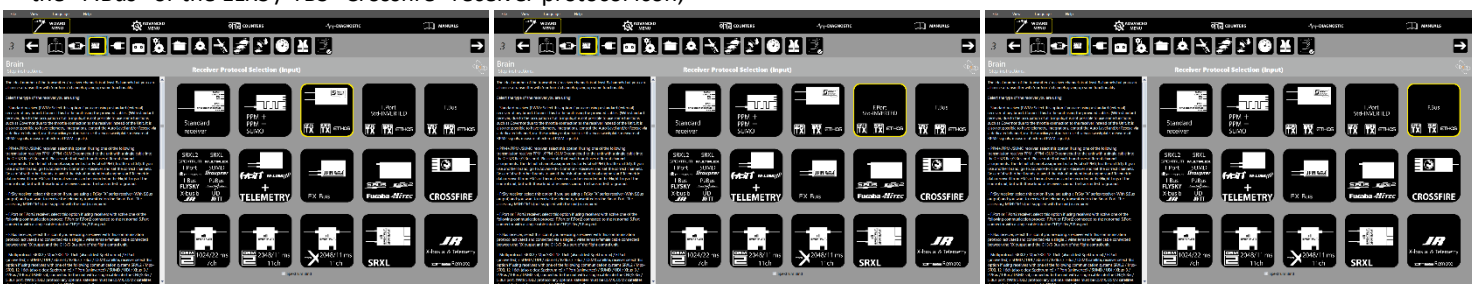
README for Brain2/iKon2 OpenTX / EdgeTX INTEGRATION (version 2.3 2024 June 24):

You can use the Brain2/iKon2 Integration, with receiver that uses Smart Port for telemetry and S.Bus for Radio channels (EG: FrSky X series receivers) or with new or updated receiver's able to manage F.Port or F.Bus protocol or with ELRS/TBS receivers able to manage CRSF protocol. Compatible Transmitters are the three FrSky Horus (X12S / *X10S* / *X10*), Taranis Q X7, the new X9D+ 2019, the new X9Lite and X-Lite models and RadioMaster TX16S. All both in ACCST mode and in the new ACCESS mode of the new FrSky TX versions (not for RadioMaster) or with an external ELRS or TBS module.

For telemetry, under "MANUALS" see the "Telemetry" pdf document that explain how connect and configure your ESC or a Temperature sensor to the Brain2/iKon2 and how to activate the reception of telemetry data on your transmitter (read paragraph 2 on page 11 !!).

1) Transmitters must use OpenTX (**at least the version 2.2.4**) or EdgeTX firmware. This is not a guide for installing, update and use OpenTX / EdgeTX on FrSky/RadioMaster transmitters, for this purpose, instructions, software and drivers download and firmware update, refer to either the FrSky, RadioMaster, OpenTX, EdgeTX websites. Using the OpenTX / EdgeTX program "Companion", after it updates itself (Help -> Check for Updates), verify that your transmitter is updated with the latest version of the OpenTX (**is needed at least 2.2.4** version with LUAC checkbox activated) or EdgeTX. Check also from FrSky/RadioMaster/ELRS/TBS website that your Receiver is updated with latest firmware;
2) Connect your Brain2/iKon2 unit via a USB cable to your PC, open the Windows application, and update the Brain2/iKon2 software and firmware to the latest version (leave the software open);
3) With the Windows application, on the panel 3 "Receiver Protocol Selection (Input)" of the Wizard, select the "Smart.Port" or the "F.Port" or the "F.Bus" or the ELRS / TBS "Crossfire" receiver protocol icon;

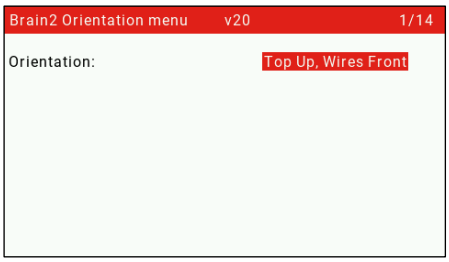


4) Connections (panel 4 of the Wizard) and Transmitter Setup (panel 5 of the Wizard) must have completed before using the Integration!;
5) Under "Help" menu select "Download Latest OpenTX/EdgeTX Integration" or download from msh-electronics.com/downloads/ website the file "Brain2OpenTX-EdgeTX.zip" and save in a folder of your PC. For ELRS / TBS Crossfire "Download Latest Crossfire Integration";
6) Unzip the "Brain2OpenTX-EdgeTX.zip" or the "Brain2crossfire.zip" to create the folder "BRAIN2";
7) Copy the right version (screen & memory) of "Brain2xxx.lua" for your transmitter in the SCRIPTS/TOOLS of the transmitter SD memory card;
8a) For Smart.Port protocol: with receivers that have standard 3 poles connectors like RX8R, X8R & X6R: Per the schematic in panel 4 ("Connections"), connect a standard 3-pole female/female cable like that supplied with the Brain2/iKon2 to the Smart Port "- + S" of your "X" receiver and the other end in the CH3/S-REC connector of the Brain2/iKon2 that work as TELEMETRIC IN/OUT port;
Using ONLY the adapter cable **MSH51645**, connect the standard connector of the adapter cable to the SBUS port of your FrSky "X" receiver and connect the small JST connect of the adapter cable to the lateral SAT1 connector of the Brain2/iKon2 that with this protocol active become the S.Bus signal input port. Note: Power to receiver come from S.Port;

***** DON'T USE OTHER CABLE, OTHERWISE, YOU MAY BURN YOUR Brain2/iKon2 UNIT AND/OR YOUR RECEIVER!!!! *****

8b) For F.Port or F.Bus protocol: you must connect directly only the receiver Smart.Port output to the CH3/S-REC connector of the Brain2/iKon2. No other connection is required;
8c) For ELRS / TBS Crossfire protocol that have separate cables for TX and RX, follow the schematics of panel 4 of the wizard "Connections";
9) Power your TX, go to MDL, MODEL SETUP, Internal RF, Mode=D16, Receiver No.=01, for ACCST TX/RX select "Bind", for ACCESS TX/RX select "Register". Keeping pushed the "f/s" key, power your receiver to Bind / Register it to the transmitter model that is active in the transmitter. Cycle power of RX (With ACCESS you must now select one of the Receiver "Bind"). For ELRS with the TX LUA app "ExpressLRS" (elrsV3.lua) set as preferred setup: Packet Rate = 333Hz Full (16ch), Telem Ratio = 1:8, Switch Mode 16ch Rate/2, Dynamic Power set to Off. Then Bind;
10) In the menu "MDL" -> "OUTPUTS" the Center Pulses (last column in OpenTX) must be set to 1520 for all channels;
11) Power your transmitter and your receiver. With the Brain2/iKon2 software, verify in panel 5 ("Transmitter setup") the correct direction of each channel as explained in the side bar instructions (Default channel order like S.Bus Futaba: "AETR") If necessary, correct it in the transmitter, reversing the channel in the transmitter menu "MDL", "OUTPUTS", "Direction";
12) With the Brain2/iKon2 software, verify in panel 5 ("Transmitter setup") that you are able to obtain the full -100/+100 travel of all control channels. If necessary, correct them in the transmitter, raising or lowering in the menu "MDL" -> "OUTPUTS" the Min/Max values (the "extended limits" checkboxes must be selected and for RadioMaster select also "Enable Max throw");

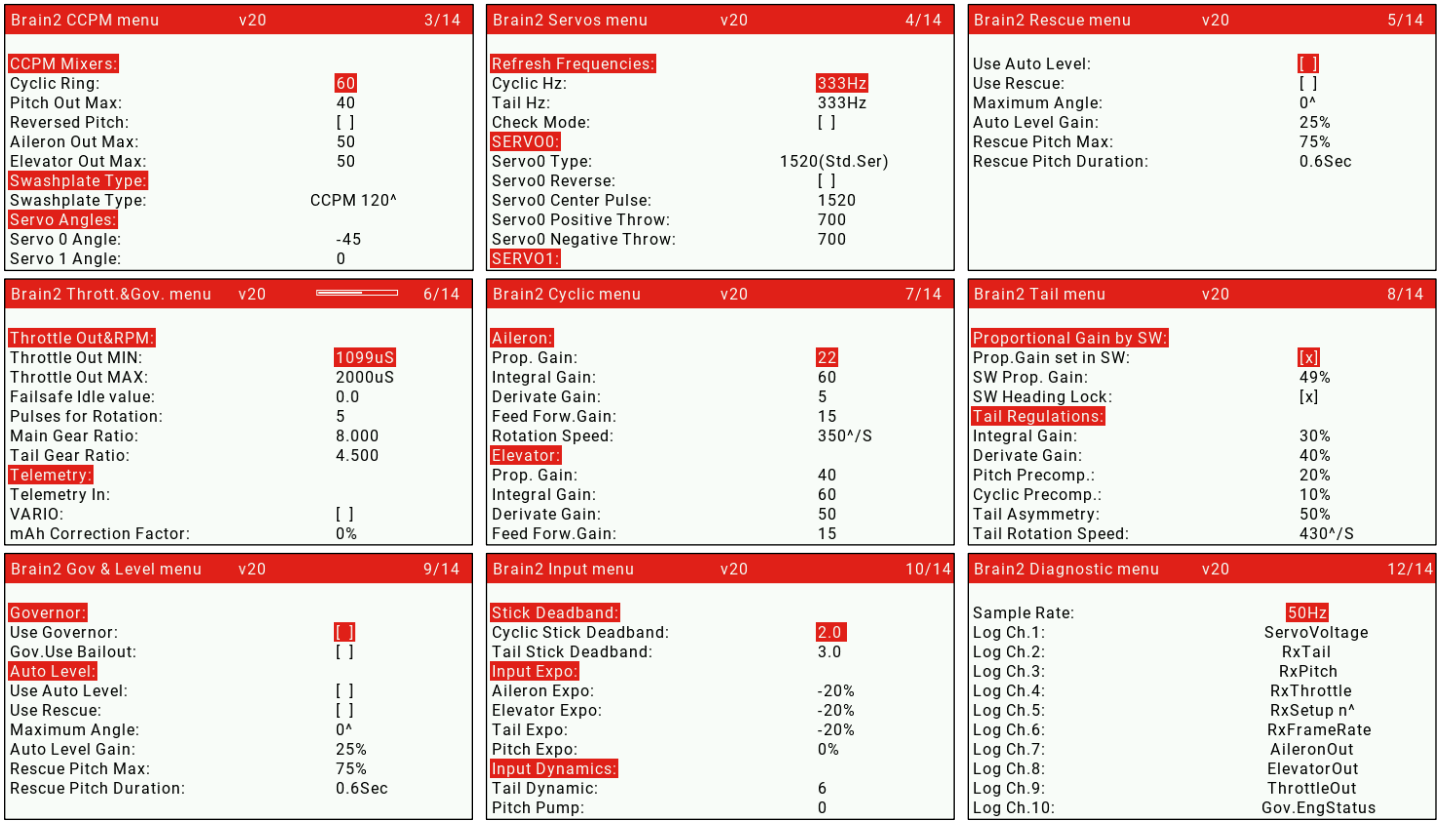
Now you are ready to use the Brain2/iKon2 Integration, going to the "SYS" menu and selecting "BRAIN2" file. The first section menu "Brain2 Orientation menu" page appears:



Integration info's:

- Once inside the Brain2/iKon2 integration, you can use: PgDn / PgUp, the Roller with his buttons and the three-position switch you have assigned to the Brain2/iKon2 for the selection of the active Setup1 or 2 or 3 (e.g. the SC switch).
- The Integration pages reproduce the ADVANCED menu of the app Windows, Android, iOS with the same order/sequence.
- You can move between each of the 14 sections menus with PgUp and PgDn (for X10S see Note2).
- The active section is indicated on the right of the title of the screen.
- Each time you enter in a menu, before modifying any parameter, wait until the update bar on the top disappear.
- Inside each section menu, you can go to a specific parameter/row rotating the Roller. The value of the active parameter/row is highlighted. To enter into edit mode for change the value of the active parameter, push the Roller button (value start to blink), values are changed on the transmitter display rotating the Roller but are not sent and memorized in the Brain2/iKon2 unit until you push again the Roller button and from blinking the value returns to normal.
- To facilitate and speed up the navigation, when you arrive at the last row of the menu and rotating again clockwise the dial, you will return to the first row of that menu. If you rotate anticlockwise the dial from the first row of a menu, you will go to the last row of that menu.
- Also, during the edit of parameters represented by a list of names (the Loggable Parameters, the Timers Names, etc.), when you arrive at the end of the list and you again rotate clockwise the dial, you will return to the first value of that list. If you rotate anticlockwise the dial from the first value of a list, you will go to the last value of that list.
- Menu from 1 to 6 are related to "Common" values. Menu from 7 to 11 are related to the "Setup" actually active in your TX. You must set on the transmitter the switch of "Setup" selection to the Setup number (1 or 2 or 3) with the values you want see (and eventually change), before entering in one of these "Setup" menu (7 ⇔ 11).
- To speed up the value changes for some big values (like RPM for example), you can push the upper "MDL" key. This cyclically change the multiplier of inc/dec values from 1, to 10, to 100 and again to 1 (multiplier is used only for numeric values). Multiplier is displayed on top bar.

To exit from the Integration menu, you can push in any moment, the "RTN" button.



NEVER use Brain2/iKon2 Integration while you are flying! For example, changing the ESC brand of ESC telemetry in the Governor menu will generate a reinitialization of the communication port and the radio signal is lost for a couple of seconds.

Note1: Never use the OpenTX / EdgeTX Integration of Brain2/iKon2 together with the Windows application and/or Android app and/or iOS app or while changing parameter values with dials. Use only one system at a time to change values.

Note2: X10S transmitters: due to a bug in actual OpenTX version, long press on PgUp/Dn don't work on X10S. This bug will be fixed with version 2.3.X of OpenTX, but none know the release date/ETA. In the meantime, the "SYS" and "TELE" keys have been activated as workarounds to be able to navigate the pages not only forward but also backwards.

Note3: Switching between the Smart.Port or F.Bus and F.Port protocol, you can have conflicts in the telemetry sensors (different ID used). The solution is to delete all the sensors and do a new discovery of the telemetry sensors when you switch between protocols.

Note4: The OpenTX telemetry & Integration was developed and tested with FrSky HORUS (X12S) with OpenTX version 2.2.4 of 2019/July/11, Companion 2.2.4 of July-11-2019 and with FrSky receiver X8R with firmware version 151118.

Note5: Our LUA applications are only provided in precompiled versions so that the size of the apps is reduced and they can also be run on transmitters with limited memory (or on future versions of operating systems that will use more memory, reducing the amount of free memory). Furthermore, precompiled versions run faster, and in the event of any support requests, we are able to respond more quickly without having to check and verify whether users have modified our applications, where and how.

Note6: Due to the big amount of FW code to load and use, OpenTX / EdgeTX integration works only on the new Brain2/iKon2 units that have more memory for the additional FW code and more power to execute than the older Brain/iKon.