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## RPL™ (Reactive Pulsed Light) Technology - How does it work?

RPL™ (Reactive Pulsed Light) is an advanced technology which uses clinically proven IPL (Intense Pulsed Light) technology in conjunction with a skin tone and skin contact sensor. The light emitted from the device penetrates the skin and is then absorbed by the melanin pigment in the hair shaft. The heat produced by this light goes into the follicle and generates a local thermal effect, also known as selective photothermolysis. The thermal effect disables the hair follicle which causes a reduction in hair growth while leaving the surrounding skin unaffected and cool.

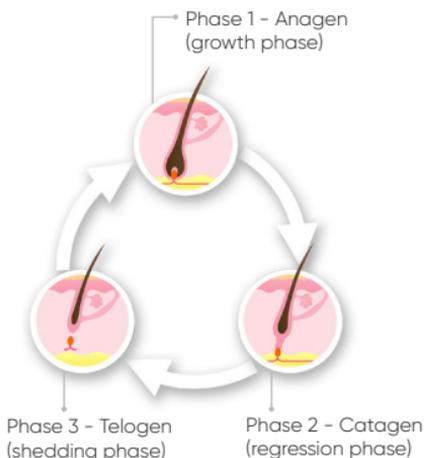
### Long-term hair reduction- Hair growth cycle

Two factors play an important role in optimal long-term hair reduction:

- **Hair growth cycle.** Hair growth involves three phases: Anagen, Catagen, and Telogen. Anagen is the

growth phase, while Catagen and Telogen are the resting phases. Permanent hair reduction can only occur in the Anagen phase, the phase of growth. Since hair growth is not synchronized, it is recommended to complete the full treatment protocol to ensure every hair will be exposed to treatment during its Anagen phase.

- **Skin tones (according to the Fitzpatrick scale).** Darker skin contains more melanin, which competes with the targeted hair for energy absorption. When more energy is absorbed into the skin, there is a greater risk of adverse effects.





Please make sure to carefully read this user guide before you start using the device. The user guide can also be found at [www.sensica.com](http://www.sensica.com)

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## Intended Use

The Sensilight PRO device is an over-the-counter device intended for the reduction of unwanted body and/or facial hair. Sensilight PRO is also intended for permanent reduction in hair regrowth, defined as a long-term, stable reduction in hair regrowth when measured at 6, 9, and 12 months after the completion of treatment regimen.

This device is intended for use on the entire body (e.g. legs, arms, underarms, bikini line, back, shoulders, chest and stomach) and on permitted facial areas (i.e. above upper lip, cheek, jaw, chin and neck).

**Note:** This device is especially designed for your own personal treatment and is intended for a single user and home use only.

The device is intended for use on skin tone types I to IV according to the Fitzpatrick skin chart below (colored chart available in section 02 on the cover). Do not use on dark skin such as type VI. The use of IPL devices on naturally dark skin is forbidden.

Skin  
Tones



This device works best on dark hair or hair that contains more melanin. Brown and light brown hair will respond, but typically will require more treatment sessions.



Never use around or near your eyes

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**Note:** Hair removal by lasers or Intense Pulsed Light can cause increased hair growth in some individuals. Based upon current data, the highest risk groups for this response are females of Mediterranean, Middle Eastern, and South Asian heritage, treated on the face and neck.

## Who should NOT use the device?

Carefully read the information below before you begin a treatment with the device. If you still have any doubts or are unsure that the device is safe for your use, please consult with your physician.

### CONTRAINDICATIONS

Do NOT use the device if you:

- Have an active implant such as a pacemaker, insulin pump or similar devices, since it may cause interference.
- Are pregnant, have a chance of being pregnant or are nursing since the device was not tested on pregnant or nursing women and may stimulate pigmentation.
- Have skin cancer, areas at risk of malignancy, or if you have received chemotherapy/radiation therapy within the past 3 months since the safety of such usage has not been established and the immune system can be compromised, which can lead to serious injury.
- Suffer from epilepsy, as using the device could trigger a seizure.
- Have damaged or broken skin, or a history of Herpes or Psoriasis outbreak in the treatment area since such usage can result in serious side effects.
- Suffer from keloid scar formation (growth of extra scar tissue where the skin has healed after an injury) in the treatment area since such usage has not been established and may result in serious skin complications.
- Have been taking Tetracycline antibiotics or medication with the following active ingredients within the last two weeks: Retinoid acid, Retina-A, Vitamin A (such as Accutane), as they are considered to be photo-sensitizing drugs and may result in skin injury.
- Are photosensitive or have other diseases related to light sensitivity, as device usage under these conditions may lead to serious injury.

- Suffer from severe or decompensated metabolic conditions, such as diabetes, since it may cause a greater risk of delayed healing and infection in case of an adverse effect.
- Have had a skin peel or other skin resurfacing procedures within the last 8 weeks in the treatment area as, under these circumstances, device usage may result in stimulation of pigmentation.

**Note:** If you have undergone any other aesthetic procedures or have any uncertainty regarding potential side effects, consult with your physician before using the device.

## WARNINGS

Do NOT use the device:

- On naturally dark skin (colored chart available in section 02 on the cover).
- If you have dark brown or black spots such as: around the nipples, freckles, birth marks, moles, or blisters on the area to be treated.
- On mucous membranes such as: nostrils, lips of the mouth, eyelids, ears, genital area and the anus, as it may lead to serious injury.
- Over piercings or any metal items such as earrings or jewelry on the area to be treated, as it may cause burns
- Over areas with tattoos or permanent make-up, cover tattoos or permanent make-up with a white plaster before treatment. Do not use the device directly over the tattoo or permanent make-up, even when covered.
- **Do not treat the same area of skin more than once per treatment, as it may cause adverse effects.**
- **On tanned skin or after sun exposure as this can cause serious burns or skin injury. Avoid more than 15 minutes of sun exposure for 4 weeks before your treatment and for at least 2 weeks post treatment. If during this period your treated skin area is exposed to sunlight, make sure to apply SPF 30 or higher sunscreens.**

Additionally:

- Never look directly at the light coming from the applicator and lamp, as it may cause eye injury.
- Never use flammable liquids such as alcohol (including perfumes, sanitizers, or other applications containing alcohol) or acetone on the skin one hour before using the device as it may cause burning of the skin.

## CAUTIONS

- KEEP OUT OF CHILDREN'S REACH
- This device is not intended for use by individuals with reduced physical, sensory or mental capabilities.
- Do not place, store or use this device near bathtubs, showers, basins or other vessels containing water, as it may lead to severe electrocution.
- Do not open or repair the device, as it may expose you to dangerous electrical components which may cause serious bodily damage.
- Do not leave the device unattended while plugged into the electricity, as it is a risk of electrocution.
- Do not use the device if any part of the device or its accessories are: not working properly, appear damaged, broken, loose, missing or wet (take extra care since UV and IR are emitted from this device), or if you see or smell smoke.
- Before using this device, make sure it is clean, dry and intact. Cleaning instructions are detailed under the **Cleaning & Storage** section.



Use the device only with the supplied external power and accessories. For your safety, never use DC adapters which are not approved by the manufacturer

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## Possible Adverse Reactions

When using this device according to the Instructions for Use, adverse effects are rare. However, every aesthetic procedure may cause some degree of adverse effects (as listed in the table below). In case adverse effects appear, stop using the device, and consult with your physician if necessary.

Mild adverse reactions should be spontaneously relieved within a few hours or days.

<b>Severity of Adverse reaction</b>	<b>Frequency of Adverse reaction</b>	<b>Adverse reaction</b>
<b>Mild</b>	<b>Common</b>	Skin Irritation Skin Redness Skin Sensitivity
<b>Moderate</b>	<b>Rare</b>	Skin Burns Scarring Pigment Changes Excessive Redness and Swelling
<b>Severe</b>	<b>Extremely Rare</b>	Infection Bruising

Any serious incident that has occurred in relation to the device should be reported to us (via customer service).

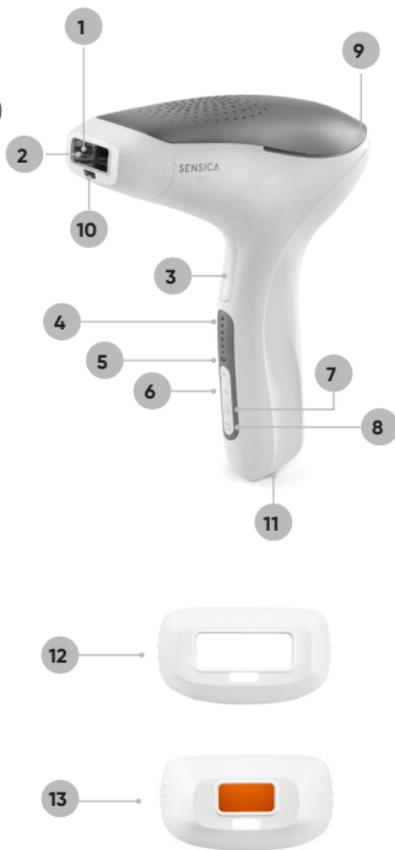
**For your convenience, additional explanations are given below.**

- **Skin Irritation** – The use of Pulsed Light Hair Removal System is generally very well- tolerated, the majority of users do feel a sensation of warmth and a mild stinging sensation during treatment or a few minutes after. Anything beyond this skin irritation – discomfort is abnormal and means that either the energy level is too high, or you shouldn't continue using the SENSILIGHT PRO as you are unable to tolerate the hair reduction application.
- **Skin Redness** – Redness on the treated area may appear right after using the application or within 24 hours of using the device. Consult your physician in case the redness does not disappear within 2 to 3 days.
- **Skin Sensitivity** – You may feel that your skin in the treated area is more sensitive so you may encounter dryness or flaking of the skin.
- **Skin Burns** – Rarely, burns on the treated area can occur following the use of the hair removal system. The burns can require a few weeks to heal and, extremely rarely, may leave a visible permanent scar.
- **Scarring** – In rare cases, permanent scarring may occur. Usually when scarring occurs it is in the form of a flat and white lesion on the skin (hypotrophic). However, it can be large and red (hypertrophic) or large and extend beyond the margins of the injury itself (keloid). Subsequent aesthetic treatments may be required to improve the appearance of the scar.

- **Pigment Changes** – Use of the device may cause temporary skin hyperpigmentation (increased pigment or brown discoloration) or hypopigmentation (whitening) to the surrounding skin. The risk is higher for people with darker skin tones. Usually discoloration or changes to skin pigment are temporary and permanent hyperpigmentation or hypopigmentation rarely occur.
- **Excessive Redness and Swelling** – Very rarely, the treated area skin may become very red and swollen. This side effect is very common in sensitive areas of the body. The redness and swelling should be decreased after 2 to 7 days and you should treat the area by applying ice. You should avoid exposure to sun.
- **Infection** – In rare cases, infection of the skin is a possible risk following a skin burn caused by the application.
- **Bruising** – Blue-purple bruising is exceedingly rare by using the device and can last 5 to 10 days. As the bruising fades, there may be a rust-brown discoloration of the skin (hyperpigmentation) that can be permanent.

## Sensilight PRO Description

1. Flashing light (internal lamp)
2. Treatment window
3. Trigger button
4. Energy level display
5. Battery status indicator
6. Energy level selection buttons
7. Glide mode (trigger less) button
8. ON/OFF button
9. Status Indicator
10. Skin tone and skin contact sensor
11. Charging socket
12. Large treatment window (0.7 sq. in/ 4.5 cm<sup>2</sup>)
13. Precise treatment window (0.3 sq. in/ 2 cm<sup>2</sup>)



## User interface description

- 1. ON/OFF button** – Pressing the button will turn the device ON at energy level 1. The device will switch to standby mode when left unattended for 5 minutes or by pressing the ON/OFF button for 3 consecutive seconds.
- 2. Glide (trigger-less) mode button** – A press on the  button will activate the Glide mode. In this mode, consecutive pulses will be released without the need to press the trigger button, as long as the device is in full contact with the skin and applied on allowed skin tone. The Glide mode can be turned off by additional press on the button or will be automatically turned off if the device is unused (or doesn't have proper skin contact and skin tone detected) for a few seconds.
- 3. Energy level selection buttons** – The + (increase energy level) and – (decrease energy level) buttons, allow you to choose between 6 different

levels. Select the energy level according to what you found most comfortable in the preliminary test. You can use the Glide mode button to assist in choosing the optimal energy level for you for each desired treatment area.

- Each press of the (+) or (-) buttons will increase or decrease the energy by one level. When you reach the maximum energy level, pressing the (+) button again won't change the energy level any further. Similarly, when you reach the minimal energy level, pressing the (-) button won't decrease the energy level further.
- The 1-6 energy level display indicators will light up green according to the selected energy level (e.g. at energy level 1, one green light will be lit, at energy level 2, two green lights will be lit).

#### 4. **Battery status indicator** –

The indicator, marked as , shows the charge status of the battery:

- Red – Battery is being charged. Note: If in addition to this red light, energy level “1” is green, the device is turned on.
- Green – Battery is fully charged, and the device is connected to the external power supply.
- Slow blinking red light – Low battery level (about 30% of full charge).
- Fast blinking red light – Very low battery level (about 10% of full charge).

**Note:** The green or blinking red battery status indicators will appear only while the device is turned on.

**5. Treatment windows** – For the most comfortable treatment, select the appropriate treatment window for the body area you want to treat and simply snap on the treatment window.

- **Large treatment window (the optical filter is fixed on the device)** – Use

the large treatment window for fast and easy hair removal on large body areas, such as legs, back and arms.

- **Precise treatment window (additional snap-on window)** – Snap on the

precise treatment window for treatment of small and delicate areas, such as the face (area below the cheek line) and bikini line.

**6. Status indicator** – This indicator (located at the back side of the device) has several statuses, as detailed in the table below.

<b>Status Indicator</b>	<b>Status</b>	<b>Description</b>
<b>No light</b>	OFF	Device is inactive
<b>Steady green light</b>	ON	Flash is ready to be delivered
<b>Momentary orange light</b>	Flash blocked	The device is not in full contact with the skin – no flash will be delivered
<b>Momentary red light</b>	Flash blocked	A non-allowed skin tone has been detected – no flash will be delivered (colored chart available in section 02 on the cover)
<b>Blinking orange light</b>	Glide mode	Device is in glide mode. Trigger less flashes will start as soon as the device is in full contact with the skin
<b>Steady red light</b>	Device blocked	The device is blocked due to either an internal malfunction or improper attachment of treatment window to the device

## User Instructions

The device is suitable for use on: legs, arms, underarms bikini line, back, shoulders, chest, stomach, and permitted facial areas (above upper lip, cheek, jaw, chin and neck).

### What to expect

During your treatment, it is normal to experience:

- A flash of light with each press on the trigger button– the emitted light will not harm your eyes.
- A pop noise with each flash of light.
- A mild, stinging sensation.
- Some mild red or pink color may appear during or just after using

### Preliminary Test

The preliminary test is intended to determine your skin's reaction to treatment with the device and help you set the optimal energy level for each treatment area.

Perform a preliminary test on a hidden patch of skin for the area you intend

to treat 48 hours prior to the first full treatment.

Due to varying levels of sensitivity, body areas may require different energy levels; this will be determined by separate preliminary tests.

**Note:** Do not treat full areas with energy levels that you have not tested before!

Do not treat the tested area for at least 48 hours after the preliminary test has been carried out.

1. Prepare your skin as described below in "**Step 1: Prepare your skin**". Instructions for operating the device can be found below in "**Step 2: Device operation**".
2. Select the lowest energy level and deliver a flash.
3. You can increase the energy level as long as it feels comfortable. You may continue to do this up to the maximum energy level unless you begin to experience discomfort.
4. If you do not feel comfortable or see adverse effects such as severe

redness or blistering stop the test immediately.

5. Wait 48 hours and examine the tested area:
  - If the skin in the test area seems normal (there is no reaction or just a mild redness), you can proceed with a full treatment on the highest comfortable energy level that you tested.

## Getting Started

### Step 1: Prepare your skin

1. Remove all jewelry.
2. Make sure the hair in the treatment area is shaved or trimmed (between treatments you can shave, but don't wax or pluck hair), and that the skin is free of any residue from: powders, creams, makeup, antiperspirants or deodorants.
3. Never use flammable liquids such as alcohol (including perfumes, sanitizers, or other applications containing alcohol) or acetone on the

skin for one hour before using the device, as it may cause burning of the skin.

### Notes:

- The device will not operate without the treatment window or if the treatment window is not properly attached.
- The device is equipped with a built-in skin-tone sensor, allowing the device to work only on suitable skin tones. This unique safety feature will prevent a flash from occurring on specific areas where your skin is too dark or too tanned, even if your general skin type is lighter.
- You can use the device while it is being charged. This may allow you limited number of pulses since battery charging is slower than battery consumption during use.

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**Important:** Do not use any cream or gel while using the device since it may prevent normal operation.

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## Step 2: Device operation

**Note:** A preliminary test should be conducted before proceeding with a full treatment. See "Preliminary Test" section above. Make sure the device is clean, dry and intact.

1. Charge your device as necessary:
  - Before your first use and when the battery is empty, fully charge the battery (full charging of the battery takes up to 2.5 hours).
  - Whenever battery level is low, as indicated by the blinking red light of the battery status indicator.
  - Fully charge the appliance at least once every 6 months, even if you have not used it in that time.
  - To charge your device, insert the plug of the power cord into the electrical outlet and the other end into the device. When the battery is fully charged, the charging light lights up green continuously.

- After charging, remove the power adapter from the wall socket and disconnect it from your device.

### Notes about charging:

- Some warming of the device and power adapter during charging is normal.
  - Charging should be done in a room temperature or cool environment, never above 40°C. The device is equipped with battery-overheat protection and will not charge if the room temperature exceeds 40°C.
  - Never cover the appliance and the adapter during charging.
2. Turn the device on. When the device is turned on it will be automatically set to the lowest energy level and the energy level display will show one green light. You may change energy levels by pressing the energy level selection buttons (increase energy level button (+) or decrease energy level button (-), according to your comfort level, as determined by the preliminary test.

3. Select the desired treatment window and simply snap it onto the device by aligning the plastic pins of the selected window to the device sockets and pressing into place. To remove the treatment window, grab both sides on the elevated dots and firmly pull until it is removed.
4. Place the treatment window on the desired treatment area, ensuring full contact with the skin. As a safety precaution the device is equipped with a safety sensor that will not trigger a flash if:
  - The device is not properly applied to the skin. In this case, the status indicator will turn "momentarily" orange.
  - Your skin tone is too dark/tanned. In this case, the status indicator will turn "momentarily" red.
  - The treatment window is not properly attached. In this case, the status indicator will turn "steady" red.
5. Apply the treatment window firmly against your skin and press the trigger button to release a flash. Following each flash, move the device to the next spot. After each flash, the device will take 1-3 seconds to be ready for the next one.
6. You may choose from 2 operational modes, the 'Pulse mode' or the Glide mode (Trigger-less):
  - **Pulse mode:** Press the trigger button once to release a single flash. Continue to the next spot and press the trigger button again to release another flash. Repeat this until treatment is complete.
  - **Glide mode (trigger-less):** Begin treatment in the 'pulse mode'. After three consecutive pulses without releasing the trigger button are released, or after pressing the trigger-less button, the device will automatically enter into the trigger-less mode and allow consecutive pulses release without the need to press or hold the

trigger button. In trigger-less mode, the device will automatically deliver a pulse (without holding the trigger button) when a pulse is ready (1-3 seconds after the previous pulse) and when proper skin tone and contact are detected by the skin tone and contact sensor. If activated by the trigger-less button, the glide mode can be turned off by additional press on the button or will be automatically turned off if the device is unused (or doesn't have proper skin contact and skin tone detected) for a few seconds. If activated by constant press on the trigger button, the glide mode will be automatically deactivated when the device is not in proper contact with the skin or when skin is too dark/ tanned.

7. After the treatment, turn off the device by pressing the "ON/OFF" button; the status indicator will turn orange while the device shuts down.

8. Perform treatment sessions according to the "**Recommended Treatment**" section.
- 

**Important:** Try not to overlap pulses - repeated pulses on the same spot may cause burns.

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**Note:** Do not treat the same area of skin more than once per treatment as it may cause skin irritation.

### **What to expect:**

Different individuals and different treatment areas may not react equally to RPL technology.

You should begin to notice a reduction in hair growth by the 6th treatment. Once the treatment protocol of 12 treatments is complete, you should see further hair growth reduction. Any hairs that remain should be finer and lighter in color. In order to maintain results, we recommend using the device once a month per treatment area.

Don't forget to select the proper treatment window (either the built-in large treatment window or the additional precise treatment window), according to the size of the treatment area and your comfort.

### **Notes:**

- It is recommended to use the highest energy setting that you found comfortable during the preliminary test.
- Lighter hair colors may require more treatments in order to see results.
- The hair will continue to grow for up to two weeks after a hair reduction session. However, as you progress through the full treatment protocol, hair will naturally and gradually fall out. The time until initial results can be noticed varies between users and depends on factors such as: age, hair color and skin tone.
- The number of sessions required for achieving long term results differs for every treatment area and between different users.
- This device is suitable for men. However, male body hair, especially on the chest, will require more treatment sessions.
- Maintenance will be needed from time to time if growth is still visible.

## Recommended treatment protocol:

Treatment areas depending on hair color and their treatment protocol:

Hair Color	Fitzpatrick Skin Level	Energy Levels	Treatment Area	Average Number of Treatments	Treatment Interval
Light Brown to Brown	I-IV (Inclusive)	1-6	<ul style="list-style-type: none"><li>• Legs</li><li>• Arms</li><li>• Underarms</li><li>• Bikini Lines</li></ul>	10-12	The 1-4 treatments will be approximately two weeks apart, followed by four-week time intervals.
Brown to Black	I-IV (Inclusive)	1-6	<ul style="list-style-type: none"><li>• Legs</li><li>• Arms</li><li>• Underarms</li><li>• Bikini Lines</li></ul>	8-10	

**Important:** Facial treatment should be performed at 1-4 energy levels only.

### **Post-treatment care**

- After treatment, you may use a calming lotion or try Sensica's post RPL lotion (available at [www.sensica.com](http://www.sensica.com)).
- Avoid using peeling and bleaching creams or similar products for at least 24 hours, as this irritates the treated skin.
- Avoid direct sun exposure for at least 2 weeks post treatment. If exposing recently treated skin to sunlight during this time period, apply sunscreen of SPF 30 or higher.

### **Cleaning & Storage**

1. Make sure to turn off the device before cleaning and storage.
2. It is recommended that the treatment window area be cleaned after every session by using a dry and clean cloth.
3. Fully charge the device every 6 months, even if you have not used it in that time.
4. If there is dirt or debris on the treatment window, clean the treatment window. If you can't get the device clean, contact our Customer Service.

### **Troubleshooting**

If the device does not turn on:

- Make sure that the device is charged (as indicated by the green light at the battery status indicator).

If the device does not trigger a pulse:

- Verify there is full contact between the device and your skin. The trigger button will activate a pulse only when the device is in full contact with the skin.
- Verify that the treatment window is properly attached to your device (the device will not be operable if the treatment window is not attached or not properly attached to the device).
- Verify that the area you are trying to treat is not too small, curved or bony. The entire treatment window should touch the treatment

area, pulling the skin flat can help to achieve this.

- If the skin tone identified by the skin tone and contact sensor is too dark, the flash activation will be blocked, and the status indicator will turn "momentarily" red.
- In case of a pulse delay after repositioning the device on a different treatment area, you should consider performing the treatment in a cooler environment. The device may pulse at a slower rate in a warm environment.

If the problem is not solved, please contact our customer service.

## Customer Service

For more information about the device, if your device is broken, stopped working, or if you need more assistance, please contact us:

 855-SENSICA  
(855-736-7422)

 support@sensica.com

## Device specification parameters

### Emitted light spectrum:

Large treatment window (yellow optical filter) 475[nm] to 1,200[nm] max.

Precise treatment window (red optical filter) 550[nm] to 1,200[nm] max.

### Maximal emitted energy flux:

5 [J/cm<sup>2</sup>]

### Selectable energy levels:

6 levels

### Treatment area:

Large treatment window: 0.7 sq inch (4.5cm<sup>2</sup>). Precise Treatment window (additional attachment): 0.3 sq inch (2cm<sup>2</sup>)

### Speed:

1 pulse every 3 seconds

### External Power Supply:

12[V], 1.8[A]  
100–240 VAC, 50/60Hz

### Device Size and Weight:

16.3 [Oz], 79 X 69 X 2.7 [in]  
461 [gr], 200 X 175 X 70 [mm]

### Technology:

Home use IPL

## Storage Instructions:

Storage and Transport Conditions	
Temperature	-10°C to 70°C (14°F to 158°F)
Humidity	55°C (0 to 90% RH at 131°F)
Pressure	non-condensing
Operational Conditions	
Temperature	10°C to 40°C (50°F to 104°F)
Humidity	30% to 70% RH
Max operating altitude	10,000 ft.

### Package include:

hand-held device, large treatment window, precise treatment window power adaptor and user guide.

## Labeling

Model: IPL300XXYYZZ



Double insulation



Type BF equipment



Consult Instructions for use



Do not dispose



Keep away from eyes



Please read all warnings and safety precautions prior to use



Do not use the Sensilight PRO device on tanned skin or after sun exposure



Do not let the device become wet. Keep away from bathtubs, showers, basins, or other vessels containing water:

Keep dry



Rechargeable battery

IP2X: Object of 12.5 mm diameter, shall not penetrate.

## IP22

IPX2: Vertically falling drops shall have no harmful effects.

This device complies with Part 15 of the FCC Rules. Operation is subject to the following two conditions:

1. This device may not cause harmful interference.
  2. This device must accept any interference received, including interference that may cause undesired operation.
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Use Sensilight PRO only with the supplied external power and accessories. For your safety, never use DC adapters which are not approved by the manufacturer.

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### **Electromagnetic compatibility (EMC) and Specifications**

- The Sensilight PRO needs special precautions regarding EMC and needs to be installed and put into service according to the EMC information provided.
- Portable and mobile RF communications equipment can affect Sensilight PRO.
- The use of accessories or replacement parts, other than those sold/specified by Sensica International, may result in increased emissions or decreased immunity of the Sensilight PRO.
- The Sensilight PRO should not be used adjacent to or stacked with other equipment and that if adjacent or stacked use is necessary, the Sensilight PRO should be observed to verify normal operation in the configuration in which it will be used.
- Portable RF communications equipment, including antennas (including peripherals such as antenna cables and external antennas) should be used no closer than 12 inches (30 cm) to any part of the device including cables specified by the manufacturer. Otherwise, degradation of the performance of this equipment could result.

## EMC Information

IEC 60601-1-2: 2014 4<sup>th</sup> Edition

The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure that it is used in such an environment.

Emissions test	Compliance	Electromagnetic environment– guidance
RF emissions CISPR 11	Group 1	The device uses must emit electromagnetic energy in order to perform its intended function. Nearby electronic equipment may be affected.
RF emissions CISPR 11	Class B	The device is suitable for use in all establishments, including domestic establishments and those directly connected to the public low voltage power supply network that supplies buildings used for domestic purposes.
Harmonic emissions IEC 61000-3-2	Class A	
Voltage fluctuations/flicker emissions IEC 61000-3-3	Complies	

IEC 60601-1-2: 2014 4<sup>th</sup> Edition

The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance level	Electromagnetic environment - guidance
Electrostatic discharge (ESD) IEC 61000-4-2	± 8 kV contact ± 2, 4, 8, 15 kV air	± 8 kV contact ± 2, 4, 8, 15 kV air	Floors should be wood, concrete or ceramic tile. If floors are covered with synthetic material, the relative humidity should be at least 30%.
Electrical fast transient/burst IEC 61000-4-4	± 2 kV for power supply lines	± 2 kV for power supply lines	Mains power quality should be that of a typical commercial or hospital environment.
Surge IEC 61000-4-5	± 1 kV line(s) to line(s)	± 1 kV line(s) to line(s)	Mains power quality should be that of a typical commercial or hospital environment.
Voltage dips Voltage Interruptions IEC 61000-4-11	0% $U_T$ , 0,5 cycle 0% $U_T$ , 5 cycles 70% $U_T$ , 30 cycles 0% $U_T$ , 300 cycles	0% $U_T$ , 0,5 cycle 0% $U_T$ , 5 cycles 70% $U_T$ , 30 cycles 0% $U_T$ , 300 cycles	Mains power quality should be that of a typical commercial or hospital environment. If the user of the device requires continued operation during power mains interruptions, it is recommended that the device be powered from an uninterruptible power supply or a battery.
Power frequency (50/60 Hz) magnetic field IEC 61000-4-8	30 A/m	30 A/m	Power frequency magnetic fields should be at levels characteristic of a typical location in a typical commercial or hospital environment.

NOTE  $U_T$  is the a.c. mains voltage prior to application of the test level.

The device is intended for use in the electromagnetic environment specified below. The customer or the user of the device should assure that it is used in such an environment.

Immunity Test	IEC 60601 Test Level	Compliance level	Electromagnetic environment – guidance
<p>Conducted RF IEC61000-4-6</p>	<p>3Vrms 0.15 MHz to 80 MHz</p> <p>6Vrms in ISM and amateur radio bands between 0.15 MHz to 80 MHz</p>	<p>3Vrms 0.15 MHz to 80 MHz</p> <p>6Vrms in ISM and amateur radio bands between 0.15 MHz to 80 MHz</p>	<p>Portable and mobile RF communications equipment should be used no closer to any part of the device including cables, than the recommended separation distance calculated from the equation applicable to the frequency of the transmitter.</p> <p><b>Recommended separation distance</b></p> <p><math>d=3.5/3 \sqrt{P}=1.17\sqrt{P}</math></p> <p><math>d=3.5/6 \sqrt{P}=0.58\sqrt{P}</math></p>
<p>Radiated RF IEC 61000-4-3</p>	<p>80% AM at 1kHz 10 V/m 80 MHz to 2.7 GHz 80% AM at 1kHz</p>	<p>80% AM at 1kHz 10 V/m 80 MHz to 2.7 GHz 80% AM at 1kHz</p>	<p><math>d=3.5/10 \sqrt{P}=0.35\sqrt{P}</math> 80 MHz to 800 MHz</p> <p><math>d=7/10 \sqrt{P}=0.7\sqrt{P}</math> 800 MHz to 2.7 GHz</p> <p>where P is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer and d is the recommended separation distance in metres (m).</p>

			<p>Field strengths from fixed RF transmitters, as determined by an electromagnetic site survey,<sup>a</sup> should be less than the compliance level in each frequency range.<sup>b</sup></p> <p>Interference may occur in the vicinity of equipment marked with the following symbol: </p>
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NOTE 1 At 80 MHz and 800 MHz, the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

<sup>a</sup> Field strengths from fixed transmitters, such as base stations for radio (cellular/cordless) telephones and land mobile radios, amateur radio, AM and FM radio broadcast and TV broadcast cannot be predicted theoretically with accuracy. To assess the electromagnetic environment due to fixed RF transmitters, an electromagnetic site survey should be considered. If the measured field strength in the location in which the device is used exceeds the applicable RF compliance level above, the device should be observed to verify normal operation. If abnormal performance is observed, additional measures may be necessary, such as re-orienting or relocating the device.

<sup>b</sup> Over the frequency range 150 kHz to 80 MHz, field strengths should be less than 3 V/m.

Recommended separation distances between portable and mobile RF communications equipment and the device

The device is intended for use in an electromagnetic environment in which radiated RF disturbances are controlled. The customer or the user of the device can help prevent electromagnetic interference by maintaining a minimum distance between portable and mobile RF communications equipment (transmitters) and the device as recommended below, according to the maximum output power of the communications equipment.

Rated Maximum Output Power of Transmitter W	Separation distance according to frequency of transmitter m			
	0.15 MHz to 80 MHz $d=3.5/\sqrt{3P}$ $=1.17\sqrt{P}$	80 MHz to 800 MHz $d=3.5/\sqrt{6P}$ $=0.58\sqrt{P}$	80 MHz to 800 MHz $d=3.5/\sqrt{10P}$ $=0.35\sqrt{P}$	800 MHz to 2,7 GHz $d=7/\sqrt{10P}$ $=0.7\sqrt{P}$
0.01	0.12	0.058	0.035	0.07
0.1	0.37	0.18	0.11	0.22
1	1.17	0.58	0.35	0.7
10	3.70	1.83	1.11	2.21
100	11.67	5.8	3.5	7

For transmitters rated at a maximum output power not listed above, the recommended separation distance  $d$  in metres (m) can be estimated using the equation applicable to the frequency of the transmitter, where  $P$  is the maximum output power rating of the transmitter in watts (W) according to the transmitter manufacturer.

NOTE 1 At 80 MHz and 800 MHz, the separation distance for the higher frequency range applies.

NOTE 2 These guidelines may not apply in all situations. Electromagnetic propagation is affected by absorption and reflection from structures, objects and people.

## Test specifications for ENCLOSURE PORT IMMUNITY to RF wireless communications equipment

Test Frequency (MHz)	Band <sup>a)</sup> (MHz)	Service <sup>a)</sup>	Modulation <sup>a)</sup>	Maximum Power (W)	Distance (m)	Immunity Test Level (V/m)	Compliance Level (V/m)
385	380-390	TETRA 400	Pulse modulation <sup>b)</sup> 18Hz	1.8	0.3	27	27
450	430-470	GMRS 460 FRS 460	FM <sup>c)</sup> $\pm 5$ kHz deviation 1 kHz sine	2	0.3	28	28
710 745 780	704-787	LTE Band 13, 17	Pulse modulation <sup>b)</sup> 217 Hz	0.2	0.3	9	9
810 870 930	800-960	GSM 800/900, TETRA 800, iDEN 820, CDMA 850, LTE Band 5	Pulse modulation <sup>b)</sup> 217 Hz	2	0.3	28	28
1720 1845 1970	1700-1990	GSM 1800; CDMA 1900; GSM 1900; DECT; LTE Band 1, 3, 4, 25; UMTS	Pulse modulation <sup>b)</sup> 18 Hz	2	0.3	28	28

2450	2400-2570	Bluetooth, WLAN 802.11 b/g/n, RFID 2450, LTE Band 7	Pulse modulation <sup>b</sup> 217 Hz	2	0.3	28	28
5240	5100-5800	WLAN 802.11 a/n	Pulse modulation <sup>b</sup> 217 Hz	0.2	0.3	9	9
5500							
5785							

NOTE If necessary to achieve the IMMUNITY TEST LEVEL, the distance between the transmitting antenna and the ME EQUIPMENT or ME SYSTEM may be reduced to 1 m. The 1 m test distance is permitted by IEC 61000-4-3.

<sup>a)</sup> For some services, only the uplink frequencies are included.

<sup>b)</sup> The carrier shall be modulated using a 50% duty cycle square wave signal.

<sup>c)</sup> As an alternative to FM modulation, 50% pulse modulation at 18 Hz may be used because while it does not represent actual modulation, it would be worst case.