Biogents

BG - Counter 2

EN Troubleshooting Guide
(live.bg-counter.com)

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BG-Counter 2™

General Safety Instructions and Warnings

WARNING

To avoid injury, read the following safety information and the operating instructions before using the BG-Counter 2. Failure to follow these safety instructions could result in fire, electric shock, or other injury or damage to the BG-Counter 2 or other property.

Important safety instructions

Read and follow these instructions to use the BG-Counter 2 safely.

- Read these instructions.
- Keep these instructions.
- Heed all warnings.
- Follow all instructions.
- Install in accordance with instructions.
- Clean only with a dry cloth.
- Protect the power lead from being walked on or pinched, particularly at the plugs and at the point where it exits from the BG-Counter 2.
- Unplug the BG-Counter 2 during lightning storms or when unused for long periods of time.
- Do not use the BG-Counter 2 near or immersed in water.
- Only use attachments/accessories specified by Biogents.
- Refer all servicing to qualified service personnel. Servicing is required when the BG-Counter 2 has been damaged in any way, such as when the housing, power lead or plug is damaged, does not operate normally or has been dropped.

Handling

Your BG-Counter 2 may be damaged by improper storage or handling. Be careful not to drop the BG-Counter 2 when transporting it.

Operation

The device contains a cellular modem emitting radio-frequency electromagnetic radiation. Keep a distance of at least 20 cm when the device is in operation. The device also contains LED emitters of invisible infrared radiation. Do not operate the device with the housing opened or removed.

Repairing

Do not make repairs yourself. If the BG-Counter 2 is damaged or malfunctions, contact your Sales and Service Representative. Repairs by service providers other than Biogents or a Biogents Authorized Service Provider may not involve the use of Biogents genuine parts and may affect the safety and functionality of the device. Any changes to the device may affect warranty.

Power

The BG-Counter 2 has no on/off switch. To disconnect the BG-Counter 2 from power, unplug the power lead. Make sure the power lead is always easily accessible. When connecting or disconnecting the BG-Counter 2, always hold the plug by its sides. Don't pull on the cable. Keep fingers away from the metal part of any plugs or solar wires.

WARNING: To reduce the risk of fire or electric shock, do not expose the BG-Counter to liquids, excessive heat or naked flame.

WARNING

The BG-Counter 2 runs on 12 V. Never connect the BG-Counter 2 to a voltage above 14.4 V.

When using the BG-Counter 2, always confirm that the rated voltage on the fan label is 12 V (Biogents SKU 10042). Do not connect a 6 V fan!

Power Supply

The BG-Counter 2 comes with an outdoor power supply. This is the most reliable, cheapest, and least service-intensive way to to use your BG-Counter.

Whenever you have the possibility to operate the trap with mains power supply, you should do so!

Using a Solar Panel with Solar Battery

Using a solar panel is only recommended when the system needs to be operated autonomously for extended periods of time.
While the trap is usually placed in a shady location, **the solar panel should be placed in a sunny spot** nearby; the charge controller and battery should be placed near the counter. **Make sure to protect the battery and the charge controller by using a water-tight container or plastik bag.**

WARNING

To ensure the proper setup of your solar system connections, follow these instructions:

1. Prior to connecting the BG-Counter 2 to the charge controller, make sure to connect a **fully charged** 12 V battery first.
2. Never disconnect the battery without first disconnecting the BG-Counter 2.
3. Use the wires provided with the solar system without making any alterations.

Before making any connections to the charge controller:

1. Confirm the BG-Counter 2 is disconnected (nothing plugged into the black power connector on the left side of the counter front panel).
2. Review the instruction leaflet for the charge controller (instructions may differ, depending on the model).
3. Confirm the battery is a fully charged 12 V lead-acid deep cycle battery; the voltage across the terminals should read no less than 12 V and no higher than 13.8 V.
4. **The battery must not be a lithium battery of any kind to avoid a fire hazard and system damage.**

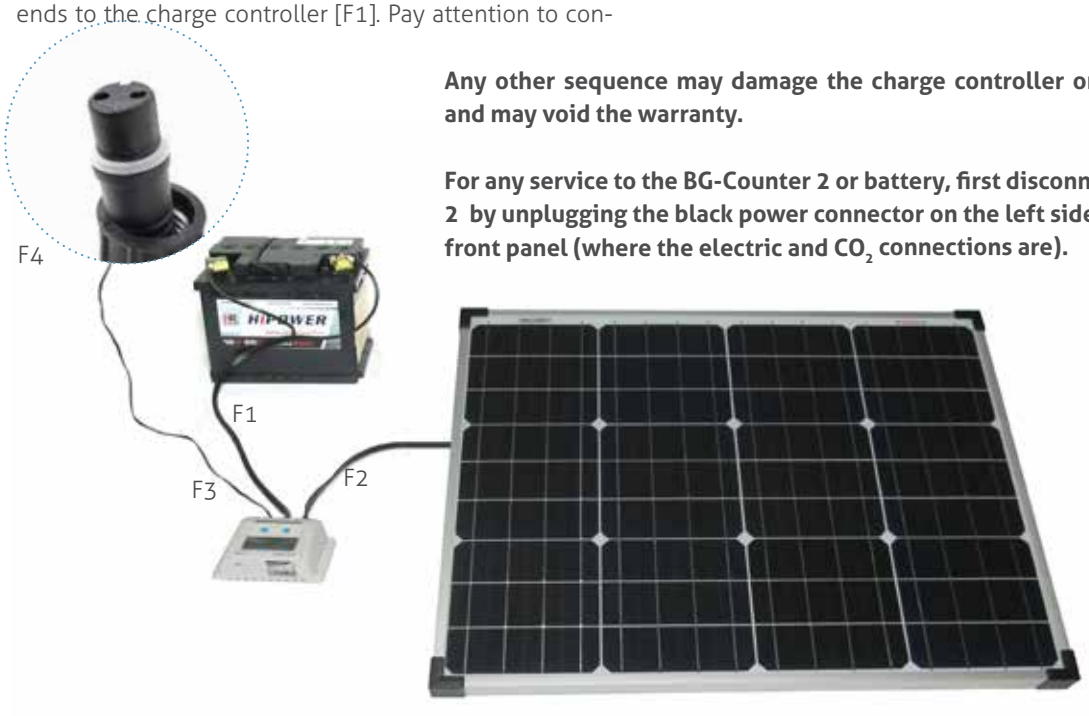
In case of any questions or concerns at this stage, contact your distributor or Biogents.

Then, make the charge controller connections in this order:

1. Connect battery clamps to the battery and the other ends to the charge controller [F1]. Pay attention to connect minus-pole to minus-pole (black) and plus-pole to plus-pole (red).
   This is necessary to power up the controller, enable its control and protection functions to avoid damage. Note that **crocodile clamps are not a solid connection**: they are easily knocked off, and subject to corrosion and loss of electrical conductance.
2. Connect the solar panel [F2], making sure the polarity is correct. Now check the voltage and/or indicator LEDs on the controller front panel and confirm function according to the instruction leaflet. Specifically, any voltage reading should indicate a 12 V system.
3. Connect the BG-Counter 2 power cable to the solar controller [F3] but don't yet plug the other end into the BG-Counter 2; re-check the solar controller indications.
4. Plug the BG-Counter 2 power cable [F4] into the leftmost connector on the front panel.

Any other sequence may damage the charge controller or the BG-Counter 2 and may void the warranty.

For any service to the BG-Counter 2 or battery, first disconnect the BG-Counter 2 by unplugging the black power connector on the left side of the BG-Counter front panel (where the electric and CO_2 connections are).



Dashboard Warnings

When you log in, you will be presented with a dashboard with a list showing the status of all BG-Counters 2 in your account. Devices with warning status are displayed on top of the list. The following warnings are indicated with a red triangle:

Voltage Column:
The low and high supply voltage for the last 24 hours are displayed.
⚠ A triangle here means that the lowest voltage is less than 11.5V, indicating a discharged battery or a solar system that is not charging properly. The counter will be turned off when the voltage drops to less than 11.5V in order to protect the electronics. Once turned off, the counter remains turned off until the voltage builds up again to 11.8V.
Corrective action may include one or more of the following:

- Charge the battery
- Use a battery with higher capacity
- Make sure solar panels are in full sun
- Check connections on solar controller
- Check solar controller for proper function

Fan column:
⚠ A triangle here means one of two conditions have been detected:
1.) The fan current is low, indicating the fan is not running even though it is turned on
2.) The fan current is high, indicating a stall (i.e. something is blocking the fan blades)
Corrective action: Check the fan for proper operation.

You can choose to be notified with an e-mail if warnings are present. In order to turn on Notifications, click on Profile, then click on Notify me about warnings and click Save.

Further issues

Trap does not start up

Symptoms:

- No beeps after connecting power
- Fan not working
- CO_2 valve not clicking
- A blue glow may be visible when looking into the counter funnel.

Cause: No power or wrong polarity.
Solution: Check voltage, continuity, and polarity on the power connection.

Only one or two beeps upon start-up

Symptoms: Counter, fan and CO_2 valve are off. No data transmission.
Cause: Battery is too low.
Solution: Recharge battery or replace with full battery.

SOS beep during start-up

Symptom: 3 short, 3 long, 3 short beeps
Cause: SD card failure.
Solution: Contact customer support.

Solar battery voltage gradually drops

Symptom:
When viewing "List" data, it is observed that the solar battery is not maintaining voltage. Eventually, counting and transmission of data stops.
Cause:
There is insufficient sunlight to keep the solar battery charged.
Solutions:

- Modify your trap schedule to only measure during peak hours of mosquito activity
- Move the solar panel to a sunnier position
- In rare cases, a larger solar panel may be needed. Contact Biogents or your distributor.

WARNING

When servicing the battery of the solar system, it is mandatory to follow these steps:

1. **First disconnect the BG-Counter by unplugging the black power connector on the left side on the counter front panel (where the electric and CO_2 connections are).**
2. **Then disconnect the solar panel wires from the charge controller before disconnecting the battery.**
3. **Any other sequence may damage the charge controller or the BG-Counter and may void the warranty.**

Cellular signal & Transmission

Checking cellular connectivity

If the counter is in a location with weak cellular signal, the cellular data connection to the server may be unreliable.
The signal strength at the deployment site can be checked as follows:
Connect counter to power, then pay attention to beeps:

1.) **Immediately**: One to four beeps indicate battery voltage:
- 4 beeps: fully charged
- 3 beeps: partially charged
- 2 beeps or 1 beep: discharged, counter and trap will not run

2.) **After 10-90 seconds**, check for 1-5 long beeps that indicate cellular signal strength (like the bars on a cell phone):
- 3-5 beeps: strong signal
- 2 beeps: marginal signal
- 1 beep: weak signal
- 2 short beeps: no connection

Cellular signal too low

Symptom:
Two short beeps about 1-2 minutes after connecting the trap to power.
Cause: Weak or no cellular reception at the present location.
Solutions:
- Move trap to a location which has stronger reception.
- Continue using the trap: data will be saved and uploaded upon the next time there is reception.

Irregular transmission times

Symptom:
Trap doesn't transmit data when scheduled.
Cause:
Weak cellular connection or cellular network is busy.
Solution:
See "Cellular signal is too low".

Cellular transmission stops

Symptom:
Counter stops transmitting despite good cellular signal strength.

1. **Cause:**
Extremely low battery (<11.2 V). To protect the counter from damage, the electronics, fan and CO_2 are automatically shut down. In order to view the last transmitted battery voltage, go to the the trap page and press the "List" button.
Note: A 12 V battery is considered 0 % charged when the voltage is below 11.8 V, and fully charged, when voltage is above 12.8 V.
Solution: Replace or charge battery.

2. **Cause**:
Counter needs reset.

Solution:
- Disconnect power
- Wait 30 seconds
- Reconnect power
- Insert hand into the funnel to block the sensor
- Wait 4 beeps that indicate power (4 beeps if battery is fully charged)
- After 15-90 seconds, verify cellular signal strength beeps (1-5 long beeps, corresponding to 1-5 signal bars); if there **are only two short beeps, there is no cellular connectivity**
- Right after the cellular signal indication, there will be 5 additional short beeps followed by a long beep.
- Power-cycle the counter once more
- After 30 minutes, go to the website and verify if new transmissions have been recorded.

Counting errors

Fan failure

Symptoms:
- Mosquito counts may appear low
- Small counts may appear high
- Catch bag (if used) may be empty
- When viewing "List" data, Power Draw is near 0, even when the fan is supposed to be on.

Cause: Fan has failed.
Solution: Check fan wiring; if necessary replace fan.

Overcounting

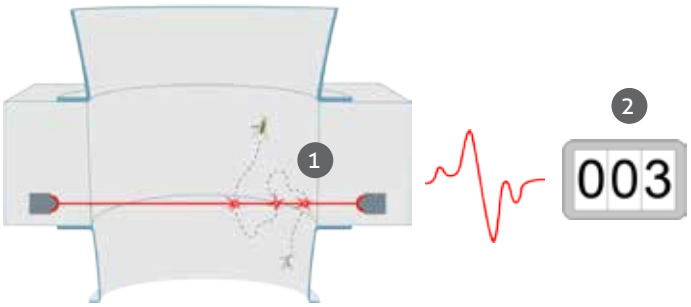
Symptom: Fewer mosquitos in the catch bag than counts on BG-Counter App.

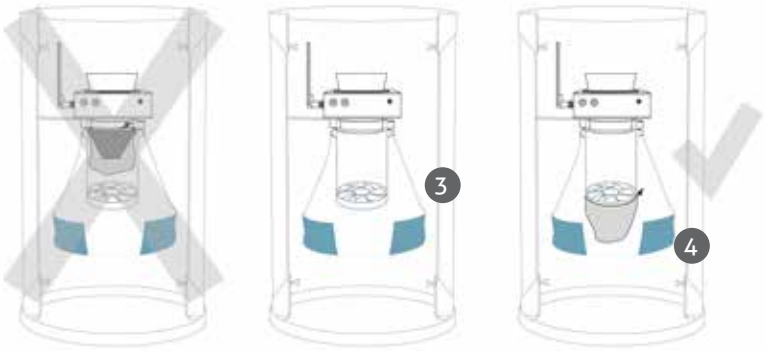
1. **Cause:**
Mosquitos might be able to escape if the catch bag is full or due to a reduced air flow. When leaving the trap, the mosquitoes sometimes cross the infrared barrier several times (1) and are therefore also counted several times (2).
Solution:
A) Remove the funnel net and catch bag (3).
B) In case you need to analyze the mosquitoes, install a catch bag below the fan (4).

2. **Cause:**
Mosquitoes were "stolen" by other insects (e.g. ants)
Solution:
Place the trap ant-protected, e.g. in a water bath or grease the basement with petroleum jelly.

Undercounting

Symptom:
More mosquitos in catch bag than counts on website.
Cause: Some mosquitoes were misclassified as large.
Solution: An accuracy of 80% or higher is normal. If there are no other large objects in the catch bag, use the sum of mosquito and large object counts.





CO_2 issues

CO_2 failure

Symptoms:
- Low mosquito counts
- No CO_2 flow even when CO_2 is activated
- CO_2 tank empties rapidly
- Valve not clicking or no hissing sound even though CO_2 is turned on

Causes:
- CO_2 tank empty
- CO_2 regulator (a) not adjusted correctly, (b) failure
- Leak in CO_2 lines
- Contaminants in CO_2 stream damaging internal regulator or valve parts
- Valve or electronic failure

Solution:
- Check CO_2 tank and regulator pressure (see „Checking CO_2 system)
- Leak-check the CO_2 system (see „Checking CO_2 system)
- Confirm proper grade of CO_2 is being used (99.9% pure; at least technical grade)

Make sure to maintain cleanliness of the CO_2 system by careful handling of the CO_2 exhaust port air stone and prompt replacement if broken off, and properly covering open ports when CO_2 tank or counter are removed.

Checking the CO_2 system

Checking the CO_2 flow
- Confirm that the tank valve is open and the regulator is set to 1.5 bar.
- Confirm that the CO_2 dosing valve inside counter is clicking and a hiss can be heard from the CO_2 exhaust port (blue, black or gold air stone).
- Note that at the time of test, CO_2 may be turned on in the schedule on the website

If there is no clicking or hissing: the valve may be contaminated or there is a electrical problem

Checking for leaks
- Disconnect the power cable at the BG-Counter front panel.
- Close the valve of the CO_2 tank.
- Observe the CO_2 regulator gauge for at least 3 minutes.
  -> The pressure indication should be stable at 1.5 bar

A drop of the pressure may indicate

1.) **a leak in the CO_2 tubing. In this case leak-check the pressure regulator and the tubing with soapy water. A leak location will be indicated by the presenece of air bubbles)**

2) **an internal leaking of the dosing valve. In this case the valve needs cleaning or replacement. Please contact technical support.**

Links

» https://eu.biogents.com/bg-counter
Webpage with resources about the BG-Counter, including the newest version of the manual, customer stories, publications and many more.

Contact

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ENGINEERED IN GERMANY

SCIENCE FOR MOSQUITO CONTROL

Biogents