SmartDoc™ 2.0 Imaging Enclosure

E5001-SD

Instruction Manual

Version 11.16

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1. INTRODUCTION

Congratulations on your purchase of a *SmartDoc 2.0 Imaging Enclosure*. This enclosure is designed for capturing high quality photos of electrophoresis gels with a smart phone or tablet camera. The SmartDoc Enclosure can be used on existing blue light or UV transilluminators.

An orange photo filter is included with the system. This filter is designed to absorb (block) blue excitation light from a blue light transilluminator, allowing through only the fluorescing sample light for capturing gel images using a smart phone camera.

Additional filters are required and available separately for imaging gels on a UV transilluminator.

To ensure proper operation and performance from your *SmartDoc System*, please read this manual in its entirety before use.

2. WARNINGS

Read this manual in its entirety before operating the SmartDoc system, and keep the manual for future reference**.**

CAUTION: When using blue light transilluminators: Although blue light does not pose the same hazards as UV light, the emitted blue light is very bright. It is not recommended to look directly at the blue light illumination surface .

CAUTION: When working in a laboratory environment, it is always important to properly handle all reagents and chemicals. When using a cell phone for capturing gel images, it is very important not to contaminate the phone with any chemicals or reagents. Use proper and common laboratory safety practices when working with reagents and gels stained with DNA dye. Always wear gloves, and always change gloves when switching from handling gels, or reagent to use of a cell phone, and vice versa. The SmartDoc System components should be cleaned periodically using mild soap and water or 10% bleach solution for decontamination.

CAUTION: If using the SmartDoc enclosure on a UV transilluminator, always use caution to prevent exposure of the skin and eyes to UV light. If working on a UV transilluminator with a viewing surface larger than the bottom of the SmartDoc housing, use the E5000-MAT UV Blocking Mat to block UV light from emitting around the edges of the SmartDoc.

3. UNPACKING

NOTE: Always handle the *SmartDoc* enclosure and parts with care.

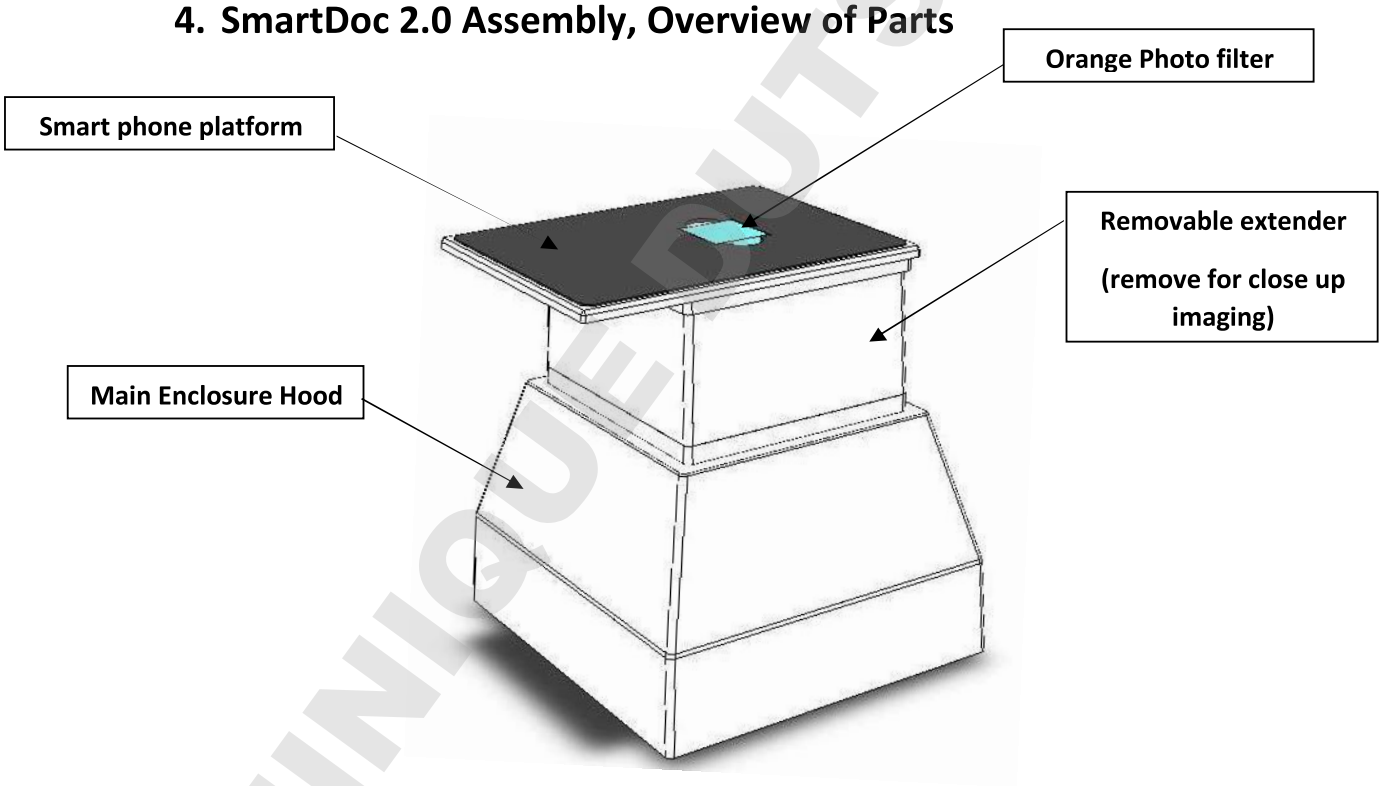
Carefully remove the system and all accessories from the carton and remove any foam protective pieces. Check for any shipping damage. In the event of shipping damage, a claim must be filed with the carrier. Check the contents of the package to make sure you have received all of the parts ordered:

- SmartDoc Imaging Enclosure parts: 1) Main enclosure hood, 2) extending adapter, and 3) top platform for smartphone.
- Orange Photo Filter
- Any additional filters for UV (ordered separately)

If any parts are damaged or missing, please immediately contact Benchmark Scientific Customer Service at 908-769-5555 or email info@benchmarkscientific.com.

IMPORTANT: Save the carton and packing materials for storing and transporting the SmartDoc or returning it for any required servicing.

4. SmartDoc 2.0 Assembly, Overview of Parts



5. SETTING UP THE SMARTDOC

Assemble the components of the SmartDoc enclosure as pictured in Section 4 of this manual. Depending on the size of the gels to be imaged, or the desired detail of the image, the extender piece can be connected or removed. The top, smart phone platform piece connects either to the top of the Extender or to the top of the Main Enclosure. These parts will snap together and pull apart with gentle pressure.

6. SMARTDOC PHOTO FILTERS

E5001-ORANGE
(included)

E5001-535
(optional)

E5001-590
(optional)

A photo filter is required to capture quality images with the SmartDoc enclosure. The orange photo filter, part E5001-ORANGE is included and this filter blocks the visible blue wavelengths coming from the illumination base or other blue light transilluminators. It allows through the emission wavelengths from fluorescing nucleic acid stains, to allow clear pictures of gel bands.

Additional filters are available separately for the SmartDoc and are recommended when using the enclosure on a UV Transilluminator. These glass, band pass filters block UV light so the UV bulbs will not be seen in the images, and they also eliminate background wavelengths from the excitation source.

E5001-590	band pass photo filter, 590nm, for imaging EtBR on UV transilluminator
E5001-535	band pass photo filter, 535nm for imaging green stains on UV transilluminator

Caution: Using the SmartDoc on a UV Transilluminator without an appropriate filter in place can cause eye or skin exposure to UV radiation. The SmartDoc filters effectively block harmful UV radiation, and should always be properly installed when using UV illumination.

7. GEL IMAGING WITH THE SMART DOC

Electrophoresis gels should be prepared and stained according to the instructions included with the nucleic acid stain. Use the proper type of transilluminator for the stain used. Common stains that work well with the SmartDoc enclosure and filters include:

SmartGlow™ PS (Pre Stain), SmartGlow™ LD (Loading Dye), SYBR® Green I and II, SYBR® Safe, SYBR® Gold, Gel Star, Gel Green, and Green Glo™, Ethidium Bromide, Gel Red.

1. The UV or blue light transilluminator should be set up on a level and stable lab bench or table.
2. Carefully place a stained electrophoresis gel onto the transilluminator viewing surface.
3. Note: The gel to be imaged should be 15x15cm or smaller. Cut the gel to a smaller size if required.
4. Note: If the transilluminator being used has a viewing surface larger than 19x19cm, please use E5000-MAT UV Blocking Mat. This will block any UV or blue light from coming around the edges of the SmartDoc enclosure base.
5. Place the SmartDoc imaging enclosure onto the transilluminator.
6. Insert the appropriate filter into place on the top platform. The side with the Accuris logo should be facing up. See Section 6 for information on filters.
7. Place a smartphone face down onto the top platform, and align the camera lens with the filter. NOTE: Some protective phone cases can prevent the camera lens from aligning and connecting to the photo filter. Remove the phone case if necessary.
8. Turn on the power of the transilluminator.
9. Select the Camera Mode on your Smart Phone and turn off the flash setting. When properly positioned, the gel will be seen in the device's display screen. Focus as required.
10. If required, remove or insert the extender piece to maximize the image size of the gel in the display. NOTE: Always turn of the power of the transilluminator when adjusting the SmartDoc enclosure.
11. A zoom function on the camera phone can be used to enlarge the gel image in the display, but this can decrease the resolution of the image.

SmartDoc Enclosure properly positioned on a UV Transilluminator.

Note: On some models of transilluminators, the protective cover may need to be removed.

SmartDoc Enclosure properly positioned on a Blue Light Transilluminator.

8. SPECIFICATIONS:

Maximum Gel Size:	15 x 15 cm
Included imaging filter:	Orange PMMA, 12mm aperture
Dimensions (WxDxH):	23x19x22 cm
Weight:	0.9 kg
Phone compatibility:	iPhone, Samsung, LG, HTC smartphones and tablets with camera

9. ACCESSORIES AND CONSUMABLES

Item No.	**Description**
E3000	UV Transilluminator, 302nm, 16x19cm viewing surface
E4000	Blue Light Transilluminator, 465nm, 12 x 17cm viewing surface
E5001-ORANGE	Orange photo filter for use with blue light illuminators
E5001-590	band pass photo filter, 590nm, for imaging EtBR on UV transilluminator
E5001-535	band pass photo filter, 535nm for imaging green stains on UV transilluminator
E5000-MAT	SmartDoc UV Blocking Mat
E4500-LD	SmartGlow™ Loading Dye with Safe Green Stain, 1.0ml
E4500-LD-S	SmartGlow™ Loading Dye with Safe Green Stain, Sample, 20ul
E4500-PS	SmartGlow™ Safe Green Pre Stain, 1.0ml
E4500-PS	SmartGlow™ Safe Green Pre Stain, Sample, 40ul

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