README for INTEGRATION using SRXL2 RX & OpenTX/EdgeTX transmitter with MULTI protocol module 4 in 1 (version 1.1   2024 march 25):

You can use the Fat Forward Integration for Brain2/oKon2, with Spektrum receiver that use SRXL2 protocol on serial output like SPM4650/1 and that (for now) don't transmit on the bus their own Fast Forward Menu's (like al the ARxxxx receivers or AVIAN/FIRMA ESC on the same serial bus) to any Transmitters brand using OpenTX or EdgeTX OS and an internal or external MULTI-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 OpenTX/EdgeTX transmitter.

1) This is not a guide for installing, update and use OpenTX, EdgeTX, Multiprotocol modules, for this purpose, instructions, software, and drivers download and firmware update, refer to the Transmitters and/or OpenTX and/or EdgeTX and/or MULTI-Module websites.

2) Check from your transmitter website that your Transmitter, internal or external Multimodule and Receiver are all updated with latest firmware & software.

3) Select the Internal or external MULTI module to DSM mode, X 2F protocol, max. throw enabled and 11ms update rate.

4) 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).

5) With the Windows application, on the panel 3 "Receiver Protocol Selection (Input)" of the Wizard, select the "Multiprotocol" (SRXL2) icon.

6) Connections (panel 4 of the Wizard) and Transmitter Setup (panel 5 of the Wizard) must have completed before using the Integration!.

7) 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.

8) Unzip the "Brain2OpenTX-EdgeTX.zip" to create the folder "BRAIN2" that contain the "_SRXL2_MULTI" sub-folder.

9) Copy the full content of the sub-folder "_SRXL2_MULTI" in the SCRIPTS/TOOLS folder of the transmitter SD memory card.

10) Per the schematic in panel 4 "Connections", connect the "SRXL2" port of your telemetric receiver to the CH3/S-BUS connector of the FCU with a standard female/female three wire cable (for SPM4650/1 cable see FAQ#26). If you want have redundancy, you can also connect one or two DSMX satellite to the SAT1 & SAT2 ports.

11) In panel 3 of the Brain Configuration Software select the checkbox "Spektrum Bind" and read and follow the instructions. Power on your TX, go to MDL, MODEL SETUP, Internal RF, select the BIND button.

12) In the menu "MDL" -> "OUTPUTS" the Center Pulses (last column in OpenTX) must be set to 1520 for all channels.

13) Power on 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 for Spektrum must be: "TAER") If necessary, correct it in the transmitter, reversing the channel in the transmitter menu "MDL", "OUTPUTS", "Direction".

14) With the Brain2/iKon2 configuration 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" and also "Enable Max throw" checkboxes must be selected).

Now you are ready to use the Brain2/iKon2 Integration, going to the "SYS" menu and selecting "Brain2 Frwd Prog" file. The main menu of Brain2 Integration appears:
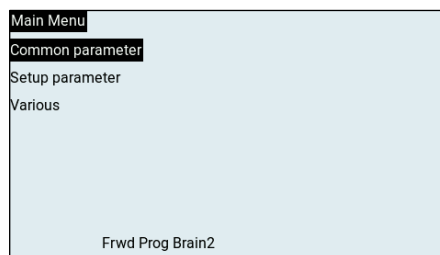
Integration info's:

- Once inside the Brain2/iKon2 integration, you can use 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 menus and sub-menu rotating the roller.
- The active section is indicated by background color.
- Each time you enter in a menu, before modifying any parameter, wait until the parameters and values are loaded.
- 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 related to the "Setup parameter" display the values of the actually active Setup 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.

To return to the previous menu, select "Back" or "Prev." (the nearest).

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

CCPM Mixers	Back
Cyclic Ring	60
Pitch Out Max	40
Reversed Pitch	Off
Aileron Out Max	29
Elevator Out Max	29
Prev Frwd Prog Brain2	

Servo 4	Back
Servo 4 Type	760(Fast Ser)
Servo 4 Reverse	Off
Servo 4 Center Pulse	760
Servo 4 Positive Throw	150
Servo 4 Negative Throw	150
Prev Brain2 v3.4.39	

Rescue	Back
Auto Level	On
Rescue	Off
Max Angle	22°
Gain	25 %
Pitch Max	75 %
Pitch duration	0.6
Prev Brain2 v3.4.39	

Gov Gains	Back
Is Electric	On
Proportional	50 %
Integral	40 %
Derivate	60 %
Pitch precomp	5 %
Cyclic Precomp	0 %
Tail Preocmp	0 %
Prev Frwd Prog Brain2	

Gov Spoolup	Back
Spoolup Ramp	2
Ramp Up	5
Ramp Down	15
Deadzone	0
Bailout Ramp	15
Bailout Timeout	0
Prev Brain2 v3.4.39	

Aileron	Back
Proportional	22 %
Integral	60 %
Derivate	5 %
Feed Forward	15 %
Max Rotation Speed	350°
Prev Frwd Prog Brain2	

Tail Regulations	Back
Integral	30 %
Derivate	40 %
Pitch Precomp	20 %
Cyclic Precomp	10 %
Asimmetry	50 %
Rotation Speed	430°
Prev Frwd Prog Brain2	

Exponentials	Back
Aileron	-20 %
Elevator	-20 %
Tail	-20 %
Pitch(lightening)	0 %
Prev Frwd Prog Brain2	

Parameters I	Back
Parameter 1	ServoVoltage
Parameter 2	RxTail
Parameter 3	RxPitch
Parameter 4	RxThrottle
Parameter 5	RxSetup n.
Prev Frwd Prog Brain2	

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 while changing parameter values with dials. Use only one system at a time to change values.

Note2: 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.

Note3: Due to the big amount of FW code to load and use, Fast Forward 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.

OpenTX, EdgeTX, FrSky, RadioMaster, Smart.Port, F.Port, F.Port2, F.Bus, S.Bus, Crossfire, TBS, ELRS are all trademark of the respective company.