Frolight Automatic Generator Start Control Unit

User Manual

FROLIGHT
SYSTEMS

Congratulations on taking the next step in automating your Frolight spring frost protection system!

The Frolight Automatic Generator Start Control Unit is designed to automatically start your power generator when a temperature threshold is reached, ensuring that your Frolight Control Units and IR tubes have a reliable source of power available when needed.

As a part of the Frolight product family, this product is engineered to provide you with a simple and efficient solution to further unburden you in protecting your vineyard from spring frost.

This manual will guide you through the installation and usage of your Frolight Automatic Generator Start Control Unit, so that you can get the most out of your investment in protecting your vineyard.

We hope that you will find the user manual informative and easy to understand.

Enjoy your Frolight Automatic Generator Start Control Unit!

Table of Contents

General safety warnings & precautions

Please read this manual carefully.

Please contact your point of sales if you have any questions.

⚠ **This product is intended for professional use only.**
It should not be operated by untrained individuals or children under the age of 12. To prevent the risk of electrocution and injury, children should always be kept at a safe distance from the system.

⚠ **This product uses electrical power**
Always turn off and disconnect the power generator and the Automatic Generator Start Control Unit from any power source before installing or uninstalling.
Do not dismantle the unit.
Make sure the power supply voltage has been correctly measured by a qualified person before connecting the unit.
Ensure the generator's grounding is correctly installed and connected.

⚠ **Failure to adhere to any of these guidelines could result in death or serious injury and may also void the warranty.**

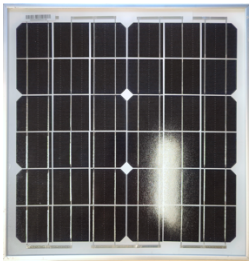
Product overview

SOLUTION OVERVIEW

The **Frolight Automatic Generator Start Control Unit** extends your Frolight system by **automatically starting and stopping a power generator** which can power your Frolight Control Units and IR tubes. The Automatic Generator Start Control Unit communicates with the Master Control Unit wirelessly over radio signals.

PARTS

The Frolight Automatic Generator Start Control Unit exists out of the following parts:

	**Automatic Generator Start Control Unit (FLGCU-C)** This unit is the driving force of the system. It connects over radio signals to a Frolight Master Control Unit (FLGCU-A) and listens to that Master Control Unit to activate or stop the power generator.
	**Solar Panel** The solar panel charges the internal battery of the Automatic Generator Start Control Unit. The solar panel is fixed on a mounting frame and attached to the unit via a power cable.

	**Mount** The mount holds the Automatic Generator Start Control Unit and the solar panel.
	Signal cable The signal cable is used to start/stop the power generator. It connects the Automatic Generator Start Control Unit (via an XLR connection) to the power generator.

Installation

This chapter will guide you through the process of installing the Frolight Automatic Generator Start Control Unit. Please read through the instructions carefully before beginning the installation process to ensure a smooth and successful setup. In this chapter, we will cover the following:

- Unpacking and verifying the components
- Preparing your environment for installation
- Step-by-step instructions for installing

Before you begin, please make sure that you have all necessary tools and equipment to complete the installation. Once you have read through the instructions and prepared your environment, you can begin the installation process with confidence.

UNPACKING AND VERIFYING THE COMPONENTS

Before beginning the installation process, it is important to first unpack and verify the contents of your package. This section will guide you through the process of unpacking your package, identifying the components included in your system, and verifying that you have received all the necessary components. Additionally, please verify that none of the goods were damaged during shipping. By following these instructions, you can ensure that you have

all the necessary components to complete the installation process and that your system is fully operational.

Frolight Automatic Generator Start Control Unit

The Frolight Automatic Generator Start Control Unit can be identified by the serial number, which is printed on the sticker you can find on the bottom of the left side of the unit. The serial number should be in the form of FLGCU-C-20XXX.XXXX.

The mount

Each Automatic Generator Start Control Unit also comes with a coated steel mount, 5 M8x20 bolts, 5 M8 nuts and 5 A 8.4 washers.

PREPARING YOUR ENVIRONMENT FOR INSTALLATION

To ensure a proper working of the system, we advise you to install the Frolight Automatic Generator Start Control Unit on a location which enables the solar panel to receive direct sunlight.

STEP-BY-STEP INSTRUCTIONS FOR INSTALLING

This section will provide detailed instructions for installing your system. By following these step-by-step instructions, you can ensure a smooth and successful installation. In this section, we will cover the following steps:

1. Installing the Automatic Generator Start Control Unit

2. Connecting the unit to the power generator

Please ensure that you have read and understand all the previous sections before proceeding with the installation process. Also make sure to have all necessary tools and equipment ready, and read through each step carefully before proceeding to the next.

⚠ **Ensure that the Automatic Generator Start Control Unit is not connected to a power source during installation.**
Failing to do so might damage in the system, or even result in heavy personal injury or death due to electrocution.

Required tools and equipment

- 6mm Allen key
- 13mm hex nut driver or hex spanner

Installing the Automatic Generator Start Control Unit

BEFORE INSTALLING

⚠ Always turn off or disconnect the Automatic Generator Start Control Unit from any power source before installing or uninstalling.

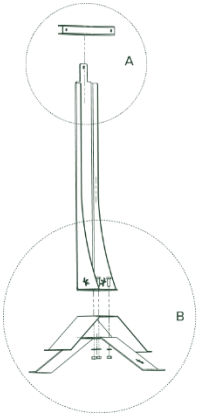
ASSEMBLING THE MOUNT

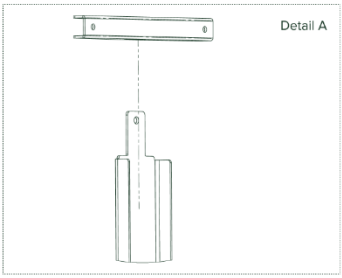
TOOLS & PARTS REQUIRED

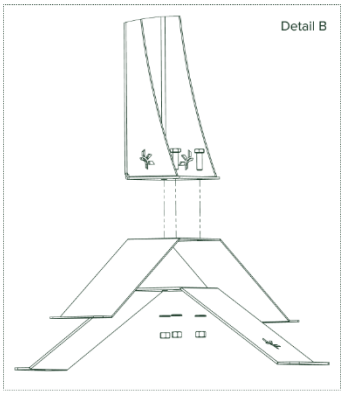
- 6mm Allen key
- 13mm hex nut driver or hex spanner
- 3x M8x20 bolt
- 3x M8 nut
- 3x A 8.4 washer

INSTRUCTIONS

To assemble the mount, place both feet on top of each other in a perpendicular way, so that the 3 holes align correctly. Note that the foot with the Frolight logo cut out should be the bottom foot. Next, place the large holder on top of the feet, in such a way that the holes in the bottom align with the 3 holes in the feet. To attach the holder to the feet, insert a bolt through each hole from the top, then use the Allen key and hex nut driver or hex spanner to tighten the nuts onto the bolts from the bottom. Don't forget to place a washer between the nut and the bottom side of the feet. (See detail B)







You are now ready to attach the Automatic Generator Start Control Unit and the solar panel to the mount.

ATTACHING THE SOLAR PANEL TO THE MOUNT

TOOLS & PARTS REQUIRED

- 10mm hex nut driver or hex spanner
- 4x M6x10 bolt
- 4x M6 nut

INSTRUCTIONS

Slide the solar panel's mounting frame over the lip at the top of the mount, so that the mounting frame is oriented towards the back of the mount (see photo).

Tip: you can identify the backside of the mount by looking at the feet of the mount. On the mount's front side, the Frolight logo is carved out of the mount's foot.

ATTACHING THE UNIT TO THE MOUNT

TOOLS & PARTS REQUIRED

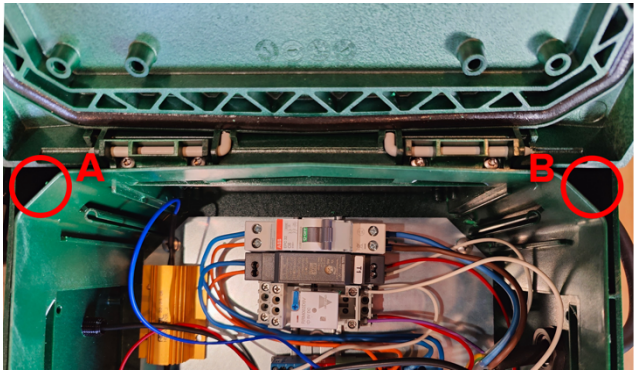
- 6mm Allen key
- 13mm hex nut driver
- 2x M8x20 bolt
- 2x M8 nut
- 2x A 8.4 washer

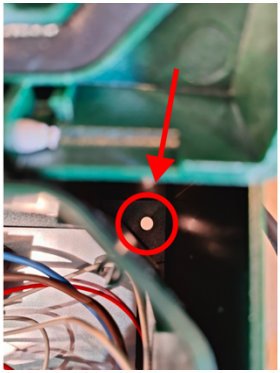
INSTRUCTIONS

The Automatic Generator Start Control Unit should be mounted on the control unit attachment bracket, so that the front side of the unit is facing the front side of the mount (where the Frolight logo is visible on the feet of the mount).

First, slide the Automatic Generator Start Control Unit attachment bracket over the lip (see detail A in the schematic drawing above) at the top of the holder, so that the closed side points to the front of the mount (the side where the Frolight logo is visible on the feet).

To mount the unit, open it first. Notice the 2 holes (marked below as A and B). These are the holes where the bolts should be threaded through. Insert the bolts (with washers) through the back of the attachment bracket and slide the unit over the bolts. Next, screw on a nut on each of the two bolts using the Allen key and the hex nut driver. Be careful not to overtighten the nuts to prevent damaging the Control Unit's casing.





POSITIONING THE UNIT

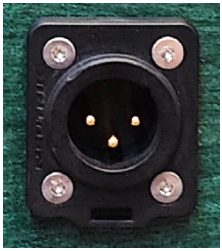
The Automatic Generator Start Control Unit should be positioned close enough to the power generator so that the cables can be attached. It should also be within a maximum distance of 100 meters from a Frolight Master or Slave Control Unit on the mesh network it should connect to, with a clear path for the radio signal to travel between the two.

Furthermore, to ensure a proper working of the system, we advise you to install the Frolight Automatic Generator Start Control Unit on a location which allows the solar panel to receive direct sunlight.

Connecting the unit to the power generator

1. The unit's signal cable should be connected to the power generator's external start signal input. On the unit's end, plug the cable into the

XLR plug. For more information on how to connect the signal cable to the power generator, please contact the generator's manufacturer.



The XLR plug as seen on the unit

2. Next, plug the unit into the power generator using the provided power cable. This will ensure that the unit is receiving power from the generator, which in turn will also load the unit's battery.

⚠ Ensure that the power generator is turned off when connecting the Frolight Automatic Generator Start Control Unit to the power generator.

Operation

This chapter will explain you how the Frolight Automatic Generator Start Control Unit works. Please read through this chapter carefully, to ensure that you have a clear grasp of how this product operates.

AUTOMATIC STARTING AND STOPPING OF THE POWER GENERATOR

The Automatic Generator Start Control Unit will automatically close a circuit via a dry contact located on pins 2 and 3 of the male XLR plug on the unit.

The XLR male chassis, pin 1 is the grounding, 2 and 3 are the dry contact pins.

The circuit closes when the temperature is below the set lower threshold (3 °C by default), **or** the internal battery reaches below 25% of its capacity. The circuit will break again (which in turn will stop the generator from running) when the temperature reaches above the set higher threshold temperature (4 °C by default) **and** the internal battery reaches over 75% of its capacity.

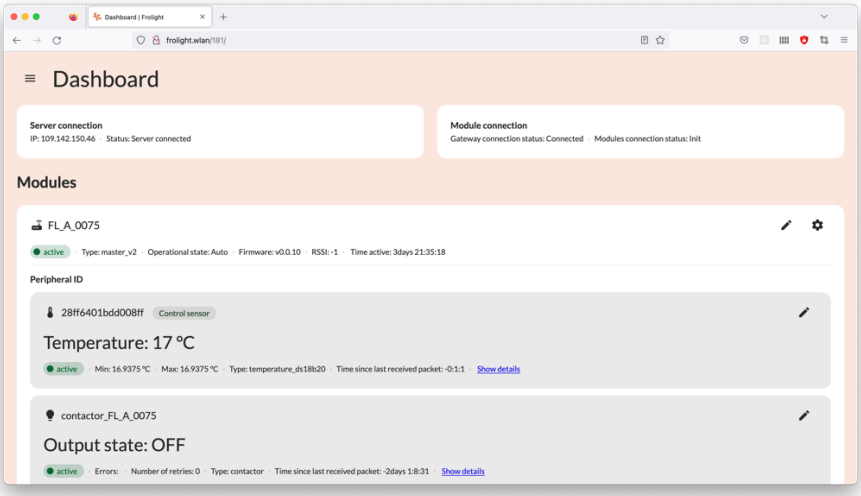
The threshold temperature values can be changed via the Control Panel of the Master Control Unit to which this Automatic Generator Start Control Unit is connected.
See the chapter *Configuration* for more information on how to set these values.

Configuration

This chapter will guide you through the process of configuring your Frolight Automatic Generator Start Control Unit. Please read through the instructions carefully before beginning the configuration process to ensure a smooth and successful setup. In this chapter, we will cover the following:

- Accessing the Control Panel
- Getting acquainted with the Control Panel
- Basic configuration of your system.

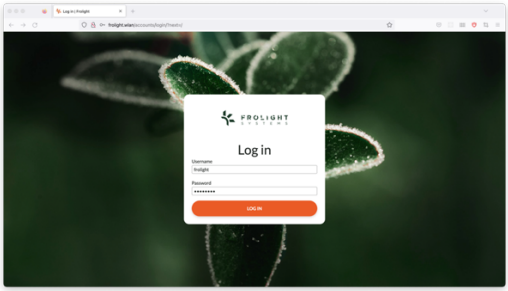
Once you have read through these instruction, you can begin the configuration process with confidence.



ACCESSING THE CONTROL PANEL

To access the Control Panel, you need a device (such as a smartphone, tablet or laptop) with Wi-Fi capabilities and a recent web browser (e.g. Google Chrome, Mozilla Firefox, Microsoft Edge, Safari,...) installed.

1. First, make sure you are well in range of your installation's Master Control Unit (within 50 meters).
2. Open your device's wireless network settings.
3. Connect to the Wi-Fi network named `FLGCU-A-XXX` (where `XXX` equals the last 3 digits of your Master Control Unit's serial number).
4. Your device will prompt for a password. The Wi-Fi password to use is `frolightpwd` (case-sensitive).
5. Once connected, open a web browser and browse to http://frolight.wlan. Please make sure to enter the exact URL (including `http://`) in the browser's address bar. You should now see the Control Panel's *Sign In* screen.

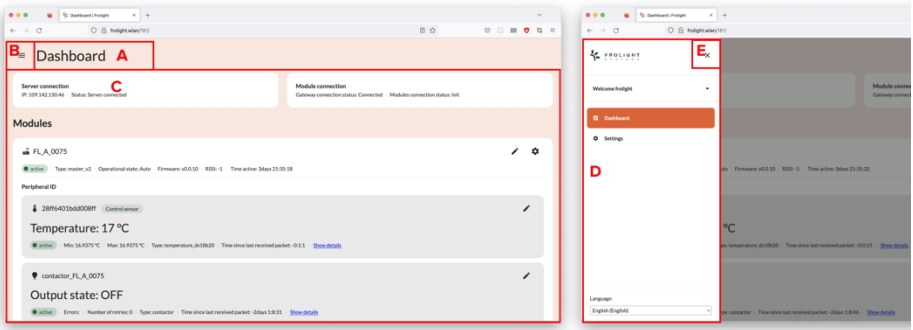


6. Sign in using `frolight` as username, and `pwd12345` as password. Both are case-sensitive.

You are now signed in to the Control Panel of the Master Control Unit.

GETTING ACQUAINTED WITH THE CONTROL PANEL

The User interface

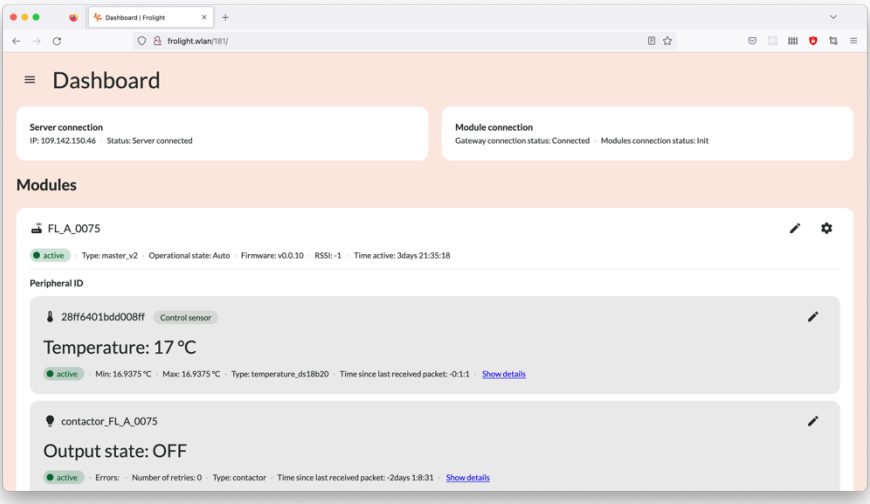


The user interface consists out of 3 primary elements:

- The current page's title (A)
  This shows you which page you are currently viewing.
- The navigation button (B) & drawer (D)
  The navigation drawer allows you to navigate from the Dashboard page to the Settings page and vice versa. It also allows you to sign out and to change the language of the user interface.
- The page content (C)
  This contains the content of the current page.

Clicking the *Navigation* icon (B) in the top-left corner of the screen opens the navigation drawer (D). To close the drawer again, you can click the *Close* icon (E) in the top right corner of the navigation drawer.

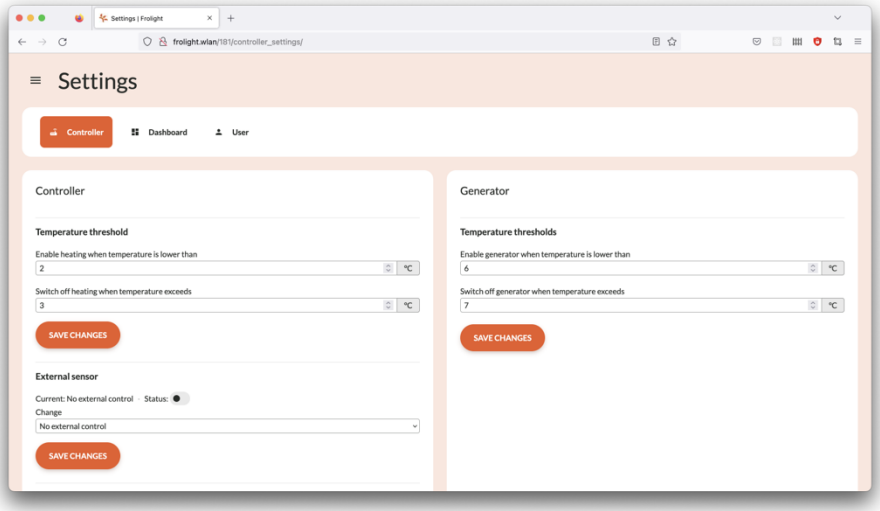
Dashboard



The first page you see after signing in, is the Control Panel's *Dashboard* page, here you can see an overview of all the Control Units, the temperature readings from their sensors and the state of the heating system (IR tubes).

Note: When the contactor's `Output state` is set to `OFF`, the IR tubes are not active. This is because the measured temperature is above the configured threshold temperature value.

Settings



The *Settings* page has 3 tabs, shown under the current page's title:

- *Controller*
  This tab shows all operational settings related to your Frolight installation, such as the temperature thresholds for the heating, Control Temperature Sensor selection, Automatic Generator Start Control Unit settings, etc.
- *Dashboard*
  All settings related to the Dashboard page.
- *User*
  This tab contains all settings related to the user. Here you can change your password.

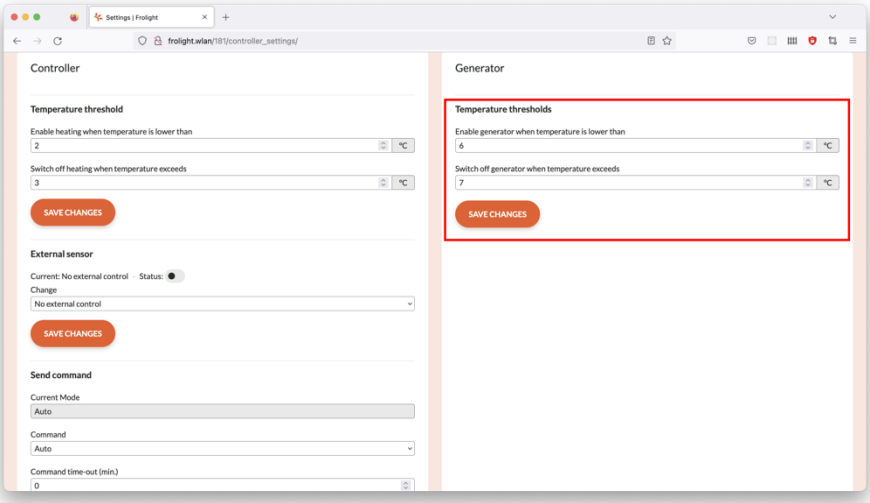
BASIC CONFIGURATION

The Frolight Automatic Generator Start Control Unit comes pre-configured with optimal settings, but you may wish to adjust certain defaults to better suit the unique needs of your vineyard. This section highlights the essential customization options, enabling you to fine-tune the system to perfectly fit your requirements.

Temperature threshold settings

The Frolight Automatic Generator Start Control Unit comes with pre-configured temperature threshold settings that automatically activates the power generator when the temperature drops below 3°C, and deactivates it when the temperature rises above 4°C again. However, these values can be easily customized to suit your specific needs by following these steps:

1. Access the Control Panel (see Configuration > Accessing the system's Control Panel)
2. Navigate to the *Settings* page
3. Ensure you are on the *Generator* tab
4. In the *Controller* panel, locate the section labeled *Temperature threshold* sand adjust the values for the activation and deactivation temperatures
5. Click the *Save changes* button located beneath the 2 input fields
6. Confirm the changes in the dialog that appears


Settings | Frolight
frolight.wlan/181/controller_settings/
Controller
Temperature threshold
Enable heating when temperature is lower than
2
°C
Switch off heating when temperature exceeds
3
°C
SAVE CHANGES
External sensor
Current: No external control · Status:
Change
No external control
SAVE CHANGES
Send command
Current Mode
Auto
Command
Auto
Command time-out (min.)
0
Generator
Temperature thresholds
Enable generator when temperature is lower than
6
°C
Switch off generator when temperature exceeds
7
°C
SAVE CHANGES

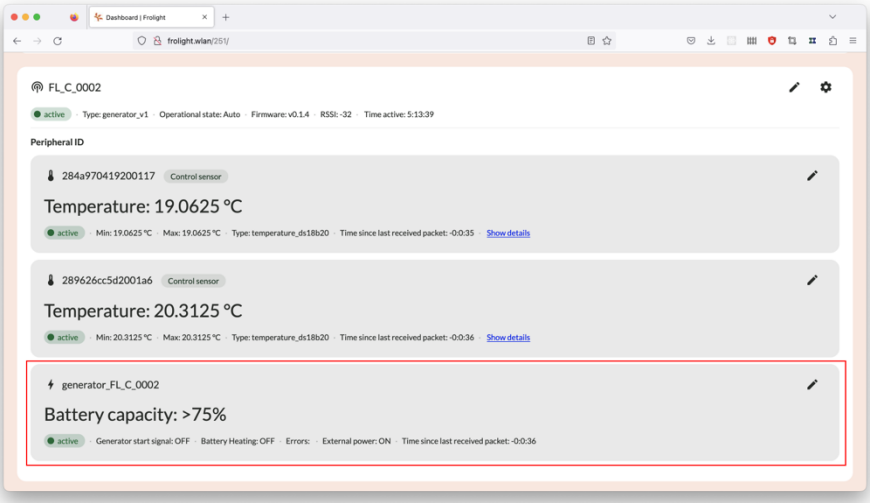
Operational capabilities

This chapter will provide you an overview of the various features and capabilities of the Control Panel. It is important to read through these instructions carefully to ensure you are getting the most out of your system.

MONITORING THE AUTOMATIC GENERATOR START CONTROL UNIT'S STATUS

The Control Panel allows you to monitor multiple data points, such as the unit's internal battery level, the status of the start signal and the status of the internal battery's heating system, this can be seen by following these steps:

1. Access the Control Panel (see Configuration > Accessing the system's Control Panel)
2. Ensure you are on the *Dashboard* page
3. Locate the Master Control Unit to which this Automatic Generator Start Control Unit is connected
4. Locate the panel for the Automatic Generator Start Control Unit
5. You will now be see the following data: battery level, start signal status, battery heating status, date & time when the last message was sent from the Automatic Generator Start Control Unit to the Master Control Unit.


Dashboard | Frolight
frolight.wlan/251/
FL_C_0002
active · Type: generator_v1 · Operational state: Auto · Firmware: v0.1.4 · RSSI: -32 · Time active: 5:13:39
Peripheral ID
284a970419200117 Control sensor
Temperature: 19.0625 °C
active · Min: 19.0625 °C · Max: 19.0625 °C · Type: temperature_ds18b20 · Time since last received packet: -0:0:35 · Show details
289626cc5d2001a6 Control sensor
Temperature: 20.3125 °C
active · Min: 20.3125 °C · Max: 20.3125 °C · Type: temperature_ds18b20 · Time since last received packet: -0:0:36 · Show details
generator_FL_C_0002
Battery capacity: >75%
active · Generator start signal: OFF · Battery Heating: OFF · Errors: · External power: ON · Time since last received packet: -0:0:36

Maintenance and cleaning

Regular maintenance and cleaning of the Frolight Automatic Generator Start Control Unit is crucial to ensure optimal performance and longevity of the products. This chapter will provide detailed instructions on how to properly maintain and clean the various components of the system. By following these guidelines, you can ensure that your system is running at peak efficiency and reduce the risk of equipment failure. It is important to note that maintenance should be performed as needed, based on environmental conditions and usage.

FROLIGHT AUTOMATIC GENERATOR START CONTROL UNIT

- Regularly inspect the Frolight Automatic Generator Start Control Unit for any damage.
- Clean the Frolight Automatic Generator Start Control Unit at least once per season using a clean damp cloth or sponge.
- Clean the attached solar panel as needed using a clean damp cloth or sponge.

⚠ Before cleaning, ensure that the Frolight Automatic Generator Start Control Unit is disconnected from its power source.

SENSORS

- Regularly clean the attached Temperature Sensors with a clean damp cloth or sponge to ensure that it can provide accurate temperature readings.

Technical specifications

FROLIGHT AUTOMATIC GENERATOR START CONTROL UNIT

External feedback (power supply from generator to unit)	230V AC
Power generator start signal	< 80V DC
Operation mode	Automatic
Control	Via web interface (Control Panel)
Water resistance	IP65

This technical data sheet is subject to change without prior notice. For the most recent version, please visit our website www.frolight.com.

Troubleshooting and support

Issue	The power generator is not starting.
Solution	Ensure that the Frolight Automatic Generator Start Control Unit is on by verifying that the red LED light on the unit is on and not blinking.

Issue	The red LED light on the Frolight Automatic Generator Start Control Unit is off or blinking.
Solution	The internal battery level is too low. Charge the battery using solar energy by ensuring that the solar panel is receiving direct sunlight.

Should you encounter any other problems with the installation or parts thereof, please contact your point of sales as soon as possible.

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