

# Operation manual for lighting device "PL-90"



The lighting device belongs to the group of products - IPC G03B15 / 02 and is intended for illumination of space, objects during panoramic photo and video shooting, obtaining color data of laser 3D scanning, in conditions of limited daylight or its complete absence by creating a one-step, uniform lighting the space that best suits natural daylight. The PL-90 modification is designed to be mounted on a standard photo tripod with a central pole 28mm in diameter. The layout and design of the device is made in such a way that it allows you to install the light source on the same tripod with the shooting equipment, thereby providing such illumination of the space and objects around the shooting point, which allows you to obtain photographic data without shadows and unnecessary artifacts. The lighting device can be used in various fields of activity, in particular, related to construction, including underground, as well as when working in emergency areas, in emergency situations, for fixing traces of incidents, where fast, mobile placement of local lighting with autonomous power supply, both for obtaining high-quality photo data, and for ordinary lighting of the space.

## ***Dimensional and weight characteristics***

• light unit	190x200x220mm; 1.6 kg
• autonomous power supply unit (APS) with batteries	138x190x190mm; 2.4 kg
• charger 100/220V with power cable (EU)	180x50x90; 1.0 kg
• installation diameter of the device	28mm

## ***Specifications***

• power of the light unit (W)	- 90
• color temperature (K)	- 6000
• created illumination (Lux)	- 100 at 3m; - 6 at 10m
• solid angle of illumination	- $4\pi$
• installation diameter of the device blocks (mm)	- 28
• range of operation of the radio remote control	- not less than 40 meters, up to 100m in line of sight
• operating frequency of the radio remote control	- 433Mhz
• humidity	up to -80%
• type, marking, batteries for the APS	- LifePo4 26700 4000mAh 3.2V Lii-40E
• the required number of batteries for the APS (pcs.)	-16
• operating temperature of the device with LifePo4 elements	from -20 to +50 degrees Celsius
• the service life of the device is at least	3 years

### **APS characteristics**

*(when using batteries from LiitoKala® LifePo4 26700 4000mAh 3.2V Lii-40E, recommended by the device manufacturer).*

- time of continuous work without recharging, not less (h) - 2.2
- time until full charging of the autonomous power supply unit (h) - 2.0

### **Attention!**

***The use of batteries other than the type LifePo4 26700 is strictly prohibited and will damage the lighting device. It is strictly forbidden to use defective batteries and with a damaged case.***

### **Delivery set**

- |   |       |
|---|-------|
| 1. Light block  | -1pc. |
| 2. Autonomous Power Supply unit (APS)<br>(supplied without batteries) | -1pc. |
| 3. Charger device 100 / 220V with power cable (EU)                    | -1pc. |
| 4. Connecting cable   | -1pc. |
| 5. Radio remote control with battery (CR2016)                         | -1pc. |
| 6. Transport backpack   | -1pc. |
| 7. User manual  | -1pc. |

### **Preparation for operation**

Before using the PL-90 device, the device units (lighting and APS) must be installed on the central pole of the photo tripod, connected with a cable and a radio remote control must be prepared for remote operation of power on / off. Installation of blocks on the central rod is carried out using quick-release clamps. At the same time, batteries must be installed in the APS in accordance with the requirements and recommendations of this operation manual.



### ***Installing batteries in the APS***

Before operating the PL-90 lighting device, 16 LifePo4 26700 cells must be installed into the APS. It is recommended to use batteries of the same manufacturer, of the same batch, the same resource and service life, the same charge, because these parameters directly affect the duration of operation, the time when the lighting device is fully charged.

To install the batteries, it is necessary to remove the top cover of the autonomous power supply unit by unscrewing 5 M4x12 screws and the contact cover by unscrewing 10 M4x10 screws.

Strictly observing the polarity of the batteries, place them in the power supply case (see Figure 1).

### ***Attention!***

***Failure to observe the polarity when installing the batteries will damage the Autonomous Power Supply unit, be careful.***

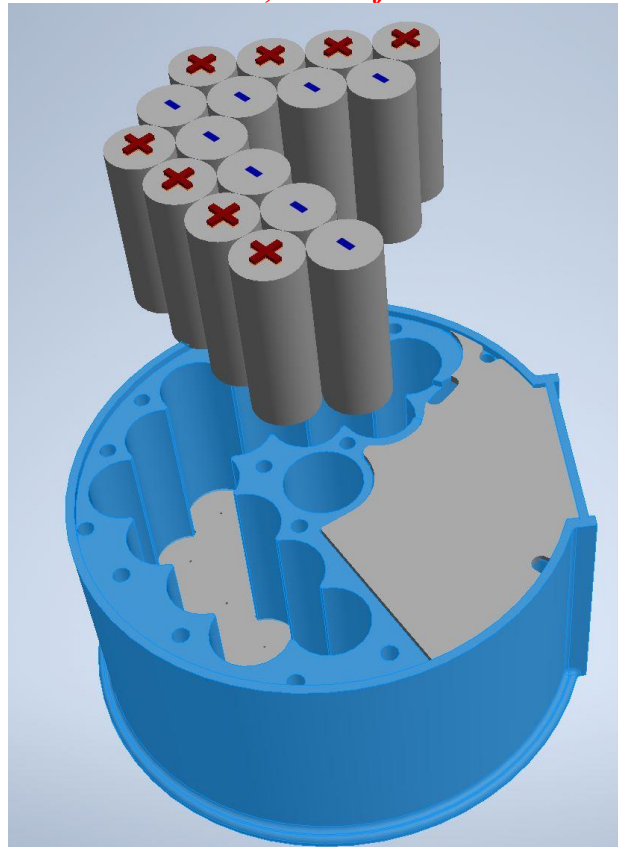


Figure 1.

Reinstall the covers. To put the UPS into working condition, it is necessary to connect the APS to the charger device, by connecting the charger connector (see Figure 2) to the autonomous power supply unit and supply voltage. The procedure for connecting the APS to the charger device must be carried out whenever you for some reason remove the contact cover board, for example, when replacing batteries or before flying in an airplane, when you are asked to remove the batteries from the power supply. After installing the batteries into the case, a short-term power supply is required to start the APS power control board, which controls the charge/discharge of the batteries and protection against short circuits. Disconnect the charger connector, press the APS charge indicator to make sure it is charged (the charge indicator correctly shows the state of charge only when the charger device is disconnected). Leave the APS in charging mode if necessary.

### ***Charging the UPS***

The UPS is charged as needed, using a special charging unit, which is included in the device package and is connected directly to the APS through a connector on its case (see Figure 2).

In turn, the charging unit is connected to an external power supply. The charger is designed for AC220v or AC110v. Adjustment is carried out by switching the mechanical toggle switch on the charging unit. By default, the switch is set to AC220v.

The batteries must be charged when the APS charge indicator (see Figure 2) shows the minimum value or when the lighting unit does not turn on anymore. You can activate the charge indicator at any time by pressing its red button, both during operation and when charging the APS. Full charge time can vary from 2 hours to 2,5 hours, depending on the energy capacity and the condition of the batteries you are using. We recommend leaving the APS in charge mode for a longer period. The charge control board will automatically turn off the charge mode when needed.

#### ***Attention!***

***The use of a charging block other than the one included in the lighting device is strictly prohibited!***

### ***Control***

Power on/off of the light unit can be carried out both manually and remotely.

For manual control, you must use the power button 1 (see Figure 2). Remote control will not be available in this mode.

To activate remote control mode of APS (for using a radio remote control), it is necessary to turn off the power button 1 and press the button 2 (see Figure 2).

After that, the power on/off, of the light unit, can be controlled by the radio remote control.

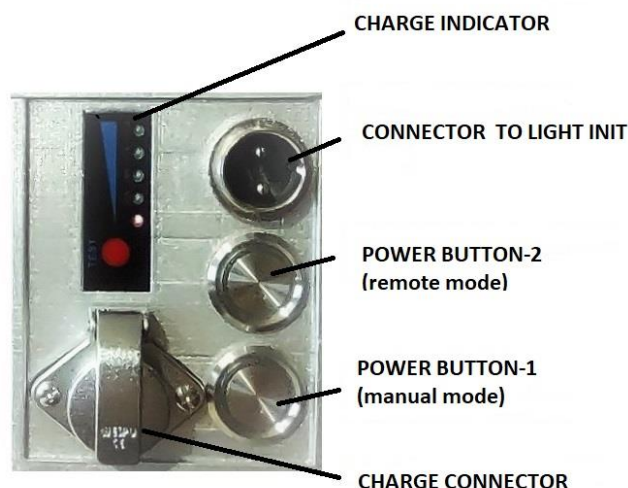


Figure 2.

### ***Maintenance, transportation, storage, disposal***

The PL-90 lighting device does not require special maintenance for its entire service life.

Any type of transport allows for transportation PL-90, if it is protected from mechanical damage, direct effects of atmospheric precipitation and any shock loads.

Storage is carried out in the manufacturer's transport backpack in a closed room with natural ventilation at an ambient temperature of -20 to +50 and a relative humidity of 80%.

The PL-90 lighting device is environmentally friendly, does not contain toxic materials, does not belong to hazardous waste and does not require special conditions and permits for disposal.

### ***Recommendations for air transportation of the ABP unit***

Because in the APS, we have to use batteries of the type Lithium Iron Phosphate Batteries (LiFePO<sub>4</sub>, LFP), which contain lithium and are considered dangerous goods for air transportation, are subject to a certain transportation regime. Most airlines require this type of battery to be transported OUTSIDE the instrument case.

We strongly recommend that you familiarize yourself with the rules for the carriage of lithium-ion batteries by the airline you are going to use and, if necessary, dismantle them from the APS in advance, pack them to exclude a short circuit and damage to the case from possible external mechanical impact.

### ***Warranty obligations***

The warranty period of operation is 12 months from the date of sale by the trading organization, provided that the consumer observes the operating rules set forth in this operating manual.

The warranty does not apply to the product, the defects of which have arisen due to:

- violation by the consumer of operating rules
- mechanical damage, shock, etc.
- repair or introduction of unauthorized structural or circuitry changes
- deviations from state standards and norms of supply networks
- incorrect installation or connection of batteries
- actions of force majeure (elements, lightning, etc.)

### **OAO NPO "Innovation Technologies"**

140180, Moscow region,

Zhukovsky, st. Narkomvod, 7 bldg. 2.

+7 (965) 319-00-69

[faro.russia@gmail.com](mailto:faro.russia@gmail.com)

[www.3DFARO.ru](http://www.3DFARO.ru)