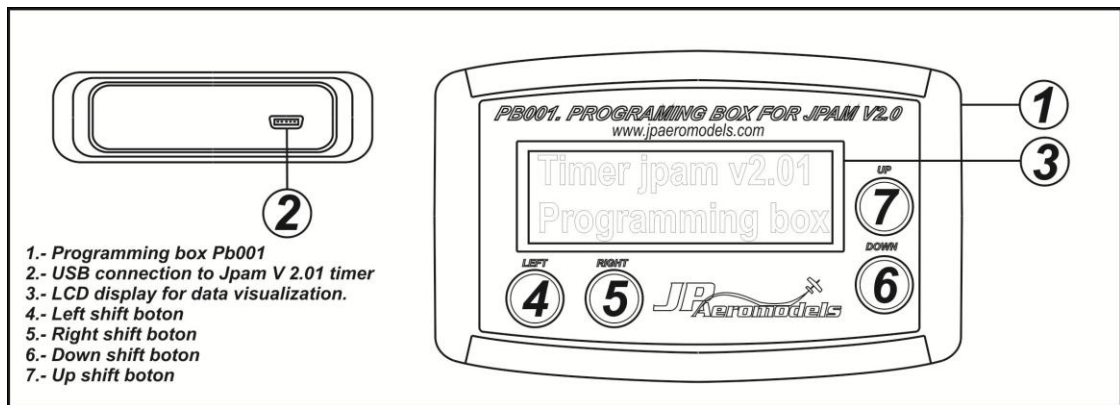


JPAM TIMER V 2.01

1. Programing box PB01.

1.1 General description.



1.2 Functions.




- Save or restore flight data.
- Programing flight data.
- Motor test mode.




1.3. Connections.

- PB01 connection to JPAM timer v.2.01 through mini-USB cable.
- PB01 is feed by the timer so, to work correctly, timer must be feed by BEC(1) of the ESC (2)

1.4. Function of buttons.

Some of the PB01 menus and sub-menus show indicators as an asterisk or an arrow.

Asterisk means the possibility of move over the menus tree by means of buttons   . By pressing button  you can select available options on actual menu or sub-menu.

An arrow can point to an option or to a value field to be modified. If it points to an option it means that this option is selected and you can execute it by pressing button  . If the arrow points to a value field, buttons   increments or decrements respectively the value of that field.

A continuous beep means you have reached the end of the options list on a menu or sub-menu.

An intermittent beep with no button pressed means that it exists a communication error between PB01 and timer. To solve this problem check PB01-timer connection.

When changing a field value you can get a fast increment or decrement if you maintain pressed the corresponding button. Meanwhile beeper sound will be intermittent.

2. Programing menus on PB01.

- Presentation screen.



JPAM Timer V2.01
S# XXXX-XXXX

This screen indicates timer version and serial numbers.

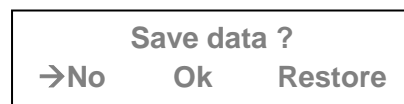
- Initial Menu.



INITIAL MENU
→Save Prg Test

This is the root menu.

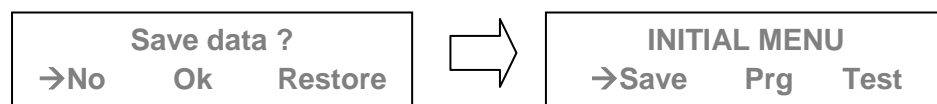
- Option "**SAVE**" opens "**Save data ?**" sub-menu.




Save data ?
→No Ok Restore

This sub-menu allows you to update and restore data stored in timer memory.

- Option "**No**": It cancels saving data and goes back to "**INITIAL MENU**".

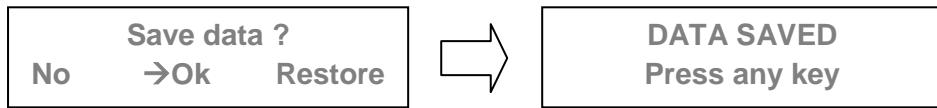


Save data ?
→No Ok Restore



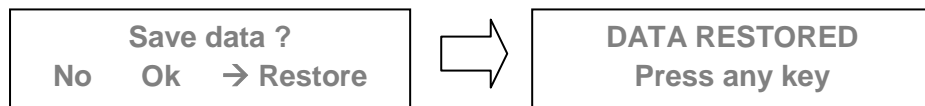
INITIAL MENU
→Save Prg Test

- Option **"OK"**: It overwrites timer memory data with the new configuration.



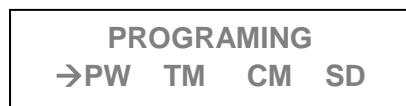
This screen indicates success writing data to timer. Pressing any key you go back to Initial Menu.

- Option **"Restore"**: It restore data in PB01 from stored data on timer.



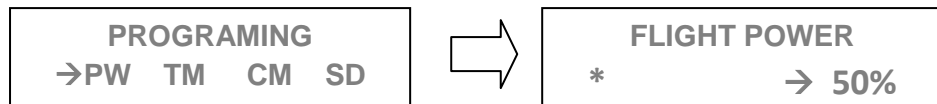
This screen indicates success restoring data from timer. Pressing any key you go back to Initial Menu.

- Option **"PRG"**. It opens **"PROGRAMING"** sub-menu.



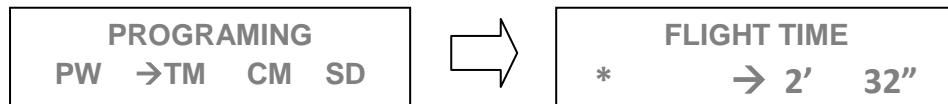
This sub-menu allows you to change configuration parameters of the timer: Flight time, flight power, etc.

- Option **"PW"**. It opens **"FLIGHT POWER"** sub-menu.



This screen allows you to set up motor power from 20% up to 100%.

- Option **"TM"**. It opens **"FLIGHT TIME"** sub-menu.



This screen allows you to set up flight time from 0' 30" up to 8' 00".

- Option **"CM"**. It opens a sub-menu to set up motor power compensation.

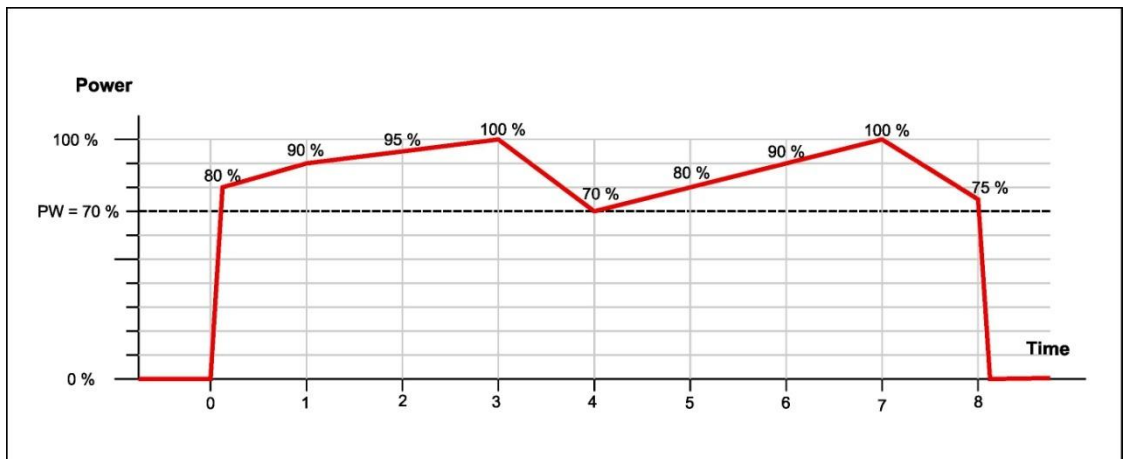


PW+	10	20	25	30	00	10	20	30	05
Tseg *	→ 0	1	2	3	4	5	6	7	8

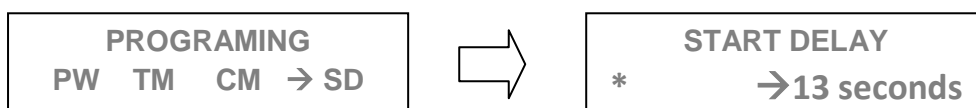
Power compensation consists on the possibility to reserve some percentage of the maximum motor power in order to use it during the flight time at specific amounts on preset time segments.

Flight time is split on eight segments with the same duration (1/8 of total flight time). Each segment can be assigned a power compensation value, from a minimum of 0% up to a maximum of (100% - PW), where PW is the flight power set on the "PW" option in the "PROGRAMING" sub-menu.

Example: According to the compensation values shown on the last screen figure, the effect of compensation would be the following:



- Option "SD". It opens "START DELAY" sub-menu.



This sub-menu allows you to set the time of delay for motor starting from 0" up to 20".

- Option "TEST mode". It opens "Enter TEST mode" sub-menu.



With this sub-menu you must indicate the number of magnet poles in the rotor of your brushless motor.

Any brushless motor is composed by a rotor and an stator.

Stator is the non-mobile part of the motor and it has a group of magnet coils. Rotor is the spinning part of the motor and it has a set of permanent magnet poles.

Number of coils / number of magnets quotient determines the number of magnet poles ("M poles") you must assign in the corresponding "Enter TEST mode" sub-menu to get a right measure and display of RPM.

To know number of coils and magnets in a motor, and so determine the value of "M poles" if motor supplier does not indicate it, there are two ways, the first is disassembly the motor and count them (not recommended), the second it is enter next option "Check PW/RPM" and, using an external tachometer, compare the measure of the external tachometer and the measure indicated in PBO1. If measures are not equal change the "M poles" value and check again until both measures be equal.

Number of coils	Number of magnets	"M poles"
9	6	8
9	12	16
12	8	8
12	10	10
12	14	14
12	16	16

- Option Check PW/RPM.



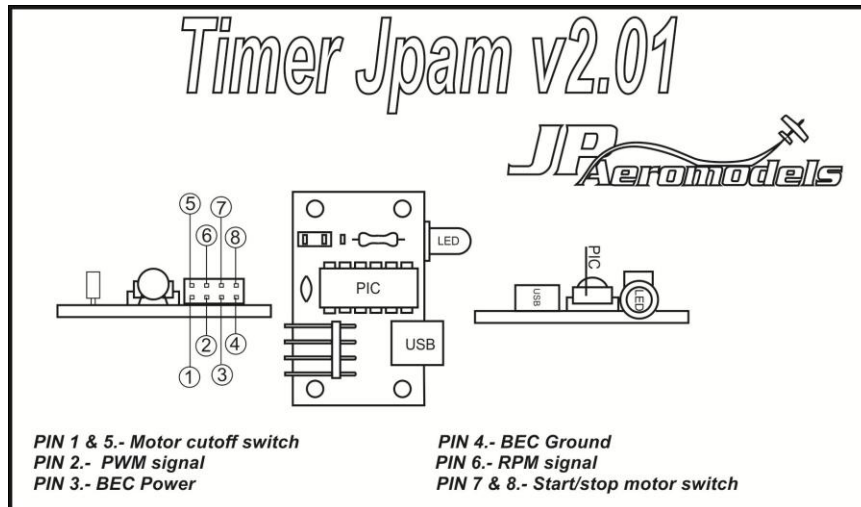
This sub-menu allows you to watch on the LCD display the relationship between % of motor power and real RPM motor is rotating.

WARNING !!, being in this sub-menu, at the moment you push the start/stop button in the timer the motor will start at the % of power selected in this sub-menu.

Once finished programing work, and data saved, you only have to disconnect PBO1 of the timer.

3. Jpam Timer v 2.01.

3.1 General description.



Telemetry Connection.

Jpam timer v.201 could be connected to a future TM01 telemetry system using the actual connections with ESC.

TM01 will be an on-board device which will transmit to ground, at real-time, data captured by different sensors of current, voltage, RPM and PWM signal.

3.2 Modes.

- "ESC Programing" mode.

To enter in this mode you must maintain start/stop switch pressed while you connect the battery.

This mode allows to program the different options and functions of used ESC. By means of the Start/Stop switch it is simulated the maximum/minimum throttle stick position on RC transmitters.

Maximum throttle corresponds to start/stop switch pressed and minimum throttle to start/stop switch released.

- "Normal" mode.

This is the mode used to init normal flight.

In this mode the timer can be in two different states, idle or started.

In idle state the timer is waiting for initiation of start process, and started state the timer is when this process has been started.

- "Timer Programing" mode.

This mode is used to modify working parameters of the timer.

To access this mode only connect the programing box PB01 to the timer through mini-USB connector.

- "Test" mode.
This mode allows you to visualize in the LCD display of PB01 the relationship between % of motor power and motor RPM so, in this mode, the timer works as a tachometer.
To enter this mode, PB01 must be connected to the timer and get access to "TEST" menu.

3.3 Accessibility.

- Buttons.

Start/stop: This switch is used to init motor start process and to stop motor running.

If an start delay time has been programmed and you press this button during this delay time, the start process is stopped and it goes back to idle state.

To start or stop process button must be pressed at least during 2 seconds.

Process will start/stop when button is released.

Cutoff: This switch has the only function to stop motor running, in the way the cutoff function used in F2A and F2C. This switch is optional and it is not included (It is available as an add-on item).

- LED.

It indicates the different working states of the timer.

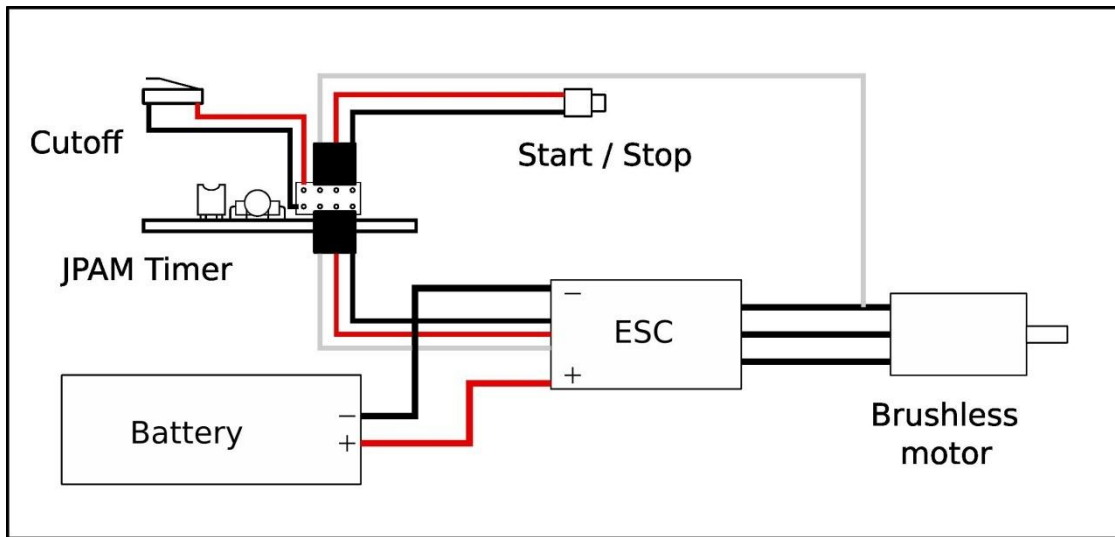
Turned OFF: Indicates idle state in normal mode or throttle to minimum in "ESC programming" mode.

Permanent ON: Indicates idle state in test mode or throttle to maximum in "ESC programming" mode.

Fast intermittent: Indicates started motor in test mode or advise of last 10 seconds of flying time in normal mode.

Slow intermittent: Indicates started status in normal mode (ready for flight).

3.4 Connections.



1.- ESC. Short-cut of "Electronic speed controller".

2.- BEC. Short-cut of "Battery circuit elimination".

In models equipped with radio control there are elements as radio receiver, servos, etc. which need be feed, usually with 5 V. supply voltage.

In models powered by fuel engines the most usual solution is to incorporate a batteries pack with this supply voltage to feed radio receiver.

In models powered by electric motors, as motor already needs a power supply battery, this same battery is used to feed the radio receiver. But this battery voltage use to be much more high that 5 V. needed by the radio receiver, so BEC in the ESC is in charge to drop down the high voltage from the battery to 5 V. needed for radio receiver.

