

E-Gel® iBase™ Power System E-Gel® Safe Imager™ Real-time Transilluminator

**General information for using the E-Gel® iBase™
Power System with firmware version 1.4.0**

**Catalog nos. G6400, G6400EU, G6400UK,
G6400ST, G6400STEU, G6400STUK,
G6465, G6465EU, G6465UK,
G6500,
G6500ST, G6500STEU, G6500STUK,
G6511ST, G6511STEU, G6511STUK,
G6512ST, G6512STEU, G6512STUK,
G6612ST, G6612STEU, G6612STUK**

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Product Contents

Types of Products

This manual is supplied with the following products:

Product	Catalog no.
E-Gel® iBase™ Power System	G6400 G6400EU G6400UK
E-Gel® Safe Imager™ Real-time Transilluminator (Device and Amber Filter)	G6500
E-Gel® iBase™ and E-Gel® Safe Imager™ Combo Kit (US/EU/UK versions)	G6465 G6465EU G6465UK
E-Gel® EX 1% Starter Kit (US/EU/UK versions)	G6511ST G6511STUK G6511STEU
E-Gel® EX 2% Starter Kit (US/EU/UK versions)	G6512ST G6512STUK G6512STEU
E-Gel® SizeSelect™ 2% Starter Kit (US/EU/UK versions)	G6612ST G6612STEU G6612STUK
E-Gel® Safe Imager™ Real-time Transilluminator Starter Kit for Cloning (US/EU/UK versions)	G6500ST G6500STEU G6500STUK

Contents

The contents of the products are listed below.

Component	G6400 G6400EU G6400UK	G6400ST G6400STEU G6400STUK	G6500	G6465 G6465EU G6465UK	G6500ST G6500STEU G6500STUK
E-Gel® iBase™ Power System	1 each	1 each	--	1 each	1 each
E-Gel® CloneWell 0.8% SYBR Safe™	--	18 cassettes	--	--	18 cassettes
E-Gel® Safe Imager™ Real-time Transilluminator	--	--	1 each	1 each	1 each
E-Gel® High Range DNA Ladder	--	--	--	--	100 appl.

Continued on next page

Product Contents, Continued

Component	G6511ST G6511STEU G6511STUK	G6512ST G6512STEU G6512STUK	G6612ST G6612STEU G6612STUK
E-Gel® iBase™ Power System	1 each	1 each	1 each
E-Gel® EX 1%	10 cassettes	--	--
E-Gel® EX 2%	--	10 cassettes	
E-Gel® SizeSelect™ 2%	--	--	10 cassettes
E-Gel® Safe Imager™ Real-time Transilluminator	1 each	1 each	1 each
50 bp DNA Ladder	--	--	50 µg
E-Gel® 1 Kb Plus DNA Ladder	100 appl.	100 appl.	--

Upon Receiving Instrument

Examine the unit carefully for any damage incurred during transit. Any damage claims must be filed with the carrier. The warranty does not cover in-transit damage.

Product Specifications

E-Gel® iBase™ Specifications

The specifications for the E-Gel® iBase™ Power System are listed below.

Dimensions:	18.4 cm x 11 cm x 5.75 cm
Weight:	500 g
Electrical Requirements:	100-240VAC 50/60Hz 1.0 A
Temperature:	Ambient 5°C to 40°C
Built-in Features:	LCD Display Alarm LED light

Adapter Specifications

Use only the UL Listed, original adapter supplied.

Input:	100-240 VAC, 50/60Hz, 1A
Output:	48 VDC, 0.8 A min.

Continued on next page

Product Specifications, Continued

E-Gel[®] Safe Imager[™] Specifications

The specifications for the E-Gel[®] Safe Imager[™] Real-time Transilluminator are listed below.

Viewing surface dimensions:	62 mm × 77 mm
Case dimensions:	200 mm × 110 mm × 43 mm
Amber filter dimensions:	121 mm × 138 mm × 31 mm
Weight of Safe Imager[™]:	243 g
Weight of Filter:	55 g
Electrical Requirements:	100-240VAC 50/60Hz 1.0A
Temperature:	Ambient 5° C to 40° C
Built in Features:	LED light
LED life:	50,000 hours
LED Specifications:	Array of 12 high power LEDs emitting at 480 ± 5 nm. The LEDs used radiate less than 10 Lumens each at 200 mA.
Included accessories:	Amber filter unit and viewing glasses for viewing results.

Adapter Specifications

Use only the UL Listed adapter supplied with the starter kit, or with the E-Gel[®] iBase[™] Power System.

Input:	100-240 VAC, 50/60Hz, 1A
Output:	48 VDC, 0.8 A min.

Continued on next page

Product Specifications, Continued

Use Conditions

The E-Gel® iBase™ Power System and E-Gel® Safe Imager™ Real-time Transilluminator comply with the Underwriters Laboratories Inc. regulation and the European Community Safety requirements. Operation of the E-Gel® iBase™ Power System and E-Gel® Safe Imager™ Real-time Transilluminator are subject to the following conditions:

- Indoor use.
- Altitude below 2,000 meters.
- Temperature range: 5° to 40° C.
- Maximum relative humidity: 80%.
- Installation categories (over voltage categories) II; Pollution degree 2
- Mains plug is a disconnect device and must be easily accessible.
- Do not attempt to open the iBase™ or Safe Imager™ device. To honor the warranty, iBase™ and Safe Imager™ device can only be opened and serviced by Invitrogen.
- The protection provided by the equipment may be impaired if the equipment is used in a manner not specified by Invitrogen.
- The device must be connected to a mains socket outlet with protective earthing connections.
- Ventilation requirements: no special requirements

The E-Gel® iBase™ Power System and E-Gel® Safe Imager™ Real-time Transilluminator comply with part 15 of the FCC rules.

Operation of the devices are subject to the following conditions:

- The device may not cause harmful interference
- The device must accept any interference received, including interference that may cause undesired operation.

Ethrog Biotechnologies Ltd., an Invitrogen company, is the manufacturer and owner of the UL file. For more information, contact Technical Support (page 38) or Ethrog:

Ethrog Biotechnologies Ltd.
12 Hamada St.
P.O. Box 4035
Rehovot, Israel 74103

Safety Information



Caution
(For iBase™)

- Do not attempt to open the E-Gel® iBase™ Power System.
 - The adapter must be connected to a mains socket outlet with matching protective earthing connections.
 - Mains plug is a disconnect device and must be easily accessible.
 - Do not touch or handle the E-Gel® cassette during a run (when the green light is illuminated).
-

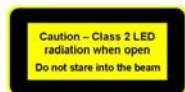


Caution
(For Safe Imager™)

- Do not attempt to open the E-Gel® Safe Imager™ Real-time Transilluminator.
 - The adapter must be connected to a mains socket outlet with matching protective earthing connections.
 - Mains plug is a disconnect device and must be easily accessible.
 - Use of controls or adjustment or performance of procedures other than those specified herein may result in hazardous radiation exposure.
 - Class 2 LED radiation when open.
 - Do not stare into the beam
 - Always use the E-Gel® Safe Imager™ amber filter unit or E-Gel® Safe Imager™ viewing glasses provided with this device while viewing gels to protect your eyes. Amber filters absorb radiation from 190-530nm, with an OD of over 3.
-



The E-Gel® Safe Imager™ Real-time Transilluminator is classified as a Class 1 LED product, which is indicated by the symbol to the left.



A yellow label is affixed to the side of the E-Gel® Safe Imager™ Amber filter saying: “Caution – Class 2 LED radiation when open. Do not stare into the beam.”

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Safety Information, Continued

Detailed Safety Information E-Gel® Safe Imager™

The E-Gel® Safe Imager™ Real-time Transilluminator is an electrical device. Never touch the power cord or outlet with wet hands. Do not use this device in damp areas or while standing on damp floors. Do not attempt to open the E-Gel® Safe Imager™ Real-time Transilluminator.

The E-Gel® Safe Imager™ Real-time Transilluminator should be used with the power cord supplied your starter kit, or with the E-Gel® iBase™ Power System. This power cord has a universal transformer compatible with 90 V to 220 V. Only these power cords should be used to power the device. Attach the power cord to the E-Gel® Safe Imager™ Real-time Transilluminator at the back of the device. Plug the other end of the power cord into a properly grounded electrical outlet, ensuring the correct plug adaptor is attached. Always disconnect the E-Gel® Safe Imager™ Real-time Transilluminator from the electrical outlet before cleaning the device.

The E-Gel® Safe Imager™ Real-time Transilluminator does not produce UV-light, however, it does utilize an intense blue light for viewing gels. It should be noted that published literature has identified blue light as a possible risk factor for macular degeneration, however, no clinical studies have been published. Therefore, the E-Gel® Safe Imager™ amber filter unit or E-Gel® Safe Imager™ viewing glasses provided with this device should be used to protect your eyes while viewing gels. The amber filter unit is NOT a safety screen for UV emission, and will NOT protect your eyes when viewing gels on UV transilluminators. Although the viewing glasses do block UV light, they are not designed for use as UV safety glasses.

Do not leave the E-Gel® Safe Imager™ Real-time Transilluminator switched on for extended periods of time. After viewing and documenting the gel or sample, always switch the unit off.

Overview

Introduction In this section, we first describe the following devices:

- **E-Gel® iBase™ Power System**, which is designed to run E-Gel® single-comb, double-comb, CloneWell™, EX, and SizeSelect™ cassettes.
- **E-Gel® Safe Imager™ Real-time Transilluminator**, designed to view gels run on the iBase™ that use the SYBR® Safe DNA gel stain or E-Gel® EX, and SizeSelect™ gels that use a proprietary blue-light excitable fluorescent nucleic acid stain. Other blue light excitable stains visible with the E-Gel® Safe Imager™ include SYBR® Gold, SYBR® Green I and II, SYPRO® Ruby, SYPRO® Orange, and Coomassie Fluor™ Orange.

Together, these systems form an integrated system for running and viewing SYBR® Safe stained E-gel® agarose gels.

E-Gel® iBase™ Power System

The E-Gel® iBase™ Power System is an easy-to-use, programmable, automated device designed to simplify electrophoresis of single comb or double comb E-Gel® cassettes from Invitrogen. The E-Gel® iBase™ Power System is a base and a power supply combined in one device.

E-Gel® iBase™ Features

The E-Gel® iBase™ Power System offers:

- Program selection option
 - Time control
 - Reverse mode running option
 - High power capability
 - LCD display
 - USB port to enable future program updates
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Overview, Continued

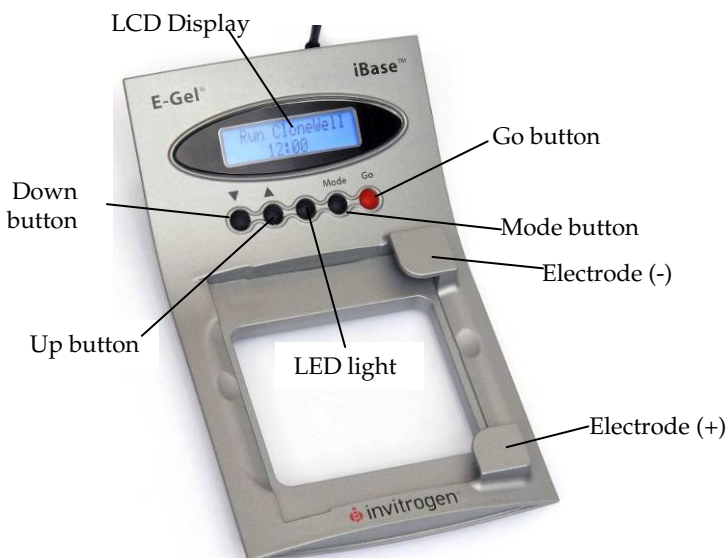
E-Gel® iBase™ Description

The E-Gel® iBase™ Power System has an **LCD display**, which shows information about the program selected and running time. The display is located near the upper edge of the iBase™. Just below the display, the E-Gel® iBase™ Power System has four buttons (see image below):

- A **Go** button, to start programs
- A **Mode** button, to toggle between programs, minutes, and seconds
- An **Up** button (marked ▲), to select between programs on the display and increase running time
- A **Down** button (marked ▼), to select between programs on the display and decrease running time

A **LED light** is located in the middle of the four buttons, which indicates the status of the iBase™. The gel cassette is inserted into the two **electrode connections** at the lower half of the iBase™.

E-Gel® iBase™ Power System, top view



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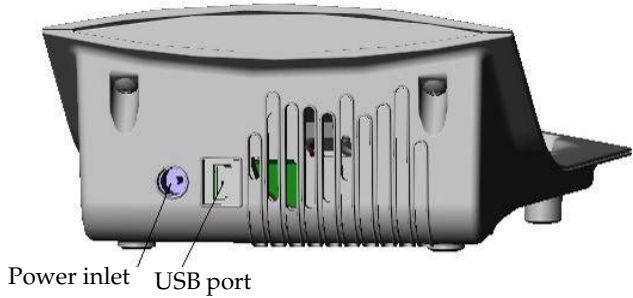
Overview, Continued

E-Gel® iBase™ Description

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At the back, the E-Gel® iBase™ Power System contains a USB port and a power inlet. The supplied power cord has a matching connector that inserts into the power inlet, and connects the E-Gel® iBase™ Power System to the electrical outlet. A separate, stand-alone power supply is not required to run the iBase™.

E-Gel® iBase™ Power System, back view



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Overview, Continued

E-Gel® Safe Imager™ Real-time Trans-illuminator

The E-Gel® Safe Imager™ Real-time Transilluminator is designed for viewing E-Gel® with SYBR® Safe gels and E-Gel® CloneWell® gels on the laboratory bench top for real time monitoring on the E-Gel® iBase™ Power System or for documentation purposes at the end of the run directly on the E-Gel® Safe Imager™.

E-Gel® Safe Imager™ Features

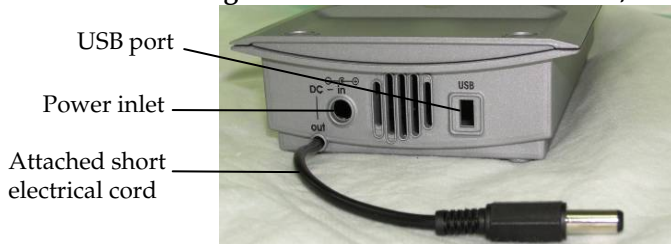
The E-Gel® Safe Imager™ Real-time Transilluminator has the following features:

- An array of 12 LED sources behind a blue filter that emit high intensity blue light
- A red **ON/OFF** button, located at the front
- 30 seconds and 5 minutes automatic shut-off options
- A LED indicator light just behind the ON/OFF button, to indicate the status of the Safe Imager™.
- A short electrical cord to connect to the iBase™
- USB port to enable future program updates

E-Gel® Safe Imager™ Real-time Transilluminator, top



E-Gel® Safe Imager™ Real-time Transilluminator, back



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Overview, Continued

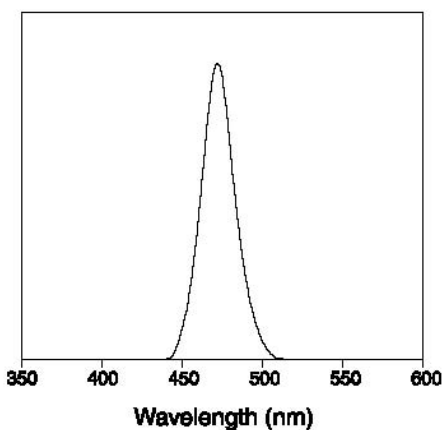
Emission Spectrum of E-Gel[®] Safe Imager[™]

Light from the array of 12 LED sources inside the transilluminator passes through a blue filter producing a single-intensity signal at approximately 480 nm, effective for the excitation of the SYBR[®] Safe DNA gel stain, and many of our other nucleic acid and protein stains such as SYBR[®] Gold, SYBR[®] Green I and II, SYPRO[®] Ruby, SYPRO[®] Orange, Coomassie Fluor[™] Orange, and the proprietary blue-light excitable fluorescent nucleic acid stain used in E-Gel[®] EX, and SizeSelect[™] gels.

Unlike UV-transilluminators, the E-Gel[®] Safe Imager[™] Real-time Transilluminator does not produce UV light, however, it does utilize an intense blue light for viewing gels. Therefore, the E-Gel[®] Safe Imager[™] amber filter unit or E-Gel[®] Safe Imager[™] viewing glasses provided with this device should always be used to protect your eyes while viewing gels.

Note: The amber filter unit is **NOT** a safety screen for UV emission, and **will NOT** protect your eyes when viewing gels on UV transilluminators. And although the viewing glasses do block UV light, they **are not** designed for use as UV safety glasses.

Emission spectrum for the E-Gel[®] Safe Imager[™] Real-time Transilluminator.



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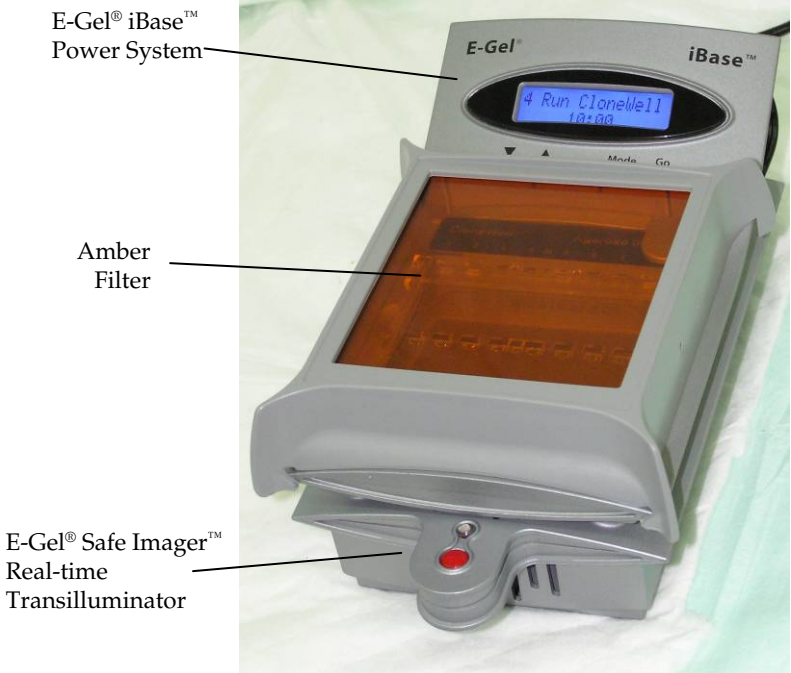
Overview, Continued

E-Gel® iBase™ and E-Gel® Safe Imager™ Integrated System

E-Gel® iBase™ Power System and E-Gel® Safe Imager™ Real-time Transilluminator form an integrated system for running and viewing SYBR® Safe stained E-gels® agarose gels. The iBase™ fits neatly on the Real-time Transilluminator, and power is provided through a shared power cord / adapter (included with the E-Gel® iBase™ Power System).

With the matching amber filter mounted on top of the iBase™ (included with the E-Gel® Safe Imager™ Real-time Transilluminator), you can follow the migration of DNA bands while they are running, or document your results at the end of the run directly.

iBase™ and Safe Imager™ Integrated System

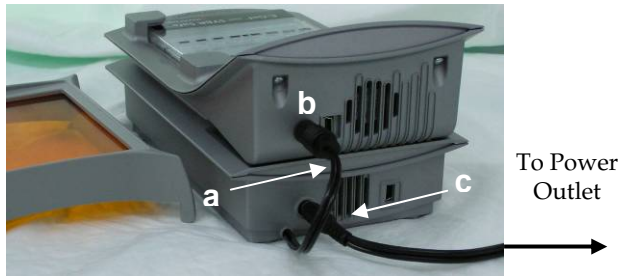


Device Installation

Installing the E-Gel® iBase™ Power System and E-Gel® Safe Imager™ Transilluminator

Follow these instructions to install the E-Gel® iBase™ Power System with the Safe Imager™ Real-time Transilluminator.

1. Place the E-Gel® Safe Imager™ Real-time Transilluminator on a level bench, with enough space around the unit to allow air circulation and prevent overheating.
2. Place the iBase™ directly onto the E-Gel® Safe Imager™ Real-time Transilluminator so that the legs of the iBase™ fit directly into the grooves of the Safe Imager™.
3. Plug the short electrical cord of the E-Gel® Safe Imager™ Real-time Transilluminator (a) into the power inlet of the iBase™ (b).



4. Plug the connecting end of the power cord with the transformer (c) into the back inlet of the Safe Imager™ and connect the power cord to the electrical socket. A steady, red light illuminates the E-Gel® Safe Imager™ Real-time Transilluminator, indicating that it is properly connected and ready to use. The fan in the iBase™ begins, and the LED (yellow) and LCD are activated, indicating the device is on. The fan and LED will turn off after 3 seconds if no gel is inserted. The LCD initially displays the firmware version for a few seconds, then changes to display the default program (PRE-RUN, 2 minutes) or the last program used.

Continued on next page

Device Installation, Continued

Installing the E-Gel[®] iBase[™] Power System Alone

1. Verify that the power cord supplied with the unit is compatible with the local socket format. Contact Technical Support (page 38) if the plug does not fit.
2. Plug the connecting end of the power cord with the transformer (a) into the back inlet of the iBase[™], then plug the other end to an electrical outlet. Use only properly grounded AC outlets and power cords. The fan in the device begins, and the LED (yellow) and LCD are activated, indicating the device is on. The fan and LED will turn off after 3 seconds if no gel is inserted. The LCD initially displays the firmware version for a few seconds, then changes to display the default program (PRE-RUN, 2 minutes) or the last program used.



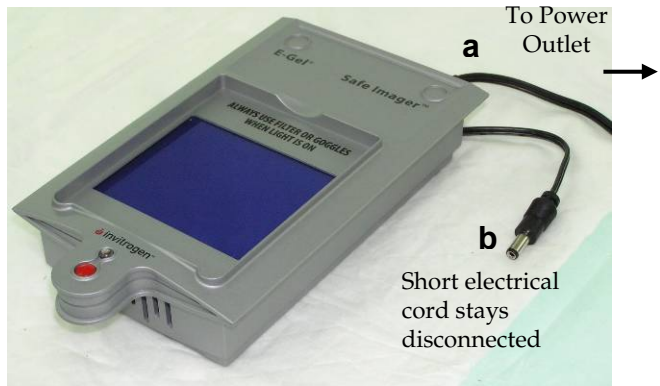
Note: The fan in the device operates constantly during an electrophoresis run. However, when the power is on but there is no electrophoresis run, the fan operates only upon demand of the electronic components.

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Device Installation, Continued

Installing the E-Gel® Safe Imager™ Trans-illuminator Alone

1. Place the E-Gel® Safe Imager™ Real-time Trans-illuminator on a level bench, with enough space around the unit to allow air circulation and prevent overheating.
2. Plug the connecting end of the power cord with the transformer (a) into the back inlet of the Safe Imager™ and connect the power cord to the electrical socket. The short electrical cord (b) remains disconnected.



3. A steady, red light illuminates the E-Gel® Safe Imager™ Real-time Transilluminator, indicating that it is properly connected and ready to use.
-

Running the iBase™ Power System

Selecting Programs

Before inserting the E-gel® cassette make sure the program you want to use is set up properly.

1. Press the Mode button (M) until the program field (a) blinks.



2. Select the appropriate program for the gel type using the Up/Down (▲\ ▼) buttons to change the program (see page 21 for list of programs).
3. To change the run time, press the Mode button until the minutes or seconds fields blink. Change the values using the Up/Down buttons. **Do not** exceed the maximal run time for the program (see page 21).

Note: To reset the iBase™ Power System, press and hold the **Go** button for three seconds until the display reads “E-Gel iBase”.

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Running the iBase™ Power System, Continued

Program Parameters

The E-Gel® iBase™ Power System **firmware version 1.4** is pre-programmed with 10 different programs for running various types of E-Gel® cassettes. Refer to the table below for the run parameters, default time, and maximum allowable time for each program.

	Program	Gel Type	Default Time	Maximal Time
0	PRE-RUN	E-Gel® 0.8%, 1.2%, 2%, 4% E-Gel® double comb E-Gel® CloneWell	2 min	2 min
1	E-Gel 0.8-2%	E-Gel® 0.8%, 1.2%, 2%	26 min	40 min
2	E-Gel 4%	E-Gel® 4%	30 min	40 min
3	E-Gel DC	E-Gel® double comb	13 min	20 min
4	CloneWell 0.8%	E-Gel® CloneWell	12 min	60 min
5	Reverse E-Gel	E-Gel® CloneWell E-Gel® SizeSelect	2 min	3 min
6	Speed E-Gel	E-Gel® 0.8%, 1.2%, 2%	7 min	7 min
7	E-Gel EX 1-2%	E-Gel® EX 1%, 2%	10 min	20 min
8	E-Gel EX 4%	E-Gel® EX 4%	15 min	20 min
9	SizeSelect 2%	E-Gel® SizeSelect	8 min	20 min

Speed Runs

The **SPEED E-Gel** program is used to perform a quick run to obtain a “yes/no” result. The program utilizes high power and is only suitable for 0.8%, 1.2% and 2% E-Gel® cassettes. This program is limited to 7 minutes, where the bands migrate less than half the length of the gel. A run exceeding 7 minutes, under these conditions results in a defective run. The **SPEED E-Gel** mode is **not** compatible with E-Gel® 4% cassettes.

Running the iBase™ Power System, Continued

Running the Gel

For instructions on sample preparation, refer to the E-Gel® manual supplied with the gels, or the **E-Gel® Technical Guide**.

1. Select the program and set the time for your run (see page 20). If you need to pre-run the gel, follow the instructions on page 24.
2. Open the package and remove the gel. Gently remove the comb(s) from the gel.
3. Slide the cassette into the two electrode connections on the E-Gel® iBase™ device. Press on the left side of the cassette to secure it into the iBase™. The two electrodes on the right side of the gel cassette must be in contact with the two electrode connections on the base. The LED illuminates with a **steady red** light to show that the cassette is correctly inserted.

Slide cassette into electrodes Press left side to secure



4. Select the appropriate program to run your cassette, according to the table on the previous page.

Continued on next page

Running the iBase™ Power System, Continued

Running the Gel, continued *Continued from previous page*

5. Load your samples as directed by the E-Gel® manual. Be sure to load the appropriate molecular weight markers, and add water to any empty wells.



6. If you want to view the bands with the E-Gel® Safe Imager™ Real-time Transilluminator while the gel runs, place the Amber filter unit on top of the gel and view the gel as described in **Using E-Gel® Safe Imager™ Real-time Transilluminator** (page 27).
7. To start electrophoresis press the **Go** button, a **green light** illuminates to show that the run is in progress. The LCD displays the count down time while the run is in progress.
8. The run will stop automatically when the programmed time has elapsed. The iBase™ signals the end of the run with a **flashing red light** and rapid beeping for 30 seconds followed by a single beep every minute. The LCD displays "Run Complete Press Go".
9. Press and release the **Go** button to stop the beeping. The light turns to a **steady red light** and the LCD display shows the last selected time and program.

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Running the iBase™ Power System, Continued

Pre-Runs

The **PRE-RUN** program is used prior to running any of the following types of E-Gel® cassettes:

- E-Gel® 0.8%, 1.2%, 2%, 4%
- E-Gel® double comb
- E-Gel® CloneWell

Do not use the **PRE-RUN** program for E-Gel® EX or E-Gel® SizeSelect cassettes.

To pre-run a gel follow these instructions:

1. Select the **PRE-RUN** program on the iBase™ device.
2. Open the package and remove the gel. **Do not** remove the comb(s) until step 6.
3. Slide the cassette into the two electrode connections on the E-Gel® iBase™ device. Press on the left side of the cassette to secure it into the iBase™. The two electrodes on the right side of the gel cassette must be in contact with the two electrode connections on the base (see page 22). The LED illuminates with a **steady red** light to show that the cassette is correctly inserted.
4. Select the program **PRE-RUN 2 min** and press the **Go** button to pre-run the gel. The LED light changes to **green**, indicating that the cassette is in the pre-run mode.
5. After two minutes, the pre-run stops automatically as indicated by a red light and a beeping sound.
6. Gently remove the comb(s) from the gel.
7. Proceed to **Running the Gel**, Step 4 (page 22).

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Running the iBase™ Power System, Continued

Downstream Application You are now ready to proceed to imaging or any other application with the gel:

- View SYBR® Safe stained gels and E-Gel® EX and SizeSelect™ agarose gels as described in **Using E-Gel® Safe Imager™ Real-time Transilluminator** (page 27).
 - Remove the E-Gel® cassette from the iBase™ and view gels using your own imaging system
 - For E-Gel® CloneWell gels, refer to the QRC for further running information
-

Interrupting a Run

You can interrupt an electrophoresis run at any time by **pressing and releasing** the **Go** button to stop the current. The stopped current is indicated by a **flashing red light** and the digital display flashes to indicate that the run was interrupted. The display also shows “Press GO to Run, Hold Go to Reset”.

You can remove the gel from the iBase™ to check the progress of the run. Then:

- To **continue** the run from the point at which it was stopped, reinsert the gel and press and release the **Go** button. The light changes to steady green and the LCD display shows the count down time. It is also possible to change the remaining run time (but not the program) as described on page 20 before continuing the run.
 - To **cancel** the rest of the interrupted run, press and hold the **Go** button for a few seconds. The LCD display will reset and the base will return to Ready Mode. If desired, you can then select a new program or run time as described on page 20 and rerun the gel.
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Running the iBase™ Power System, Continued

Running in Reverse Direction

The REVERSE E-Gel program is used to run E-Gel® agarose gels in a reverse direction. This is particularly useful for isolating fragments using E-Gel® CloneWell and E-Gel® SizeSelect™ agarose gels.

1. Toggle between program, minutes, and seconds by pressing the Mode button (M) until program blinks.
2. Select the REVERSE E-Gel Program using the Up/Down (▲ \ ▼) buttons to change the program.
3. If you want to change the run time, press the Mode button until the minutes or seconds blink and change the values using the Up/Down buttons (the maximal run time for reverse running is 3 minutes).
4. To start electrophoresis press the Go button, a **green light** will illuminate to show that the run is in progress. The LCD display will show the count down time while the run is in progress.
5. The iBase™ will signal the end of the run with a **flashing red light** and rapid beeping for 30 seconds followed by a single beep every minute, while the LCD display will read "Run Complete Press GO".
6. Press and release the Go button to stop the beeping. The light turns to a **steady red light** and the LCD display shows the last selected time and program.
7. Remove the E-Gel® cassette from the iBase™. You are now ready to proceed to imaging or any other application with the gel.



Note

We recommend that you disconnect the E-Gel® iBase™ Power System from the electrical outlet when not in use for a prolonged period of time.

Maintaining the E-Gel® iBase™

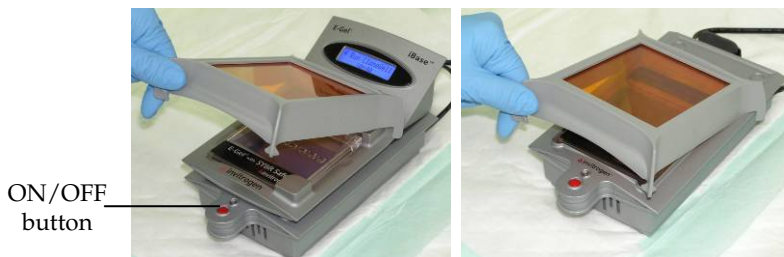
Keep the surfaces of the E-Gel® iBase™ Power System free of contaminants. To clean, disconnect from power source and wipe with a dry cloth. Do not attempt to open or service the bases. To honor the warranty, bases should only be opened and serviced by Invitrogen.

Using the E-Gel[®] Safe Imager[™]

Introduction Instructions to view gels with the E-Gel[®] Safe Imager[™] Real-time Transilluminator are described in this section.

Viewing Gels

1. Place the Amber filter unit on top of the sample as shown below, or use the viewing glasses when excising bands from DNA gels.



Caution

Always use the E-Gel[®] Safe Imager[™] Amber filter unit or E-Gel[®] Safe Imager[™] viewing glasses; they help to visualize DNA when using blue-light excitable stains, and also prevent prolonged exposure of your eyes to the intense blue light.

2. Switch the E-Gel[®] Safe Imager[™] Transilluminator on using the ON/OFF button in one of these ways:
 - To activate the light for **30 seconds** press and release the ON/OFF button. The LED indicator light flashes green throughout the run.
 - To activate the light for **5 minutes** press and hold the ON/OFF button for a few seconds. The LED indicator light turns a steady green, then turns to flashing green in the last 30 seconds of the run.
3. To turn off the light, press and release the ON/OFF button. The LED indicator light turns red.

Note: A flashing red LED indicates an error. Wait until the LED turns a steady red before turning on the device again. If the LED does not turn red after the run, disconnect the Safe Imager[™] and try again after a few minutes. If this problem persists, contact the Invitrogen Technical Support (page 38).

Continued on next page

Using E-Gel[®] Safe Imager[™], Continued

Documenting Results

To document your results you may use any standard imaging device. Due to the small footprint, the E-Gel[®] Safe Imager[™] Real-time Transilluminator may fit inside the cabinet of your current gel documentation system. The documentation can be performed with or without the iBase[™] unit on the Safe Imager[™]. In many cases, satisfactory results are obtained by placing the amber filter unit on top of the gel and photographing/imaging as normal.

The distance between the camera and the gel may have to be adjusted. In addition some CCD documentation systems may include a filter that will work in place of the amber filter unit (contact the manufacturer for filter specifications). Please refer to the **E-Gel[®] Technical Guide** for instructions on best documentation for E-Gel[®] with SYBR[®] Safe gels or the proprietary blue-light excitable fluorescent nucleic acid stain in E-Gel[®] EX and SizeSelect[™] agarose gels.

If you wish to document gels with other stains compatible with the E-Gel[®] Safe Imager[™] Real-time Transilluminator (see page 15) please refer to the directions on imaging conditions and filters in the instruction manual of the relevant stain. Make sure to switch the E-Gel[®] Safe Imager[™] Real-time Transilluminator on before documenting the results.

Maintaining the E-Gel[®] Safe Imager[™]

After viewing or documenting the results, switch the E-Gel[®] Safe Imager[™] Real-time Transilluminator off. The Safe Imager[™] can be cleaned with a dry cloth, a wet cloth with water and mild soap or ethanol. Avoid damaging or scratching the glass surface of the Safe Imager[™] with abrasive cleaners, sharp instruments, or harsh solvents. Before cleaning the instrument, disconnect it from the electrical outlet.



Note

We recommend that you disconnect the E-Gel[®] Safe Imager[™] Real-time Transilluminator from the electrical outlet when not in use for a prolonged period.

E-Gel[®] iBase[™] Quick Reference Guide

Introduction A quick reference guide for operating the E-Gel[®] iBase[™] Power System is provided below.

Mode	Action	Sound	LED Light	LCD Display
Base plugged in	iBase [™] connected to an electrical outlet	Fan working for 3 seconds	Yellow light for 3 seconds if a cassette is not inserted, or red light if a cassette is inserted	Default program (RUN E-Gel), or last program used
Ready (with no current flowing through gel)	Gel cassette inserted into a base	--	Steady red	Default program or last program used
Pre-run	Press and release the Go button	--	Steady green	Program name and count down time
End of Pre-run	Automatic	Beeping sound	Flashing red	"Run Complete Press Go" and count up time
Run	Press and release the Go button	--	Steady green	Program and count down time
End of run	Automatic	Continuous beeping for 30 seconds followed by a single beep every minute	Flashing red	"Run Complete Press Go" and count up time
Pause (manually end the run)	Press and release the Go button during the run	--	Flashing red with or without cassette	Program name and remaining count down time alternating with "Press Go to Run Hold Go to Reset"
Restart after manual stop	Press and release the Go button	--	Steady green	Program and count down time

Continued on next page

E-Gel[®] iBase[™] Quick Reference Guide,

Continued

Mode	Action	Sound	LED Light	LCD Display
Return to Ready mode after a manual stop	Press and hold the Go button	--	With gel cassette in – steady red Without gel cassette – no light	Last program and time setting
No cassette	--	--	--	Last program used. Backlight turns off after 3 minutes
No cassette	Press Go button	--	--	“Cassette not detected”
Timer setting	Press the Mode button until the minutes or seconds blink and change the values using the Up/Down buttons (▲\▼)	--	With gel cassette – steady red Without gel cassette – no light	Time increases by minutes or 10 seconds
Program setting	Press the Mode button (M) until the program blinks. Select the appropriate program for the gel type using the Up/Down (▲\▼) buttons	--	With gel cassette – steady red Without gel cassette – no light	Selected program
Remove cassette during run or failure detected	Without pressing the Go button	Rapid beeping	Flashing red	“Cassette Missing Hold Go to Reset”
Time change during run	Change time using Up/Down buttons (▲\▼)	--	Steady green	Program and Count down time

E-Gel[®] Safe Imager[™] Quick Reference Guide

Introduction A quick reference guide for operating the E-Gel[®] Safe Imager[™] Real-time Transilluminator is provided below.

Mode	Action	LED Indicator Light
Safe Imager [™] plugged in	Safe Imager [™] connected to an electrical outlet and ready to use.	steady, red light
Light on for 30 seconds	Press and release ON/OFF button	flashing green light
Light on for 5 minutes	press and hold the ON/OFF button for a few seconds	steady green followed by a flashing green light the last 30 seconds of the run
Light turned off	press and release the ON/OFF button	Steady, red light
Error	Wait until the LED turns a steady red before turning on the device again. If the LED does not turn red after the run, disconnect the Safe Imager [™] and try again after a few minutes. If this problem persists, please contact the Invitrogen Technical Support (38).	flashing red LED

Troubleshooting

Introduction The table below provides some solutions to the problems you might encounter when using iBase™ or E-Gel® Safe Imager™ Real-time Transilluminator

For troubleshooting resolution and sample preparation problems, refer to the manual supplied with the gels.

Problem	Reason	Solution
No current	Copper contacts in the iBase™ are damaged due to improper use	Make sure that the copper contact in the base is intact.
	Expired or defective gel cassette used	Use fresh gel cassette. Use properly stored gels before the specified expiration date.
	Gel cassette is not correctly inserted into the base	Remove cassette and reinsert; a steady red light is illuminated on the base when the cassette is correctly inserted and power is on.
	iBase™ not properly connected to E-Gel® Safe Imager™ Real-time Transilluminator	Plug the E-Gel® Safe Imager™ Real-time Transilluminator short electrical cord into the iBase™ power inlet directly
Over-run the gel or need more time to run gel	Accidentally selected an incorrect program	Select program according to program parameters on page 21. If you are at the beginning of the run, stop the run and select the desired program. If you are well into the run, check the gel to see where the loading dye is running. Estimate the amount of time remaining and manually stop the run.

Continued on next page

Troubleshooting, Continued

Problem	Reason	Solution
Failure Mode indicated by “Cassette Missing Hold Go to Reset”, and continuous loud beeping	Defective cassette	Disconnect iBase™ and remove the gel cassette from the base. Press and hold the Go button for 2 seconds to return to Ready Mode. Use a fresh gel cassette.
	Cold cassette	Use a room temperature cassette stored at room temperature. Avoid storing gel cassettes at 4°C.
	Improper operating conditions	Use iBase™ at room temperature (20°C to 25°C).
Bands not visible in middle area of gel	Gel overheated due to selection of improper time or program	Let gel cool down and check again. Use suggested settings next time.
High background, suboptimal, or no image when using Safe Imager™	No filters or wrong filter set.	Refer to E-Gel® Technical Guide to determine the optimal filter sets to use, or contact the instrument manufacturer for advice.
	Photographic settings not optimal.	Optimize settings of your system empirically for E-Gel® with SYBR® Safe or other blue-light excitable stains (see page 15). You may need to increase the exposure time or gain setting.
	Low sample concentration	Use E-Gel® EX or E-Gel® SizeSelect™ agarose gels.
Stripes visible on image when using Safe Imager™	No IR coating on camera lens.	Use IR blocking filter or emission filter with IR coating.

Downloading Firmware Upgrades

Firmware Update

Instructions are provided below to upgrade the firmware on the E-Gel® iBase™ Power System.

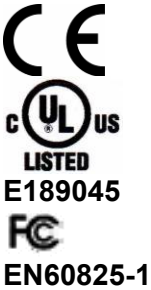
1. Download the iBase™ updater program from www.invitrogen.com/ibase.
2. Disconnect the electrical plug of the iBase™ from the electrical outlet.
3. Please make sure the USB cable is not connected.
4. Press and hold the "Go" button (red button).
5. Continue holding the "Go" button and Insert the power plug into the electrical outlet, and then connect the cable to the iBase™ unit.
6. Release the "Go" button and connect the iBase™ to this computer with a USB A to B cable (A into the computer, B end into the iBase™). The computer should now begin to search for the iBase™. This step may take several minutes.
7. The program will inform it is searching for the iBase™.
8. The program will inform the iBase™ has been found.
9. Please press 'Next' to begin the iBase™ Firmware Update.
10. Please do not disconnect or use device until iBase™ Updater is complete!
11. The update was successful
12. Please disconnect the USB cable from the iBase™ device.

The iBase™ device is now updated.

Trouble-shooting

In case a message "The Update Failed". Retry the program and if the problem persists contact Technical Support for further assistance.

Explanation of Symbols and Warnings



The CE mark symbolizes that the product conforms to all applicable European Community provisions for which this marking is required.

The E-Gel® iBase™ Power System and E-Gel® Safe Imager™ Real-time Transilluminator comply with the Underwriters Laboratories Inc. regulation and the European Community Safety requirements. The E-Gel® iBase™ Power System and E-Gel® Safe Imager™ Real-time Transilluminator comply with part 15 of the FCC rules. The E-Gel® Safe Imager™ Real-time Transilluminator complies with AS/NZS CISPR22:04(Australia). The product adheres to the EN60825-1 standard, publication date: EN 60825-1:1994 + A1 + A2

Operation of the E-Gel® iBase™ Power System and E-Gel® Safe Imager™ Real-time Transilluminator are subject to the conditions described in this manual. The protection provided by the equipment may be impaired if the equipment is used in a manner not specified by Invitrogen.



Caution

The **Caution** symbol denotes a risk of safety hazard. Refer to accompanying documentation.



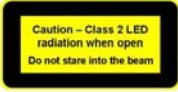
WEEE

The **WEEE** (Waste Electrical and Electronic Equipment) symbol indicates that this product should not be disposed of in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provisions to reduce the environmental impact of WEEE. Visit www.invitrogen.com/weee for collection and recycling options.



The E-Gel® Safe Imager™ Real-time Transilluminator is classified as a Class 1 LED product, which is indicated by the symbol to the left.

Explanation of Symbols and Warnings, Continued



A yellow label is affixed to the side of the E-Gel[®] Safe Imager[™] Amber filter saying: “Caution – Class 2 LED radiation when open, do not stare into the beam.”

Purchaser Notification

Limited Use Label License No. 5: Invitrogen Technology

The purchase of this product conveys to the buyer the non-transferable right to use the purchased amount of the product and components of the product in research conducted by the buyer (whether the buyer is an academic or for-profit entity). The buyer cannot sell or otherwise transfer (a) this product (b) its components or (c) materials made using this product or its components to a third party or otherwise use this product or its components or materials made using this product or its components for Commercial Purposes. The buyer may transfer information or materials made through the use of this product to a scientific collaborator, provided that such transfer is not for any Commercial Purpose, and that such collaborator agrees in writing (a) not to transfer such materials to any third party, and (b) to use such transferred materials and/or information solely for research and not for Commercial Purposes. Commercial Purposes means any activity by a party for consideration and may include, but is not limited to: (1) use of the product or its components in manufacturing; (2) use of the product or its components to provide a service, information, or data; (3) use of the product or its components for therapeutic, diagnostic or prophylactic purposes; or (4) resale of the product or its components, whether or not such product or its components are resold for use in research. For products that are subject to multiple limited use label licenses, the terms of the most restrictive limited use label license shall control. Life Technologies Corporation will not assert a claim against the buyer of infringement of patents owned or controlled by Life Technologies Corporation which cover this product based upon the manufacture, use or sale of a therapeutic, clinical diagnostic, vaccine or prophylactic product developed in research by the buyer in which this product or its components was employed, provided that neither this product nor any of its components was used in the manufacture of such product. If the purchaser is not willing to accept the limitations of this limited use statement, Life Technologies is willing to accept return of the product with a full refund. For information about purchasing a license to use this product or the technology embedded in it for any use other than for research use please contact Out Licensing, Life Technologies, 5791 Van Allen Way, Carlsbad, California 92008 or outlicensing@lifetech.com

Accessory Products

Additional Products

Additional products available separately from Invitrogen are listed in the table below. For more information, visit our website (www.invitrogen.com) or contact Technical Support (page 38).

Product	Quantity	Catalog no.
E-Gel® EX 1% 10 Pak	10 gels	G4010-01
E-Gel® EX 1% 20 Pak	20 gels	G4020-01
E-Gel® EX 2% 10 Pak	10 gels	G4010-02
E-Gel® EX 2% 20 Pak	20 gels	G4020-02
E-Gel® EX 4% 10 Pak	10 gels	G4010-04
E-Gel® SizeSelect™ 2% 10 Pak	10 gels	G661002
E-Gel® CloneWell 0.8 % SYBR Safe™	18 gels	G6618-08
E-Gel® 1.2% with SYBR Safe™	18 gels	G5218-01
E-Gel® 2% with SYBR Safe™	18 gels	G5218-02
E-Gel® 0.8% with Ethidium Bromide	18 gels	G5018-08
E-Gel® 1.2% with Ethidium Bromide	18 gels	G5018-01
E-Gel® 2% with Ethidium Bromide	18 gels	G5018-02
E-Gel® 4% with Ethidium Bromide	18 gels	G5018-04
1.2% Clear E-Gels®	18 gels	G5518-01
E-Gel® 0.8% double comb with Ethidium Bromide	18 gels	G6018-08
E-Gel® 2% double comb with Ethidium Bromide	18 gels	G6018-02
E-Gel® Sample Loading Buffer	4 × 1.25 ml	10482-055
E-Gel® 25bp DNA Ladder	100 apps	10488-095
E-Gel® 50bp DNA Ladder	100 apps	10488-099
E-Gel® 1Kb Plus DNA Ladder	100 apps	10488-090

Molecular Weight Markers

The recommended marker for each gel type is listed in the manual supplied with the gels, or the **E-Gel® Technical Manual**. For more information, visit www.invitrogen.com or contact Technical Support (page 38).

Technical Support

Web Resources



Visit the Invitrogen website at www.invitrogen.com for:

- Technical resources, including manuals, vector maps and sequences, application notes, MSDSs, FAQs, formulations, citations, handbooks, etc.
 - Complete Technical Support contact information
 - Access to the Invitrogen Online Catalog
 - Additional product information and special offers
-

Contact Us

For more information or technical assistance, call, write, fax, or email. Additional international offices are listed on our website (www.invitrogen.com).

Corporate Headquarters:

5791 Van Allen Way
Carlsbad, CA 92008 USA
Tel: 1 760 603 7200
Tel (Toll Free): 1 800 955 6288
Fax: 1 760 602 6500
tech_support@invitrogen.com

Japanese Headquarters:

LOOP-X Bldg. 6F
3-9-15, Kaigan
Minato-ku, Tokyo 108-0022
Tel: 81 3 5730 6509
Fax: 81 3 5730 6519
jpinfo@invitrogen.com

European Headquarters:

Inchinnan Business Park
3 Fountain Drive
Paisley PA4 9RF, UK
Tel: +44 (0) 141 814 6100
Fax: +44 (0) 141 814 6117
eurotech@invitrogen.com

MSDS

Material Safety Data Sheets (MSDSs) are available on our website at www.invitrogen.com/msds.

Certificate of Analysis

The Certificate of Analysis provides detailed quality control and product qualification information for each product. Certificates of Analysis are available on our website. Go to www.invitrogen.com/support and search for the Certificate of Analysis by product lot number, which is printed on the box.

Continued on next page

Technical Support, Continued

iBase™ Warranty

Invitrogen (a part of Life Technologies Corporation) warrants that E-Gel® iBase™ Power System will be free from defects in material and workmanship for a period of one year from date of purchase. If a defect is present, Invitrogen will, at its option, repair, replace, or refund the purchase price of this product at no charge to you, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse or misapplication, or from ordinary wear and tear. This warranty shall be limited to the replacement of defective products. **It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.**

Safe Imager™ Warranty

Invitrogen (a part of Life Technologies Corporation) warrants that E-Gel® Safe Imager™ Real-time Transilluminator will be free from defects in material and workmanship for a period of one year from date of purchase. If a defect is present, Invitrogen will, at its option, repair, replace, or refund the purchase price of this product at no charge to you, provided it is returned during the warranty period. This warranty does not apply if the product has been damaged by accident, abuse, misuse or misapplication, or from ordinary wear and tear. This warranty shall be limited to the replacement of defective products. **It is expressly agreed that this warranty will be in lieu of all warranties of fitness and in lieu of the warranty of merchantability.**

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NOTES

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Corporate Headquarters

Invitrogen Corporation
1600 Faraday Avenue
Carlsbad, CA 92008
T: 1 760 603 7200
F: 1 760 602 6500
E: tech.service@invitrogen.com

For country-specific contact information visit our web site at www.invitrogen.com