

USER GUIDE

invitrogen
by *life* technologies

E-Base™ Electrophoresis Device

Catalog Numbers EB-M03 and EB-D03

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Overview

Introduction

The E-Base™ device is an easy-to-use, programmable, automated device combining a base and power supply to simplify electrophoresis of pre-cast E-PAGE™ 48, E-PAGE™ 96, E-Gel® 48, and E-Gel® 96 gels from Life Technologies.

Types of E-Base™ Devices

Mother E-Base™ device (Cat. no. EB-M03)

Built with an electrical plug that can connect directly to an electrical outlet. Used for electrophoresis of one E-PAGE™ 48/96 or E-Gel® 48/96 gel.

Daughter E-Base™ device (Cat. no. EB-D03)

Connects to the Mother E-Base™ device, allowing the independent electrophoresis of two or more E-PAGE™ 48/96 or E-Gel® 48/96 gels.

Note: The Daughter E-Base™ device does not have an electrical plug and cannot be used without a Mother E-Base™ device. See pages 5–6 for diagrams of the bases.

E-Base™ Specifications

Dimensions:	14.6 cm × 15 cm × 5.3 cm
Weight:	370 g (Mother E-Base™ device) 271 g (Daughter E-Base™ device)
Safety:	Double Insulation
Temperature:	Ambient 5°C to 40°C
Built-in Features:	Digital time display (00–99 min) alarm, light LED
	<ul style="list-style-type: none">• The SBS (Society for Biomolecular Screening) standard 96-well plate format of the E-Base™ device fits on most robotic platforms allowing the loading and electrophoresis of gels on the E-Base™ device directly on the automated liquid handling system.• The gel cassette used with the unit shall have suitable insulation to operate at hazardous voltages up to 120VDC.

Overview, Continued

Mother E-Base™ device

Each Mother E-Base™ device has a **pwr/prg** (power/program) button (right side) and a time button (left side) on the lower right side of the base. The lower left side of each Mother E-Base™ device contains a light LED and a digital time display (00–99). The gel cassette is inserted into the two electrode connections. The Mother E-Base™ device is connected to an electrical outlet with the electrical plug.

Mother E-Base™ Device



Note: The Mother E-Base™ device has been tested with up to three Daughter E-Base™ devices connected at one time.

The E-Base™ device is pre-programmed with 2 programs specific for each gel type as described below:

Program	Gel Type
EG	E-Gel® 48/96
EP	E-PAGE™ 48/96

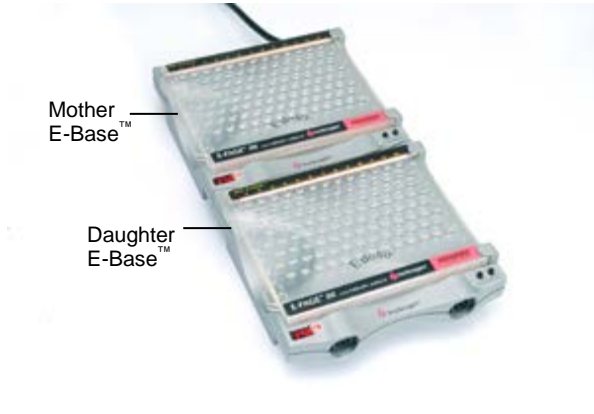
Overview, Continued

Daughter E-Base™ device

The Daughter E-Base™ device is similar to the Mother E-Base™ device except the Daughter E-Base™ device does not have an electrical cord and cannot be connected to an electrical outlet.

The Daughter E-Base™ device connects to a Mother E-Base™ device or to another Daughter E-Base™ device (if already connected to a Mother E-Base™ device). Once connected to a Mother E-Base™ device, each Daughter E-Base™ device is designed to function independently of the Mother E-Base™ device or other Daughter E-Base™ devices.

Mother E-Base™ Device/Daughter E-Base™ Device



Instructions for Use

Introduction

Instructions to perform electrophoresis using a Mother E-Base™ device and Daughter E-Base™ device are described in this section.

For sample preparation, refer to the manual supplied with the gels.

Connecting a Daughter E-Base™ device

Ensure the Mother E-Base™ device is unplugged prior to attaching a Daughter E-Base™ device.

1. Connect the Daughter E-Base™ device to a Mother E-Base™ device or another Daughter E-Base™ device already connected to a Mother E-Base™ device.
 2. Plug the Mother E-Base™ device into an electrical outlet using the electrical plug on the base.
The displays show EP or the last program used (EP or EG) if there are no gel cassettes on the bases.
-

Selecting a Program

Select the appropriate program for your application prior to inserting a gel into the E-Base™ device.

1. Plug the Mother E-Base™ device into an electrical outlet using the electrical plug on the base.
The display shows EP or the last program used (EP or EG) if there is no gel cassette on the base.
2. Select the appropriate program for the type of gel by pressing and releasing the **pwr/prg** button:

Gel Type	Program	Default Run Time
E-Gel®	EG	12 minutes
E-PAGE™	EP	14 minutes

Instructions For Use, Continued

Setting the Run Time

The default time setting for program EG is 12 minutes, while EP is 14 minutes. Follow the instructions provided to increase or decrease the time setting according to the gel type being used.

Gel Type	Recommended run time	Maximum run time
E-Gel® 48 Agarose Gels	20 minutes	25 minutes
E-Gel® 96 Agarose Gels	12 minutes [EG]	17 minutes
E-PAGE™ 488% Gels	25 minutes	30 minutes
E-PAGE™ 96 6% Gels	14 minutes [EP]	25 minutes

Note: Do not exceed the maximum run time listed for the type of gel when setting the time.

Setting the Time without a Cassette on the Base

To increase or decrease the default run time when no cassette is on the base, use the following steps:

1. Press and release the time button located on the lower right corner of the base to view the time setting.
2. Press and hold the time button to increase the time.
3. When the appropriate run time for the gel type is reached, release the time button.

If the time button is not released, the time setting will continue advancing until it reaches 00. To begin cycling through the numbers again, press the time button again.

Setting the Time with a Cassette on the Base

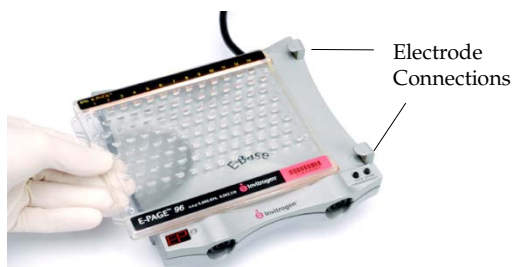
To increase the run time when a cassette is inserted (e.g., during electrophoresis), press and release the time button to increase the time setting by 1-minute intervals or press and hold the time button to increase the time continuously.

To interrupt or stop a run in progress, see page 11.

Instructions for Use, Continued

Running the Gel

1. Open the package and remove the gel.
2. Remove the plastic comb from the gel.
3. Slide the gel into the Mother E-Base™ device or Daughter E-Base™ device such that the two copper electrodes on the right side of the gel cassette come in contact with the two electrode connections on the base.



When the gel is properly inserted into the base, the fan in the base turns on and a red light illuminates at the lower left corner of the base. The digital display shows the default time for a selected program or the last manual setting (Ready Mode).

4. Load the appropriate amount of DNA or protein samples into sample wells. Load water or sample buffer containing the same salt concentration as the sample into any remaining empty wells.
5. Load DNA or protein markers in marker wells.
6. To begin electrophoresis, press and release the **pwr/prg** button located on the lower right corner of the Mother E-Base™ device or Daughter E-Base™ device.

The **red light** changes to **green** and the display counts down the time remaining in the run.

To increase the run time during electrophoresis, press the time button until the desired time is reached (see page 8).

To interrupt or stop a run in progress, see page 11.

Instructions for Use, Continued

Running the Gel, continued

7. The Mother E-Base™ device or Daughter E-Base™ device signals the end of the run with a **flashing red light** and rapid beeping for 2 minutes, followed by a **single beep** every minute.

At the end of the run, the display shows the original time setting (time added during electrophoresis is not shown). The display also shows the elapsed time since the end of the run (up to 19 minutes with a negative sign).

8. Press and release the **pwr/prg** button to stop the beeping. The red light becomes **steady** and the display shows the last time setting.
9. Remove the gel cassette from the Mother E-Base™ device or Daughter E-Base™ device. Proceed to stain or capture an image of the gel.

Note: The bands in the gel will diffuse within 20–40 minutes.



We recommend that you disconnect the Mother E-Base™ device from the electrical outlet when not in use for prolonged periods of time.

Instructions for Use, Continued

Interrupting a Run

You can interrupt an electrophoresis run at any time by pressing and releasing the **pwr/prg** button. The stopped current is indicated by a steady red light and the digital display flashes to indicate that the run was interrupted.

You can remove the gel from the E-Base™ device 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 **pwr/prg** button. The light changes to steady green and the digital display shows the countdown time.
- To cancel the rest of the interrupted run, press and hold the **pwr/prg** button for a few seconds. The digital display resets and the base returns to Ready Mode. You can also program a new run time as described on page 8 and rerun the gel.

In case of an external power failure (loss of electricity or the electrical cord is accidentally unplugged), the run will continue when the power resumes. The Mother E-Base™ device or Daughter E-Base™ device signals the end of the run as described on page 10, except the light will be an alternating red/green to indicate that an external power failure has occurred during the run.

Maintaining E-Base™ Devices

Keep the surfaces of the Mother E-Base™ and Daughter E-Base™ devices free of contaminants. To clean, disconnect bases 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 Life Technologies.

E-Base™ Quick Reference Guide

Introduction A quick reference guide for operating the Mother E-Base™ and Daughter E-Base™ devices is provided in the following table.

Mode	Action	Sound	Light	Digital Display
Base plugged in	Mother E-Base™ device connected to an electrical outlet	1 beep	No light if a cassette is not inserted or red light if a cassette is inserted.	Without gel cassette -EP, last program used (EP or EG) With gel cassette in -last time setting
Ready (with no current flowing through gel)	Gel cassette inserted into a base	—	Steady red.	Default time setting (12 minutes for EG, 14 minutes for EP, or last time setting)
Run	Press and release the pwr/prg button	—	Steady green.	Countdown time
End of run	Automatic	Continuous beeping for 2 minutes followed by a single beep every minute	Flashing red until the time button is pressed.	Negative time display (00 to -19 minutes)
Run ends after an external power failure during the run	Automatic	Continuous beeping for 2 minutes followed by a single beep every minute	Alternating red and green.	Negative time display (00 to -19 minutes)
Pause (manually end the run)	Press and release the pwr/prg button during the run	—	With gel cassette in - steady red Without gel cassette - no light.	Flashing time display

E-Base™ Quick Reference Guide, Continued

Mode	Action	Sound	Light	Digital Display
Return to Ready mode after an automatic stop	Press and release the pwr/prg button.	—	Steady red	Last time setting.
Restart after a manual stop	Press and release the pwr/prg button.	—	Steady green	Countdown time.
Return to Ready mode after a manual stop	Press and hold the pwr/prg button.	—	With gel cassette in – steady red Without gel cassette – no light	With gel cassette in –last time setting Without gel cassette - last program setting.
Failure	Press and hold pwr/prg button for 2 seconds and remove gel from the base.	Continuous loud beeping		Flashing “ER”.
No cassette	—	—	—	EP, last program used (EP or EG).
Run time setting	With gel cassette in - Press and release the time button.	—	With gel cassette – steady red	Time increases by 1 minute increments.
	With and without gel cassette - Press and hold the time button.	—	With gel cassette in – steady red Without gel cassette – no light	Time increases continuously and automatically stops at 00.
Program setting	Press and release the pwr/prg button when no cassette is inserted into the E-Base™ device to select the desired program.	1 beep	No light	Selected program EP or EG.

Troubleshooting

Introduction The following table provides some solutions to the problems you might encounter during electrophoresis using E-Base™ devices.

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






Observation	Reason	Solution
No current	Daughter E-Base™ device used without a Mother E-Base™ device.	Do not use the Daughter E-Base™ device without a Mother E-Base™ device. The Daughter E-Base™ device does not have an electrical plug to connect to an electrical outlet.
	Copper contacts in the Mother E-Base™ device or Daughter E-Base™ device are damaged due to improper use.	Ensure 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 illuminates on the base when the cassette is correctly inserted and power is on.

Troubleshooting, Continued

Observation	Reason	Solution
Over-run the gel or need more time to run gel	Incorrect program selected	<p>Select EG if you are using E-Gel[®] 48 or E-Gel[®] 96 gels and EP if you are using E-PAGE[™] 48 or E-PAGE[™] 96 gels.</p> <p>If you are at the beginning of the run, stop the run and select the desired program.</p> <p>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 then manually stop the run.</p>
Failure Mode indicated by flashing "ER", and continuous loud beeping	Defective cassette	<p>Disconnect E-Base[™] device and remove the gel cassette from the base.</p> <p>Press and hold the pwr/prg button for 2 seconds to return to Ready Mode. Use a fresh gel cassette.</p>
	Cold cassette	Use a room temperature cassette. Avoid storing gel cassettes at 4°C.
	Improper operating conditions	Use E-Base [™] devices at room temperature (20°C to 25°C).

Appendix

Explanation of Symbols and Warnings







Conformity mark	Description
	The CE mark symbolizes that the product conforms to all applicable European Community provisions for which this marking is required.
	The E-Base complies with the TUV Rhineland North America Inc. safety requirements. The indicators "C" and "US" mean that the product is certified for both the U.S. and Canadian markets, to the applicable U.S. and Canadian standards.
 Caution	Caution risk of danger. Consult the manual for further safety information.
 Double Insulation	Class II product
	Do not dispose of this product in unsorted municipal waste. CAUTION! To minimize negative environmental impact from disposal of electronic waste, do not dispose of electronic waste in unsorted municipal waste. Follow local municipal waste ordinances for proper disposal provision and contact customer service for information about responsible disposal options.

Safety

Operation of the E-Base™ device is subject to the following conditions:

- Do not place the product in a location where the product's ventilation can be obstructed.
- Do not place the product on heat-generating surface or near heat emitting devices such as heaters. Verify that there is sufficient clearance between the product and any other system that may exhaust warm air.
- The product is for indoor use only
- The product operating ambient range is temperature of 5–40°C (50–95 °F) and Relative humidity of 20–80%. Life Technologies recommends that an ambient temperature of 20–25 °C (68–77 °F) and relative humidity of 30–50% is maintained during normal operation as this will result in better performance and longer MTBF of the equipment. Temperature must not exceed the maximum temperature specified above.
- Maximum operating altitude 2000 m asl, Maximum transport altitude 4500 m asl.
- Installation categories (over voltage categories) II; Pollution degree 2
- Mains supply voltage fluctuations not to exceed 10% of the nominal voltage (100–240 V, 50/60 Hz, 1.5 A).
- Do not connect more than 3 daughter units to a mother unit
- Mains plug is a disconnect device and must be easily accessible.
- Do not attempt to open the Mother E-Base™ device or Daughter E-Base™ device.
- To honor the warranty, E-Base™ devices can only be opened and serviced by Life Technologies.
- The protection provided by the equipment may be impaired if the equipment is used in a manner not specified by Life Technologies.

Explication des symboles et des avertissements

Marque de conformité	Description
	<p>Le marquage CE symbolise que le produit est conforme à toutes les dispositions applicables de la Communauté européenne pour lesquels ce marquage est requis.</p>
	<p>L'E-Base est conforme aux exigences de sécurité de TÜV Rheinland North America Inc. Les indicateurs « C » et « US » signifient que le produit est certifié pour les marchés aux États-Unis et au Canada selon les normes américaines et canadiennes.</p>
 Attention	<p>Attention, risque de danger. Consulter le manuel pour d'autres renseignements de sécurité.</p>
 Double isolation	<p>Produit de classe II</p>
 	<p>Ne pas éliminer ce produit avec les déchets usuels non soumis au tri sélectif.</p> <p>ATTENTION! Pour minimiser les conséquences négatives sur l'environnement à la suite de l'élimination de déchets électroniques, ne pas éliminer ce déchet électronique avec les déchets usuels non soumis au tri sélectif. Se conformer aux ordonnances locales sur les déchets municipaux pour les dispositions d'élimination et communiquer avec le service à la clientèle pour des renseignements sur les options d'élimination responsable.</p>

Sécurité

L'utilisation du dispositif E-Base^{MC} est soumise aux conditions suivantes :

- Ne pas placer le produit dans un endroit où sa ventilation risque d'être obstruée.
- Ne pas placer le produit sur une surface générant de la chaleur ou près de dispositifs émettant de la chaleur, tels que des appareils de chauffage. Vérifier qu'il y a suffisamment d'espace entre le produit et tout autre système pouvant évacuer de l'air chaud.
- Le produit est destiné à une utilisation en intérieur uniquement.
- La plage d'utilisation normale du produit est de 5 à 40 °C (50 à 95 °F) en matière de température et de 20 à 80 % en matière d'humidité relative. Life Technologies conseille aux utilisateurs de conserver une température ambiante de 20 à 25 °C (68 à 77 °F) et une humidité relative de 30 à 50 % au cours du fonctionnement normal de l'équipement de façon à en optimiser les performances et à accroître le temps moyen entre défaillances. La température ne doit pas dépasser la limite supérieure de la plage spécifiée ci-dessus.
- Altitude maximale d'utilisation de 2 000 m au-dessus du niveau de la mer, altitude maximale de transport de 4 500 m au-dessus du niveau de la mer.
- Catégories d'installation (catégories de surtension) II; degré de pollution 2.
- Les fluctuations de tension de l'alimentation secteur ne doivent pas dépasser 10 % de la tension nominale (100 à 240 V, 50/60 Hz, 1,5 A).
- Ne pas brancher plus de 3 unités dépendantes à la même unité principale.
- La fiche secteur est un dispositif de déconnexion et doit être facilement accessible.
- Ne pas tenter d'ouvrir le dispositif E-Base^{MC} principal ou le dispositif E-Base^{MC} dépendant.
- Pour honorer la garantie, les dispositifs E-Base^{MC} ne peuvent être ouverts et entretenus que par Life Technologies.
- La protection fournie par l'équipement risque d'être altérée si l'équipement est utilisé d'une manière non spécifiée par Life Technologies.

Accessory Products

Additional Products

Additional products available separately from Life Technologies are listed in the following table. For more information on these products, go to www.lifetechnologies.com or contact Technical Support, page 21.

Product	Quantity	Catalog No.
E-PAGE™ 48 8% Gels	8 gels	EP048-08
E-PAGE™ 96 6% Gels	8 gels	EP096-06
1% E-Gel® 96 Agarose	8 gels	G7008-01
2% E-Gel® 96 Agarose	8 gels	G7008-02
E-Gel® 48 1% Agarose Gels	8 gels	G8008-01
E-Gel® 48 2% Agarose Gels	8 gels	G8008-02
E-Gel® 48 4% Agarose Gels	8 gels	G8008-04
E-Holder™ Platform	2 each	EH-03

Molecular Weight Markers

A variety of DNA and protein molecular weight markers are available from Life Technologies. The recommended marker for each gel type is listed in the manual supplied with the gels. For more information, visit www.lifetechnologies.com or contact Technical Support, page 21.

Technical Support

Obtaining Support

For the latest services and support information for all locations, go to **www.lifetechnologies.com**.

At the website, you can:

- Access worldwide telephone and fax numbers to contact Technical Support and Sales facilities
 - Search through frequently asked questions (FAQs)
 - Submit a question directly to Technical Support (**techsupport@lifetech.com**)
 - Search for user documents, SDSs, vector maps and sequences, application notes, formulations, handbooks, certificates of analysis, citations, and other product support documents
 - Obtain information about customer training
 - Download software updates and patches
-

Safety Data Sheets (SDS)

Safety Data Sheets (SDSs) are available at **www.lifetechnologies.com/support**.

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.lifetechnologies.com/support** and search for the Certificate of Analysis by product lot number, which is printed on the box.

Limited Product Warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale found on Life Technologies' website at **www.lifetechnologies.com/termsandconditions**. If you have any questions, please contact Life Technologies at **www.lifetechnologies.com/support**.

For support visit

www.invitrogen.com/support or email techsupport@invitrogen.com

www.lifetechnologies.com

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