

Illumination Unit NF-3m

NF-3m (mini) unit is a unit designed for illumination of small models including plastic ones, Indoor and ParkFly models for flying at night. It is designed to power color ultra bright LEDs (Light-Emitting Diode) with a diameter of 1.8, 3 or 5 mm with nominal current up to 20 mA. LED diodes for SMD assembly can be also used e.g. for plastic models. The unit NF-3m contains eight pairs of soldering contacts to connect up to eight lights. **P1** is designed for the green light and **P2** for the red position light. There are also three flashing anti-collision lights there. There is one **F1** and two **F2**. F1 is intended to be on the body. Both F2 output flash in the same way and are designed e.g. to be on the tip of the wings. Their illumination rate is lower than by F1 but they can be combined in one diode, achieving the same illumination rate as the one of F1. There are also three outputs for the landing lights there. **L1** are twin lights with half illumination rate and they go on first. One second after them the stronger **L2** light goes on. If necessary, the L1 twin lights can be combined in one light, similar to the F2 flashing lights.

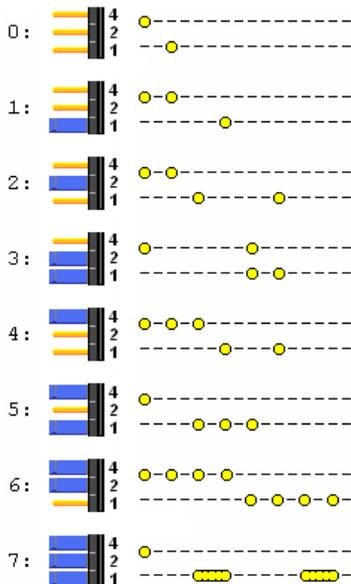


Fig. 1

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).

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)

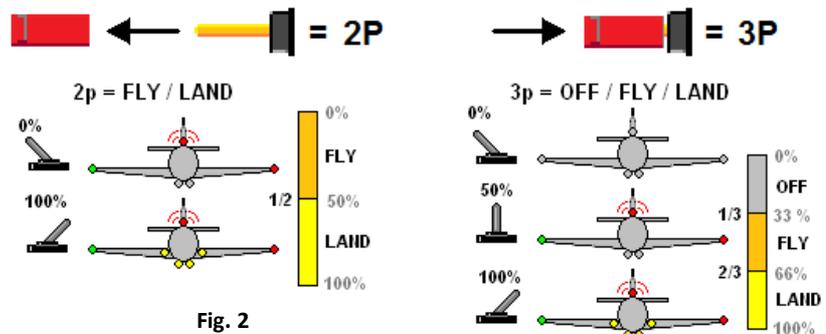


Fig. 2

The circuit is to be connected with a Graupner or Hitec connector directly to the receiver, being supplied with a voltage of 5 V and with BEC circuit tolerance. The circuit has no other protection against reversed polarity than a connector lock. Diodes are supplied with this voltage. The output contacts have a joint positive pole. Each output can be connected with one diode.

If the unit is controlled with the receiver, it indicates receiver signal outage by means of fast flashing of the landing and flashing lights.

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The unit NF-3m can also be connected as an uncontrolled unit when disconnecting the orange signal contact on the connector on the receiver. This can be either cut off or you can gently try to lift the lock on the connector and pull the contact out of the connector. Then isolate against touching by chance. If necessary, you can always push the contact back again. When connecting the unit as an uncontrolled one (without the orange contact), the receiver only powers the NF-3m module. Then both the position and the flashing lights are on permanently and the connector for regime choice serves for a manual control of the landing lights. In such case, the unit can be supplied directly from the accumulator as there is voltage between 4.5 - 5,5 V there. Exceeding the upper limit can cause damage. The red conductor is to be connected to "+" and the brown one to "-" of the accumulator.

The total average current consumption by all lights on is between 12 mA when having power supply from a BEC of the receiver. During 10 minutes of fly the light circuits burn only a little bit more than 1 % of capacity of a 700 mAh accumulator.

Installation procedure

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

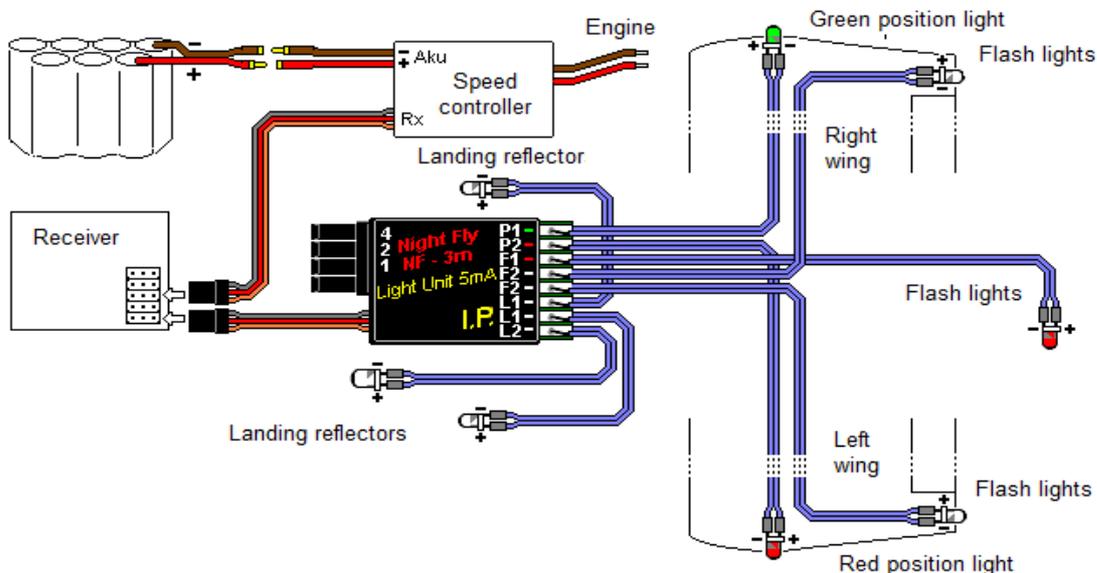


Fig. 3

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.*

When performing the installation with a night fly model, you have to keep certain rules to ensure the model to be visible in all positions so that flying at the night time is secure. Ultra bright LEDs are directional light sources compared to light bulbs. They light with angles of 15, 23, 30, 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, or combine these two methods.

Fig. 4 shows the connection of uncontrolled unit to the source. The illustration shows (B) how it is possible if necessary to connect two identical outputs F2 to achieve greater light intensity, if we don't need two flash LEDs F2, but just one. Likewise you can connect both outputs L1 in parallel to get the same light intensity as output L2. Or even to connect three outputs L together to power a single stronger landing reflector.

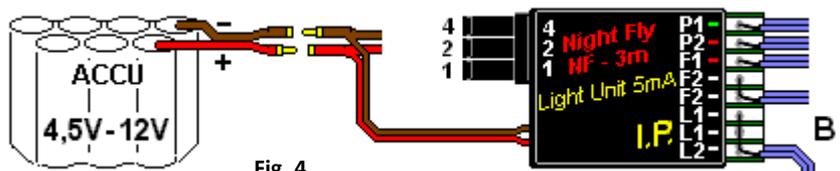


Fig. 4

Assembly and pre-flight tests

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 NF-3m			
	min	typ.	max.
Operational voltage [V]:	4.5	5	12.6
Control input Voltage [V]:	0.0	3.3	4.5
Consumption (5 V) [mA]:		12	
Consumption (12 V) [mA]:		32	
Circuits FL (frekv. 1 Hz):		pulses 66 ms	
Temperature:		0 – 70 °C	
Dimensions [mm]:		33 x 18 x 5	
Weight [g]:		4,6	

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