Illumination unit NF3E

NF3E controller is designed to illuminate big flying models with wingspan two meters. It is used to power color ultra bright LEDs with the nominal current of 20, 120, 350 or 700 mA. The unit contains five independent current-powered outputs, two for the position lights (**P20** and **P**), two for the anti-collision flashing lights (**F1, F2**) and one output powers the landing lights (**L**). Two current values can be set up to each output by a jumper placed between heatsinks (except for P20) – see Fig.1. Possible current setting is displayed by color points on the label. Red point indicates low current (pulled out jumper) and blue point indicates high current (inserted jumper). Position lights P20 output is intended for the auxiliary weaker positional lighting LED 20 mA, for example, on the tail or for supplying cabin lighting.

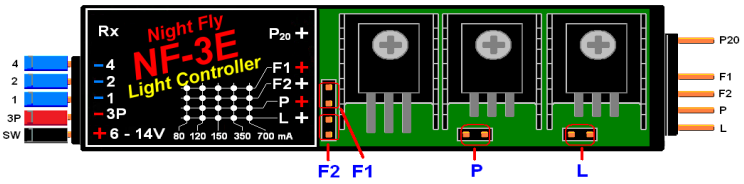

Fig. 1

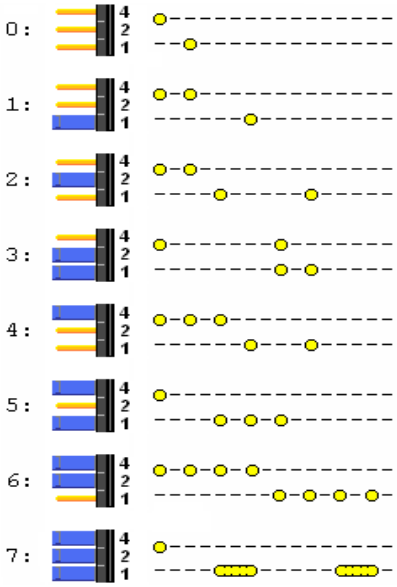

Fig. 2

Both outputs of the anti-collision lights flash every one second. One of 8 combinations of flashes can be selected by blue jumpers (**1, 2, 4**). The sum of numbers of the connected jumpers represents the number of the selected combination (see Fig. 2).

When you connect the **Rx** connector into a free channel of the receiver, you get the option to switch on the lights during the flight. The red jumper **3P** selects the control lights mode. The disconnected jumper sets up the 2-position control mode **2P,** inserted jumper 3-position control mode **3P** (see Fig. 3).

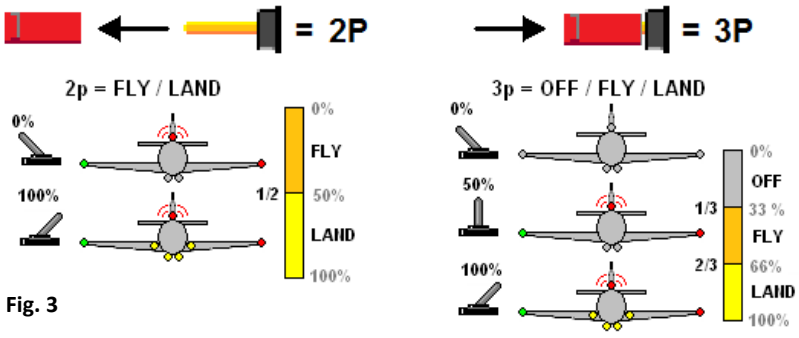

Fig. 3

Unit is in non-controlled mode if the **Rx** cable is not connected to the receiver. In this case the lights start work when the unit is connected to the accumulator and the **3P** jumper can be used to switch the landing lights manually. Landing lights are switched on when the jumper is disconnected, switch off when jumper is connected.

Anti-collision and landing lights automatically begin to flash when the plane is unable to receive a signal from the remote controller. The receiver circuit and the light circuits are electrically separated by an opto-coupler. The negative pole of all outputs is common ground connected with an acumulator´s negative pole.

The unit is equipped with an electronic power supply switch. If the black jumper **SW** is inserted, the lights are on even after the switching off the receiver. When the jumper **SW** is pulled out, the unit is automatically switched off together with reciever.

Installation procedure

The outputs maintain the nominal current in the wide range of voltage from 5 V to 14 V (2S or 3S Li-Pol) without the need to connect compensating resistance series in the circuit. As the number of the cells of the accumulator increases, so does the number of diodes that can be connected (serially) on each output. LEDs of different colors can be connected into series. It is only necessary to assume that the summa of voltages of diods for output circuit functionality is below the voltage of accumulator, otherwise the luminosity od LEDs falls down. The typical working voltage for red and yellow LEDs is from 1,9 V to 2,2 V. For white, blue and green it is from 3,0 to 3,3 V. Number , color, as well as position of LED in specific model may vary.

You may check function of the unit and LEDs before installation by connecting them to the accumulator and touching light circuit outputs with diodes. In this way it is also possible to check the diode's color as well. Do not connect LEDs to the output with the current bigger than their nominal current. The exception is the flash output, which thanks to the pulse mode can be set up at the current 2x bigger than the nominal LED current. When connecting the diodes to the outputs one must observe the current setting and the polarity marks. Do not test LEDs by connecting them directly to the accumulator. Both lead to overheating and to their destruction.

The typical connections are shown by the scheme on Fig 4 .

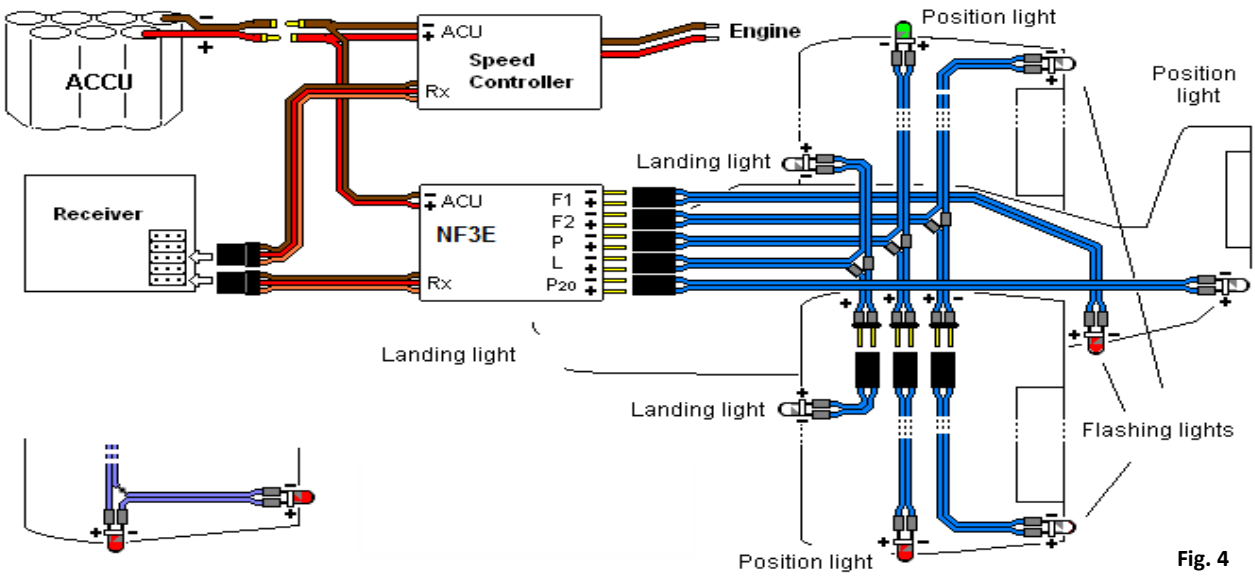

Fig. 4

To avoid overheating, the power supply voltage should not be more than 5 V higher than the lowest sum of the diodes voltage that you want to connect to position or landing outputs. Overheating is possible even with LED wtih nominal current 350 and 700 mA, which can lead to a shorter lifetime. Therefore, it is advisable to place them on the cooler and provide them with the airflow. You can discover the risk of overheating indicatively by plugging the unit in your suggested configuration. Therefore, it is advisable to place them on the cooler and provide them with the airflow. You can discover the risk of overheating indicatively by plugging the unit in your suggested configuration. Check the temperature of cooler and LEDs by touching them by finger occasionally. If you can keep your fingers on them after two or three minutes, verything is fine.

For an accurate calculation of the entire lighting consumption, go to websites www.nightfly.cz. For the approximate determination of the required capacity of the battery, add up the currents of used positioning outputs and add the sum of currents used flashing and landing outputs divided by ten.

For flying at night it is useful to keep certain rules to make sure the model is visible in all positions and that night flying is safe. LEDs for 350 and 700 mA light with angles from 120° to 160°, the small ones with angles from 15° to 60°, rarely 70°. The directional characteristics of diodes should be adjusted so that they are visible from large angles. The easiest way to do that is by roughening them with emery paper. It is also possible to drop some adhesive from a fuse pistol on the diode.

Assembly and pre-flight tests

Unscrew the cooler´s nuts and replace them with a spacer from accessory bag. Then the plate can be screwed into holes with the pitch 16 mm. Lighting cables themselves are not the source of interference. However, they can distribute across the whole model the interference from the engine or affect reception when they are placed near the receiver´s antenna. It is therefore not appropriate to lay the cables in parallel with the antenna of receiver and the wires should not form surface loops. After installation it is better to check the model's behavior on the ground first and if necessary to add interference or change the unit or cables location. Do not forget to check the temperature. The procedure is referred to above.

The manufacturer is not liable for damages caused by the operation of the unit beyond the technical parameters and the above recommendations. Instructions for the implementation of socket adapters, cabling and more information about diodes can be found on the website.

Technical parameters NF3E

	min	typ.	max.
Operating Voltage [V]:	5	9	14
Consumption [mA]* :	1	12	25
Consumption [mA]* *:	18	20	25
Flash (freq. 1 Hz):	impulsions 66 ms		
Temperature:		0 – 70 °C	
Dimensions [mm]:		106 x 24 x 25	
Weight [g]:		35	

* unit switched off

* * unit with lights swithed off

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