

Illumination unit NF32

NF32 is a unit designed for illumination of aircraft models with wing spread up to 1.3 metres. It is used to power colour ultra bright LEDs. There is no need to connect compensating resistance series in the circuit when connect LED to output. It contains five outputs for LED with the nominal current of 80 mA. Two outputs are for position lights (**P1**, **P2**), two for the anti-collision flash lights (**F1**, **F2**), and one output for the landing lights (**L1**). The sixth output (**L2**) is designed to power the landing headlight. In version **NF32A** reflectors can be fitted with LED 80 or 120 mA. Version **NF32B** is designed for reflectors 120 or 350 mA.

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. 1).

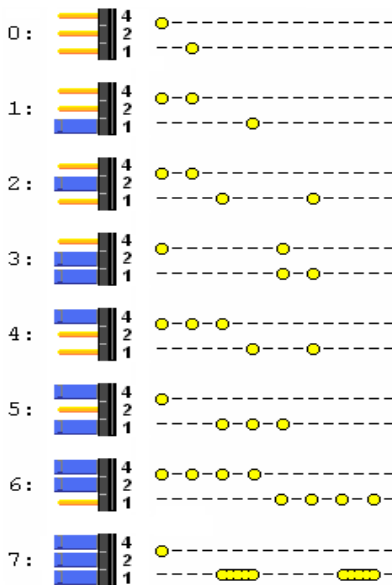


Fig. 1

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. 2)

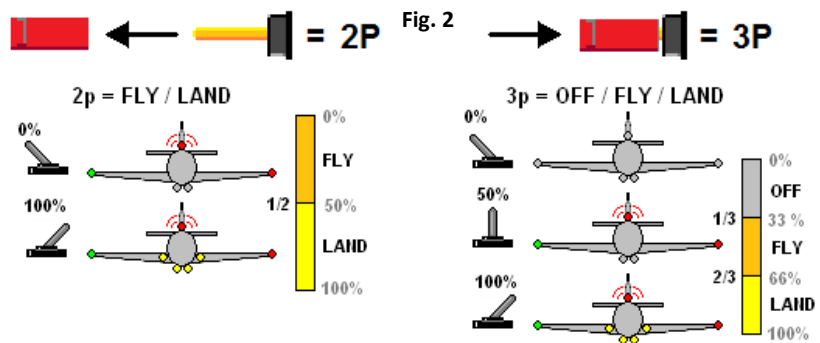


Fig. 2

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 accumulator's negative pole.

Installation procedure

The typical connections are shown on Fig. 3. Number, color as well as position of diodes in a specific model may vary.

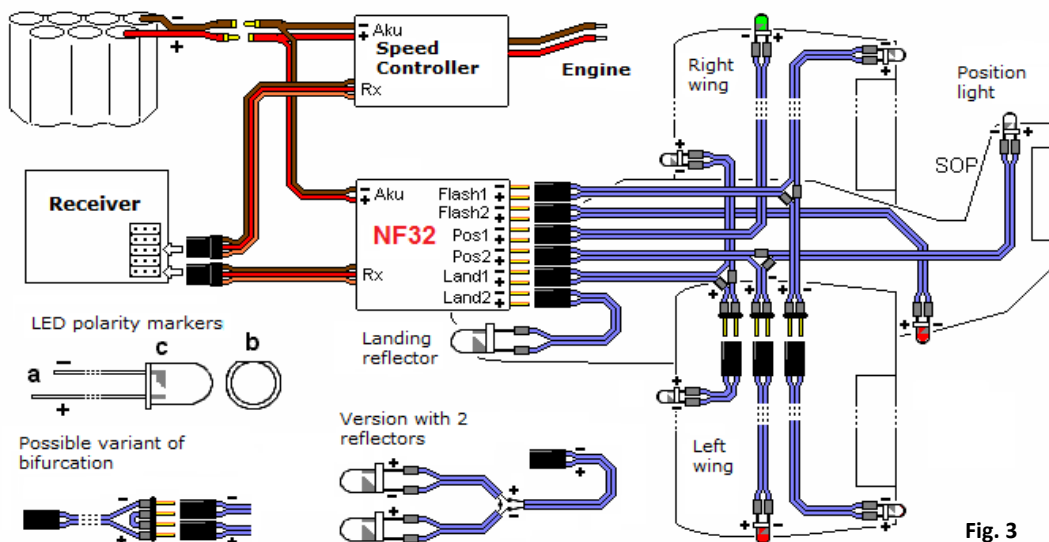


Fig. 3

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 diodes in a 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.*

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 with 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. For lighting of larger modelst it is recommended to use a separate accumulator. Capacity of 400 mAh is enough for one hour flying 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 NF32

	min	typ.	max.
Input Voltage [V]:	5	9	14
Consumption [mA]:	18	20	25
Outputs P1 [mA]:	72	80	95
Outputs P2,L1 [mA]:	36	40	47
Outputs L2 - NF32A [mA]:	80 or 120 *		
Outputs L2 - NF32B [mA]:	120 or 350 *		
Outputs F1, F2 (freqv. 1 Hz):		pulsy 66 ms	
Temperature:		0 – 70 °C	
Dimensions [mm]:		74 x 24 x 19	
Weight [g]:		19	

* depending on the jumper setting on the heatsink

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