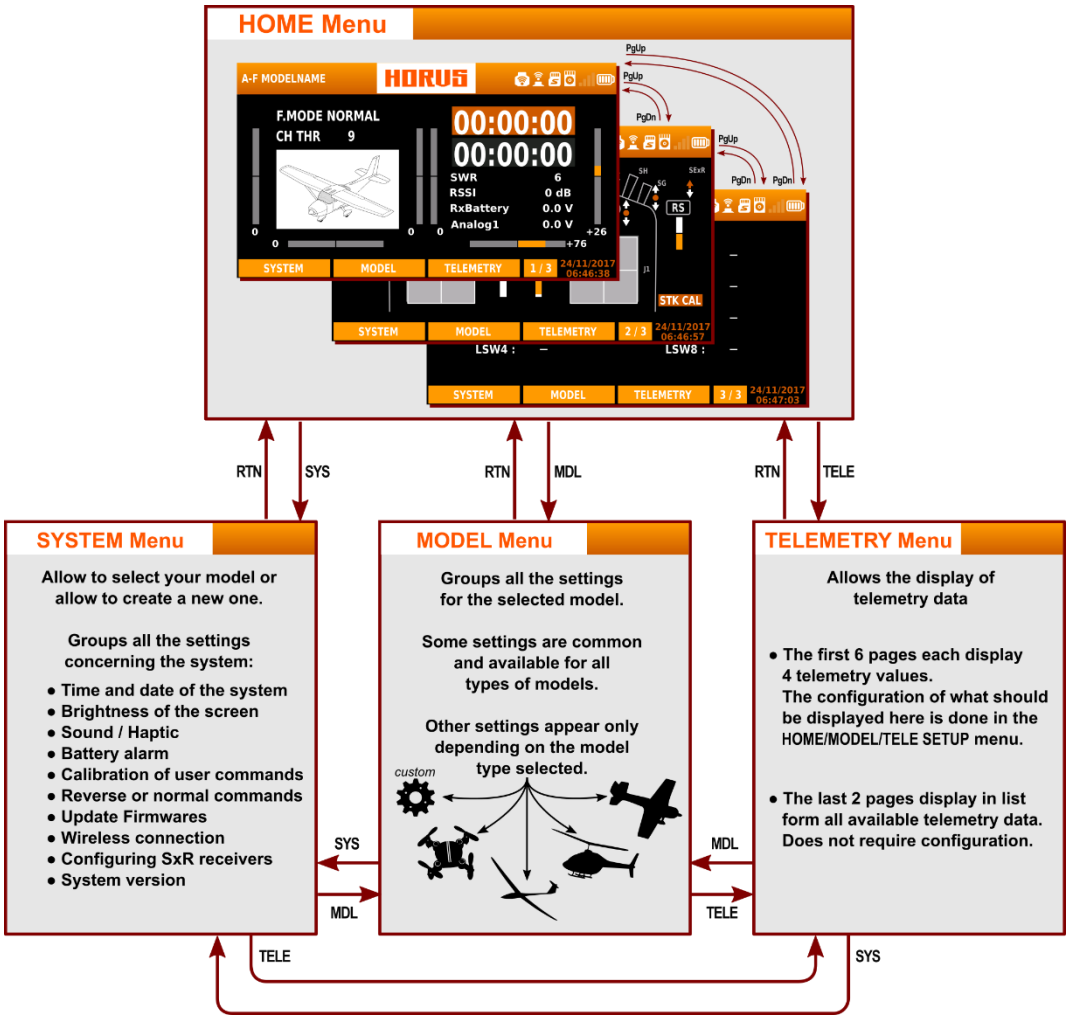
These elements are located in front on the lower part of the radio, on the left and on the right

4.2 WHERE AM I IN THE MENU TREE?

Here is an example of display :

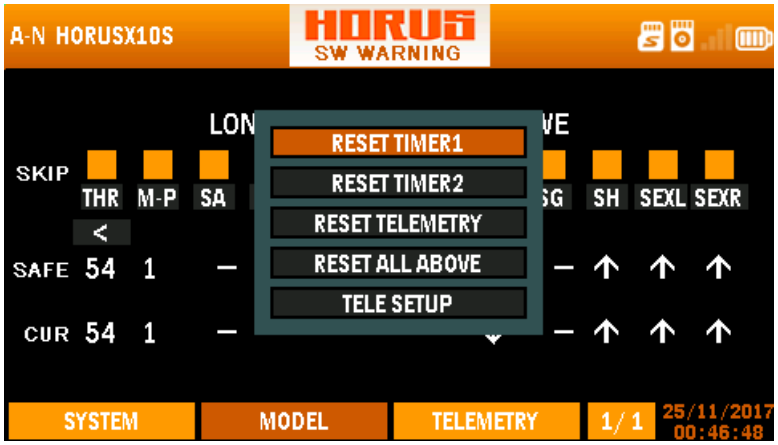


4.3 OVERVIEW OF THE MENU TREE



4.4 QUICK SELECT OPTIONS

Long press “TELE” button: this will generate a pop-up where the user can reset timer, reset telemetry values, reset all above, jump to tele setup page.

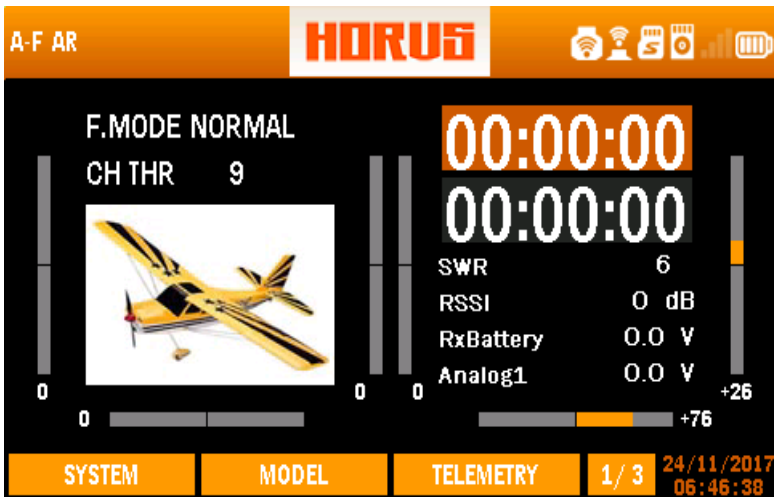


Overview of the switch warning reset menu screen

Long press “RTN” button: this will instantly bring the user to the “MONITOR” menu, pressing “RTN” again, will return the user back to the previously opened menu.

Long press “PgUp/Dn” button for 3 seconds: this will (de)activate the button lock function, a lock icon will be displayed on the top right corner of the screen when activated.

5 HOME SCREEN



Home screen (page 1/3)

The illustration above is the home screen of the transmitter (page 1/3), the picture of the airplane can be made and/or selected by users representing the selected model. The currently selected flight mode, and throttle position (%) are displayed in the top left. On the right side are two timers followed by real-time data related to the RF system and receiver battery voltage. The telemetry data shown here is the same as the user can, or has chosen to be displayed on the first page of the telemetry menu screen. This can be programed in the "TELE SETUP" menu under "MDL" The long grey bars represent the trim position of the 6 available trim switches. A visual as well as a numerical trim position indication is displayed.

Displayed Icons

Hardware buttons locked/unlocked (long press PgUp/Dn).

Transmitter battery state.

RSSI signal quality.

Internal RF module active.

External RF module active.

Trainer mode active. M = Master, S = Slave (cable connection)

Trainer mode active. M = Master, S = Slave (wireless connection)

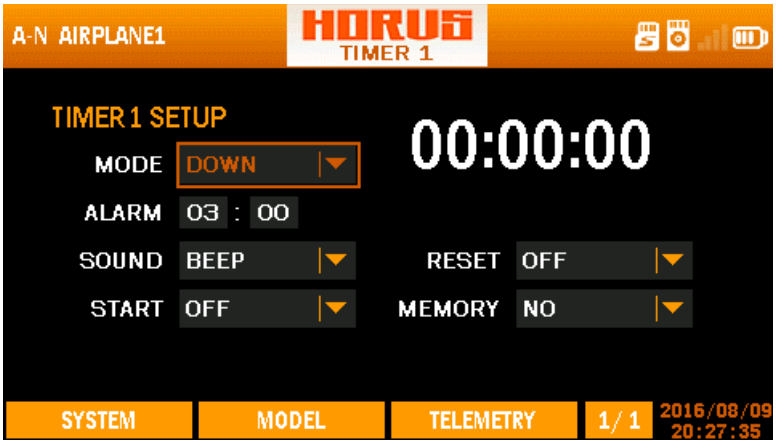
Micro SD card icon, indicates connection state.

Flash status indication.

NOTE: Yellow triangle on the icon means that the device is not well detected or not working properly.

Setting up timer

The illustration below is an example of the "TIMER" menu, to choose between the two available timer menus rotate the rotary button while being on the home screen, press "ENTER" to confirm your selection.



Timer menu screen

"**MODE**": Allows the timer to count up or down.
"**ALARM**": Determines after how long an alarm is triggered.
"**SOUND**": Has as the following options:

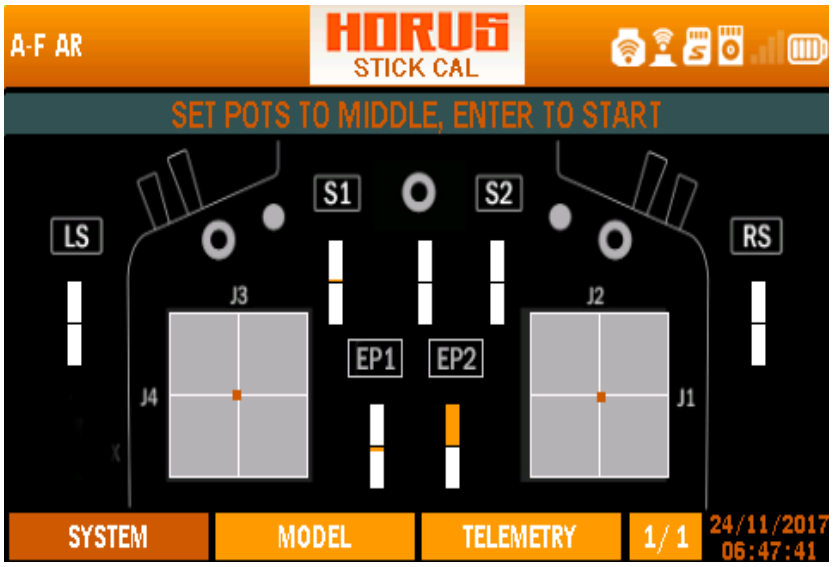
"MUTE": Produces no hearable warning.
"BEEP": Makes a beeping sound.
"SPEECH": Produces as spoken value.

"**START**": Has as the following options:

"OFF": Disables the "TIMER".
"ABS": Disables the "START" option.
"THs": Activates the "TIMER" while having a throttle setting above 0 (-100).
"TH%": The throttle setting determines the timer running speed, the higher the throttle setting the faster it counts.
"THt": Uses the throttle as trigger to start the timer.
"SWx": Uses a switch as trigger to start the timer.
"LSW": Uses a logic switch (LSW1-8) as trigger to start the timer.

"**RESET**": Allows and "SWx" or "LSW1-8" to reset the timer.
"**MEMORY**": Has YES/NO as options, YES will allow the user to store the TIMER values when power off.

NOTE: *The user can reset TIMER1/2 in any time by pressing and holding the "TELE" button and selecting the relevant option from the list.*



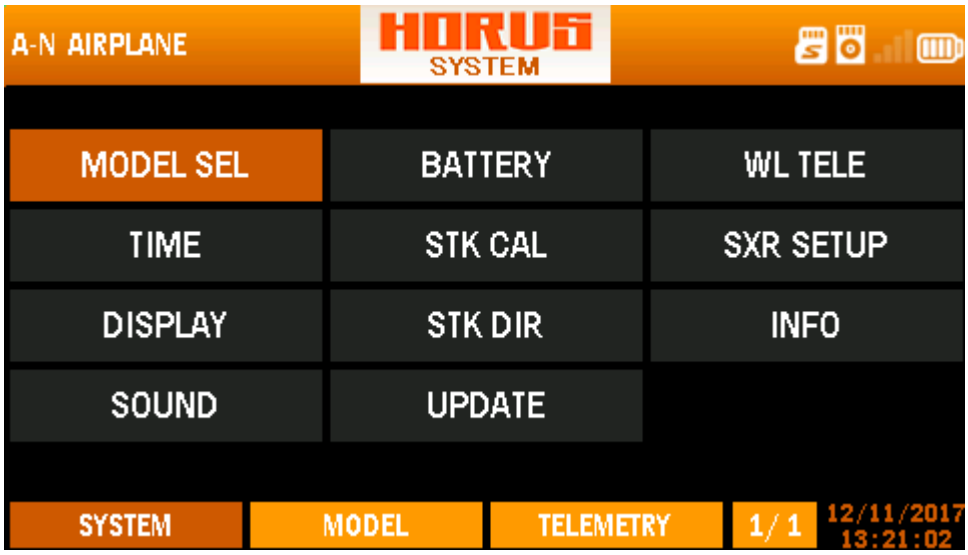
Home screen (page 2/3)

The home screen page 2/3 can be used to check if the sticks, switches, sliders and knobs

Home screen (page 3/3)

The home screen page 3/3 illustrates the status of the programed logic switch lines, the programming line gets a white bar to indicate that the preassigned conditions are met.

6 SYSTEM MENU



Overview of the system menu screen

System Menu Options

"MODEL SEL": Is used to create, select, modify, copy or delete a model.

"TIME": Is used to adjust time and date, and change the type in which the date is displayed.

"DISPLAY": Allows adjustment to screen brightness and the activation or inactivation of the sleep function. It is allowed to assign a knob or slider to manually adjust the intensity of the back-light.

"SOUND": Volume and haptic adjustments, muting and assigning knobs and sliders to adjust individual sound levels manually can be done in this menu.

"BATTERY": Displays the transmitter battery voltage, of which the range can be changed to accommodate battery's other than the one supplied by FrSky. The low-battery warning voltage and the range of the battery icon displayed in the top right corner can be adjusted in this menu.

"STK CAL": Is used to calibrate the endpoints of the sticks, knobs and sliders.

"STK DIR": Allows reversal of each individual stick, knob, slider and switch signal.

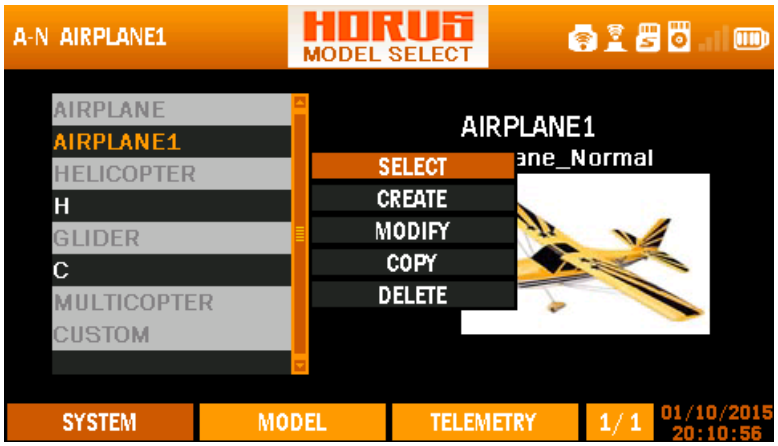
"UPDATE": Allows to update the firmwares of FrSky products with S.Port.

"WL TELE": Allows the user to turn on/off the Bluetooth, which is used to transmit the data of flight information to the Smart Device through the App which can be downloaded from http://www.frsky-rc.com/app/.

"SXR SETUP": Displays the wing type of the plane and the mounting type of the receiver (horizontal/vertical) only when the SXR receiver is connected to the transmitter.

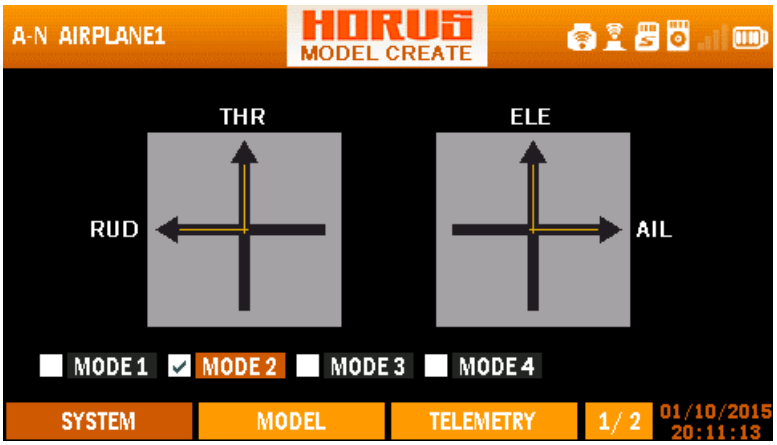
"INFO": Displays transmitter information and the installed firmware version.

6.1 MODEL SEL



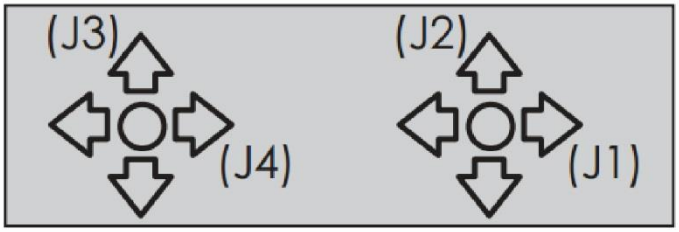
Overview of the model select menu screen

The illustration above is an example of the "MODEL SEL" menu, to enter this menu press the "SYS" button then select "MODEL SEL". Here the user can select, create, modify, copy and/or delete models. Press ENT button, the names and model types will be displayed on the left side of the screen. The options will be in the middle and the default/self-defined image of model in the right side. Choose create, select the left column to browse the available files of existing models. After selecting the desired option a pop-up menu will appear to facilitate more navigation options.



Overview of the stick mode selection menu screen

The illustration above is an example of the “STICK MODE” menu that is used when creating a new model. Here the user can choose one of the four available stick modes (MODE 1-4), this must correspond with the actual transmitter stick layout.

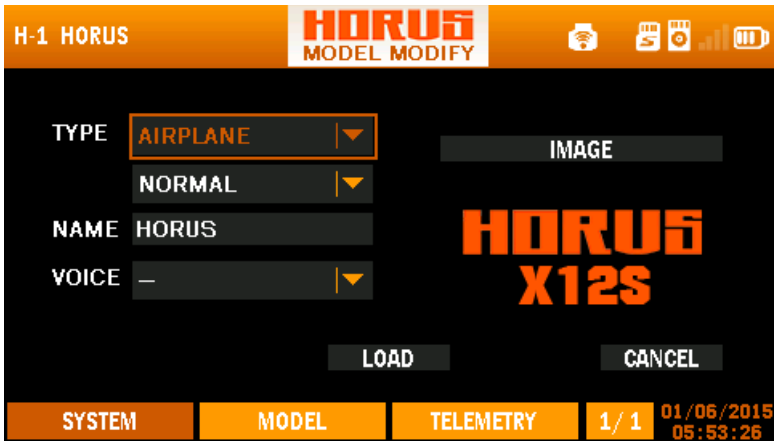


Mode	J1	J2	J3	J4
1	Aileron	Throttle	Elevator	Rudder
2	Aileron	Elevator	Throttle	Rudder
3	Rudder	Throttle	Elevator	Aileron
4	Rudder	Elevator	Throttle	Aileron

Description of MODE naming

Overview of the model creation menu screen

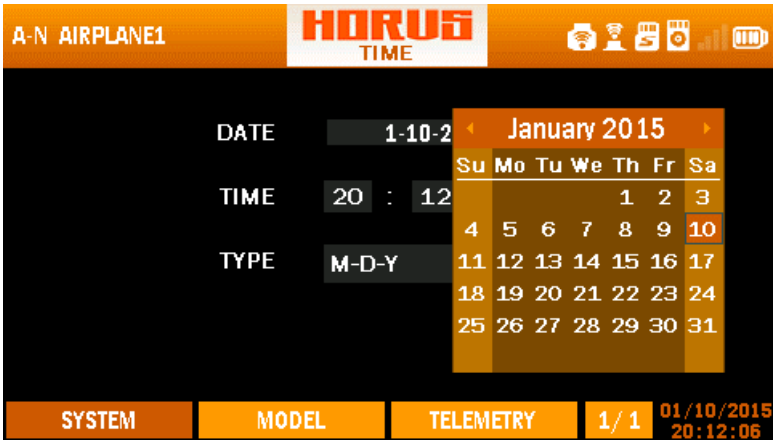
The illustration above is an example of the “MODEL CREATE” menu, to enter this menu press the “SYS” button, select “MODEL SEL”, create a new model or select modify from the selection list on an existing model. Here the user can assign a name to identify the aircraft, select the model “TYPE”（Airplane/Helicopter/glider/multicopter/custom）. Under the option of Airplane, you can choose three types of wings: Normal, Flying wing and V-tail. Under the option of Helicopter, the options are written below: H-1, H-4, HE3, H-3, HR3, H-4X. Under the option of Glider, the two options are Normal and V-tail. Also, there are no sub-options under the option of Custom and Multicopter. Assign a “VOICE” (this will be called out when selecting the model), and assign an “IMAGE” that will be displayed on the main page（four options of images）. Selecting the correct model “TYPE” with the additional option boxes is critical during this process, as it determines how the “OUTPUT MAP” is configured in default.



Overview of the model modify menu screen

CAUTION: *Changing TYPE will result in the deletion of all settings, as channel order and/or function change, making these setting obsolete. Keep this in mind when using this menu option.*

6.2 TIME

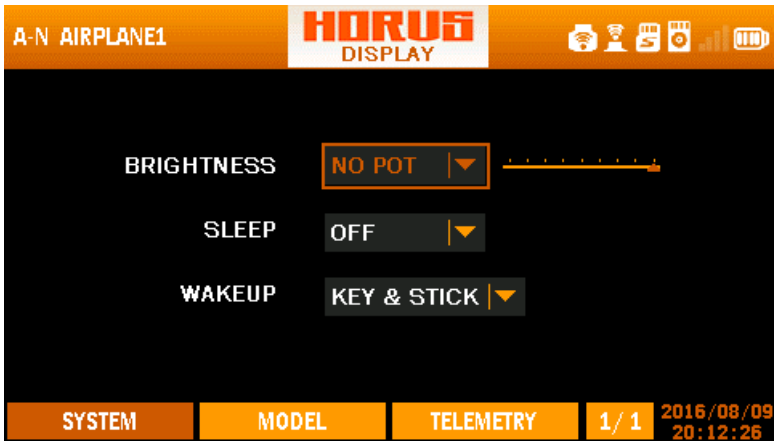


Overview of the time menu screen

The illustration above is an example of the "TIME" menu, to enter this menu press the "SYS" button, then select "TIME". Here the user can make changes to the time and date, and change the type of how the date is displayed. Time and date are always visible in the lower right corner of the screen.

NOTE: Use SYS / TELE to scroll through the months in the calendar and PgUp/Dn to the years.

6.3 DISPLAY



Overview of the display menu screen

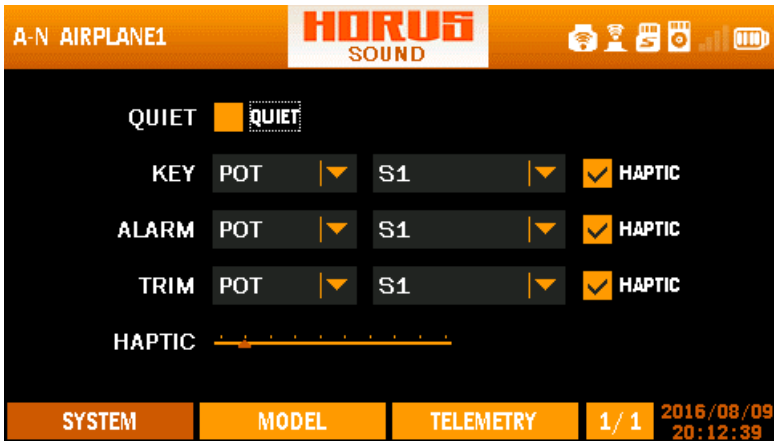
The illustration above is an example of the "DISPLAY" menu, to enter this menu press the "SYS" button, then select "DISPLAY". Here the user can adjust the brightness of the screen and activate the sleep function.

According to personal preference and changes on brightness, a knob can be assigned to manually change the brightness to achieve the desired visual effect. These settings can optimize readability and/or have a positive effect on battery endurance.

There are two options for brightness adjustment: POT and NO POT. Under the option of POT, the adjustment is carried out by several knobs: S1, M-pos, S2, LS, RS, EXTPOT1 and EXTPOT2.You could choose what you like. Under the option of NO POT, the brightness could be adjusted by the knob around the ENT button.

Activating the sleep function will turn off the screen after the selected amount of time without operation. The sleep function has the following options: OFF, 10s, 30s, 60s, 2Min, 5 Min and 10Min. The transmitter will be waked up when the selected conditions are met (Only KEY, Only STICK, KEY&STICK).

6.4 SOUND

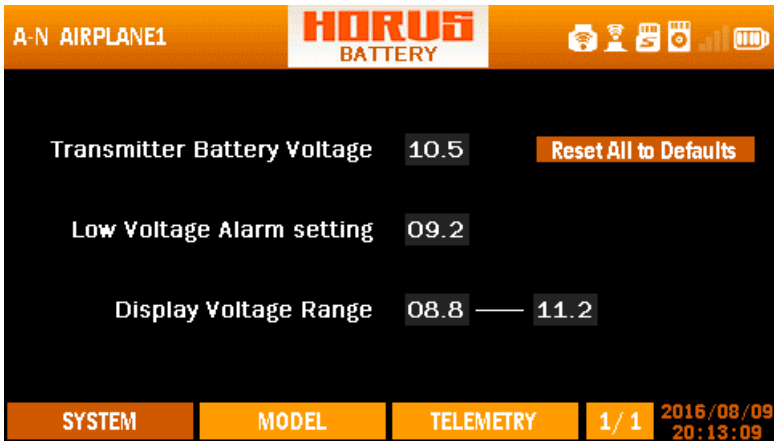


Overview of the sound menu screen

The illustration above is an example of the "SOUND" menu, to enter this menu press the "SYS" button, then select "SOUND". Here the user can adjust the volume of the key, alarm and trim beeps. They can be individually adjusted or all muted (QUIET). Selecting "POT" option, the knobs and/or sliders can be used to individually adjust the volume without entering the menu.

NOTE: The beeping volume which indicates the rising/falling of the model (measured by variometer sensor) should be adjusted through the TRIM option.

6.5 BATTERY



Overview of the battery menu screen

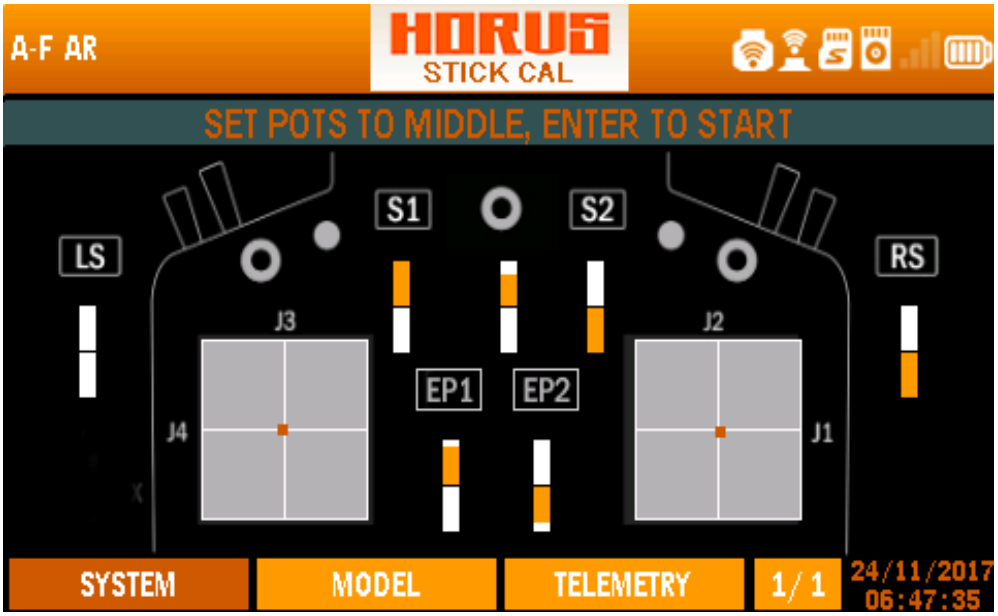
The illustration above is an example of the "BATTERY" menu, to enter this menu press the "SYS" button, then select "BATTERY". Here the user can see the actual voltage of the transmitter battery, and adjust the total voltage of the battery via "TRANSMITTER

BATTERY VOLTAGE" (0.0-16.0V). This allows to make room for the battery evolution and improve the compatibility with multiple types of batteries.

The battery voltage under the option of BATTERY is an accurate value, thus recalibration is very unlikely to be required. If changing by mistake, press the "Reset all to defaults". The low-voltage alarm could be set via the "LOW Voltage Alarm setting" (the value is 6.2-8.4).
The working range of the battery Indicated by the icon on the top right can be adjusted via "DISPLAY VOLTAGE RANGE" to adjust the main-screen icon range (0-16 Volts). The "RESET ALL TO DEFAULTS" option allows the user to set the settings back to factory default.

CAUTION*: The system will generate a low-voltage alarm (power indicator, haptic, warning pop up & voice alarm) to alert the user to prevent the shut-down of the transmitter. Never start or continue flying if the low voltage alarm has been triggered.*

6.6 STICK CAL



Overview of the stick calibration menu screen

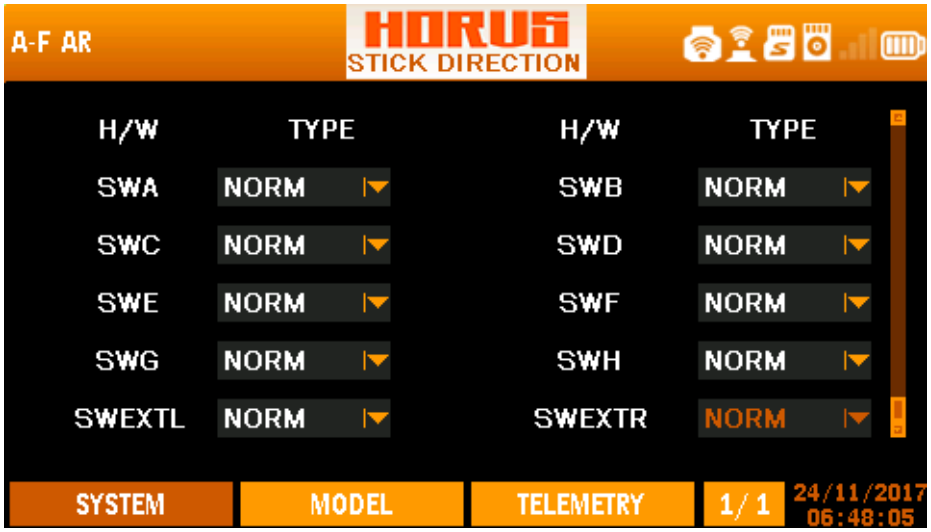
The illustration above is an example of the "STICK CAL" menu, to enter this menu press the "SYS" button, then select "STICK CAL". Here the user can calibrate the sticks, knobs and sliders (J1-4, S1-2, L1-2, LS, RS) by following the onscreen instructions. EP1 and EP2 are extendable stick ends connected to the joysticks.

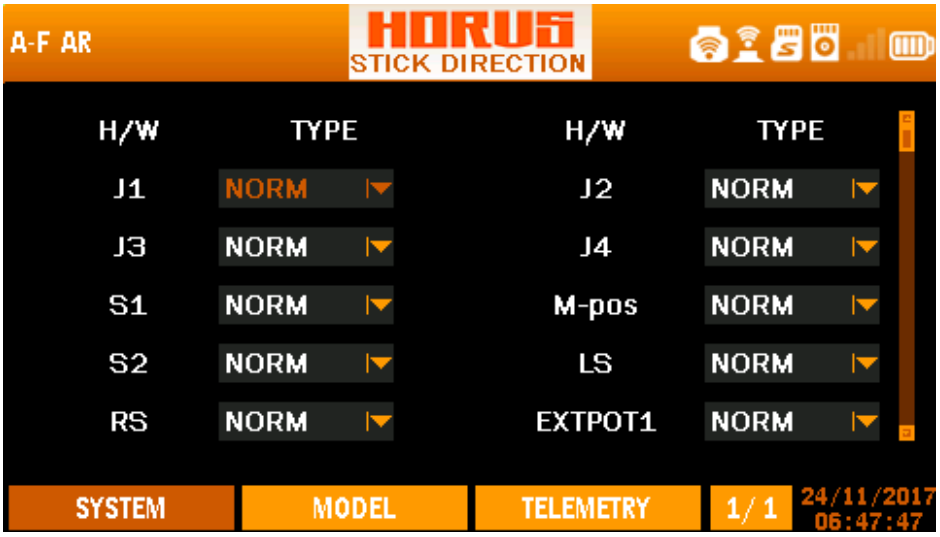
NOTE: *make sure you set the M-POS knob to the centre detent before starting the calibration process, failing to do so will prevent the user from using full travel range(-100/+100) in the "MIXER" and/or "LOGIC SWITCH" menus.*

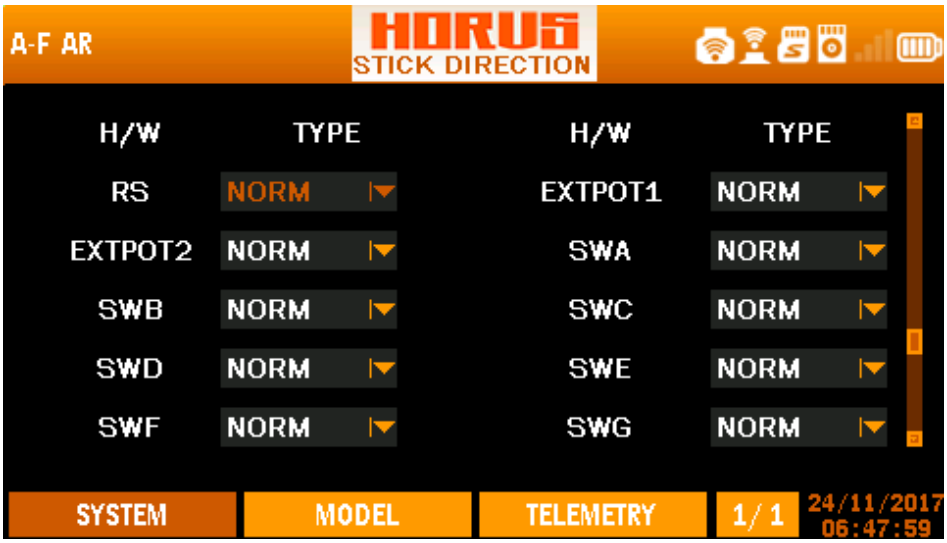
NOTE: *We advise you to regularly check the produced output signals and to recalibrate the transmitter when it has not been used for a long period of time.*

NOTE: You can use this menu to readjust the zero/neural position by starting the calibration process with the desired hardware input at an endpoint. By doing so, the output signal will lose resolution as the total signal range is divided in half.

6.7 STICK DIR







Overview of the stick direction menu screen

The illustration above is an example of the "STICK DIRECTION" menu, to enter this menu press the "SYS" button, then select "STICK DIRECTION". Here the user can reverse the signal direction of all hardware signals. Reversing the channel direction of the transmitted signal going to the RX can be done with the option of "REVERSE", which can be found in the "MDL" menu.

CAUTION: *Always check for correct system operation after making changes to flight- control-related channels. Failure to do so can lead to unexpected deflection directions and reversal of the throttle channel, and may result in damage and/or serious injury.*

6.8 UPDATE

Overview of the update menu screen

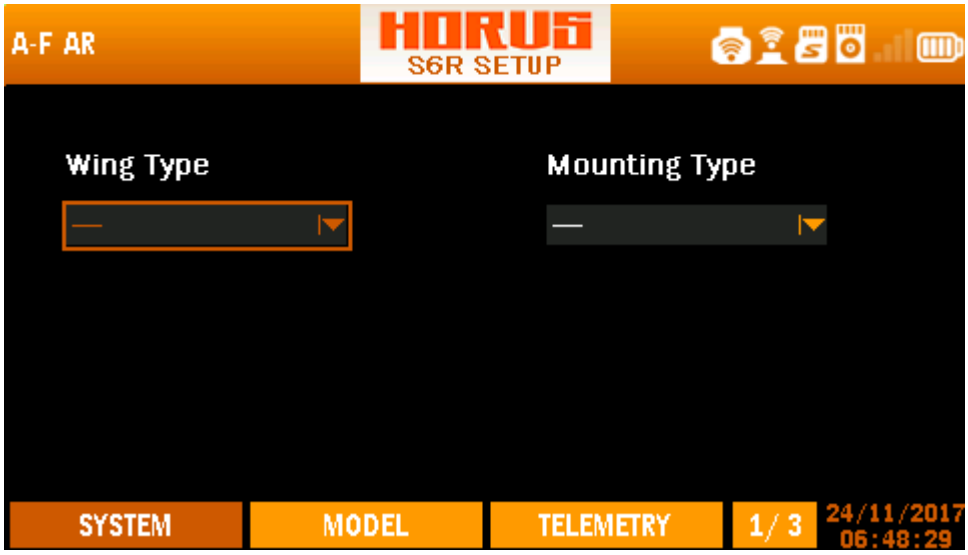
The illustration above is an example of the “UPDATE” menu, to enter this menu press the “SYS” button, then select “UPDATE”. Here the user could apply the files in the SD card to update the firmware of FrSky products with S.Port and delete them. For example, if you want to update/delete the first file, move the cursor to the first one and press ENT Button. And then, choose UPDATE/DELETE through the Knob around the ENT Button.

6.9 WL TELE

Overview of the WL TELE menu screen

The illustration above is an example of the “WL TELE” menu, to enter this menu press the “SYS” button, then select “WL TELE”.In this section, you are allowed to turn on/off the Bluetooth of the transmitter through choosing both “ON” under WL transmis and STATE. Then, you could turn on the Bluetooth on your Smart Device and match with the transmitter, FrskyBT indicating the name of the Bluetooth. After that, the flight information will display on your Smart Device, which is transmitted through the transmitter. The state for matching is at the last option: Disconnected or Connected.

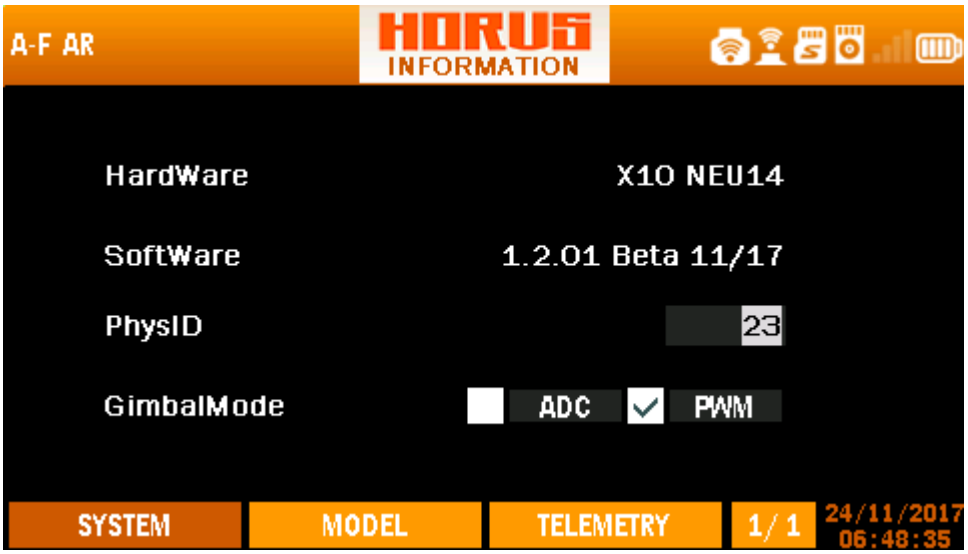
6.10 SXR SETUP



Overview of the sxr setup menu screen

The illustration above is an example of the “SXR SETUP” menu, to enter this menu press the “SYS” button, then select “SXR SETUP”. If a SXR receiver has been bound to the transmitter, the wing type and mounting type of the plane will be displayed on the screen.

6.11 INFORMATION



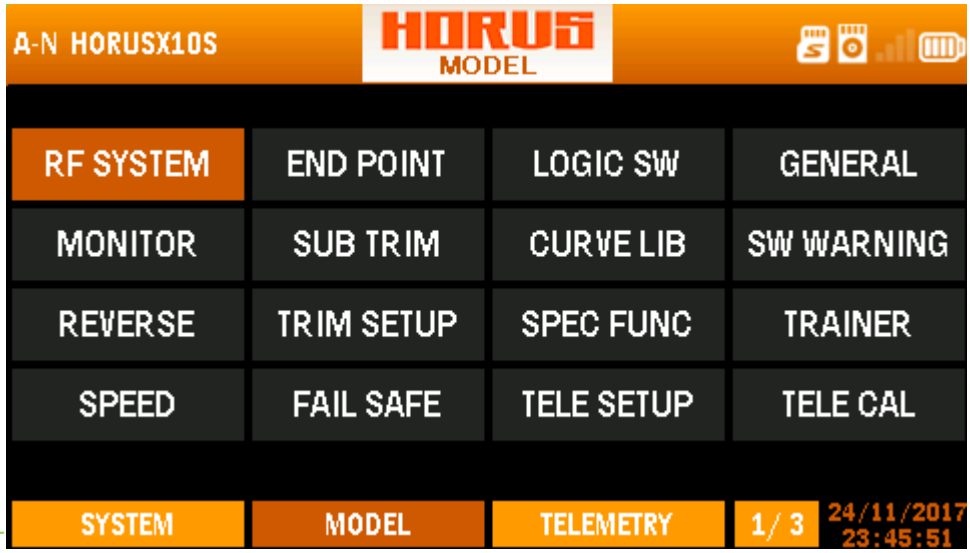
Overview of the information menu screen

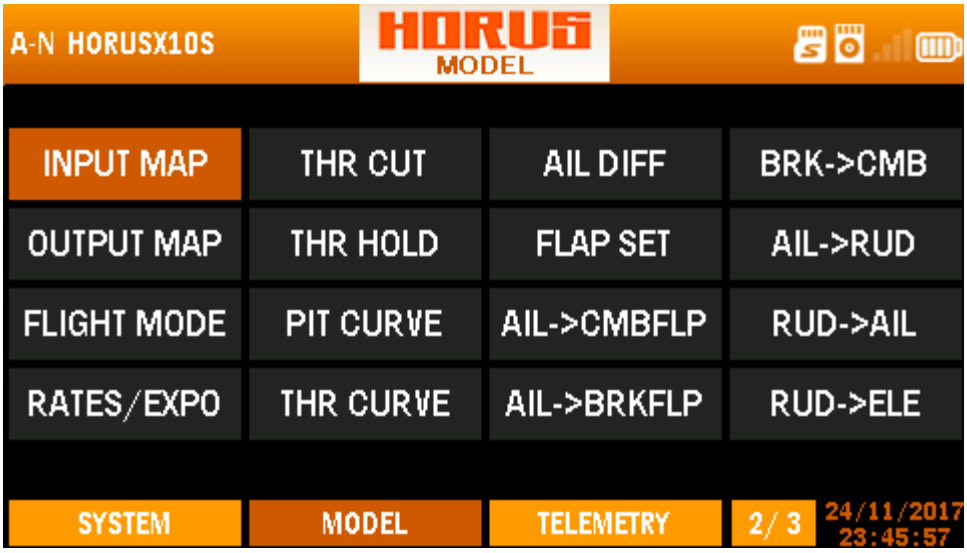
The illustration above is an example of the “INFORMATION” menu, to enter this menu press the “SYS” button, then select “INFO”. Here the user can find information about the transmitter version， physical ID, Gimbal mode and the installed firmware. This menu can be used as a reference to check firmware versions to check if an update is required.

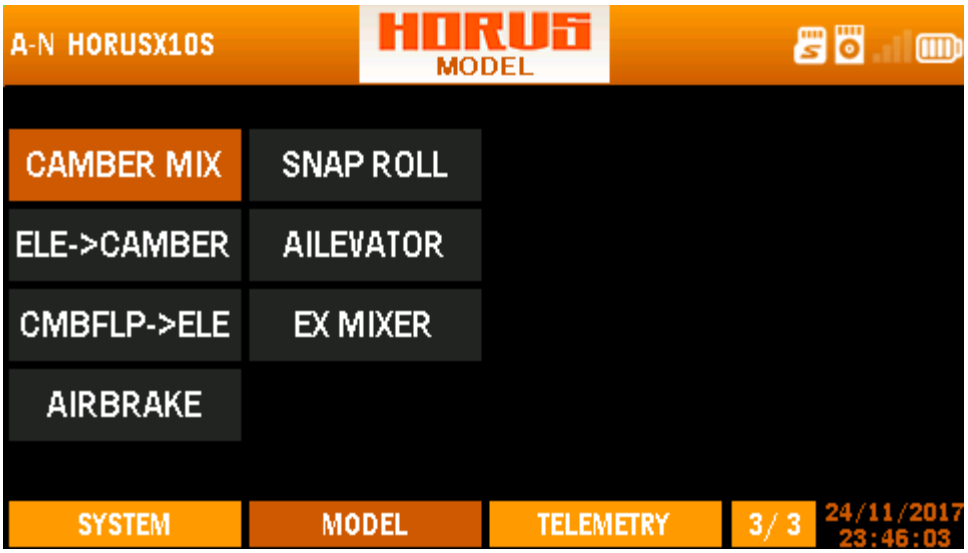
7 MODEL MENU

The “MODEL” (MDL button) menu is used to set up the selected model, the content of this menu changes with the type of model selected. There are predefined mixes. Press PgUp/Dn to switch between the menu pages. The first section of this chapter contains the shared menus, thereafter it is divided into the available model types/variations, except for fixed wing that also contains glider related menus, type specific menus will be discussed in their own sub chapter.

7.1 OVERVIEW OF THE MODEL MENU SCREEN



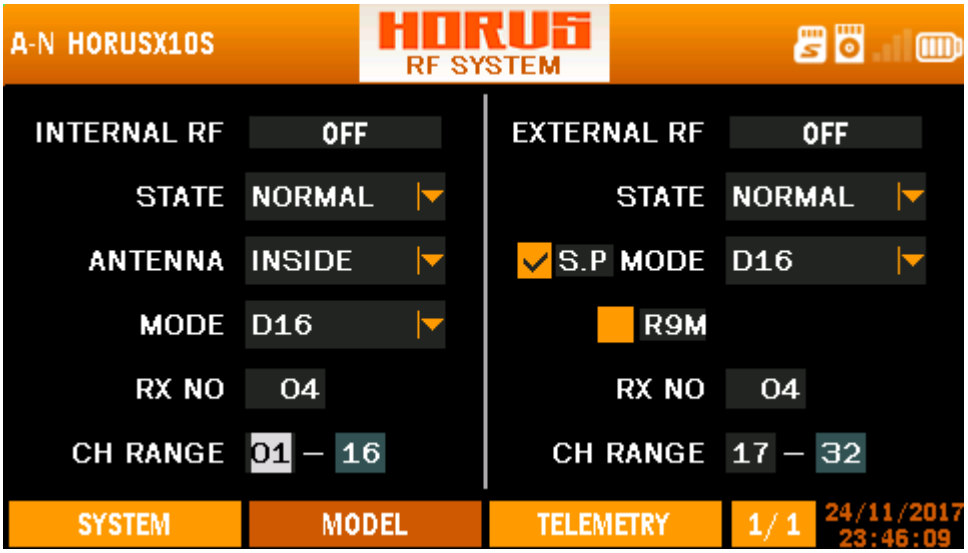




Overview of the model menu screen

7.1.1 RF SYSTEM

The illustration below is an example of the "RF SYSTEM" menu, to enter this menu press the "MDL" button, then select "RF SYSTEM". Here the user can turn the internal and external RF modules on or off, as well as choosing the receiver type and the number of channels to be used. The RF SYSTEM menu is divided into two segments, setup options for the internal RF module IXJT (left column) and any installed external RF module (right column).



Overview of the RF system menu screen

NOTE: *We recommend to use an external antenna when using the internal RF and expect to flying far away and/or using FPV gear. The use of an external antenna will maintain a better signal quality. Pointing the antenna directly at the model should be avoided at all times!*

INTERNAL RF MODULE

INTERNAL RF MODULE: Select the option at the right of the "Internal RF" to switch it ON or OFF by using the ENTER button.

"STATE": Is used to set the internal RF in either normal, bind or range check state. During range check state, the RF signal strength is only 1/30 of the normal setting, therefore always make sure to return the module to "normal" mode after a bind/range check procedure, failing to do so can lead to a loss of signal!

"ANTENNA": Allows the user to activate the internal or external antenna port of the transmitter. The external antenna to be used will need to be fitted with a RP-SMA Connector.

"MODE": Allows changing of the different working modes available on the internal RF module (IXJT). It is important to select the correct operating mode to match the receiver being used. See table in chapter 3.2.

"D16 mode": The "RX NO" option allows the user to assign a number to the bound receiver. Numbering receivers therefore requires an X series receiver as data needs to be stored in the receiver. This allows the programmed model to be paired with a specific receiver and ensures that the receiver will only operate when the user has the correct model selected. This helps to prevent the possibility of accidental selection of the wrong model on the transmitter, and helps to avoid accidents such as spool up of an engine due to a reversed channel, etc. The user can configure up to 64 individual X series receivers.

"D8 mode": 8 channel with telemetry mode

"LR12 mode": without telemetry up to 12 channel long range mode

"CHANNEL RANGE": Can only be used when using X series receivers to select up to 32 channels. The upper limit of the available channels depends on the number and type of the used receiver(s), and the use of an additional external (XJT) module.

NOTE: *European users (EU version) can select D16 and LR12 mode, all other users (**Non-EU version (FCC)**) have the D8, D16 and LR12 modes available.*

EXTERNAL RF MODULE

When using an external DJT/XJT module, the available features are identical to the internal RF module.

When using non-FrSky external RF Modules the user first needs to acquire the operating characteristics and requirements of the module before selecting the required PPM setting.

PPM + & PPM mode have the signals reversed.

S.P: Connect the external RF to the transmitter. If the user doesn't choose the S.P. connection, the data sends by the receiver will not transmit to the transmitter.

R9M: If an R9M receiver has been connected to the transmitter, select R9M and you are able to adjust the transmitting power (10mw, 100mw, 500mw and 1000mw For Non-EU version).

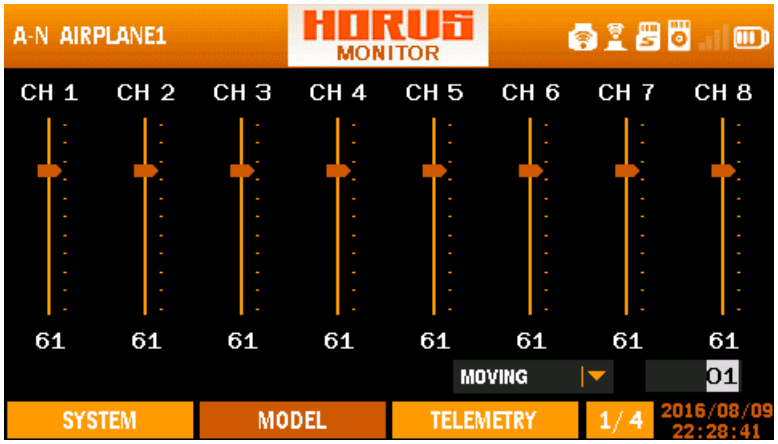
For EU version, you can choose the telemetry mode with 25mw output or No-telemetry mode with 500mw output.

NOTE: *When using the external RF module only, make sure to set the channel range from 17-32 to 1-16.*

NOTE: *To turn off the external module the user can cut its power supply via the "EXERNAL RF" on/off option.*

7.1.2 MONITOR

The illustration below is an example of the "MONITOR" menu, to enter this menu press the "MDL" button, then select "MONITOR", or press and hold the "RTN" button for 3 seconds to instantly jump to this menu. Here the user can monitor the output value of each individual channel with a visual aid and a numerical value. The PgUp/Dn button can be used to switch between the 4 available menu pages to display the 32 available channels.



Overview of the monitor menu screen

The monitor feature can be used to check the output signals of the selected model, as well as checking the channel-assigned mixes, switches, sticks, knobs, and sliders for correct functions. After pressing ENTER button, the user can select "OFF", "NEUTRAL" and "MOVING". The "MOVING" setting allows for automated movement of all channels, the travel speed can be adjusted by varying the number (01-16) next to "MOVING". The "NEUTRAL" setting can be used for finding the neutral position of a servo. This is useful during the assembly of the servos/control rods on new models.

DANGER: *Selecting "NEUTRAL" or "MOVING" will activate the throttle channel, and under electric-powered models, it will lead to the spool up of the motor! PLEASE disconnect the throttle channel before entering the test mode in case of accidents!*

NOTE: *At any time you can press and hold the "RTN" button to instantly jump to the "Monitor" menu, and press it again to return to the previous menu. This shortcut allows the user to check the made changes in the monitor menu without scrolling through the menus.*

7.1.3 REVERSE

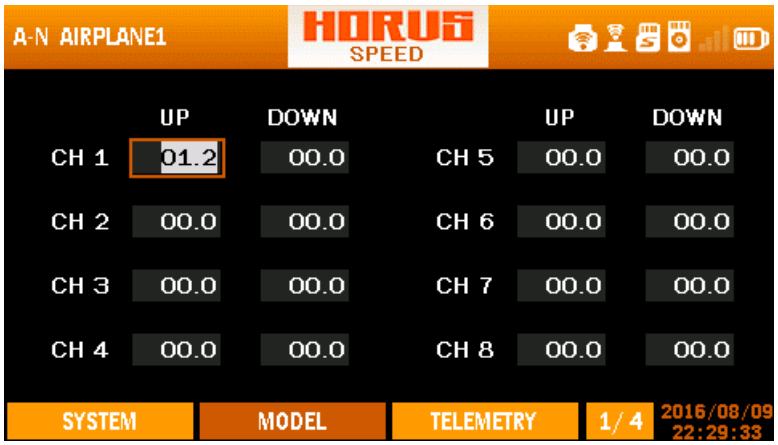
The illustration below is an example of the "REVERSE" menu, to enter this menu press the "MDL" button, then select "REVERSE". Here the user can reverse the direction on all available RX channels, the PgUp/Dn button can be used to switch between the two menu pages.

Overview of the reverse menu screen

Selection of the receiver channel of which the signal direction needs to be changed gives the user the following two options. "NOR" is the normal direction of movement and "REV" is the reversed movement option. The direction of the hardware signals can be changed via the "STK DIR" menu located in the "SYSTEM" menu.

CAUTION: *Always check for correct system operation after making changes to flight-control-related channels. Failure to do so can lead to unexpected deflection of directions and reversal of the throttle channel, or even result in damage and/or serious injuries.*

7.1.4 SPEED



Overview of the speed menu screen

The illustration below is an example of the "SPEED" menu, to enter this menu press the "MDL" button, then select "SPEED". Here the user can adjust the servo cycle duration time (0s-10.0s in both directions) by adjusting the values for the corresponding channel. The higher the value, the longer it takes for the servo to reach its programmed end point. It can be a useful tool as setting up functions like retractable landing gears (doors), flaps, speed brakes etc. The PgUp/Dn button can be used to switch between the four menu pages.

WARNING: *Never change the values on the primary flight control channels, failing to do so will result in delayed inputs during their operation. This menu allows this only because the transmitter has customizable channel mapping capabilities.*

7.1.5 END POINT

The illustration below (next page) is an example of the "END POINT" menu, to enter this menu press the "MDL" button, then select "END POINT". Here the user can adjust the maximum travel range "LIMIT", normal "TRAVEL" point, and set up differential on channels such as the ailerons. After selecting the required channel, a travel range of +125 to -125 can be programed for each direction of travel.

Overview of the end point menu screen

After setting up the “LIMIT”, the servo will never exceed this programmed limit, even if an activated mix demands an increase of servo travel, thus to prevent damage to the servo and/or control service hardware. The normal “TRAVEL” range must also be set up in this menu, thus to determine the normal travel range. But when the set is lower than the “LIMIT”, it still allows for more deflection if required by a mix. In models without mixes, we recommend to set both “TRAVEL” and “LIMIT” at the same value. The PgUp/Dn button can be used to switch between the menu pages.

CAUTION: *Always check for travel clearance after making changes to end points. Failure to do so can lead to damage to the aircraft’s structure and or the servo’s. We recommend using the “monitor” menu ”moving” feature to inspect endpoints, and recommend removing the propeller when setting up or modifying models.*

CAUTION: *Setting up the “TRAVEL” range larger than “LIMIT” should be avoided. It will result in loss effective stick travel, making the last part of stick travel useless.*

7.1.6 SUB TRIM

Overview of the sub trim menu screen

The illustration above is an example of the “SUB TRIM” menu, to enter this menu press the “MDL” button, then select “SUB TRIM”. Here the user can change the neutral position of the servo/control surfaces which in models without adjustable control rods. The PgUp/Dn button can be used to switch between the two menu pages. A range of -100 to +100 can be programmed, but when high numbers are required, we advise checking the hardware for proper installation.

NOTE: *Changes in “SUB TRIM”* will not appear on the trim position indication bars at the home screen, *enabling the user to adjust these values for a clear presentation on the home screen.*

7.1.7 TRIM SETUP

Overview of the trim setup menu screen

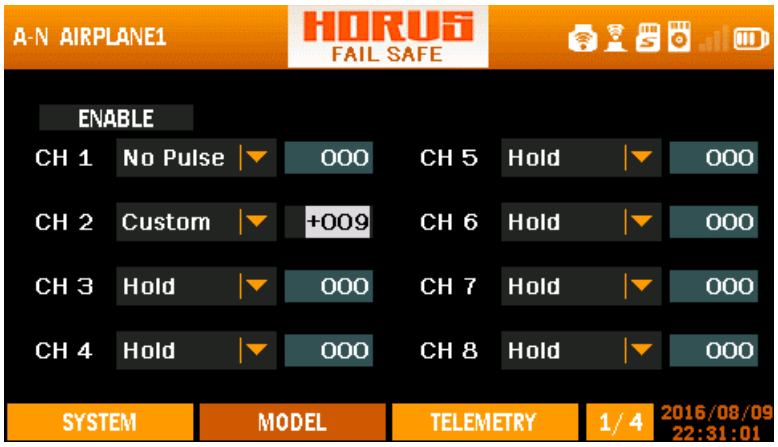
The illustration above is an example of the "TRIM SETUP" menu, to enter this menu press the "MDL" button, then select "TRIM SETUP". Here the user can customize the step size of the six available trim buttons. If the selected model supports multiple flight modes, the following options are available on the bottom right of the screen.

"COMB": When selected it, use the same trim value on all the available "FLIGHT MODES"

"SEPR": will save a separate trim value for each available "FLIGHT MODES".

NOTE: *Changes to step size do not affect the total trim range, only step size is affected. Trim values will be saved under different flight modes but not trim step sizes when SEPR is selected.*

7.1.8 FAIL SAFE (D16 RF MODE ONLY)



Overview of the fail safe menu screen

The illustration above is an example of the “FAIL SAFE” menu, to enter this menu press the “MDL” button, then select “FAIL SAFE”. The “FAIL SAFE” feature establishes pre-set functions that the receiver will initiate if the control link back to the transmitter is lost.

The PgUp/Dn button can be used to switch between the menu pages. This menu only works when using X series receivers.

“ENABLE/DISABLE”: Turns on/off the transmitter’s “FAIL SAFE” function and allows the programed receiver settings (if present) to become active.

“HOLD”: The receiver will hold the positions of the last two servos after the loss of RF connection.

“CUSTOM”: The user can program the value of the each channel to establish the servo setting required during a loss of signal.

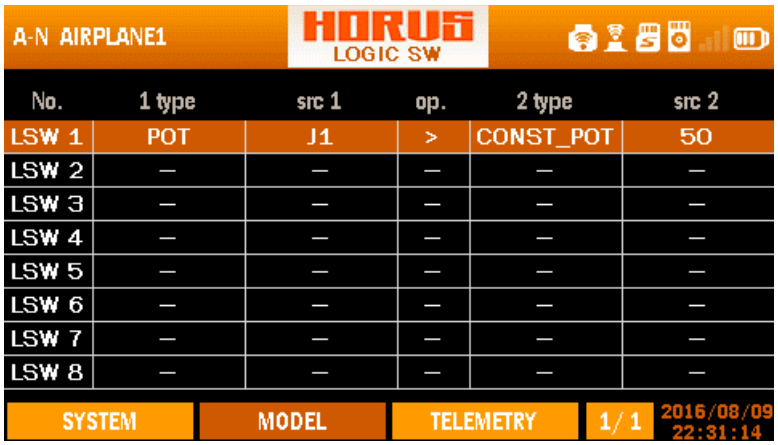
“NO PULSE”: During a loss of signal, the receiver produces no pulses on the selected channels.

CAUTION: *The setting of the transmitter programmed in this menu WILL OVERRIDE that of the receiver by the user when this function is ENABLED.*

CAUTION: *Take great care when holding the transmitter near the receiver. The RF connection may fail as the transmitter overpowers the receiver. A FAILSAFE will be triggered if programmed! If a FAILSAFE setting has been set on the throttle channel, electric and IC motor/engines can unexpectedly spool up, which may lead to damage and/or serious injury. It is recommended that users maintain an appropriate distance between the transmitter and receiver.*

NOTE: The Failsafe menu *only works when using X series receivers. Programing Failsafe in D8 Mode can only be done on the receiver.*

7.1.9 LOGIC SWITCH

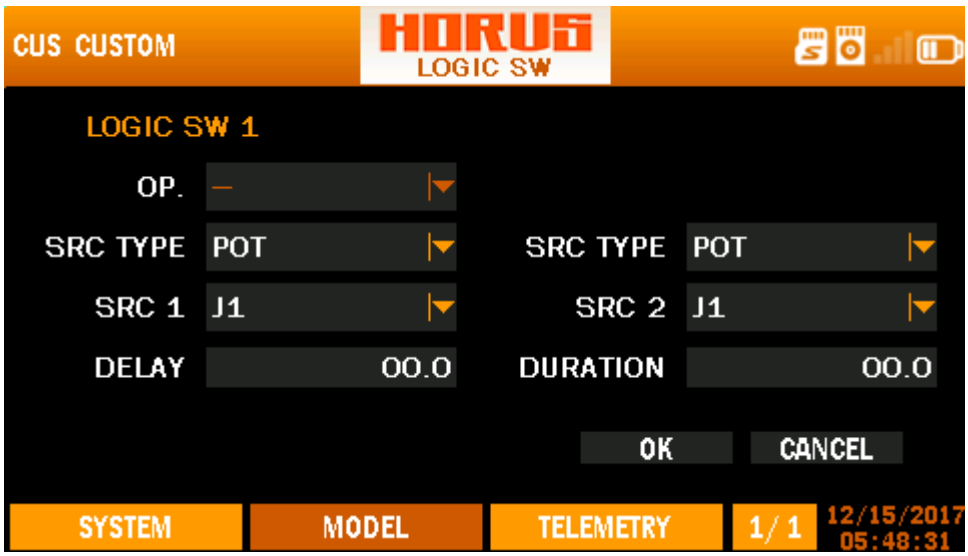


Overview of the logic switch overview menu screen

The illustration above is an example of the "LOGIC SW" menu, to enter this menu press the "MDL" button, then select "LOGIC SW". The application of Logic Switches and Special function provide the possibility to create powerful customized functions that are not pre-built in the system. Logical Switches have basic properties, the understanding of which is essential to maximizing the potential of Logical Switch/Special Function pairing.

Logical Switch basics

- Do not exist physically, but are created by the firmware based on conditions set by the user.
- Do not directly cause a result; they compare inputs (conditions) and determine the state of the switch based on the comparison.
- Logic Switches exist in only two states: 'TRUE' and 'FALSE'
- Comparisons are grounded on a set of standard Boolean operators (greater than (>), less than (<), OR, etc.).
- May be sequenced (i.e.: daisy chained) to provide comparison of more than two conditions. (i.e.: Given three LSs (LS1, LS2, LS3), LS3 is TRUE only when both LS1 and LS2 are TRUE)



Overview of the logic switch programing menu screen

Left side of the screen

“OP.”: Represents the Boolean Operator that can be selected, <, =, >, AND, OR, XOR, NOT

“SRC TYPE”: Represents the first source of the logic that can be selected (POT, SW, CHANNEL, LOGIC_SW, CONST, TELEMETRY and TIMER).

“SRC 1”: Represents the item within the “SRC TYPE” and the options under different SRC types are not the same. Here are the options.

POT: J1-4, S1, M-pos, S2, LS, RS, EXTPOT1, EXTPOT2.

SW: SWX (A-H) _UP/MID/DN, SWEXTL/SWEXTR_UP/DN, SWFLP_X (1-6).

CHANNEL: CH1-CH32

LOGIC_SW: LSW1-LSW8

CONST: -100- +100

TELEMETRY: Alti-g, Alti-v, Analog1-Analog4, Consump, Course, Current, Dist-g, Fuel, MaxRPM, MaxSWR, Maxalti-g, Maxalti-v, Maxcurr, Maxdist, Maxpower, Maxspd-g, Maxtemp1, Maxtemp2, Maxvario, MinRSSI, MinVario, Power, RPM, RSSI, RxBATTERY, SWR, Spd-g, Spd-v, Temp1, Temp2, Volt-fas, airspeed, celNum, celSum, celsMin, rb1AMP, rb1Consum, rb1Volt, rb2Amp, rbConsum, rb2Volt.

TIMER: TIMER1, TIMER2

“DELAY”: Represents delay after the LS Switch is triggered (0s-25.0s).

Right side of screen

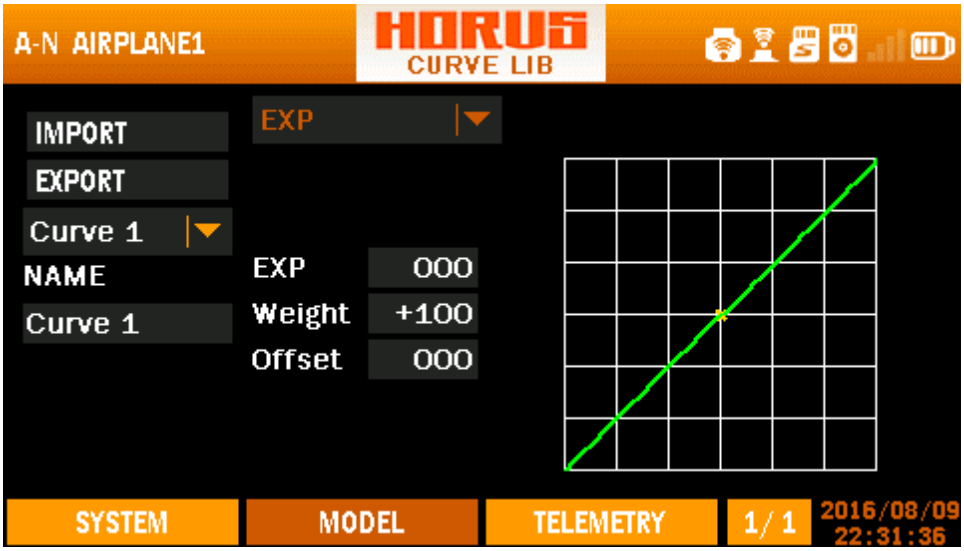
“SRC TYPE”: Represents the second source of the logic that can be selected (POT, SW, CHANNEL, LOGIC_SW, CONST, TELEMETRY and TIMER).
“SRC 2”: Represents the second item, which is the same with “SRC 1”.
“DURATION”: Represents the time span of the functions set by LS Switches (0s- 25.0s).

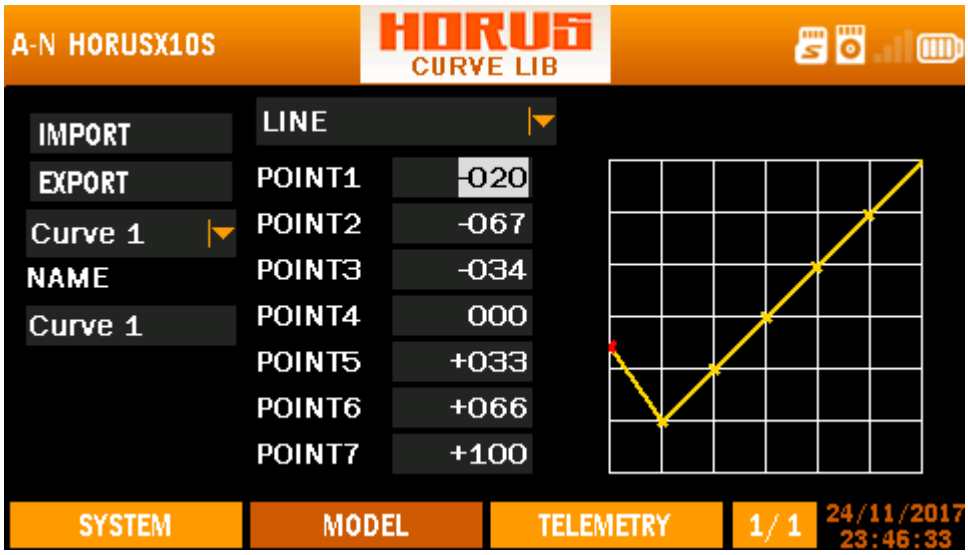
An example of a Logic Switch algorithm to create a custom RSSI warning

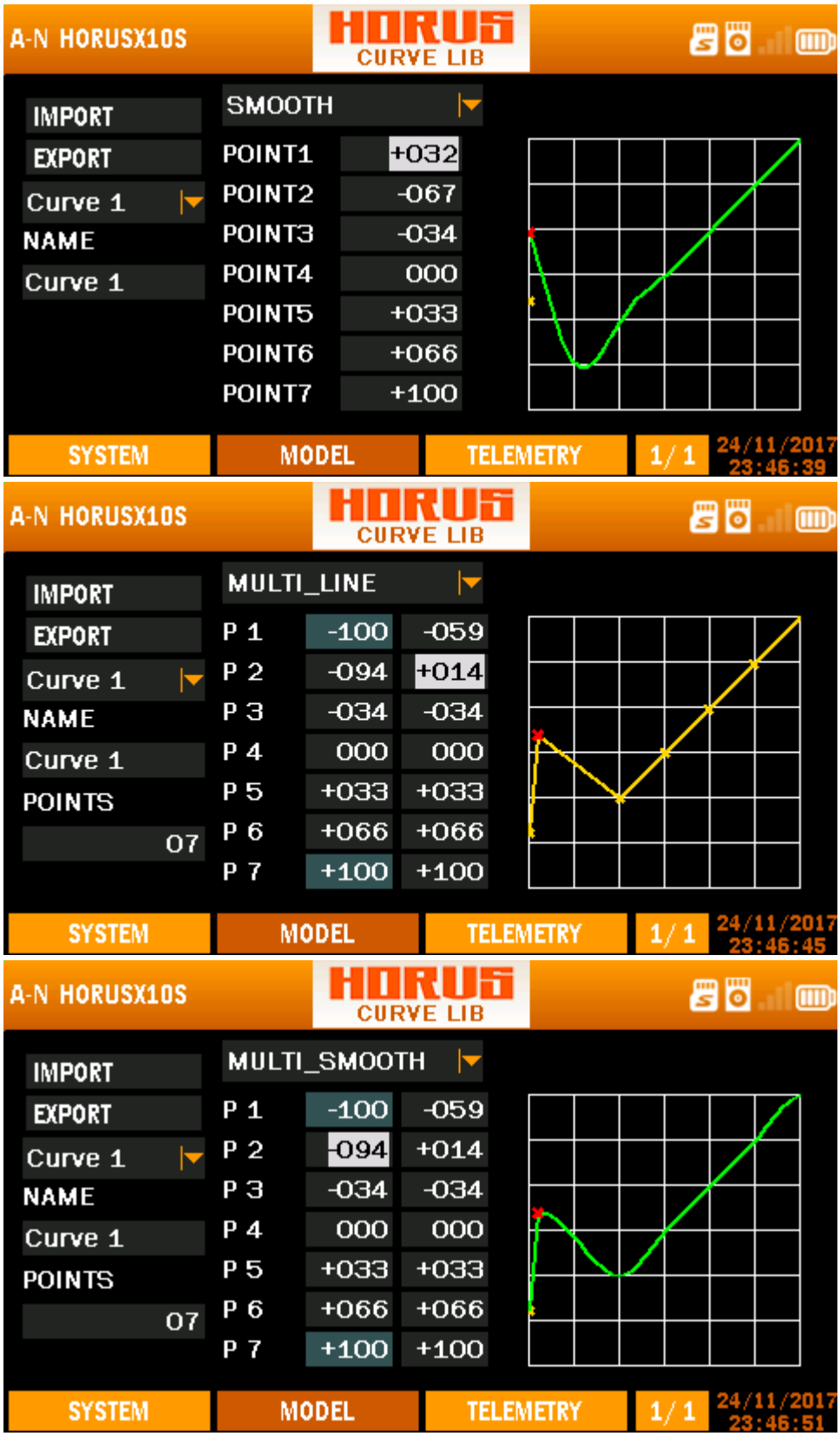
No.	1 type	src1	Op.	2 type	src 2
LSW 1	TELEMETRY	RSSI	<	CONST_VAL	45

The next step could be to use LSW 1 in the “SPECIAL FUNTIONS” menu so when LSW 1 is true (RSSI less than 45) a custom “track” will be played.

7.1.10 CURVE LIBRARY







Overview of the curve library menu screen

The illustration above is an example of the “CURVE LIB” menu, to enter this menu press the “MDL” button, then select “CURVE LIB”. Here the user can create custom curves that

can be used via “MIXER”, the operation of this menu is similar to setting up “EXPO” and “MIXER”. Up to a hundred curves can be created when using custom type, all other model types support fifteen. The names can be customized to easily find the curve during “MIXER” programming. Created curves can be copied to create new ones, minimizing the amount of programming tasks.

Left side of the screen

“IMPORT”: Produces a list of saved curve files (if created) and they can be copied on the mounted curve page.

“EXPORT”: Creates a save file of the programmed curve.

“CURVE 1-99”: Represent the 99 available curves.

“NAME”: Allows the user to customize the curve name.

Centre of the screen

“EXP”: automatically generated Exponential curves are produced when using this feature. +100 to -100 can be programmed, reducing or increasing the sensitivity near the center.

“WEIGHT”: represents the “RATES”, reducing the number will limit servo travel. +100 (deflection until programmed end points) to -100 (complete reversal of travel direction).

“SMOOTH”: Connects the individual curve points with a smooth line. POINT1-7 represents the location of the value.

“LINE”: Connects the individual curve points with a straight line. POINT1-7 represents the location of the value.

“MULTI_LINE”: Connects the individual curve points with several straight lines. POINT1-7 represents the location of the value.

“MULTI_SMOOTH”: Connects the individual curve points with several smooth lines.

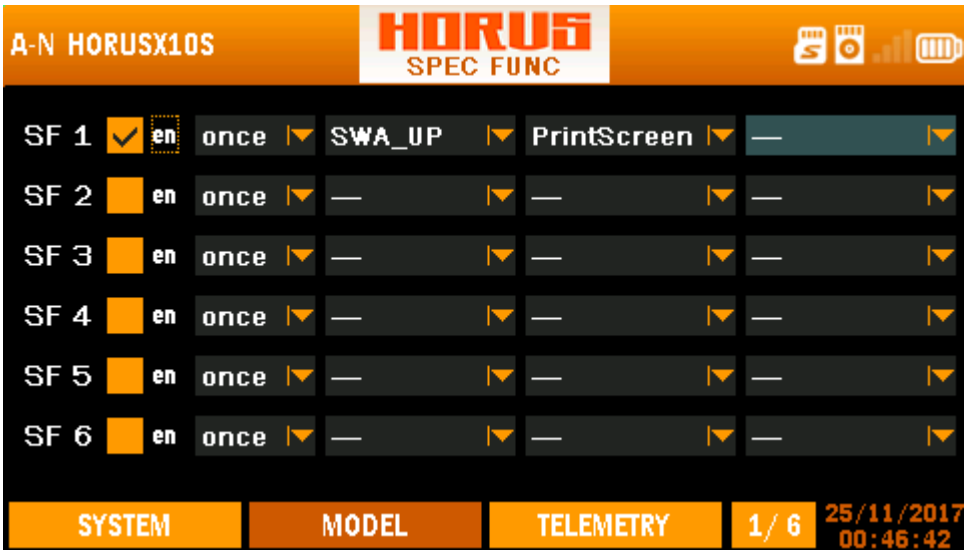
“POINT1-7”: Represents the location of the value. Under the MULTI_SMOOTH and MULTI_LINE modes, each point has two values while it only has one value under the LINE and SMOOTH modes. The meaning of the values could be set in mixers.

Right side of the screen

Depicts a visual aid to assist the user during programming.

NOTE: *IMPORT and EXPORT curve file location on microSD Card: \SYSTEM\curves*

7.1.11 SPECIAL FUNCTION



Overview of the special function menu screen

The illustration above is an example of the "SPECIAL FUNCTION" menu, to enter this menu press the "MDL" button, then select "SPECIAL FUN". Here the user can program the transmitter to produce alerts, sound and haptic, and play the values of telemetry data, etc. Special Functions can be activated by physical switches and logical switches. The PgUp/Dn button can be used to switch between the menu pages.

First (left) column

Is used to activate/deactivate the special function of the corresponding program line. Choose the checkbox and press the ENT button will enable the special function. Long pressing of the ENT button on the checkbox will allow to clear the special function. (There will be a pop up of warning for you to choose reset or not).

Second column

Allows the user to choose the time delay after the special function triggered or single pressing of the switch selected in the third column. The time delay is from 5s to 60s with the interval of 5s.

Third column

Allows the user to assign a switch: SWx Switch, SWEXTEL Switch, SWEXTER Switch, SWFLP Switch or Logic Switch by scrolling through the options with the rotary button or by operating the intended switch.

Fourth column

Allows selection of the action to be assigned when the switch is operated. The options to choose from are:

“Play Track”: Is used to assign a sound track to be played when a switch is triggered.

“Play Value”: Is used to assign a switch to call out a predetermined telemetry value.

“Haptic”: Allows the activation of the haptic feature when operating a switch or knob. This can be useful on a noisy flying field. When defining haptic active as warning notification (located in the “SYSTEM/SOUND” menu), “TRACK” and “VALUE” setting will produce a haptic signal, and thus requires no separate programing.

“Center Trim”: Is used to make all trims centred.

“Clear Cons”: When triggered, this feature will reset the stored consumption data.

“Tele Log”: When active it will store the recorded telemetry data on the microSD card and stored in the “LOGS” folder. This file can be opened with Excel (PC software).

“Printscreen”: Is used to make a screenshot of the current interface. It will be stored on the microSD card as a BMP file. There will be a beep when screenshot is completed.

“ReadTimer”: This allows the transmitter to read the value of the timer (Timer1/2).

“ReadBattery”: This allows the transmitter to read the value of the percentage of battery.

“Play Vario”: Is used to assign a switch to call out the value of the variometer.

Fifth column

Only comes active if the previous selected column has additional options to choose from. Only “Play Track”, “ReadTimer” and “Play Value” have this option, either stored sound files (.wav) or telemetry sources can be assigned.

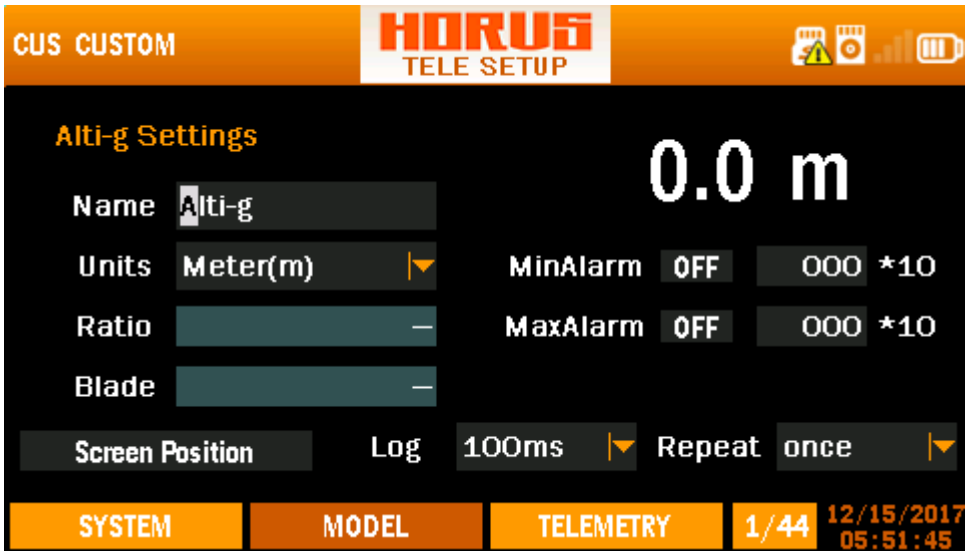
NOTE: *“Printscreen” will freeze the display, so be aware of this feature when using it and disabling it after use.*

NOTE: *“Play Track” is uesd to play customized files, the maximum .wav file density is 100kbs, and up to 100 sound files can be stored on the microSD card. The location on the microSD card is: \SOUNDS\Track\ xxx.wav.*

NOTE: *The user can delete unused programming lines by positioning the cursor on the activation square and pressing and holding on ENTER, and then follow the on screen instructions.*

NOTE: *The user can instantly assign a knob or switch simply by operating it while the applicable menu option is mounted.*

7.1.12 TELEMETRY SETUP



Overview of the telemetry setup menu screen

The illustration above is an example of the "TELEMETRY SETUP" menu, to enter this menu press the "MDL" button, then select "TELE SETUP". Here the user can choose a variety of sensors and customize each one of them. The order in which the telemetry data will be displayed to the user (accessed by the "TELE" menu button) can be modified by using the Screen Position located on the bottom left. The first page of the "TELE" menu will also be displayed on the "Home Screen" page 1/44. There is a separate screen for each telemetry sensor. The screens all follow a common layout, but the editable and non-editable fields change according to the nature of the sensor.
There will be a more detailed instruction in chapter 8.2 TELEMETRY SETUP MENU.

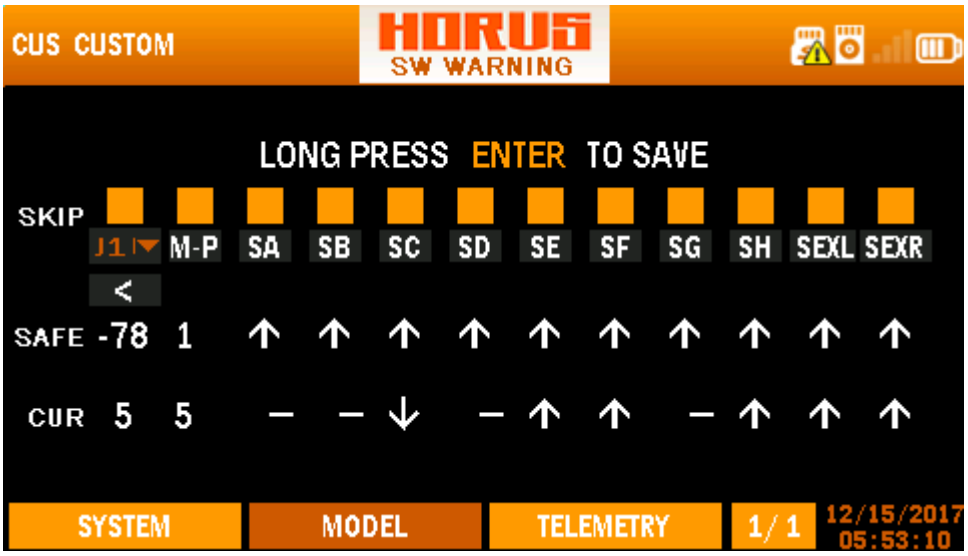
7.1.13 GENERAL

Overview of the general menu screen

The illustration above is an example of the “GENERAL” menu, to enter this menu press the “MDL” button, then select “GENERAL”. Here the user can deactivate menu features such as start-up sound, pop-ups and warnings.

CAUTION: *Users are advised that warnings should not be deactivated except in exceptional circumstances.*

7.1.14 SWITCH WARNING



Overview of the switch warning menu screen

The illustration above is an example of the “SW WARNING” menu, to enter this menu press the “MDL” button, then select “SW WARNING”. Most users will assign switches to functions like landing gear, flaps and engine/motor cut etc. Turning on the transmitter with an incorrect switch position may lead to a spool up of the motor and/or activation of the flaps/landing gears, etc.

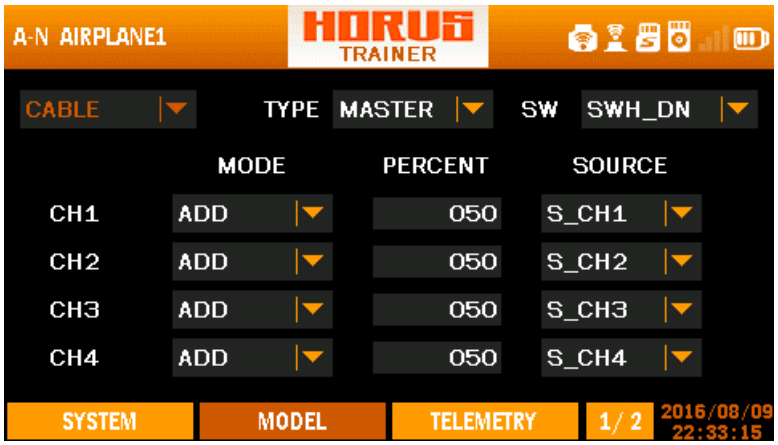
There is a safety feature in the start-up sequence of the transmitter which checks the position of the throttle and switches. This will generate a warning pop-up and pause the start-up if switches or throttle are not in their safe positions. After placing the switches and/or throttle in the safe position, all warnings will be suspended to allow the reworking of the transmitter.

The user can bypass the pop-up by pressing “ENTER”. To alter the trigger location of the stick and switches, place them in the required safe position, and then press and hold “ENTER” for 3 seconds. Press and hold TELE Button for 2 seconds, the user could reset timer 1/2. The picture is below.

NOTE: *The user can use the on-screen-position indicators to check switches, knobs, sliders and/or sticks that will trigger the alarm as well as take corrective actions.*

NOTE: *Warnings can be deactivated in GENERAL menu when the transmitter in power on. Please refer to chapter 6.1.13.*

7.1.15 TRAINER



Overview of the trainer menu screen

The illustration above is an example of the "TRAINER" menu, to enter this menu press the "MDL" button, then select "TRAINER". Here the user can choose the preferred connection methods (cable or wireless). The "WIRELESS" selection allows two HORUS radios connecting to each other through their internal wireless trainer modules. "CABLE" selection supports both Futaba and JR Pro style trainer cables that can be connected to sockets located on the rear of the transmitter (the external RF module bay is below). Control can be selected either via a switch or by directly overriding the controls. The end points of the 8 available channels (Slave) can be reduced according to the proficiency of the student.

Top of the screen

"CABLE/WIRELESS": Allows the selection of the desired connection type.

"TYPE": Sets the transmitter in ether "MASTER" or "SLAVE" mode.

"SW": When selecting "MASTER", the user has the option to set a intervene switch to retake control of the model.

Centre of the screen

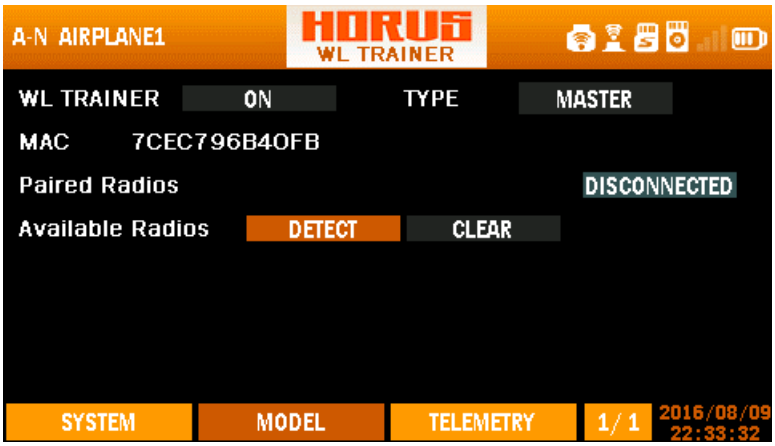
"CH1-8": Represent the eight available channels that can be controlled by the student, the student's transmitter will have an empty menu screen and can't make settings change.

"MODE": Has three options "ADD", "REPLACE" and "OFF".

“PERCENT”: Allows the reduction of the travel range of the selected channels, thus allowing students to fly with reduced rates. The default value is 50 and the range of the percent is 0-100.

“SOURCE”: Allows to change the channel arrangement to support multiple “STICK MODES” as this can change between users.

The “WIRELESS” menu is identical to “CABLE” except that it allows to set up the connection via the pairing menu. Select the gear icon in the top left corner of the screen to enter the menu illustrated below.



Overview of the wireless trainer pairing menu screen

Here the “MASTER” can connect to the “SLAVE” transmitter, both transmitters need to be set in “WIRELESS” mode for the pairing to succeed.

“WL TRAINER”: Allows to turn the connection on or off.

“MAC”: Displays the transmitter identification code that can be used to find the correct transmitter to pair with when multiple transmitters are in pairing state.

“Paired Radios” Displays the identification code of the connected transmitter.

“Available Radios” Displays the available transmitters that are in pairing mode.
“DETECT” Allows to refresh the list of available transmitters.

“CLEAR” Allows to clear the list of available transmitters.

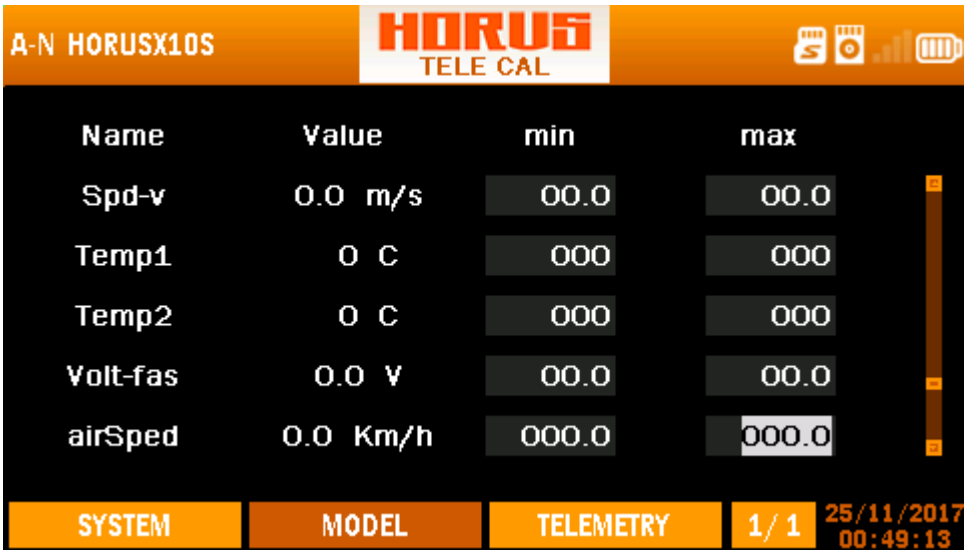
“DISCONNECTED/CONNECTED” Displays the connection status of the “MASTER” transmitter.

CAUTION: *Always check for correct system operation, after setting up trainer mode. Failure to do so can lead to unexpected system behaviour, and may result in damage and/or serious injury.*

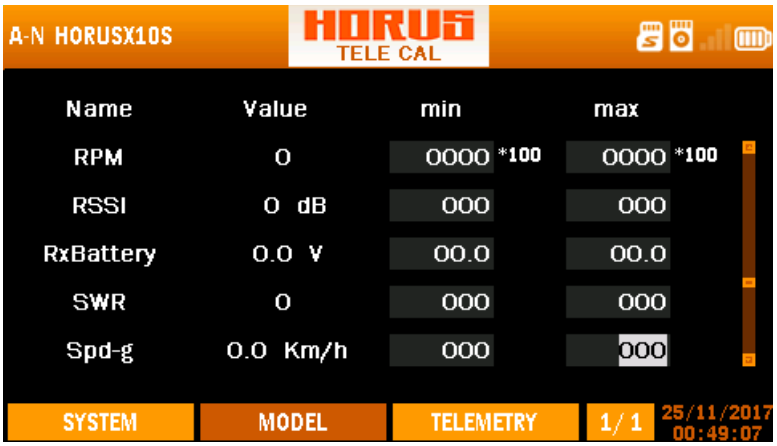
NOTE: *In order to pair the transmitters the user must first choose "SLAVE" as type and turn on the student's transmitter (also as slave), then turn on "MASTER" side.*

NOTE: *Wireless trainer can only be used when both users are using a HORUS transmitter.*

7.1.16 TELE CAL



Overview of the telemetry calibration menu screen



Overview of the telemetry calibration menu screen

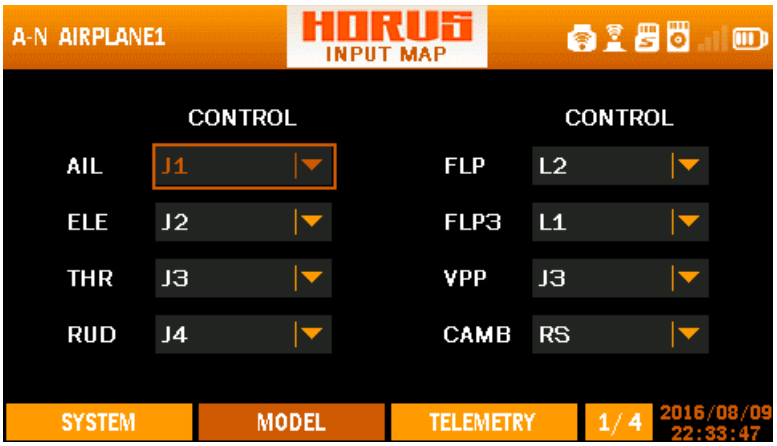
The first column of the screen

The names of parameters are explained at Pg.1

The second column of the screen
The values of the options in the first column.

The last two column of the screen
The minimum and maximum values.

7.1.17 INPUT MAP



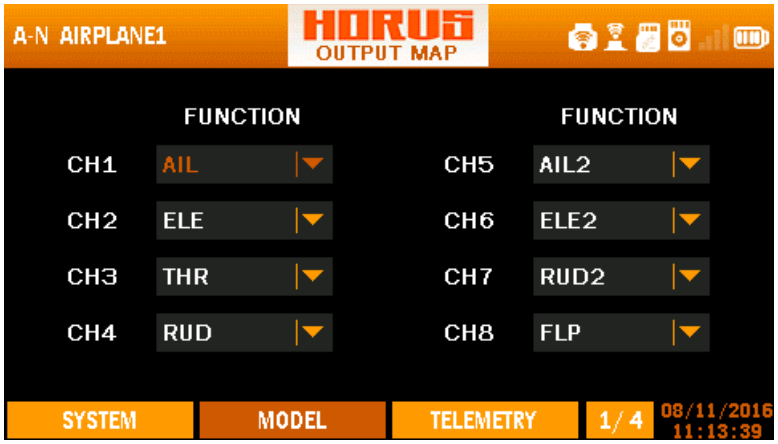
Overview of the input map menu screen

The illustration above is an example of the "INPUT MAP" menu, to enter this menu press the "MDL" button, then select "INPUT MAP". Here the user can reassign hardware inputs to the desired functions, which allows the optimum control layout depending on the requirements of the user. The first page of this menu can be interpreted as the "source" and "switch" programing in "MIXER", only here it represents those of the preprogramed "predefined mixes". The PgUp/Dn button can be used to switch between the menu pages.

Input map		**Output map**
AIL	=	AIL1-4
ELE	=	ELE1-2
THR	=	THR
RUD	=	RUD1-2
FLP	=	FLP (1) and FLP 2
FLP 3	=	FLP3 and FLP 4 -> BRKFLP = airbrakes/spoilers
VPP	=	VPP
CAMBER	=	CAMBER = flaperon mix
GEAR	=	GEAR
AUX	=	AUX1-16

CAUTION: *Always check for correct system operation, after making changes to the INPUT MAP. Failure to do so can lead to unexpected system behaviour, and may result in damage and/or serious injury.*

7.1.18 OUTPUT MAP



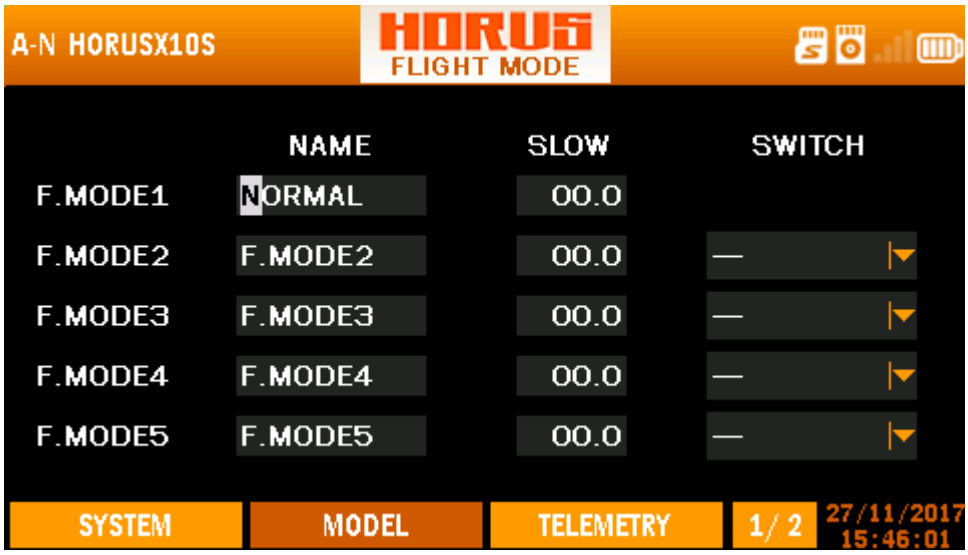
Overview of the output map menu screen

The illustration above is an example of the "OUTPUT MAP" menu, to enter this menu press the "MDL" button, then select "OUTPUT MAP". Here the user can assign functions to the available receiver channels, up to 32 channels can be selected for a variety of tasks. The PgUp and PgDn buttons can be used to switch between the menu pages.

Input map		**Output map**
AIL	=	AIL1-4
ELE	=	ELE1-2
THR	=	THR
RUD	=	RUD1-2
FLP	=	FLP (1) and FLP 2
FLP 3	=	FLP3 and FLP 4-> BRKFLP = airbrakes/spoilers
VPP	=	VPP
CAMBER	=	CAMBER = flaperon mix
GEAR	=	GEAR
AUX	=	AUX1-16

CAUTION: *Always check for correct system operation, after making changes to OUTPUT MAP. Failure to do so can lead to unexpected system behaviour, and may result in damage and/or serious injury.*

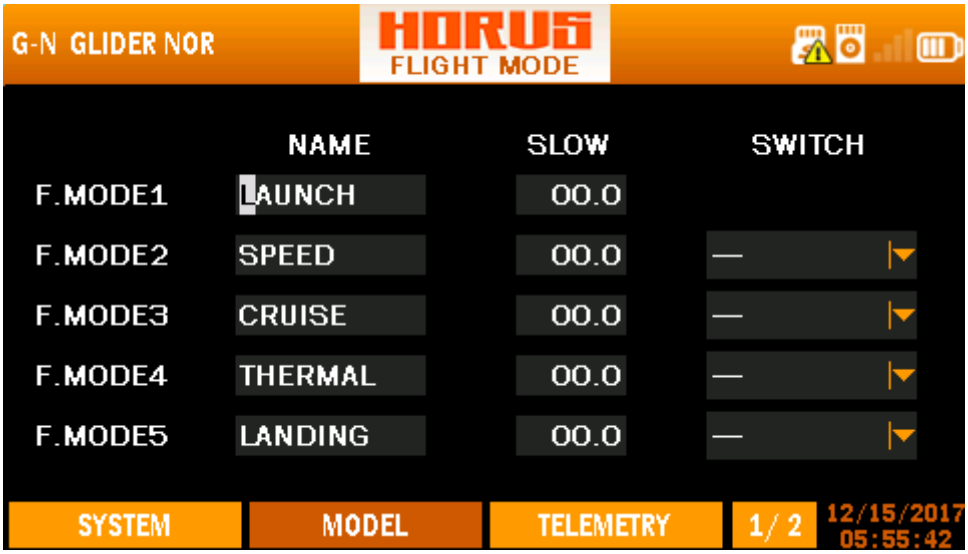
7.1.19 FLIGHT MODES



Overview of the flight mode (helicopter) menu screen

The illustration above is an example of the helicopter "FLIGHT MODE" menu. To enter this menu, press the "MDL" button and move to the second page, selecting "FLIGHT MODE". The user can program up to nine different flight conditions when using "CUSTOM" while gliders, helicopters and multicopters only have five. This feature is commonly used to combine multiple requirements to one switch with the purpose of reducing the work load of the user.

Switches can assign to all except under the "NORMAL" mode in which "HOLD" has the highest priority. It always (also under all other model types) degrades from the bottom to the top, making "NORMAL" the lowest priority. For example, when the assigned switches of IDLE2 and HOLD are both activated, the system prioritizes and activates only the HOLD condition.



Overview of the flight mode (glider) menu screen

The illustration above is an example of the glider “FLIGHT MODE” menu, operation is identical to the other model types. Priority starts with “LANDING” degrading upward resulting in that “NORMAL” is the lowest.

The illustration above is an example of the custom “FLIGHT MODE” menu, operation is identical to the other model types. Priority starts at the highest number degrading downward while “NORMAL” is the lowest. PgUp/Dn can be used to navigate between the two menu pages.

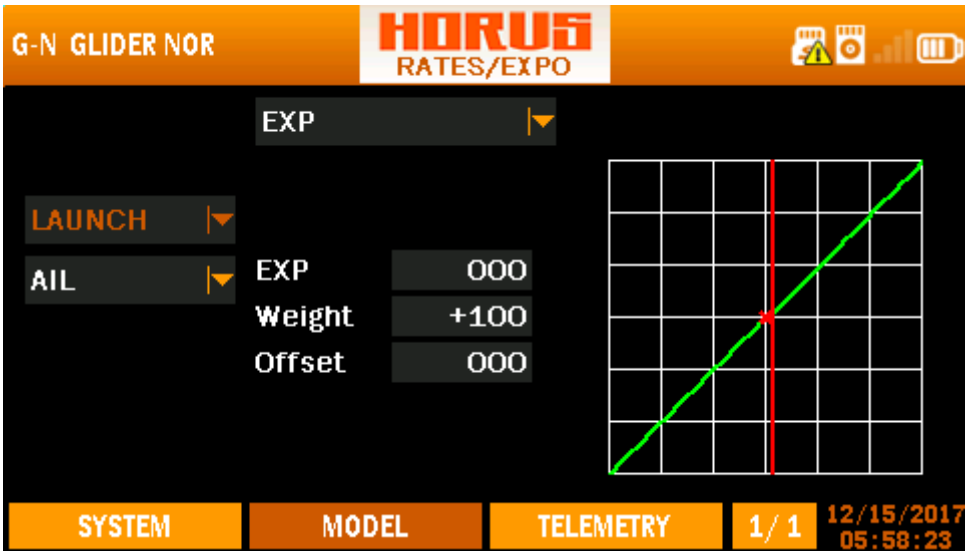
“NAME”: When applying a custom model type, the “FLIGHT MODE” names can be changed to fit the requirements of the user.

“SLOW”: Allows the user to slow down the transition speed when switching to the required “FLIGHT MODE”, thus to avoid fast movement of control surfaces (like flap) and allow to recover from incorrect operation of buttons before the selected task is completed.

“SWITCH”: Allows to assign a switch or M-POS knob to the required “FLIGHT MODE” condition.

NOTE: *Press and hold the “RTN” button to instantly enter the “Monitor” menu, press “RTN” again to return to the previous menu. This shortcut allows the user to check the made changes in the monitor menu, without having to scroll through the menu.*

7.1.20 RATES/EXPO



Overview of the rates/expo menu screen

The illustration above is an example of the “RATE/EXPO” menu, to enter this menu press the “MDL” button, then select “RATES/EXPO”. Here the user can set up multiple deflection

rates and exponential to create custom curves that can be assigned to a switch or “FLIGHT MODE”. The operation of this menu is similar to setting up “CURVE LIB” and “MIXER”.

Left side of the screen

Depending on the selected model type the user can either assign “FLIGHT MODES” or switches (Helicopter only) to active the programmed curve.

Centre of the screen

“EXP”: Automatically generated Exponential curves are produced when using this feature, +100 to -100 can be programmed, increasing or reducing the sensitivity near the centre. “Weight”: represents the “RATES”, reducing the number will limit servo travel. +100 (deflection until programmed end points) to -100 (complete reversal of travel direction). “Offset” is used to relocate the centre position.

“LINE/SMOOTH”: Are used to manually adjust the shape of the curve. Up to7 segments can be adjusted either via straight lines or smooth curves, depending on the selected option.

“MULTI LINE/MULTI SMOOTH”: Are used to manually adjust the shape of the curve with several straight lines or smooth curves, the same with LINE/SMOOTH in essence.

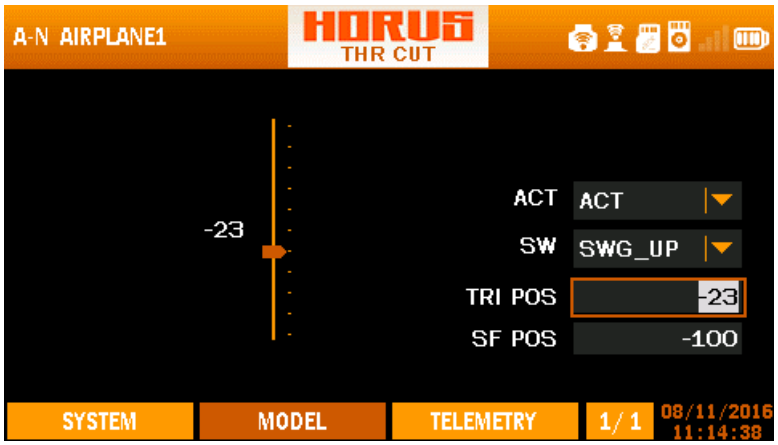
Right side of the screen

Depicts a visual aid to assist the user during programming.

NOTE: *The user can instantly assign switch simply by operating it while the applicable menu option is mounted.*

NOTE: *Press and hold the “RTN” button to instantly enter the “Monitor” menu, press “RTN” again to return to the previous menu. This shortcut allows the user to check the made changes in the monitor menu, without having to scroll through the menu.*

7.1.21 THROTTLE CUT



Overview of the throttle cut menu screen

The illustration above is an example of the "THR CUT" menu. To enter this menu, press the "MDL" button and move to the second page, then select "THR CUT". Here the user can set up the "throttle cut" on IC engines, or a throttle deactivation switch on electric-powered models. Before programming SF POS, the user must first set the desired throttle end points in the "END POINT" menu.

IC engine powered models

This feature is used to shut down internal combustion engines. We recommend using this feature in combination with the "THROTTLE CURVE" feature on a three-position switch to set up a ground and a flight idle position. A higher idle RPM during flight will prevent the engine turning off during violent 3D flight with low-power setting, or unexpected high speed stalls ending in a spin. Three parameters need to be set to ensure correct operation of the throttle cut feature.

After activating the menu feature, the first step is to assign a switch to activate the throttle cut, the second step is to set up the "TRI POS" (trip) by moving the throttle to the point where the engine runs at the desired (equal or just above idle) RPM (make sure servo travel allows a lower RPM setting that shuts down the engine). The third and final step is to set up "SF POS" (safe), it must be below the idle position to ensure the engine shut down. TRI POS also determines the position of the throttle stick that is required to disarm the throttle cut feature. This means that the cut feature can only be deactivated with the throttle stick in the idle position (TRI POS).

Electric-powered models

This safety feature is used to protect the user from accidental spool up of the motor when bumping the throttle stick or dropping the transmitter. We recommend always using this safety feature, preferably in combination with the "switch warning" feature (switch in save position), to ensure safe operation. Three parameters need to be set to ensure the throttle cut feature operate safely.

After activating the menu feature, the first step is to assign a switch to activate the throttle cut protection, the second step is to mount "TRI POS" and move the throttle stick to max, or use the rotary knob to set it at +100, press enter to confirm the setting. The third and final

step is to set up the save position by mounting “SF POS” and set it at -100 to -125 depending on the programmed “end point” of the throttle channel.

Left side of the screen

Depicts a visual aid to assist the user during programming.

Right side of the screen

“ACT/INH”: Represents activating/Inhabiting the function

“SW”: Represents Switch, SWx, SWEXTER, SWFLP, LSW.

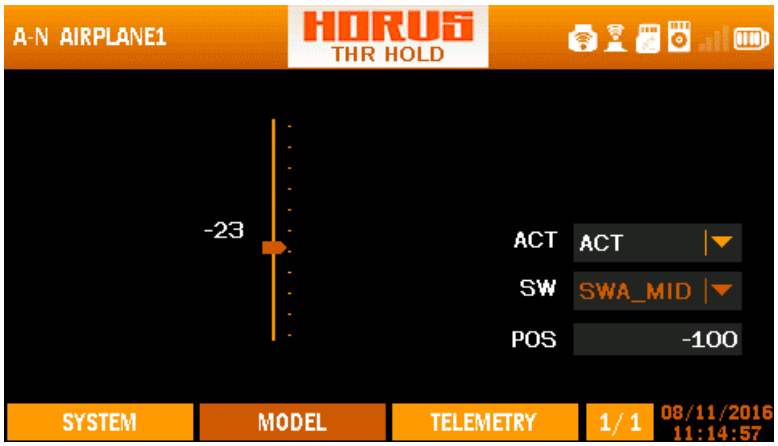
“TRI POS”: Represents the trigger position.

“SF POS”: Represents the safe position.

NOTE: TRI POS is represents the position of the throttle stick and SF POS is the output value displayed in the “MONITOR” menu screen, SF POS will not exceed the LIMIT value set in the “ENDPOINT” menu.

DANGER: *We recommend to ALWAYS! Remove the propeller/rotor blades during testing, if this is not possible make sure you take the appropriate safety precautions.*

7.1.22 THROTTLE HOLD



Overview of the throttle hold menu screen

The illustration above is an example of the “THR HOLD” menu, to enter this menu press the “MDL” button, then select “THR HOLD”. Here the user can set up a switch to hold a preprogramed throttle position. It can be used to set up a predetermined power setting that overrules the throttle stick position. It can be used as a throttle deactivation switch on electric-powered models. Two parameters need to be set to ensure that the throttle hold feature operates as required. After activating the menu feature, the first step is to assign a switch to activate the throttle

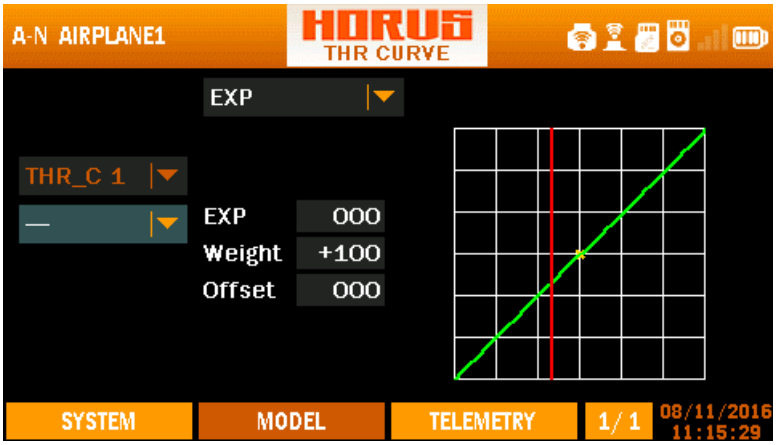
hold, the second step is to decide the throttle setting to which the setting should go to when activated.

NOTE*: If your model is equipped with a throttle governor, there is no need to activate the throttle hold function of the transmitter. Please refer to the manual of your governor system.*

NOTE: *This menu can be used in combination with "Pitch Curve" to set up an idle RPM when the blades have a capability to be set at a neutral pitch.*

NOTE: *This menu can be combined with "Throttle Cut" to set up 2 safety switches.*

7.1.23 THROTTLE CURVE



Overview of the throttle curve menu screen

The illustration above is an example of the "THR CURVE" menu, to enter this menu press the "MDL" button followed by PgUp/Dn, then select "THR CURVE". Here the user can adjust the throttle curve. The function of this menu is to adjust the correlation between the transmitter's throttle stick position and the actual power units under a certain power setting. When using gas/glow engines, throttle curves can be used to get a linear throttle response. By increasing the movement of the throttle servo, the engine generates less torque and reduces the movement on the top end to get the linear feel in the stick. When using electric setups, throttle curve can be used to reduce the sensitivity on overpowered planes to have better control during landing. Electric 3D pilots can use this feature to set up an idle to prevent the esc from switching off during low power throttle pulsing, this function only triggers by changing the first data point up until the required setting is reached. This last feature works well in combination with the "throttle cut" feature on a 3 position switch. The user can customize up to seven points according to personal requirements, depending on the selected model. The operation of this menu is similar to setting up "CURVE LIBRARY" and "MIXER".

Left side of the screen

Depending on the selected model type the user can either assign “FLIGHT MODES” or switches (Airplane only) to active the programmed curve.

Centre of the screen

“EXP”, “LINE” and “SMOOTH” are the types of programming option available to the user. “EXP” automatically generated Exponential curves are produced when using this feature, “weight” represents the “RATES”, reducing the number will limit servo travel.

“LINE”, “SMOOTH”, “MULTI-LINE” and “MULTI-SMOOTH” are used to manually adjust the shape of the curve. Up to7 segments can be adjusted either via straight lines or smooth curves, depending on the selected option.

Right side of the screen

Depicts a visual aid to assist the user during programming.

DANGER: *We recommend to ALWAYS! Remove the propellers during testing, if this is not possible make sure you take the appropriate safety precautions.*

NOTE*: Press and hold the “RTN” button to instantly enter the “Monitor” menu, press “RTN” again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.1.24V-TAIL

Overview of the V-tail menu screen

The illustration above is an example of the “V-TAIL” menu, to enter this menu press the “MDL” button followed by PgUp/Dn, then select “V-TAIL”. Here the user can program the V-tail mix if the model has a V-tail configuration. Depending on the selected model type, “FLIGHT MODE” can be programmed.

Top of the screen

“ELEVATOR UP/DOWN” is to set up the travel range and correlation between the rudder and elevator channel when applying the elevator.
“RUDDER&ELE LEFT/RIGHT” is to set up the travel range and correlation between the rudder and elevator channel when applying the rudder.

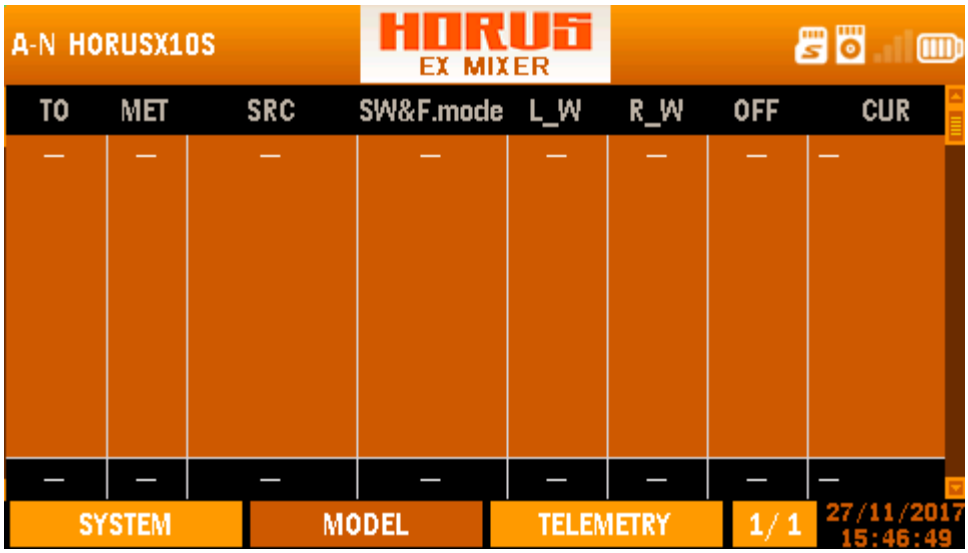
Bottom of the screen

Depending on the selected model type, the user can either assign “FLIGHT MODE” and/or switches to active the programmed curve.

CAUTION: *Always check for correct system operation after making changes to flight-control-related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the “RTN” button to instantly enter the “Monitor” menu, press “RTN” again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.1.25 EXTRA MIXER



Overview of the extra mixer menu screen

The illustration above is an example of the “EXTRA MIXER” menu, to enter this menu press the “MDL” button followed by PgUp/Dn, then select “EX MIXER”. In order to meet the demands of accomplishing model customization, the user can customize the mixer setting to achieve configurations beyond the predefined transmitter mixes.

“TO”: Represents the channels that are mixed to.

“MET”: Method, allows to change the insertion method of the signal produced by the mixer.
+ add signal produced by the “MIXER” to the selected output channel.

* multiply by
: replace with

"SCR": Source, allows the user to assign a hardware input to operate the "MIXER"

"SW": Switches, allows to assign an activation switch to turn the mix on or off, this can be done with hardware switches and logic switches.

"F.MODE": Flight mode, allows to determine during which mode the mixer is active.

"L_W": Left Weight, allows to set the limits of the travel range of the signal to the left

"R_W": Right Weight, allows to set the limits of the travel range of the signal to the right

"OFF": Offset, allows to change the centre (0) position of the signal.

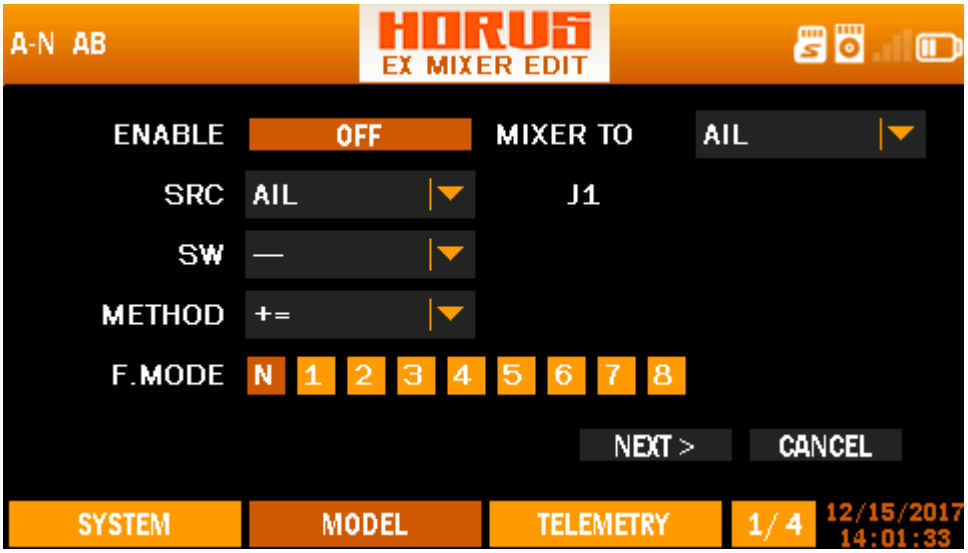
"CUR": Curve, allows to add custom curves created in "CURVE LIBRARY" in to the "MIXER"

Place the cursor to the column and the first slot in the list will light up. At this time press ENTER to select a slot and an operation box will pop up for edit and reset.

"Edit": Edit the currently selected slot.

"Reset": reset the currently selected slot.

PAGE 1/4



Overview of the mixer edit menu 1/4 menu screen

The illustration above is an example of the "EXTRA MIXER" menu. It is the first of four program pages that can be edited. Here the user can create the basis of the channel, where is coming from (SRC), when it's active (SW and F.MODE), how it behaves (METHODE),

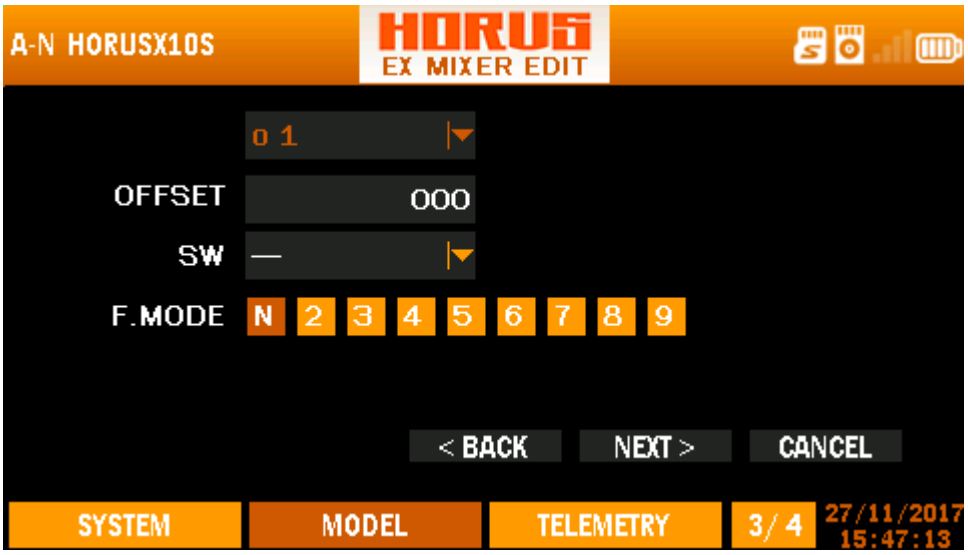
what is the maximum/minimum delay/speed，which F.Mode (N-9) should choose, which channel is mixed to.

PAGE 2/4

Overview of the mixer edit menu 2/4 menu screen

The illustration above is an example of the “EXTRA MIXER” menu, it’s the second of four program pages that can be edited. Here the user can modify the limits of the signal (end points), this is similar to setting up “WEIGHT” in “RATE/EXPO” and “CURVE LIBRARY”. Up to 9 “WEIGHTS” (W1-9) can be programmed and can be connected with switches, “LOGIC SWITCHES” and “FLIGHT MODES” to determine when it may become active.

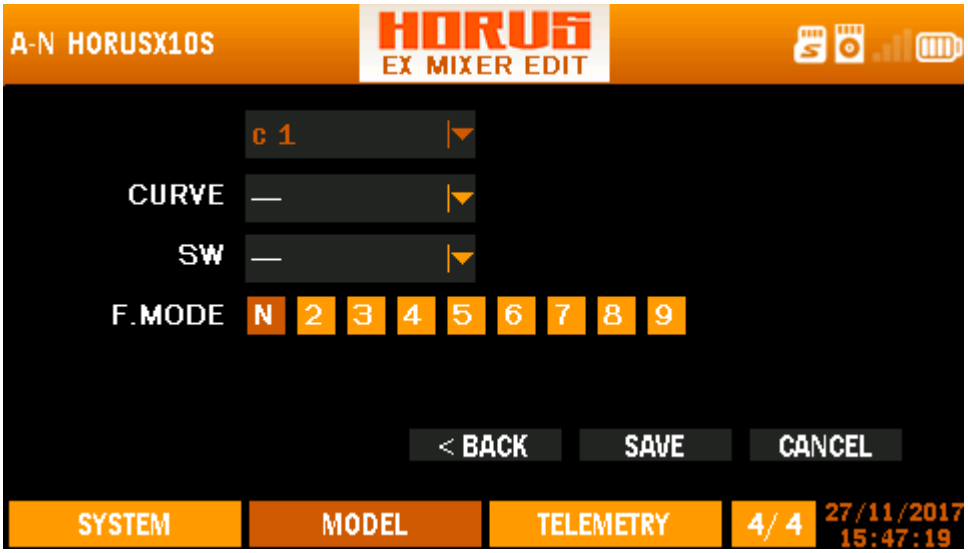
PAGE 3/4



Overview of the mixer edit menu 3/4 menu screen

The illustration above is an example of the “EXTRA MIXER” menu, it’s the third of four program pages that can be edited. Here the user can modify the center position of the signal, this is similar to setting up “OFFSET” in “RATE/EXPO” and “CURVE LIBRARY”. Up to 9 “OFFSET” (1-9) can be programmed and can be connected with switches, “LOGIC SWITCHES” and “FLIGHT MODES” to determine when it may become active.

PAGE 4/4

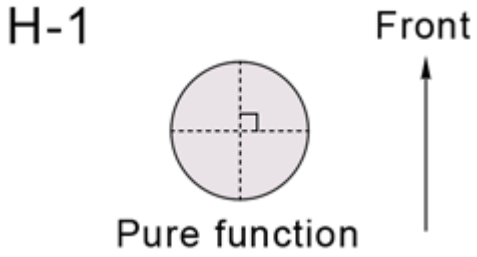


Overview of the mixer edit menu 4/4 menu screen

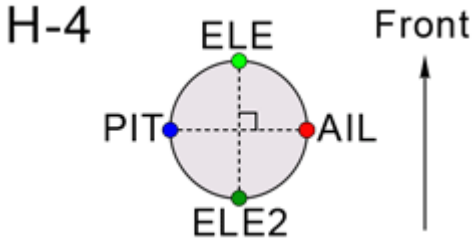
The illustration above is an example of the “EXTRA MIXER” menu, it’s the last of four program pages that can be edited. Here the user can assign created curve in “CURVE LIBRARY”. Up to 9 “WEIGHTS” (W1-9) can be programmed and can be connected with switches, “LOGIC SWITCHES” and “FLIGHT MODES” to determine when it may become active. As “WEIGHT” and “OFFSET” are identical programming options as in “CURVE LIBRARY”, the previous two menu pages can be skipped when the user uses curves created in “CURVE LIBRARY”

7.2 MODEL (HELICOPTER)

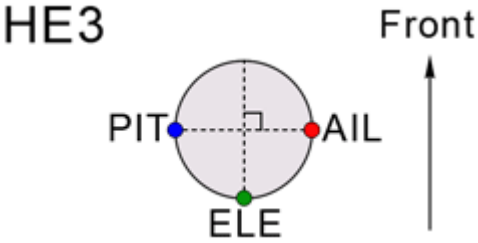
This section of the manual goes specifically about predefined helicopters mixes, there are six types of swash plate settings available. During and/or after the creation of a helicopter model, the user can choose preprogramed settings from the second tab to select the desired settings.



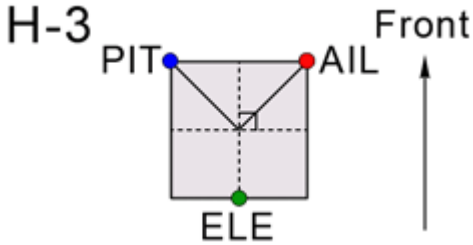
H-1 TYPE: Is commonly known as a *"Pure Function" or "single servo" (most flybarless helicopters use this type).*



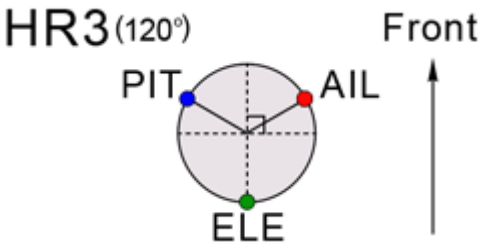
H-4 TYPE: Has the *input points positioned as illustrated, and has a 4 servo CCPM, with the servos positioned at 90 degrees from each other.*



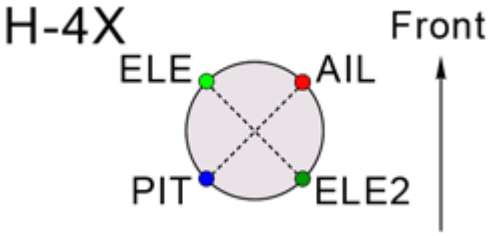
HE3 TYPE: *Has the input points positioned as illustrated. The Aileron and pitch servos (at 180 degrees) tilt the swashplate left and right. The Elevator servos tilts the swashplate forward and afterward.*



H-3 TYPE: *Has the input points positioned as illustrated. The Aileron and pitch servos (at 80 degrees) tilt the swashplate left and right. The Elevator servos tilts the swashplate forward and afterward.*



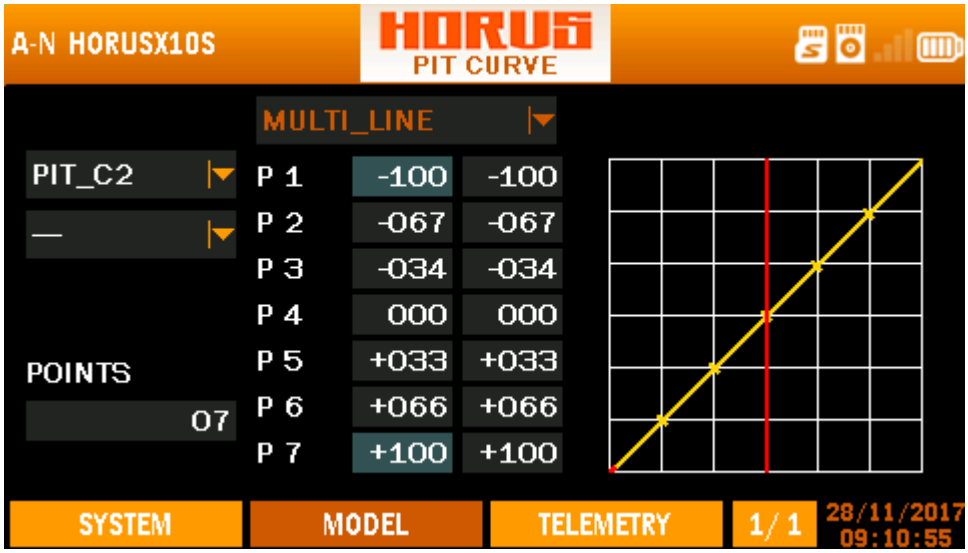
HR3 TYPE: *Has the input points positioned at 120 degrees. Other than that H-3 operation is almost identical to HE3 and HR3.*



H-4X TYPE: Has the *input points positioned as illustrated, and has a 4 servo CCPM, with the servos positioned at 90 degrees from each other, but at 45 degrees from the center line.*

NOTE: *"CCPM" stands fore "Cyclic-Collective-Pitch-Mixing", this can be done either mechanical or via channel mixing.*

7.2.1 PITCH CURVE



Overview of the pitch curve menu screen

The illustration above is an example of the "PIT CURVE" menu, to enter this menu press the "MDL" button followed by PgUp/Dn, and then select "PIT CURVE". Here the user can adjust the pitch curve on each individual flight mode to facilitate the required settings to ensure optimal operation. Pitch curve represents the main blade angles and should be set up according to the models' limitations, which can be found in its user's manual. When setting up a model, the user can setup the pitch curve by using a special pitch angle measuring tool to acquire the desired setting for each of the available "FLIGHT MODES". The operation

of this menu is similar to setting up “CURVE LIBRARY” and “MIXER”, there will be a more detailed instruction in the “setup guide” on how to use this menu.

Left side of the screen

“PIT_C1-- PIT_C9: Represents the available flight modes that can be selected.

SWX (A-H) UP/MID/DN, SWEXTL_UP/DN, SWEXTR_UP/DN, SWFLP_ X (1-6), LSW 1—LSW8: Represents physical or logic switches to draw thr curves.

Center of the screen

“EXP”: Automatically generated Exponential curves are produced when using this feature, +100 to -100 can be programmed, with + reducing and – increasing the sensitivity near the center. “Weight” represents the “RATES”, reducing the number will limit servo travel. +100 (deflection until programmed end points) to -100 (complete reversal of travel direction). “Offset” is used to relocate the center position.

“LINE/SMOOTH”: Are used to manually adjust the shape of the curve. Up to 7 segments can be adjusted via straight lines or smooth curves, depending on the selected option.

“MULTI_LINE/MULTI_SMOOH”: Are used to manually adjust the shape of several curves. Up to 7 segments can be adjusted either via straight lines or smooth curves, depending on the selected option.

Right side of the screen

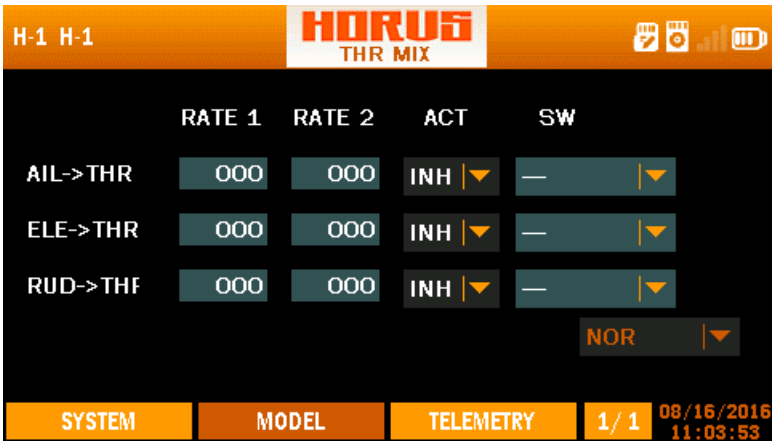
Depicts a visual aid to assist the user during programming.

DANGER: *Never exceed the maximum blade angle limits specified by the models manufacturer, failing to do so can lead to structural damage and components being ejected from the model at high velocity!*

NOTE: *Press and hold the “RTN” button to instantly jump to the “Monitor” menu, press “RTN” again to return to the previous menu. This shortcut allows the user to check the made changes in the monitor menu, without having to scroll through the menu.*

7.2.2 THROTTLE MIX

The illustration below is an example of the “THROTTLE MIX” menu, to enter this menu press the “MDL” button followed by PgUp/Dn, then select “THROTTLE MIX”. Here the user can mix aileron, rudder and elevator with throttle, thus to counter torque forces created by the spinning blades. By activating the mix the user gets two “rate” options for the two side of the stick. Users can set different rates for each flight mode and the possibility to assign the mix to a switch.



Overview of the throttle mix (heli) menu screen

Setting up throttle mix: "FLIGHT MODE" can be selected in the lower right corner of the menu (The default mode is NORMAL), In order to make changes the user must first activate (select and change the INH option to ACT) the required throttle mix.

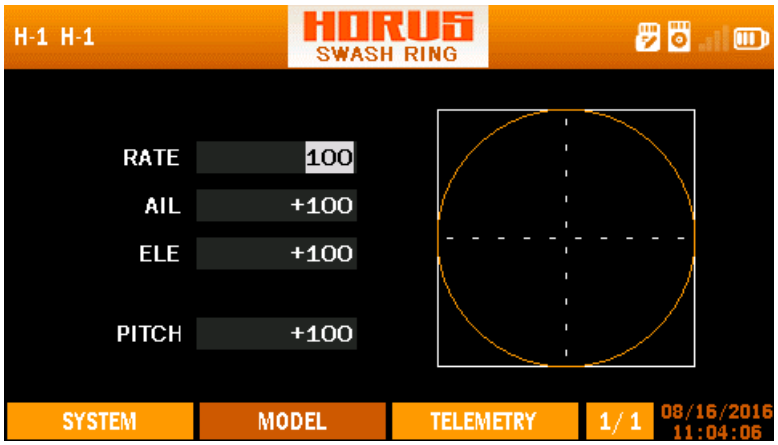
DANGER: *We recommend to ALWAYS! Remove the blades during testing, if this is not possible make sure you take the appropriate safety precautions.*

NOTE: *FBL systems do not require the use of the "THROTTLE MIX" function. This is only valid if your model is equipped with a fly-bar.*

NOTE*: Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to check the made changes in the monitor menu without scrolling through the menu.*

7.2.3 SWASH RING

The illustration below is an example of the "SWASH RING" menu, to enter this menu press the "MDL" button followed by PgUp/Dn, then select "SWASH". Here the user can set up the deflection range of the aileron, elevator and pitch, as well as setting the travel limit of the swash ring.



Overview of the swash ring menu screen

Left side of the screen

"RATE": Represents the total deflection range of the three channels. Changes to this setting will affect "AIL", "ELE".
"AIL": Represents the aileron channel, its deflection limit can be set up here.
"ELE": Represents the elevator channel, its deflection limit can be set up here.
"PITCH": Represents the pitch angle of the blades, the maximum defection angle can be set up here.

Right side of the screen

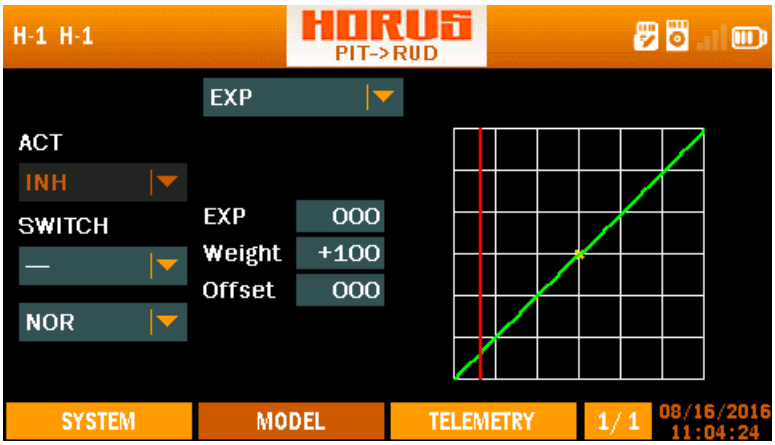
Depicts a visual aid to assist the user during programming.

NOTE: *FBL systems do not require the use of the" SWASH RING" menu. In order to adjust the cyclic servo travel limits, please refer to the manual that is supplied with the model.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to check the made changes in the monitor menu, without having to scroll through the menu.*

7.2.4 PITCH→RUDDER

The illustration below is an example of the "PITCH->RUDDER" menu, to enter this menu press the "MDL" button followed by PgUp/Dn, then select "PITCH->RUDDER". Here the user can mix "PITCH" with "RUDDER", thus to automatically counter the generated torque created by the main rotor. When using a model with a tail rotor without variable pitch, the user can install a gyro to compensate for the generated coupling.



Overview of the pitch->rudder menu screen

Left side of the screen

“ACT/INH”: Turns the mix on or off.

“SWITCH”: Is used to assign the mix to a switch or knob.

"NOR", "IDLE1", "IDLE2", "IDLE3", "HOLD" represent the available flight conditions that can be selected.

Center of the screen

“EXP”: Automatically generated Exponential curves are produced when using this feature, +100 to -100 can be programmed, with + reducing and – increasing the sensitivity near the center.

“Weight”: Represents the “RATES”, reducing the number will limit servo travel. +100 (deflection until programmed end points) to -100 (complete reversal of travel direction).

“Offset” is used to relocate the center position.

“LINE/SMOOTH”, “MULTI-LINE/MULTI-SMOOTH”: Are used to manually adjust the shape of the curve. Up to7 segments can be adjusted either via straight lines or smooth curves, depending on the selected option.

Right side of the screen

Depicts a visual aid to assist the user during programming.

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to check the made changes in the monitor menu, without having to scroll through the menu.*

7.2.5 GYRO

Overview of the gyro menu screen

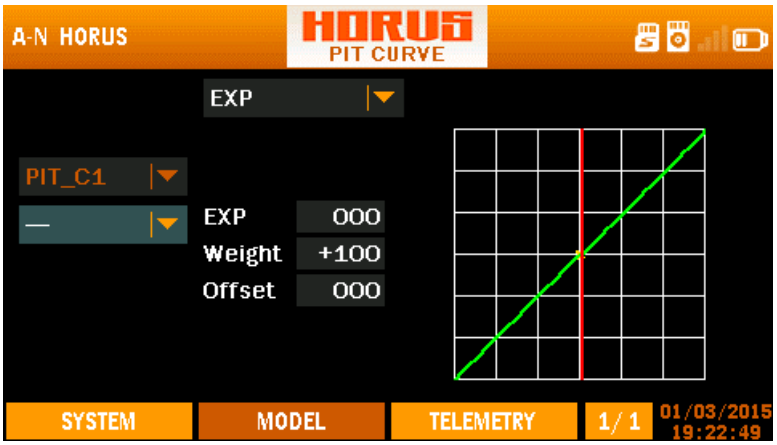
The illustration above is an example of the "GYRO" menu, to enter this menu press the "MDL" button, then select "GYRO". Here the user can remotely (only if the installed model hardware supports this feature) adjust the gain on a 3 axis gyro on each of the 5 available "flight modes" (The default value is 50). To guarantee correct operation of the gyro, closely follow the manual recommendations supplied with the unit. Reduce the value when the model moves erratic and is unable to fly straightly, increase the value when more assistance is required on the required axis. Most user will set the value to just below the point where erratic behaviour is detected.

"NORMAL", "IDLE1-3", "HOLD", "F.MODE6-9": Represents the available flight modes.

7.3 MODEL (AIRPLANE)

This section of the manual covers fixed wing airplanes and the predefined mixes that are only shared with glider model types.

7.3.1 PITCH CURVE (FIXED-WING)



Overview of the pitch curve menu screen

The illustration above is an example of the "PIT CURVE" menu, to enter this menu press the "MDL" button, and then select "PIT CURVE". Here the user can set up nine pitch curves when using a variable pitch propeller. Some planes are fitted with a variable pitch propeller to allow variable thrust at a constant RPM, 4D and scale models may allow reversal of the thrust direction. The operation of this menu is similar to setting up "CURVE LIBRARY" and "MIXER", there will be a more detailed instruction in the "setup guide" on how to use these menus.

Left side of the screen

"PIT_C1-9" represent the 9 available setup lines.

Centre of the screen

"EXP": Automatically generated Exponential curves are produced when using this feature, +100 to -100 can be programmed, with + reducing and – increasing the sensitivity near the center. "Weight" represents the "RATES", reducing the number will limit servo travel. +100 (deflection until programmed end points) to -100 (complete reversal of travel direction). "Offset" is used to relocate the center position.

"LINE/SMOOTH", "MULTI_LINE/MULTI_SMOOTH": Are used to manually adjust the shape of the curve. Up to7 segments can be adjusted either via straight lines or smooth curves, depending on the selected option.

Right side of the screen

Depicts a visual aid to assist the user during programming.

DANGER: *Never exceed the maximum blade angle limits specified by the models manufacturer, failing to do so can lead to structural damage and components being ejected from the model at high velocity!*

DANGER: *We recommend ALWAYS! Remove the propellers during testing, if this is not possible, make sure you take the appropriate safety precautions.*

NOTE: *This feature requires a model that has a variable pitch propeller system.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.2 AILERON DIFFERENTIAL

Overview of the swash ring menu screen

Shown on the illustration above is an example of the "AIL DIFF" menu, to enter this menu press the "MDL" button followed by PgUp/Dn, then select "AIL DIFF". Here the user can adjust the travel range of each roll direction. Up to 4 aileron channels can be programmed with the range from -100 to +100. On wings without a symmetrical air foil, identical opposite aileron deflection will results in an uneven increase of drag and reduction of lift due to the uneven aerofoil shape created after the movement of the control surfaces. This

will lead to (unwanted) coupling, and can be reduced by programming aileron differential (uneven aileron deflection) to equalize the drag numbers and reduce the loss of lift. When in a banked corner, the lower wing aileron deflection is set up to deflect less than the upper wing. When using glider type the settings can be assigned individually to the five available glider

"AIL1-4": Represent the 4 available aileron channels.

"LEFT-RIGHT": Allows setting up the aileron differential.

"**#1- #9**": Represents 9 different options.

"**Switch**": Is used to assign the function to a switch or knob.

CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE*: Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.3 FLAP SET

Overview of the flap setup menu screen

Shown on the illustration above is an example of the "FLAP SET" menu, to enter this menu press the "MDL" button, then select "FLAP SET". Here the user can adjust the travel range up to 4 flap channels with the range from -100 (reversed signal) to +100 (default setting), and adjust their individual neutral positions by adjusting the offset value. When using glider type the settings can be assigned individually to the five available glider "FLIGHT MODES".

Left side of the screen

"FLP-FLP4" represents the four available flap channels assigned to the flap switch.
"UP-DOWN" allows programing of flap travel.

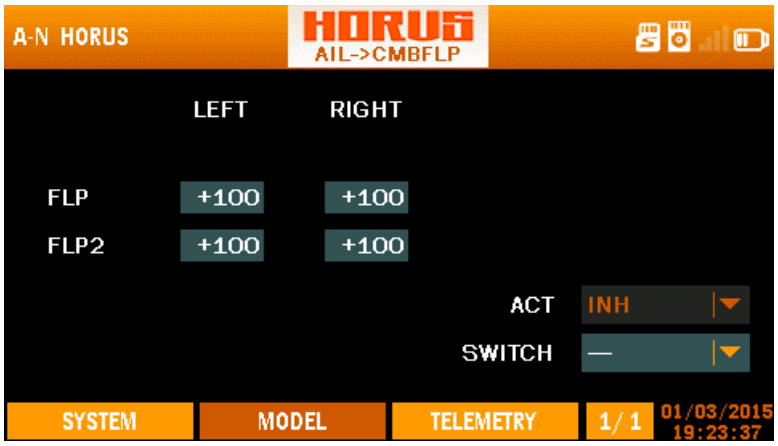
Right side of the screen

"#1- #9": Represents 9 different options.
"SWITCH": Is used to assign the mix to a switch or knob.

CAUTION: *When setting up flaps with a single travel direction, we recommend to program them with the model power on, thus to prevent damage to the model caused by the flaps hitting endpoints when the flaps are activated.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.4 AILERON→CAMBER FLAP



Overview of the aileron->camberflap menu screen

Shown on the illustration above is an example of the "AIL->CMBFLP" mix menu, to enter this menu press the "MDL" button, then select "AIL-CMBFLP" Here the user can mix ailerons with flaps. If the user experiences an insufficient roll rate during full aileron, deflection, or just wants to achieve the highest roll rate possible, the user can program flaps to function as ailerons (flaperons) via the "AILERON->CAMBER FLAP" menu. The intensity of the mix can be set up within a range of -100 / +100. A switch can be assigned to give the user the option to turn the mix on or off. Any dual-rate function applied to

ailerons will automatically apply to flaps. The user must first activate the mix before changes can be made. Depending on airplane/glider configuration (Low-mid-high wing), elevator and/or rudder coupling characteristics may change when mixing flaps with ailerons.

Left side of the screen

"FLP-FLP2": Represents the two available flap channels to be mixed with aileron.

"LEFT-RIGHT": Allows programing of mix strength (-100/+100) on both deflection directions.

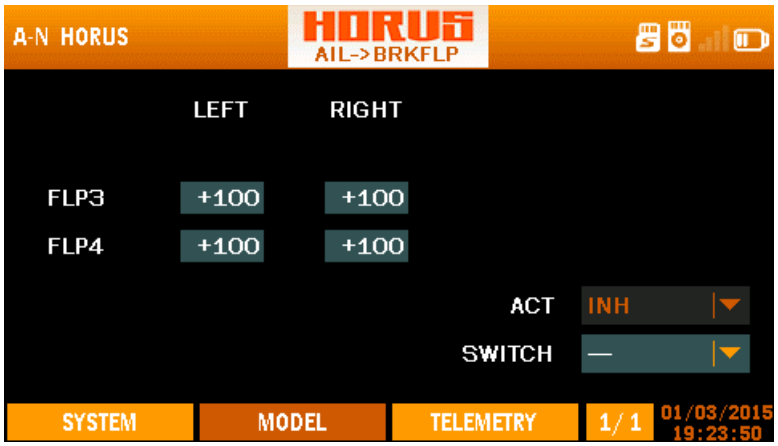
Right side of the screen

"ACT": Turns the mix on or off.
"SWITCH": Is used to assign the mix to a switch or knob.

CAUTION: *Always check for correct system operation, after making changes to flight-control-elated mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.5 AILERON→ BRAKE FLAP



Overview of the aileron brakeflap menu screen

Shown on the illustration above is an example of the "AIL->BRKFLP" mix menu, to enter this menu press the "MDL" button, then select "AIL->BRKFLP". Here the user can mix the brake flaps (spoilers) to ailerons, thus to counter the possible coupling generated during aileron operation.

Left side of the screen

"FLP3-FLP4": Represents the two available brake flap channels to be mixed with aileron.

"LEFT-RIGHT": Allows programing of mix strength (-100/+100) on both deflection directions, for each of the available channels.

Right side of the screen

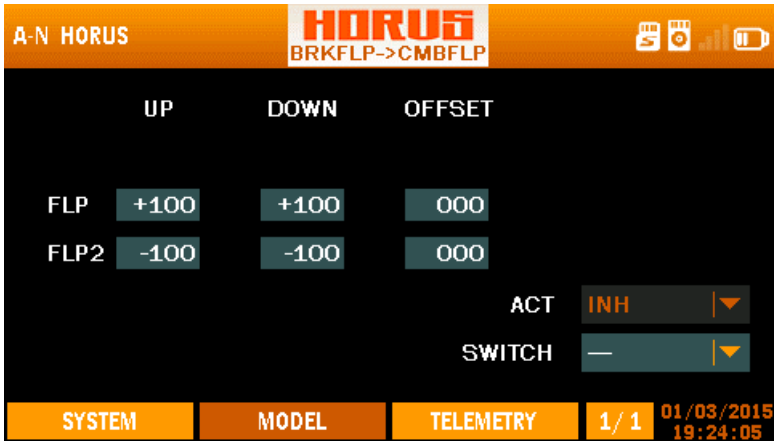
"ACT/INH": Turns the mix on or off.

"SWITCH": Is used to assign the mix to a switch or knob.

CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.6 BRAKE FLAP→CAMBER FLAP



Overview of the brakeflap->camberflap menu screen

The illustration above is an example of the "BRKFLP->CMBFLP" mix menu, to enter this menu press the "MDL" button, then select "BRK->CMB". Here the user can program the camber flaps to function as brake flaps, and assign it to a switch. When the user experiences

insufficient effect and/or unwanted coupling during brake flap (spoiler) operation, the option to mix in the camber flaps is available in this menu.

Left side of the screen

"FLP-FLP2": Represents the two available flap channels to be mixed with brake flaps.
"UP-DOWN": Allows programing of mix strength (-110/+100) on both deflection directions, for each of the available channels.
"OFFSET": Allows changing the neutral position.

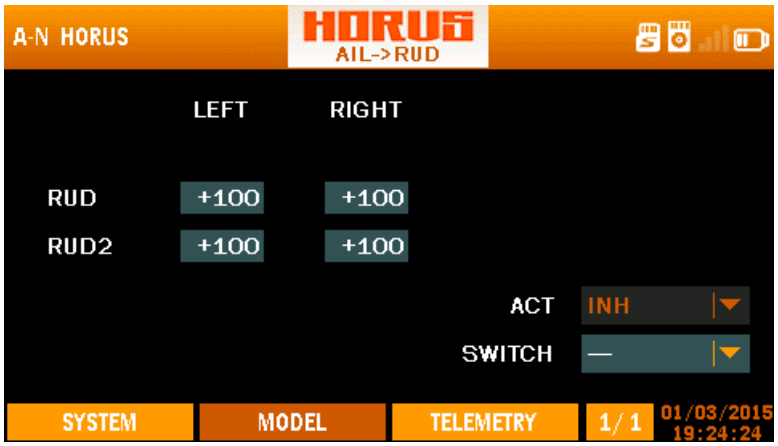
Right side of the screen

"ACT/INH": Turns the mix on or off.
"SWITCH": Is used to assign the mix to a switch or knob.

CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.7 AILERON→RUDDER



Overview of the aileron->rudder menu screen

The illustration above is an example of the "AIL->RUD" mix menu, to enter this menu press the "MDL" button, then select "AIL->RUD". Here the user can mix aileron with rudder to compensate for coupling than may be generated on certain airplane/glider configurations, and assign it to a switch. To enable changes to be made, the user must first

activate the mix by selecting the ACT icon at the bottom right of the screen. On some airplanes (depending on layout, aerofoil type, etc.) a coupling moment on the rudder (yaw) axis is generated when applying aileron, this due to the differential of frontal drag numbers generated by the difference in the resulting aerofoil shapes (comparing LH and RH wing). To counter this some opposite rudder can be mixed to reduce the work load of the pilot. The mix can be separately programed for each deflection direction, and on models fitted with dual tail/rudder surfaces and/or servos.

Left side of the screen

"RUD-RUD2": Represents the two available rudder channels to be mixed with aileron.

"LEFT-RIGHT": Allows programing of mix strength (-100/+100) on both deflection directions, for each of the available channels.

Right side of the screen

"ACT/INH": Turns the mix on or off.
"SWITCH": Is used to assign the mix to a switch or knob.

CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made*

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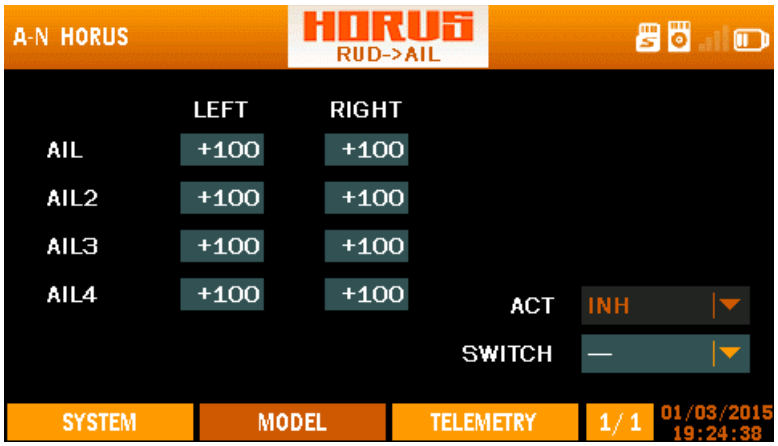
7.3.8 RUDDER → AILERON



Overview of the rudder->aileron menu screen

The illustration above is an example of the “RUD->AIL” mix menu, to enter this menu press the “MDL” button, then select “RUD->AIL”. Here the user can mix rudder with aileron to compensate for coupling than may be generated on certain airplane/glider configurations, and assign it to a switch. To enable changes to be made, the user must first activate the mix by selecting the ACT icon at the bottom right of the screen. On some airplanes (depending on layout, aerofoil type, etc.) a large coupling moment on both the aileron (roll) and elevator (pitch) axis is generated when applying rudder, this can occur on models where the rudder moment force is applied above/below of the center of gravity. To counter this some opposite aileron can be mixed in, to reduce the work load of the pilot. The mix can be separately programed for each deflection direction, and on models fitted with 4 aileron control surfaces and/or servos.

Left side of the screen

“AIL-AIL4”: Represents the four available aileron channels to be mixed with rudder.
“LEFT-RIGHT”: Allows programing of mix strength (-100/+100) on both deflection directions, for each of the available channels.

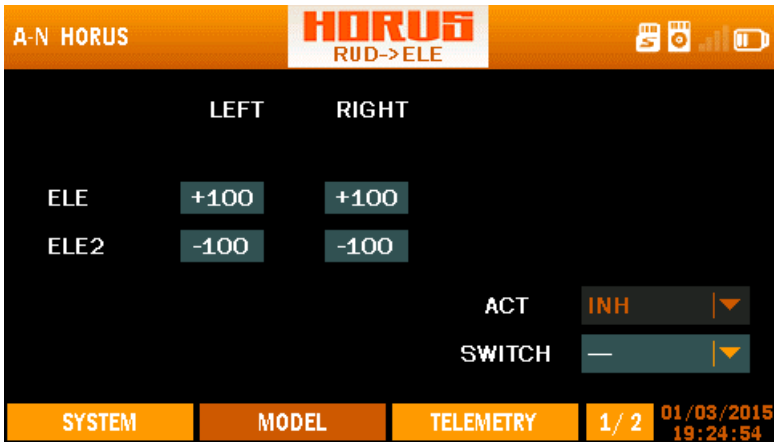
Right side of the screen

“ACT/INH”: Turns the mix on or off.
“SWITCH”: Is used to assign the mix to a switch or knob.
“FLIGHT MODES”: when using glider, launch, speed, cruise, thermal and landing can be selected.

CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE*:* *Press and hold the “RTN” button to instantly enter the “Monitor” menu, press “RTN” again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.9 RUDDER → ELEVATOR



Overview of the rudder->elevator 1/2 menu screen

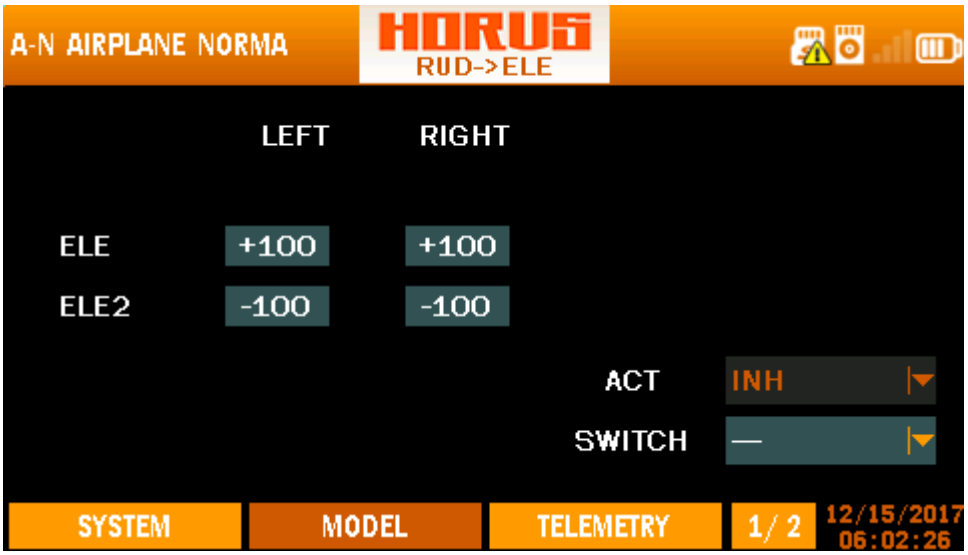
The illustration above is an example of the "RUD->ELE" mix menu, to enter this menu press the "MDL" button, then select "RUD->ELE". Here the user can mix rudder with elevator to compensate for coupling than may be generated on certain airplane/glider configurations, and assign it to a switch. To enable changes to be made, the user must first activate the mix by selecting the ACT icon at the bottom right of the screen. On some airplanes (depending on layout, aerofoil type, etc.) a large coupling moment on both the elevator (pitch) axis and aileron (roll) is generated when applying rudder. This can occur on models where the rudder moment force is applied above/below of the center of gravity. To counter this some nose up/down elevator can be mixed in, to reduce the work load of the pilot.

Left side of the screen

"ELE-ELE2": Represents the two available elevator channels to be mixed with rudder.
"LEFT_RIGHT": Allows programing of mix strength (-100/+100%) on both deflection directions, for each of the available channels.

Right side of the screen

"ACT/INH": Turns the mix on or off.
"SWITCH": Is used to assign the mix to a switch or knob.



Overview of the rudder->elevator 2/2 menu screen

The illustration above is an example of page three of the "RUD->ELE" menu, here the user can set up exponential on the rudder input signal. We recommend to set this identical to the rudder expo values programmed in the "RATE/EXPO" menu.

Left side of the screen

"ELE-ELE2": Represents the two available elevator channels to be mixed with rudder.
"LEFT_RIGHT": Allows programing of mix strength (-100/+100%) on both deflection directions, for each of the available channels.

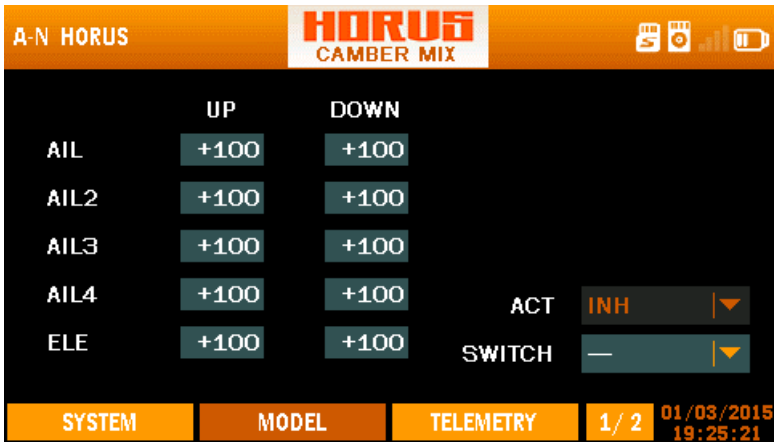
Right side of the screen

"ACT/INH": Turns the mix on or off.
"SWITCH": Is used to assign the mix to a switch or knob.

CAUTION: *Always check for correct system operation, after making changes to flight-control-related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to check the made changes in the monitor menu, without having to scroll through the menu.*

7.3.10 CAMBER MIX



Overview of the camber mix 1/2 menu screen

The illustration above is an example of the "CAMBER MIX" menu, to enter this menu press the "MDL" button, then select "CAMBER MIX". Here the user can adjusts camber angles on most surfaces (ailerons, camber flaps，brake flaps) in the negative and positive directions. The elevator can be mixed to counter possible coupling. In glider mode the user can set different values for each of the available flight modes.

Left side of the screen

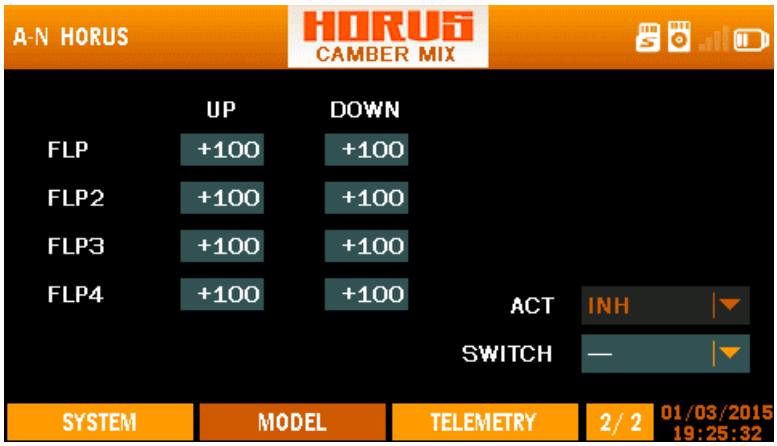
"AIL-AIL4": Represents the four available aileron channels.

"ELE": Represents the elevator channel.

"UP-DOWN": Allows programing of mix strength (-100/+100) on both deflection directions, for each of the available channels.

Right side of the screen

"ACT/INH": Turns the mix on or off.
"SWITCH": Is used to assign the mix to a switch or knob.



Overview of the camber mix 2/2 menu screen

The illustration above is an example of page two of the "CAMBER MIX" menu, here the user can set up the second half of the mix.

Left side of the screen

"FLP-FLP4": Represent the four available flap channels.
"LEFT_RIGHT": Allows programing of mix strength (-100/+100) on both deflection directions, for each of the available channels.

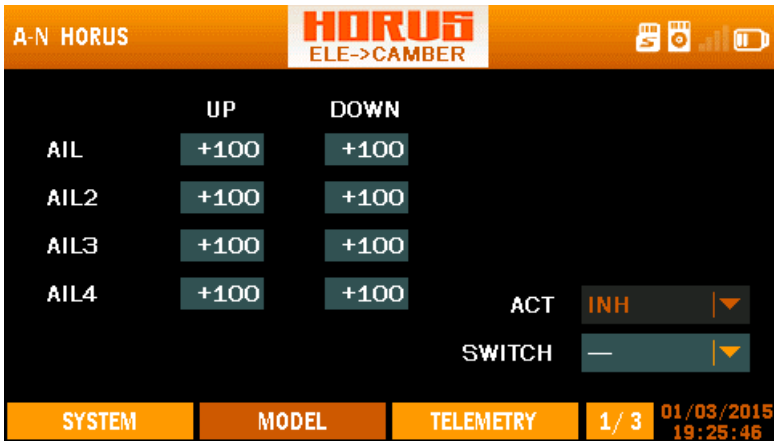
Right side of the screen

"ACT/INH": Turns the mix on or off.
"SWITCH": Is used to assign the mix to a switch or knob.

CAUTION: *Always check for correct system operation after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended, and lead to damage and/or serious injury.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.11 ELEVATOR→CAMBER



Overview of the elevator->camber 1/3 menu screen

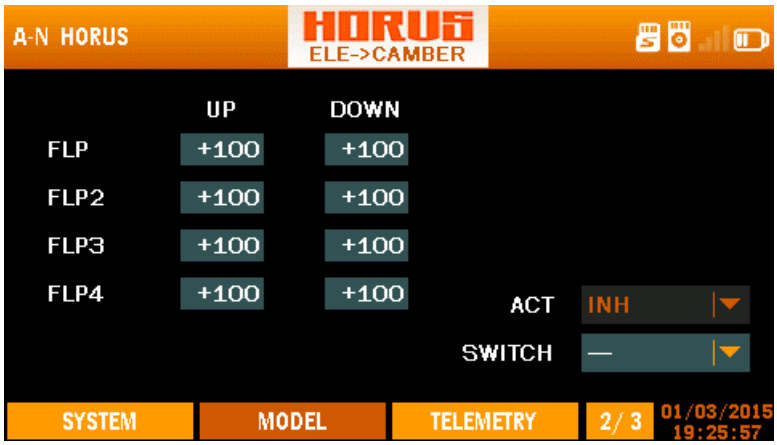
The illustration above is an example of the "ELE-CAMBER" (elevon) mix menu, to enter this menu press the "MDL" button, then select "ELE-CAMBER". Here the user mix in ailerons (flaperons) with elevator, and assign it to a switch. To enable changes to be made, the user must first activate the mix by selecting the ACT icon it the bottom right of the screen.

Left side of the screen

"AIL-AIL4": Represents the 4 available aileron/flap channels.
"UP-DOWN": Allows programing of mix strength (-100/+100) on both deflection directions, for each of the available channels.

Right side of the screen

"ACT/INH": Turns the mix on or off.
"SWITCH": Is used to assign the mix to a switch or knob.



Overview of the elevator->camber 2/3 menu screen

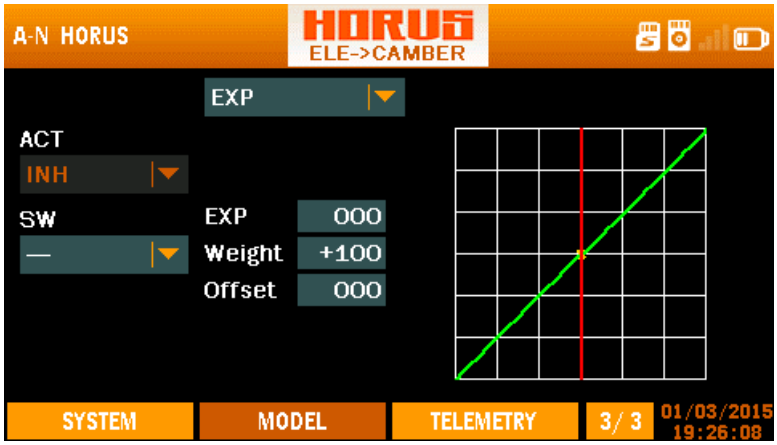
The illustration above is an example of page two of the “ELE-CAMBER” menu, here the user can set up the second half of the mix.

Left side of the screen

“FLP-FLP4”: Represent the four available flap channels.
“UP-DOWN”: Allows programing of mix strength (-100/+100) on both deflection directions, for each of the available channels.

Right side of the screen

“ACT/INH”: Turns the mix on or off.
“SWITCH”: Is used to assign the mix to a switch or knob.



Overview of the elevator->camber 3/3 menu screen

The illustration above is an example of page three of the “ELE-CAMBER” menu, here the user can set up the third part of the mix.

Left side of the screen

“ACT/INH”: Turns the mix on or off.
“SWITCH”: Is used to assign the mix to a switch or knob.

Center of the screen

“EXP”: Automatically generated Exponential curves are produced when using this feature, +100 to -100 can be programmed, with + reducing and – increasing the sensitivity near the center. “Weight” represents the “RATES”, reducing the number will limit servo travel. +100 (deflection until programmed end points) to -100 (complete reversal of travel direction). “Offset” is used to relocate the center position.

"LINE/SMOOTH", "MULTI_LINE/MULTI_SMOOTH": Are used to manually adjust the shape of the curve. Up to7 segments can be adjusted either via straight lines or smooth curves, depending on the selected option.

Right side of the screen

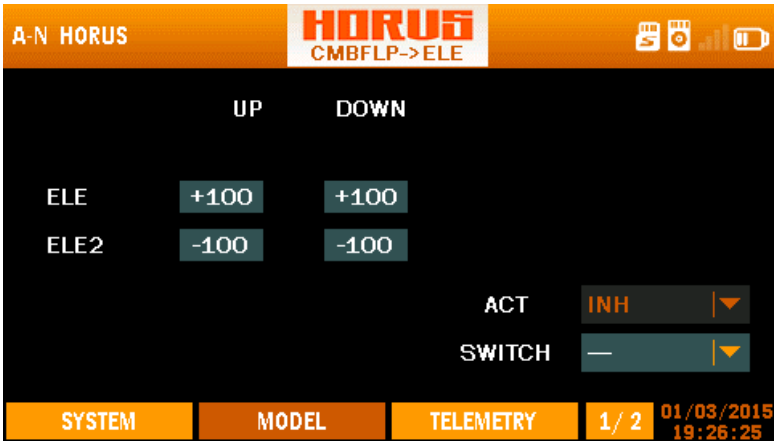
Depicts a visual aid to assist the user during programming.

CAUTION*: Beware of the lift bleeding effect (when using a negative setting) during high speed exit out of a dive, as the reduced/reversed lift will make the airplane slip (drift), this may result in a high speed collision with the ground.*

CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE*: Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.12 CAMBER FLAP → ELEVATOR



Overview of the camberflap->elevator 1/2 menu screen

The illustration above is an example of the "CMBRFLP-ELE" mix menu, to enter this menu press the "MDL" button, then select "CMBRFLP-ELE". Here the user can mix elevator with flaps to compensate for coupling than may be generated on certain airplane/glider configurations, and assign it to a switch. To enable changes to be made, the user must first activate the mix by selecting the ACT icon at the bottom right of the screen. On some models (depending on layout, aerofoil type, etc.), a coupling moment on the elevator (pitch) axis is generated when applying aileron, this due to the differential of frontal drag numbers generated by the difference in the resulting aerofoil shapes (comparing LH and RH wing).

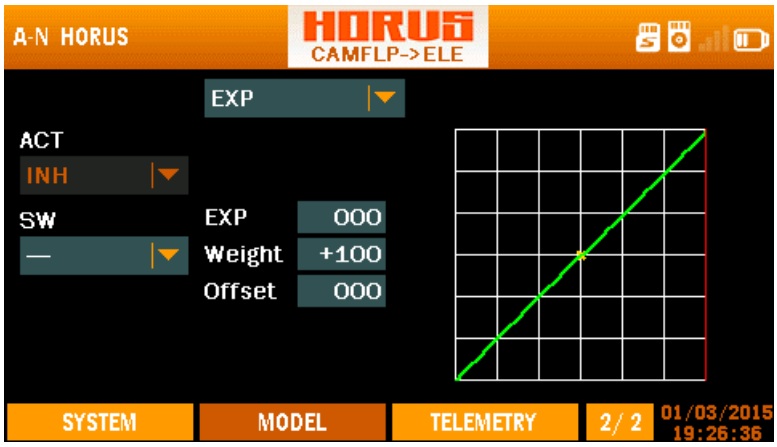
To counter this some elevator can be mixed in, to reduce the work load of the pilot. The mix can be separately programed for each deflection direction, and on models fitted with two elevator surfaces/halves.

Left side of the screen

"ELE-ELE2": Represents the two available elevator channels to be mixed with flaps.
"UP-DOWN": Allows programing of two separate deflection rates for each of the available channels.

Right side of the screen

"ACT/INH": Turns the mix on or off.
"SWITCH": Is used to assign the mix to a switch or knob.



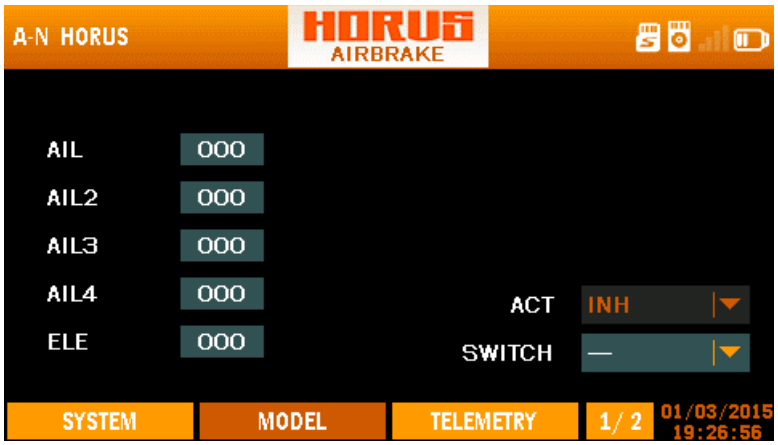
Overview of the camberflap->elevator 2/2 menu screen

The illustration above is an example of page two of the "CMBFLP->ELE" menu, here the user can set up exponential on the rudder input signal. We recommend to set this identical to the elevator expo values programmed in the "RATE/EXPO" menu.

CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.13 AIRBRAKE



Overview of the airbrake 1/2 menu screen

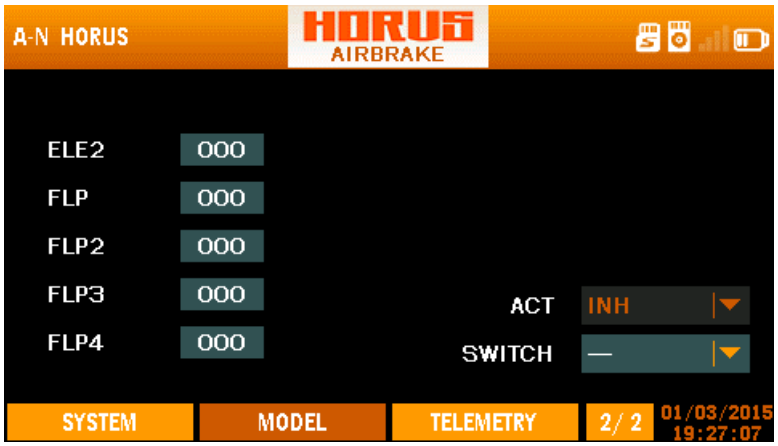
The illustration above is an example of the "AIRBRAKE" menu, to enter this menu press the "MDL" button, then select "AIRBRAKE". Here the user can assign a switch to function as airbrake. Airbrakes are commonly used to lose altitude on final, and/or to bleed lift directly after landing to reduce the roll out distance. When using 4 wing servos, the user can individually program them to extend in opposite directions (2 up, 2 down), thus to maximize brake force and maintain aerodynamic balance. The elevator can be mixed in to counter coupling (pitch axis) during brake operation, and/or to increase the maximum brake force.

Left side of the screen

"AIL-AIL4": Represents the 4 available aileron channels, and allows changes to the deployment position.
"ELE": Represents the elevator channel, and allows changes fore braking and/ or counter coupling.

Right side of the screen

"ACT/INH": Turns the mix on or off.
"SWITCH": Is used to assign the mix to a switch or knob.



Overview of the airbrake 2/2 menu screen

The illustration above is an example of page two of the "AIRBRAKE" menu, here the user can set up the second half of the mix.

Left side of the screen

"ELE2": Represents the elevator channel, and allows changes fore braking and/ or counter coupling.
"FLP-FLP4": Represents the 4 available flap channels, and allows changes to the deployment position.

Right side of the screen

"ACT/INH": Turns the mix on or off.
"SWITCH": Is used to assign the mix to a switch or knob.

CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.14 SNAP ROLL

Overview of the snaproll 1/2 menu screen

The illustration above is an example of the "SNAP ROLL" menu, to enter this menu press the "MDL" button, then select "SNAP ROLL". Here the user can program the four directions of a snap roll and assign each direction to a separate switch as well as setting up the deflection rate of the three individual control surfaces. We installed a safety feature via an activation switch option to prevent accidental operation in the pits and/or during landings etc. To enable changes to be made, the user must first activate the mix by selecting the ACT option at the bottom right of the screen. Use PgUp/Dn to scroll between the two menu pages. There will be a more detailed instruction in the "setup guide" on how to use this menu.

Left side of the screen

"R/U and R/D": Represents the right hand side up and down programing line.

"L/U and L/D": Represents the left hand side up and down programing line.

Top of the screen

"AIL-AIL4": Represents the four available aileron channels.

"SWITCH": Represents the column were switches can be assigned to active to programmed snap-roll function.

Bottom of the screen

"ACT/INH": Turns the mix on or off.

"SF SW": The "save switch" option is used to assign a switch to disarm the mix, to prevent accidental operation of the snap roll function.

Overview of the snaproll 2/2 menu screen

The illustration above is an example of page two of the "SNAP ROLL" menu, here the user can set up the second half of the mix.

Left side of the screen

"R/U and R/D": Represents the right hand side up and down programing line.
"L/U and L/D": Represents the left hand side up and down programing line.

Top of the screen

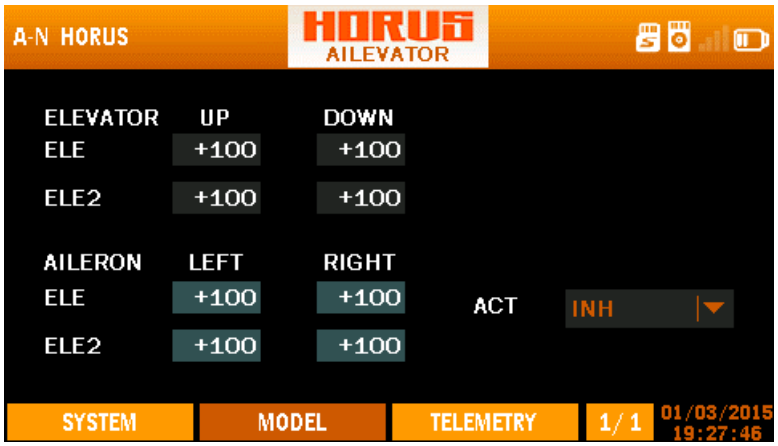
"ELE and ELE2": Represents the two available elevator channels.
"RUD and RUD2": Represents the two available rudder channels.
"SWITCH": Represents the column were switches can be assigned to active to programmed snap-roll function.

Bottom of the screen

"ACT/INH": Turns the mix on or off.
"SF SW": The "save switch" option is used to assign a switch to disarm the mix, to prevent accidental operation of the snap roll function.

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.15 AILEVATOR



Overview of the ailevator menu screen

Adjusted limits elevator travel still active with mix inhibited. The illustration above is an example of the "AILEVATOR" mix menu, to enter this menu press the "MDL" button, then select "AILEVATOR". Here the user can mix in elevator with ailerons, and assign it to a switch. To enable changes to be made, the user must first activate the mix by selecting the ACT icon at the bottom right of the screen. It is commonly used on jet type models, and on planes without ailerons, but it requires two elevator surfaces to function as intended.

Left side of the screen

"ELE and ELE2": Represents the two available elevator channels.
"ELEVATOR": Represents the programing line to set the elevator end points.
"AILERON": Represents the programing line to set up the mix strength (-100/+100%).

Right side of the screen

"ACT/INH": Turns the mix on or off.

CAUTION: *Always check for correct system operation, after making changes to flight-control-related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE*: Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.3.16 RUDDER SETUP (FLYING WING)

Overview of the rudder setup menu screen

The illustration above is an example of the "RUD SET" menu, to enter this menu press the "MDL" button, then select "RUD SET". Here the user can assign and set up rudder deflection limits for both directions, there will be a more detailed instruction in the "setup guide" on how to use this menu.

"RUD-RUD2": Represents the two available rudder channels.
"LEFT-RIGHT": Allows programing of the deflection limits for both directions.

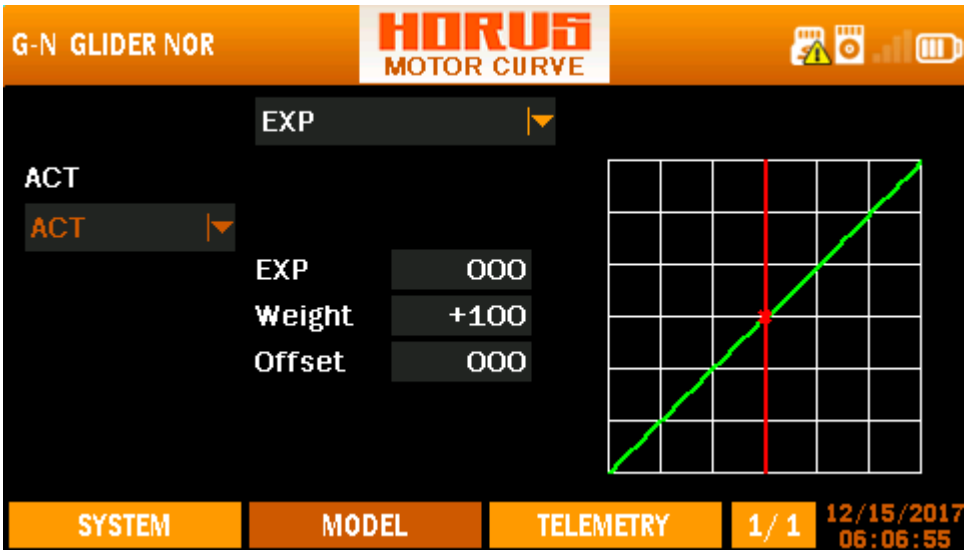
CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.4 MODEL (GLIDER)

"GLIDER" shares a lot of predefined mixes with "FIXED WING", most of which be covered in the "FIXED WING" chapter of the manual.

7.4.1 MOTOR CURVE



Overview of the motor curve menu screen

The illustration above is an example of the "MOTOR CURVE" menu, to enter this menu press the "MDL" button, then select "MOTOR CURVE". Here the user can adjust the throttle curve. The function of this menu is to adjust the correlation between the transmitters' throttle stick position and the actual power units and power setting.

Left side of the screen

"ACT/INH: Turns the mix on and off

Center of the screen

"EXP": Automatically generated Exponential curves are produced when using this feature, +100 to -100 can be programmed with + reducing and – increasing the sensitivity near the center. "Weight" represents the "RATES", reducing the number will limit servo travel. +100 (deflection until programmed end points) to -100 (complete reversal of travel direction). "Offset" is used to relocate the center position.

"LINE/SMOOTH", "MULTI-LINE/MULTI-SMOOTH": Are used to manually adjust the shape of the curve. Up to 7 segments can be adjusted either via straight lines or smooth curves, depending on the selected option.

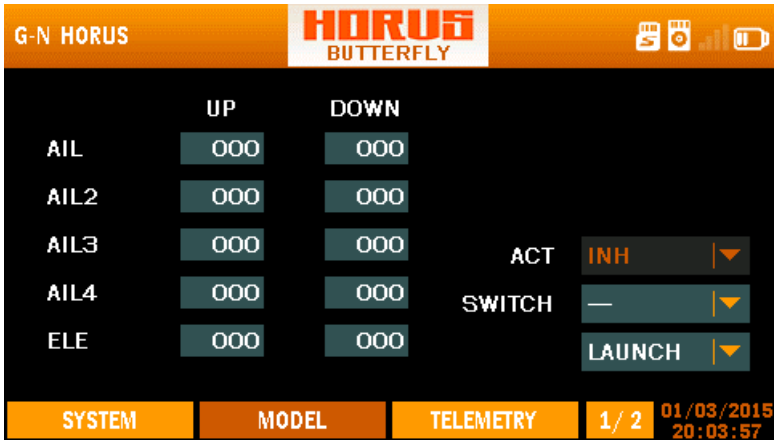
Right side of the screen

Depicts a visual aid to assist the user during programming.

DANGER: *We recommend to ALWAYS! Remove the propellers during testing, if this is not possible make sure you take the appropriate safety precautions.*

NOTE: *Press and hold the "RTN" button to instantly enter the "Monitor" menu, press "RTN" again to return to the previous menu. This shortcut allows the user to check the made changes in the monitor menu, without having to scroll through the menu.*

7.4.2 BUTTERFLY



Overview of the butterfly menu screen 1/2

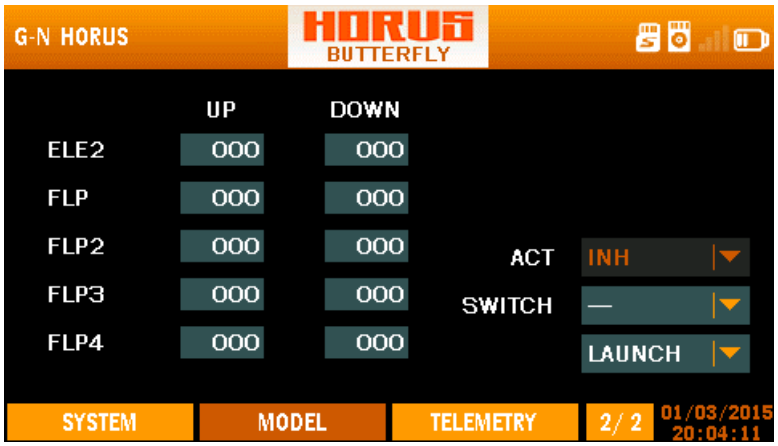
The illustration above is an example of the "BUTTERFLY" menu, to enter this menu press the "MDL" button, then select "BUTTERFLY". Here the user can setup this menu to function as a crow mix. The control input to be used can be set up in "INPUT MAP" by adding the required input in the "BUTTERFLY" slot. The function of this menu can be to create a drag and/or lift by moving the ailerons, flaps and spoilers. When the user needs to compensate for coupling that results in a change in pitch, the option to mix in the elevator is available. If required "FLIGHT MODES" and/or switches can be assigned to allow multiple settings and/or changes in "RATES", "EPXO" and "WEIGHT", there will be a more detailed instruction in the "setup guide" on how to use this menu.

Left side of the screen

"AIL-AIL4": Represents the 4 available aileron/flap channels.
"ELE": Represents the elevator channel.
"UP-DOWN": Allows programing of two separate deflection directions for each of the available channels, and can be setup independently for each flight mode.

Right side of the screen

"ACT": Turns the mix on or off.
"SWITCH": Is used to assign the mix for each individual flight mode to a switch.
"LAUNCH", "SPEED", "CRUISE", "THERMAL", "LANDING", "F.Mode6-F.Mode9": Represent the available flight modes that can be selected.



Overview of the butterfly menu screen 1/2

Here the user can program the second half of the mix.

Left side of the screen

“ELE2”: Represents the elevator channel.
“FLP1-FLP4”: Represents the 4 available flap channels.
“UP-DOWN”: Allows programing of two separate deflection directions for each of the available channels, and can be setup independently for each flight mode.

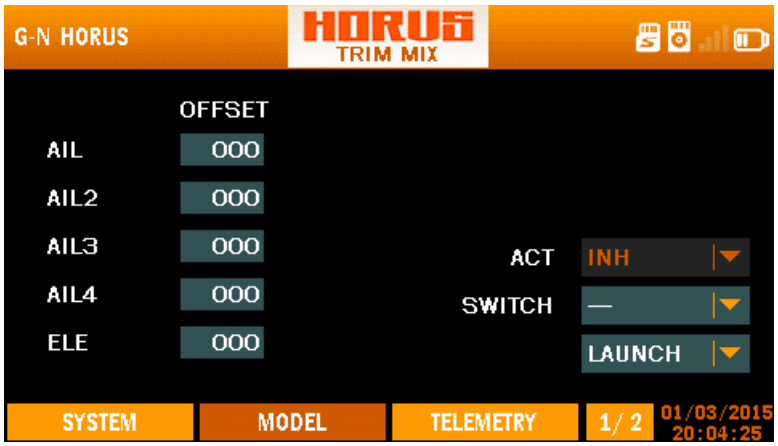
Right side of the screen

“ACT”: Turns the mix on or off.
“SWITCH”: Is used to assign the mix for each individual flight mode to a switch.
"LAUNCH", "SPEED", "CRUISE", "THERMAL", "LANDING", “F.Mode-F.Mode9”: Represent the available flight modes that can be selected.

CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the “RTN” button to instantly enter the “Monitor” menu, press “RTN” again to return to the previous menu. This shortcut allows the user to check the made changes in the monitor menu, without having to scroll through the menus.*

7.4.3 TRIM MIX



Overview of the trim mix menu screen 1/2

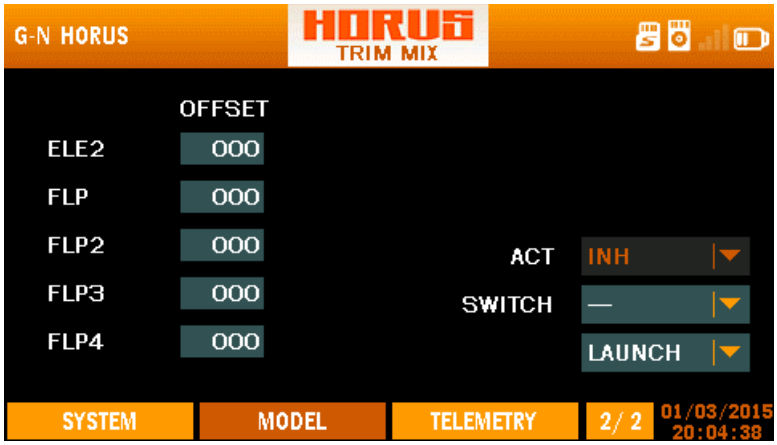
The illustration above is an example of the “TRIM MIX” menu, to enter this menu press the “MDL” button, then select “TRIM MIX”. Here the user can set up the required trim depending on the corresponding “flight mode”. The user must first activate the mix by selecting the ACT icon at the bottom right of the screen. The primary function of this menu feature is to accommodate multiple trim settings depending on the selected “flight mode”, giving the user the option to trim in each mode depending on the requirements.

Left side of the screen

“AIL-AIL4”: Represents the 4 available aileron/flap channels.
“ELE”: Represents the elevator channel.
“OFFSET”: Use to set up the neutral position.

Right side of the screen

“ACT”: Turns the mix on or off.
“SWITCH”: Is used to assign the individual flight mode to a switch or knob.
"LAUNCH", "SPEED", "CRUISE", "THERMAL", "LANDING", “F.Mode6-F.Mode9”: Represent the available flight modes that can be selected.



Overview of the trim mix menu screen 2/2

Here the user can program the second half of the mix.

Left side of the screen

“AIL-AIL4”: Represents the 4 available aileron/flap channels.
“ELE”: Represents the elevator channel.
“OFFSET”: Use to set up the neutral position.

Right side of the screen

“ACT”: Turns the mix on or off.
“SWITCH”: Is used to assign the individual flight mode to a switch or knob.
"LAUNCH", "SPEED", "CRUISE", "THERMAL", "LANDING", “F.Mode6-F.Mode9”: Represent the available flight modes that can be selected.

CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the “RTN” button to instantly enter the “Monitor” menu, press “RTN” again to return to the previous menu. This shortcut allows the user to check the made changes in the monitor menu, without having to scroll through the menu.*

7.4.4 RUDDER SETUP

Overview of the rudder setup menu screen

The illustration above is an example of the “RUD SET” menu, to enter this menu press the “MDL” button, then select “RUD SET”. Here the user can assign and set up rudder deflection limits for both directions on 5 different “flight modes/condition”.

Left side of the screen

“RUD-RUD2”: Represents the two available rudder channels, and can be setup independently for each flight mode/condition.

“LEFT-RIGHT”: Allows programming of the deflection limits for both directions.

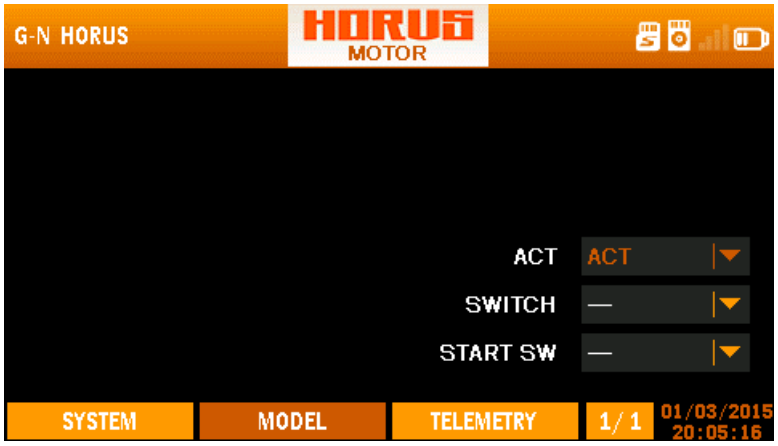
Right side of the screen

"LAUNCH", "SPEED", "CRUISE", "THERMAL", "LANDING", “F.Mode6-F.Mode9”: Represent the available flight modes that can be selected.

CAUTION: *Always check for correct system operation, after making changes to flight control related mixes. Pay close attention to surface travel near and at the endpoints, incorrect endpoint setup will cause the mix to stop working as intended.*

NOTE: *Press and hold the “RTN” button to instantly enter the “Monitor” menu, press “RTN” again to return to the previous menu. This shortcut allows the user to quickly check any changes made.*

7.4.5 MOTOR



Overview of the motor menu screen

The illustration above is an example of the “MOTOR” menu, to enter this menu press the “MDL” button, then select “MOTOR”. Here the user can assign a switch to set up a save and a start position. This function allows the user to assign a activation switch to the MOTOR function and have the control active or not depending on the selection of one switch (or 2 different switches) in both menu options.

“ACT”: Turns the function on or off.
“SWITCH”: Allows setting up the switch used to activate the MOTOR function.

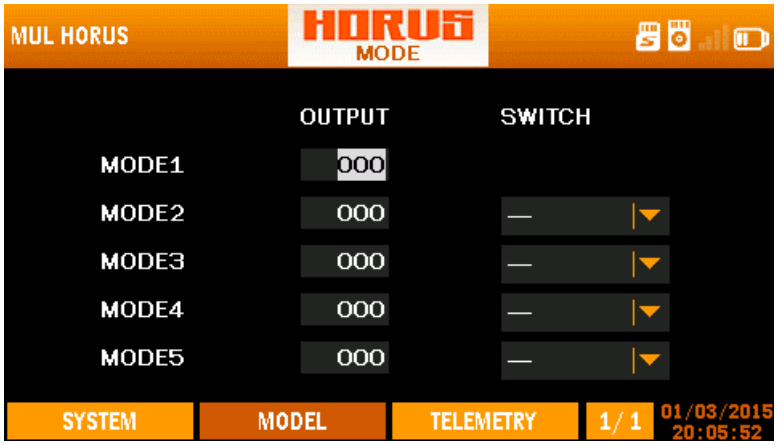
“START SW”: Allows setting up the switch used to activate the INPUT control used to start (not stop) the motor.

CAUTION: *We recommend to ALWAYS! Remove the propellers during testing, if this is not possible make sure you take the appropriate safety precautions.*

7.5 MODEL (MULTICOPTER)

The “MDL” menu of “MULTICOPTER” shares a lot of predefined mixes with the other model types, except for “RUD SET” and “MODE”.

7.5.1 MODE



Overview of the mode menu screen

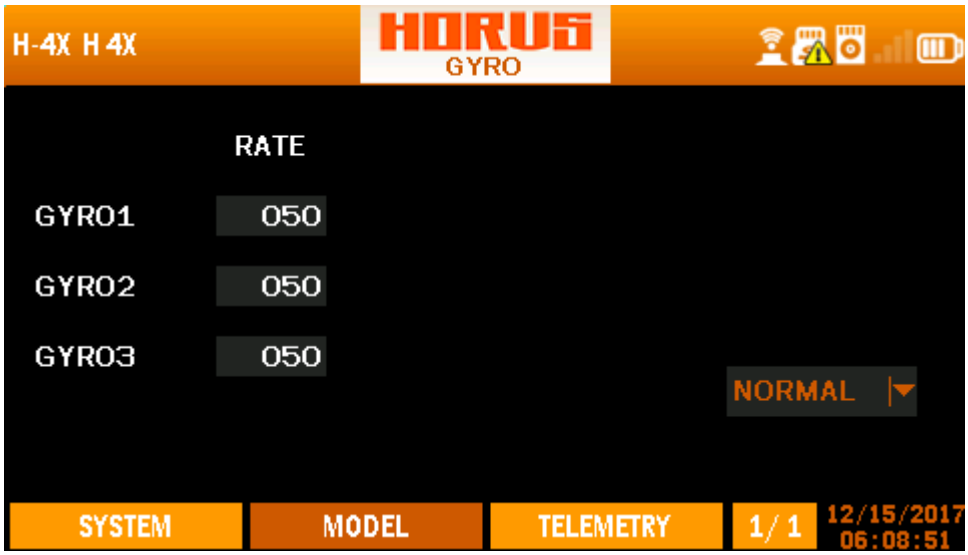
The illustration above is an example of the “MODE” menu, to enter this menu press the “MDL” button, then select “MODE”. Switches can assign to all but the “MODE1”, in this menu “MODE5” has the highest priority. This degrades from the bottom to the top making “MODE1” the lowest priority. Example: when the assigned switches of MODE2 and MODE5 are both activated, the system prioritizes and activates only the MODE5 condition set in the flight controller. The user can use “CURVE LIBRARY” to create the signal required by the flight controller and assign them to the “MODE” switch via “EXTRA MIXER”.

Top of the screen

“OUTPUT” : Allows the user to slow down the transition speed when switching to the required “MODE”, this to avoid fast movement of control surfaces (like flap) and allow to user to recover from incorrect button operation before the selected task is completed.

SWITCH”: Allows to assign a switch or M-POS knob to the required “FLIGHT MODE” condition.

7.5.2 GYRO



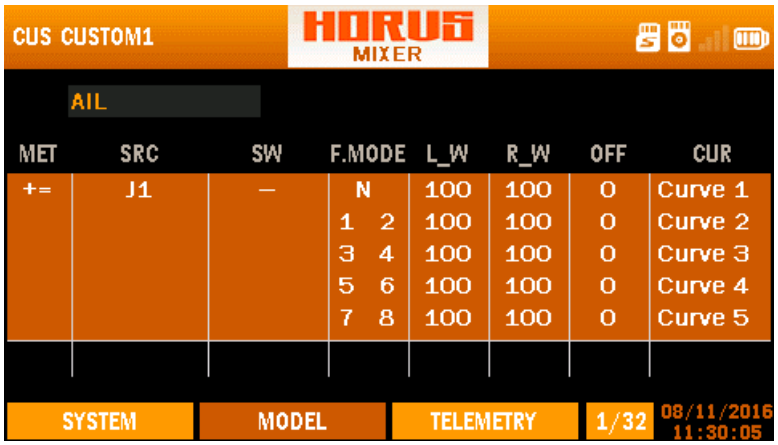
Overview of the gyro menu screen

The illustration above is an example of the "GYRO" menu, to enter this menu press the "MDL" button, then select "GYRO". Here the user can remotely (only if the installed model hardware supports this feature) adjust the gain on a 3 axis gyro on each of the 5 available "flight modes" (The default value is 50). To guarantee correct operation of the gyro, closely follow the manual recommendations supplied with the unit. Reduce the value when the model moves erratic and is unable to fly straightly, increase the value when more assistance is required on the required axis. Most users will set the value to the point where erratic behaviour is detected just as below.

7.6 MODEL (CUSTOM)

Custom model type does contain preassigned mixes and "input map", as these can both be created using the "MIXER" "LOGIC SWITCHES" and "CURVE LBRARY" menus. It allows the user to start with a clean AETR setup on which he/she can add features as desired.

7.6.1 MIXER



Overview of the mixer menu 1/32 screen

The illustration above is an example of the "MIXER" menu, to enter this menu press the "MDL" button, then press PgUp/Dn and select "MIXER". Here the user can program up to thirty-two channels to create new models from scratch.

"AIL": Is the name that is assigned to this "MIXER" so it can be found and assigned in output map, "AIL, ELE, THR, RUD" are prebuild and represent the AETR. "MIXER5-32" represent the other available channels that can be programmed, the names can be edited to fit the requirement of the user.

"MET": Method, allows to change the insertion method of the signal produced by the mixer.

+ add on the signal produced by the "MIXER" to the selected output channel.

* multiply by.

: replace with.

"SCR": Source, allows the user to assign a hardware input to operate the "MIXER".

"SW": Switches, allows to assign an activation switch to turn the mix on or off, which can be done with hardware switches and logic switches.

"F.MODE": Flight mode, allows to determine during which mode the mixer is active.

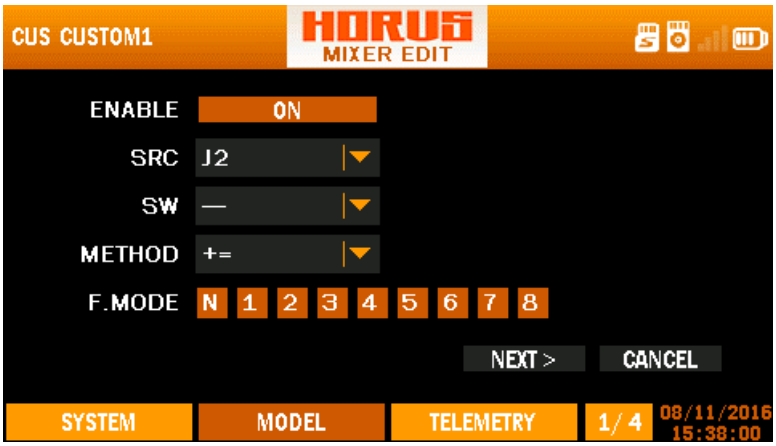
"L_W": Left Weight, allows to set the limits of the travel range of the signal to the left.

"R_W": Right Weight, allows to set the limits of the travel range of the signal to the right.

"OFF": Offset, allows to change the centre (0) position of the signal.

"CUR": Curve, allows to add custom curves created in "CURVE LIBRARY" in to the "MIXER".

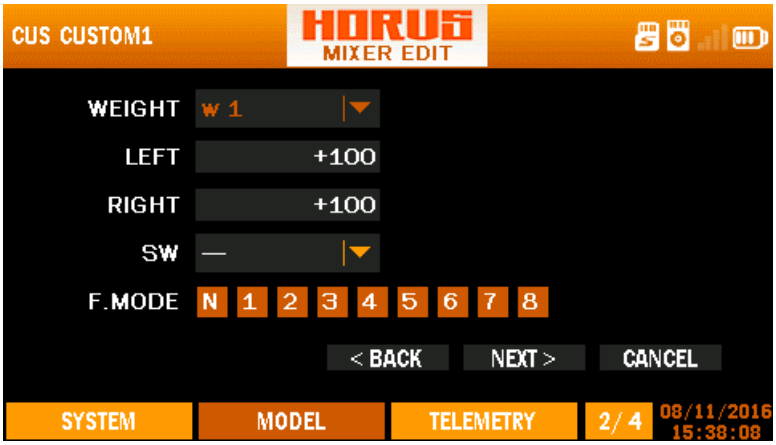
Page 1/4 Interface 1



Overview of the mixer edit menu 1/4 screen

The illustration above is an example of the "MIXER EDIT/ INSERT" menu, it's the first of four program pages that can be edited/inserted. Here the user can create the basis of the channel, where is coming from (SRC), when it's active (SW and F.MODE), and how it behaves (METHODE).

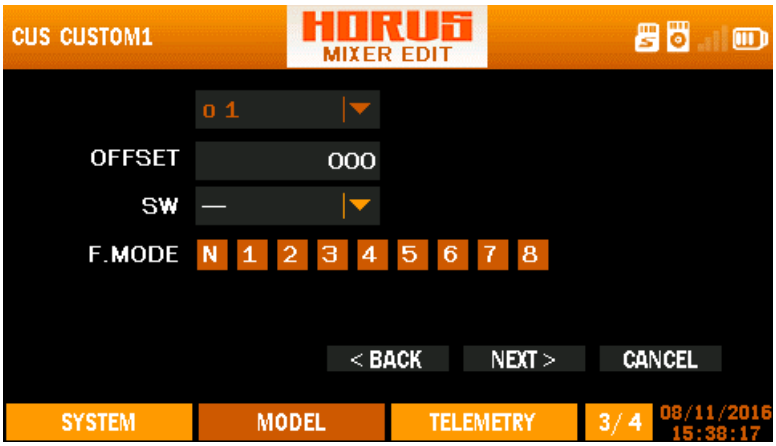
Page 2/4



Overview of the mixer edit menu 2/4 screen

The illustration above is an example of the "MIXER EDIT/INSERT" menu, it's the second of four program pages that can be edited. Here the user can modify the limits of the signal, this is similar to setting up "WEIGHT" in "RATE/EXPO" and "CURVE LIBRARY". Up to 9 "WEIGHTS" (W1-9) can be programmed and can be connected with switches, "LOGIC SWITCHES" and "FLIGHT MODES" to determine when it may become active.

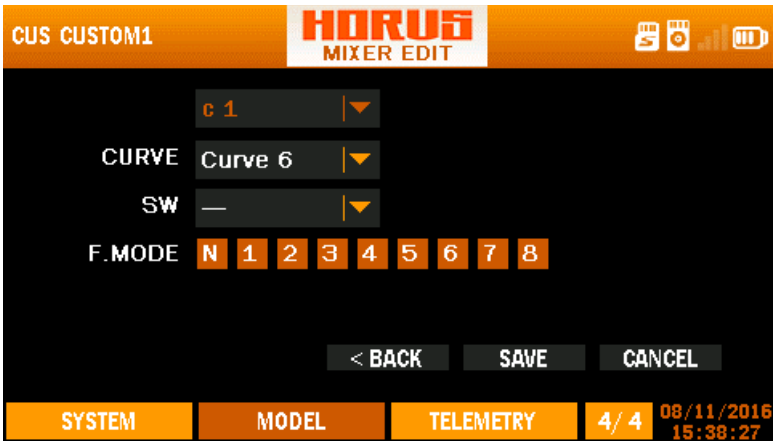
Page 3/4



Overview of the mixer edit menu 3/4 screen

The illustration above is an example of the "MIXER EDIT/INSERT" menu, it's the third of four program pages that can be edited/inserted. Here the user can modify the center position of the signal, this is similar to setting up "OFFSET" in "RATE/EXPO" and "CURVE LIBRARY". Up to 9 "OFFSET" (o1-9) can be programmed and can be connected with switches, "LOGIC SWITCHES" and "FLIGHT MODES" to determine when it may become active.

Page4/4



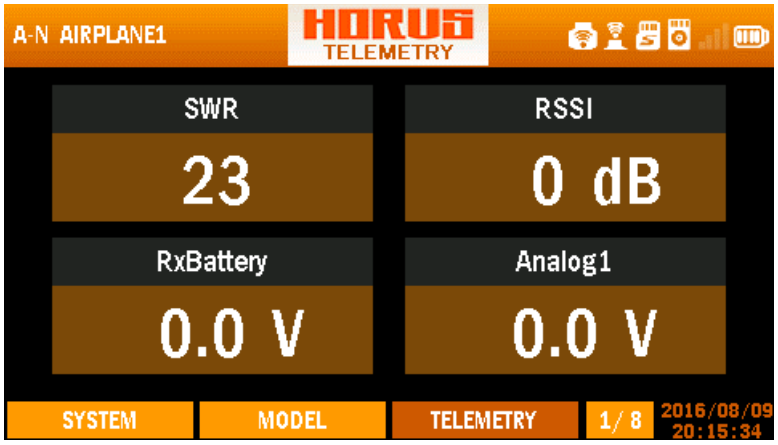
Overview of the mixer edit menu 4/4 screen

The illustration above is an example of the "MIXER EDIT/INSERT" menu, it's the last of four program pages that can be edited/inserted. Here the user can assign created curve in "CURVE LIBRARY". Up to 9 "WEIGHTS" (W1-9) can be programmed and can be connected with switches, "LOGIC SWITCHES" and "FLIGHT MODES" to determine when it may become active. As "WEIGHT" and "OFFSET" are identical programming options as in "CURVE LIBRARY" the previous two menu pages can be skipped when the user uses curves created in "CURVE LIBRARY"

8 TELEMETRY MENU

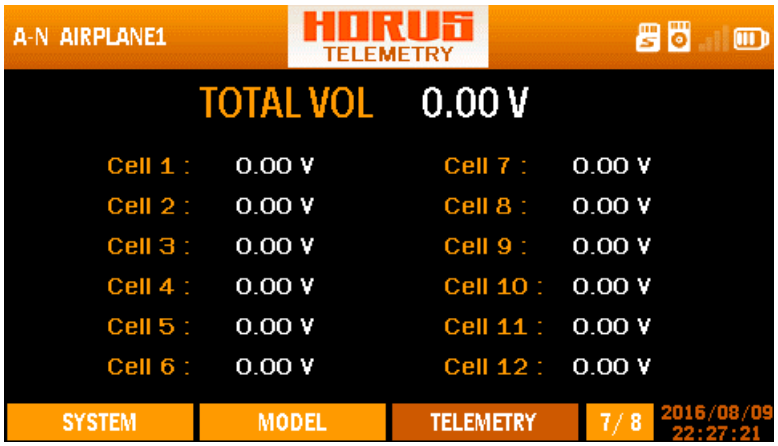
8.1 TELEMETRY MENU

The “TELE” button gives instant access to the telemetry overview menu, here the user can monitor the connected telemetry sensor data. The order of the menu can be changed via the “MDL/TELE SETUP” menu, and the first page set in Screen position is also displayed on the home screen page 1/4.



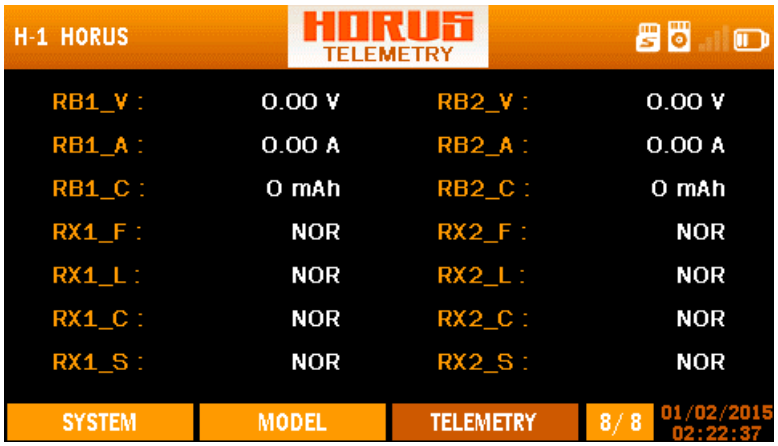
Overview of the telemetry menu 1/8 screen

The illustration above is an example of the “TELE” menu page 1/8, it can be used to monitor the incoming sensor data.



Overview of the telemetry menu 7/8 screen

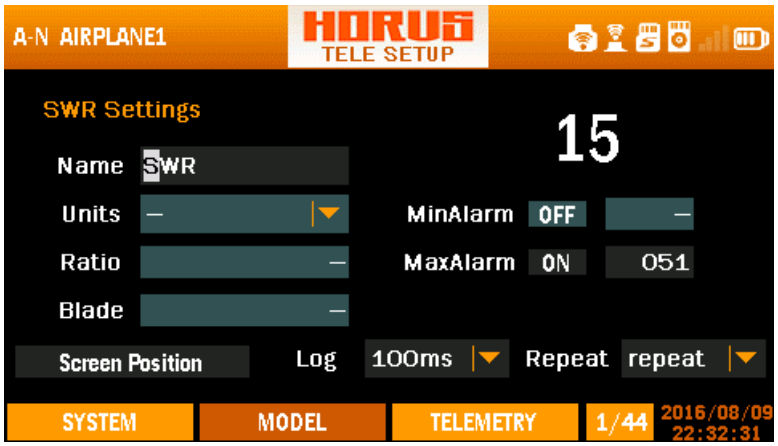
The illustration above is an example of the “TELE” menu page 7/8, here the user can monitor the individual cells of the models battery. When using two FrSky FLVSS voltage sensors, 12 individual cells can be monitored in real time.



Overview of the telemetry menu 8/8 screen

The illustration above is an example of the "TELE" menu page 8/8, here the user can monitor the Redundancy Bus sensor data.

8.2 TELEMETRY SETUP MENU



Overview of the telemetry setup menu screen

The illustration above is an example of the "TELEMETRY SETUP" menu, to enter this menu press the "MDL" button, then select "TELE SETUP". Please refer to chapter 6.1.12, operation of this menu will be discussed there.

Left side of the screen

"Name": Represents the name of the sensor type, and can be changed if required.
"Unit": The appropriate units for the sensor will be chosen by the system and will appear under the sensor name. These can be changed by the user (Imperial/Metric .etc.).
"Ratio": ratio of voltage sensor, more details can be found in manual of voltage sensor.
"Blade": When using an optical sensor the amount of propeller/rotor blades can be selected to display the correct RPM. On electric models and measuring from the motor leads, the pole count can be programmed in the sensor itself.

Right side of the screen

"MinAlarm": If the sensor value falls below the MinAlarm value set by the user then an alarm will be generated.
"MaxAlarm": If the sensor value goes above the MaxAlarm value set by the user an alarm will be generated.

Lower part of the screen

"Log": Log intervals can be adjusted to fit the need of the user.
"Repeat": Warnings occur once or in repeat mode.
"Screen position": Directs the user to the next telemetry menu.

Overview of the telemetry position setup menu screen

"S1-6": Represent the six available menu pages to house the thirty-two available telemetry slots, each page is divided into four sections.

Telemetry Sensor Names and their function

"SWR": This is a measure of antenna performance. A value above 51 will represent a failed or broken antenna and the radio should not be used until the issue is resolved. We recommend not to change the factory default warning (51) of this menu.

"RSSI": The RSSI (Received Signal Strength Indicator) measures the strength of the signal between the transmitter and the receiver as measured at the receiver. The measured value is sent back to the transmitter by telemetry for display and alarm purposes.

The transmitter will announce "RSSI WARNING" when the RSSI falls to a value of 43 db or below, we recommend not to change the factory default warning (43) of this menu.

"RxBattery": The receiver measures the voltage of the power supplied to it and sends the data back to the transmitter for display and alarm purposes. If the power is coming directly from a battery in the aircraft the measure will be the battery voltage. Models powered by an electric motor(s) will often use a BEC supplying the receiver and the measure will therefore be the BEC voltage. Another method (on-board voltage/current sensor such as a FCS40 or FCS150) should be used to keep a track of battery voltage in this case.

"Analog1-4": The receiver battery voltage with receivers. Set ratio to 4.

The four Analog values may be used by other third party sensors to measure, report and log battery voltage and other user/sensor determined values.

"Alti-V": Vertical Altitude as measured by an on-board vario sensor at any given time.

"Spd-V": Vertical speed. Rate of rise/fall (change in altitude) being measured by on-board vario sensor.

"Current": The current being measured by the on-board current/voltage sensor.

"Volt-fas": Voltage measured by on-board current/voltage sensor at any given time.

"Temp1": The temperature being measured by the temperature sensor in the aircraft at any given time.

"Temp2": As for Temp 1 but second sensor**.** Note that units and log intervals for both temperature sensors are automatically kept the same by the firmware**.** The maximum temperature able to be recorded reliably is 250 degrees Celsius.

“RPM”: The RPM of the aircraft motor. For the hub RPM sensor this is the reading from the optical sensor. For S.PORT the rpm sensor gets its signal from 2 of the 3 power leads between the motor and ESC. The sensor instructions show how to set the number of poles on the sensor.

“Fuel”: The percentage of fuel used as measured by an on-board fuel sensor. This relates to liquid fuel in an IC powered aircraft, not electric power.

“Alti-g”: Altitude as measured by on-board GPS unit.

“Spd-g”: Ground speed as measured by on-board GPS unit**.**

“Consump”: The aggregate consumption of electric power used since the last reset (milliamp hours). The setup screen allows the user to set a value that will trigger an alarm on the transmitter. This is useful to prevent over-discharge of on-board battery and/or in flight failures caused by lack of battery power.

“Power": The power (watts) of the electric motor and/or other aircraft components being measured at any time.

“Course”: GPS heading in degrees. North is zero degrees.

“Dist-g”: Distance as measured by GPS unit. If the transmitter contains a GPS unit the distance will be measured between the transmitter and the on-board sensor.

If the transmitter contains no sensor the distance will be measured between the place where the GPS unit first achieved GPS lock after switch on, and the on-board sensor.

“AirSpeed”: Airspeed as measured by on-board airspeed sensor.

“CelNum”: The number of cells in the on-board battery as measured by a FLVS-01 sensor (hub) or FLVSS (SPORT sensor).

“CelSum”: The aggregate voltage of all cells in on-board battery as measure by FLVS-01 or FLVSS.

“CelsMin”: The lowest cell voltage of all cells in on-board battery as measure by FLVS-01 or FLVSS.

“rb1 (2) volt”: The aggregate voltage of all cells in on-board battery as measure by the redundancy bus port batt1 (2).

“rb1 (2) Amp”: The current flowing through the redundancy bus port batt1 (2).

“rb1 (2) Consum”: The aggregate consumption of electric power (measured on redundancy buss port batt1 (2) used since the last reset (milliamp hours). The setup screen allows the user to set a value that will trigger an alarm on the transmitter. This is useful to prevent over-discharge of on-board battery and/or in flight failures caused by a depleted battery.

“Maxspd-g”: Maximum GPS measured speed recorded by GPS unit since last reset.

“Maxalti-g”: Maximum GPS measured altitude recorded since last reset.

“Maxalti-v”: Maximum altitude recorded by on-board variometer since last telemetry reset.

“Maxvario”: Maximum climb rate recorded by on-board variometer since last telemetry reset.

“Minvario”: Minimum descend rate recorded by on-board variometer since last telemetry reset.

“Maxdist”: The maximum distance the aircraft was ever away from the transmitter since the last reset. This is the maximum dist-g recorded since the last reset.

“Maxcurr”: The highest current value (current) measured by the on-board voltage/current sensor since the last telemetry reset.

“Maxpower”: The maximum number of watts (power) measured since the last reset.

“Maxtemp1 (2)”: The highest temperature measured by the Temp1 sensor since the last telemetry reset.

“MaxRPM”: The highest RPM recorded by the RPM sensor since the last telemetry reset.

“MaxSWR”: The highest reading recorded since the last telemetry reset.

“MinRSSI”: The lowest RSSI reading measured since the last telemetry reset.

NOTE: *More information of these parameters please refer to the manuals of the sensors.*

NOTE: *Telemetry data can be reset/cleared by pressing and holding the “TELE” button, then follow the on screen instructions. Consumption can be reset/cleared via the “SPECIAL FUNCTION” menu when assigned to a switch.*

9 DATA STORAGE

There transmitter has an internal flash chip (EPROM) and a microSD card slot.

9.1 FILE STRUCTURE

CONFIG: Configuration files that are required when a new model is created.

IMAGES: Contains **bitmap, modelImages, and S6RScript** folders.
All the default and custom images that can be assigned to a model.

SOUNDS: All sound files required by the audio system.
The sounds used by your radio. Normally the sounds will be downloaded from the same place as are firmware upgrades.

SYSTEM: Contains transmitter and model files created by the user.
The SYSTEM folder is very important. Amongst other things it contains all of the model data that has been programmed on the radio. The data is written on the microSD card only when the radio is switched off or when a different model is selected.

FIRMWARES: Firmware files should be added to this folder when you need to upgrade the transmitter, wireless trainer and/or iXJT module software.

LOGS: Log files of telemetry data
The LOGS folder contains log files and will be automatically populated by the system whenever logging of the telemetry data is active. The folder will contain one file per day. Log files can be downloaded from the microSD card (see later) and viewed and/or edited via Excel.

NOTE: Files under *CONFIG/IMAGES/SOUNDS/SYSTEM* folders *can be stored either in flash or microSD card. FIRMWARES/LOGS are always saved on the microSD card to make more space on the internal flash memory.*

NOTE: *When the system is power on, it will search for files needed* under *CONFIG/IMAGES/SOUNDS/SYSTEM* folders *on the flash first. If they do not exist, the system will search for files on the microSD card.*

CAUTION: *If you want to store your important files (like model files) in the microSD card, you should always make sure that the file folder is properly closed before disconnecting the radio from the computer. Never remove the card when the radio is switched on.* ***If you lose or damage the card without a backup you will have to manually recreate all of your model data.***

NOTE: *You may not find some of the folders mentioned, but these will created automatically when you use the features that related to them. You can create them by yourselves if you need to add some customized files.*

9.2 CREATING YOUR OWN FILES

Boot image limitations: It must be called "openshow1.gif", and must be equal or smaller then 100K and have the following dimensions 480x272.The path is "IMAGE/".

USB icon limitations: It must be called "connect.jpg" and must be equal or smaller then 70k and have the following dimensions 480x272. The path is "IMAGE/".

Model images: The size should be equal or smaller then 50K, 100 is the maximum allowed images in the folder, located in the folder "IMAGE/MODELIMAGES/". The recommended size is 155x100 (colour: 16bit, RGB 565, 72DPI), smaller images will be displayed in the top left corner, larger images will be cut to fit the available space. Up to 50 characters are available to name the created image file, but 20 is recommended as a maximum in order for it to fit on the menu screens.

Track files: located in the folder "SOUNDS/en/TRACK/". The size should be equal or smaller then 100K, 100 is the maximum allowed images in the folder name length should be less than 10 characters and must have the .wav format.

NOTE: All the files can be stored in the corresponding path of flash or microSD card.

9.3 AS DISK DRIVERS

The HORUS can be connected to your PC using any good quality MINI-USB data cable. The flash and microSD card will appear on your PC as remote disk drives and can be treated as any other file folder.

It is Important to make backups of the data periodically. We recommend to do this before each firmware Updates. It's recommended to back-up the data after making significant changes to models and/or adding new models. Make sure that the names of the backup files contain a date, making it easier to backtrack them if required.

9.4 HOW TO UPGRADE

First step is to add the required files on to the microSD card.

Turn on HORUS and connect it to the PC USB port via a cable. A large USB icon will appear and HORUS will behave as mass storage device. Now you are able to access the microSD card content, we recommend to make a back-up of the existing microSD card content before proceeding.

NOTE: *If the released firmware update file contains a microSD folder, then this folder contains updated content. They should be copied onto and replace the existing microSD card files.*

CAUTION: *If the system has custom Boot files (sounds and/or images) manually copy the custom boot files back (from the created backup file) in the folder when the files have been replaced with the content of the update file.*

The second step will be to add the firmware file required by the user.

Select the file needed and copy it to the *microSD* card FIRMWARE folder, depending on region non-EU or EU should be selected, mode1-2 depends on the stick layout of the transmitter.

NOTE: *if you are not using a Windows computer your system may write other hidden files to the folder and the update will not work.*

The next step will be disconnecting the HORUS from the computer.

When all files are copied correctly, use the drive eject feature on your computer and unplug the HORUS from the USB cable. The HORUS will automatically turn off.

NOTE: *If you are not using a Windows computer your system might not disconnect the USB connection properly, if the USB cable is not removed within a couple of seconds.*

The final step will be to start the update process.

To start the HORUS update procedure press and hold the ENTER button and then power on the HORUS. This procedure will force the system to open the FIRMWARE folder and look for a firmware file to flash. There will be information on the screen about the update procedure steps and progress. You need to turn on the HORUS manually after the update has been completed.

Once all upgrades are done the HORUS should start normally.

If the update failed please retry the procedure above, if this does not resolve the issue delete the “SYSTEM” folder (make sure you have the folder backed up) and repeat the above steps. If this also fails contact your local dealer or contact FrSky.

NOTE: *The internal module will be updated automatically when you first power on your transmitter. When the update is finished, the HORUS will turn itself off.*

NOTE: *Wireless Trainer can be updated when the file is added to the FIRMWARE folder. When the update is finished, the HORUS will turn itself off.*

NOTE: *The firmware file will be deleted from the microSD card after the update is completed.*

NOTE: *More information please refer to the video 'how-to-upgrade-the-frsky-operating-system-fros' which can be downloaded from https://www.frsky-rc.com.*

10 TERMS AND ABRIVIATIONS USED IN THE MANUAL.

Term	Details

10.1 A

AC electrical outlet	AC power plugs and sockets are devices that allow electrically operated equipment to be connected to the primary (AC) in a building.
ACCST	Advanced Continuous Channel Shifting Technology - The ACCST 2.4GHz system shifts the frequency hundreds of times per second, ensure there are no signal conflicts and interruptions.
AETR	Stands for AILERON-ELEVATOR-THROTTLE-RUDDER and is used to summarize the RX channels 1-4. The arrangement of the channel order varies between manufactures.
AIL	Aileron.
AUX	Additional channels.

10.2 B

BEC	Battery Eliminator Circuit, provides the required voltage for the receiver by reducing the voltage received from the main battery.
BMP	The BMP file format, also known as bitmap image file or device independent bitmap (DIB) file format or simply a bitmap, is a used to store , independently of the (such as a), especially on .
Boolean operators	The three basic Boolean operators are: <, =, >, AND, OR, XOR , these are conditions for a logic switch construction.
BRKFLP	Brake flap also known as spoilers.

10.3 C

CCPM	Cyclic-Collective-Pitch-Mixing, this can be done either mechanical or via channel mixing.
CMBFLP	Camber flap = flaperon and is a combined signal of aileron and flaps.
CYCLIC PITCH	The cyclic pitch control (often referred to simply as "the cyclic") allows the pitch of the main rotor blades to be varied throughout their 360-degree cycle.
CMB/CAMBER	In aeronautics and aeronautical engineering, camber is the asymmetry between the top and the bottom surfaces of an aerofoil. An aerofoil that is not cambered is called a symmetrical aerofoil.
CG/CoG	CG or CoG Centre of Gravity is a point around which the force of gravity appears to act. It is point at which the combined mass of the model appears to be concentrated.
CNC	Computer Numerical Control (CNC) is the automation of machine tools that are operated by precisely programmed commands encoded on a storage medium (computer command module, usually located on the device, as opposed to controlled manually by hand wheels or levers, or mechanically automated by cams alone.
COMB MODE	When using “flight modes” this feature allows the same trim values to be valid for all modes.
CURVE LIB	Curve Library menu within the HORUS.

10.4 D

D8	V8-II series Receivers in D mode (V8FR-II, V8R7-II, V8R4-II, VD5M) or D Series Receiver (D8R-XP, D6FR, D4R-II) with 8 Channels (international version only).

D16 X series Receiver (X8R, X6R, X4R, X4RSB, XSR, etc.) with up to 32 channels.

DJT FrSky D series compatible external RF module.

DPI Dots Per Inch, a measure for image resolution.

10.5 E

ELE Elevator.

Etc. Etcetera.

ESC Electronic Speed Controller.

EXP/EXPO "EXP" automatically generated Exponential curves are produced when using this feature, +100 to -100 can be programmed, reducing or increasing the sensitivity near the center.

10.6 F

FBL system Most electronic flybar systems consist of the gyro sensors and the mixing/control unit/servo Bus. These can be combined in one unit, or separate.

FCC The Federal Communications Commission (FCC) is an independent agency of the United States government. The FCC works towards six goals in the areas of broadband, competition, the spectrum, the media, public safety and homeland security, and modernizing itself.

FCS40 FrSky ACCST 2.4GHz Telemetry - Smart Port Current Sensor 40A.

FCS150 FrSky ACCST 2.4GHz Telemetry - Smart Port Current Sensor 150A.

FLAPERON	A "flaperon" on an aircraft's wing is a type of control surface mix that integrates flaps with the ailerons channel.
FLP	Flap.
Flying wing	A flying wing is a plane with no definite tail , although a flying wing may have various small protuberances such as vertical , winglets and rudder.
Predefined mixes	Are preprogramed mixes that are commonly used to set up a model, these can vary depending on the selected model type.

10.7 G

GEAR	Landing gear.
G-PITCH	Inputs defined by transmitter movement (IMU) to create Pitch
G-ROLL	Inputs defined by transmitter movement (IMU) to create Roll
Gimbal	A gimbal is a pivoted support that allows the rotation of an object about a single axis.
GPS unit	Global Positioning System, is a device that accurately calculates geographical location by receiving information from GPS satellite.
GYRO	A gyroscope is a device that produces correction inputs to help stabilize a model.

10.8 H

Hall effect	The Hall effect is the production of a voltage difference (the Hall voltage) across an electrical conductor, transverse to an electric current in the conductor and a magnetic field perpendicular to the current.
Haptic feedback	Haptic or kinaesthetic communication recreates the sense of touch by applying forces, vibrations, or motions to the user. This mechanical

stimulation can be used to assist and to enhance the remote control of machines and devices.

10.9 I

IC Internal Combustion engine.

INT International

iXJT FrSky Internal Transmitter module.

10.10 J

JPEG JPEG is a commonly used method of lossy compression for digital images, particularly for those images produced by digital photography. The degree of compression can be adjusted, allowing a selectable trade-off between storage size and image quality. JPEG typically achieves 10:1 compression with little perceptible loss in image quality.

10.11 K

10.12 L

LBT Listen Before Talk firmware (EU).

LIMIT Maximum movement of a Servo channel.

LINE LINE is used to manually adjust the shape of the curve. Up to7 segments can be adjusted either via straight lines or smooth curves, depending on the selected option.

LS**W** Logic Switch used in HORUS model configuration.

LSD Low self-discharge.

LR12 L series Receiver (L9R, etc.) with 12 Channels.

Li-ion battery A lithium-ion battery or Li-ion battery (abbreviated as LIB) is a type of in which move from the negative to the positive electrode during discharge and back when charging.

10.13 M

M-POS Multi-position switch or knob on HORUS.

MDL HORUS Model Menu, this can be accessed via the MDL button.

MODEL SEL HORUS menu were the user can create/modify/delete models.

MIXER Mix is short for mixing, mixing is creating a program that will take a master input and control a slave output. For example: Mix a coupling between flaps and elevator for some rapid aerobatic loops. Mix in flaps and elevator the opposite way for a slow scale model to prevent ballooning when using the flaps. Mix rudder to ailerons for scale like turns. Mix throttle to elevator to flaps on a slow scale aircraft for a true scale flying experience.

Multicopter A multirotor or multicopter is a rotorcraft with more than two rotors. An advantage of multirotor aircraft is the simpler rotor mechanics required for flight control. Unlike single- and double-rotor helicopters which use complex variable pitch rotors whose pitch varies as the blade rotates for flight stability and control, multirotors often use fixed-pitch blades; control of vehicle motion is achieved by varying the relative speed of each rotor to change the thrust and torque produced by each.

10.14 N

10.15 O

OFFSET “OFFSET” is used to relocate the center position.

10.16 P

PPM	Pulse Position Modulation, effectively PPM is the old "analog" type of signal. PPM takes the position of the stick and adjust the width of a pulse transmitted over the air accordingly.
PC	Personal Computer.

10.17 Q

10.18 R

RATES	“WEIGHTS” represents the “RATES”, reducing the number will limit servo travel. +99 (deflection until programmed end points) to -99 (complete reversal of travel direction).
RTN	Return to previous menu/cancel button.
RUD	Rudder.
RP-SMA	Coaxial RF connectors developed in the 1960s as a connector interface for coaxial cable with a screw type coupling mechanism. The connector has a 50 Ω impedance. SMA is designed for use from DC to 18 GHz.
RSSI	RECEIVE SIGNAL STRENGTH INDICATOR (RSSI) - Received Signal Strength Indication (RSSI) value used to monitor acceptable signal strength or distance. Measures the strength of the signal between the transmitter and the receiver as measured at the receiver.

10.19 S

SMOOTH	“SMOOTH” is used to manually adjust the shape of the curve. Up to7 segments can be adjusted either via straight lines or smooth curves, depending on the selected option.
STK CAL	Stick Calibration menu within HORUS.
STK DIR	Software signal reversal menu within HORUS.

SWASH PLATE/RING	A swashplate is a device that translates input via the helicopter flight controls into motion of the main rotor blades. Because the main rotor blades are spinning, the swashplate is used to transmit three of the pilot's commands from the non-rotating fuselage to the rotating rotor hub and main blades.
SWR	SMART ANTENNA DETECTION - measure of transmitter antenna quality. Reading below 51 are normal.
SEPR MODE	HORUS menu configuration which allows independent trimming of each available “Flight mode”.
SCR TYPE	Source type
SYS button	System Button menu on the HORUS.

10.20 T

TELE	HORUS Telemetry menu on the HORUS.
THR	Throttle.
TRAVEL	Travel range of a servo.

10.21 U

10.22 V

V-Tail	In aircraft, a V-tail or Vee-tail is an unconventional arrangement of the tail control surfaces that replaces the traditional fin and horizontal surfaces with two surfaces set in a V-shaped configuration when viewed from the front or rear of the aircraft.
VPP	Variable-pitch propeller is a type of propeller with blades that can be rotated around their long axis to change the pitch (angle of attack) of the blade.

10.23 W

WEIGHT "weight" represents the "RATES", reducing the number will limit servo travel. +100 (deflection until programmed end points) to -100 (complete reversal of travel direction).

WL Trainer Wireless Trainer function, liking master and buddy TX via Wireless.

WL TELE a wireless automated communication process.

10.24 X

XJT FrSky X series compatible external RF module.

10.25 Y

10.26 Z

Revision Record

Index	Version	Revision content	Date	Mark
1	V1.0.0	Release, based on latest firmware of Horus X10/X10S v1.1.04.	2017-12-15	
2				
3				