

README for BRAIN2 HoTT TELEMETRY and INTEGRATION (version 1.1 of 18 June 2017):

You can use the telemetry sent by the Brain2 (included that read from a connected ESC), together with Brain2 integration, with every kind of HoTT Receiver. If you want to use sensors other than that emulated by the Brain2, it is necessary to use one or more "Y" cables on the "T+" connector.

- 1) Using the Graupner software GrStudio for Windows, after it updates itself (About -> Checking for Update), verify that your transmitter and your receivers are updated with the latest version of the firmware (for software download, instructions for the use, and for the firmware update, refer to the Graupner instructions);
- 2) Connect your Brain2 unit via a USB cable to your PC, open the Windows application, and update the Brain2 software and firmware to the latest version (leave the software open);
- 3) With the Windows application, on the panel 3 ("Receiver Selection") of the wizard, select the "HoTT + Telemetry" receiver type icon;



- 4) Per the schematic in panel 4 ("Connections"), connect a standard 3-pole female/female cable like that supplied with the Brain2 to the CH3/S-REC connector of the Brain2 and the other end in the port "- + T" of your HoTT "GR-.." receiver;
- 5) Using another standard 3-pole female/female cable like that supplied with the Brain2 units, cut away 5mm of the central red wire near either the two connectors (the remaining red wire only keeps the black and white wires together, but you can also totally remove the red wire and twist black and white wires together);

***** IF YOU DON'T DO THIS, YOU MAY BURN YOUR BRAIN2 UNIT AND/OR YOUR RECEIVER!!!! *****



- 6) Connect one end of the cable to a GOV adapter cable (like MSH51606, MSH51605, or MSH51626; or you can instead use a 3-pole female/male cable **WITH THE RED WIRE CUT** with MSH51623);
- 7) Connect the standard connector of this modified cable to the SUMD port of your HoTT receiver (e.g. port 8 on GR-24L / GR-16, port 6 on GR-12L);
- 8) Connect the small JST connector of the GOV adapter cable to the lateral SAT1 connector of the Brain2;
- 9) Power your transmitter and your receiver. On the transmitter, go in the menus to "Base" -> "TX ctl" -> "BIND ON/OFF" and bind while holding down the bind button on the receiver;
- 10) Go in the transmitter menus to "Function" -> "Telemetry" -> "SETTING & DATA VIEW", select the "RECV" receiver button, and find the page with "CH OUT TYPE:" using the ENT button. Set it to SUMD, then OF (fail safe=OFF, keeps the Brain2 in charge this situation), then the effective number of channels usable with the transmitter (for example, with a MZ-18, set it to 8) or the maximum number of channels you can use with the Brain2 (11 channels are sufficient to use all the Brain2 functions). This is to avoid having to transmit, receive and decode many channels unnecessarily. With some receivers, you can only set the row "SUMD at CHX" to YES. In this case, remember to set in the transmitter menu: Base -> Fail Safe (F/S) to 000% for the throttle channel (usually CH6 in Heli mode);
- 11) With the Brain2 software, verify in panel 5 ("Transmitter setup") the correct direction of each channel as explained in the side bar instructions. If necessary, correct it in the transmitter, reversing the channel in the transmitter menu "Base" -> "Rev/Slow";
- 12) With the Brain2 software, verify in panel 5 ("Transmitter setup") that you are able to obtain the full travel of all control channels. If necessary, correct them in the transmitter, raising or lowering the "Travel" in the menu "Base" -> "E.P.A";
- 13) To activate the ESC telemetry, select the ESC you use in panel 12 (under "MANUALS" see the ESC pdf document that explain how connect your ESC to the Brain2 and to activate the reception of the ESC telemetry).

Now you are ready to:

- Use HoTT <-> Brain2 telemetry selecting the "T" (Telemetry) button and the top "NEXT" button (or pushing either "<" and ">" together for 0,5 seconds).
- Use the Brain2 Integration, enter into the "Brain setup" menu with your transmitter by pushing the "F" button from the main screen and then pushing "Telemetry" -> "SETTING & DATA VIEW" (in transmitter firmware 2.x, start by pushing the "B" button instead of the "F" button), selecting the kind of sensor you have assigned to the Brain2 in the next-to-last column of buttons (factory default is "ESC"), and pushing the "ENT" button repeatedly until the "Brain Setup main menu" page appears:



Integration info's:

- Once inside the Brain2 integration, you can use only the buttons in the right column and the three-position switch you have assigned to the Brain2 selection of Setup1, 2, 3 (e.g. the S3 switch).
- You can move inside the main menu using the "INC" button (down) or "DEC" button (up). The active row is indicated by "*" in the first column of the screen.
- Enter into the submenu corresponding to the active row (that with "*" symbol) using the "ENT" button.
- When in a submenu, as in main menu, you can go to a specific row with the INC and/or DEC buttons. To change the value, push the SET button (value becomes bold/white), values are changed on the transmitter display with the INC and DEC buttons but are not memorized in the Brain2 unit until you remove the SET status with the SET button and the value returns to yellow. If you want revert to the last memorized value before pushing SET, push the ESC button, the value will revert and SET mode will be disabled.
- From the main "Brain setup" menu, if you go into one of the submenus, change the submenu row, and then return to the main menu by pushing the ESC button, the last row of the submenu is memorized. Pushing the ENT button again will return to the same row of the submenu. Only when you return to the main "Brain setup" menu and change the row of the main menu will the submenu index return to the first row of the relative submenu.
- To facilitate and speed up the navigation, when you arrive at the last row of the main "Brain setup" menu or submenu and push the INC button again, you will return to the first row of that menu/submenu. If you push the DEC button from the first row of a submenu or main "Brain setup" menu, you will go to the last row of that menu/submenu.
- Also, for values represented by a list of names (the Loggable parameters, the counters names, etc.), when you arrive at the end of the bolded/white list and you push the INC button again, you will return to the first value of that list. If you push the DEC button from the first value of a list, you will go to the last value of that list.
- In the submenus where values are related to each of the three "Setups", you can change the active column (Setup1, Setup2, Setup3) with the transmitter switch that you have assigned to change the Setup. In the second row of all Setup parameters, the value being changed in SET mode is indicated in BOLD/WHITE.



- In submenus with high-value parameters (degree/sec rotation speeds, Governor speed 1, 2, 3, etc.), the increment by 1 is too little for a fast value change. So, when you are in "SET" mode and push the ENT button, you can see in the top right of the text area that the increment changes between three Roman numerals symbol: I, X, and C. I means x1, X means x10, and C means x100.



NEVER use Brain2 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:** When you select "HoTT + Telemetry" receiver type in the "Receiver Selection" of the Brain2 wizard, the channels are assigned as when you create a new model in the HoTT transmitter from scratch. If you have configured the transmitter with different channel assignments, changing from "HoTT" to "HoTT + Telemetry", will require reassigning the channels in the transmitter: "Base" -> "CH set": 1=Pitch, 2=Roll, 3=Elevator/Nick, 4=Tail, 5=Aux1 (Setup), 6=Throttle, 7=Gyro, 8=Governor(Rescue), 9=Aux2 (don't confuse the Transmitter names Aux1 and Aux2 with the Brain2 Aux name). With the Windows app, also check panel 5 of the wizard and in the transmitter menu "Base" -> "E.P.A." that end points are around +100%/-100%, in the transmitter menu "Base" -> "Rev/Slow", also check that the direction is correct or must be reversed.
- Note2:** Integration works by default as an "ESC" sensor. If you are using a Graupner HoTT ESC, you can change the sensor type from "ESC" to "GENE" or "ELEC", whichever will not interfere with other sensor types you are using. This is done using the first row in the Brain2 "Brain setup" menu: "Hott Emulation Setup" (if you have sensor conflict, disconnect all other sensors until finished). To update the sensor displayed in the sensor menu "T" (Telemetry), you must power-cycle your transmitter.
- Note3:** At Transmitter power-on, the HoTT system needs at least 30 seconds to discover the sensors connected to the receiver that transmit telemetric data other than that transmitted by the receiver.
- Note4:** To exit from the Integration menu, you can push on the "ESC" button or you can push the button in the next-to-last column representing any other sensor module present on the telemetry bus, including the "RECV" (receiver) button.
- Note5:** To change from Celsius to Fahrenheit and vice versa, the "Voice2_English_Imperial.vdf" audio file must be downloaded from the Graupner USA website for Fahrenheit or the "Voice2_English.vdf" audio file must be downloaded from the Graupner EUROPE website for Celsius, and loaded in the transmitter with grStudio Windows software.
- Note6:** It is possible to display telemetry values with big graphics and small numbers, or without graphics but with big numbers, by changing the "System" -> "Display" -> "Glaring sun" setting in the transmitter between OFF/ON.
- Note7:** Telemetric data's can be also recorded and saved in the folder "LogData" of the SD card inserted in your transmitter and after the flight, replayed using in grStudio the "File Log" -> "File Log View" utility. To start the recording, the Timer1 must start and run. Remember that the setup for Timer1 allows only to activate the start and the reset of Timer 1. To stop the timer1 you must use the lateral physical "ESC" key.
- Note8:** Be aware that MZ-18 and MZ-24 have the last channel (channel 9 for MZ-18 and channel 12 for MZ-24) reserved for the Throttle Limiter function and this function cannot be disassociated in Heli mode. This means that the last channel is unusable for other purposes, such as Analogic Dials. Note that if in "Function" -> "Gyr/Gover" "Governor ACT", the output value of channel 8 change (used for rescue) with throttle changes.
- Note9:** Never use the HoTT Brain2 Menu together with the Windows application and/or Android app and/or iOS app. Use only one at time.
- Note10:** The HoTT integration was developed and tested with HoTT transmitter MZ-18 with firmware version 1.050, with HoTT receiver GR-24L with firmware version 3.90, HoTT receiver GR-16 with firmware version 6.39, and HoTT receiver GR-12L with firmware version 1.90.
- Note11:** Due to the big amount of FW code to load and use, HoTT integration works only on the new Brain2 units that have more memory for the additional FW code and more power to execute.

FW Release Notes:

Version 0.00

- First BETA release

Version 1.00

- First official release

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