

SPIN

English

PRO

1. Introduction

The series **SPIN pro** controllers are successors of the former brushless series SPIN controller family. The new line with the attribute PRO offers in comparison with the predecessors increased adjustment possibilities like automatic motor timing, directly in volts practicable shut-off voltage adjustments, tuning of start-up properties for different motor types as well as new possibilities of mode activation for setting up autorotation of helicopters. The power range of SPINpro controllers is the same as provided by the former SPIN family ranging from 11A to 300A.

1.1 Controller SPIN pro

All controllers (except OPTO types) contain a new type of voltage regulator for supplying the receiver and servos, the so called switched BEC. Owing to this element, a considerable increase of applicability of controllers with BEC towards higher numbers of flight battery cells could be achieved. Another advantage is the independence of number of servos from the input voltage.

Basic parameters of SPIN controllers with BEC:

Type	Sustained current [A]	Input Voltage [V]	BEC [A]	BEC [V]	Dimensions [mm]	Weight [g]
SPIN 11 pro	11	5 - 17	2,5	5,5	32x23x6	12
SPIN 22 pro	22	5 - 17	2,5	5,5	32x23x7	26
SPIN 33 pro	33	5 - 21	3	5,5	42x23x7	32
SPIN 44 pro	44	5 - 26	5	5,5	52x25x10	44
SPIN 55 pro	55	5 - 34	5	5,5	52x25x12	60
SPIN 66 pro	70	5 - 26	5	5,5	52x25x12	56

1.2 SPIN pro OPTO Controllers:

These controllers have galvanically separated input (signal from receiver) from power accumulators, therefore it's necessary to use independent supply for receiver and servos (4-5 NiXX or 2-3 LiXX with linear voltage regulator, such as **MAX BEC**).

SPIN OPTO controllers are provided with two **JR** connectors. Connector on longer **three-line cable with black ending** is to be linked to the receiver. Connector on shorter **three-line cable with red ending** is intended for communication with **JETI BOX**; for programming or data reading connect it into slot marked **imp. + - on JETI BOX**.

Basic parameters of SPIN OPTO controllers:

Type	Sustained current [A]	Input Voltage [V]	BEC [A]	BEC [V]	Dimensions [mm]	Weight [g]
SPIN 66 opto pro	70	6 - 26	-	-	52x25x12	45
SPIN 75 opto pro	75	12 - 42	-	-	52x25x15	55
SPIN 77 opto pro	77	12 - 50	-	-	65x55x17	110
SPIN 99 opto pro	90	12 - 50	-	-	65x55x17	110
SPIN 125 pro opto	125	12 - 50	-	-	65x55x25	120
SPIN 200 opto pro	170	18 - 59	-	-	63x120x27	326
SPIN 300 opto pro	220	18 - 59	-	-	63x120x27	360

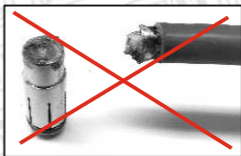
2. Connecting the controller

2.1 General conditions for connecting the controller:

- apply only new high quality connectors properly soldered to the cables.
- for controllers SPIN 11 and SPIN 22 we recommend to use G2 connectors, for higher types G3.5 or G4. After soldering the connectors, check that the springy front part remains rotary. It may happen that the flux rises along the connector surface and in the worst case galvanically separates the springy part from the connector body. A remedy is possible by brushing the connector with nitro diluent. During the operation, observe that the connectors stay clean and the plug-in force remains high. If this force decreases, replace the connectors immediately. **We recommend replacement of connectors after 1-2 flight seasons.**



good soldered connector



bad soldered connector

- the distance between motor and controller should not exceed 10-15 cm. Flight battery cables can be extended to 20-25 cm. A further prolongation of the driving battery cables can be achieved by connecting in parallel to the cables electrolytic capacitors (with low internal resistance, so called low ESR capacitors with appropriate voltage capability and a capacity of several hundred microfarad), one capacitor per 25 cm cable length is necessary.
- connect the JR connector to the throttle channel of the receiver.
- Plug-in the JR plug (red plug) into the receiver of the duplex-EX system (or into the EXPANDER).

2.2 Controllers connecting SPIN 125 opto, SPIN 200 opto and SPIN 300 opto:

This controllers contains ancillary circuit which avoids sparking when the controller is being connected to accumulators.

Controller connecting procedure:

- 1) connect minus pole of controller to minus pole of accumulator
- 2) connect red thin wire (1,5 mm²) to plus pole of accumulator
- 3) connect plus pole of controller to plus pole of accumulator
- 4) disconnect red thin wire (1,5 mm²) to plus pole of accumulator

Once the main power pack is connected, handle the model with extreme care – ensure that everyone is well clear of the propeller all the time!!!

3. Online Telemetry (not valid for controllers SPIN PRO 11, 22 and 33)

With the aid of the JetiBox the controllers SPIN PRO provide the possibility of depicting the controller status in real time. The JR plug with red body can be connected directly to the JetiBox or to the input EXT. of the DUPLEX 2,4GHz receiver.

The controller parameter set-up with the aid of the JetiBox can be carried out only if the JR plug (throttle) is disconnected from the receiver (or the receiver is switched-off). If the

controller after switching-on of the voltage supply detects at the input of the black JR-plug a servo pulse, it automatically switches to the telemetric data depicting mode. Within this mode the controller ignores any commands of the JetiBox keys.

The following data are shown on the JetiBox LCD:

Actual power in percent:

R 80% - the motor is running, the percent value shows the motor voltage

B 100% - the motor is braking, the percent value shows the braking effectivity

B 0% - Motor-Stop, without brake

Actual motor r.p.m.:

this value is shown in the upper right corner of the display. The value is converted accordingly to the controller set-up (number of motor poles and gear reduction ratio) and is indicated in r.p.m.

Actual voltage:

in the lower left corner there is shown the actual battery voltage.

Actual temperature:

in the lower right corner the actual controller temperature is shown.

Error status:

in case of an error the error status is shown in the center of the lower line.

U - the controller has detected a supply voltage value which lies below the set switch-off voltage

C - a commutation error occurred, the controller has detected a reading error while reading the motor position

T - the controller temperature protection has been activated, the set maximum temperature has been exceeded

4. Setting with the help of the R/C equipment

In manual setting menu (MAN Setting), the item Setting thru R/C must be ON (factory preset).

Setting process:

1. connect the controller by means of the JR connector to the receiver throttle channel and connect the motor.

2. shift the throttle stick to position „full throttle“, switch on the transmitter and connect the flight batteries.

3. switch on the switch - receiver power supply (void for SPIN 11), after five seconds four tones sound. If the throttle stick is immediately shifted back to low throttle position the value of the full throttle

position is stored in the memory (END POINT), otherways follow groups of five repeating tones according to the appropriate mode:

single tones - **Mode 1 Acro inrunner:**

- this mode is appointed to aerobatic models driven by motors of classic conception. (inrunner)
- brake not active
- timing 0°
- LiXX-3,2V per cell

two tones - **Mode 2 Acro outrunner:**

- this mode is appointed to aerobatic models driven by motors of the reversed conception (outrunner).
- brake not active
- timing 24°
- LiXX-3,2V per cell

groups of three tones - **Mode 3 Glider inrunner:**

- this mode is appointed to gliders driven by motors of classic conception (inrunner).
- brake activated
- timing 0°
- LiXX-3,2V per cell

groups of four tones - **Mode 4 Glider outrunner:**

- this mode is appointed to gliders driven by motors of the reversed conception (outrunner).
- brake activated
- timing 24°
- LiXX-3,2V per cell

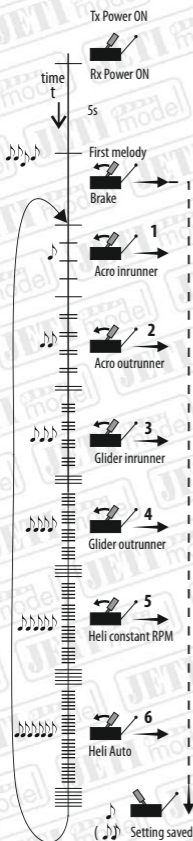
groups of five tones - **Mode 5 Heli constant RPM:**

- this mode is appointed to model helicopters with the claim or constant speed regulation with changing load/unload of the rotor. This mode does not support fast speed changes
- timing 0°
- LiXX-3,2V per cell

groups of six tones - **Mode 6 Heli Auto:**

- the same like mode 5, but RPM range is set automatically
- LiXX-3,2V per cell

Confirmation of the setting is carried out by shifting back the throttle to low throttle position during the tone signals of the factual mode.



5. Setting with the help of the JETIBOX

This setting is carried out by means of four push-buttons: left **L**, right **R**, up **U**, down **D**. Plug in the JR connector of the controller (SPIN OPTO red ending) into the plug designated Impuls + -, which is positioned on the right side of the **JETIBOX**.

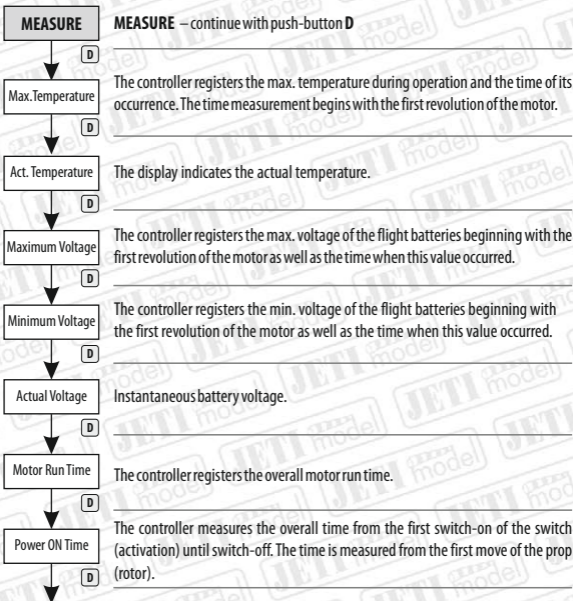
Before connecting the flight battery remove for the sake of safety the propeller.

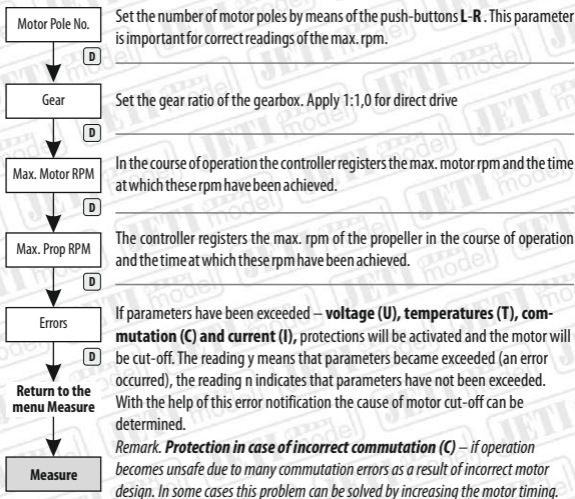
Do not connect anything to the connector designated with + -.

Connect the flight batteries and switch on the switch - receiver power supply (void for Spin11). On the display appears the name of the connected controller. By means of the push-buttons **L** and **R** more detailed informations are acquired of your controller.

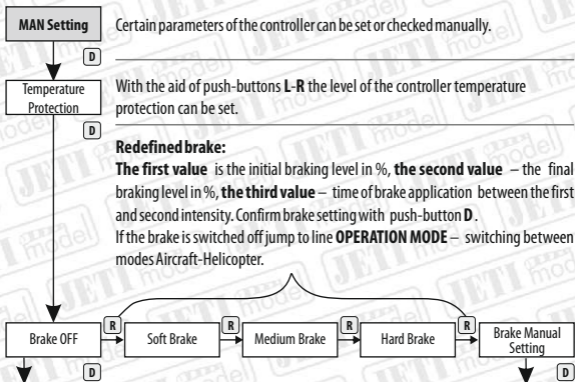
By means of the push-button **D** we get to the option line of basic régimes where we either can choose reading out of measured values or setting of controller parameters (**Measure or Setting**), with push-buttons **L** and **R** we choose **MEASURE-MAN. SETTING-AUTOSET**.

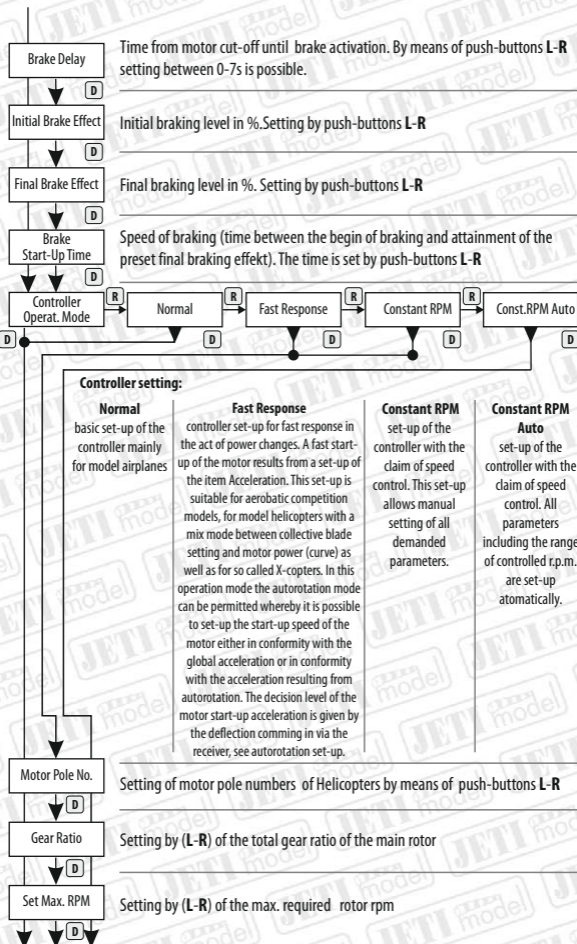
5.1 Measure





5.2 Manual setting





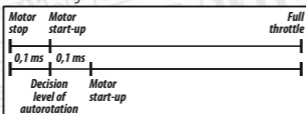


Setting by (L-R) of the min. required rotor rpm.
We recommend to set the value to 1000 – 1500 rpm

By means of the push-buttons L-R we set the speed of balancing rpm deviations. The smaller the number, the faster are the interventions. We always proceed from the higher number. If a certain limit becomes exceeded the controller starts to operate unstable (analogy with an overgrated Model helicopter)

-allows or forbids the motor start-up mode in conformity with autorotation. In case of allowed autorotation the deflection for the motor stop command is splitted into two parts. Start-up of the motor with autorotation, whereas the fast motor start-up is carried out on the base of autorotation or motor start-up in conformity with global acceleration. If at the moment of motor switching-off the deflection will be bigger than the autorotation decision level, the controller will during start-up follow the acceleration set-up of the autorotation set-up. If the deflection will be smaller than the decision level of autorotation, the motor start-up will follow the global acceleration set-up.

Example of an autorotation set-up for a helicopter. The global acceleration is set for a value of 10s (from 0 to 100%), the acceleration from autorotation for a value of 0,5s. Let us switch-on the receiver now with a deflection corresponding to motor-stop. The motor start-up will be slow in correspondence to the global acceleration, because the deflection lies below the decision level. If we carry out autorotation and switch-off the motor with the deflection of the control element lying above the decision level, the motor will start-up fast when switched-on again.

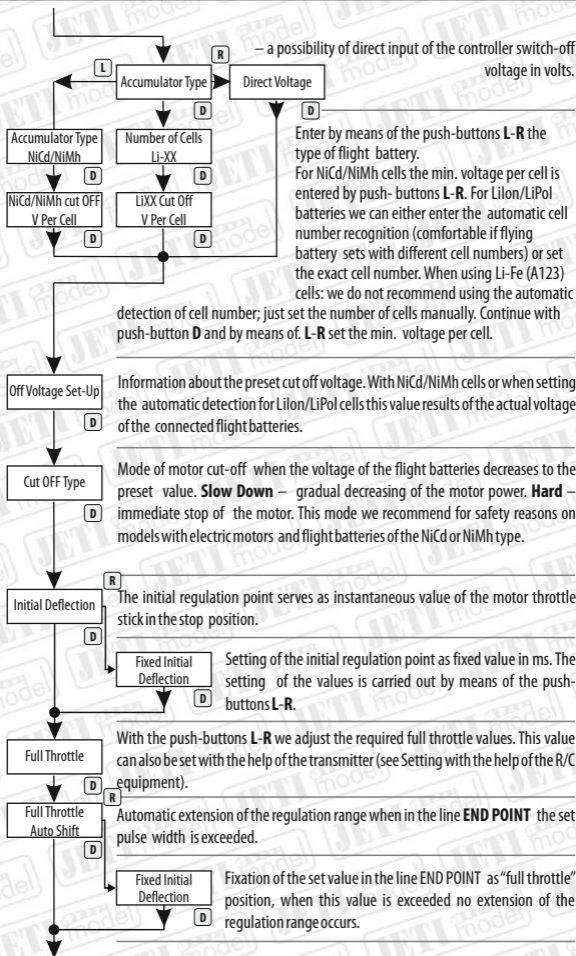


set-up by the key L-R. Set-up of the motor timing in the range from 0° to 30°. In correspondence with the motor type we can also implement an automatic „preignition“ for the motor.

Recommended values: 2pole motor...0-5°, 4p motor...0-10°, 6p motor...0-20°, 8p and more...20-30° - necessary in case of the so called reversed motor conception

Motor control modulation frequency within the regulation range. Always use 8kHz. The only exception are the so called iron free motors (Tango, Samba). For these motors a frequency of 32 kHz must be used.

Speed of motor acceleration. On principle – the larger the propeller, the longer the acceleration time value must be. For big reversed motors apply an acceleration time of 2 and more seconds. For model helicopters we recommend acceleration times of 5 and more seconds.





Regulation curve:

- **Logarithmical** - a logarithmic course of rpm with the throttle stick displacement (linear power course with the throttle stick displacement). This course is applied if most of the flight time is carried out within a region of 50% of full throttle.
- **Linear** - a linear course of rpm with the throttle stick displacement. This course is applied if most of the flight time is carried out within a region of 30% of full throttle.
- **Exponential** - an exponential course of rpm with the throttle stick displacement. This course is applied model airplanes.



Direction of motor rotation is set by means of push-buttons **L-R**



- set-up of the controller initial power when the motor starts-up from zero r.p.m. The initial power becomes assigned automatically and here we can fine-tune this value in concordance with the application or used type of motor. The smaller the set-up value the softer the motor start-up will be, for instance in model helicopters or with motors comprising low winding numbers. For motors with high winding numbers we recommend an increase of the set-up value to positive values.

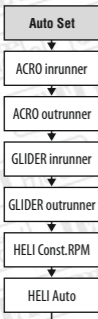


Setting thru **R/C** – enables or disables ESC settings thru radio

return to main menu



5.3 Automatic setting



We apply this mode for putting the controller into operation in a fast and simple way for instance after loosing track during setting. The setting content is practically the same as setting with the help of R/C equipment (page 2). Confirmation of the setting is carried out by means of the push-button **R**.

6. Recommendation

6.1 Extending the battery cables.

As a matter of principle only cables from the battery to the controller can be extended. If the extension is larger than 20 cm it is unavoidable to connect between the cables a low impedance electrolytic capacitor of a capacity 100-300 μF . These capacitors must be inserted between every cable section longer than 25-30 cm.

6.2 Multi motor models

We recommend to use the same controller type for each motor. In case of SPIN controllers switch on only one BEC. The switches of the other controllers remain in the "SWITCHED OFF" position.

When using controllers with BEC it is generally necessary to use only one common flight battery. If we want to utilize 2 and more batteries these must be connected in parallel.

6.3 Motor Poles Number Determination Method

If you do not know the pole number of your motor please contact the manufacturer. If you own a revolution counter and know the gear ratio of your gear box (direct 1:1) you will be able to find the pole number as follows. Switch on the motor and with the help of the revolution counter measure the maximum propeller (rotor) rpm. Connect the JETI Box and go in the menu MEASUREMENT to the maximum propeller RPM display (Max. Prop RPM). If the shown value does not correspond with your measured value check the gear ratio setting (Gear) and change the pole number inputs until your measured RPM will be identical with the value in the JETI Box display (Max. Prop RPM). As a result you will obtain the pole number of your motor (Motor Pole No.)

7. Safety information, Warranty, Service and Technical Support

7.1 Safety and Warranty Conditions

- When handling the model with connected driving batteries always keep in mind, that the propeller may any time start running!!!
- Always be aware to operate the SPINpro controller in dry environment. Humidity may cause corrosion of electronic parts. If fluid and/or humidity penetrates into the product, switch immediately off and let it dry thoroughly. In most cases a controller which has been affected by humidity is irreparably damaged and warranty claims will not be recognized.
- Do not open the SPINpro controllers and do not try to apply any changes. This may destroy the controller irreversibly and will void any warranty claims.
- Pay attention to correct and clean soldering of connectors. With incorrectly soldered connectors (especially at the motor) the controller may blaze up. Such a controller will be irreversibly destroyed and complaints will not be considered.
- The controller must always be operated with the default supply voltage and recommended current. In case of nonobservance irreversible damages may occur without any possibility of warranty claims.
- Pay attention to correct polarity when connecting up the controller. In case of incorrect polarity the controller may be irreparably damaged without any liability for defects!

- Before sending an inoperative controller to a service center, please check whether an incorrect adjustment via the JETIBOX is not the source of misbehaviour. Try to use one of the preset modes (see item 6.3).
 - Be sure to provide a sufficient cooling of the controller. In case of insufficient cooling the temperature safety guard may switch off, or in extreme conditions the controller may be damaged irreversibly.
 - Repairs of SPINpro controllers can be performed by qualified service stations only, otherways warranty will loose its validity.
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7.2 Warranty and Service

The product is furnished with a warranty of 24 months after the date of sale on the assumption that it has been operated correctly and with the proper voltage according to these instructions and that it does not show mechanical damage. In case of a complaint always add a purchase receipt of the product. Warranty and post warranty repairs are carried out by the manufacturer.

7.3 Technical Support

If you are not sure to be able to provide a correct set-up and function control of your equipment by yourself, please contact our technical support. You may find our technical support either at your distributor or directly at the manufacturer JETI model. Please find further information on the internet pages www.jetimodel.com.

8. Disposal of used electronic equipment

ENGLISH

Information on Disposal for Users of Waste Electrical & Electronic Equipment (private households)



This symbol on the products and/or accompanying documents means that used electrical and electronic products should not be mixed with general household waste.

For proper treatment, recovery and recycling, please take these products to designated collection points, where they will be accepted on a free of charge basis. Alternatively, in some countries you may be able to return your products to your local retailer upon the purchase of an equivalent new product.

Disposing of this product correctly will help to save valuable resources and prevent any potential negative effects on human health and the environment which could otherwise arise from inappropriate waste handling. Please contact your local authority for further details of your nearest designated collection point.

Penalties may be applicable for incorrect disposal of this waste, in accordance with national legislation.

For business users in the European Union

If you wish to discard electrical and electronic equipment, please contact your dealer or supplier for further information.

Information on Disposal in other Countries outside the European Union

This symbol is only valid in the European Union.

If you wish to discard this product, please contact your local authorities or dealer and ask for the correct method of disposal.