NEXUS PRO

AEROFLASH PLUS

“See and Avoid” starts with being SEEN...

Valid for:

CanopyFlasher + FuselageFlasher + Nexus PRO.
AeroFlash PLUS kit.

Installation and Operating Manual

Revision 2 - February 2022

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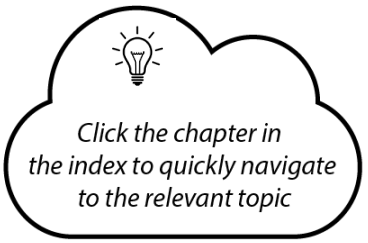


1. Important notices and limited warranty

The AeroFlash system is designed for VFR use only, as an aid to collision avoidance. AeroFlash is in no way designed for operation in IFR or IMC conditions. Installing AeroFlash does not refrain from exercising the regular See and Avoid procedures.
The pilot is **always** responsible for this action and may NEVER fully rely on being seen by the other traffic. AeroFlash is only an aid to enhance visibility of your aircraft.

The installation of an AeroFlash system **must comply** with EASA regulations as per Standard Change **CS-SC036a "INSTALLATION OF VISUAL AWARENESS LIGHTS"**: click here for the link to the EASA document.

Information in this document is subject to change without notice. AeroFlash reserves the right to change or improve their products and to make changes in the content of this material without obligation to notify any person or organisation of such changes or improvements.

If in any case confusion exists, please contact us for a clarification.

A yellow triangle is shown for parts of the manual which should be read very carefully and are important for operating the system.

Notes with a red triangle describe procedures which are critical and may result in serious damage or any other critical situation.

A bulb icon is shown when a useful hint is provided to the reader.

This AeroFlash product is warranted to be free from defects in materials or workmanship for **two years** from the date of purchase. Within this period, AeroFlash will, at its sole discretion, repair or replace any components that fail in normal use. Such repairs or replacement will be made at no charge to the customer for parts and labour, provided that the customer shall be responsible for any transportation cost. This warranty does not cover failures due to abuse, misuse, accident, or unauthorised alterations or repairs.

THE WARRANTIES AND REMEDIES CONTAINED HEREIN ARE EXCLUSIVE AND IN LIEU OF ALL OTHER WARRANTIES EXPRESSED OR IMPLIED OR STATUTORY, INCLUDING ANY LIABILITY ARISING UNDER ANY WARRANTY OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE, STATUTORY OR OTHERWISE. THIS WARRANTY GIVES YOU SPECIFIC LEGAL RIGHTS, WHICH MAY

VARY FROM STATE TO STATE. IN NO EVENT SHALL AEROFLASH BE LIABLE FOR ANY INCIDENTAL, SPECIAL, INDIRECT OR CONSEQUENTIAL DAMAGES, WHETHER RESULTING FROM THE USE, MISUSE, OR INABILITY TO USE THIS PRODUCT OR FROM DEFECTS IN THE PRODUCT. Some states do not allow the exclusion of incidental or consequential damages, so the above limitations may not apply to you. AeroFlash retains the exclusive right to repair or replace the unit or firmware, or to offer a full refund of the purchase price, at its sole discretion. SUCH REMEDY SHALL BE YOUR SOLE AND EXCLUSIVE REMEDY FOR ANY BREACH OF WARRANTY.

To obtain warranty service, contact your local AeroFlash dealer or contact AeroFlash directly.

2. Introduction

A printed version of this installation manual may be in grayscale. Some figures and diagrams are coloured, like coding of power- and data wires. Please refer to the electronic version to see the correct colours. Confusion of color coded wires may cause serious system damage and is not covered by the limited warranty.
The latest electronic version of this manual can be downloaded from www.AeroFLASH.de, section downloads - manuals. Please refer to your hardware version if certain items apply to your device.
This manual will guide you through the installation process of all systems, components, basic setup and check of the system.

Before using any part of the system, please read and understand this Installation and Operating manual.

There are no serviceable parts within the unit, hence the unit must be taken to the dealer or factory for service.

Opening of the Nexus and/or Fusion unit by the user will void all warranty!

Never plug any unauthorized devices into the mini-USB or DB9 connectors. These will certainly cause serious damage to the Nexus and/or CanopyFlasher. For updating procedures refer to this manual.

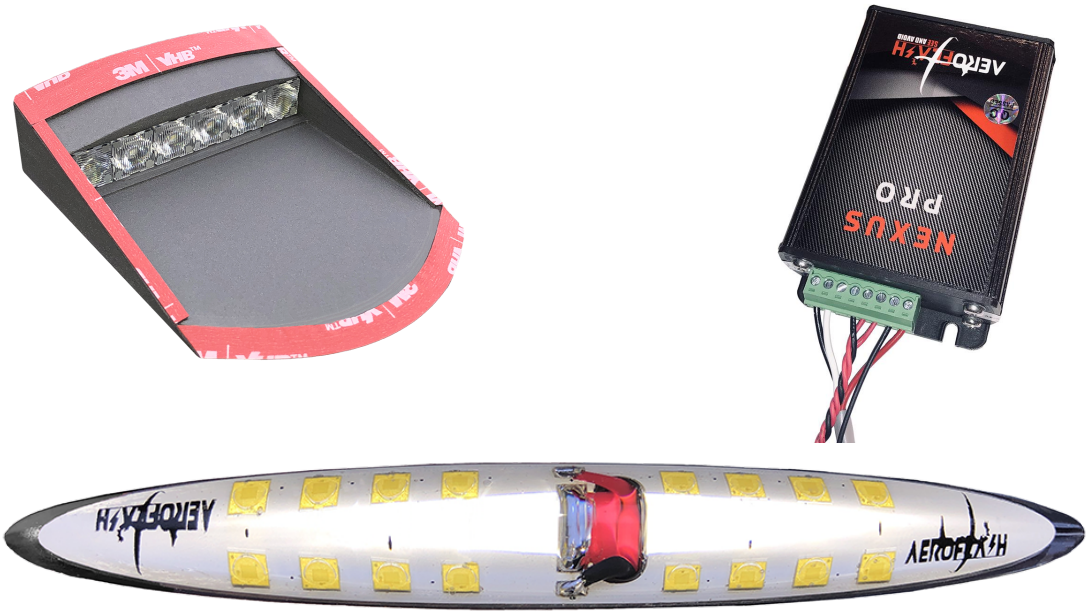
2.1 Terminology

Nexus / Nexus MINI: computer controlled Flasher activator and power supply for one CanopyFlasher.
Nexus PRO: computer controlled Flasher activator and power supply for one CanopyFlasher and one FuselageFlasher.
AeroFlash PLUS: Value kit containing one Nexus PRO, one CanopyFlasher and one FuselageFlasher.
CanopyFlasher: canopy mounted forward flashing device.
FuselageFlasher: top or bottom fuselage external mounted, 360° by 180° flashing device. This may also be an "external flasher" - not necessarily supplied by AeroFlash (read further for compatibility).
CanopyConnector: the opposite 7-pin connector that is fitted to the CanopyFlasher, and is mounted on the canopy or canopy frame, supplying power and data between Nexus and the CanopyFlasher.
SidewallContact: a 7-pin contact fitted to the Nexus cable set, which is to be mounted on the interior sidewall. It is **universal for every glider** with a side opening canopy. It connects to the CanopyFlasher.
PanelContact: a 7-pin contact fitted to the Nexus cable set, which is to be mounted on the instrument panel cover, specially made for Schempp-Hirth gliders, which connects to the CanopyFlasher. SH-glider owners may also choose the SidewallContact if they prefer not to drill a hole in the instrument panel cover.

3. System overview and installation planning

3.1 System overview

The AeroFlash PLUS value kit features multiple parts:



The system is designed to be plug-and-fly. It comes complete with everything you need. No additional wiring, splitters or soldering is required, other than connecting it to your aircraft's power supply. Typical installations can be done in 60 to 120 minutes. For an overview of the scope of delivery please refer to chapter 4.1.

Nexus PRO - connection box - the brain of AeroFlash

Nexus has an IGC-standard RJ12 Flarm input port for plug-and-fly connection of a Flarm, an additional display and a wired PDA/PNA port. Nexus receives the Flarm signal and calculates *when* and *how* to flash; of course traffic behind you cannot see the forward CanopyFlasher. Nexus can also be extended with an extra external FuselageFlasher. Nexus is also able to operate without Flarm input, as a stand-alone, manually activated device. In case we develop more features in the future, or enhance the flashing logic, there is no need to send the Nexus back

to us for service and updates: you can update the Nexus yourself using the Mini-USB port and a configuration / update tool on your PC.

CanopyFlasher - canopy mounted, forward-facing flasher

CanopyFlasher is made from a high strength, UV-resistant ABS based polymer. The unit is delivered as standard painted in a high quality, matte "Space Grey" (Nextel like) finish. Optionally it can be delivered in different colors.
The heart of the CanopyFlasher is the array of **6 extremely bright CREE LEDs emitting approximately 4000-4500** *(red/white)* **Lumens,** with powerful, oval lenses; 2 beams orientated vertically, and 4 beams oriented horizontally. This makes the Flasher well visible at distances of even up to 3500m, ±30 degrees above and below- and up to ±45 degrees left and right of the nose.
The CanopyFlasher system incorporated many safety features, like heat sinks, a temperature sensor to prevent overheat conditions and two status LEDs for indication of the operating modes.

Never look straight into the illuminated CREE LEDs as this will certainly result in temporary blindness, with risk of permanent damage to the eye sight! It is your responsibility to inform anyone who is not familiar with this system.

FuselageFlasher - 360° external, top/bottom fuselage mounted flasher
The Nexus system features an additional flasher data port for connection to our FuselageFlasher system. The FuselageFlasher is made out of a very

strong, super clear UV resistant epoxy and features **16 extremely bright CREE LEDs, emitting approximately 7500-8500** *(red/white)* **Lumens**. It can be installed on the top or bottom of the fuselage, flashing in a 360 degrees view. The FuselageFlasher is extremely sleek and aerodynamic, measured at only 110mm long x 15mm wide x 11mm high. Only one small hole of 4mm is required for the three power wires. Mounting of the flasher

can be done simply with the (included) super strong 3M double sided adhesive foam tape, sealed off with some silicone mounting kit for weather-proofing. A simple and sturdy mounting, but less "permanent" than other solutions.

Install the FuselageFlasher on one of the wheel- or engine bay doors (close to the center-line of the fuselage) to avoid drilling in the fuselage. This is the quickest and easiest installation with the least amount of impact on the airframe.

3.1.1 RJ12 input port

Nexus features an **IGC-compatible RJ12 port** for input of Flarm data. Included with the Nexus PRO is an RJ12 splitter, a short RJ12-RJ12 cable, and two longer RJ12-RJ12 and RJ12-RJ45 cables for easy plug-and-fly connection with your Flarm. The user can also directly connect an external Flarm Display to one of these ports. Power supply of an external Flarm Display will be handled by the Flarm. No data or power supply is manipulated in the RJ12 port by the Nexus. Additionally an Oudie or other PNA can be connected to one of these splitter ports as well. All data will be synchronized between all devices, in both directions.

Pin Number	Description
1	+12V DC, supplied from Flarm (not used by Nexus)
2	+3V DC, supplied from Flarm (not used by Nexus)
3	Ground
4	Flarm data in (RX, Receive to Nexus)
5	Flarm data out (TX, Transmit from Nexus)
6	Ground

The RJ12 port is designed and numbered in accordance with the **IGC-standard pinout**. Please note with caution that the IGC-standard pin numbering is in reverse to the PC-industry standard!

3.1.2 Mini-USB connector

The Mini-USB port on the Nexus is used for updating the firmware and configuring certain NMEA settings. A Windows PC configuration/update

tool is available for download on our website - downloads section. Read more about this tool in chapter 5.

3.1.3. Status LEDs

The CanopyFlasher features two different colored status LEDs. These quickly show various different operating modes and errors. The brightness of the status LEDs may be changed with the PC tool. Some users may find the standard setting too bright because of reflections, or often landing after sunset (like in Africa or when mountain wave flying). Refer to chapter 5 for more information.

Green status LED:

Off	Nexus system switched off.
Steady	System running, Flarm data OK.
Blinking (0.5 Hz)	System error, no Flarm data received, AUTO-mode unavailable (manual ON-mode is available).

Red status LED:

Off	Flasher standby (AUTO-mode, no traffic detected)
Steady	Flasher always flashing; ON-mode active.
Blinking (0.5 Hz)	Flasher active, system in AUTO-mode, traffic detected.

Status LEDs **alternating green and red** indicate that the system is in Standby-mode, on ground, when the switch is set to ON. This only happens on ground, after the 30 second initial testing mode. The system is then selected in **Standby-mode**, and will start the continuous ON-mode flashing once the Flarm detects that the aircraft is in flight. This is to prevent overheating of the system during activation on ground without airflow cooling.

Status LEDs rapidly (1Hz) **alternating green green - red red** indicate that the system is in **hazard mode**. Read more about this in chapter 3.1.6 Hazard mode logic.

Green and red status LEDs blinking rapidly (1Hz) at the same time indicate that an **overheat condition** is detected. Subsequently, the CanopyFlasher is deactivated until the overheat condition disappears.

3.1.4 Auto/ON mode logic - in flight

ON-mode vs AUTO-mode logic - in flight

In **ON-mode**, both the CanopyFlasher and FuselageFlasher are **always flashing** in a 3-flash per 1,5 second sequence. If a Flarm warning occurs, the system automatically adapts to a flashing timing more rapidly and more aggressively, generating more light.

In **AUTO-mode**, Nexus calculates ***when*** to activate automatically. This is considered **a power saving mode**. If traffic *behind* you causes a Flarm warning, it may not be useful to activate the forward *CanopyFlasher*. FuselageFlasher is always active when traffic nears to within 3km horizontally and 300m vertically or when a Flarm warning occurs, regardless of the traffic direction. Depending on the vertical- and horizontal distance and the warning level the flashing increases in intensity:

Nexus logic	**ON-mode**	**ON/AUTO - Traffic <3km**	**ON/AUTO - Level 1 warning**	**ON/AUTO - Level 2 warning**	**ON/AUTO - Level 3 warning**
Flash timing	3 flashes / 1,5 sec	3 flashes / 1 sec	4 flashes / 1 sec	5 flashes / 1 sec	6 flashes / 1 sec

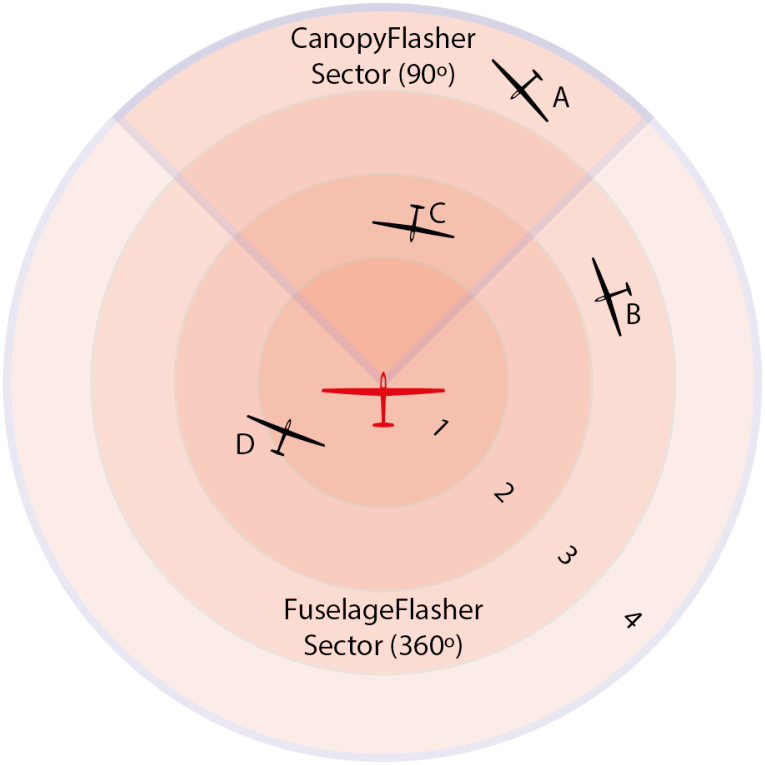
CanopyFlasher "AUTO" logic - in flight

If traffic is received in the ***forward 90 degree horizontal and +/- 30 degree vertical sector*** of the aircraft, within 3km distance horizontally and 300m vertically the CanopyFlasher will already activate in a 3-flash per 1 second sequence.
When an actual traffic warning (low, medium or high, as triggered by Flarm) is activated due to a target in the *forward 90 degree sector of the aircraft*, the CanopyFlasher will start flashing more rapidly: 2 to 4 times per second, depending on the warning level (see above).

FuselageFlasher "AUTO" logic - in flight

If traffic is received ***anywhere within 360 degrees*** around the aircraft, within 3km distance horizontally and 300m vertically, the FuselageFlasher will activate in a 3-flash per second sequence.
When an actual traffic warning (low, medium or high, as triggered by Flarm) is activated, the FuselageFlasher will start flashing more rapidly: 4 to 6 times per second, depending on the warning level (see above).

Logic visually explained on the next page.



Example:

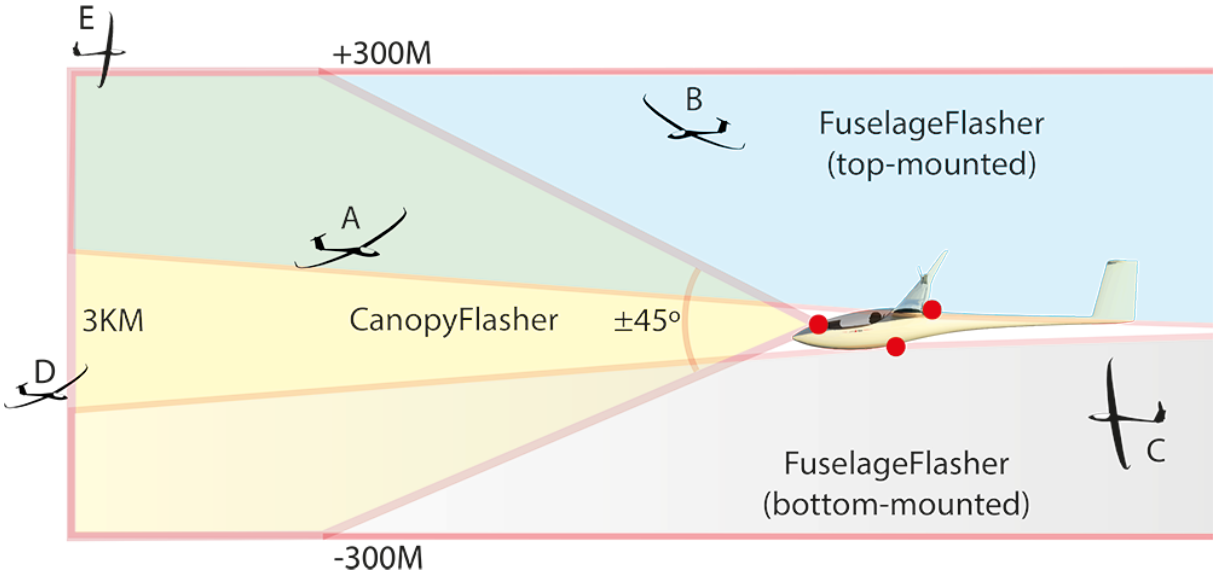
*(**CF** = **C**anopy**F**lasher, **FF** = **F**uselage **F**lasher)*

Glider A is flying in **forward sector 4 (starts at less than 3km):**
Both **CF and FF** activate - 3 flashes per second.
(Flarm traffic advisory - usually no audio warning)

Glider B is flying in **sector 3:**
Only **FF** flashes - 4 flashes per second.
(low level Flarm warning)

Glider C is flying in **forward sector 2:**
Both **CF and FF** flash - 5 flashes per second.
(medium level Flarm warning)

Glider D is flying in **sector 1:**
Only **FF** flashes - 6 flashes per second
(high level Flarm warning)



Example:

Glider A is flying in the CanopyFlasher Sector (90° x +/- 45°): both **CF and FF** are active.
Glider B and **C** cannot see the **CanopyFlasher**: only the **FuselageFlasher** is active.
Glider D is more than 3km away: **CanopyFlasher** and **FuselageFlasher** are not yet activated.
Glider E is flying within 3km and within the 30 degree CF-sector, but more than 300m higher: **CanopyFlasher** and **FuselageFlasher** are not yet activated.

Please always manually select **ON-mode** when visibility is degraded or potentially dangerous situations may exist. Examples of these are, but are not limited to: flying close to cloud base, running under cloud streets, flying along mountain ridges, white snowy mountainous areas, lot's of VFR traffic, competitions, circuit and landing, low standing sun, close to sunset, etc. The extremely bright red LEDs really stand out well in grayed out conditions. **Never fully rely on "AUTO-mode": your Flarm reception may be poor, or someone else's Flarm signal may be weak! It may also protect you from General Aviation traffic without Flarm!**

3.1.5 Auto/ON mode logic - on ground

In **AUTO-mode** the CanopyFlasher and FuselageFlasher will not activate on ground. They both will start flashing when the Flarm detects that the flight has started, and ***if*** conflicting traffic is received, as mentioned in chapter 3.1.4. This logic will continue until shortly after coming to a full stop upon landing.

ON-mode, before take-off

In **ON-mode with Flarm connected**, when on the ground before take-off, the CanopyFlasher and FuselageFlasher will only flash for a short period of 20 seconds* and is then waiting in ***Standby-mode: ready for takeoff***. This is a protection to avoid an accidental overheating of the FuselageFlasher without sufficient air cooling. This allows ample time to test the system and show it off to your friends.

Now when you take-off, flashing will start immediately once the Flarm detects that the aircraft is in flight.

Status LEDs **alternating green and red** indicate that the system is in **Standby-mode**, on ground, when the switch is set to ON. This only happens on ground, after the 20 second initial testing mode. The system is then selected in **Standby-mode**, and will start the continuous ON-mode flashing once the Flarm detects that the aircraft is in flight. This is to prevent overheating of the system during activation on ground without airflow cooling.

*In ON-mode on ground, by resetting the switch from ON to AUTO to ON, this protection logic will be overridden and no

further overheating protection is available. This may be necessary to operate the system without Flarm data (refer to chapter 6.1 Troubleshooting). Limit the activation of the FuselageFlasher on the ground for a maximum of 5 minutes! Refer to chapter 3.6 Cooling requirements for more information.

ON-mode, after landing
After landing in **ON-mode with Flarm connected**, the Nexus system will automatically turn off the flashing logic approximately 30 seconds after the flight has ended.

Do not rely on Flarm ending the flight status, and always manually switch the system to AUTO or OFF after landing.

3.1.6 Hazard mode logic

When extremely hazardous conditions exist where (temporarily) maximum visibility is demanded, Nexus can quickly be entered in a continuous rapid-flashing operation. This generates the maximum available light output and increases the chances of being seen. It basically simulates a continuous Flarm level 3 (highest) warning, for a period of 5 minutes.

To enter Nexus in hazard mode, select the switch from AUTO to **ON** to AUTO to **ON** to AUTO and once again to **ON** within **3 seconds** (rapidly cycle the mode switch 3 times to ON).
After 5 minutes Nexus will automatically revert into ON-mode and normal flashing operation will return (steady green and red LED will show). If required, the procedure can be repeated.

The CanopyFlasher status LEDs will confirm that the Nexus entered hazard mode with the following blinking indication: **GREEN - GREEN - RED - RED**.

When in hazard mode, temperature protection is of course active.
When operating hazard mode on ground (for example after landing) with Flarm connected, **standby mode** additionally protects your canopy and the system from overheating.

No other Flarm warning inputs will be used for flashing logic during this hazard mode operation.

Switch on hazard mode in extremely crowded environments, when landing, making a competition finish/low pass, or when entering unexpected IMC or poor visibility.

Battery drain will be significantly increased due to the high power consumption of this mode. Be aware of potential loss of avionics or navigation with weaker or empty batteries. Avoid using hazard mode with near to empty batteries.

Although temperature protection is available, avoid activating hazard mode for prolonged times when on ground. The CanopyFlasher and FuselageFlasher will become very hot without air cooling. On ground, an overheat condition is very likely to occur with high ambient temperatures. **Standby mode** on ground is **only available with Flarm connected!**

3.2 Power consumption

Due to the smart technology and complex synchronized flash-sequencing we incorporated in all AeroFlash products, power consumption is very reasonable and should not be an obstacle to installing AeroFlash.
Typical power consumption in AUTO-mode after a 6-hour flight with moderate traffic (multiple activations of a few minutes per hour) will result in an average power consumption of only 300-1800mAh. Of course an exact figure cannot be given.

System situation & setup	**Standby current (not flashing)**	**AUTO-mode, average consumption per hour with *moderate traffic**.**	**ON-mode, per hour.**
Nexus PRO + CanopyFlasher + FuselageFlasher	10mA	± 120 - 350mAh	*450mAh*

*These are theoretical values only and strongly depend on actual traffic conditions; quantity and height/direction of traffic (when the CanopyFlasher does not need to be activated it drains no power). *Moderate traffic* implies flashing activations lasting several minutes, multiple (5 - 10) times per hour, with various Flarm warnings.

AeroFlash can strongly recommend special AIRNERGY high capacity LiNiMnCoO2 (NMC) batteries, which double capacity versus LiFePO4 (LFP) for the same size and even lower weight!

3.3 Power supply

All AeroFlash systems accept a power input of 10V to 20V DC. We designed our system to be smart in an automatic power saving mode, or "always on" in the ON-mode. AeroFlash should not be powered through the same circuit breaker as the Flarm, as AeroFlash systems are rated significantly higher.

There is **NO** fuse inside, nor included with the system. Suitable fuses or circuit breakers are available from our dealers, or from AeroFlash directly. The AeroFlash systems require a minimum thickness of 20AWG wire (supplied as standard with Nexus PRO).

System setup	Circuit breaker requirement
Nexus PRO + CanopyFlasher + FuselageFlasher	3A

We strongly advise to install an automatic circuit breaker that can be tripped manually, rather than a fast blowing glass-fuse. These automatic circuit breakers are available from AeroFlash webshop or our dealers. Contact us for more information.

3.4 Dimensions and weights

Nexus PRO:
Dimensions LWH: 100 x 63 x 31mm (including mounting flanges).
Weight: ±190 grams.
CanopyFlasher:
Dimensions LWH: 90 x 64 x 23mm (±10%, length/height varies per glider type).
Weight: ±100 grams with 50cm cable.
FuselageFlasher:
Dimensions LWH: 110 x 15 x 11mm (including mounting-foam tape).
Weight: ±15 grams without cable / ±95 grams with 4m cable.

3.5 Temperature specifications

All AeroFlash components are designed to operate in temperatures ranging from -30 to +60°C. These temperature limitations highly depend on the actual ambient conditions. Generally with high-summer (>30°C) temperatures some precautions must be observed:

Maximum operating times at high ambient temperatures:

CanopyFlasher		FuselageFlasher	
On ground	In flight	On ground	In flight
Max 10 minutes	50°C OAT	**Max 5 minutes!**	60°C OAT
(temperature sensor prevents overheating in normal conditions)	*(with forward canopy airflow open)*	*(**limited*** *temperature protection installed!)*	*(no additional cooling requirements)*

*Refer to chapter 3.1.5 Auto/ON mode logic - on ground for more information on the **limited** temperature protection.

3.6 Cooling requirements

In flight there are no special precautions that must be made for cooling of the system. Multiple heat sinks, cooling slots and a temperature sensor are built-in the CanopyFlasher to monitor the system and automatically shut it down when an overheat condition is experienced (LED temperature of 70°C). Ensure to never block the cooling slots.
Generally even in hot summer conditions, the airflow from the front of the canopy is more than sufficient to cool the system and the system will not even come close to the maximum operating temperature of 70°C. These protections are built-in solely to prevent aircraft- and system damage in case of a failure of the electronics.

In high ambient temperatures (and strong sunlight), the CanopyFlasher LEDs may become quite warm when operated continuously ***on the ground***, without cooling from the canopy airflow ventilation. Do not fully rely on the temperature sensor and avoid activating the system in "ON-mode" on the ground for prolonged times.

The FuselageFlasher is cooled by airflow around the device. *In flight* there are no further cooling requirements. ***On-ground*** **observe the following procedures:**

There is a **limited** temperature protection built in the FuselageFlasher! Do not activate the "ON-mode" on ground for prolonged times (<5 minutes) when a FuselageFlasher is

installed. Serious damage to the flasher, as well as to the fuselage (overheating) may occur due to the lack of air-cooling, especially in strong sunlight and high ambient temperatures!

Always switch off the "ON-mode" after landing by turning the switch back to AUTO! Refer to chapter 3.1.5 Auto/ON mode logic - on ground for more information on the limited temperature protection.

Please **always** use a canopy cover whenever the glider is not in use, and switch off the power supply to the system. This will benefit the life-time of all the components due to less exposure to heat and UV light.

3.7 Humidity

Nexus PRO, the CanopyFlasher are designed to operate in humidity ranging from 0 to 95%.

The FuselageFlasher is waterproof. Please refer to the specific installation instructions in chapter 4.8 for more details.

3.8 Mounting requirements

Nexus PRO may be mounted with up to 4 screws, or by using the supplied 3M "Dual Lock" super strong double sided adhesive tape and some cable ties. In any case Nexus PRO should be mounted in accordance with the installation requirements as per (a.o.) CS-SC036a and CS-SC402b.

The CanopyFlasher comes prepared with super strong black 3M double sided adhesive foam tape. It is strongly recommended to use this black tape as it blocks out any reflections that may appear in the canopy when the flasher is activated. This 3M tape is safe to use on plexiglass.

4. Installation instructions and examples

The installation of an AeroFlash system **must comply** with EASA regulations as per Standard Change **CS-SC036a "INSTALLATION OF VISUAL AWARENESS LIGHTS"**: click here for the link to the EASA document.

4.1 Scope of delivery

1x Nexus PRO device.
1x CanopyFlasher with 3M double sided adhesive foam tape pre-applied and cable set ***.
1x FuselageFlasher with 3M double sided adhesive foam tape pre-applied, with 4 meter pre-attached AWG20 wiring (3 wires: red, red, black) - other lengths available on request.

1x Nexus PRO cable set with 8-pin pluggable screw-terminal connector pre-attached, with OFF/Auto/ON switch connected (total length 70cm standard, other lengths available on request).
1x RJ12 - RJ12 1:1 cable 10cm - for connection between Nexus and splitter.
1x RJ12 - RJ12 1:1 cable 50cm - for connection Nexus-Flarm.
1x RJ12 - RJ45 1:1 cable 50cm - for connection Nexus-Flarm.
1x 3-Way RJ12 splitter.
1x Mini-USB to USB-A cable 150cm, for firmware updates.
1x 15cm 3M Dual Lock adhesive tape for mounting of Nexus PRO.
1x Vinyl sticker template for aligning the CanopyFlasher during installation.
1x OFF/Auto/ON switch marking/label.

******* The cable set version depends on the canopy opening direction:

- Vertical opening canopies receive a DB9 connector set. If required you will receive an extension cable.
- Side opening canopies receive a matching 7-pin panel-cover-mounted *CanopyConnector/PanelContact* set with various mounting supports, depending on the chosen option: general or Schempp-Hirth style.

NOT included, optionally available and may be required for the installation:
Fuse/circuit breaker, 3A - available from us separately.
Silicone sealant/kit (for weather-proofing the FuselageFlasher).
Additional power cable. Crimp or soldering tools. Cable ties, cable clips.

4.2 Installation of the Nexus PRO unit

Find a suitable location for the Nexus PRO unit. It may be required to make some brackets and use the mounting flanges to mount it with two or four screws. Avoid over-tightening of screws on the plastic flanges, as the plastic may break! It may also be possible to use some cable ties to mount the Nexus to another device, or use a piece of the 3M Dual Lock adhesive tape that we included.

Insert the green 8-pin pluggable screw-terminal connector into the Nexus PRO. On the other side of the Nexus you will find the DB9 connector. This connector is used for the CanopyFlasher.

You will also find a pre-installed Red and **black** wire pair. Use the Red (positive, attached to the switch) and **black** (ground) wire to power the Nexus PRO. Observe the maximum input voltage of 20V DC and the polarity of the wiring.

Install a fuse or circuit breaker. Observe the tripping current as per chapter 3.3, and connect these to the glider's power network.

On the cable set you will also find the OFF/Auto/ON switch. More about this later.

4.3 Connection to a Flarm

In normal installations the Nexus is installed to the Display Port of a Flarm. Additionally it may be installed to the Power/Data port of a Flarm. Caution must be used to select in this case the supplied RJ45 to RJ12 cable. Inserting a RJ12 (6-pin) connector in a RJ45 (8-pin) socket *may* work fine, but *could* result in a poorly fitted connector with the potential of damage to both devices.

Nexus is able to **automatically** capture the required **baud rate** from your Flarm. Supported baud-rates are **9600, 19200, 38400 and 57600 bps**. You can use the FlarmTool to change your Flarm's baud rate if this is not set to one of these figures. You can also configure this in your Flarm by SD card, or modify this in the LX-flight computer.

If for any reason a Flarm Display Port is not available, it may be connected to a "USER port" that offers NMEA output. At least "PFLAU" sentences must be transmitted. Special caution must be given to the pinout of these sort of "USER ports", as these **may not be IGC-standard!** Please refer to chapter 3.1.1 RJ12 input port for more information.

4.4 Mounting the CanopyFlasher

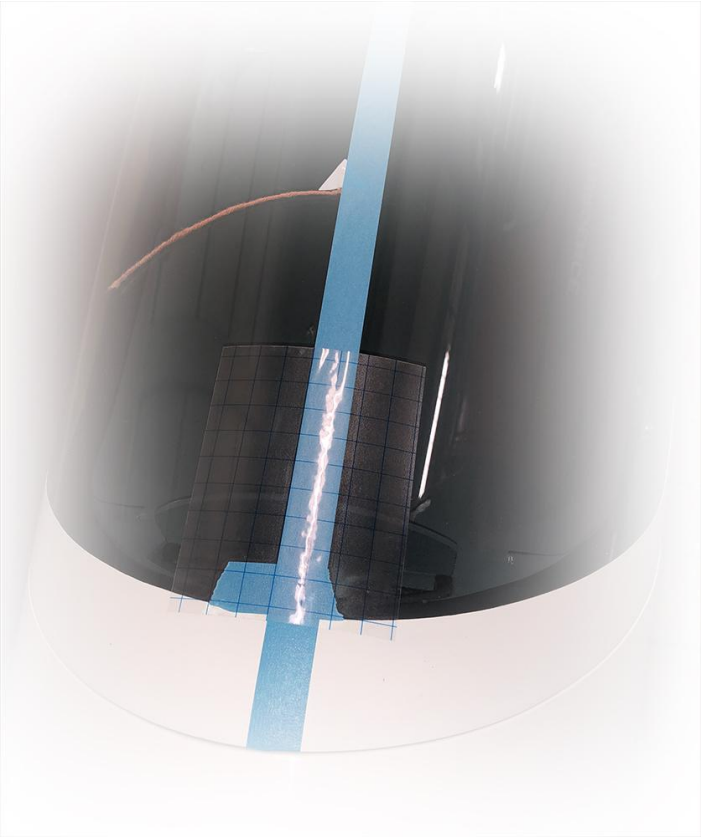
Mark the centerline of the canopy with a piece of white PVC tape. Please be cautious to use the yaw string as centerline reference, as often these are not placed in the exact center! Using the supplied vinyl grid sticker may

make it easier to align the CanopyFlasher so it's perfectly straight. It may be very difficult to see the alignment once you try to stick it to the canopy from the inside.

Before permanently mounting the CanopyFlasher, check if the selected location does not intervene with the canopy ventilation mechanism!

After marking the correct position, it may be easiest to remove the canopy and place it upside down on a soft/safe location.
Clean the surface of the canopy with a non-aggressive cleaning agent to remove dirt and grease, to ensure the adhesive tape sticks well. Normally water and a bit of soap is fine.

The CanopyFlasher is pre-applied with black 3M VHB double sided adhesive foam tape. It is strongly recommended to use this black tape as it blocks out any reflections that may appear in the canopy when the flasher is activated. This 3M tape is safe to use on plexiglass canopies.
Remove the film and carefully stick the CanopyFlasher against the canopy. Be careful not to apply too much force to the canopy, but make sure the tape is attached well in all corners. If there is a small air bubble between the canopy and the tape, don't attempt to remove the CanopyFlasher. Most likely the bubble will disappear in a couple of days or with some warmth from the sun.



The 3M VHB double sided adhesive foam tape is best applied at temperatures above 15°C.

4.5 Vertical-opening canopy installations

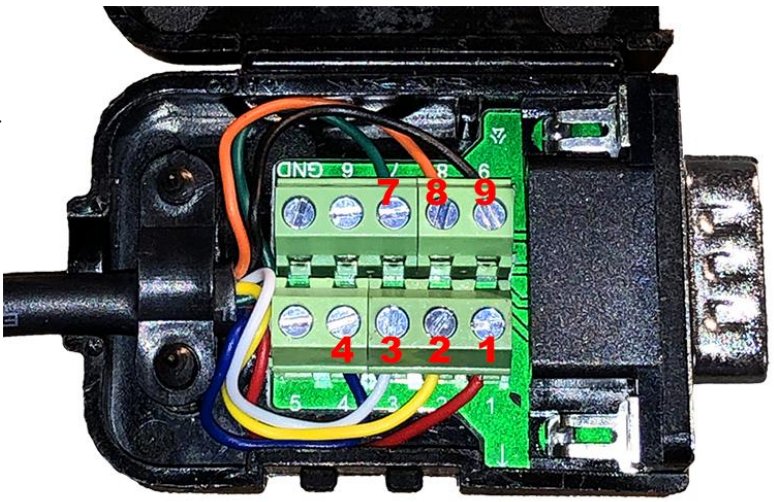
This section mostly applies to JS, Schleicher, HPH, Rolladen Schneider (LS) and Glaser Dirks (DG) gliders. In some side-opening canopy installations it may be preferential to use the vertical-opening cable set solution. This applies to for example DG500/DG1000, (Twin) Astir and Standard Cirrus, and perhaps other gliders.

Vertically opening canopies need an easy to attach, but most importantly, easy to DETACH connector. When jettisoning the canopy in case of an emergency, our connectors are designed to easily separate. Do not modify these connectors, or install a different type.

Now that you have mounted the CanopyFlasher, it's time to take care of the cable set. The AeroFlash installation consists of commonly seen male and female DB9 (D SUB 9) type connectors for the data cables (status LEDs and temperature sensor), and for the power supply of the CanopyFlasher. It is sturdy, easy to attach, separate, and highly suited for the currents.

Step 1

The DB9 connector comes pre-attached to the CanopyFlasher. In certain installations there may be required to make a hole through the instrument panel cover to feed the cable through. Of course it's highly desirable to keep this hole as small as possible. Our DB9 connector is fitted with certain easy to install screw-type terminals (no soldering required!). Open the connector cover by loosening the clip on the side with a screwdriver and take note of the color coding and pinout of the connector:



(pinout described on the next page)

Pin	Wire color	Wire description
1	RED	Flasher +9-20V VCC/Positive (internally connected with pin 6)
2	YELLOW	Temperature sensor +5V
3	WHITE	Temperature sensor signal
4	BLUE	Common signal GND (ISOLATE FROM PIN 9!)
5	-	Flasher GND/Negative (internally connected with pin 9)
6	-	Flasher +9-20V VCC/Positive (internally connected with pin 1)
7	GREEN	Status LED 1 (green LED)
8	ORANGE	Status LED 2 (red LED)
9	BLACK	Flasher GND/Negative (internally connected with pin 5)

DG-owners use extreme caution! The above **wire color coding** is valid for **standard CanopyFlashers only - not for DG-installations!** Refer to *chapter 8.2 DG-single seater cable set differences* for more information. Failure to follow the correct wiring will result in permanent damage to the Nexus and CanopyFlasher, and is not covered by warranty!

Loosen the screws on the DB9 terminals to temporarily remove the wires. It is now possible to feed the data cable through a hole of approximately 6mm.
Carefully replace the wires in the original pinout and tighten the screw terminals. Do not overtighten the screws to avoid damage to the threads. Replace the connector cover. Find a place to secure the cable to a sturdy point. You could use a cable tie.

If possible, secure the cable set from the CanopyFlasher to a sturdy point on the instrument panel cover. In case someone forgets to manually separate the connectors during regular maintenance/removal of the canopy, no chance exists to accidentally damage the CanopyFlasher or Nexus PRO.

Step 2

Continue now with chapter 4.8 Installation of the FuselageFlasher. Depending on the glider type, you may have removed the canopy. You can now reinstall the canopy as the installation is nearly complete and we need to correctly orientate the OFF/Auto/ON switch and test its function. Make sure not to forget to attach the system's cables.

4.6 Side-opening canopy installations - general

Each glider type requires a specially designed connector solution. This is unique to every different glider type. A brief installation instruction manual together with installation example pictures will be delivered together with these orders.

Below / on the side are a few generic examples suitable for Grob G102 Club/Standard Astir and G103 Twin Astir gliders.

If your glider is not yet supported, please contact us to develop a solution together.

4.7 Side-opening canopy installations - Schempp-Hirth

This section mostly applies (but is not limited to, or possible for all) to Schempp-Hirth gliders.
For example Cirrus gliders require a vertical-opening canopy connector solution.

Schempp-Hirth glider owners may also choose to install a panel mounted DB9 connector option when the instrument panel cover has a lot of play. It must be fairly sturdy in order to work well/reliable.

For safety reasons, we require a connector that is easily DETACHED in case of an emergency. We designed a special 7-pin spring loaded connector to be mounted on the glareshield/panel cover and the canopy edge, which requires absolutely no force to separate. There is no need to solder any wiring, however you will need to install the connector in a suitable location and drill some holes.

Find a suitable place to install the 7-pin *CanopyConnector* that is attached to the CanopyFlasher. You need to install this *CanopyConnector* to the canopy frame using one of the supplied mountings at a location where when the canopy is closed, it can make good contact with the opposite part. This should be done on the right side of the instrument panel cover. Ideally there should be no or limited movement of the panel cover. A good place is close to the instrument panel, and near the canopy hinge.

The opposite connector part (called *PanelContact*) is already attached to the Nexus' cable set and is ideally mounted through a small hole (approximately 25 x 10mm) in the instrument panel top cover, using the supplied stainless steel M3 cylinder head bolts. These bolts are designed to align correctly with the *CanopyConnector*.

Please note that certain glider types may use or require a "vertical-opening canopy installation", even though they have side-opening canopies. This applies to for example: DG500/DG1000, Standard Cirrus, etc, and is due to the difficulty finding a suitable location for installing this *CanopyConnector*.

Step 1

Depending on your glider type, we included a suitable angled mounting support in order for you to optimally mount it in your specific glider. It may be required to make some adjustments to this mount to optimize it for your specific glider, as each glider is slightly different than the other... To fixate it to the canopy frame it's possible to use thickened (cotton flakes) epoxy glue to fixate the canopy frame. Make sure to roughen up the surfaces first with some sandpaper.
Alternatively, 2 holes may be drilled from the bottom through the canopy frame, to mount this support using regular self-tapping screws. Make sure these are drilled flush with the surface.

Step 2

To find the proper mounting position for the connector on top of the mounting support, it's recommended to use some simple double-sided adhesive tape to try various positions. When positioning the CanopyConnector (canopy closed and locked!), make sure that all of the 7 pins **equally** touch the surface of the instrument panel cover. Do **not** allow them to compress more than 1mm; The PanelContact is approximately 1mm thick and the travel of the pins about 3mm maximum!
You may glue the CanopyConnector on top of this mounting support, or better: use some self-tapping screws.

Warning: in case the CanopyConnector is not fitted properly/securely on the canopy frame and is allowed to come loose during opening or closing of the canopy, a short-circuit may cause permanent damage to the CanopyFlasher or Nexus. Damage from improper mounting of the CanopyConnector is **not covered by warranty**. It's imperative that the CanopyConnector is fitted securely.

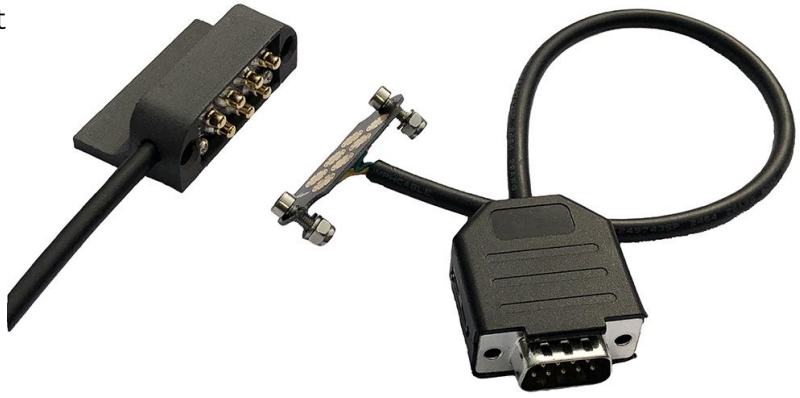
Step 3

Included with the kit is a simple plastic drilling template to resemble the *PanelContact*. It comes pre-applied with some general purpose double sided adhesive tape. On the other side are two slightly oversized pins that clamp into the alignment holes in the *CanopyConnector*. Gently press the template in the *CanopyConnector*. Now remove the film of the double sided tape, and close and lock the canopy. Re-open the canopy. If fitted correctly, the template should now remain in place on the instrument cover, indicating the matching placement of the *PanelContact*. Mark the location for the M3 mounting- and cable holes, and drill/cut the required holes.

Step 4

Remove the template. You won't need this anymore. Feed the *PanelContact* that is already attached to the cable set of Nexus, on it's side through the hole that you just made, and mount it in the right orientation.

Take note of the correct orientation of the *CanopyConnector* that you already mounted on the canopy frame. You can't really get it wrong: there are 4 pins/contacts on top, and 3 pins/contacts on the bottom.



When you are certain the orientation is correct, use the supplied M3x10 stainless steel bolts, spring-washer and locking nuts to fasten the connector. It is recommended to use these bolts as they align the connector in the right position to avoid any short circuits. Do not place a washer underneath the head of the bolt; only between the instrument

panel cover and the locking nut. Do not over-tighten the bolts. It's better to leave a tiny bit of play between the connector and the instrument panel cover, so that the alignment is easier. Check if the connectors are sitting perfectly level on top of each other with sufficient spring tension. If not, it may be required to adjust it's position.

Step 5

Connect the cable to the Nexus cable set. It is highly recommended to fixate the cable to a sturdy point. In case someone removes the instrument panel cover and does not remove the cable set from Nexus, damage may occur to the *PanelContact*. For this reason no locking screws are installed on this connector. Use some cable ties or tape to secure the cable set to a sturdy point on the instrument panel cover.

4.8 Installation of the FuselageFlasher

The Nexus PRO cable set is equipped with a 8-pin pluggable screw-terminal power connector, for easy connection. No soldering is required. Find the pinout and connection details of this connector later in this chapter at **step 5.**

Step 1

Find a suitable place to mount the FuselageFlasher. We recommend installing the flasher just behind the main wheel, or on top of the fuselage behind the canopy. Sometimes there is already a perfectly suitable water drain hole which you may be able to use. This hole can still be functional when mounting the flasher. More later in Step 4. Alternatively you can mount the flasher on a wheel door or engine bay door. This has the least amount of impact on the glider, provided that you find a safe way to route the cable, without it being damaged by mechanisms, or interfering with other equipment, limit switches, sensors or moving parts. Avoid routing cables near potentially hot parts of the engine bay (exhaust, cylinder, etc). Do not mount the flasher underneath the front part of the cockpit, in front of the Center of Gravity (CoG/winch) hook where the winch/tow rope or the

trailer fuselage support can damage it. Ensure that the selected location is also accessible from the inside of the fuselage.
Observe the roundness of the fuselage: The FuselageFlasher has a 1,6mm thick foam/gel type of 3M double sided adhesive pre-applied, which if compressed enough will allow mounting on a slightly curved surface, but not too extreme. In certain areas the fuselage may not be flat enough for the FuselageFlasher to stick well.

Step 2
Find the center of the fuselage and mark the location of the intended hole with some painters tape and securely press this onto the surface. This will prevent your drill from running away, and reduces the chance of paint chipping. Use a small size drill bit first: 2mm will do. Only then drill the final size of 4mm!

Step 3
Remove the painters tape and be cautious not to pull off any loose paint chips, in case the paint cracked. Clean the surface with non-aggressive sticker/adhesive remover (never use acetone or thinner on gliders!).
Now feed the cable through the hole until the last 5cm. Remove film from the pre-applied 3M double-sided adhesive tape.
There is no front or back of the flasher, it can be rotated in either direction. Please note that the cable-hole is slightly offset from the middle. Align the FuselageFlasher so it is as straight as possible. Securely press the front, back and middle of the flasher to the surface of the fuselage, to ensure all sides stick well. Observe the roundness of the fuselage and see where more pressure may need to be applied.

Step 4
FuselageFlasher is completely waterproof. We do however strongly recommend to seal the edge of the flasher and fuselage with a bit of white silicone kit. This will prevent dirt and water from coming underneath the flasher, which may affect the adhesive tape. This will ensure a longer life time of the adhesive tape. A small seal of silicone kit may also further improve the aerodynamics.

If mounted in the water drain hole on the bottom of the fuselage, this drain hole may still remain functional if a small opening is kept on the side of the FuselageFlasher near the cable.

Route the 3-wire flasher cable through the interior and secure the cable with cable ties or cable clips. Ensure that the cable does not intervene with moving levers, like the controls from the stick, air brakes, flaps and landing gear. The cable has twisted wires, which reduces RF interference on other systems. If possible however, avoid routing the cable immediately next to coax cable or radio wires.

Recommended daily maintenance:
Ensure the FuselageFlasher is kept clean. If mounted behind the main wheel, grass and mud may easily stick to the Flasher, seriously reducing the light output. After cleaning your glider, make sure to avoid scratching the surface of the lens with a dirty cloth. Use lots of water.

Step 5

Time to connect the wires. The pluggable 8-pin Camdenboss CTB922HE/8 power connector has the following pinout which must be carefully observed. Wrong connection will permanently damage the device.

Pin	Color	Description
1	**Black**	Switch ground (AWG20)
2	**WHITE**	Switch signal (AWG20)
3		Extension port for future system expansion
4	**Black**	**FuselageFlasher** Ground OUT (GND, negative) (AWG20)
5	**Red**	**FuselageFlasher** Power OUT (positive) (AWG20)
6	**Red**	**FuselageFlasher** Power OUT (positive) (AWG20)
7	**Black or Blue**	Ground **INPUT** (GND, negative) (AWG20, **do NOT connect to pin 1 or 4!**)
8	**Red**	+12* to 20V INPUT (VCC, positive) (AWG20)

**FuselageFlashers may not work optimally at voltages below 12V. It is not advisable to use weaker lead-acid batteries with AeroFlash Nexus PRO.*

4.9 Installation of the Auto/ON switch

A drill hole of 6mm is required for the OFF/Auto/ON switch. Please do not tighten the nut just yet! Correct orientation of the switch should be observed after the first power-up. One hint: the wires are soldered on the "bottom" positions of the switch, that also implies the "OFF side"...

We included an ACL OFF/AUTO/ON label/marking for the switch. This plate is placed between the panel and the nut of the switch. A commonly made error is scratching the instrument panel or label/marking when rotating the nut with pliers. Be careful!

As per EASA Standard Change CS-SC036a and ARC airworthiness requirements, it is mandatory to correctly mark or label the switch as part of the installation procedures.

4.10 Post-installation system check

After installation, please check if the system starts up normally: check if the OFF/Auto/ON switch works as expected, is correctly orientated on the instrument panel and only hand-tighten the nut.

After startup, give it some time and check that the green status LED does not keep blinking. If the green LED is blinking, no usable Flarm data is received and the AUTO-baud rate detection did not work (yet): please check if the baud rate of the Flarm is set to any of the 4 supported baud rates (9600, 19200, 38400, 57600 bps). If the green LED is steadily illuminated, your Flarm connection works. Auto-baud rate detection *may* take up to two or three minutes the first time, as some devices may only start transmitting NMEA data once they have a GPS lock.

When the red LED is steadily illuminated, the system is in ON-mode and the Flashers should be activated for 20 seconds before the system goes in Standby-mode (**alternating green and red** indicate that the system is in **Standby-mode**, on ground, when the switch is set to ON). Read more about the status LEDs in chapter 3.1.3.

4.11 Installation of a second FuselageFlasher and Fusion unit

Reserved.

This procedure **ONLY APPLIES** if you are retrofitting an existing installation of Nexus PRO. Please contact us directly to obtain a suitable version with the correct cable set.

5. Firmware configurations and updates

5.1 Windows PC tool

The Windows PC tool ("Nexus configuration tool") offers possibilities to update the firmware of Nexus. It is also possible to tweak settings like the brightness of the status LEDs - dim, medium, bright. Some users may find the standard setting too bright because of reflections, or often landing after sunset (like in Africa or when mountain wave flying). The installer tool guides you through the process. **An internet connection is required for automatic checking of the latest firmware versions.** In case of a manual (forced) firmware update, an internet connection is not required.

Step 1

Switch off the Nexus PRO power supply first and remove the CanopyFlasher connector from the Nexus PRO device. This prevents erratic LED behavior during updating.

Step 2
Do NOT run the application yet. Plug the Mini-USB to USB-A cable in the Nexus and in your computer.

Step 3
If required, Windows will find a new device and installs the required driver automatically in the background.
If this does not happen and a warning occurs, try to manually download and install USB-SERIAL CH340 drivers for your operating system, or contact us for support.

Step 4
Download the latest version of the Nexus Configuration tool from our website - downloads section. Now run the application.
Please ensure your internet connection is on - the application checks the latest version of the tool each time it is launched, and automatically updates itself if required.

Step 5
Select the newly added COM-port named "USB-SERIAL CH340". Click connect. Nexus will now be connected.

Step 6
The application will show the current firmware version on Nexus (resembles the date: year/month/day). The tool automatically compares this with the currently installed version. If there is a new version available, a button will appear with the text "update available". Click it. Please enter your serial number (found on the stickers on the Nexus PRO) to ensure you get the correct firmware version for your specific hardware model. An update progress bar will appear.

Step 7
Do not touch the device during updating. Please make sure that the cable is not accidentally unplugged as this may damage the file system. A message will appear that the firmware update has successfully finished and connection has been terminated. Depending on the update and if determined that a reboot is required, the tool may close automatically. You can now restart the application and reconnect, or proceed with step 8 immediately;

Step 8

If you wish to change any of the brightness or configuration settings, this may be done now. Press connect again. You may choose to configure the status LED brightness to dim, bright and brightest. Press apply to finish. If you have a FuselageFlasher installed, please tick the box "FuseFlash installed", to ensure the Status LED will show the correct flasher activation.

Step 9

You may now close the application and ideally you should use "safely remove the hardware" before you remove the USB cable.

Step 10

Reconnect the CanopyFlasher connector to the Nexus PRO.

6. Troubleshooting

6.1 Q: My Flarm is broken/removed and I want to use the system without AUTO-mode

No problem! It is possible to use the system without a connected Flarm. The green status LED will keep blinking indicating AUTO-mode is not available, as a reminder for you to control the system.

Flarm data plays an important role in the overheating protection logic for the *FuselageFlashe*r. Therefore the following procedure must be carefully followed:

To operate the system without a Flarm connected, switch it to ON for a MINIMUM of 20 seconds for it to go into standby-mode, then switch it to AUTO, and back to ON. This may be done before or in-flight. This will override the automatic temperature protection logic for the FuselageFlasher, as due to the lack of Flarm data, the Nexus does not know if the aircraft is in flight (airflow cooling), or on the ground (potential for overheating if activated for prolonged times).

Keep the system in AUTO when on ground until you are actually airborne, to avoid accidental overheating of the system in case of delays or an aborted launch!

Upon landing you **must** switch the system back to AUTO **manually**! Limit the activation of the FuselageFlasher on the ground for a maximum of 5 minutes! Refer to chapter 3.6 Cooling requirements for more information.

6.2 Q: My CanopyFlasher keeps blinking green

The CanopyFlasher does not receive a valid NMEA signal from the Flarm. Please check the wiring to see if it's connected properly to the Flarm. Check the baud rate of the Flarm and reconfigure it to any of the supported baud rates: 9600, 19200, 38400 or 57600bps (AUTO-baud rate detection). Refer to the manual of your specific Flarm device for instructions.
Check if PFLAU sentences are enabled in case you have connected it to a USER port.

6.3 Q: AUTO-mode does not seem to work
(Red status LED does not light up while traffic is shown on Flarm)

On ground:

AUTO-mode does activate the flasher on the ground before takeoff. It is only active in flight, until approximately 1 minute after coming to a full stop upon landing.

In flight:

The target may not have caused a significant enough Flarm-warning, and/or may have been outside of the Flasher's "visible zone".
Are you sure the specific target was actually received by the Flarm? Could it have been a different target without a Flarm signal? If doubt exists, perform a Flarm range analysis. Refer to chapter 3.1.4 Auto/ON mode logic - in flight for more information on the AUTO-activation logic.

6.4 Q: My system is showing erratic flashing behavior

In older firmware versions, erratic flashing behavior may occur when Nexus is connected to a Flarm setup, where another Bluetooth module or device may communicate with the Flarm. When downloading for example flights using a 3rd party Bluetooth module, Nexus may respond erratically as it "passively listens" to all the incoming data. It's strongly recommended to (temporarily) power-off the AeroFlash system in case you would use a separate Bluetooth module for downloading of flights, or uploading of a flight declaration to the Flarm. We strongly upgrade to the latest Nexus version which solves this issue.

6.5 Q: I need to remove the CanopyFlasher from the canopy. How do I do this safely?

To remove the CanopyFlasher from the canopy safely, do not use any excess force. Obviously and probably needless to say, do not use any heat! The safest and simplest solution is to use a thin nylon or dyneema fishing line, wrap it underneath the front lip, and start "sawing". This will cut the 3M tape, a technique similar seen in replacing front windshields of a car.

My question is not listed
Contact us at info@AeroFlash.de for support and more information.

7. Revision history

Revision 2 - February 2022;
Revised updating procedures. Revised pictures.
Revised flashing sequence: Nexus PRO now flashes 3-6 times per second.

Revision 1 - October 2021;
Initial issue.

8. Appendix

8.1 Product comparison

	Nexus GEN1 (2019/2020, no longer produced)	Nexus MINI (>08/2021)	Nexus PRO (>08/2021)	Power Box (2022)	PowerBox PRO (2022)
Flarm compatible	✓	✓	✓	✗	✗
RJ12 IGC ports	3	1 ***	1 ***	✗	✗
AUTO-mode	✓	✓	✓	✗	✗
Standby-mode	✓	✓	✓	✗	✗
Hazard-mode	✓	✓	✓	✗	✗
Flash frequency adjustable	✗	✗	✗	✓ Slow and Fast	✓ Slow and Fast
Updatable (PC)	✓	✓	✓	✓	✓
Bluetooth	✓	✗	✗	✗	✗
USB type (Mini /Micro)	✓ Mini	✓ Micro	✓ Mini	✗ Micro	✗ Mini
Canopy Flasher control	✓	✓	✓	✓	✓
Fuselage Flasher Power Supply	✗	✗	✓ 1	✗	✓ 1
Fuselage Flasher Control Logic Output (Sync. Flash)	✓	✓	✓	✓	✓
Temperature protection	✓	✓	✓	✓	✓
Enclosure size**	A	B	A	B	A

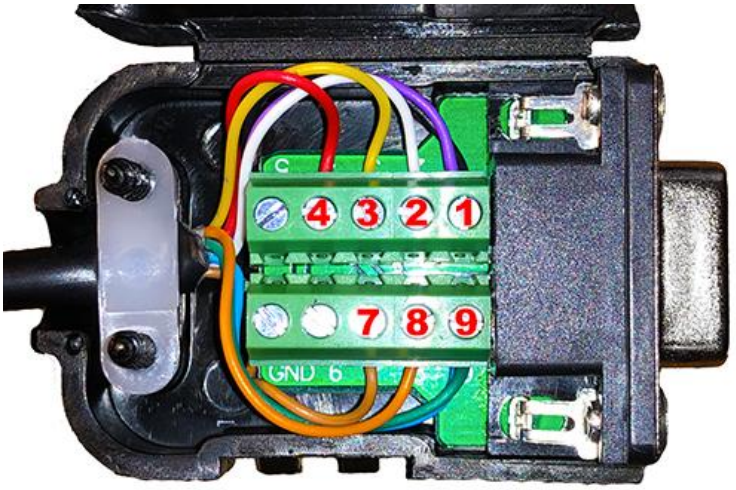
** Limited temperature protection: only for Fusion devices.*

*** Model A: LWH: 100 x 63 x 31mm. Model B: LWH: 50 x 63 x 31mm.*

**** External 3-way splitter included in delivery.*

8.2 DG-single seater cable set differences

CanopyFlasher/Nexus systems are optimized and designed for each individual glider. For the DG-series single seat gliders with vertical opening canopies the Nexus-Flasher cable set needs to be longer than standard to route the cables optimally. Therefore we included a DB9 extension cable. Additionally, the **screw-terminal DB9 connector is placed on the extension cable**. This is needed to be able to feed the connector through a small hole (6mm) on the rear of the instrument panel cover. To comply with international standards of having live-power on "female- connectors" rather than "male-connectors", the screw-terminal DB9 pin gender is reversed compared to the standard cable set, covered earlier in this manual. This results in a *mirrored image*, so caution must be taken when simply copying the wire colors and positions:



The pin numbering remains the same! The colors are different!

Pin	Wire color	Wire description
1	**BLACK** + **PURPLE**	Flasher +9-20V VCC (internally connected with pin 6)
2	**WHITE**	Temperature sensor +5V
3	**YELLOW**	Temperature sensor signal
4	**RED**	Common signal GND
5	-	Flasher GND (internally connected with pin 9)
6	-	Flasher +9-20V VCC (internally connected with pin 1)
7	**BROWN**	Status LED 1 (GREEN)
8	**ORANGE**	Status LED 2 (RED))
9	**BLUE** + **GREEN**	Flasher GND (internally connected with pin 5)

Cable set versions PRIOR to July 2021:

CanopyFlasher/Nexus systems are optimized and designed for each individual glider. For the DG-series single seat gliders with vertical opening canopies the Nexus-Flasher cable set is longer than standard to route the cables optimally (120-145cm), and the screw-terminal DB9 connector is located on the side of the Nexus. This is needed to be able to feed the connector through a small hole (6mm) on the rear of the instrument panel cover. To comply with international standards of having live-power on "female-connectors" rather than "male-connectors", the screw-terminal DB9 pin gender is reversed compared to the standard cable set, covered in this manual. This results in a mirrored image, so caution must be taken when simply copying the wire colors and positions:

The pin numbering remains the same!

Pin	Wire color	Wire description
1	**Red (thick wire)**	Flasher +9-20V VCC (AWG20) (internally connected with pin 6)
2	Brown	Temperature sensor +5V (AWG26)
3	White	Temperature sensor signal (AWG26)
4	Black (thin wire)	Common signal GND (AWG26)
5	-	Flasher GND (AWG20) (internally connected with pin 9)
6	-	Flasher +9-20V VCC (AWG20) (internally connected with pin 1)
7	Green	Status LED 1 (GREEN) (AWG26)
8	Red (thin)	Status LED 2 (RED) (AWG26)
9	**Black (thick wire)**	Flasher GND (internally connected with pin 5)

8.3 Fixed canopy cable set differences

This applies to gliders with a 2-part fixed canopy, like (some) DG100, DG200, LS1C/D, Hornet, Kestrel, etc. Fixed canopy cable sets may be delivered with or without a connector between the Nexus and CanopyFlasher. For certain glider types it's strongly recommended to use a connector, to be able to optimally route the cable through a small hole or narrow spaces. This connector may be fitted with a locking mechanism. The length of the required cable differs per glider type. Therefore, please contact us for more information and custom cable set solutions.