senseFly SMART CHARGER User Manual

Model: S65 / Revision 1.0 / November 2020

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GENERAL INFORMATION

READ ALL USER MANUALS CAREFULLY BEFORE USING AND/OR SENSEFLY PRODUCTS.

USER MANUALS ARE AVAILABLE ON MY.SENSEFLY.COM WEBSITE.

senseFly products (the "Product(s)") are intended for professional use only.

Always comply with Civil Aviation regulations and other applicable laws, act responsibly and follow the instructions in your senseFly User Manuals.

Regulations

ALL USE OF THE PRODUCT INCLUDING, BUT NOT LIMITED TO, THE USE CONFORM TO THE APPLICABLE LAW OF THE COUNTRY IN WHICH THE PRODUCT IS OPERATED, IS UNDER THE CLIENT'S SOLE RESPONSIBILITY.

Compliance with Export Control Regulations

Products may be subject to export control regulations in which case:

- The Product must not be used to design, develop, manufacture or use any military equipment or any nuclear, chemical or biological weapons, nor missiles classified under the U.S. Munitions List, the Common Military List of the European Union and the Wassenaar Arrangement Munitions List.
- The Product must not be exported, re-exported, sold or transferred, either directly or indirectly, to any military end-user (defined as a national armed organisation) or to anyone else if the Client is aware that the Product will be subsequently exported or transferred to a military end-user.
- The Client must comply with the dual use regulations if such regulations apply.
- The Client must declare that he/she is not a "Person subject to Sanctions" and must not export, re-export, sell or transfer the Product, either directly or indirectly, to any "Persons subject to Sanctions". A "Person subject to Sanctions" is defined as any person, company or entity appearing on the list of specially designated persons established by the Security Council of the United Nations, the United States of America and the European Union.
- The Product must not be exported, re-exported, sold or transferred, either directly or indirectly to any
 "Country subject to Sanctions". A "Country subject to Sanctions" is defined as any country subjected to
 international economic sanctions adopted and applied by the Security Council of the United Nations, the
 United States of America and the European Union.

Limited warranty

senseFly (the "Supplier") warrants that the delivered Product will be free from defects in workmanship and materials for a period of twelve (12) months from the date of shipment by senseFly to the original Client. Should the Product malfunction due to defects in material and/or workmanship during this this defined period, the Client may request for the product to be repaired and/or replaced at no charge. If repair or replacement is not possible, a credit will be issued, provided that the malfunctioning Product is returned with its original proof of purchase.

Warranty does not apply, without limitation, in case: a) the delivered items are not stored, maintained or used according to their specifications, b) the delivered items are damaged due to carelessness, misuse, negligence, or wrong use by the user, c) for defects due to normal wear and tear including, but not limited to, normal degradation, misuse, moisture or liquids, dust, proximity or exposure to heat, accidents, excessive strain, abuse, neglect, misapplication, non authorised repairs or modifications, damage due to rain, water or humidity, or other causes for which senseFly

is not answerable, d) the delivered items are damaged during shipping. The warranty is void if the Product has been tampered with or opened.

In the event of the following, the Supplier reserves the right to reject warranty claims: A) The delivered items are not stored, maintained or used in accordance with their specifications. B) The delivered items are damaged due to carelessness, misuse, negligence or mishandling by the user. C) For defects due to normal wear and tear including, but not limited to, normal degradation, misuse, moisture or liquids, dust, proximity or exposure to heat, accidents, excessive strain, abuse, neglect, misapplication, non-authorised repairs or modifications, damages due to rain, water or humidity, or other causes for which senseFly deems is user-generated. D) The delivered items are damaged during shipping. E) The warranty is void if the product is deemed to have been tampered with or opened.

Battery cells are excluded from warranty after first use.

The Client shall make available to the Supplier, at the Supplier's request, all data regarding maintenance parameters. The Client further agrees and acknowledges that the Supplier is entitled, at any time, to access, analyse and use all data available on the Client's Account regarding the maintenance parameters. If such data are not available for a reason over which the Supplier has no control or responsibility, including but not limited to an external service provider issue, network fault or power failure, the Supplier is under no obligation to provide the Limited Warranty coverage until such data is made available.

It is the Client's responsibility to check that the Product is compliant with applicable requirements under local laws and regulations. Before using the Product, the Client shall make any and all necessary checks to ensure that any additional provisions required by international or local authorities are taken into consideration and carried out.

There are no express or implied warranties, representations or conditions other than those stated in this Limited Warranty. This Limited Warranty is made in lieu of all other warranties, representations or conditions, whether expressed or implied, including without limitation, merchantability or fitness for a specific purpose.

The remedy set forth herein shall be the sole, exclusive remedy by senseFly with respect to the Product.

Limitation of liability

UNDER NO CIRCUMSTANCES WILL THE SUPPLIER BE LIABLE FOR ANY DIRECT, INDIRECT, SPECIAL, INCIDENTAL OR CONSEQUENTIAL DAMAGES (EVEN IF THE SUPPLIER IS NOTIFIED OF THE POSSIBILITY OF SUCH DAMAGES) INCLUDING, BUT NOT LIMITED TO, ANY CRASH OR DAMAGES CAUSED BY THE CLIENT OR A THIRD PARTY WHILE OPERATING OR USING THE PRODUCT(S) (INCLUDING SIMULTANEOUS FLIGHTS OF PRODUCTS USING A SINGLE INSTANCE OF THE SOFTWARE, ENCRYPTION MODE) AND ANY DAMAGES CAUSED BY FAILURE OF THE AUTOPILOT, ELECTRONICS OR SOFTWARE (EVEN IF CAUSED BY A MALFUNCTION OF THE PRODUCT, AUTOPILOT, ELECTRONICS OR SOFTWARE), ANY LOSS OF REVENUE, LOSS OF PROFIT, OR LOSS OF DATA WHETHER BASED UPON ANY ALLEGED BREACH OF WARRANTY, REPRESENTATION OR CONDITION, CONTRACT, OR ANY OTHER CONDUCT INCLUDING NEGLIGENCE (INTENTIONAL OR OTHERWISE), GIVING RISE TO SUCH CLAIM. THE CLIENT SHALL NOT OPERATE THE PRODUCT(S) IN AREAS OR UNDER CIRCUMSTANCES WHERE A FAILURE COULD CAUSE DAMAGES AND/OR HARM TO PEOPLE, PROPERTY AND/OR ANIMALS.

Intellectual property rights

senseFly Products and software are protected by intellectual property rights. senseFly is the proprietor and legal and beneficial owner and/or the authorised licensee of any intellectual property rights within the Products, and senseFly is entitled to the benefit of all applications made for the grant of senseFly Intellectual Property Rights.

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FCC compliance statements



This device complies with part 15 of the FCC Rules and Industry Canada License-exempt RSS standard(s).

Operation is subject to the following two conditions:

- 1. This device may not cause harmful interference, and
- 2. This device must accept any interference received, including interference that may cause undesired opera-

Changes or modifications not expressly approved by the party responsible for compliance could void the user's authority to operate the equipment.

This equipment has been tested and found to comply with the limits for a class B digital device, pursuant to part 15 of the FCC Rules. These limits are designed to provide a reasonable protection against harmful interference in a residential installation. This equipment generates, uses and can radiate radio frequency energy and, if not installed and uses in accordance with the instructions, may cause harmful interference to radio communications. However, there is no guarantee that interference will not occur in a particular installation. If this equipment does cause harmful interference to radio or television reception, which can be determined by turning the equipment off and on, the user is encouraged to try to correct the interference by one or more of the following measures:

- 1. Reorient or relocate the receiving antenna
- 2. Increase the separation between the equipment and the receiver
- 3. Connect the equipment into a an outlet on a circuit different from that to which the receiver is connected
- 4. Consult the dealer or an experienced radio/TV technician for help.

Declaration of conformity



senseFly SA, Route de Genève 38, 1033 Cheseaux-Lausanne, Switzerland, declares under its sole responsibility that the product described in this user guide satistfies all relevant and mandatory EC directives and FCC Part 15 Subpart B: ANSI C63.4:2014. Safety

Standard	Title	Result
EN 60335-1:2012+A11:2014	Household and similar electrical appliances - Safety - Part 1: General requirements	PASS
EN 60335-2-29:2004+A2:2010	Part 2-29: Particular requirements for battery chargers	PASS
EN 62368-1 : 2014	Audio/video, information and communication technology equipment – Part 1: Safety requirements	PASS

Emission

Standard	Title	Result
EN 55014-1: 2006+A2:2011	Conducted (Main Port)	PASS
EN 55014-1: 2006+A2:2011	Disturbance Power	PASS
EN 61000-3-2: 2014	Harmonic current emissions	PASS
EN 61000-3-3: 2013	Voltage fluctuations and flicker	PASS

Immunity EN 55014-2: 2015

	,	
Standard	Title	Result
EN 60335-1:2012+A11:2014	Household and similar electrical appliances - Safety - Part 1: General requirements	PASS
EN 60335-2-29:2004+A2:2010	RS	PASS
IEC 61000-4-4: 2012	EFT	PASS
IEC 61000-4-5: 2014	Surge	PASS
IEC 61000-4-6: 2008	CS	PASS
IEC 61000-4-11: 2004	Voltage dips and voltage variations	PASS

Disposal of this product at the end of its life



At the end of this Product's life, please do not dispose of this Product in your general household waste. Instead, in order to prevent possible harm to the environment or human health from uncontrolled waste disposal, please dispose of this Product separately in accordance with your local laws and regulation. For more information on the separate collection systems for waste electrical and electronic equipment that

are available for consumers, near your home, free of charge, please contact your local municipal authority.

You can also contact senseFly or the reseller from which you purchased your drone who may provide recycling services or be part of a recycling scheme.

Copyrights

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Address

senseFly SA

Route de Genève 38 1033 Cheseaux-Lausanne Switzerland

Website: http://www.sensefly.com

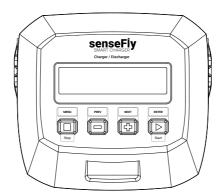
Technical support

senseFly and our resellers are dedicated to providing you with full professional product support. To submit a support ticket and/or view your outstanding tickets, please use our customer portal my.senseFly (http://my.senseFly.com). Log in with the same account details you used to download your drone's software (see the separate software information document in your *eBee*'s case).

In addition to support access, my.senseFly includes:

- Details of all your senseFly drones, including their serial numbers.
- The Knowledge Base packed full of helpful articles, tips, tutorials and webinars.
- Download links for the latest versions of our software.

Your senseFly SMART CHARGER



Thank you for purchasing a **senseFly SMART CHARGER**, pre-programmed for safe and effective balanced charging and discharging of **eBee X**, **eBee Classic**, **eBee Plus** and **eBee SQ** batteries.

The senseFly SMART CHARGER can charge your batteries for:

Flight charge

Charges to approximately 100% of the battery's capacity for a planned flight.

Storage

Charges or discharges the battery to the storage state, for a short and long-term storage without harming battery capacity.

Shipping

Charges or discharges the battery to the shipping state.

For security purposes, when charging or discharging your batteries, please take into account possible differences between the displayed and the actual charge level.

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1 Package contents



- 1x senseFly SMART CHARGER
- 1x AC main power cable

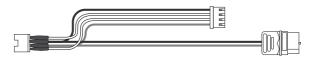
2 Mandatory charging/balancing cables

To charge or discharge your battery, you must have the right charging and/or balancing cables (depending on your drone family) to connect the battery to the senseFly SMART CHARGER. These cables are included in your drone package, however, they must be ordered separately if your senseFly SMART CHARGER was purchases individually.

• eBee X charging cable:



• eBee Classic charging and balancing cables:



• eBee Plus/eBee SQ balancing cables:

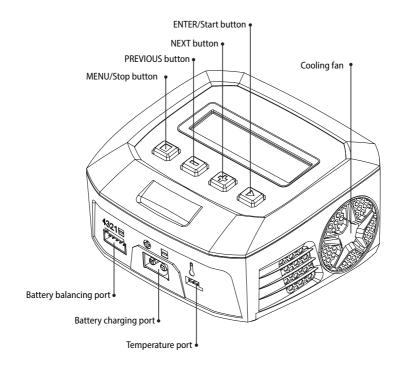
The eBee Plus/eBee SQ battery does not require a charging cable as the battery charging connector is plugged directly into the charging port of the senseFly SMART CHARGER. Note that these balancing cables are used as an extension of the short balancing cables of the eBee Plus/eBee SQ battery.



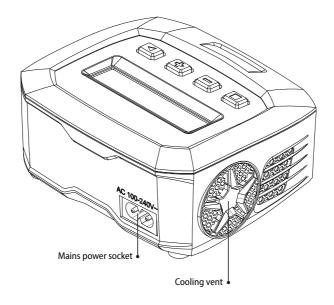
1

Note: To know how to connect your cables, see *Connecting batteries* to your senseFly SMART CHARGER on page 21

3 Hardware features



Top, front and right-hand side



Top, back and left-hand side

MENU/Stop button

Press to display previous menu. Press to stop charge/discharge.

· PREVIOUS button

Press to display previous option.

NEXT button

Press to display next option.

ENTER/Start button

Press to select current displayed option. Press to start charge/discharge.

· Battery charging port

Plug battery's charging cable into this port.

· Battery balancing port

Plug battery's balancing cables into this port¹.

· Temperature port

Do not use.

· Mains power socket

Plug mains power (100–240 VAC, 50–60 Hz).

Cooling fan

Pull air through the charger. Do not block.

· Cooling vent

Allow air to flow into the charger. Do not block.

plug it into the right-hand side of the port. See *Connecting batteries to your senseFly SMART CHARGER* on page 21

4 Safety precautions



Caution: Disconnect cables from battery after charging/discharging. Once the battery charge/discharge is complete, always unplug the battery from its cable. Do not store your battery with its cable attached to avoid undesired discharge.



Caution: Select the right drone family charging program. Selecting the wrong drone family charging program may dangerously affect your battery health, causing overheat, fire and irreversible damages to your battery.

- Never leave a powered senseFly SMART CHARGER unattended
 If the battery or the charger behaves unexpectedly during charging (for example, overheating, smoking, melting, leaking, a suspicious smell or noise etc.) immediately disconnect the mains and store the battery, without its cables attached, and charger in a safe location.
- Inspect your batteries and the senseFly SMART CHARGER before using

Inspect the batteries and charger regularly for damage to, or corrosion of the cable, plug, enclosure or other parts. Do not use a battery if the plastic cover has been torn or compromised in any way. Never charge a swollen battery, one that is leaking, one that has been damaged or one that has damaged or corroded connectors.

- Only charge senseFly batteries
 Only charge senseFly-approved batteries with the senseFly SMART CHARGER.
 Do not attempt to use it to charge any other batteries.
- Place unit on a flat, heat-resistant, non-flammable, insulating surface
 Do not charge batteries near flammable materials or on an flammable or
 conducting surface, for example, do not charge on carpet, a car seat, wooden
 flooring or wooden furniture.

Do not cover the cooling fans and vents

Keep all cooling fans and vents clear of obstacles (those on the side and bottom). Do not place the charger on materials that can deform and block any of the cooling vents, for example, a cushion, duvet, soft cloth or upholstery. Ensure that the cooling fan can effectively extract heat.

Keep the senseFly SMART CHARGER cool

Do not charge your batteries near a source of heat. Only operate this device in a cool, ventilated area, away from flammable objects.

Remove battery from drone

Do not attempt to charge the battery while it is still installed in your drone or inside the case.

• **Do not charge very warm or cold batteries** Do not attempt to charge a battery if its temperature is below 10 °C (32 °F) or above 40 °C (104 °F).

Take care of your senseFly SMART CHARGER

Do not expose batteries or chargers to excessive physical shock such as impact, intense vibration or crushing force. Do not place any heavy objects on the batteries or on the senseFly SMART CHARGER and avoid dropping them. Keep the senseFly SMART CHARGER away from dust and high temperatures and avoid leaving it directly exposed to the sun.

Do not force a battery to charge

If any of the cells of your battery pack have been overly discharged the battery may be irreversibly damaged and dangerous to charge. Do not attempt to charge an over-discharged battery.

Never disconnect battery while charging

Never disconnect a battery while the charger is charging or discharging it. Always stop the charging/discharging process first.

• Keep the senseFly SMART CHARGER out of the reach of children

Keep the senseFly SMART CHARGER away from liquids

Do not allow it to come into contact with any kind of liquid. Do not leave it out in the rain or near a source of moisture.

· No user-serviceable parts

Do not attempt to dismantle or repair the **senseFly SMART CHARGER**.

Only use 100–240 V AC mains power

Keep it away from flammable substances

Keep the **senseFly SMART CHARGER** away from flammable liquids, gases, vapours and materials.

Use the correct settings for your battery

Choosing the wrong settings or selecting the wrong battery can result in damage to the **senseFly SMART CHARGER**, damage to the battery, shorter flights, shorter battery lifetime and may cause a fire or explosion.

Always take off with a fully-charged drone battery

The power the drone can pull from its Lithium Polymer batteries is at its maximum when the battery is fully charged. When delivered, the drone's battery may not be fully charged. Do not take off with a battery charged to only storage or shipping level.

Do not pull on the battery cables

When disconnecting batteries from the **senseFly SMART CHARGER**, do not pull on the cables. Hold the connectors and pull instead.

· Always connect batteries correctly

• The senseFly SMART CHARGER may become hot during use Take care when handling it.

Comply with regulations

Refer to the local regulations when shipping or travelling with batteries.

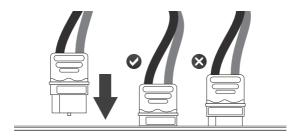
5 Using your senseFly SMART CHARGER

Charging a battery can take up to one hour and 30 minutes, depending on the charge level of the battery, the required cell balancing work and the battery capacity.

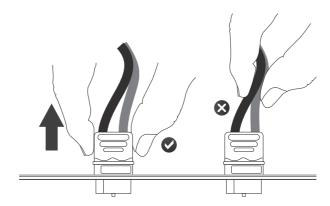
Discharging a single battery from 100% to storage level, or from storage level to shipping level takes up to five hours.

5.1 Connecting & disconnecting batteries

When connecting the charging cable to the **SmartCharger**, push the connectors firmly together:

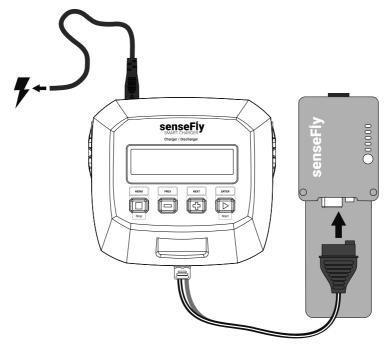


When disconnecting, do not pull on the cables. Hold the connectors and pull:



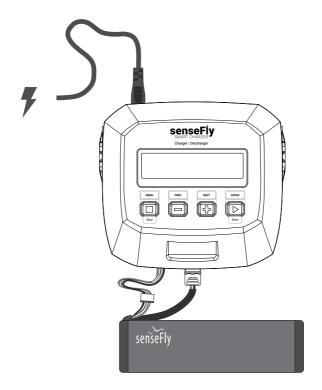
5.2 Connecting batteries to your senseFly SMART CHARGER

To charge/discharge an **eBee X** battery, plug the charging cable:

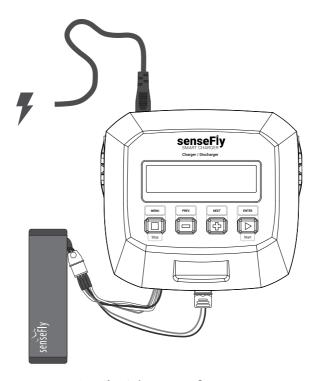


eBee X battery configuration

To charge/discharge an eBee Classic or an eBee Plus/eBee SQ battery, always plug both the charging cable and the balancing cables into the right ports:

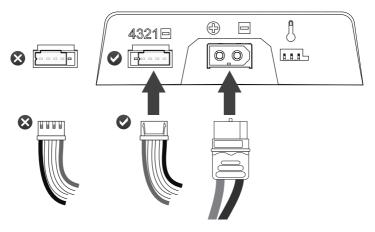


eBee Plus/eBee SQ battery configuration



eBee Classic battery configuration

Always plug the balancing connector into the right-hand side of the balancing port. Plugging the balancing connector into the left-hand side would lead to a CELL ERROR message.



Example showing an **eBee Plus** battery

5.3 How to charge/discharge a battery

- 1. Power on the **senseFly SMART CHARGER** and allow it to start up.
- 2. Plug the charging and/or balancing cables (depending on your drone family) to the battery and the senseFly SMART CHARGER. 1
- **3. Select the right drone family with the two navigation buttons (PREVIOUS and NEXT buttons) and press** ENTER/Start.
- 4. Select your desired program between Flight charge, Storage and Shipping. **Long press** ENTER/Start to start the battery check.
- 5. Once the battery check is done, press ENTER/Start again to start your program.

The **senseFly SMART CHARGER** will start charging or discharging to the charging state you chose.

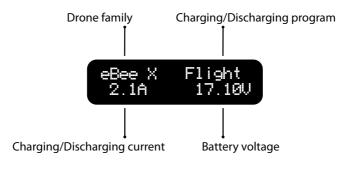


Caution: Selecting the wrong drone family program may dangerously affect your battery health, **causing overheat**, **fire and irreversible damages** to your battery.

¹ See Connecting batteries to your **senseFly SMART CHARGER** on page 21 to properly plug cables.

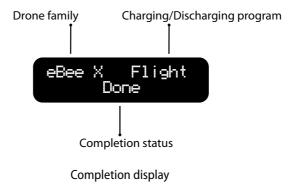
5.4 About the charging/discharging display

The charging/discharging display appears on the **senseFly SMART CHARGER**'s screen when you start charging a battery. The display shows status information for your battery.



Charging/Discharging display

Once the charging/discharging program is complete, your **senseFly SMART CHARGER** alerts you with a beep and displays a completion message.



5.5 How to interrupt charging or discharging

- Press the MENU/Stop Button.
- Press again the MENU/Stop button if you want to display the main menu.

5.6 About battery storage

The battery cells must remain balanced and stay above a minimum voltage. Following a deep discharge they can become damaged, which reduces the effectiveness of the battery. If this occurs, it will no longer be possible to charge that battery.

Even when not in use, the battery will discharge over time. This occurs at a rate of roughly two and six percent per month. If ignored, the battery could enter a state of deep discharge.

To avoid that:

- Never store the battery with its charging/balancing cable attached.
- Never let the battery reach 0% charge.
- After landing, do not leave the drone powered on with a low battery.
- After flying, do not leave the battery in a low-charge state for a long time, and recharge the battery as soon as possible.
- When batteries are in storage, check the battery level every three months and recharge to storage level.
- Store batteries in a safe environment, preferably in LiPo safe bags with a reasonable ambient temperature and humidity, i.e. household-like environment, for the full duration of storage.

Find more info in our knowledge base: sensefly.zendesk.com/hc/en-us/articles/360010694520-Important-eBee-X-Battery-Info-Flight-Tips-

5.7 Understanding the warnings

program in the main menu.

- **CELL ERROR**: This warning may have various causes:
 - You wrongly plugged in your blalancing cables to the battery balancing port².
 - You unplugged the battery balancing cables from the charger.
- **BATTERY WAS FULL**: Your battery is already full and does not require further charging. In some rare cases, the screen may display this warning for a totally discharged battery (no LEDs on for an **eBee X** battery). This means your battery does not work anymore because of too low voltage.
- REMOVE BALANCE CONNECTOR: You uncorrectly plugged in balancing cables to charge your eBee X or you selected the eBee X program to charge a battery from another drone family.
 If you want to charge an eBee X, remove the balancing cables and use the right eBee X cable. If you want to charge another battery, select the right
- **CONNECTION BREAK**: You unplugged your **eBee Plus** or **eBee SQ** battery power cable while charging/discharging it or your **eBee X** battery charge level is at 0%.
- **CONNECT ERROR CHECK MAIN PORT**: You unplugged your **eBee Classic** battery while charging/discharging it.
- OVER TIME LIMIT: The charging time is longer than the maximum charging time. You battery may be malfunctioning.
- Low level batt confirm eBeeX?: You selected the eBee X program when
 trying to charge an eBee Classic, eBee Plus or eBee SQ battery. Do not go
 further and return to the main menu and select the right drone family to
 avoid possible overheat, fire and irreversible damages to your battery.

² plug it into the right-hand side of the port. See Connecting batteries to your senseFly SMART CHARGER on page 21

5.8 About the senseFly SMART CHARGER's settings

You can change the following settings:

Setting	Details
Key Beep	Turn ON/OFF all key beeps.
Buzzer	Turn ON/OFF all buzzers for warnings and programs completion.



Note: Choosing Buzzer OFF mutes all sounds except those resulting from key beeps.

5.9 How to change the senseFly SMART CHARGER's settings

- 1. Press NEXT button to reach the settings display.
- 2. Press ENTER/Start to select which setting you want to change.
- 3. Use PREVIOUS and NEXT buttons to switch between ON/OFF.
- 4. Press MENU/Stop to leave the settings editing mode.

5.10 Reporting a problem with your senseFly SMART CHARGER

If there is a problem with your **senseFly SMART CHARGER** we recommend the following actions:

- 1. If there is an error message displayed, begin by checking your user manual to see if there is a solution to the particular message.
- 2. Check our Knowledge Base, part of my.senseFly³, to see if there is a solution to your problem.
- 3. If you have still not found a solution, contact your *eBee* support provider. Please include the following information with your inquiry:
 - The serial number of your drone, likely in the format XX-XXX. You
 can find this number inside the battery enclosure. Please include this
 serial number in the subject line of your message.
 - A short description of the problem.
 - Photos or video of the senseFly SMART CHARGER, battery and cables, if required.



Note: In order to provide support, senseFly may request relevant flight log files for inspection.

³ http://my.sensefly.com

6 Specifications

Display type 2x16 LCD

Controls Four Buttons

Operating temperature 10–40 °C

Storage temperature -20–60 °C

Dimensions 117x105x55 mm

Mass 315 g

Input voltage 100–240 V AC

Charge current 0.1 A-6.0 A

Discharge current 0.1 A-1.0 A

Charge wattage 65 W

Discharge wattage 10 W

Balance current 0.2 A per cell



http://my.sensefly.com