DG

FLUGZEUGBAU GMBH

OPERATING MANUAL

FLASH LIGHT

TYPE: FOR DG-500 AND DG-1000

VARIANTS: ALL

Issued: July 2016

Owner:

Ser. No.:

Registration:

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This flash light is to be operated in compliance with information and limitations contained herein.
These instructions must be carried on board.
The flash light is not suited for operation as an anti collision light as defined in aviation regulations and may not be used as such.

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0 Manual Contents

0.1 Log of Revisions

Any revision of the present manual, except actual weighing data, must be recorded in the following table and in case of approved Sections endorsed by the responsible airworthiness authority.
The new or amended text in the revised page will be indicated by a black vertical line in the right hand margin, and the revision No. and the date will be shown on the bottom left hand of the page.

No	Page	Description	Date	approval

0.2 Table of Contents

Wiring plans

The following wiring plans are part of this operating manual.

Installation for all types and variants:

10Ep38

DG-500 gliders, DG-1000S with mechanically operated landing gear, or fixed landing gear (Club)

10EP37 revision f (or any later issue).

DG-1000S with electrically operated landing gear

10E03 revision b (or any later issue).

DG-500M, DG-500MB, DG-1000T and DG-1000M:

10E215, initial issue (or any later issue).

First Prototype 10-74T13:

10Ep36, initial issue (or any later issue).

1 Introduction

In the following text the amendments to those sections of the flight manual which are affected by the installation of the flash light will be given.

2 Section 1 of the flight manual (General)

2.1 System description

A circular FLASH LIGHT is attached to the forward fuselage nose around the opening for the aero tow release, see figure 1. The FLASH LIGHT consists of a circuit board on which several high power LED's are assembled which is casted together with the complete electronics in a ring made of epoxy resin. This ring is shaped in such a way that it exactly fits the outer shape of the forward fuselage and hence does not influence the aerodynamic quality of the fuselage nose.

Figure 1, fuselage nose of the DG-1000 with aero tow release and FLASH LIGHT

To achieve an optimal visibility of the glider in front of snow covered surfaces or just below the cloud base, the FLASH LIGHT flashes with red LED's. The FLASH LIGHT is to be connected to a FLARM anti-collision warning device. It always emits a series of 3 consecutive flash pulses, which last 25, 50 and 200 milliseconds. To limit the electric power consumption in a sensible way, the time between the series of flashes is increased when the risk of collision reduces. FLARM has 4 alarm stages, depending on these stages the flash frequency is adjusted, see table 1.

Alarm stage FLARM	Time between flashes [s]	Average current consumption [A]	Average power consumption [W]
0	5	0,28	3,3
1	1,5	0,92	11
2	0,7	1,96	21
3	0,4	3,09	37
no GPS fix	1,5	0,92	11
FLARM switched off	1,5	0,92	11

Table 1

2.2 Power consumption

The FLASH LIGHT has a peak current draw of about 5A during a flash, when operated at 13,5 V. For lower voltages, the current is also lower. The average power consumption depends also on the alarm stage of the FLARM, see table 1.

Due to the high peak currents, the FLASH LIGHT has to be operated with a Lithium-Iron-Phosphate (LiFePo) battery with a minimal capacity of 15 Ah, see drawing Z01/4. To avoid radio interference in FLASH LIGHT operation due to long cable lengths and resulting strong voltage drops, the FLASH LIGHT battery has to be positioned in the baggage compartment. For this reason it is not allowed to operate the FLASH LIGHT by the battery in the vertical fin.

If not yet installed in the baggage compartment, a battery Z01/4 (LiFePo min. 15 Ah, with fuse 16A) has to be installed in the standard battery box (DG-1000) or in a battery holder Z200 (DG-500).

Caution: The baggage compartment battery Z01/1 which may have been in use so far is not approved in combination with the flashlight.

3 Section 2 of the flight manual (Limitations)

3.1 Limitation placards

Directly below the placard Cockpit Check the following placard is installed:

FLARM switched on and positive GPS fix, or FLASH LIGHT off?

4 Section 4 of the flight manual (Normal procedures)

4.1 Pre-flght inspection

Respect the following additionol item of the pre-flght inspection:

FLARM switched on and positive GPS fix, or FLASH LIGHT off?

Warning: The light emitted by the high power LED's on the FLASH LIGHT is extremely bright and could be harmful to the human eyes, when looking into it directly from a close distance. The person helping out with the aero tow could be glared by the flash. Therefore the FLASH LIGHT should only be switched on before launching, if the FLARM device is switched on and has a positive GPS fix. Alternatively the FLASH LIGHT may be switched on after launching.

4.2 Control

The FLASH LIGHT can be switched on or off with the switch marked „FLASH LIGHT" on the instrument panel. However, it will not flash while standing on the ground, as long as the flight speed is below 50 km/h. To determine the speed, the FLASH LIGHT needs a signal transmitted by the FLARM device. If the FLARM has no GPS fix, or is switched off, the FLASH LIGHT will give a series of three flashes every 1,5s, see table 1. For normal operation, it is recommended to first switch on the FLARM device and switch on the FLASH LIGHT not before the FLARM has a positive GPS fix (with free sky view usually within one minute).

5 Section 7 of the flight manual (Sailplane and systems description)

5.1 Cockpit, cockpit controls and placards

Schalter für Blitzlicht (at a suitable place on the instrument panel)

Up on
Down off

6 Section 8 of the flight manual (Sailplane handling, care and maintenance)

6.1 Function test on the ground

To verify the FLASH LIGHT is serviceable, the connected FLARM device has to be switched off, or the connection can be separated by removing the connector plug directly from the FLARM device. If the FLASH LIGHT is switched on now, the FLASH LIGHT should give 3 flashes every 1,5 seconds, see table 1.

6.2 Software settings of the FLARM device

The external communication port of the FLARM device should be set to a Baud rate of 19200, to achieve a proper communication with the FLASH LIGHT. If the communication of the FLARM device is not set to a baud rate of 19200, the FLASH LIGHT will flash three times every 1,5 seconds, also with FLARM switched on and with positive GPS fix. The Baud rate of most FLARM devices can be set by a memory card with a setting file in the SD or USB slot of the FLARM when switching on.

Caution: Because this method is also used when downloading flights from the FLARM device, settings of the FLARM device could be easily changed inadvertently when downloading flights. Therefore the FLARM Baud rate has to be checked first, when the FLASH LIGHT flashes on the ground, while connected to Flarm with a positive GPS fix.

6.3 Maintenance

The flash light is maintenance free.

In case of a defect the flash light has to be replaced analogous to “Installation instructions TM1000-29 FE-33-01-01b”.