**README for the regulation (Integration) from Spektrum TX of BRAIN2 parameters (Vers.1.2 2017 September 12):**

You can use the integration together the telemetry sent by Brain2 (included that read from a connected ESC).

1) You must have a Spektrum telemetric receiver with a bidirectional SRXL port. Actually, the only working is SPM4649T (AR6600T, AR6270T don't have SRXL connector, AR8010T, AR9030T, AR9320T have SRXL connection but are not bidirectional). Transmitter enabled for all the new telemetry sensor and integration are:
DX6e, DX6 G2/G3 (black), DX7 G2 (black), DX8 G2 (black), DX9, DX10T, DX18 G1/G2, DX18t, DX18QQ, DX20.
With old G1 DX6, DX8, DX7 transmitter, telemetry and alarms work but due to the old AIRWARE firmware released 2014 and never updated, Integration don't work. No integration with 'EU' G2 DX6 and DX7 that work only at 22mS, DX6i and all other non-LCD transmitters such as DXe, DX5e, DX4e;
For redundancy and security on larger models you can also add DSMX sats on SAT1 & SAT2 ports;

2) Your Transmitter **MUST** be updated at least with the last AirWare firmware and voices (firmware 1.20 and voices 1.09 released 2017-July-11);

3) Connect your Brain2 unit via USB cable to your PC, open the Windows application, update Brain software and firmware to the last version;

4) You must select "Spektrum SRXL" receiver type in the panel 3 "Receiver Selection" of the FBL configuration software wizard;


5) The "README_for_ESC_datas_log_and_telemetry.pdf" document explain you how activate also the telemetric transmission of data of your ESC;

6) You must connect the "SRXL" port of your telemetric receiver to the CH3/s.rec connector of the FBL with the cable supplied with receiver or adding a standard female/female three wire cable like that supplied with the Brain2;

7) Before binding to the receiver, in the Transmitter, the system type must be set to either "DSMX" and "11mS" frame rate;

8) Bind your receivers (SPM4649T and eventually also the connected DSMX sats) to your transmitter. This can be done via software checking the "Spektrum Bind" checkbox in page 3 "Receiver Selection" of the wizard and following instructions or with Bind Plug to CH345. Note: You must re-power Brain2 from the servo rail by BEC/Lipos (not only by USB) and SPM4649T led start to blink only after a couple of seconds from re-powering of the unit;

9) With the Brain2 software, verify in panel 5 ("Transmitter setup") that you can obtain the 100% travel of all control channels (also Tail Gain and also AUX if you use it). If necessary, correct them in the transmitter, going in to function -> "Servo Setup" -> raising or lowering the "Travel" values;

10) Verify in panel 5 "Transmitter setup" of the wizard the correct cursor direction of each channel as explained in the lateral instructions and eventually correct in the transmitter reversing the channel in function -> "Servo Setup" -> "Reverse";

11) Close the FBL configuration software, and disconnect the USB from the FBL unit so that it powers down. Now power on your model from the flight pack;

12) To enable the Brain2 Integration menu in your Transmitter, select "System Setup" -> "Telemetry" -> "Auto-Config.

13) Now from main page, using the "Roller" you can see other than all the telemetric info's pages, also the page dedicated to the Integration.
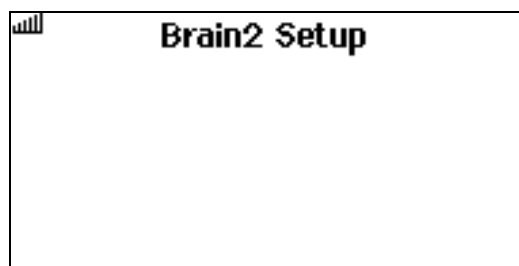
(The symbol ⏶ in the top left indicate that receiver is powered and is transmitting Integration info's.)

To make appear menu (to activate integration): With Mode 1 & 2 transmitters, keep both sticks down and into the corners to the internal sides of the transmitter for at least 4 seconds: \ / so that they are in the bottom right on the left stick and bottom left on the right stick.

With Mode3 & 4 transmitters, keep both sticks down and pointed to the outside of the transmitter for at least 4 seconds: / \ so the left stick is pointed to the outside left and the right stick is pointed to the outside right.
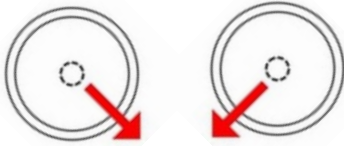
Brain2 Setup
CALIBR.DIAL
orientation
servos
ccpm
rescue
governor
input
tail

To disactivate integration: The same method used to activate, or with Throttle Hold and/or Throttle Cut switches turned off, raise Throttle from zero with stick or with the Idle Up switch.

Navigation is done with the cyclic sticks. With elevator stick movements, you can navigate up and down in the 14 Sections of the Main Menu. The text of the selected/active row change to UPPERCASE, and other not active rows are set to lowercase. To be more accustomed, Sections and Parameters of each Sections are ordered like the Advanced Sections of Windows, Android, iOS, Jeti, HoTT applications.
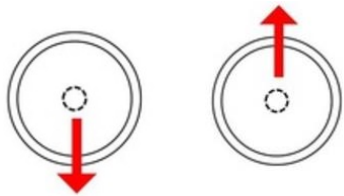
Brain2 Setup
calibr.dial
orientation
servos
CCPM
rescue
governor
input
tail

Moving aileron stick to right, you can enter in the Sub Menu of the selected Section with the list of all Parameters of that Section or return to the Main Menu moving aileron stick to left. In a Sub Menu, the title change and become the name of the Section. If for error you return to Main Menu, if you don't change the Section, you can return in the same row of the Sub Menu (every time you change Section of the Main Menu, when you enter in to a Sub Menu you are in the first row).
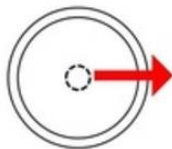
B2 CCPM
CYCLIC RING
pitch mixer
rev.pitch
ail. mixer
elev.mixer
swashpla.type
srv1 angle
srv2 angle

Like Main Menu, also in each Sub Menu you can navigate up and down with the elevator stick movements. Like in Main Menu, the text of the selected row change to UPPERCASE, and other not active rows are set to lowercase.
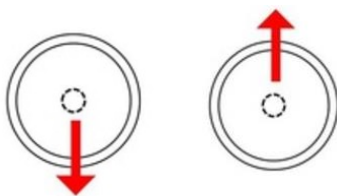
B2 CCPM
cyclic ring
pitch mixer
rev.pitch
AIL. MIXER
elev.mixer
swashpla.type
srv1 angle
srv2 angle

To facilitate and speed up the navigation, when you arrive at the last row of the Main Menu or Sub Menu, moving the elevator stick further to down, you will return to the first row of that Main Menu or Sub Menu. If you are in the first row of the Main Menu or Sub Menu moving the elevator stick up, you will go to the last row of that Main Menu or Sub Menu.

Once selected the desired Parameter, moving to right the aileron stick, the actual value of the selected Parameter is displayed (but here is not modifiable).

1
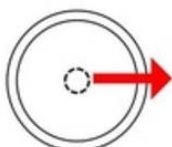
B2 COMMON
CCPM
AIL. MIXER
38

Moving again the aileron stick to right you change from "Value Display" status to "Value Modify" status/condition. In this status/condition, the name of the Parameter blink and you can change the value moving the elevator stick up or down.
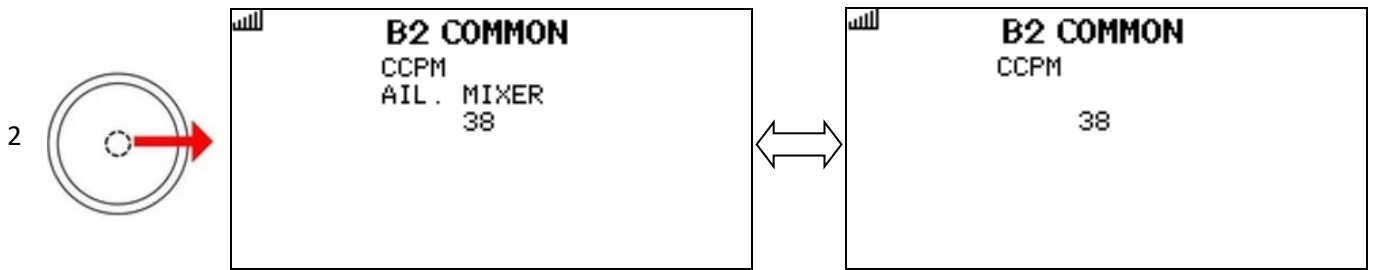
From this situation ("Value Modify"), if you move the aileron stick to left, the value displayed return to the previous value stored in the unit (escape), instead if you move the aileron stick again to right, the new value is stored in the unit and the message "STORED !" appear to confirm that the value is now modified in the unit (note that if you try to store the same value that is already stored in the unit, the message "STORED !" don't appear).
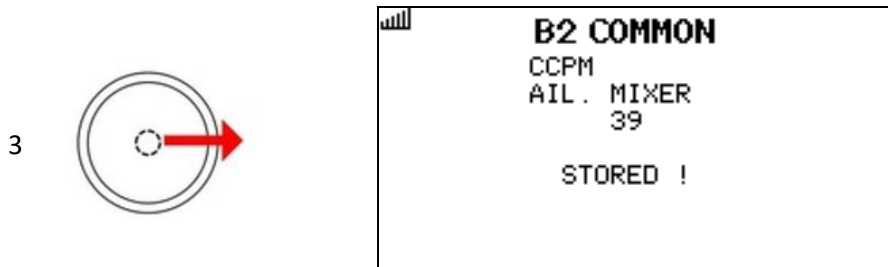
On the top row is indicated if the displayed value is a "COMMON" Parameter or a SETUP1/SETUP2/SETP3 Parameter. For Parameters related to each of the three "SETUPS", you can change the SETUP with the transmitter switch that you have already assigned and normally use to the change of the Setup. The displayed value is that related to the displayed SETUP number.
Note that if you change SETUP in the "Value Modify" status, the status change and return to "Value Display" status.

NEVER use Brain2 Integration while you are flying! Anyway, Integration navigation work only with the heli landed to ground if throttle is at zero (throttle hold and / or Throttle cut) and the read RPM are at zero.

Note1: The use of the cyclic stick for the navigation inside the integration menu, start to work only after the end of the initialization process of the Brain2 unit (after the end of alternate led lamps and after the swashplate movement). NEVER MOVE STICKS DURING THE UNIT INITIALIZATION PROCESS OTHERWISE CENTER STICKS VALUES ARE CHANGED!!!

Note2: SPM4649T due to his small dimension have not implemented and don't have capacitor for filter and as backup of power. With SPM4649T is needed a good power system, with a redundant second cable connection, better if you have also a backup system like Opti Guard or similar products, better if you have also an external electrolytic connected to a spare connector. These requirements become a "MUST HAVE" if you use only SPM4649T without any sat connected.

Note3: Like the Sat's, also SPM4649T due to his small dimension don't have failsafe function (when RF signal disappear output signal disappear), but this is not a problem because Brain2 take in charge the Fail Safe and after some milliseconds that the signal disappears cut throttle and set the servos to the last valid position.

Note4: SPM4649T due to his small dimension don't read and don't transmit RX-Voltage in his telemetry data's but this is not a problem because Brain2 take in charge the problem and send to the transmitter the voltage used for powering the SPM4649T receiver as RX-Voltage.

Note5: Normally during menu navigation, the elevator stick up or down work as a "switch", you must return to zero before other position increase/decrease. Only when in "Value Modify" status, keeping the elevator stick deflected, the values continue to increase/decrease until you release the stick to the center. If the stick deflection is at full throw, the amount of increase decrease steps changes from 1 to 10. Obviously, this happen only if point 9) has been respected.

Note6: If you want see text clearer, in any moment you can turn on again backlight with the transmitter "BACK" key. We suggest using Lipo Ion battery to power the transmitter and set Backlight duration to 60 secs (that is the maximum allowable value) in "System Setting" menu.

Note7: If for any reason, screen become dirty, you can clear/refresh display with the transmitter "CLEAR" key.

Note8: For SPM4649T registration on "My Spektrum" or firmware update is needed a SPMA3065 accessory and the last version (V1.2.4) of the "Spektrum Updater" SW (http://spektrumrc.cachefly.net/apps/updater_instructions.html).

Note9: Development and test are done with DX9 with AirWare 1.20, voices 1.09 and SPM4649T receiver.

Note10: Spektrum Integration work only on the new Brain2 units that have more power and more useable memory for the large amount of FW code added and executed.

Release Notes:
Version 1.00
- First official release   Spektrum, AirWare, DSMX are trademark of the respective company.

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                                    "B2 CalibDial "                                    "No Cal.Param."
                                    "CAL. CH.1    "  ─────────────────────────────────▶ "CCPM:Cyc.Ring"
                                    "CAL. PAR 1   "                                      "CCPM:PitMixer"
                                    "CAL. CH.2    " ──────▶ "No          "              "CCPM:AilMixer"
                                    "CAL. PAR 2   "         "8           "              "CCPM:EleMixer"
                                    "CAL. CH.3    "         "9           "              "CCPM:SwashPha"
                                    "CAL. PAR 3   "         "10          "              "Gov:Speed 1  "
                                                            "11          "              "Gov:Speed 2  "
                                                            "12          "              "Gov:Speed 3  "
                                    "B2 Orientat. "         "13          "              "Gov:Prop.Gain"
                                    "ORIENTATION  "         "14          "              "Gov:Inte.Gain"
                                                            "15          "              "Gov:Deri.Gain"
                                    "B2 Servos    "         "16          "              "Gov:Pit.Prec."
                                    "CYCLIC HZ    "                                     "Gov:Cyc.Prec."
                                    "TAIL    HZ   "                                     "Gov:TailPrec."
                                    "CHECK MODE   "                                     "Gov:Ramp Up  "
                                    "SRV1 TYPE    "         "WRONG/NOT SET"             "Gov:Ramp Down"
                                    "SRV1 REVERSE "         "TopUpWireFron"             "Gov:Spoo.Ramp"
                                    "SRV1 NEUTRAL "         "TopUpWireBack"             "Gov:Deadzone "
                                    "SRV1 POS.THR "         "TopUpWireLeft"             "Gov:Bai.TimeO"
                                    "SRV1 NEG.THR "         "TopUpWireRigh"             "Gov:Bail.Ramp"
                                    "SRV2 TYPE    "         "BotLeftWirFro"             "Cyc.StickDead"
                                    "SRV2 REVERSE "         "BotLeftWirBac"             "TailStickDead"
                                    "SRV2 NEUTRAL "         "BotLeftWirDow"             "Aileron Expo "
                                    "SRV2 POS.THR "         "BotLeftWireUp"             "Elevator Expo"
                                    "SRV2 NEG.THR "         "BotUpWirFront"             "Tail Expo    "
                                    "SRV3 TYPE    "         "BotUp-WireBac"             "Pitch Expo   "
"Brain2 Setup_"                     "SRV3 REVERSE "         "BotUp-WirLeft"             "Tail Dynamic "
"CALIBR.DIAL  "                     "SRV3 NEUTRAL "         "BotUp-WirRigh"             "Pitch Pump   "
"ORIENTATION  "                     "SRV3 POS.THR "         "TopLeftWirFro"             "Tail:Int.Gain"
"SERVOS       "                     "SRV3 NEG.THR "         "TopLeftWirBac"             "Tail:Der.Gain"
"CCPM         "                     "SRV4 TYPE    "         "TopLeftWirDow"             "Tail:Pit.Prec"
"RESCUE       "                     "SRV4 REVERSE "         "TopLeftWireUp"             "Tail:Cyc.Prec"
"GOVERNOR     "                     "SRV4 NEUTRAL "                                     "Tail:Rot.Spee"
"INPUT        "                     "SRV4 POS.THR "                                     "Tail:Asymmetr"
"TAIL         "                     "SRV4 NEG.THR "         "None(no out) "             "Cyc.OverGains"
"CYCLIC       "                                            "1520(Std.Ser)"             "Ail.Prop.Gain"
"GOV & LEVEL  "                     "B2 CCPM      "         "760(Tail Ser)"             "Ail.Inte.Gain"
"COUNTERS     "                     "CYCLIC RING  "                                     "Ail.Deri.Gain"
"DIAGNOSTIC   "                     "PITCH MIXER  "                                     "Ail.FF.Gain  "
"BLADE SIZE   "                     "REV.PITCH    "                                     "Ail.Rot.Speed"
"CYCLIC GAIN  "                     "AIL. MIXER   "                                     "Ele.Prop.Gain"
                                    "ELEV.MIXER   "                                     "Ele.Inte.Gain"
                                    "SWASHPLA.TYPE" ──────▶ "Heli CCPM120°"             "Ele.Deri.Gain"
                                    "SRV1 ANGLE   "         "Heli H-1 90° "             "Ele.FF.Gain  "
                                    "SRV2 ANGLE   "         "Heli CCPM135°"             "Ele.Rot.Speed"
                                    "SRV3 ANGLE   "                                     "Agility      "
                                    "SWASH.PHASE  "                                     "TailDragComp."

                                    "B2 Rescue    "
                                    "USE AUTO LEV."
                                    "USE RESCUE   "
                                    "MAX ANGLE    "
                                    "AUTOLEVELGAIN"
                                    "RES.MAXPITCH "
                                    "RES.PITCHDUR."

                                    "B2 Governor  "
                                    "THR.OUT MIN  "
                                    "THR.OUT MAX  "
                                    "MAINGEAR RATI"
                                    "TAILGEAR RATI"
                                    "SENSING DIV  "
                                    "ESC TELEMETRY" ──────▶ "No ESC       "
                                    "MAH CORRECTIO"         "CastleCreatio"
                                    "SPEED 1      "         "Hobbywing    "
                                    "SPEED 2      "         "Kontronik    "
                                    "SPEED 3      "         "Scorpion     "
                                    "IS ELECTRIC  "
                                    "P GAIN       "
                                    "I GAIN       "
                                    "D GAIN       "
                                    "PITCH PRECOMP"
                                    "CYCLIC PRECOM"
                                    "TAIL PRECOMP."
                                    "RAMP UP      "
                                    "RAMP DOWN    "
                                    "SPOOLUP RAMP "
                                    "DEADZONE     "
                                    "BAILOUT TIMEO"
                                    "BAILOUT RAMP "
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                                              "B2 Input      "
                                              "CYC.STK DEADB"
                                              "TAI.STK DEADB"
                                              "AIL EXPO     "
                                              "ELEV EXPO    "
                                              "TAIL EXPO    "
                                              "PITCH EXPO   "
                                              "TAIL DYNAM.  "
                                              "PITCH PUMP   "

                                              "B2 Tail      "
                                              "I GAIN       "
                                              "D GAIN       "
                                              "PITCH PRECOMP"
                                              "CYCL.PRECOMP."
                                              "TAIL ROT.SPEE"
                                              "TAIL ASYMMETR"
                                              "IS SET BY SW "
                                              "SWHEADINGLOOK"
                                              "P GAIN BY SW "

                                              "B2 Cyclic    "
                                              "AIL.P GAIN   "
                                              "AIL.I GAIN   "
                                              "AIL.D GAIN   "
                                              "AIL.FF GAIN  "
                                              "AIL.ROT.SPEED"
                                              "ELE.P GAIN   "
"Brain2 Setup_"                               "ELE.I GAIN   "
"CALIBR.DIAL  "                               "ELE.D GAIN   "
"ORIENTATION  "                               "ELE.FF GAIN  "
"SERVOS       "                               "ELE.ROT.SPEED"
"CCPM         "                               "AGILITY      "
"RESCUE       "                               "TAILDRAGCOMP."
"GOVERNOR     "
"INPUT        "                               "B2 Gov & Lev "
"TAIL         "                               "USE GOVERNOR "
"CYCLIC       "                               "GOV.USE BAIL."
"GOV & LEVEL  "                               "USE AUTO LEV."
"COUNTERS     "                               "USE RESCUE   "
"DIAGNOSTIC   "                               "MAX ANGLE    "
"BLADE SIZE   "                               "AUTO LEV.GAIN"
"CYCLIC GAIN  "                               "RESC.PITC.MAX"
                                              "RESC.PIT.DUR."
                                                                 "None          "
                                              "B2 Counters  "    "Main Belt     "
                                              "MAIN FLI.COUN"    "Tail Belt     "
                                              "MAIN FLI.TIME"    "Head Dampers  "
                                              "C1 FLIGH NAME"    "HeadThrustBea "
                                              "C1 FLIGH TIME"    "TailThrustBea "
                                              "C1 RESET TIME"    "MotorBearings "
                                              "C2 FLIGH NAME"    "Muffler       "        "NoLog         "
                                              "C2 FLIGH TIME"    "Cyclic Servos "        "ServoVoltage  "
                                              "C2 RESET TIME"    "Tail Servo    "        "RxAileron     "
                                              "C3 FLIGH NAME"    "MainShaftBear "        "RxElevator    "
                                              "C3 FLIGH TIME"    "TailShaftBear "        "RxTail        "
                                              "C3 RESET TIME"    "Main Blades   "        "RxPitch       "
                                              "C4 FLIGH NAME"    "Tail Blades   "        "RxThrottle    "
                                              "C4 FLIGH TIME"    "Fuel Filter   "        "RxAUX         "
                                              "C4 RESET TIME"    "Glow Plug     "        "Setup n°      "
                                                                 "ModelFlightTi "        "SwashAileron  "
                                                                                         "SwashElevator "
                                                                                         "PitchOut      "
                                              "B2 Diagnostic"                            "ThrottleOut   "
                                              "SAMPLE RATE  "    "Disabled      "        "Gov.EngStatus "
                                              "LOG CH1  PAR."    "10Hz          "        "MainRotRPM 3K "
                                              "LOG CH2  PAR."    "20Hz          "        "MainRotRPM 6K "
                                              "LOG CH3  PAR."    "50Hz          "        "RxFrameRate   "
                                              "LOG CH4  PAR."                            "Ail.Rot.Rate  "
                                              "LOG CH5  PAR."                            "Ele.Rot.Rate  "
                                              "LOG CH6  PAR."                            "Tail Rot.Rate "
                                              "LOG CH7  PAR."                            "DsmxSat1Fades "
                                              "LOG CH8  PAR."                            "DsmxSat2Fades "
                                              "LOG CH9  PAR."                            "DsmxSrxlFades "
                                              "LOG CH10 PAR."                            "DsmxSatsHolds "
                                              "ACTIVE LOGS  "                            "DsmxFrameLoss "
                                                                                         "ESCBatVoltage "
                                                                 "NONE SELECTED "        "ESCBatCurrent "
                                              "B2 BladeSize "    "    155-255    "        "ESCBatUsedmAh "
                                              "BLADE NUMB.  "    "    275-320    "        "ESCPowerOutp. "
                                              "BLADE LENGHT "    "    325-385    "        "ESCTemp.1     "
                                                                 "    420-510    "        "ESCTemp.2(HW) "
                                                                 "    515-650    "        "ESCBat.Ripple "
                                              "B2 OverallGa "    "    670-806    "        "ESC LS RPM    "
                                              "CYCLIC GAINS "
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