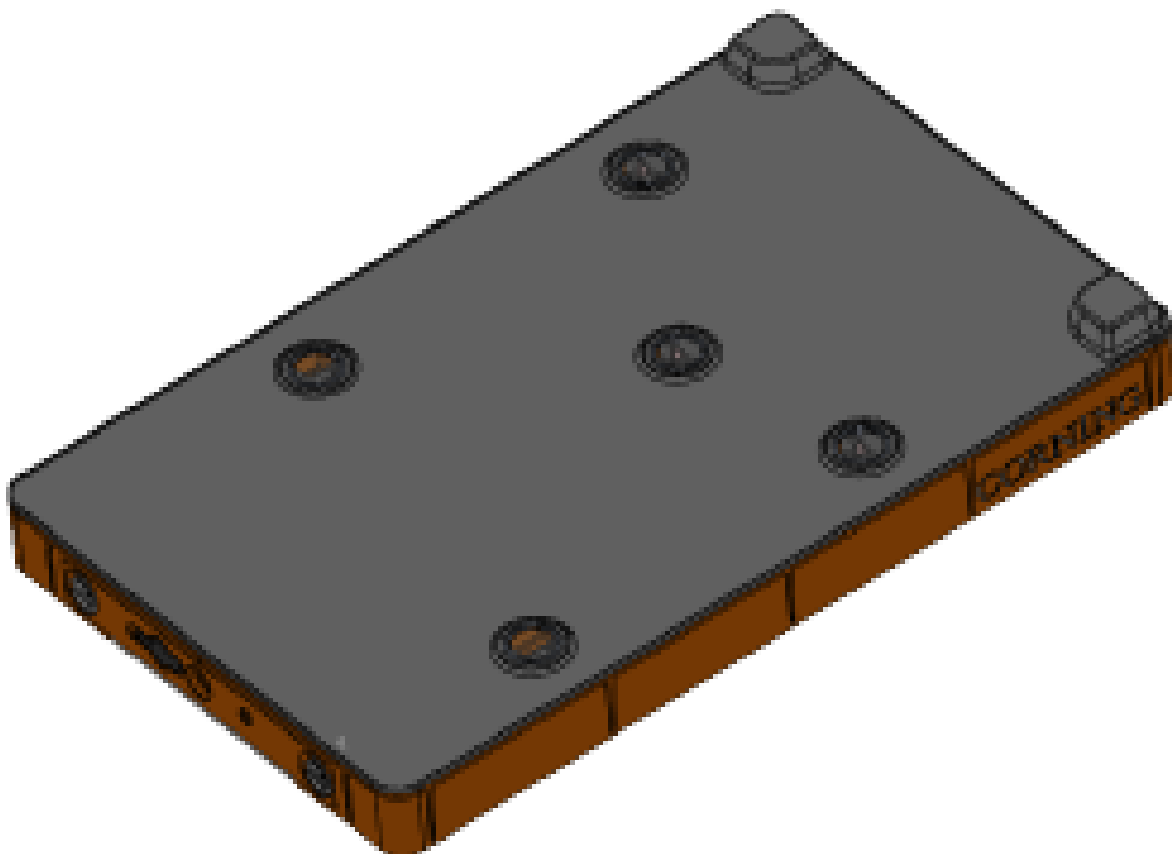


# Corning® StackSENSE™ Imaging Base

Instruction Manual

Catalog Numbers:

Cat. #	Features
6880	StackSENSE System for Process Development, Standalone version, Includes 1 user license, 3 Imaging Bases, computer and network assembly for 1 incubator. Installation support and training quoted separately
6884	Additional Imaging Base; includes a charger
6887	Network assembly for 1 additional incubator; includes 3 dual-band access points, 4-port switch and cabling



Insert a TABLE OF CONTENTS Page

### **Safety Information**

To avoid personal injury while using the Corning® StackSENSE™ System:

- Do not attempt to remove or repair the outer case of the unit.
- Never attempt to repair, disassemble, or modify this unit yourself, as tampering with this product may result in injury.
- Do not drop the unit or allow objects to fall onto it.
- Do not allow the unit to be submerged or immersed in liquid.
- Do not stand or lean on the unit. Doing so may result in breakage and/or injury.
- Do not autoclave this unit.
- Do not perform the sterilization cycle of an incubator with the StackSENSE Imaging Base inside.
- Do not use acetone to clean the unit.
- Always use the provided external power supply to charge the unit.

### **Emissions and Interference – Warning Statements**

This device complies with Part 15 of the FCC Rules/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 operation.

Le présent appareil est conforme aux CNR d'Industrie Canada applicables aux appareils radio exempts de licence. L'exploitation est autorisée aux deux conditions suivantes : (1) l'appareil ne doit pas produire de brouillage, et (2) l'utilisateur de l'appareil doit accepter tout brouillage radioélectrique subi, même si le brouillage est susceptible d'en compromettre le fonctionnement.

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 reasonable protection against harmful interference in a residential installation. This equipment generates uses and can radiate radio frequency energy and, if not installed and used 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:

- Reorient or relocate the receiving antenna.
- Increase the separation between the equipment and receiver.

- Connect the equipment into an outlet on a circuit different from that to which the receiver is connected.
- Consult the dealer or an experienced radio/TV technician for help.

#### MPE Requirements

Operation Frequency: 2400 - 2483.5 MHz

RF power:<20dBm

To satisfy FCC / IC / EU RF exposure requirements, a separation distance of 20 cm or more should be maintained between the antenna of this device and persons during device operation.

To ensure compliance, operations at closer than this distance is not permitted.

Les antennes installées doivent être situées de façon à ce que la population ne puisse y être exposée à une distance de moins de 20 cm. Installer les antennes de façon à ce que le personnel ne puisse approcher à 20 cm ou moins de la position centrale de l'antenne.

La FCC des états-unis stipule que cet appareil doit être en tout temps éloigné d'au moins 20 cm des personnes pendant son fonctionnement.

#### Intended Use Statements

The Corning StackSENSE Imaging Base is intended to be used within a standard cell culture incubator or warm room at 37°C and 95% RH.

### 1.0 Introduction

The Corning® StackSENSE™ Imaging Base is designed to enable remote monitoring of cell confluence with Corning CellSTACK® vessels. The unit contains 5 optical assemblies (cameras) that can capture high-quality images from the bottom layer of a CellSTACK vessel. Cell images are wirelessly transferred to the software for viewing and automated confluence value determination.

The StackSENSE Imaging Base was designed to be compatible with Corning CellSTACK culture vessels (2-layer to 40-layer vessels). **NOTE:** This system is not compatible with the 1-layer CellSTACK. The top surface of the StackSENSE Imaging Base contains alignment features that enable proper engagement with the CellSTACK vessel.

### 2.0 Getting Started

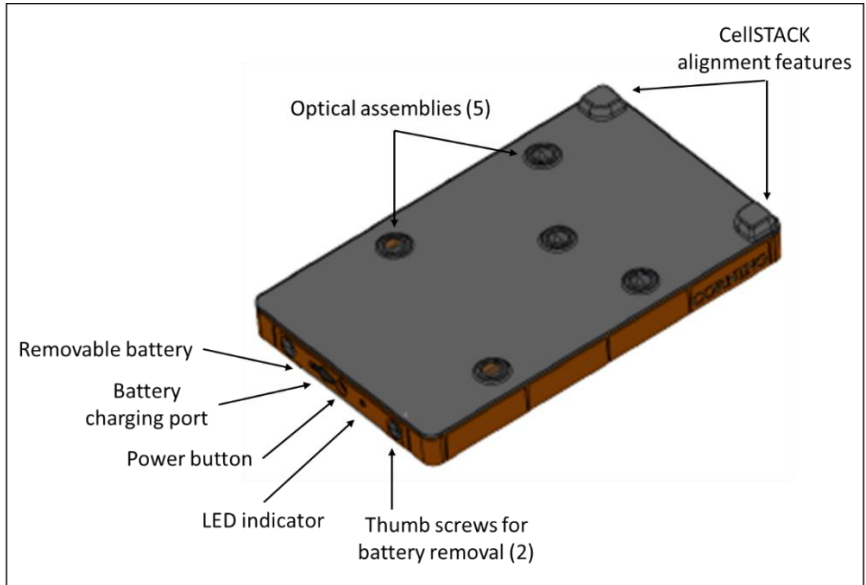
Product contents include the following items:

- Corning StackSENSE Imaging Base
- Battery (removable for charging or replacement)
- AC adapter model number GST18A05
- Instruction Manual - online

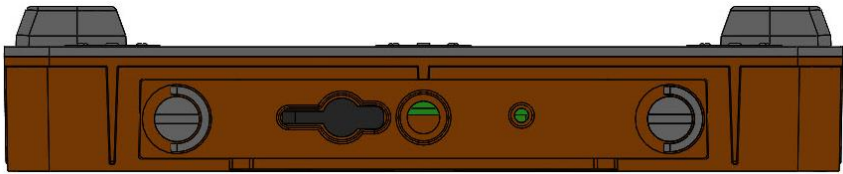
### 3.0 Material Requirements:

1. Corning StackSENSE Imaging Base
2. Corning CellSTACK vessel (2-layer to 40-layer vessels)
3. StackSENSE software and networking equipment

4.0 Diagram of Corning StackSENSE Imaging Base:



**Figure 1.** Schematic of Corning StackSENSE Imaging Base.



**Figure 2.** Schematic of Corning StackSENSE Imaging Base side with button and LED indicator

Indicator LED modes:

	Imaging Base status	LED color	LED description
Indicator LED	Wi-Fi and power on	Green	Wi-Fi transmitting - Green flashing (5 times/second)
		Green	Module start process- Green flashing (1 time/second)
		Green	Power on - Green solid
	Battery charging	Blue	Charging - Blue flashing
		Blue	Charged - Blue solid
	Issue	Red	Wi-Fi transmission failure - Red flashing
		Red	Module failure - Red solid

5.0 Overview of optical assemblies

The StackSENSE Imaging Base contains 5 optical assemblies, which allows the user to evaluate multiple locations on the bottom layer of the CellSTACK vessel. Each optical assembly can

illuminate a fixed field of view and then capture a high-quality image of the attached cells. The optical assemblies are designed to properly align with the bottom surface of a CellSTACK vessel and do not require focusing by the user.

#### 6.0 Charging the StackSENSE Imaging Base battery:

##### **SAFETY WARNING – Use only the original or Corning-authorized replacement battery for the Imaging Base**

To charge while the battery is installed within the StackSENSE Imaging Base:

1. Remove the rubber plug on the battery charging port.
2. Insert the AC adaptor into the battery charging port.
3. The LED indicator will flash blue during the charging process. When charging is complete, the LED indicator will stop flashing and display a solid blue color.

To charge the battery after it is removed from the StackSENSE Imaging Base:

1. Use the thumb screws on the battery compartment to remove the battery.
2. Insert the AC adaptor into the battery charging port.
3. The LED indicator will flash blue during the charging process. When charging is complete, the LED indicator will stop flashing and show a solid blue color.
4. Reinsert the battery into the StackSENSE Imaging Base and tighten the thumb screws.

It is recommended to fully charge the battery prior to using the Imaging Base for multi-day experiments. The Imaging Base will capture >900 images on a full charge (1 image/4 hours for 30 days). Typical charge times for the battery range from 2-5 hours.

#### 7.0 Powering on the StackSENSE Imaging Base:

The Imaging Base is turned on by firmly pressing the power button until it locks in the “on” position (button is slightly recessed in “on” position). The LED indicator will slowly flash green (1-time per second) for approximately 30 seconds as the unit starts up. The LED indicator will stop flashing after the initial power up phase is completed.

Once the LED indicator is solid green the unit is ready for use

#### 8.0 Powering off the Imaging Base:

The Imaging Base is powered off by firmly pressing in the power button. The power button will go from the recessed “on” position to the non-recessed “off” position, and the LED indicator will turn off.

#### 9.0 Overview of image capture process using the Imaging Base:

Note: Ensure that the Imaging Base is on a level surface prior to capturing images. Operating the Imaging Base on non-level surfaces may impact image quality.

The Imaging Base image capture schedule is controlled via the software. The image capture process can be initiated in two different manners.

1. During power on: The Imaging Base will capture a set of images each time that the unit is manually powered on.
2. Scheduled via software: The Imaging Base will capture images according to a custom schedule that the user creates in the “Build Protocol App”. This section describes the process that occurs each time the Imaging Base captures a set of images.
  - i. First, the LED indicator will start flashing green slowly for approximately 30 seconds. During this time the Imaging Base is communicating with the control software and is receiving the parameters for the next image capture step (Exposure, LED power, cycle time).
  - ii. Next, the LED indicator will turn solid green while the Imaging Base is capturing images. The Imaging Base captures images sequentially using the 5 cameras.
  - iii. The LED indicator will flash green rapidly while the Imaging Base transmits the recently captured images to the control software via Wi-Fi.
  - iv. The LED indicator will stop flashing after the images are successfully transmitted to the software.
  - v. The LED indicator will remain off until the next image capture step (determined by the cycle time or user-defined schedule).

#### 10.0 Cleaning and Care:

To ensure optimal image quality the glass windows on the Imaging Base should be free of smudges and debris. The windows can be maintained by gently cleaning with lint-free wipes.

The Imaging Base is compatible with common cell culture sterilization solutions (70% ethanol, 10% bleach, sporicide). The Imaging Base can be sprayed with the sterilant and wiped to disinfect.

#### 11.0 Troubleshooting:

##### **The Imaging Base does not turn on.**

Ensure the battery is properly inserted into the Imaging Base and secured with thumb screws. Ensure the battery is charged. The LED indicator on the battery will flash blue during charging and will display solid blue when fully charged.

##### **The Imaging Base is not transmitting images.**

Ensure that access points are in close proximity to the Imaging Base. Access points should be located inside incubators (if applicable).

##### **Poor image quality (dark images).**

Ensure that the Imaging Plate is on a level surface. Ensure that there is no condensation inside the vessel.

##### **Imaging Base is not transmitting images (LED indicator flashing red).**

Ensure that the Imaging Base is in close proximity to network access point. The Imaging Base communicates via Wi-Fi with the access point. The Wi-Fi signal may not travel through incubator doors and walls.

#### 12.0 Technical Specifications:

▸ Dimensions

Length                    33.5 cm (13.2 inches)  
Width                    20.5 cm (8.1 inches)  
Height                   3.0 cm (1.2 inches) (4.0 cm (1.6 inches) including the alignment features)

▸ Weight                    1.2 Kgs (2.6 lbs.)

Battery Life

▸ The Imaging Base will capture >900 images on a full charge (1 image capture cycle/4 hours for 30 days).

▸ Cycle life of battery: >300 cycles

**Environmental Limits**

The Corning StackSENSE Imaging Base is designed for use in:

- Indoor environments
- Ambient temperature between 2°C and 50°C
- Humidity between 50% to 95% R.H., non-condensing
- Air containing up to 5% CO<sub>2</sub>
- Altitude up to 2,000 meters
- Not for use in potentially explosive environments

**IP Rating**

- Corning StackSENSE Imaging Base, IP22
- External power supply, IP41

**Equipment Ratings**

- External power supply: 100-240 VAC, 50-60 Hz, 0.5 A
- Battery is a 3.7V 7600 mAh Li-ion Battery
- Battery charging connection: 5.5 mm barrel jack, 2.1 x 11 mm center positive
- Fuse: 2A, 250V 5 x 20 mm time delay (slow blow)
- Overvoltage Category II
- Pollution Degree 2

**Limited Warranty.**

Corning Incorporated (Corning) warrants that this product will be free from defects in material and workmanship for a period of one (1) year from date of purchase. CORNING DISCLAIMS ALL OTHER WARRANTIES WHETHER EXPRESSED OR IMPLIED, INCLUDING ANY IMPLIED WARRANTIES OF MERCHANTABILITY OR OF FITNESS FOR A PARTICULAR PURPOSE. Corning's sole obligation shall be to repair or replace, at its option, any product or part thereof that proves defective in material or workmanship within the warranty period, provided the purchaser notifies Corning of any such defect. Corning is not liable for any incidental or consequential damages, commercial loss or any other damages from the use of this product.

This warranty is valid only if the product is used for its intended purpose and within the guidelines specified in the supplied instruction manual. This warranty does not cover damage caused by accident, neglect, misuse, improper service, natural forces or other causes not arising from defects

in original material or workmanship. This warranty does not cover motor brushes, fuses, light bulbs, batteries or damage to paint or finish. Claims for transit damage should be filed with the transportation carrier.

In the event this product fails within the specified period of time because of a defect in material or workmanship, contact Corning Customer Service at: USA/Canada 1.800.492.1110, outside the U.S. +1.978.442.2200, visit [www.corning.com/lifesciences](http://www.corning.com/lifesciences), or contact your local support office.

Corning's Customer Service team will help arrange local service where available or coordinate a return authorization number and shipping instructions. Products received without proper authorization will be returned. All items returned for service should be sent postage prepaid in the original packaging or other suitable carton, padded to avoid damage. Corning will not be responsible for damage incurred by improper packaging. Corning may elect for onsite service for larger equipment.

Some states do not allow limitation on the length of implied warranties or the exclusion or limitation of incidental or consequential damages. This warranty gives you specific legal rights. You may have other rights which vary from state to state.

No individual may accept for, or on behalf of Corning, any other obligation of liability, or extend the period of this warranty.

For your reference, make a note of the serial and model number, date of purchase, and supplier here.

Serial No. \_\_\_\_\_ Date Purchased \_\_\_\_\_

Model No. \_\_\_\_\_

Supplier \_\_\_\_\_.

#### 15.0 Equipment Disposal

According to Directive 2012/19/EU of the European Parliament and Council of 4 July 2012 on waste electrical and electronic equipment (WEEE), the Corning® StackSENSE™ Imaging Base is marked with the crossed-out wheeled bin and must not be disposed of with domestic waste.

Consequently, the purchaser shall follow instructions for reuse and recycling of waste electronic and electrical equipment (WEEE) provided with the product and available at [www.corning.com/weee](http://www.corning.com/weee).

